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LEPIDOPTERA INDICA.



# LEPIDOPTERA INDICA.

BY

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## RHOPALOCERA.

FAMILY HESPERIIDÆ (*concluded*).

SUB-FAMILIES CELÆNORRHINÆ, HESPERIINÆ, PAMPHILINÆ, ASTICTOPTERINÆ, SUASTINÆ,  
ERIONOTINÆ, MATAPINÆ, NOTOCRYPTINÆ, PLASTINGIINÆ, ERYNNINÆ.

FOLLOWED BY

AN ADDENDA OF NEW GENERA AND SPECIES, A SYNOPSIS OF FAMILIES AND SUB-FAMILIES,  
AND AN INDEX OF GENERA AND SPECIES FOR THE COMPLETE WORK.

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# LEPIDOPTERA INDICA.



## Sub-Family CELÆNORRHINÆ.

WHEN settled, the butterflies of this group rest with their wings extended flat; it contains a large number of genera; the club of the antennæ is of moderate thickness, often recurved, bent at about a right angle to the shaft in *Charmion*, *Daimio*, *Tajiades*, *Caprona* and *Odontoptilum*; hooked in *Satarupa*, *Odina*, *Tapena* and *Darpa*; the palpi are porrect, third joint short, conical, often minute; in the forewing vein 12 usually ends on the costa before the end of the cell; the cell is less than two-thirds the length of the costa, discocellulars oblique, or sub-erect; vein 3 arises near the lower end of the cell, 2 from before the middle, usually at about one-fourth from the base; no costal fold. In the hindwing vein 5 and the discocellulars are usually very faint; the hind tibiæ with two pairs of spurs. We divide the group into two sections, the habits of the first being different to those of the second. We give Davidson, Bell and Aitken's description of the life history of the members of each section *in extenso*.

### SECTION I.

The imagos of this group rest with their wings wide open as those of group B (Section II.), and generally on the underside of leaves. They are all shade-loving insects, and have a very rapid, jerky flight, never sustained for any length of time. The typical larva is stout, thickest at the fourth and fifth segments and somewhat narrow at the anal end, the extremity being flattened and rounded; the head is large, very strongly bi-lobed, the lobe being separated by a deep triangular sinus on the vertex; surface of the head rugose; jaws strong. The colour of the larva is variable, being brown, green, or white, according to the species. The larva lies closely applied to the surface of the leaf, with its head turned round on its side when at rest; like that of the foregoing group (Section II.), it raises its head and opens its mandibles when disturbed, as if to bite; it makes a cell by turning over a triangular piece of leaf from the edge of the upperside, fixing laxly with silk round the edges, and lying with its

back towards the leaf-surface on the underside of the piece turned over; it sometimes scollops the edge of the piece turned over. The pupa is stoutish, with a slightly humped thorax and slight constriction, a short snout to the front of the head between the eyes; in some cases there is a spiracular expansion to segment 2. The pupa is attached by the tail and by a body-band. *Tapena thwaitesi*, Moore, has been placed in this group, as it evidently is most intimately related to the imagos of the group; its larva is somewhat abnormal in the shape of the head, and the pupa in not having spiracular expansions to segment 2.

#### Genus CELÆNORRHINUS.

- Celænorrhinus*, Hübner, Verz. bek. Schmett. p. 106 (1816). Plötz, Berl. ent. Zeit. xxvi. p. 253 (1882). de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 177. Watson, Hesp. Ind. p. 131 (1891); id. Proc. Zool. Soc. 1893, p. 49. Leech, Butt. of China, etc. ii. p. 569 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 420. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 111.
- Narga*, Mabille, Compt. Rend. Soc. Ent. Belg. 1861, p. lxx.
- Plesioneura*, Moore (part), Lep. Ceylon, i. p. 177 (1881).
- Gehlota*, Doherty, Journ. As. Soc. Bengal, 1889, p. 131.

*Forewing.* Vein 12 ends on costa at about opposite the end of cell; discocellulars sub-erect, the upper minute, the lower longer than the middle, vein 6 emitted from the junction of the upper and middle discocellular, 5 from the junction of the middle and lower, 3 from one-sixth before lower end of cell, 2 from one-fourth from the base, the cell less than two-thirds the length of the costa; costa slightly and evenly arched, apex sub-acute, outer margin convex, in some species it is nearly as long as the hinder margin which is nearly straight, but in many species the outer margin is shorter, making the wing proportionately longer; hinder angle obtuse. *Hindwing.* Vein 7 emitted one-fifth before lower end of cell, discocellulars faint, erect, 5 hardly visible, 3 from close to lower end of cell, 2 from about one-third before the end, apex of the wing rounded, outer margin sinuous but fairly rounded. Antennæ with a moderately thick, short club, recurved at its apex; hind tibiæ with two pairs of spurs and in the male with a tuft of hairs attached near the proximal end.

Type, *Papilio eligius*, Cramer, from Brazil.

#### CELÆNORRHINUS SUMITRA.

Plate 757, figs. 1, ♂, 1a, ♀, 1b, ♂.

- Plesioneura sumitra*, Moore, Proc. Zool. Soc. 1865, p. 787. Doherty, Journ. As. Soc. Bengal, 1886, p. 139. Elwes, Trans. Ent. Soc. 1888, p. 463.
- Tagiades sumitra*, Plötz, Jahrb. Nass. Ver. Natur. xxxvii. p. 51 (1884).
- Celænorrhinus sumitra*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 184. Watson, Hesp. Ind. p. 137 (1891). Elwes, Proc. Zool. Soc. 1892, p. 660. Watson, id. 1893, p. 49. Leech, Butt.



of China, etc. ii. p. 570, pl. 39, fig. 1, ♂ (1893). de Nicéville, Gazetteer of Sikkim, Butt. p. 177 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 115.

*Celænorrhinus (Plesioneura) sumitra*, Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 372.

IMAGO.—Male. Upperside dark olive-brown, nearly black, the basal half of both wings covered with brownish-ochreous hairs. *Forewing* with five sub-apical spots, larger than usual, the upper three conjoined in a very slight curve from near the costa, the lower two nearly as large, a little outwards below, one above the other, a discal, outwardly oblique, nearly straight band of fairly large spots, two conjoined across the end of the cell, a rather elongated squarish spot a little larger across the middle of the first median interspace, a smaller, somewhat oval spot in the interno-median interspace, a small round spot close to the base of the second median interspace, all whitish and semi-hyaline. *Hindwing* with a small orange spot at the end of the cell, and a discal series of three or four small round orange spots, the upper in cell 5, the next in cell 3, two in cell 1. Cilia of forewing dark brown, of hindwing orange, with dark brown patches at the vein ends. Underside paler and duller in colour, the markings similar, but in the hindwing the discal series of orange spots is complete. Antennæ entirely pure white above to the tip of the club; palpi ochreous-grey with black hairs, the base of last joint ringed with white, a white patch between the palpi viewed from above, and a white band between the bases of the antennæ; head and body above and below concolorous with the wings; thorax above with brownish-ochreous hairs, beneath with whitish hairs; legs ochreous-grey.

Female like the male, but the spots on both wings are larger, there is an additional spot, ochreous in colour, between the upper discal spot and the costa in the forewing, and the discal series of orange spots is complete on both sides. Antennæ with shaft spotted with white, a white streak beneath, below the club, its tip tinged with dull ochreous-grey.

Expanse of wings, ♂  $1\frac{6}{10}$ , ♀  $1\frac{7}{10}$  inches.

HABITAT.—N.W. Himalayas, Sikkim, Naga Hills, China.

DISTRIBUTION.—The type is marked N.E. Bengal, evidently a wrong locality; Elwes records it from the Naga Hills, de Nicéville from Sikkim, Doherty and Hannington from Kumaon; our description and figures are from a pair in the B. M. *C. sumitra* is a rare species; it is one of the largest species of the genus and has no near ally. Doherty says,\* “*Sumitra* is one of the swiftest and most active of insects, incessantly whirling around flowers, or patrolling up and down a path, almost invisible from the rapidity of its flight. Like its allies of the *Tagiades* group, it alights with open wings. The egg is more than three-fourths as high as wide, generally white, with very numerous sharply cut ribs and a greatly contracted base without carina.”

\* Journ. As. Soc. Bengal, 1889, p. 131.

## CELÆNORRHINUS PYRRHA.

Plate 757, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Celænorrhinus pyrrha*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 181, pl. B, fig. 11, ♀  
 Watson, Hesp. Ind. p. 134 (1891); id. Proc. Zool. Soc. 1893, p. 49. Swinhoe, Trans. Ent Soc.  
 1893, p. 317. de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894). Watson, Journ. Bo. Nat.  
 Hist. Soc. ix. 1895, p. 422.

*Celænorrhinus sumitra*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 116.

IMAGO.—Male. Upperside very dark olive-brown, nearly black, the basal third of forewing and nearly the basal and abdominal half of hindwing covered with brownish-ochreous hairs. *Forewing* with three sub-apical, small semi-hyaline spots close together, in an outward curve from close to the costa, followed by two similar detached spots a little outwards, one above the other, an outwardly oblique band commencing with two very small semi-hyaline spots close to the costa, one above the other, a large sub-quadrate spot crossing the cell near its end, its lower part broader than its upper, a similar but more quadrate spot below and a little outwards, its upper inner end almost touching the middle of the upper spot, a small round spot between them, but a little outside, another similar small spot below and near to the outer lower end of the second sub-quadrate spot, and another small well-separated spot inwards below. *Hindwing* with a bright orange-ochreous small spot at the end of the cell, two between it and the abdominal margin, obscured by the brownish-ochreous hairs, and a series of similar discal spots, the upper one on a level with the cell spot, those towards the abdominal margin nearly hidden by the hairs. Cilia of forewing brown, with a little whitish towards the hinder angle, of the hindwing orange-ochreous, with brown patches at the vein ends. Underside as darkly brown as the upperside, markings similar, but in the forewing the two upper very small spots of the discal band are replaced by a larger single spot which extends the band close to the costa, and two diffused whitish spots in addition at the end of the band, on the outer side parallel to the two lowest spots. Antennæ black, with a small portion on its upper side below the club silvery white, the shaft dotted with white; palpi grey, white at the sides and below the eyes; body above and beneath and legs concolorous with the wings; tarsi ochreous.

Female like the male above and beneath; in the forewing there is a white dot in the sub-median interspace one-third from the base, but in some males there are indications of this dot, the lowest spots of the discal band on the underside are larger, and so also are all the ochreous spots above and below in the hindwing. Antennæ as in the male.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $2\frac{2}{10}$  inches.

HABITAT.—Assam, Bhutan.

DISTRIBUTION.—The types from Bhutan are in the Indian Museum, Calcutta; de Nicéville also records it from the Khasia Hills; our figures and descriptions are from a

pair in our collection from the Khasia Hills. Elwes sinks this species, without any remark, to *C. sumitra*, Moore, he never could have seen a specimen of the male of *pyrrha*. de Nicéville says he examined the prehensores of his male type, so that there could be no mistake about the sex; setting apart other differences, and they are great, it can at once be distinguished from *sumitra* by the entirely different antennæ.

#### CELÆNORRHINUS PLAGIFERA.

Plate 757, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Celænorrhinus plagifera*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 182, pl. B, fig. 13, ♀.

Watson, Hesp. Ind. p. 135 (1891). de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894).

Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

*Celænorrhinus pluscula*, Leech, Butt. of China, etc. ii. p. 571, pl. 39, fig. 6, ♀ (1893).

*Celænorrhinus sumitra*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 116.

IMAGO.—Male. Upperside coloured like *C. pyrrha*, very dark olive-brown, the basal portions of both wings somewhat more extensively covered with brownish-ochreous hairs. *Forewing* with the sub-apical spots similarly disposed but larger than in *pyrrha*, the spots of the discal band all well separated from each other. *Hindwing* with similarly disposed orange-ochreous spots, but all much larger, and three or four additional spots anteriorly forming as it were three series of spots. Cilia as in *pyrrha* on both wings, but the brown patches at the vein ends in the orange-ochreous cilia of the hindwing larger. Underside like the upperside, the hinder marginal space of the forewing grey, the orange-ochreous spots in the hindwing larger and clearer than they are on the upperside.

Female similar to the male above and below; in the forewing the dot in the submedian interspace in *pyrrha* is wanting in this species, in the hindwing the orange-ochreous spots are larger than they are in the male. Antennæ of both sexes as in *pyrrha*.

Expanse of wings, ♂ ♀ 2 to  $2\frac{3}{10}$  inches.

HABITAT.—Sikkim, Bhutan.

Described and figured from examples from Sikkim in our collection. It appears to us to be a perfectly distinct species; the unique female type specimen of *pluscula*, Leech, in the B. M., and a male we have from Siao Lou, W. China, are identical with our Sikkim examples.

#### CELÆNORRHINUS PATULA.

Plate 758, figs. 1, ♀, 1a, ♀.

*Celænorrhinus patula*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 182, pl. B, fig. 4, ♀. Watson,

Hesp. Ind. p. 136 (1891). de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894). Watson,

Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

*Celænorrhinus sumitra*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 116.

IMAGO.—Male. Upperside. *Forewing* with the white spots forming the discal band smaller than in *C. pyrrha* and *C. plagifera*, mihi, no spot at the base of the second median interspace, the lower of the two spots in the sub-median interspace minute. Cilia anteriorly dark brown, posteriorly pale yellow. *Hindwing* with the yellow spots on the disc larger and clearer than in either the above mentioned species. Cilia almost entirely yellow, instead of being prominently marked with brown at the ends of the veins. Antennæ with the shaft anteriorly entirely pure silvery-white, in which respect it agrees with *C. sumitra*, Moore, and *C. pero*, mihi.

Female. Upperside. *Forewing* with the lower spot in the sub-median interspace larger than in the male, as also are the five sub-apical spots; a minute spot at the base of the second median interspace. Cilia posteriorly barely marked with pale yellow. Antennæ as in the male.

*C. patula* differs from the description of *C. sumitra* in having two spots in the sub-median interspace of the forewing in both sexes instead of one only; the cilia are not alternately broadly brown and orange-yellow, and the female of *C. patula* lacks the yellow costal spot above the oblique discal series of white spots on the upperside of the forewing described in *C. sumitra*. Described from a single pair from Sikkim; the female of *C. patula* is unique, as far as I know, amongst this group of the genus in possessing antennæ white, this being usually a male character. I am certain of the sex of my type specimens, as I have examined the primary sexual organs. (de Nicéville.)

Expanse of wings, ♂  $2\frac{2}{10}$ , ♀  $2\frac{5}{10}$  inches.

HABITAT.—Sikkim.

We have not seen this species, the types are in the Indian Museum, Calcutta; we therefore give de Nicéville's description and copies of his female figure.

#### CELÆNORRHINUS PERO.

Plate 758, figs. 2, ♂, 2a, ♂.

*Celænorrhinus pero*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 183, pl. B, fig. 12, ♂. Watson, Hesp. Ind. p. 137 (1891). Elwes, Proc. Zool. Soc. 1892, p. 660. Watson, id. 1893, p. 49; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 115. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 597. Hannyngham, id. xx. 1910, p. 372.

IMAGO.—Male. Upperside, both wings differ from *C. pyrrha*, mihi, in being paler in colour. *Forewing* marked as in that species, but the yellow spot one-third from the base of the wing in the sub-median interspace more prominent. Cilia broadly pale yellow and brown. *Hindwing* as in *C. pyrrha*, but the yellow spots on the disc smaller, and the cilia almost entirely pale yellow, only just touched with brown at the ends of the veins as in *C. patula* and *C. flavocincta*. Underside, both wings as in *C. pyrrha*, but the spot one-third from the base of the sub-median interspace of the

forewing much larger than on the upperside, and white. Antennæ shining silvery-white anteriorly throughout, posteriorly black; palpi white below, instead of pale yellow as in *C. pyrrrha*.

*C. pero* agrees with *C. sumitra* in having the antennæ anteriorly white, but differs from the description of that species in having the palpi and front of the thorax beneath white, not pale yellow, and in possessing the additional yellow spot one-third from the base, and the white spot one-third from the outer margin in the sub-median interspace of the forewing on the upperside; described from two male examples from Colonel G. F. Marshall's collection. They are not ticketed, but I believe they are from the Western Himalayas. (de Nicéville.)

Expansion of wings, ♂  $2\frac{3}{10}$  inches.

HABITAT.—W. Himalayas.

DISTRIBUTION.—Recorded by Watson from the Chin Hills, by Elwes from the Naga Hills, by de Rhé-Philipe from Masuri, by Hannington from Kumaon.

We have not seen this species, it is not in the B. M., and we have not been able to procure any specimen at all corresponding with de Nicéville's description or figure, we therefore give copies of his figure.

#### CELÆNORRHINUS CLITUS.

Plate 758, figs. 3, ♂, 3a, ♂.

*Celænorrhinus clitus*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 378, pl. G, fig. 26, ♂. Elwes, Proc. Zool. Soc. 1892, p. 115.

*Celænorrhinus aspersa*, Watson (part), Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 660.

IMAGO.—Male. Upperside, both wings fuscous. *Forewing* with the base over-spread somewhat sparsely with yellow hair-like scales; three sub-apical dots, which form an oblique line whose inner edge is straight, but the outer irregular, owing to the spots varying in size, the uppermost being oblong, and twice the size of the middle smallest spot; two small elongated spots divided by the lower discoidal nervule placed below the sub-apical series, and about coequal in size with the uppermost of these; a large irregularly shaped spot across the discoidal cell about two-thirds of its length from the base, the inner edge of the spot upright, its lower half outwardly produced, and therefore larger than the anterior half, a narrow outwardly obliquely placed spot in the middle of the second median interspace; a much larger one across the middle of the first median interspace; three spots in the sub-median interspace, the two anterior ones placed against the first median nervule, the posterior one against the sub-median nervure, the innermost spot somewhat rounded, a little beyond one-third the length of the wing from the base, the outermost spot narrow, placed inwardly obliquely somewhat

near to the outer margin of the wing, the third spot coequal in size to the first, and placed half as near to the second spot as it is to the first—all these spots lustrous semi-transparent white. Cilia fuscous. *Hindwing* bearing large rounded bright chrome-yellow spots in three series, the upper of two, the middle of four, and the lower of five; the base and abdominal margin of the wing clothed with long yellow setæ. Cilia anteriorly fuscous, posteriorly and along the abdominal margin bright chrome-yellow. Underside, both wings of the ground colour of a duller, more hair-brown shade. *Forewing* with an obscure dull yellow streak at the base of the discoidal cell; the inner margin sharply bounded anteriorly by the sub-median nervure pale ochreous; the spots as above. *Hindwing* with the spots as above, but rather larger and of a duller shade of yellow; some short obscure dull yellow streaks at the base and along the abdominal margin of the wing; an additional irrorated spot near the apex of the wing. Antennæ with the shaft and club anteriorly dull ochreous, posteriorly fuscous; thorax concolorous with the wings. Abdomen narrowly but prominently striped with yellow.

It is difficult to say to which species *D. clitus* is nearest allied, though perhaps it exhibits a greater resemblance to *C. flavocincta*, de Nicéville, than to any other species. The disposition of the spots on both wings is very distinctive, those on the forewing being apparently scattered evenly over the entire surface, in the hindwing arranged in regular rows. Described from a single example in Mr. H. J. Elwes' collection obtained by Mr. W. Doherty in July or August, 1889, in the Naga Hills, Assam, at an elevation of 5,000–8,000 feet. (de Nicéville.)

Expanse of wings, ♂  $2\frac{2}{10}$  inches.

HABITAT.—Naga Hills, Assam.

Watson made this a synonym to *C. aspersa*, Leech, from China; it is certainly superficially very like it; but *aspersa*, the type of which (a male) in the B. M. is unique, has a pure white antennæ from the base of the shaft to the tip of the club, as in *C. leucocera*, Kollar.

#### CELÆNORRHINUS PULOMAYA.

Plate 758, figs. 4, ♂, 4a, ♀, 4b, ♂, 4c, ♀.

*Hesperia pulomaya*, Moore, Cat. Lep. Mus. E.I.C. i. p. 252 (1857).

*Plesioneura pulomaya*, Moore, Proc. Zool. Soc. 1865, p. 782. Butler, Ent. Mo. Mag. 1870, p. 95.

Moore, Proc. Zool. Soc. 1883, p. 263. Doherty, Journ. As. Soc. Bengal, 1886, p. 139. Elwes, Trans. Ent. Soc. 1888, p. 463.

*Tagiades pulomaya*, Plötz, Jahrb. Nass. Ver. Natur. xxxvii. p. 50 (1884).

*Celænorrhinus pulomaya*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 180. Watson, Hesp. Ind. p. 132 (1891); id. Proc. Zool. Soc. 1893, p. 49. de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 115. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 597.

*Celænorrhinus (Plesioncura) pulomaya*, Hannyngton, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 372.

*Celænorrhinus lucifera*, Leech, Butt. of China, etc. ii. p. 571, pl. 39, fig. 5, ♀ (1893).

IMAGO.—Male. Upperside dark purplish-brown, the basal third of both wings covered with brownish-yellow hairs. *Forewing* with the usual five semi-hyaline white sub-apical dots, the first three from near the costa very close together, in a slight curve, and nearly straight down, the other two as usual, but a little larger than the upper three; a discal band composed of two moderate-sized quadrate spots, much smaller than in any of the foregoing species, one inside the cell near its end, the other below it, its upper inner end almost touching the lower middle of the upper spot, a small, nearly round, disconnected spot below its middle, a similar spot outside the junction of the two quadrate spots, all white and semi-hyaline; an orange-ochreous small spot below the base of vein 2 and another similar spot in the middle of the interspace below the discal band. Cilia brown, whitish towards the hinder angle. *Hindwing* with three rows of orange-ochreous spots, all but the outer one of the upper row hidden by the brownish-ochreous hairs. Cilia orange-ochreous with large brown patches at the vein ends. Underside like the upperside in colour and markings, all the orange-ochreous spots on both wings larger and clearer, the discal white band on the forewing with two white short streaks between the top of the upper quadrate spot and the costa. Palpi yellowish-grey, top of head black, with two ochreous-grey spots on each side, abdomen with orange-ochreous segmental bands.

Female. Upperside coloured like the male. *Forewing* with three conjoined short streaks representing the three sub-apical upper spots, the two lower ones also much larger than in the male; the discal semi-hyaline band is very different, the quadrate spots much larger, the lower one protruding outwards, making the band outwardly oblique; in the male it is nearly erect, the upper outer small round spot is in the form of a short streak, the lower round spot and the two orange-ochreous spots much larger. Underside as on the upperside, all the markings clearer, the two orange-ochreous spots of the upperside of the forewing much larger and white, not ochreous. Antennæ of both sexes with an ochreous-white short streak below the club.

Expanse of wings, ♂ ♀ 2 inches.

HABITAT.—N.W. Himalayas, Sikkim, Bhutan, China.

DISTRIBUTION.—The type is marked Darjiling, Moore records it also from the Kangra Valley, Doherty from Kumaon, 7000–9000 feet elevation, de Rhé Philipe from Masuri, de Nicéville and Elwes from Sikkim. Our description and figures are from a pair in our collection from Sikkim; the female we believe is described for the first time. de Nicéville also records it from Kulu and from Bhutan.

## CELÆNORRHINUS FLAVOCINCTA.

Plate 759, figs. 1, ♀, 1a, ♀.

*Plesioneura flavocincta*, de Nicéville, Proc. Zool. Soc. 1887, p. 464, pl. 40, fig. 9, ♀.*Celænorrhinus flavocincta*, de Nicéville, Journ. Bo. Nat. Hist. Soc. iv. 1889, p. 181. Watson, Hesp. Ind. p. 133 (1891). de Nicéville, Gazetteer of Sikkim, Butt. p. 177 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 115.

IMAGO.—Male. Upperside, both wings black. *Forewing* with the base (all except a round spot in the sub-median interspace just beyond the origin of the first median nervule and touching it) thickly clothed with large tawny scales; a quadrate transverse spot beyond the middle of the cell, five conjoined quadrate spots divided by the veins, the two lower ones shifted outwards, a narrow linear spot in the second median interspace, a quadrate one equal in size to that in the cell in the first median interspace, two much smaller ones placed obliquely (in one specimen conjoined in the right-hand wing) in the sub-median interspace, all semi-diaphanous pale ochreous-white. Cilia black, all except a small portion in the sub-median interspace, which is yellow. *Hindwing* with numerous more or less quadrate large orange spots disposed over the disc; the base of the wing clothed with long fur-like orange setæ. Cilia broadly orange, just marked with black at the end of the veins. Underside. *Forewing* with the ground colour paler, the spots as above, the inner margin below the sub-median nervule ochreous, the two obscure ochreous diffused spots placed one above the other near the base of the wing, in the sub-median interspace. *Hindwing* with the colour of the ground apparently reversed, being orange, leaving a broad irregular black outer margin; a large black spot at the end of the cell, and a series of eight black spots placed one in each interspace (except the uppermost and lowest interspaces which have two each) round the cell. Head black, marked with whitish at the base of the antennæ. Antennæ with the shaft above and club entirely, except the tip, creamy-white, the shaft below and tip of club black. Palpi whitish, marked anteriorly with three black lines, which meet at the apex. Thorax clothed above with long ferruginous setæ. Abdomen black, ringed with orange.

Female differs only from the male in being larger. *P. flavocincta* is the largest species of the genus described from India. It is most nearly allied to *P. pulomaya*, Moore, and *P. sumitra*, Moore, but differs from both in the very large size of the orange spots on the hindwing on the upperside, these spots on the underside coalescing and occupying the greater portion of the wing, thus reducing the ground colour of the upperside to a band on the outer margin, and to nine discal spots; in the two species just mentioned there is no tendency to this feature, the orange spots being all comparatively small and well separated, and the base of the wing is black. The cilia in



*P. flavocincta* are also very much broader, and orange throughout, except the bases of those cilia at the termination of the veins on the hindwing, which are black.

Described from a pair in the collection of Mr. A. V. Knyvett, and a single male in that of Mr. Otto Möller, all of which were obtained near Buxa, Bhutan, by the native collectors of those gentlemen. (de Nicéville.)

Expanse of wings, ♂  $2\frac{3}{10}$ , ♀  $2\frac{7}{10}$  inches.

HABITAT.—Bhutan.

We have not seen this species; the types are in the Carnegie Museum, Pittsburgh, Pennsylvania, U.S.A. Our figures are copies of de Nicéville's figure.

#### CELÆNORRHINUS AMBAREESA.

Plate 759, figs. 2, ♂, 2a, ♀, 2b, ♀, 2c, larva and pupa.

*Plesioneura ambareesa*, Moore, Proc. Zool. Soc. 1865, p. 788. Butler, Ent. Mo. Mag. 1870, p. 95. de Nicéville, Journ. As. Soc. Bengal, 1883, p. 87, pl. 10, fig. 9, ♀. Swinhoe, Proc. Zool. Soc. 1885, p. 146. Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 843. Hampson, Journ. As. Soc. Bengal, 1888, p. 367.

*Tajiades ambareesa*, Plötz, Jahrb. Nass. Ver. Natur. xxxvii, p. 52 (1884).

*Celænorrhinus ambareesa*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 185. Watson, Hesp. Ind. p. 140 (1891); id. Proc. Zool. Soc. 1893, p. 49. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 429; id. idem, viii. 1894, p. 423. Davidson, Bell and Aitken, id. xi. 1897, p. 37, pl. 8, fig. 1 (larva and pupa). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 115. Aitken and Comber, Journ. Bo. Nat. Hist. Soc. xv. 1903, p. 52. Evans, id. xx. 1910, p. 388.

IMAGO.—Male. Upperside dark olive-brown, tinged with ochreous; the basal areas of both wings with ochreous and white hairs, the outer portions of the wings sparsely sprinkled with minute white scaling. *Forewing* with three conjoined sub-apical, semi-hyaline white spots from near the costa, larger than usual, and in an outwardly oblique curve, with the usual two lower spots outwards, a discal band of six spots, in an outwardly oblique form, consisting of a large spot excavated on its outer side, at the inner end of the cell, another well-separated, similar-sized, sub-quadrate spot, constricted in its middle, in the first median interspace, its upper inner end below the middle of the cell spot, a small spot outside, near the base of the second median interspace, a still smaller spot close to the lower outer end of the sub-quadrate spot, a small ochreous spot between the cell spot and the costa, another just below vein 2, near its base, a similar spot just above the sub-median vein below the band, a sub-marginal series of disconnected, short lunular, ochreous spots. *Hindwing* with three rows of ochreous spots, the inner spots of the upper row hidden by the basal hairs, both wings with brown and ochreous-white checkered cilia. Underside paler, markings similar. Antennæ with the anterior third of the club ochreous, an ochreous-white stripe on the shaft beneath, below the club; palpi white at the sides, and white below

the eyes; head, body above and below and the legs concolorous with the wings, abdomen beneath with ochreous-white, thin segmental bands.

Female like the male above and below. Antennæ without markings.

Expanse of wings, ♂ ♀  $1\frac{9}{10}$  to  $2\frac{3}{10}$  inches.

LARVA.—Head similar to the last (*leucocera*) in colour and shape. Segment 2 somewhat swollen and shiny. Shape of the body the same as the foregoing. Colour of larva when young is black (*C. leucocera*, Kollar, and *C. fusca*, Hampson, are green), but is dark brown olive-green when full grown, with a pair of lateral short white lines to each segment, a dark dorsal pulsating line and a white marginal line. Length, 32 mm.

PUPA.—The chrysalis of this species is nearly exactly the same as that of the last in every particular, the proboscis being produced to the same length, etc. Length, 25 mm.

HABITS.—The habits are the same as for the last, the larva does not scallop the edge of the cell. Feeds on *Strobilanthes callosus*, Nees.

Is found much in the same localities as the last, but often visits the verandahs of bungalows; it haunts places where the shade is deep amongst rocks in the jungles, and may be caught at flowers in the early morning round the open spaces in the forest. We have bred many with larvæ obtained with larvæ of the next species (*fusca*, Hampson). (Davidson, Bell and Aitken.)

HABITAT.—South India, Ceylon.

DISTRIBUTION.—The type came from Maungbhoom in Lower Bengal, de Nicéville records it from Trichinopoli; it is a common species in Southern India, we took many examples in Mahableshwur, Matheran, and in and about Bombay, and have it from Kanara. Hampson records it from the Nilgiris, Evans from the Palni Hills; our description and figures are from a pair from Mahableshwur.

#### CELÆNORRHINUS LEUCOCERA.

Plate 759, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Hesperia leucocera*, Kollar, Hugel's Kaschmir, iv. p. 454, pl. 18, figs. 3, 4, ♀ (1844). Westwood, Gen. Diurn. Lep. ii. p. 526 (1852). Horsfield and Moore, Cat. Lep. Mus. E.I.C. p. 252 (1857). Moore, Proc. Zool. Soc. 1865, p. 509.

*Plesioneura leucocera*, Butler, Ent. Mo. Mag. 1870, p. 95. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1881, p. 257. Moore, Proc. Zool. Soc. 1882, p. 263. de Nicéville, Journ. As. Soc. Bengal, 1883, p. 100. Swinhoe, Proc. Zool. Soc. 1885, p. 146. Doherty, Journ. As. Soc. Bengal, 1886, p. 139. Elwes and de Nicéville, id. p. 441. Hampson, id. 1888, p. 367. Elwes, Trans. Ent. Soc. 1888, p. 462.

*Tajiades leucocera*, Plötz, Jahrb. des Nass. Ver. Natur. xxxvii. p. 51 (1884).

*Celænorrhinus leucocera*, de Nicéville, Journ. Bo. Nat. Hist. Soc. iv. 1889, p. 184. Watson, Hesp.

Ind. p. 138 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 58. Fergusson, id. p. 448. Elwes, Proc. Zool. Soc. 1892, p. 661. Watson, Proc. Zool. Soc. 1893, p. 49. Swinhoe, Trans. Ent. Soc. 1893, p. 317. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 429. de Nicéville, Gazetteer of Sikkim, Butt. p. 177 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422; id. idem. x. 1896, p. 673. Davidson, Bell and Aitken, id. xi. 1897, p. 36 (larva and pupa). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 116. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 596. Aitken and Comber, id. xv. 1903, p. 52. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 138. Frühstorfer, Iris, 1910, p. 62. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 372. Evans, id. p. 388.

*Plesioneura munda*, Moore, Journ. As. Soc. Bengal, 1884, p. 48.

*Celænorhinus munda*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 185. Watson, Hesp. Ind. p. 139 (1891). de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 596. Hannington, id. xx. 1910, p. 372.

IMAGO.—Male. Upperside dark blackish-brown, the basal area of both wings with greenish-ochreous hairs. *Forewing* with three conjoined semi-hyaline, white, sub-apical small spots, with the two usual separated white spots outwardly below; a white semi-hyaline, outwardly oblique band, composed of two large conjoined sub-quadrate spots, the upper one within the extremity of the cell with a small spot (sometimes a twin spot) between its upper side and the costa, the lower spot the larger, in the first median interspace, protruding outwards, its inner upper side attached to the outer lower side of the upper spot, a small round spot close to its outer upper corner, another rather larger spot attached to its lower outer corner, with a very small detached spot inwardly below it. *Hindwing* with a medial and discal series of small orange-ochreous spots, some of the discal series very obscure. Underside paler, markings as on the upperside, but there is an extra ochreous small round spot in the hindwing in the middle of the cell, and the hinder marginal space in the forewing is pale. Antennæ with shaft and club pure white above, the tip of the club entirely white; palpi grey, white at the sides and also below the eyes; head, body above and below and the legs concolorous with the wings, abdomen beneath with whitish segmental bands. Cilia of forewing brown basally, white outwardly, with small brown patches at the vein ends of hindwing checkered brown and white.

Female like the male on both sides, the two large spots of the discal band of the forewing a little more disconnected, these spots not being quite so square. Antennæ black, the club with a white stripe on its underside. Cilia alternately white and brown.

Expanse of wings, ♂ ♀ 2 inches.

LARVA.—Head very large, dark brown, nearly black, square from front view, with a deep triangular broad indentation on the vertex, rugose as to surface, thick in the direction of the longitudinal axis of the larva. Body more or less cylindrical, very fat and flanged somewhat on the margin, thickest towards the centre; anal end narrowish,

rounded at extremity. Colour dark indigo-green; segmental margins yellowish, and a dark pulsating dorsal line; a thin white marginal line. Length, 28 mm.

PUPA.—Head large, quadrate; eyes prominent, with a short, conical obtuse beak; constriction slight; section of abdomen circular; at segment 7 the pupa is broadest; shape longish; surface corrugated finely, slightly and shortly red-haired; spiracular expansions of segment 2 large, raised, oblong, facing forwards, spongy-looking and golden in colour; proboscis reaches beyond the cremaster, being free from the end of the wing cases. The colour is a rich golden-brown and shiny. Length, 23 mm.

HABITS.—The habits of the larva are those given for the group, except that it does not scallop the edge of the cell. The pupa is attached by the tail and by a body-band. The larva feeds on a plant of the acanthaceous genus *Eranthemum*.

The insect is fairly common both below and above the ghats where there is heavy jungle; it rests on the underside of leaves; it is very easily captured. We have bred quantities of it. (Davidson, Bell and Aitken.)

HABITAT.—India, Burma.

DISTRIBUTION.—Fairly common all over India in the hill ranges, Elwes records it from the Karen Hills, Elwes and de Nicéville from Tavoy; Davidson, Bell and Aitken bred it at Karwar, but unfortunately give no figures; we took it in the Bombay district, so did Fergusson; Hampson records it from the Nilgiris; we have it also from Kulu, Sikkim and the Khasia Hills. Our description and figures are from Kulu examples.

#### CELÆNORRHINUS PUTRA.

Plate 760, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, ♀.

*Plesioneura putra*, Moore, Proc. Zool. Soc. 1865, p. 788. Butler, Ent. Mo. Mag. 1870, p. 95.

*Celænorrhinus putra*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 184. Watson, Hesp. Ind. p. 139 (1891); id. Proc. Zool. Soc. 1893, p. 49. Swinhoe, Trans. Ent. Soc. 1893, p. 317.

Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

*Celænorrhinus leucocera*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 116.

IMAGO.—Male. Upperside dark fuliginous-blackish-brown, nearly black, much darker than *leucocera*, with some greenish-ochreous hairs in the basal area of both wings. *Forewing* with three semi-hyaline, small, sub-apical spots, in an outwardly oblique curve from near the costa, with the usual two lower spots placed outwards, the upper spots not conjoined and smaller than in *leucocera*, a discal band, not nearly so outwardly oblique as in *leucocera*, the upper end within the extremity of the cell, its upper half smaller than its lower, a short square spot in the interspace below, separated by the median vein, its inner side below the middle of the upper spot, its outer side very little beyond the other, a dot near the base of the second median interspace well separated from the two large spots, another also well separated below the lower outer

edge of the lower large spot. Cilia brownish basally, whitish outwardly, not checkered as in *leucocera*. *Hindwing* much as in *leucocera*. Underside blacker than the upperside, markings similar, with an extra ochreous dot in the middle of the cell. Antennæ, palpi, and body above and below as in *leucocera*.

Female like the male above and beneath.

Expanse of wings, ♂ ♀ 2 to  $2\frac{2}{10}$  inches.

HABITAT.—India, Burma.

DISTRIBUTION.—The type came from Bengal, there is a Javan specimen in the B. M. marked type, as Elwes says, but it is not the type; Moore (though he gave the manuscript name of *Hesperia putra* to a Javan specimen in Cat. Lep. Mus. E.I.C., p. 253 (1857)) described the species in Proc. Zool. Soc. 1865, p. 788, as from Bengal; we have in our collection several examples from Sikkim (compared with Moore's Bengal type) the Khasia Hills, and from the Donat Range in Burma. Our description and figures are from fresh specimens from the Khasia Hills; *leucocera* is no doubt a somewhat variable species, but *putra* seems to be quite distinct from it.

#### CELÆNORRHINUS MACULICORNIS.

Plate 760, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Celænorrhinus maculicornis*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 116, pl. 18, fig. 8, ♂.  
Frühstorfer, Iris, 1910, p. 61.

IMAGO.—Male. Upperside. *Forewing* very similar to that of *leucocera*, but the lower large spot of the discal series is more square, is about the same size as the upper, its outer side therefore does not protrude outwards, making the band more erect, this character differs a little in some examples, but not much; the cilia also differs from *leucocera*, being entirely dark brown. *Hindwing* with the ground colour, markings and cilia as in *leucocera*, but the ochreous spots are very minute and the inner series is wanting. Underside as in *leucocera*, but in the hindwing there is an ochreous spot at the end of the cell, sometimes another in the middle of the cell, in addition to the discal series, which as on the upperside consists of very minute spots, often with some of them wanting; in the antennæ it differs entirely from *leucocera*, being black, the upperside of the shaft minutely and regularly spotted with white, in *leucocera* the entire antennæ is pure white above.

Female like the male on both sides, but the spots in the forewing are larger, the discal band is more oblique, the lower large spot being longer, extending well outwards as it does in *leucocera*. Cilia and antennæ as in its own male.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  to 2 inches.

HABITAT.—Assam.

Elwes' type came from the Khasia Hills, from whence we have received several examples of both sexes, a pair of which we describe and figure.

#### CELÆNORRHINUS CHAMUNDA.

Plate 760, figs. 3, ♂, 3a, ♀, 3b, ♀.

- Plesioneura chamunda*, Moore, Proc. Zool. Soc. 1865, p. 788. Butler, Ent. Mo. Mag. 1870, p. 95. de Nicéville, Journ. As. Soc. Bengal, 1883, p. 100. Elwes, Trans. Ent. Soc. 1888, p. 462.
- Celenorrhinus chamunda*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 185. Watson, Hesp. Ind. p. 140 (1891). Elwes, Proc. Zool. Soc. 1892, p. 661. Watson, id. 1893, p. 49. Swinhoe, Trans. Ent. Soc. 1893, p. 317. de Nicéville, Gazetteer of Sikkim, Butt. p. 177 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 117. Frühstorfer, Iris, 1910, p. 63.

IMAGO.—Male. Upperside dark-olive brown. *Forewing* with the basal half covered with brownish-ochreous setæ; the usual five sub-apical semi-hyaline small spots, the middle one of the upper three very small and somewhat inwards, all of them well separated from each other, the discal outwardly oblique band composed of two semi-hyaline sub-quadrate white spots, the upper slightly excavated on its upper outer side, and separated from the lower by the median vein, a small white spot between the upper spot and the costa, another beyond the junction of the two large spots, well separated from them, two more close together in an inwardly oblique line below the lower outer end of the lowest large spot, but more outwards. Cilia brown. *Hindwing* with the whole surface of the wing covered with brownish-ochreous hairs, except for a narrow blackish marginal band, no markings. Cilia alternately brown and white. Underside paler brown, markings as above.

Female like the male above and below, the spots on the forewing larger, the lowest two small spots conjoined. Antennæ black in both sexes, with the underside of the club whitish; palpi brown, with white sides, and white below the eyes; head and body above and below and the legs concolorous with the wings, abdomen beneath with whitish segmental bands.

Expanse of wings, ♂ ♀ 2 inches.

HABITAT.—Sylhet, Sikkim, Assam, Naga Hills.

DISTRIBUTION.—The type is marked Bengal; we have it from Sylhet, Sikkim, and the Khasia Hills; Elwes records it also from the Naga Hills.

#### CELÆNORRHINUS SPILOTHYRUS.

Plate 761, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, ♀, 1d, larva and pupa.

*Eudamus spilothyrus*, Felder, Verh. Zool.-bot. Ges. Wien, xviii. p. 283 (1868).

*Plesioncura spilothyrsus*, Moore, Lep. Ceylon, i. p. 179, pl. 67, figs. 4, ♂, 4a, ♀ (1881), and vol. iii. p. 534, pl. 211, fig. 3 (larva and pupa) (1887). Hampson, Journ. As. Soc. Bengal, 1888, p. 367.

*Celænorrhinus spilothyrsus*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 185. Watson, Hesp. Ind. p. 142 (1891); id. Proc. Zool. Soc. 1893, p. 49; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 117. Swinhoe (part), Trans. Ent. Soc. 1908, p. 8. Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 388. Frühstorfer, Iris, 1910, p. 62.

IMAGO.—Male. Upperside dark olive-brown, nearly black; both wings with some brownish-ochreous hairs in the basal area. *Forewing* with the usual five sub-apical semi-hyaline spots, the upper three conjugated, the lower two minute; the discal semi-hyaline, outwardly oblique band commencing with a small ochreous spot close to the costa a little beyond its middle, attached to a moderately large, sub-quadrate spot with its outer side indented, a well separated sub-quadrate spot of similar size in the first median interspace, a small round spot attached to its upper outer side, and another (sometimes two) below, close to its outer lower end. *Hindwing* with indications of a yellow spot at the cell end and a discal series of obscure yellow spots, often entirely absent. Cilia of both wings blackish. Underside as black as the upperside, markings similar, with two additional obscure yellowish spots on the forewing near the hinder angle, immediately below the lowest spot of the discal series. Antennæ black, with a whitish streak beneath the upper part of the club, and another in the shaft, below the club; palpi black, with yellow hairs, white at the sides and below the eyes; head, body above and below and the legs concolorous with the wings.

Female like the male on both sides.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to 2 inches.

LARVA.—Dull green, with two narrow, pale dorsal lines; head brown, divided into two distinct lobes; middle segments swollen; feeds on *Acanthus*.

PUPA.—Pale green; anal segment terminating into a curved blunt point; sheath of proboscis produced to terminal segment; covering of eyes pubescent. (E. E. Green.)

HABITAT.—Ceylon.

Appears to be a common species in Ceylon and confined to that island. Our description and figures are from Ceylon specimens in our collection. Our figures of the larva and pupa are from Green's original drawings. Hampson and Evans record it from India, but we have not seen any typical *spilothyrsus*, except those from Ceylon.

## CELÆNORRHINUS AREA.

Plate 761, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, ♀, 2d, larva and pupa.

*Plesioneura area*, Plötz, Berl. ent. Zeit. 1885, p. 231, unpublished Plate No. 1582.

*Celænorrhinus spilothyrus area*, Frühstorfer, Iris, 1910, p. 8.

*Plesioneura fusca*, Hampson, Journ. As. Soc. Bengal, 1888, p. 367.

*Celænorrhinus fusca*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 186. Davidson and Aitken, id. 1890, p. 28. Watson, Hesp. Ind. p. 141 (1891); id. Proc. Zool. Soc. 1893, p. 49. de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Davidson, Bell and Aitken, id. xi. 1897, p. 37, pl. 8, fig. 2 (larva and pupa).

*Celænorrhinus spilothyrus*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 117. Swinhoe (part), Trans. Ent. Soc. 1908, p. 8. Evans (nec Felder), Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 388.

IMAGO.—Male. Upperside dark olive-brown, but not blackish as in *spilothyrus*, the brownish-ochreous setæ on the basal area of the forewing and the hairs of the hindwing more ochreous. *Forewing* with the sub-apical spots and the spots of the discal band similarly disposed, but there is usually only one lower dot of the sub-apical series, and the lowest small spot of the discal series is almost always wanting in this sex; the uppermost spot of the discal series is always white, not ochreous as in *spilothyrus*. *Hindwing* without markings. Cilia of both wings alternately black and white, the alternations more pronounced on the hindwing than on the forewing, in *spilothyrus* it is entirely blackish on both wings. Underside as on the upperside, the entire surface of both wings covered with minute ochreous-grey scales. Antennæ on the underside, with all the club, except its tip, and the upper third of the shaft pure white, the remainder of the shaft with pure white dots; palpi with the inner half ochreous-grey marked with black, the outer half blackish, white at the sides and below the eyes; head, body above and below and the legs concolorous with the wings.

Female like the male above and below, but the spots in the forewing are larger, the discal band consequently more continuous, the outer spot usually wedged into the junction of the two large sub-quadrate spots, there is also on the underside of the hindwing an obscure whitish dot at the end of the cell. Cilia of both wings as in the male.

Expanse of wings, ♂  $1\frac{7}{10}$  to  $1\frac{9}{10}$ , ♀  $1\frac{8}{10}$  to 2 inches.

LARVA.—Is the same as the last in shape (*ambareesa*, Moore). Colour, green, with a light dorsal line, and a whitish marginal line, otherwise the body is unmarked; the head is always yellow or brownish-yellow, never being as in the foregoing species, *C. leucocerca*, Kollar, or *C. ambareesa*, Moore. Length, 32 mm.

PUPA.—The same as the pupa of *C. ambareesa* in shape, but stouter, shorter and more like that of *T. atticus*, Fabricius,\* and green in colour instead of brown. Pupates in its cell with tail suspension and body-band. Length, 23 mm.

\* *Tagiades litigiosa*, Möschler.



HABITS.—The habits are those of the foregoing species; the food-plant of the larva is also the same, i.e. *Strobilanthes callosus*, Nees.

Much commoner than either of the last two species in the imago state; it swarms in the monsoon on the tops of the hills round Karwar, where the "Karwi," the food-plant of its larva, is common; it is to be met with everywhere above the ghats in the dry-season. We have bred great numbers of it. It rests on the underside of leaves in thick jungle. (Davidson, Bell and Aitken.)

HABITAT.—South India.

DISTRIBUTION.—Plotz's type of *area* came from Calcutta, Hampson's type of *fusca* from the Nilgiris; Davidson, Bell and Aitken bred it at Karwar; we give figures of the larva and pupa in two different stages from Davidson's original drawings; Evans records it from the Palni Hills; de Nicéville in the Gazetteer of Sikkim records it from Sikkim, but this is evidently an error; we have examples in our collection from the Nilgiri Hills and from Travancore, and we took it at Mahableshwur and Lanaoli near Bombay; we formerly put it to *spilothyrys* as Elwes has done, but after a careful examination of a really good series, we find there are many differences between these two forms, as pointed out by Hampson and de Nicéville, and the figures of the larvæ do not correspond; it can readily be separated from *spilothyrys* by its checkered cilia.

#### CELÆNORRHINUS NIGRICANS.

Plate 762, figs. 1, ♂, 1a, ♀, 1b, ♂.

- Plesioneura nigricans*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 123, pl. 2, fig. 6, ♀. Elwes and de Nicéville, id. 1886, p. 441. Elwes, Trans. Ent. Soc. 1888, p. 461.
- Celænorrhinus nigricans*, de Nicéville, Journ. Bo. Nat. Hist. Soc. iv. 1889, p. 186. Watson, Hesp. Ind. p. 141 (1891). Elwes, Proc. Zool. Soc. 1892, p. 661. Swinhoe, Trans. Ent. Soc. 1893, p. 317. de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 118. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 138.

IMAGO.—Male. Upperside dark blackish-brown with a slight olive tint, nearly black; the basal hairs very slightly tinted with ochreous. *Forewing* with the usual five sub-apical dots, the lower two very minute, the upper three in an outward curve, usually but not always touching each other, the lowest of the three being often separate from the others; the outwardly oblique discal band composed of four conjoined spots, the one near the costa small, the next two large and quadrate, the fourth wedged into the junction of the two quadrate spots, a fifth small spot below the lower outer end of the band. Cilia brown with grey tips. *Hindwings* without markings. Cilia alternately brown and white. Underside very nearly as dark as the upperside, markings similar.

Female like the male above and beneath. Antennæ of both sexes black, the

underside of the club and a small portion of the adjoining shaft pure white; palpi greyish-brown, with white sides, white below the eyes; head and body above and below and the legs concolorous with the wings, abdomen beneath with greyish-white segmental bands.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{9}{10}$  inches.

HABITAT.—Sikkim, Assam, Bhutan, Burma.

DISTRIBUTION.—The types from Sikkim are in the Indian Museum, Calcutta; Elwes records it from the Karen Hills and from Tavoy; de Nicéville also records it from the Khasia Hills; our descriptions and figures are from a pair from that locality in our collection.

#### CELÆNORRHINUS DHANADA.

Plate 762, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Plesioneura dhanada*, Moore, Proc. Zool. Soc. 1865, p. 789.

*Coladenia dhanada*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 4. Doherty, id. 1886, p. 139.

*Kerana dhanada*, Watson, Hesp. Ind. p. 150 (1891). Elwes, Proc. Zool. Soc. 1892, p. 663.

*Celænorrhinus dhanada*, Watson, Proc. Zool. Soc. 1893, p. 50. de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. de Rhé-Philipe, id. xi. 1896, p. 596. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 119, pl. 22, figs. 1, 1a, 1b (genitalia). Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 372. Frühstorfer, Iris, 1910, p. 64.

IMAGO.—Male. Upperside dark blackish-brown, the basal third of forewing and all but the outer margin of hindwing covered with brownish-ochreous hairs. *Forewing* with three conjoined sub-apical spots from near the costa in an almost straight line, with two smaller spots outwardly below it, one above the other; a discal band from immediately below the middle of the costa to near the submedian vein, one-fifth from the hinder angle, all the spots and band ochreous-white and semi-hyaline; the discal band with the upper part narrow and dark ochreous, edged on both sides with dark ochreous, widening gradually hindwards, its outer edges irregular and waved, cut short at vein 2, then continued by a spot attached to its outer end with a small dark ochreous disconnected spot below it. *Hindwing* without markings. Cilia of forewing brown with some white near the hinder angle, of the hindwing white or ochreous-white with small brown patches at the vein ends. Underside paler, markings similar, but in the forewing the discal band at its lower end expands in a somewhat large quadrate form, and is not edged with dark ochreous, and in the hindwing the lower small spots of an ochreous discal series are visible. Antennæ with the upper half of the club on the underside, and a streak on the shaft below the club, whitish; palpi black above with whitish-ochreous marks, ochreous-grey beneath with some black hairs; head and thorax above with ochreous hairs; legs dull ochreous-grey.

Female generally darker than the male. *Forewing* with the two lower spots of

the sub-apical series usually absent, the discal band without the dark ochreous side edgings. Underside similar to the underside of the male, a small ochreous spot in the hindwing at the end of the cell, and the discal series of small ochreous spots more complete.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—N.W. Himalayas, Sikkim, Bhutan, Burma.

DISTRIBUTION.—The type in the B. M. is said to have come from Bengal, which is highly improbable; de Nicéville records it from Sikkim, de Rhé-Philipe from Masuri, Hannyngton from Kumaon, Elwes from the Karen Hills and Tennasserim; our description and figures are from specimens from Sikkim and Bhutan in the National collection; it is a rare species, but can easily be distinguished from *C. aurivittata* and its allies by its broader wings and checkered cilia of hindwing.

#### CELÆNORRHINUS ANDAMANICA.

Plate 762, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Plesioneura dan var. andamanica*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1881, p. 257, and 1887, p. 391.

*Coladenia dan var. andamanica*, Watson, Hesp. Ind. p. 120 (1891).

*Celænorrhinus andamanica*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 119, pl. 22, figs. 2, 2a (genitalia).

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with three conjugated, semi-hyaline, sub-apical spots, in an outwardly oblique curve, and two minute dots outwardly below, one above the other, a semi-hyaline outwardly oblique discal band of five conjoined spots, the first small, touching the costa a little beyond its middle, a quadrate spot filling the extremity of the cell, a rather larger quadrate spot in the first median interspace, its outer side protruding outwards, a small spot in the base of the second median interspace, its inner side wedged into the junction of the two quadrate spots, a small round spot attached to the lower quadrate spot, all pale ochreous. *Hindwing* with the basal and abdominal areas covered with brownish-ochreous hairs, a large indistinct round spot at the end of the cell, a discal band of large, more or less conjoined spots, all a little darker than the ground colour. Cilia of both wings concolorous with the wings. Underside like the upperside, the costal and lowest spots of the discal band of the forewing more opaque, more ochreous and larger, the lowest spot being very large and square, bringing the band close to the hinder angle, the wing sparsely covered with minute ochreous scales, the hindwing with indications of an ochreous dot at the end of the cell, and a discal series of ochreous dots, hardly visible. Antennæ black, the club with the tips greyish-ochreous and a streak on the shaft below the club of the same colour; palpi whitish, brown at the sides; head, body above and

below and the legs concolorous with the wings, abdomen beneath with pale ochreous segmental bands.

Female similar to the male above and below.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  inches.

HABITAT.—Andaman Islands.

Described and figured from a pair in our collection from Port Blair.

#### CELÆNORRHINUS AFFINIS.

Plate 762, figs. 4, ♂, 4a, ♀, 4b, ♂.

*Celænorrhinus affinis*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 121, pl. 18, fig. 9, ♀, pl. 22, fig. 4 (genitalia). Adamson, Trans. N. H. S. Northumberland, etc. 1908, p. 138.

*Celænorrhinus andamanica*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 391.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with the basal area with some brownish-ochreous scales; three conjugated, semi-hyaline, small ochreous sub-apical spots from near the costa in an outwardly oblique nearly straight line; a broad discal, semi-hyaline, ochreous band from the middle of the costa to the sub-median vein near the hinder angle, the band continuous, its outer sides irregular, broadest at the middle where it is somewhat angulated on both sides, the upper part squarely darker ochreous, its lower end smaller, also darker ochreous. *Hindwing* with the basal and abdominal areas with brown hairs, tinted with ochreous, no markings. Cilia of forewing brown, shortly white near the hinder angle, on the hindwing white with small brown patches at the vein ends. Underside like the upperside, some indistinct ochreous discal dots, invisible in some examples. Antennæ black, on the underside the upper half of the club is ochreous, and there is an ochreous streak on the shaft below the club, followed by minute dots; palpi grey with brown sides; head, body above and below and the legs concolorous with the wings, foretarsi ochreous, abdomen beneath with whitish segmental bands.

Female like the male on both sides, but the ochreous costal band of the forewing is somewhat broader, and it terminates at its lower end in a large dark ochreous quadrate spot.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  inches.

HABITAT.—Assam, Burma.

DISTRIBUTION.—The type in collection Elwes came from the Khasia Hills. We have both sexes from the same locality, from which our description and figures are taken, and there is a male example in Colonel Adamson's collection taken by him at Akyab in Burma in April, 1883. The ochreous band in this example ends hindwards more narrowly than is usual in Khasia Hill specimens, but in every other respect it corresponds with an example in our collection submitted to Elwes and identified by him

as his *affinis*. Wood-Mason and de Nicéville record it (as a variety of *andamanica*) from Cachar.

#### CELÆNORRHINUS AURIVITTATA.

Plate 763, figs. 1, ♂, 1a, ♀, 1b, ♀.

*Plesioneura aurivittata*, Moore, Proc. Zool. Soc. 1878, p. 843. Elwes and de Nicéville, Journ. As Soc. Bengal, 1886, p. 440. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27. Manders, Trans. Ent. Soc. 1890, p. 538.

*Kerana aurivittata*, Watson, Hesp. Ind. p. 149 (1891). Elwes, Proc. Zool. Soc. 1892, p. 663.

*Celænorrhinus aurivittata*, Watson, Proc. Zool. Soc. 1893, p. 50. Swinhoe, Trans. Ent. Soc. 1893, p. 317. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422; id. idem, x. 1896, p. 673. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 122, pl. 22, figs. 3, 3a (genitalia). Adamson, Trans. N. H. Soc. Northumberland, 1908, p. 138. Frühstorfer, Iris, 1910, p. 64.

IMAGO.—Male. Upperside dark golden olive-brown. *Forewing* with three conjoined, pale ochreous sub-apical spots from near the costa in an outwardly oblique curve; a fairly broad, outwardly curved, ochreous, discal band, from the costa a little beyond the middle to near the hinder angle almost touching the end of the sub-median vein, the upper part of the band of a darker and brighter ochreous, its lower end terminating in a large bright ochreous spot, the band broadest at its middle. *Hind-wing* without markings. Cilia of both wings brown. Underside like the upperside. Antennæ black, the upper half of the club orange-ochreous; palpi grey, white at the sides; head, body above and below and the legs concolorous with the wings.

Female like the male above and below, but the discal band of the forewing is much broader.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  inches.

HABITAT.—Burma, Assam, Andamans.

DISTRIBUTION.—The type came from Tenasserim, Moore's figure is that of a female; Manders records it from the Shan States, Watson from Beeling in Burma and from the Chin Hills, Elwes and de Nicéville from Tavoy, Naga Hills and Bernardmyo. We have received several examples from the Khasia Hills, and have it also from the Karen Hills, Maulmein, the Ataran Valley, and two undoubted examples from the Andamans, received from the late Mr. Wimberley.

#### CELÆNORRHINUS ZEA.

Plate 763, figs. 2, ♀, 2a, ♀.

*Celænorrhinus zea*, Swinhoe, Ann. Mag. Nat. Hist. 1909, p. 89.

IMAGO.—Female. Upperside dark olive-brown. *Forewing* with a broad discal semi-hyaline band much as in *dkmada*, Moore, but cut short and square on vein 2 with

a small spot below it, attached to its middle, the band does not quite touch the costa, is white tinged with ochreous, three sub-apical whitish dots, the middle one inwards and attached to the upper dot. *Hindwings* without markings. Underside. *Forewing* with the discal band extending to the hinder angle, which it does not touch, the extension caused by an adjoining large spot of the same colour as the rest of the band. *Hindwing* without markings. Antennæ broken.

Expanse of wings, ♀  $1\frac{6}{10}$  inches.

HABITAT.—Assam ; type in the B. M.

One example from the Khasia Hills ; the band on the underside of the forewing is very similar to the band on the underside of the forewing of *C. affinis*, Elwes, but on the upperside it is quite different, and the sub-apical dots in that species are conjoined and almost in a straight line.

#### CELÆNORRHINUS ASMARA.

Plate 763, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Hesperia asmara*, Moore, MS. Cat. Lep. Mus. E.I.C. i. p. 253 (1857).

*Plesioneura asmara*, Butler, Trans. Linn. Soc. Zool. Lond. 1877, p. 556. Distant, Rhop. Malayana, p. 400, pl. 35, fig. 28 (1886). Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27.

*Notocrypta asmara*, Watson, Hesp. Ind. p. 128 (1891).

*Celænorrhinus asmara*, Watson, Proc. Zool. Soc. 1893, p. 49 ; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 118. Frühstorfer, Iris, 1910, p. 63.

*Celænorrhinus concertus*, de Nicéville, Journ. Bo. Nat. Hist. Soc. v. 1890, p. 222, pl. E, fig. 12, ♂. Watson, Hesp. Ind. p. 142 (1891).

*Celænorrhinus asmara concertus*, Frühstorfer, l.c.

*Celænorrhinus cacus*, de Nicéville, l.c. p. 223, pl. E, fig. 11, ♂. Watson, Hesp. Ind. p. 143 (1891).

Elwes, Proc. Zool. Soc. 1892, p. 661. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

*Celænorrhinus asmara cacus*, Frühstorfer, l.c.

IMAGO.—Male. Upperside dark rich brown, the basal area of forewing and the entire hindwing covered with brownish-ochreous scales. *Forewing* with three conjoined, sub-apical, semi-hyaline white dots, in a slight outward curve (in some examples there are only two spots), a short, outwardly oblique, semi-hyaline white band, composed of three conjoined spots, the first two large, of about the same size, sub-quadrangle, within the extremity of the cell and in the first median interspace, the third filling up the base of the second median interspace, its inner half wedged into the junction of the two large spots. *Hindwing* with a large rounded discoidal spot, and a discal band of large spots, all very obscure, formed by the want of yellow, hairy scales on those parts. Cilia of both wings dark brown. Underside as dark brown as the upperside, markings similar, but in the forewing the discal band has a pale yellow spot divided by the vein, carrying it to near the costa, and there is a large diffused yellowish patch at the hinder angle. Antennæ black, on the underside there is an

ochreous streak below the club, and the tip of the club also ochreous; palpi and fore-legs ochreous.

Female similar to the male above and below, but generally somewhat paler in colour.

Expansion of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—Malay Peninsula, Java, Burma, Assam.

DISTRIBUTION.—The type came from Malacca, the types of *concertus* from the Khasia Hills, and the type male of *cacus* from Rangoon; we have in our collection a typical male of *cacus* with only two sub-apical dots in the forewing from Rangoon, a female from the Ataran Valley, and a pair from the Khasia Hills, and Colonel Adamson has sent us a pair taken by him at Papun on the Salween River; they represent all three so-called species, there is really no specific difference between them; undoubtedly they represent but one species.

#### CELÆNORRHINUS BADIA.

Plate 763, figs. 4, ♂, 4a, ♀, 4b, ♀.

*Pterygospidea badia*, Hewitson, Ann. Mag. Nat. Hist. 1877, p. 322; id. Descr. Lep. Coll. Atk. p. 4 (1879).

*Plesioneura badia*, de Nicéville, Journ. As. Soc. Bengal, 1883, p. 88, pl. 10, fig. 10, ♀. Elwes, Trans. Ent. Soc. 1888, p. 462.

*Notocrypta badia*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 193. Watson, Hesp. Ind. p. 130 (1891).

*Celænorrhinus badia*, Watson, Proc. Zool. Soc. 1893, p. 49. Swinhoe, Trans. Ent. Soc. 1893, p. 317. de Nicéville, Gazetteer of Sikkim, Butt. p. 177 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 123.

IMAGO.—Male. Upperside dark blackish-brown, with some brownish-ochreous hairs on the basal area. *Forewing* with the usual five semi-hyaline small sub-apical white spots, the upper three close together, in an outwardly oblique, nearly straight line from near the costa; the lower two well outwards and well separated from each other; a moderately broad semi-hyaline silvery white discal band with irregular margins, from the upper end of the cell to the sub-median vein near the hinder angle, broadest at its middle, a small round projection on its outer side above the base of the second median interspace, the band constricted on vein 2, then bending down a little inwards almost to a point. *Hindwing* with dark brownish-ochreous hairs on the basal and abdominal areas, no markings. Cilia of forewing brown, of hindwing whitish-ochreous. Underside slightly paler than the upperside, markings as above, the hinder marginal space of the forewing pale. Antennæ black, with a whitish streak on the underside below the club, the shaft with white dots; palpi ochreous, with a black and a white stripe at the sides; head, body above and below and the legs concolorous with the wings; abdomen

on the underside ochreous towards the tip, with a lateral white stripe attached on each side.

Female coloured like the male, markings also similar, the discal band of the forewing broader, the cilia of hindwing bright ochreous.

Expanse of wings, ♂  $2\frac{1}{10}$  to  $2\frac{3}{10}$ , ♀  $2\frac{4}{10}$  inches.

HABITAT.—Sikkim, Assam.

DISTRIBUTION.—The type came from Darjiling; we have a male from the Khasia Hills; Elwes and de Nicéville both record it from Sikkim; our description and figures are from a Khasia Hill male and Sikkim female; it is a rare species.

#### INDO-MALAYAN, CHINESE AND JAPANESE ALLIED SPECIES.

- Celænorrhinus maculosa*, Pterygospidea maculosa, Felder, Reise, Nov. Lep. iii. p. 528, pl. 73, fig. 7, ♂ (1867). Habitat, Central and Western China.
- Celænorrhinus ladana*, Carystus ladana, Butler, Trans. Ent. Soc. 1870, p. 502; id. Lep. Exot. p. 170, pl. 59, fig. 1 (1874). Druce, Proc. Zool. Soc. 1873, p. 359. Habitat, Borneo, Perak, Sumatra.
- Celænorrhinus tibetana*, Pterygospidea tibetana, Mabille, Ann. Soc. Ent. Fr. 1876, p. liv. Notocrypta tibetana, Leech, Butt. of China, etc. ii. p. 628, pl. 38, fig. 6, ♂ (1893). Habitat, W. China, Thibet.
- Celænorrhinus simula*, Pterygospidea simula, Hewitson, Ann. Mag. Nat. Hist. 1877, p. 324. *Celænorrhinus simula*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 185. Habitat, Sumatra.
- Celænorrhinus ruficornis*, Plesioneura ruficornis, Mabille, Ann. Soc. Ent. Belg. xxi. p. 32 (1878). Habitat, Java.
- Celænorrhinus cameroni*, Plesioneura cameroni, Distant, Ann. Mag. Nat. Hist. 1882, p. 248. *Kerana aurivittata*, var. *cameroni*, Distant, Rhop. Malayana, p. 403, pl. 34, fig. 19 (1886). Habitat, Perak, Malacca.
- Celænorrhinus palajava*, Plesioneura palajava, Staudinger, Iris, ii. p. 156, pl. 2, fig. 10 (1889). Habitat, Philippines.
- Celænorrhinus consanguinea*, Leech, Entom. xxiv. Suppl. p. 61 (1891); id. Butt. of China, etc. ii. p. 570, pl. 39, fig. 3, ♂ (1893). Habitat, W. China, E. Thibet.
- Celænorrhinus goto*, Plesioneura goto, Mabille, Ann. Soc. Ent. Belg. xxvii. p. lvi. (1883). *Notocrypta goto*, Leech, Butt. of China, etc. ii. p. 628, pl. 38, fig. 4, ♂ (1893). Habitat, Japan.
- Celænorrhinus lucifera*, Leech, l.c. fig. 5, ♀. Habitat, Moupin, W. China.
- Celænorrhinus angustipennis*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 117. Habitat, W. Java.
- Celænorrhinus brahmaputra*, Elwes and Edwards, l.c. Habitat, Kina Balu, Borneo.
- Celænorrhinus balukinus*, Elwes and Edwards, l.c. pl. 18, fig. 1, ♂. Habitat, Kina Balu.
- Celænorrhinus orbiferus*, Elwes and Edwards, l.c. p. 118, pl. 18, fig. 2, ♂. Habitat, Kina Balu.
- Celænorrhinus inæqualis*, Elwes and Edwards, l.c. p. 119, pl. 18, fig. 3, ♂. Habitat, Gedeh, Java.
- Celænorrhinus dentatus*, Elwes and Edwards, l.c. pl. 18, fig. 4, ♂. Habitat, Kina Balu.
- Celænorrhinus fulvescens*, Elwes and Edwards, l.c. p. 120, pl. 18, fig. 5, ♂. Habitat, Kina Balu.
- Celænorrhinus saturatus*, Elwes and Edwards, l.c. pl. 18, fig. 6, ♂, and pl. 22, fig. 5, 5a (genitalia). Habitat, Java, Bali.
- Celænorrhinus lativittus*, Elwes and Edwards, l.c. pl. 18, fig. 7, ♂. Habitat, Kina Balu.



- Celænorrhinus chinensis*, Swinhoe, Ann. Mag. Nat. Hist. 1907, p. 431; id. Trans. Ent. Soc. 1908, p. 8, pl. i. fig. 6. (Plate numbered III. by mistake.)
- Celænorrhinus ratna*, *Celænorrhinus consanguineus ratna*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 135; id. Iris, 1910, p. 61. Habitat, Formosa.
- Celænorrhinus piepersi*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 135. Habitat, W. Java.
- Celænorrhinus binotatus*, *Celænorrhinus simula binotatus*, Frühstorfer, l.c. p. 136. Habitat, E. Java.
- Celænorrhinus aditta*, *Celænorrhinus asmara aditta*, Frühstorfer, l.c. Habitat, Siam.
- Celænorrhinus agatta*, *Celænorrhinus asmara agatta*, Frühstorfer, l.c. Habitat, W. Sumatra.
- Celænorrhinus milinda*, *Celænorrhinus asmara milinda*, Frühstorfer, l.c. Habitat, W. Java.
- Celænorrhinus snelleni*, Frühstorfer, l.c. Habitat, Celebes.
- Celænorrhinus vitruvius*, *Celænorrhinus maculicornis vitruvius*, Frühstorfer, Iris, 1910, p. 61. Habitat, Siam.
- Celænorrhinus formosana*, *Celænorrhinus maculicornis formosana*, Frühstorfer, l.c. Habitat, Formosa.
- Celænorrhinus vimana*, *Celænorrhinus aurivittata vimana*, Frühstorfer, l.c. p. 65. Habitat, Kina Balu.

#### Genus CHARMION.

- Charmion*, de Nicéville, Journ. As. Soc. Bengal, 1894, p. 48. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 420. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 110.

*Forewing*, vein 12 terminates on the costa opposite the end of the cell, 11 emitted one-third before the end of the cell, 10 from one-fifth before the end, the bases of 9 and 8 close together a little before the end; upper discocellular stout, long, strongly outwardly oblique, middle and lower discocellulars thin, gently curved, the lower slightly the longer; cell nearly two-thirds the length of the wing, veins 6 and 5 from the junctions of the discocellulars, the base of 6 being near the upper end, and 5 above the middle, vein 3 from far before lower end of cell, sub-median vein somewhat sinuous; the wing triangular in shape, costa arched beyond its middle, apex sub-acute, outer margin slightly convex, about as long as the hinder margin, which is straight. *Hindwing*, vein 8 nearly straight to the apex of the wing, vein 7 emitted about one-sixth before the upper end of the cell, discocellulars slightly outwardly oblique, the upper one sinuous, the lower concave, slightly the longer, vein 5 not fully developed, vein 3 emitted a little before the lower end of the cell, 2 from one-fourth before the end; sub-median and internal veins straight; costa somewhat arched at the base, apex well pronounced, outer margin rounded. Antennæ with a well-developed club fining to a point and bent at about a right angle; palpi erect, pressed closely to the face, densely pilose, third joint sub-erect, hidden beneath the hairs; body fairly stout, the abdomen extending to the end of hindwings; foreleg with epiphysis on the tibia, hindleg with a long tuft of hairs attached to the base of the tibia, and with two pairs of spurs.

Type, *Hesperia ficulnea*, Hewitson.

## CHARMION FICULNEA.

Plate 764, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Hesperia ficulnea*, Hewitson, Descr. Hesp. p. 37 (1868).——— *ficulnea*, Watson, Proc. Zool. Soc. 1893, p. 113.*Charmion ficulnea*, de Nicéville, Journ. As. Soc. Bengal, 1894, p. 49. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 529. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 111. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 137. Frühstorfer, Iris, 1910, p. 60.*Plesioneura signata*, Druce, Proc. Zool. Soc. 1873, p. 360, pl. 33, fig. 8.*Notocrypta signata*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 191; id. idem, 1891, p. 380.

IMAGO.—Male. Upperside purple-black. *Forewing* with a short, broad, pure white, outwardly oblique, discal band, commencing narrowly in a short inwardly oblique form from the sub-costal vein a little beyond its middle, then rapidly expanding, outwardly oblique, to vein 2 where it is cut short, its margins are even, the inner one nearly straight, the outer outwardly curved. *Hindwing* without markings. Cilia of both wings black. Underside like the upperside, without the purple tint, but quite as black. Antennæ with the upper half of the club dull ochreous; palpi dark grey, dark ochreous at the sides; head, body above and below and the legs concolorous with the wings.

Female similar, the discal white band of the forewing somewhat broader.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  to  $2\frac{1}{10}$  inches.

HABITAT.—Borneo, Perak, Malay Peninsula, Sumatra, Siam, Burma.

DISTRIBUTION.—Recorded by Druce from Borneo; we have several examples from Brunei, North Borneo; recorded by de Nicéville from Lower Tenasserim, Siam, the Malay Peninsula and Sumatra; it is in the Hancock Museum, Newcastle, from Toungyan in Tenasserim, taken by Adamson.

## INDO-MALAYAN ALLIED SPECIES.

*Charmion tola*, *Plesioneura tola*, Hewitson, Ann. Mag. Nat. Hist. 1878, p. 340. *Synonyms*, *Plesioneura zawi*, Plötz, Berl. ent. Zeit. xxix. p. 225 (1885) (unpublished plate No. 1345). *Plastingia* (?) *plesioneuræ*, Staudinger, ex. Schmett. p. 299, pl. C, ♀ (1888). Habitat, Celebes, Tondano.

*Charmion queda*, *Plesioneura queda*, Plötz, l.c. (unpublished plate No. 1344). *Notocrypta queda*, de Nicéville, Journ. Bo. Nat. Hist. Soc. iv. 1889, p. 192. *Charmion queda*, Swinhoe, Trans. Ent. Soc. 1908, p. 9, pl. i. fig. 8. (Plate numbered III. by mistake.) Habitat, Malacca.

*Charmion nibana*, *Charmion ficulnea nibana*, Frühstorfer, Iris, 1910, p. 61. Habitat, W. Sumatra.

## Genus DAIMIO.

*Daimio*, Murray, Ent. Mo. Mag. xi. p. 171 (1875). Watson, Proc. Zool. Soc. 1893, p. 47. Leech, Butt. of China, etc. ii. p. 563 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 420.  
*Satarupa*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 130.

*Forewing*, vein 12 ends on the costa before the end of the cell, cell less than two-thirds the length of the costa, discocellulars sub-erect, vein 3 emitted a little before the lower end of the cell, 2 about one-fourth from the base; costa evenly curved, outer margin oblique, convex above its middle, apex sub-acute, hinder angle angular, hinder margin straight. *Hindwing*, vein 7 emitted a little before the upper end of cell, discocellulars faint, nearly erect, vein 5 hardly visible, 3 from a short distance before the lower end of the cell, 2 from one-third before the end, costa highly arched at the base, apex rounded, outer margin somewhat sinuous. Antennæ with a moderately formed club, bent over at about a right angle to the shaft; palpi porrect, third joint short, obtusely conical; hind tibiæ with two pairs of spurs, a tuft of hairs attached to its proximal end.

Type, *Pyrgus tethys*, Ménétriés, from China and Japan.

## DAIMIO BHAGAVA.

Plate 764, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, ♀.

*Goniloba bhagava*, Moore, Cat. Lep. Mus. E.I.C. i. p. 246 (1857).

*Satarupa bhagava*, Moore, Proc. Zool. Soc. 1865, p. 781. Elwes, Trans. Ent. Soc. 1888, p. 457. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27; id. idem, 1891, p. 58; id. Hesp. Ind. p. 88 (1891). Elwes, Proc. Zool. Soc. 1892, p. 654. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 428. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 133. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 139.

*Daimio bhagava*, Watson, Proc. Zool. Soc. 1893, p. 47. Swinhoe, Trans. Ent. Soc. 1893, p. 316. de Nicéville, Gazetteer of Sikkim, Butt. p. 176 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422; id. idem, x. 1896, p. 673.

*Satarupa phisara*, var. Elwes, Proc. Zool. Soc. 1892, p. 655.

IMAGO.—Male. Upperside. *Forewing* dark blackish-brown, three sub-apical, semi-hyaline white dots from near the costa, the middle one shifted inwards; a discal series of four semi-hyaline white spots, a small round one at the lower end of the cell, a larger sub-quadrate spot outside, near the base of the second median interspace, a much larger quadrate spot in the first median interspace below the cell spot, a small one a little inward near the middle of the hinder margin and connected with the margin in a diffused whitish mark; in some examples there is also a white dot between this spot and the large square spot; indications of a discal series of faintly whitish lunules. *Hindwing* with a broad white band a little before the middle, its inner edge nearly

straight but uneven, leaving but a small basal blackish-brown space, its outer edge strongly outwardly curved; the outer area of the wing pale blackish, containing a band of blackish spots commencing at its upper end with two round spots and continued to the abdominal margin in a series of blackish bars closely packed, the bars becoming gradually longer hindwards; a sub-marginal series of thick lunular blackish spots. Cilia of both wings black. Underside like the upperside. Antennæ black; palpi bright orange, with a black tuft of hairs on each side, pectus with paler orange hairs; head, body above and below and the legs blackish-brown, the tuft of hairs on the hind tibia grey, abdomen above with pale whitish, narrow segmental bands, below with a whitish smear down its centre.

Female. Upperside paler than the male, usually five sub-apical dots, the discal series of spots much larger, the large square spot connected with the hinder margin by a square, more opaque and pure white spot a little inwards and a white short streak on the margin, the discal pale lunular series more distinct and often continued up to the costa round the sub-apical dots. *Hindwing* with the white band a little broader, the discal and sub-marginal series of blackish marks more prominent. Underside like the upperside, the discal lunular series on both wings more diffuse and on the forewing much broader. Abdomen with the basal and anal segments blackish-brown, the middle portion of the abdomen white, with pale grey interrupted segmental bands, the centre of the underside as in the male, but whiter.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma.

DISTRIBUTION.—The type is marked N.E. Bengal; we have both sexes from Ranikhet, Sikkim and the Khasia Hills; Betham records it from the Central Provinces, Watson from the Chin Hills and Burma, and Elwes from the Karen Hills, Tavoy and Bernardmyo.

#### DAIMIO ANDAMANICA.

Plate 764, figs. 3, ♂, 3a, ♂.

*Tagiades bhagava*, var. *andamanica*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1881, p. 256, pl. 4, fig. 5, ♂.

*Satarupa bhagava*, var. *andamanica*, Watson, Hesp. Ind. p. 88 (1891).

*Daimio andamanica*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

IMAGO.—Male. Upperside. *Forewing* much as in *bhagava*, but there are usually five sub-apical dots in a continuous line, the four upper ones in a curve, the fifth immediately below the fourth, and in the discal series the cell spot and the spot below it are usually of equal size, one above the other, and not obliquely inwards, and there is seldom any indication of the indistinct pale discal lunular series. *Hindwing* with the white band with its sides more even, three black spots on its upper margin, a

small black spot at the end of the cell within the white band, the discal series of spots much as in *bhagava*, but the uppermost one is within the white band, just clear of the broad brown margin, which also contains an indistinct sub-marginal series of lunular marks. Underside like the upperside, but in the forewing the discal series is continuous to the hinder margin, and on the hindwing the black spots in the white band are more pronounced. Antennæ black; palpi ochreous-grey, not bright orange as in *bhagava*, the hairs on the pectus also ochreous-grey; head, thorax above and below and the legs brown; abdomen above with the middle portion pure white, with two brown dorsal spots, below brown down its middle portion, in *bhigava* it is white.

Female paler than the male. *Forewing* with the white spots larger. *Hindwing* with the band purer white, and broader, markings similar, but the band being so much broader, the two upper black spots of the discal series on the underside are within it.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  inches.

HABITAT.—Andaman Islands.

The types are in the Indian Museum, Calcutta; we have a male in our collection received from Port Blair from Wimberley, which we figure, it is not in the B. M., and we have not been able to procure a female for figuring.

#### DAIMIO PHISARA.

Plate 764, figs. 4, ♂, 4a, ♀, 4b, ♂.

*Satarupa phisara*, Moore, Journ. As. Soc. Bengal, 1884, p. 50. Wood-Mason and de Nicéville, id. 1886, p. 390, pl. 17, fig. 4, ♂. Elwes, Trans. Ent. Soc. 1888, p. 457. Watson, Hesp. Ind. p. 89 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 58. Elwes, Proc. Zool. Soc. 1892, p. 654. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 134. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 139.

*Daimio phisara*, Watson, Proc. Zool. Soc. 1893, p. 47. Swinhoe, Trans. Ent. Soc. 1893, p. 316. de Nicéville, Gazetteer of Sikkim, Butt. p. 177 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

IMAGO.—Male. Upperside blackish-brown. *Forewing* with three semi-hyaline minute white sub-apical dots, and sometimes a fourth very minute, all in a curved row from near the costa; a small white semi-hyaline spot at the lower end of the cell, sometimes obsolete, a similar small spot outwards near the base of the second median interspace, and a moderate-sized quadrate spot below the cell spot, in the first median interspace, and in some examples an indistinct white spot between it and the hinder margin; indications of a pale discal series of whitish lunular marks. *Hindwing* with a narrow white band before the middle with uneven sides, varying somewhat in breadth in different examples, but always narrow, a black spot at the end of the cell, at the outer margin of the white band, and another a little inwards, a discal series of

indistinct black spots, the upper ones blackest, the one outside the cell spot large and sub-quadrate, and a sub-marginal series of similar spots more regular in size, with the narrow space between the two series pale. Cilia of both wings black. Underside similar to the upperside, but in the hindwing the black spots on the margins of the white band are more prominent, the spot at the end of the cell and the uppermost spot of the discal series are almost within the white band, and there is another black spot on the inner side of the white band opposite the uppermost discal spot; palpi ochreous, with black sides, pectus with ochreous hairs; head and body above and below and the legs blackish-brown, the tuft of hairs on the hind tibia grey, abdomen with whitish segmental bands.

Female like the male, but there is usually an extra spot in the discal series of the forewing at the end of the cell; the white band on the hindwing much as in the male, sometimes even narrower.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{7}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma.

DISTRIBUTION.—The types came from the Khasia Hills, where the species seems to be common; we have received many examples, and have it also from Sikkim. Our descriptions and figures are from Khasia Hill examples; Elwes records it from Bernardmyo, Watson from the Chin Hills; it is in the Hancock Museum, Newcastle, from Upper Burma, taken by Adamson.

#### DAIMIO NARADA.

Plate 765, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Satarupa narada*, Moore, Journ. As. Soc. Bengal, 1884, p. 51. Elwes, Trans. Ent. Soc. 1888, p. 457.

Doherty, Journ. As. Soc. Bengal, 1889, p. 133. Watson, Hesp. Ind. p. 89 (1891). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 132.

*Daimio narada*, Watson, Proc. Zool. Soc. 1893, p. 47. Swinhoe, Trans. Ent. Soc. 1893, p. 316.

Leech, Butt. of China, etc. ii. p. 566 (1893). de Nicéville, Gazetteer of Sikkim, Butt. p. 176 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422; id. idem, x. 1896, p. 673.

*Satarupa bhagara*, de Nicéville (nec Moore), Journ. As. Soc. Bengal, 1883, p. 90, pl. 10, fig. 14, ♀.

IMAGO.—Male. Upperside blackish-brown. *Forewing* with five sub-apical white dots, a white dot at the lower end of the cell, a small spot at the base of the second median interspace, a square spot below the cell spot attached to a much larger square spot half inwards, and which widens rapidly to the hinder margin; indications of a pale discal series. *Hindwing* nearly all pure white, the base narrowly blackish-brown, the white portion limited outwardly by a row of black spots, from this row to the margin the wing is pale blackish and contains a sub-marginal row of somewhat indistinct brown spots. Cilia of both wings blackish-brown, touched with white in parts of the hindwing. Underside like the upperside, but the white band of the hindwing extends a little more

hindwards, leaving the uppermost spot, sometimes the next spot also, within the white area; palpi orange with black sides, pectus and thorax beneath with white hairs; head and thorax above blackish-brown, abdomen white, with a blackish-brown tip; legs whitish, the tuft of hairs on the hind tibia white.

Female like the male above and beneath, the white bands on both wings a little broader.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to  $1\frac{7}{10}$  inches.

HABITAT.—Sikkim, Assam, Chin Hills.

DISTRIBUTION.—The type came from Sikkim, our description and figures are from Sikkim examples in our collection, and we have received many examples from the Khasia Hills. Doherty records it from Margharita in Upper Assam, and Watson from the Chin Hills.

#### DAIMIO DIVERSA.

Plate 765, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Pterygospidea diversa*, Leech, Entom. xxiii. p. 46 (1890).

*Daimio narada*, var. *diversa*, Leech, Butt. of China, etc. ii. p. 566, pl. 38, fig. 14, ♂ (1893).

*Satarupa diversa*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 132.

IMAGO.—Male. Upperside black, touched with a tint of brown, darker than any other Indian species. *Forewing* with the usual five sub-apical dots, a very small spot at the lower end of the cell, a larger and somewhat square spot at the base of the second median interspace, a fairly large quadrate spot below the cell spot, attached to a larger purer white quadrate spot half inwards which expands hindwards on to the hinder margin. *Hindwing* with a pure white band with irregular sides which expands hindwards to the abdominal margin, all the black spots of the usual discal series except the upper two obliterated by the blackness of the outer band, the uppermost spot protruding a little into the white band. Cilia of both wings black, touched with white at the tips on the hindwing. Underside like the upperside, but in the forewing the lower part of the white band is diffused outwards, exposing two black spots; and in the hindwing the two upper spots of the usual discal series are within the white band; frons ochreous, pectus and thorax beneath with white hairs; head and thorax above black, abdomen white, with a black tip, legs white, with black stripes, the tuft of hairs on the hind tibia white.

Female similar to the male.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—China, Assam.

Elwes records it from the Khasia Hills; we have in our collection several examples from Central China and from the Khasia Hills that appear to be identical; it is a

blackier insect than any other of the Indian species, and differs in many respects from any of them, and its white underside and white legs makes it very distinctive.

DAIMIO MILLIANA, nov.

Plate 765, figs. 3, ♂, 3a, ♀, 3b, ♀ (Dry-season Brood), 3c, ♂ (Wet-season Brood).

Dry-season Brood (Figs. 3, ♂, 3a, ♀, 3b, ♀).

IMAGO.—Male. Upperside. *Forewing* dark brownish-grey, five sub-apical, semi-hyaline white spots, the upper four in an outwardly oblique curve from near the costa, and very close to each other, the fifth inwardly below the fourth and a little separated from it; a central band of large semi-hyaline white spots, the upper one at the end of the cell, its outer side rounded, its inner side concave, a similar-sized quadrate spot below it in the first median interspace, before its middle, its inner upper end nearly touching the lower inner end of the cell spot, a larger quadrate spot attached to its lower side, extending half inwards, and expanding somewhat on the hinder margin, with two prominent black spots, one above the other, on each side of this spot, the outer pair well within the white; a small sub-quadrate spot close to the base of the second median interspace outside, but close to the junction of the two upper spots. *Hindwing* with the base narrowly, the outer margin broadly brownish-grey, the rest of the wing pure white, a continuous whorl all round the wing, from the base to the abdominal fold, of black spots, one below the costa within the white space, the others on the inner edges of the basal and outer marginal bands, the upper four annular, the others linear, a smaller round black spot at the lower end of the cell. Cilia on both wings brownish-grey. Underside similar, the black spots very prominent. Antennæ brown, with the upper half of the club white; palpi with bright ochreous hairs, top of head similarly coloured, thorax with some white hairs, abdomen, with the base and tip, brownish-grey, the middle portion white, on the underside, the thorax with white hairs, the abdomen entirely white.

Female similar to the male.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  inches.

Wet-season Brood (Fig. 3c, ♂).

Male. Both sides much darker than in the dry-season form, as nearly black as in *D. norada*, markings similar, the sub-apical spots on the forewing larger and somewhat elongated.

Expanse of wings, ♂  $1\frac{8}{10}$  inches.

HABITAT.—Burma. Types in the B. M.

There are several examples of both sexes in the B. M. from the Shan States, Tilin Yaw and Pegu.



## INDO-MALAYAN, CHINESE AND JAPANESE ALLIED SPECIES.

- Daimio tethys*, *Pyrgus tethys*, Ménétré, Cat. Mus. Petr. p. 126, pl. 10, fig. 8 (1857). *Daimio tethys*, Fryer, Rhop. Nippon, p. 33, pl. 10, fig. 6 (1889). Habitat, Japan, China, Corea.
- Daimio sinica*, *Pterygospidea sinica*, Felder, Wien ent. Mon. vi. p. 30 (1862). *Daimio sinica*, Leech, Butt. of China, etc. ii. p. 565 (1893). Habitat, N. China.
- Daimio moorei*, *Pterygospidea moorei*, Mabille, Ann. Soc. Ent. Fr. 1876, p. cliii. Alphéraky, Rom. sur Lep. v. p. 122, pl. 5, figs. 9, a, b (1889). Habitat, Moupin.
- Daimio celebica*, *Pterygospidea celebica*, Felder, Reise, Nov. Lep. iii. p. 528, pl. 73, fig. 8, ♂ (1867). *Tagiades celebica*, Snellen, Tijd voor Ent. 1878, p. 41. *Daimio celebica*, Watson, Proc. Zool. Soc. 1893, p. 47. *Synonym*, *Pterygospidea permena*, Hewitson, Descr. Hesp. p. 51 (1868). Habitat, Celebes.
- Daimio felderi*, Butler, Ann. Mag. Nat. Hist. 1881, p. 140. Leech, Butt. of China, etc. ii. p. 565 (1893). Habitat, Japan.
- Daimio diræ*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 369, pl. Q, fig. 49, ♂. Habitat, Pulo Laut, Java, Sumatra, Bali.
- Daimio formosa*, *Satarupa formosa*, Elwes, Trans. Zool. Soc. 1897, p. 133, pl. 18, fig. 13, ♂. Habitat, Sumatra.
- Daimio visana*, *Satarupa diræ visana*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 139. Habitat, W. Java.
- Daimio nivescens*, *Satarupa celebica nivescens*, Frühstorfer, l.c. Habitat, S. Celebes.
- Daimio formosana*, *Satarupa formosana*, Frühstorfer, Jahrb. Ent. Zeit. Guben, 1909, p. 149; id. Iris, 1910, p. 70. Habitat, Formosa.
- Daimio minima*, nov. *Male*. Upperside black. *Forewing* with five sub-apical white dots, the second and fifth well inwards, the discal series placed as usual, but composed of very small spots well separated from each other, the lowest one on the hinder margin. *Hindwing* with a broad pure white band, which does not extend to the costa, there being a continuous black marginal band from the base narrowing on the costa and broad at the apex and on the outer margin, with no traces of the usual darker macular bands within it. Underside similar; palpi ochreous, with black sides, thorax above and beneath black and the legs black, abdomen white, with a black tip. Expanse of wings,  $1\frac{3}{4}$  inches. Habitat, Labuan, Borneo.

## Genus SATARUPA.

- Satarupa*, Moore, Proc. Zool. Soc. 1865, p. 780. Distant, Rhop. Malayana, p. 384 (1885). Watson, Hesp. Ind. p. 87 (1891); id. Proc. Zool. Soc. 1893, p. 46. Leech, Butt. of China, etc. ii. p. 562 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 421. Elwes and Edwards, Proc. Zool. Soc. 1897, p. 130.

*Forewing*, vein 12 ends on costa before the end of the cell, 3 emitted one-fifth before the upper end of cell, 2 more than one-third from the base. Costa evenly arched, outer margin oblique, convex above its middle, apex sub-acute, hinder angle angular, hinder margin nearly straight. *Hindwing*, vein 7 emitted one-fifth before upper end of cell, discocellulars very faint, erect, vein 5 in most of the species barely traceable, in the type species it is well developed; the base of vein 3 very close to the lower end of the cell, 2 from one-third before the end; wing somewhat elongated, the costal margin being short in proportion to the outer margin

which is somewhat sinuous and longer than in the genus *Daimio* to which this genus is closely allied. Antennæ with a slender club, its terminal point long and curved into a hook; palpi porrect, third joint short, bluntly conical; hind tibiæ with two pairs of spurs, fringed along its upper edge in the male, and the inner side is clothed with long, coarse, recumbent hairs.

Type, *Satarupa gopala*, Moore.

#### SATARUPA GOPALA.

Plate 766, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, ♀.

*Goniloba gopala*, Moore, Cat. Lep. Mus. E.I.C. i. p. 246 (1857).

*Satarupa gopala*, Moore, Proc. Zool. Soc. 1865, p. 780, pl. 42, fig. 1. Elwes, Trans. Ent. Soc. 1888, p. 456. Watson, Hesp. Ind. p. 90 (1891); id. Proc. Zool. Soc. 1893, p. 46. de Nicéville, Gazetteer of Sikkim, Butt. p. 176 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 132. Frühstorfer, Iris, 1910, p. 67.

*Tagiades gopala*, Butler, Ent. Mo. Mag. 1870, p. 96.

IMAGO.—Male. Upperside black, a triangular-shaped, semi-hyaline white spot at the upper end of the cell, a discal series of ten semi-hyaline somewhat elongated white spots, the upper five sub-apical, in an outward curve, the sixth sub-quadrate a little inwards, the seventh similar, larger, again a little inwards, the last three in a row beneath it, the lowest linear, touching the hinder margin. *Hindwing* with a very broad pure white band which narrows upwards towards the costa, where it ends in a quadrate form, the base of the wing narrowly black, with an irregular outer margin, the black colour continued narrowly along the costa and round the apex where it broadens a little, the white band limited outwards by a row of large black, oval spots, the two lowest in the interno-median interspace, a marginal row of smaller black spots from the end of the apical band which become diffuse towards the anal angle, the space between them and the discal series pale blackish. Cilia of forewing and upper part of hindwing black, on the rest of the hindwing checkered, black and white, the black marginal spots running into the cilia. Underside. *Forewing* like the upperside, but there are two whitish spots outside the lower part of the discal series, and the hinder margin is narrowly white. *Hindwing* entirely white, a short narrow black band at the apex, the discal and marginal series of black spots as on the upperside, but on a white ground, an extra black spot above the base of vein 7, the outer row of black spots ending in a black patch at the anal angle; palpi bright orange-ochreous, pectus with white hairs; head and thorax above black, abdomen above and below white, with a black basal patch above, thorax below white, legs white beneath, black on their upper sides.

Female similar to the male, the spots on the forewing somewhat larger.

Expansion of wings, ♂  $2\frac{4}{10}$  to  $2\frac{6}{10}$ , ♀  $2\frac{7}{10}$  to  $2\frac{9}{10}$  inches.

HABITAT.—Sikkim, Assam.

DISTRIBUTION.—The types came from Darjiling; we have it from Sikkim, and have received many examples from the Khasia Hills; our description and figures are from a pair in our collection.

SATARUPA KIRMANA.

Plate 766, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Tagiades kirmana*, Plötz, Berl. ent. Zeit. xxix. p. 231 (1885) (unpublished plate No. 1585).

*Satarupa kirmana*, Swinhoe, Trans. Ent. Soc. 1908, p. 3. Frähstorfer, Iris, 1910, p. 69.

*Satarupa affinis*, var. *cognata*, Distant, Rhop. Malayana, p. 385, pl. 35, fig. 17 (1886).

*Satarupa affinis*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 134.

IMAGO.—Male. Upperside dark blackish-brown. *Forewing* with four very minute sub-apical dots, well separated from each other, the first three oblique from near the costa, the fourth below the third, a discal oblique row of four spots, almost in a linear series, all well separated from each other, the upper one small in the fifth interspace, not far from the lowest of the sub-apical series, the next a little larger, near the base of the second median interspace, the third larger, sub-quadrate, in the middle of the first median interspace, the last in the middle of the interno-median interspace, its outer side excavated; all white and semi-hyaline. *Hindwing* with a broad middle white band, its inner edge straight, and containing a black spot near the costa, its outer edge curved, making the band increased in width hindwards, and with a series (within its edge) of eight black spots. Cilia of forewing brown, of hindwing checkered with white. Underside paler, markings similar, a faint whitish streak inside the cell of forewing and an extra, suffused white spot to the discal band on the hinder margin; in the hindwing the upper part of the white band is broader, and extends to the base where there is some blue suffusion, some of the upper black spots of the discal series exposed. Antennæ black, with the upper half of the club tinged with ochreous; head and thorax above blackish-brown, abdomen paler brown, with narrow white segmental bands on its outer portion, underside and legs white.

Female similar to the male.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  inches.

HABITAT.—Malay Peninsula, Burma.

DISTRIBUTION.—The type came from Malacca; Distant records it from Malacca and Perak; it is in the B. M. from the Ataran and Ye Valleys; our description and figures are from a pair taken by Bingham.

SATARUPA SAMBARA.

Plate 766, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Goniloba sambara*, Moore, Cat. Lep. Mus. E.I.C. i. p. 246 (1857).

*Satarupa sambara*, Moore, Proc. Zool. Soc. 1865, p. 781. Doherty, Journ. As. Soc. Bengal, 1886,

p. 137. Elwes, Trans. Ent. Soc. 1888, p. 457. Watson, Hesp. Ind. p. 89 (1891); id. Proc. Zool. Soc. 1893, p. 46. Swinhoe, Trans. Ent. Soc. 1893, p. 316. de Nicéville, Gazetteer of Sikkim, Butt. p. 176 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 134. Swinhoe, Trans. Ent. Soc. 1908, p. 3. Hannyngton, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371. Frühstorfer, Iris, 1910, p. 69.

*Tagiades sambara*, Butler, Ent. Mo. Mag. 1870, p. 96.

*Tagiades cosmia*, Plötz, Jahrb. Nass. Ver. xxxvii. p. 54 (1884) (unpublished plate No. 1584).

*Satarupa dohertyi*, Watson, Proc. Zool. Soc. 1893, p. 46; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 134. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 597.

IMAGO.—Male. Upperside black. *Forewing* with a sub-costal indistinct whitish streak, three small semi-hyaline white spots from near the costa in an even outward curve, a larger oval spot outside the end of the cell, with another a little larger below it near the base of the second median interspace, a moderately large quadrate spot inwards below the base of the second median nervure, with a pure white spot attached to its outer upper end touching the lower inner end of the spot above it, its lower side attached to a short white streak on the hinder margin. *Hindwing* with a broad pure white band of nearly equal width from the middle of the costa to the abdominal margin, both its sides slightly irregular, its outer side containing a series of eight large black spots in interspaces 2 and upwards, the first six more or less in pairs, half in and half out of the white band, the eighth spot well inside the white, and another spot opposite on the upper edge of the white band. Cilia of both wings black; on the hindwing, with white spots at the ends of the interspaces. Underside like the upperside, but in the forewing the white sub-costal streak is more prominent, the three lower spots of the discal series larger and forming a continuous band; the white band of the hindwing is broader, the basal area merely suffused with bluish-grey, nearly all the black spots of the discal series being within the white band; palpi ochreous, pectus with ochreous hairs, thorax beneath marked with brown and ochreous, legs ochreous; head and thorax above black, abdomen with the basal third and the tip black, the rest white.

Female similar to the male.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{9}{10}$  inches.

HABITAT.—N.W. Himalayas, Sikkim, Assam.

DISTRIBUTION.—The types came from Darjiling; it is in our collection from Ranikhet, Sikkim, and the Khasia Hills, where it appears to be common; we have received many examples; Doherty records it from Kumaon, *dohertyi* is also from Kumaon, it is in our opinion merely a slight varietal form of *sambara*; the base of the hindwing on the underside is paler than in *sambara*, and the tip of the abdomen is also whitish, but the type in the B. M. is a very old specimen, and the tip of the abdomen looks very much as if the black scales had been worn away; it differs in no other respect from *sambara*.

## INDO-MALAYAN AND CHINESE ALLIED SPECIES.

- Satarupa affinis*, Druce, Proc. Zool. Soc. 1873, p. 360, pl. 33, fig. 9. Habitat, Borneo.
- Satarupa nymphalis*, Speyer, Stett. ent. Zeit. xl. p. 348 (1879). Staudinger, Rom. sur Lep. iii. p. 153, pl. 8, fig. 4 (1887). Habitat, Amurland, Central and Western China.
- Satarupa niphates*, Weymer, Stett. ent. Zeit. xlvii. pl. 1, fig. 5 (1886); id. idem, xlviii. p. 15 (1887).  
*Satarupa affinis niphates*, Frühstorfer, Iris, 1910, p. 69. Habitat, Sumatra.
- Satarupa corona*, Semper, Rhop. Philipp. p. 306, pl. 49, fig. 2, ♀ (1892). Habitat, Philippines.
- Satarupa tonkiniana*, *Satarupa gopala tonkiniana*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 139.  
 Habitat, Tonkin.
- Satarupa majasra*, *Satarupa gopala majasra*, Frühstorfer, l.c. Habitat, Formosa.
- Satarupa javanensis*, *Satarupa affinis javanensis*, Frühstorfer, Iris, 1910. Habitat, Java.
- Satarupa idosinica*, *Satarupa sambara idosinica*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 139.  
 Habitat, Tonkin.

## Genus TAGIADES.

- Tagiades*, Hübner, Verz. bek. Schmett. p. 108 (1816). Moore, Lep. Ceylon, i. p. 175 (1881).  
 Distant, Rhop. Malayana, p. 387 (1886). Watson, Hesp. Ind. p. 91 (1891); id. Proc. Zool. Soc. 1893, p. 53. Leech, Butt. of China, etc. ii. p. 573 (1893). Watson, Journ. Bo. Nat. Hist Soc. ix. 1895, p. 421. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 137.
- Pterygospidea*, Wallengren, Rhop. Caffr. p. 53 (1857).

*Forewing*, vein 12 ends on costa well before the end of the cell, cell less than two-thirds the length of the costa, discocellulars sub-erect, the lower the longer; vein 3, emitted one-fifth before the lower end of the cell, 2 from one-fourth from the base, the median vein strongly arched between the bases of veins 2 and 3; costa arched, apex angular, outer margin convex, hinder angle obtuse, hinder margin nearly straight. *Hindwing*, vein 7 emitted at one-fifth before upper end of cell, discocellulars and vein 5 very faint, vein 3 from a little before lower end of cell, 2 at about one-third before the end; wing evenly rounded. Antennæ with a slender club, the terminal portion rather long, and bent at about a right angle; palpi porrect, third joint minute; hind tibiæ fringed and with two pairs of spurs.

Type, *Papilio japetus*, Cramer.

This genus can be divided into two well-formed groups by the pattern of the wings:—The *Japetus Group*, in which the upper side of the wings is in various shades of brown, the forewing with three or more semi-hyaline sub-apical dots, the females with similar, but larger discal spots; and the *Menaka Group*, in which the wings are generally black, the outer half of the forewings covered with small, semi-hyaline, white spots, and the lower half or third of the hindwing white or orange-ochreous.



## JAPETUS GROUP.

## TAGIADES ATTICUS.

Plate 767, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, ♀ (one extreme form), 1d, ♂, 1e, ♀, 1f, ♂, 1g, ♀ (another extreme form).

*Hesperia atticus*, Fabricius, Ent. Syst. iii. (i.), p. 339 (1793). Aurivillius, Ent. Tidsk. 1897, p. 150.

*Goniloba ravi*, Moore, Cat. Lep. Mus. E.I.C. i. p. 246 (1857).

*Pterygospidea ravi*, Moore, Proc. Zool. Soc. 1865, p. 779.

*Tagiades ravi*, Butler, Ent. Mo. Mag. 1870, p. 96. Druce, Proc. Zool. Soc. 1874, p. 109. Watson, Journ. As. Soc. Bengal, 1885, p. 54. Wood-Mason and de Nicéville, id. 1886, p. 389. Elwes and de Nicéville, id. p. 439. Distant, Rhop. Malayana, p. 388, pl. 34, fig. 1 (1886). Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27; id. idem, 1891, p. 58; id. Hesp. Ind. p. 92 (1891). Elwes, Proc. Zool. Soc. 1892, p. 654. Watson, id. 1893, p. 54. Swinhoe, Trans. Ent. Soc. 1893, p. 318. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 428. de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 140. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 139. Frühstorfer, Iris, 1910, p. 84.

*Tagiades khasiana ravina*, Frühstorfer, l.c.

IMAGO.—Male. Upperside fuliginous-brown. *Forewing* with three minute sub-apical white dots, one of them, sometimes two of them, often absent; a minute dot at the end of the cell, another near the base of the second median interspace, and a third below it, in the middle of the first median interspace, sometimes one, sometimes two of them only present, sometimes all are wanting. *Hindwing* with indications of a curved discal series of spots darker than the ground colour, often altogether invisible. Cilia of both wings brown. Underside. *Forewing* paler than it is above, the hinder marginal area and a broad squarish patch at the hinder angle paler than the rest of the wing, the minute dots as above. *Hindwing* greyish-white, the costal and outer marginal areas somewhat suffused with brown; a curved series of dark brown discal spots, the lower ones usually mere dots, often invisible.

Female. Upperside coloured like the male, but the shade of colour more variable in different examples in this sex than it is in the male, the sub-apical dots often larger (not always) and generally three in number; the spots in the disc much larger, the one at the end of the cell round, the outer spot near the base of the second median interspace usually conical, the one below it the largest and quadrate and two small spots between it and the hinder margin. *Hindwing* with an obscure blackish spot at the end of the cell and a discal series, all of them very indistinct in many examples.

Underside. *Forewing* somewhat paler than the upperside, markings similar. *Hindwing* usually much darker grey, sometimes blue-grey, a small black dot at the end of the cell, in some examples a complete discal irregular series of black spots, but very variable in its prominence, and in many examples no better indicated than it is in the male; head and body above concolorous with the wings; palpi and body below concolorous with the hindwing.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $2\frac{1}{10}$  inches.

HABITAT.—Central and Southern India, Burma, Andamans, Nicobars, Malay Peninsula and Archipelago.

DISTRIBUTION.—Recorded from the Karen Hills, Chin Hills, Tavoy, Calcutta, Cachar, Bombay, the Central Provinces, Khasia Hills and many other parts; we have received many examples from the Khasia Hills; we took it in several places in the Bombay District, and at Mhow, and have it from Rangoon, Bassein, the Ataran Valley, the Andamans, Orissa and Annam; it is a common and very variable species everywhere, except in the northern parts of India; and it does not appear to occur in Ceylon. After a careful study of numerous examples from different localities, we have come to the conclusion that it is impossible to separate *atticus* = *ravi* from *khasiana ravina*, and very much doubt the distinctness of *epicharmus*, Frühstorfer, but not having seen any examples from Siam, we leave it in the list of "Allied species;" there does not appear to be, on examination, a character in either *ravi* or *khasiana*, or in the descriptions given by Moore to each, that cannot be found common to both from all kinds of localities, and Elwes does not say that he has found any difference in the genitalia. The semi-hyaline spots vary much in size, and the underside of the hindwing is in all shades of colour from fuliginous-brown to grey, and the discal series of blackish spots varies much in size and in number. Aurivillius, who examined the Fabrician types in the Museum at Copenhagen, says\* as to *Hesperia atticus*, Fabricius, "Der Typus stellt die Varietät von *Tajiaides ravi* Moore dar, bei der die Unterseite der Hinterflügel nicht weiss, sondern dunkel braungrau ist. Der Beschreibung passt jedoch nicht. Es bleibt darum zweifelhaft, ob Fabricius *ravi* Moore oder eine andere Art vor sich gehabt hat."

Considering the very great variability of the species there can be no doubt that upon the above evidence Moore's *ravi* must become a synonym of *atticus*, Fabricius. We give figures of the two extreme forms of both sexes, Nos. 1 and 1b, a male from the Khasia Hills, No. 1a and 1c, its corresponding female from Rangoon, No. 1d and 1f, a male from the Khasia Hills, and No. 1e and 1g, a corresponding female from the Andamans.

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\* Ent. Tidsk. 1897, p. 150.

## TAGIADES HELFERI.

Plate 767, figs. 2, ♂, 2a, ♂.

*Pterygospidea helferi*, Felder, Verh. Zool.-bot. Ges. Wien. xii. p. 483 (1862). Moore, Proc. Zool. Soc. 1877, p. 593. Watson, Hesp. Ind. p. 98 (1891); id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 140. Frühstorfer, Iris, 1910, p. 84.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with three sub-apical white dots in an outward curve from the costa, more obliquely outwards than usual; a very minute dot at the end of the cell, a small round spot near the base of the second median interspace, and a smaller spot obliquely inwards below it, the upper dot sometimes absent; the wing with shades of colour caused by indistinct darker brown narrow streaks below the veins and an indistinct patch in each of the two lower interspaces. *Hindwing* with very indistinct markings, a spot at the end of the cell, a discal series of brown spots and a narrow marginal band, all barely visible. Cilia of both wings paler brown, touched with white in parts on the lower half of the hindwing. Underside. *Forewing* nearly as dark as on the upperside, the hinder marginal space narrowly pale; the spots as above. *Hindwing* with the apical space above the sub-costal vein brown, some brown scales on the margin in the second median interspace, and a narrower brown patch on the margin in the next lower interspace; the rest of the wing white, the basal portion tinted with blue, the three upper black spots of the usual discal series, the lower one small, sometimes another very small one below it; a very narrow pale brown marginal, somewhat diffuse band. Cilia of forewing brown and the hindwing white with brown tips, except towards the anal angle, where it is pure white; palpi grey; head and body above concolorous with the wings, top of head with a whitish spot on each side; body below white, tinted with blue, legs white.

Expanse of wings, ♂  $1\frac{18}{10}$  inches.

HABITAT.—Nicobars.

Watson states in Hesp. Ind. that de Nicéville informed him that it occurs commonly in the Nicobar group, and has been obtained at Kamorta, Nankowri, Katschall, Kondul and Meroe, but it is not in the B. M., and we have not been able to obtain a female; our description and figures are from a male from the Nicobars in our collection; Felder's type came from Pulo Milu.

## TAGIADES DISTANS.

Plate 768, figs. 1, ♂, 1a, ♀, 1b, ♀.

*Tagiades distans*, Moore, Lep. Ceylon, i. p. 175, pl. 68, figs. 1, 1a (1881). Watson, Hesp. Ind. p. 93 (1891); id. Proc. Zool. Soc. 1893, p. 54; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

Swinhoe (part), Trans. Ent. Soc. 1908, p. 4. Frühstorfer, Iris, 1910, p. 71.

*Tagiades obscurus*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 141.



IMAGO.—Male. Upperside vinous-brown. *Forewing* with the usual three sub-apical dots, sometimes with one, sometimes with two very indistinct minute dots outwardly below them; the three dots on a brown indistinct patch and three indistinct brown patches in an outwardly curved row down the middle of the wing, a spot near the base of the second median interspace and another near the base of the interno-median interspace, both somewhat indistinct. *Hindwing* with a black spot at the end of the cell, and three or four more or less indistinct spots of the discal series; a pure white marginal band from the anal angle on the lower half of the outer margin, gradually narrowing upwards, with a white cilia, the cilia of the rest of the wing and of the forewing brown. Underside. *Forewing* paler, the sub-apical dots as above, the hinder marginal space slightly paler than the rest of the wing. *Hindwing* pure white, suffused with dull blue at the base and with a very broad costal brown band which extends round the apex and is continued for a short distance down the outer margin, narrowing hindwards, a few dark brown scales on the margin, not extending to the anal angle, the discal spots as above, but black and prominent; palpi grey, black at the sides; body below and legs white; head and body above concolorous with the wings.

Female. Upperside paler than the male, the dark patches more indistinct, the sub-apical dots larger; a semi-hyaline white spot near the base of the second median interspace, a larger similar spot a little inwards, below it, in the middle of the first median interspace; sometimes a small dot below the middle of the costa. *Hindwing* paler than the forewing, especially on the disc, and on the entire lower portion of the wing, making the discal black spots more prominent, the white border rather deeper than it is in the male. Underside. *Forewing* as above. *Hindwing* as in the male, the upper discal spot larger and prominent.

Expanse of wings, ♂ 2, ♀ 2 to  $2\frac{2}{10}$  inches.

HABITAT.—Ceylon.

Appears to be confined to Ceylon; we have both sexes from Kandy and Colombo.

#### TAGIADES MEETANA.

Plate 768, figs. 2, ♂, 2a, ♀, 2b, ♂.

- Tagiades meetana*, Moore, Proc. Zool. Soc. 1878, p. 842, pl. 53, fig. 1. Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 439. Manders, Trans. Ent. Soc. 1890, p. 538. Watson, Hesp. Ind. p. 94 (1891); id. Proc. Zool. Soc. 1893, p. 54; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 139. Frühstorfer, Iris, 1910, p. 84.
- Tagiades lugens*, Mabille, Ann. Soc. Ent. Belg. 1883, p. lxxviii.
- Tagiades alica*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 140.

IMAGO.—Male. Upperside dark brown, varying in shades of colour in different examples, but never blackish as in *alica*, markings similar, the anal margin of the hind-

wing and a little of the anal area bluish-grey; the spots of the discal series fairly well pronounced, and usually there are three brown spots in the bluish-grey anal margin. Cilia of forewing brown, of the hindwing brown below the apex, paling hindwards, becoming white and brown towards the anal angle; in some examples the bluish-grey area is very limited. Underside. *Forewing* paler brown, markings as above, a pale shade on the lower half near the hinder angle outside the indistinct discal band, hinder margin also narrowly pale. *Hindwing* with the costal space broadly suffused with brown, in *alica* there is only a narrow brown costal band; the rest of the wing dull whitish, tinted with blue, and with some basal blue suffusion, the discal and marginal spots as in *alica*, but smaller and paler; palpi brownish-ochreous, white at the sides; thorax and abdomen below white, legs brownish-ochreous; head and body above concolorous with the wings.

Female. Upperside coloured like the male, the sub-apical dots similar, a semi-hyaline white spot at the end of the cell, a larger one near the base of the second median interspace, with another similar spot attached to its inner lower side, both more or less round. *Hindwing* uniform in colour without the bluish-grey anal margin. Cilia similar. Underside. *Forewing* paler, markings as above. *Hindwing* as in the male.

Expanse of wings, ♂ ♀ 1 $\frac{8}{10}$  to 2 inches.

HABITAT.—Burma.

DISTRIBUTION.—The type came from Meetan; we have both sexes from Palone, Thoungyan and the Ataran Valley; Manders records it from the Shan States; Elwes and de Nicéville from Tavoy; Elwes from E. Pegu.

#### TAGIADES OBSCURUS.

Plate 768, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Tagiades obscurus*, Mabille, Ann. Soc. Ent. Fr. (3), vi. p. 274 (1876). Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 389, pl. 17, fig. 9, ♀. Watson, Hesp. Ind. p. 93 (1891). Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 448. Elwes, Proc. Zool. Soc. 1892, p. 655. Watson, id. 1893, p. 54; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422; id. idem, x. 1896, p. 673. Davidson, Bell and Aitken, id. xi. 1897, p. 38 (larva and pupa). Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 141. Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 388. Frühstorfer, Iris, 1910, p. 76.

*Tagiades athos*, Plötz, Jahrb. Nass. Ver. xxxvii. p. 48 (1884) (unpublished plate No. 1578, ♂).

*Tagiades distans*, Fergusson (nec Moore), Journ. Bo. Nat. Hist. Soc. 1891, p. 448.

IMAGO.—Male. Upperside blackish-brown. *Forewing* with three sub-apical dots. *Hindwing* with the anal margin whitish touched with blue, and with a narrow suffused marginal border, the cilia here white, brown on the rest of the wing and on the forewing, a very indistinct darker spot at the end of the cell an equally indistinct discal series. Underside. *Forewing* paler, somewhat ochreous-brown, the sub-apical dots as

above, a pale streak through the cell, a pale patch at the hinder angle and the hinder marginal space narrowly pale. *Hindwing* with the costa very broadly suffused with brown, the rest of the wing white, the base suffused with pale blue, the discal band consisting of the four or five upper spots of the series, the lower ones obsolete, the outer margin with a diffuse, narrow blackish band, thickest before the anal angle; palpi brown; body beneath and the legs white; head and body above concolorous with the wings.

Female similar to the male, the bluish-white area on the lower margin of the hindwing, usually narrower.

Expanse of wings, ♂ ♀ 2 inches.

LARVA is not to be distinguished from that of *T. atticus*,\* Fabricius, except by the colour of the head, which is here black, and by the front segments of the body being suffused with rose colour. The larva is somewhat larger than that of *T. atticus*.

PUPA, though larger, is somewhat proportionately slighter than that of the foregoing; the surface is covered with minute brown pittings and very minute hairs. Spiracular expansion of segment 2 is small, slightly swollen, with a spongy-looking surface, facing slightly backwards. Colour a light greenish-yellow; a little larger than that of *T. atticus* all round, and a good deal longer comparatively.

HABITS. The larva scollops the edge of the cell; occasionally hibernates; resembles in habits the last species; feeds on *Dioscorea pentaphylla*. By no means uncommon in Karwar in the months of September and October. We have generally found it at flowers; it is fonder of thick jungle than the last species; like the last it rests on the underside of leaves. We have bred a fair number. (Davidson, Bell and Aitken.)

HABITAT.—Southern India, Malay Archipelago, Java.

DISTRIBUTION.—The type was Javan, it is supposed to be in collection de Perreux, Paris; the figure of *Tagiades athos*, Plötz, is said to be identical with it, and Plötz's species cannot be separated from our South Indian examples; we have it from Kolar, Koorg, Karwar and Travancore; Evans records it also from the Palni Hills, Watson from the Chin Hills, and Wood-Mason and de Nicéville from Cachar; our description and figures are from Travancore examples. Unfortunately Davidson, Bell and Aitken did not figure the larva and pupa.

#### TAGIADES ALICA.

Plate 769, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Tagiades alica*, Moore, Proc. Zool. Soc. 1877, p. 593, pl. 58, fig. 2, ♂. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1880, p. 241, ♀. Elwes and de Nicéville, id. 1886, p. 439. Watson,

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\* *Tagiades litigiosa*, Möschler.

Hesp. Ind. p. 94 (1891); id. Proc. Zool. Soc. 1893, p. 54; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 140.

IMAGO.—Male. Upperside dark blackish-brown. *Forewing* darker than the hindwing, nearly black; three sub-apical dots in an outwardly oblique curve from near the costa, sometimes there are four, sometimes an extra dot outside, nearer the apex, in one example there are five dots in the right wing and only three in the left; some obscure darker patches on the wing, forming a discal band which forks upwards, and a patch on the inner part of the wing, all very obscure. *Hindwing* with the anal space whitish, tinted inwardly with blue; a discal series of black spots, somewhat obscure. Cilia of forewing black, of hindwing brown on the upper half, white on the lower. Underside. *Forewing* much paler and more brown-coloured, the hinder marginal space narrowly pale, the sub-apical spots as above. *Hindwing* with the costa narrowly, the apex broadly, suffused with brown, the rest of the wing whitish, suffused with bluish-grey, the suffusion dark on the outer parts and bluer at the base; a black spot at the end of the cell, and a discal series of black spots which does not extend below the median interspaces; a marginal row of similar spots, prominent near the anal angle, becoming small and obsolete upwards. Cilia as on the upperside; palpi whitish, brown at the sides; thorax and abdomen below and the legs whitish, the latter with brown stripes; head and body above concolorous with the wings.

Female. Upperside much paler than the male, brown in colour, the sub-apical dots and markings similar, the paleness of the ground colour making the discal band of the forewing more prominent; on the hindwing the discal series of spots is obscure, the whitish anal area is much reduced and is duller in colour, not nearly so white as in the male. Underside. *Forewing* still paler brown, the discal band of the upperside faintly reproduced. *Hindwing* with the costal brown suffusion more extensive, the rest of the wing whiter than in the male, markings similar.

Expanse of wings, ♂ ♀ 2 to  $2\frac{2}{10}$  inches.

HABITAT.—Andaman Islands.

DISTRIBUTION.—We have both sexes from Port Blair and from Aberdeen, the type came from the Andamans; in so far as we have been able to ascertain, the species is confined to these islands. Elwes and de Nicéville record it from Tavoy in Burma, but we are of opinion that this must be a mistake.

#### TAGIADES GANA.

Plate 769, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Pterygospidea gana*, Moore, Proc. Zool. Soc. 1865, p. 180.

*Tagiades gana*, Butler, Ent. Mo. Mag. 1870, p. 96. Elwes, Trans. Ent. Soc. 1888, p. 458. Watson, Hesp. Ind. p. 96 (1891); id. Proc. Zool. Soc. 1893, p. 54. de Nicéville, Gazetteer of Sikkim

Butt. p. 178 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Swinhoe, Trans. Ent. Soc. 1893, p. 318. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 141. Frühstorfer, Iris 1910, p. 75.

IMAGO.—Male. Upperside blackish-brown. *Forewing* with the usual three sub-apical white dots, an indistinct large dark spot or patch at the end of the cell, and a discal series of similar marks, and indications of a similar but smaller patch towards the base in the interno-median interspace. *Hindwing* with the lower third of the wing pure white, a broad discal space from the costa to the white border paler than the rest of the wing, the upper spots of the usual discal series traceable, some small black spots on the margin in the white band; the cilia of the white portion white, the cilia of the rest of the wing and of the forewing brown. Underside. *Forewing* paler brown, the hinder marginal area paler than the rest of the wing, the sub-apical dots as above. *Hindwing* pure white, the upper two-thirds suffused with blue, the suffusion darkening towards the base, the costa and apex narrowly suffused with brown, the discal spots small and suffused, the marginal spots in the white area larger than they are on the upperside; frons pure white, with brown sides; body beneath and the legs white; head and body above concolorous with the wings.

Female similar to the male, but in the hindwing the white space is deeper, the black discal spots and the black marginal spots on the white border much larger and more prominent; on the underside in some examples there are two white dots in the median interspaces in the forewing, and in the hindwing the blue suffusion is less, making the wing more extensively pure white, the marginal spots are often confluent, and the discal series of black spots only represented by the uppermost one.

Expanse of wings, ♂  $1\frac{3}{10}$ , ♀  $1\frac{3}{10}$  to  $1\frac{6}{10}$  inches.

HABITAT.—Sylhet, Sikkim, Assam.

DISTRIBUTION.—The types are marked Bengal, but undoubtedly in error; we have received many examples from the Khasia Hills, and have both sexes from Sylhet and Sikkim; Elwes also records it from Sikkim.

## MENAKA GROUP.

### TAGIADES MENAKA.

Plate 769, figs. 3, ♂, 3a, ♀, 3b, ♀.

*Goniloba menaka*, Moore, Cat. Lep. Mus. E.I.C. i. p. 246 (1857).

*Pterygospidea menaka*, Moore, Proc. Zool. Soc. 1865, p. 778.

*Tagiades menaka*, Butler, Ent. Mo. Mag. 1870, p. 96. Moore, Proc. Zool. Soc. 1874, p. 373, and 1882, p. 262. Manders, Trans. Ent. Soc. 1890, p. 538. Watson, Hesp. Ind. p. 95 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 58; id. Proc. Zool. Soc. 1893, p. 54; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 142. Swinhoe,

Trans. Ent. Soc. 1908, p. 6. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 139.

Frühstorfer, Iris, 1910, p. 77.

*Tagiades vulturina*, Plötz, Jahrb. Nass. Ver. xxxvii. p. 47 (1884) (unpublished plate No. 1093).

*Tagiades atticus*, Leech (nec Fabricius), Butt. of China, etc. ii. pl. 38, fig. 13 (1894).

IMAGO.—Male. Upperside. *Forewing* black, with a vinous tint; five small semi-hyaline white spots from near the costa before the apex, the third a little outwards, with the fourth and fifth in a strong outward curve, and another towards the base of the second median interspace, a spot in the upper part of the cell near its end with a sub-costal spot above it; the cell and basal third of the interno-median interspace darker than the ground colour of the wing, a blackish spot at the base of the first median interspace and a discal series, all a little darker than the ground colour and very indistinct. *Hindwing* with the basal third blackish, this colour running round the apex to the middle of the outer margin, the remainder of the wing pure white, two black spots imbedded in the outer margin of the blackish basal space, and two imbedded in the inner margin of the blackish apical band, four large black marginal spots below it on the white ground, and within the white area are two blackish spots, one in the second median interspace and the other in the interno-median interspace. Cilia of the white portion pure white, of the rest of the wing and of the forewing black. Underside. *Forewing* pale blackish, palest on the lower half, the spots as above, and two diffuse whitish spots near the hinder angle one above the other. *Hindwing* pure white, with blue basal suffusion, costa, apex and upper third of outer margin narrowly blackish, the remainder of the outer margin with black spots increasing in size hindwards; on the inside of the blackish band, but well within the white area, is a series of four round black spots and a smaller black spot in the upper part of the cell before its end; palpi whitish, with black sides, thorax below bluish-white, abdomen beneath and legs white; head and thorax above and the basal two-thirds of the abdomen black, the terminal third white.

Female similar to the male, with the black spots on the hindwing larger.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to 2 inches.

HABITAT.—Kashmir, N.W. Himalayas, Chin Hills, Shan States, Sikkim, Assam.

DISTRIBUTION.—The types are said to have come from N.E. Bengal; we have it from Kulu, Simla, Sikkim, and the Khasia Hills; Manders records it from the Shan States, Watson from the Chin Hills, Moore from Kashmir and Kangra.

#### TAGIADES LITIGIOSA.

Plate 770, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, larva and pupa.

*Tagiades litigiosa*, Müschler, Verh. Zool.-bot. Ges. Wien. xlvi. p. 230 (1878).

*Tagiades menaka litigiosa*, Frühstorfer, Iris, 1910, p. 78.

*Tagiades atticus*, Butler (nec Fabricius), Cat. Fabr. Lep. B. M. p. 283 (1869); id. Ent. Mo. Mag. 1870, p. 96. Moore, Lep. Ceylon, i. p. 175, pl. 68, fig. 2 (1881). Doherty, Journ. As. Soc.

Bengal, 1886, p. 137. Wood-Mason and de Nicéville, id. p. 389, pl. 17, fig. 10, ♀. Elwes, Trans. Ent. Soc. 1888, p. 457. Davidson and Aitken, Journ. Bo. Nat. Hist. Soc. 1890, p. 373, pl. F, figs. 5, 5a (larva and pupa). Watson, Hesp. Ind. p. 95 (1891). Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 448. Elwes, Proc. Zool. Soc. 1892, p. 655. Watson, id. 1893, p. 54. Swinhoe, Trans. Ent. Soc. 1893, p. 318. de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894). J. J. Walker, Trans. Ent. Soc. 1895, p. 475. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422; id. idem, x. 1896, p. 673. Davidson, Bell and Aitken, id. xi. 1897, p. 38. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 143, pl. 22, fig. 13 (genitalia). de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 598. Crowley, Proc. Zool. Soc. 1900, p. 510. Hannington, Journ. Bo. Nat. Hist. Soc. x. 1910, p. 371. Evans, id. p. 388. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 139.

*Tagiades menaka*, Staudinger (nec Moore), Iris, 1889, p. 159.

*Tagiades menaka vajuna*, Frühstorfer, l.c.

IMAGO.—Male. Upperside. *Forewing* black, usually more densely black than in *menaka*, markings similar except for two extra spots, one below the cell spot at the origin of vein 5, and the other in the middle of first median interspace, bringing the four spots (including the sub-costal spot) into a slightly curved line. *Hindwing* with the white space generally smaller than in *menaka*, the marginal spots similar, the two black spots within the white space absent. Underside. *Forewing* paler, markings as above. *Hindwing* like the underside of *menaka*, the black spots larger; palpi, legs, head and body above and below similar.

Female similar to the male, the semi-hyaline spots on the forewing and the black spots on the hindwing larger, the two large black spots on the inner side of the black apical band half inside the white space as in the female of *menaka*.

Expanse of wings, ♂  $1\frac{6}{10}$ , ♀  $1\frac{8}{10}$  inches.

LARVA.—Smooth, slightly depressed, thickest a little in front of the middle, neck slender, head large, bilobed, lobes diverging and pointed at the top; colour more or less dark bluish-green, darkest on the back, collar white, head chestnut, mandibles large and black.

PUPA.—Head quadrate, with a strong, conical beak; abdomen stout, circular in transverse section; cremaster triangular, curved, strong; constriction slight, surface smooth, pitted finely. No prominent spiracular expansions on segment 2. Colour transparent, light olive-green; margin of dorsal segment edged with brown; two white, enamel-like, triangular marks laterally in the wing-case line. Length, 24 mm. Pupa attached by the tail and by a band.

HABITS.—The habits of the larva are curious. It cuts out an oval piece of a leaf with the margin deeply toothed or scalloped; this is left attached by a narrow neck, including one of the principal veins of the leaf, and bent over so as to form a cell with open archways all round. In this the larva lives, and rushes at intruders with its black jaws extended. It becomes a pupa in the cell. The larva lives sometimes in a state akin to hibernation; we have noticed it lying in the same place for nearly two

months, without eating, prior to pupating; this happens generally in the cold weather. We have bred many at all seasons. (Extracts from Journ. Bo. Nat. Hist. Soc. 1890, p. 373, and ix. 1897, p. 38.)

HABITAT.—India, Ceylon, Burma, Hongkong, Hainan.

A common species; we cannot separate the southern form named *vajuna* by Frühstorfer from the northern examples. We have many examples from the Ataran Valley, Ceylon, Orissa, Kanara, Sikkim, the Khasia Hills, and from many other localities; Hannington records it also from Kumaon, Watson from the Chin Hills, and de Rhé-Philipe from Masuri. The type came from Sylhet.

#### TAGIADES PINWILLI.

Plate 770, figs. 2, ♂, 2a, ♂.

*Plesioneura pinwilli*, Butler, Trans. Linn. Soc. Zool. 1877, p. 556, pl. 68, fig. 4, ♂. Distant, Rhop.

Malayana, p. 400, pl. 35, fig. 29, ♂ (1886).

*Gelotta pinwilli*, Doherty, Journ. As. Soc. Bengal, 1889, p. 131.

*Celaenorrhinus pinwilli*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 187. Watson, Hesp. Ind. p. 144 (1891).

*Tagiades pinwilli*, Watson, Proc. Zool. Soc. 1893, p. 54; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 532. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 145. de Nicéville, Journ. Bo. Nat. Hist. Soc. xii. 1899, p. 336.

IMAGO.—Male. Upperside very dark blackish-brown, nearly pure black. *Forewing* with a semi-hyaline, almost round, white spot filling the end of the cell, a long oval spot a little outwardly below it, in the middle of the first median interspace, a small round spot below its middle, with a still smaller spot below it, well inwards, a narrow oval spot at the base of the second median interspace, its inner edge between the outer ends of the two large spots. *Hindwing* bright ochreous-orange, a black spot at the end of the cell, a broad marginal black band with irregular inner margin all round the wing from the base to the anal angle, narrowing somewhat at the middle of the costa and towards the anal angle, its inner margin containing a series of large black spots, the last spot being well inside the orange colour, in the interno-median interspace. Cilia of both wings black. Underside like the upperside. Antennæ ochreous beneath; palpi, body beneath and the legs orange, above the body is blackish, the abdomen with ochreous segmental bands.

Expanse of wings, ♂  $2\frac{1}{10}$  inches.

HABITAT.—Malay Peninsula, Malacca, Assam, Burma.

DISTRIBUTION.—The type came from the Malay Peninsula; de Nicéville records it from Toungoo, Donat Range, and the Ataran Valley, Tenasserim; our descriptions and figures are from the type in the B. M.; Doherty records it from Margharita, Upper Assam. The female is unknown.



## TAGIADES TABRICA.

Plate 770, figs. 3, ♂, 3a, ♂.

*Pterygospidea tabrica*, Hewitson, Ex. Butt. v. *Pterygospidea*, pl. i. fig. 8 (1873).*Tagiades tabrica*, Plötz, Jahrb. Nass. Ver. xxxvii. p. 53 (1884). Watson, Proc. Zool. Soc. 1893, p. 54. de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 146.*Celænorrhinus tabrica*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 187. Watson, Hesp. Ind. p. 143 (1891).

IMAGO.—Male. Upperside. *Forewing* as in *T. pinvilli*, but there is an extra thin white streak immediately above the oval spot at the base of the second median interspace, and there are five sub-apical dots in a recurved series from near the costa. *Hindwing* with a black marginal band from the base to the anal angle, the costal and apical portions broadest, its inner margin from vein 4 to the anal angle dentated, the inner part of the wing bright ochreous-yellow, a black spot at the end of the cell, and a discal series of elongated oval, black spots, the two upper ones on the edge of the black border, the others well inside the ochreous-yellow portion. Cilia of both wings blackish. Underside like the upperside, but the sub-apical series of dots on the forewing is continued down the wing sub-marginally to near the hinder angle, and the costal and apical portions of the black band on the hindwing are somewhat narrow, leaving the black upper spots more exposed. Antennæ with a white stripe on the underside of the club; palpi, body beneath and legs ochreous; head and body above blackish; top of head edged with white, abdomen with yellow segmental bands.

Expanse of wings, ♂  $2\frac{1}{4}$  inches.

HABITAT.—Sikkim; the type in the B. M. is unique.

## TAGIADES PTERIA.

Plate 770, figs. 4, ♂, 4a, ♂.

*Pterygospidea pteria*, Hewitson, Descr. Hesp. p. 51 (1868); id. Ex. Butt. v. *Pterygospidea*, pl. i. fig. 1 (1873).*Tagiades pteria*, Semper, Rhop. Philipp. p. 308 (1892). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 142. Frühstorfer, Iris, 1910, p. 83.*Tagiades dealbata*, Distant, Rhop. Malayana, p. 388, pl. 35, fig. 21 (1886). Elwes, Proc. Zool. Soc. 1892, p. 655. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 532. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, l.c. p. 145.*Tagiades pteria dealbata*, Frühstorfer, l.c.*Tagiades pteria dimidiata*, Frühstorfer, l.c.

IMAGO.—Male. Upperside dark blackish-brown, nearly pure black. *Forewing* with two white dots within the cell towards its end, one above the other, the lower one sometimes absent; six or seven similar dots on the outer portion of the wing, four of

them sub-apical, one near the costa, another below it, the third and fourth outwardly highly oblique, in a line with the second, a dot in the second median interspace before its middle, another obliquely below it in the middle of the first median interspace, and sometimes a dot above it. *Hindwing* with the anal third of the wing white, limited by a series of elongated, indistinct, black discal spots, the lower end of some of them protruding into the white patch. Cilia of forewing black, cilia of the black portion of the hindwing black, of the white portion white. Underside with the ground colour a little paler than it is above, and more brown. *Forewing* as on the upperside, with the addition of two diffuse whitish spots near the hinder angle, one above the other; hinder marginal space narrowly pale. *Hindwing* with the lower half white, the white colour running into the black portion in two places for a short distance, exposing two short bands of blackish conjoined spots in the middle of the wing and in the disc, and some indistinct blackish spots above them; the white area is covered by a series of small brown spots, but these vary much in different examples, and sometimes these are only very slightly indicated. Antennæ black, upper half of the club orange; palpi, head, body above and below blackish; legs black above, ochreous-grey beneath.

Female unknown.

Expanse of wings, ♂  $1\frac{1}{10}$  inches.

HABITAT.—Philippines, Perak, Sumatra, Borneo, Burma, Assam.

DISTRIBUTION.—The type is from the Philippines. Frühstorfer records it from Sumatra; we have it from Brunei, Borneo; Elwes records it from Burma, the Karen Hills, and Margharita in Upper Assam; Distant's type came from Perak, it is not separable from Hewitson's type. It is a rare species, but we have been fortunate enough to be able to examine several specimens from different localities; it is a widely spread and somewhat variable species.

#### TAGIADES TRICHONEURA.

Plate 771, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Pterygospidea trichoneura*, Felder, Wien. ent. Mon. iv. p. 402 (1860); id. Reise, Nov. Lep. iii. pl. 73, figs. 14, 15 (1867).

*Tagiades trichoneura*, Watson, Hesp. Ind. p. 97 (1891). Elwes, Proc. Zool. Soc. 1892, p. 655. Watson, id. 1893, p. 54; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 145. Frühstorfer, Iris, 1910, p. 85.

*Tagiades trichoneura*, var. Distant, Rhop. Malayana, p. 389, pl. 34, fig. 20 (1886).

IMAGO.—Male. Upperside dark brown. *Forewing* with thirteen (sometimes fourteen) small white semi-hyaline spots on the outer half of the wing, two near the costa at its middle, an elongated spot below them inside the cell near its upper end, a small round spot at its extreme lower end, an obliquely elongated spot outside near the

base of the second median interspace, a similar spot below it a little inwards in the first median interspace, and two dots below this in the interno-median interspace, one above the other; a sub-apical series of five dots in an outwardly oblique form, all the veins of the wing greyish. *Hindwing* with the anal third ochreous-yellow, with ochreous cilia (the rest of the cilia is brown), the ochreous cilia continued for a short distance up both outer and abdominal margins; a blackish spot at the end of the cell, a discal series of elongated blackish spots, with their outer ends protruding into the ochreous area, black outer marginal spots on the brown area. Underside. *Forewing* pale blackish, spots as above, with two additional larger diffuse spots near the hinder angle, a pale streak through the cell, another through the interno-median interspace, the hinder marginal space narrowly pale. *Hindwing* pale ochreous-yellow, with dark bluish-grey basal suffusion, the costa narrowly, the apex broadly blackish, with very irregular inner margin containing three black spots, and a black spot in the cell, near its upper end. Antennæ with the underside of the club white; palpi and pectus ochreous, with black spots; body below and the legs dull ochreous; head and body above blackish-brown.

Female similar to the male, but paler. *Forewing* with the two middle oblique elongated spots longer; the elongated spots of the discal series also longer, the yellow anal space much paler. Underside altogether paler, the marking similar, the colour of the hindwing very pale, almost whitish.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{9}{10}$  inches.

HABITAT.—Malay Peninsula, Perak, Malacca, Burma.

DISTRIBUTION.—The type came from Malacca; within our limits Watson records it from Beeling, Upper Tenasserim, Rangoon, Tavoy, and the Karen Hills; our descriptions and figures are from a pair in the B. M. from Beeling taken by Bingham.

#### TAGIADES PRALAYA.

Plate 771, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Pterygospidea pralaya*, Moore, Proc. Zool. Soc. 1865, p. 779.

*Tagiades pralaya*, Butler, Ent. Mo. Mag. 1870, p. 96. Moore, Proc. Zool. Soc. 1878, p. 842.

Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 439. Watson, Journ. Bo. Nat. Hist.

Soc. 1888, p. 27; id. Hesp. Ind. p. 97 (1891); id. Proc. Zool. Soc. 1893, p. 54. Swinhoe,

Trans. Ent. Soc. 1893, p. 318. de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894).

Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc.

1897, p. 145. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 140.

*Tagiades trichoneura pralaya*, Frühstorfer, Iris, 1910, p. 85.

IMAGO.—Male. Upperside vinous-brown. *Forewing* with greyish veins, all the white spots exactly as in *T. trichoneura*. *Hindwing* only differing from that of

*trichoneura* in having the band on the lower third of the wing orange-ochreous, not pale yellowish as in that species. Underside. *Forewing* somewhat paler, the spots somewhat ochreous; two additional sub-marginal spots near the hinder angle, with two diffuse spots above them; the streaks through the cell and interno-median interspace also ochreous. *Hindwing* with the orange-ochreous colour paler, and covers nearly all the wing with some dull blue basal suffusion, leaving the costa narrowly blackish, the apex more broadly blackish, the upper interspaces with black streaks; palpi grey, thorax beneath brown with whitish hairs, abdomen beneath whitish, legs ochreous-brown; head and body above brown.

Female similar to the male on the upperside. Underside with the orange space generally paler than it is above, and of about the same extent, the discal series of black streaks similar, but the orange-ochreous colour runs up between them, and through and on each side of the cell.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to 2 inches.

HABITAT.—Sikkim, Assam, Burma, Perak.

DISTRIBUTION.—The types are marked Bengal; we have received several examples from the Khasia Hills, and have it from Sikkim and the Ataran Valley, Burma; it is in the Hancock Museum, Newcastle, from Tenasserim, taken by Adamson; Moore also records it from the same locality; Elwes and de Nicéville record it from Tavoy, Elwes from E. Pegu and Perak, and de Nicéville from Sikkim; the Javan form named *nava* by Frühstorfer is undoubtedly a distinct local form, differing from the Indian and Burman examples on the underside.

#### INDO-MALAYAN AND CHINESE ALLIED SPECIES.

*Tagiades japetus*, *Papilio japetus*, Cramer, Pap. Exot. iv. pl. 365, figs. E, F (1782). *Goniloba japetus*, Horsfield and Moore, Cat. Lep. Mus. E.I.C. i. p. 245, pl. 7, figs. 2, 2a (larva and pupa), (1857). Synonyms, *Hesperia nepos*, Fabricius, Ent. Syst. iii. (i.), p. 340 (1793). Habitat, Java, Sumatra.

*Tagiades striata*, Druce, Proc. Zool. Soc. 1873, p. 360. Habitat, Borneo.

*Tagiades trebellius*, Hopffer, Stett. ent. Zeit. 1874, p. 41. Frühstorfer, Iris, 1910, p. 79. Habitat, Celebes.

*Tagiades boisduvali*, *Ismene boisduvali*, Mabille, Ann. Soc. Ent. Fr. 1876, p. 262. *Tagiades boisduvali*, Frühstorfer, l.c. Habitat, N. Celebes.

*Tagiades calligana*, Butler, Trans. Linn. Soc. Zool. Lond. 1877, p. 556, pl. 69, fig. 11. Habitat, Malay Peninsula.

*Tagiades lavata*, Butler, l.c. p. 557, pl. 69, fig. 8. Distant, Rhop. Malayana, p. 389, pl. 34, fig. 5. Habitat, Malay Peninsula.

*Tagiades elegans*, Mabille, Bull. Soc. Ent. Fr. 1877, p. xl. Semper, Rhop. Philipp. p. 309, pl. 49, fig. 4, ♂ (1892). Habitat, Luzon, E. Mindanao, Philippines.

*Tagiades titus*, Plötz, Jahrb. Nass. Ver. xxxvii. p. 46 (1884), (unpublished plate, No. 1086). Swinhoe,

- Trans. Ent. Soc. 1908, p. 5, pl. 1, fig. 3 (numbered III. on plate by mistake). Habitat, Philippines.
- Tagiades martinus*, Plötz, l.c. p. 47 (1884), (unpublished plate, No. 1090). Swinhoe, l.c. Habitat, Philippines.
- Tagiades utanus*, Plötz, Berl. ent. Zeit. xxix. p. 230 (1885), (unpublished plate, No. 1574). Swinhoe, l.c. p. 4, pl. i. fig. 2. Habitat, Malacca, Borneo.
- Tagiades menanto*, Plötz, l.c. p. 231 (unpublished plate, No. 1577). Swinhoe, l.c. Synonyms, *Tagiades toba*, de Nicéville, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 19, pl. T, fig. 47, ♂. *Tagiades nana*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 144, pl. 20, fig. 13, ♂. Habitat, Malacca, Java, Sumatra, Borneo.
- Tagiades latreillei*, *Tagiades japetus*, var. *latreillei*, Staudinger, Iris, ii. p. 160 (1889). *Tagiades titus*, Elwes and Edwards (nec Plötz), l.c. p. 142, pl. 20, fig. 15, ♂. Habitat, Palawan, Philippines.
- Tagiades karea*, Mabille, Compt. Rend. 1891, p. lxxiii. Frühstorfer, Iris, 1910, p. 77. Habitat, Philippines.
- Tagiades princeps*, Semper, Rhop. Philipp. p. 307, pl. 49, fig. 5 (1892). Habitat, Mindanao.
- Tagiades waterstradti*, Elwes and Edwards, l.c. p. 143, pl. 20, fig. 7. Habitat, Kina Balu, Borneo.
- Tagiades trichoneuroides*, Elwes and Edwards, l.c. p. 145. Habitat, Kina Balu.
- Tagiades multipunctatus*, Crowley, Proc. Zool. Soc. 1900, p. 510. Habitat, Hainan.
- Tagiades sangarava*, Frühstorfer, Iris, 1910, p. 70. Habitat, Tonkin.
- Tagiades patimoka*, Frühstorfer, l.c. Habitat, Siam.
- Tagiades jetavana*, Frühstorfer, l.c. p. 71. Habitat, W. Sumatra.
- Tagiades prasnaja*, Frühstorfer, l.c. Habitat, Celebes.
- Tagiades avala*, Frühstorfer, l.c. p. 75. *Tagiades gana*, Distant (nec Moore), Rhop. Malayana, p. 388, pl. 34, fig. 2, ♂ (1886). Habitat, W. Java, W. Sumatra, Perak.
- Tagiades parra*, Frühstorfer, l.c. Habitat, Kina Balu.
- Tagiades semperi*, *Tagiades elegans semperi*, Frühstorfer, l.c. p. 76. Habitat, Luzon, Philippines.
- Tagiades paceka*, *Tagiades obscurus paceka*, Frühstorfer, l.c. Habitat, Palawan, Philippines.
- Tagiades mahinda*, *Tagiades obscurus mahinda*, Frühstorfer, l.c. Habitat, Kina Balu.
- Tagiades perakana*, *Tagiades obscurus perakana*, Frühstorfer, l.c. Habitat, Perak.
- Tagiades jainas*, Frühstorfer, l.c. p. 77. Habitat, Nias.
- Tagiades gavina*, Frühstorfer, l.c. p. 78. Habitat, Tonkin.
- Tagiades yapatha*, Frühstorfer, l.c. Habitat, Nias.
- Tagiades tubulus*, Frühstorfer, l.c. p. 79. Habitat, W. Java.
- Tagiades dimidiata*, *Tagiades pteris dimidiata*, Frühstorfer, l.c. p. 83. Habitat, Kina Balu.
- Tagiades epicharmus*, *Tagiades khasiana epicharmus*, Frühstorfer, l.c. p. 84. Habitat, Siam.
- Tagiades balana*, Frühstorfer, l.c. Habitat, N. Borneo.
- Tagiades pellita*, *Tagiades trichoneura pellita*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 173; id. Iris, 1910, p. 85. Habitat, Tonkin.
- Tagiades nava*, *Tagiades trichoneura nava*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 173; id. Iris, 1910, p. 85. *Tagiades trichoneura*, de Nicéville and Martin (nec Felder), Journ. As. Soc. Bengal, 1895, p. 532. *Goniloba pralaya*, Moore, MS. Cat. Lep. Mus. E.I.C. i. p. 246 (1857). Habitat, Java, Sumatra.
- Tagiades nivosa*, *Tagiades trichoneura nivosa*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 173; id.

Iris, 1910, p. 86. *Tagiades trichoneura*, Kheil (nec Felder), Rhop. Nias, p. 38 (1881). Habitat, Nias.

*Tagiades paradoxus*, Frühstorfer, l.c. Habitat, N. Borneo.

### Genus ODINA.

*Odina*, Mabille, Comptes Rend. Ent. Soc. Belg. 1891, p. cxiii. Watson, Proc. Zool. Soc. 1893, p. 50; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 421. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 135.

*Forewing*, vein 12 ends on the costa at about opposite the upper end of the cell, cell less than two-thirds the length of the costa, discocellulars in an inwardly oblique straight line, the lower the longer, vein 5 emitted from their junction, vein 3 emitted quite close to the lower end of the cell, 2 at one-fourth from the base; costa nearly straight, very gently arched before the apex, apex subacute, outer margin convex, slightly concave above the hinder angle, somewhat shorter than the hinder margin, which is straight. *Hindwing*, vein 6 emitted well before lower end of cell, 3 from close to the lower end, 2 from near the base. Costa highly arched at the base, then nearly straight, apex rounded, outer margin even, anal angle well pronounced. Antennæ with a moderate-sized club, its upper half tapering to a point well curved into a hook. Palpi with the third joint stout, porrect, rather conspicuous; hind tibiæ with two pairs of spurs, no secondary sexual characters.

Type, *O. chrysomelæna*, Mabille.

### ODINA ORTYGIA.

Plate 771, figs. 3, ♂, 3a, ♂.

*Odina ortygia*, de Nicéville, Journ. As. Soc. Bengal, 1895, p. 531 (footnote). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 137. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 139. Frühstorfer, Iris, 1910, p. 70.

IMAGO. Male. Upperside dark bright orange-ochreous, very uniform in shade of colour on both wings. *Forewing* with the veins black, costa and outer and hinder margins with a uniform narrow black band all round, except at the apex where there is a little thickening, the entire wing crossed and recrossed with narrow, even, black bands, one close to the base, forked upwards, another across the basal third, inwardly oblique, and one from the costa a fourth from the apex, inwardly oblique across the end of the cell, after which it turns outwards to the outer margin, a fourth above the hinder angle, throwing out a branch from the middle of vein 2 which forks before reaching the outer margin, a branch also from its upper end near the costa across the inner side of the apex of the wing. *Hindwing* with a middle band, from the costa beyond its middle, to the anal angle, throwing out one branch inwards from its middle

to the base of the wing with a short branch before the base connecting it with the costa ; and two branches outwards, one from its upper fifth and the other from its lower fourth, both reaching the costa closer together than are their bases. Cilia of both wings black. Underside like the upperside ; palpi orange-ochreous with black sides ; head and body above and below and the legs orange-ochreous, thorax above with black longitudinal bars, abdomen with black segmental bands.

Female unknown.

Expanse of wings, ♂  $1\frac{6}{10}$  inches.

HABITAT.—Burma.

The type from Tenasserim is in the Indian Museum, Calcutta. Our description and figures are from a male example from the Hancock Museum, Newcastle, taken by Adamson at Tounggya Sekkan, Houngdaraw Valley, in February, 1881. A very rare insect.

#### ODINA HIEROGLYPHICA.

Plate 771, figs. 4, ♂, 4a, ♂.

*Platungia hieroglyphica*, Butler, Trans. Ent. Soc. 1870, p. 511 ; id. Lep. Exot. p. 171, pl. 59, fig. 12 (1874). Druce, Proc. Zool. Soc. 1873, p. 359. Distant, Rhop. Malayana, p. 470, pl. 44, fig. 25.

*Odina hieroglyphica*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 136. Frühstorfer, Iris, 1910, p. 70.

*Odina chrysomelæna*, Mabille, Comptes Rendus, Ent. Soc. Belg. p. cxiii. (1891).

IMAGO.—Male. Very similar in colour and markings to *O. ortygia*, de Nicéville, but the orange colour is a little deeper, and the black bands that cross and recross both wings are much broader.

Female unknown.

Expanse of wings, ♂  $1\frac{6}{10}$  inches.

HABITAT.—Malay Peninsula, Perak, Borneo. Watson includes this species in the Indian list in Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422, but we have been unable to find any other Indian record of it.

#### ODINA DECORATA.

Plate 772, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, ♀.

*Eudamus decoratus*, Hewitson, Descr. Hesp. p. 17 (1867).

*Pterygospidea decoratus*, Hewitson, Ex. Butt. v. *Pterygospidea*, pl. i. fig. 2 (1873).

*Hesperia decoratus*, Watson, Hesp. Ind. p. 161 (1891).

*Tagiades decoratus*, Elwes, Proc. Zool. Soc. 1892, p. 655.

*Odina decoratus*, Watson, Proc. Zool. Soc. 1893, p. 50. Swinhoe, Trans. Ent. Soc. 1893, p. 318.

Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 136. de Nicéville, Journ. Bo. Nat. Hist. Soc. xii. 1899, p. 336. Frühstorfer, Iris, 1910, p. 70.

*Entheus bicolor*, Oberthür, Études d'Ent. xvii. p. 14, pl. 4, fig. 36, ♂ (1893).

IMAGO.—Male. Upperside bright orange-ochreous, markings black. *Forewing* with a short inwardly oblique sub-basal band from the costa; an ante-medial transverse series of three large spots, the upper two from the costa divided by the sub-costal vein, the third well separated, somewhat inwards, in the interno-median interspace, a similar-sized round spot a little outwards, near the base of the first median interspace, a quadrate spot from the costa (a little inside the inner edge of the marginal band), which is attached to a bar at the end of the cell; the outer marginal band very broad, its inner margin squarely excavated in its middle, then produced inwards below vein 2 in the form of three closely-packed black streaks, the lowest one in two pieces; all the rest of the band with ochreous veins, each vein with a yellow streak forming acute angular yellow marks. *Hindwing* with a basal spot, a sub-basal short transverse bar, a spot at the end of the cell, another between it and the abdominal margin; a discal series of elongated spots, the upper ones with long angular outward points; a marginal series, the upper ones pointed, with thin ends running up between the points of the discal series. Underside similar, but all the spots are larger, especially on the hindwing, the middle series more or less continuous from the cell spot to the abdominal margin, the discal series without any points, these spots nearly round. Cilia of forewing black, of hindwing orange-ochreous; palpi, head, body above and below and the legs concolorous with the wings; abdomen with sub-basal and medial black bands.

Female like the male above and beneath, but all the spots are smaller and consequently more separated.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  inches.

HABITAT.—Sikkim, Sylhet, Assam, Burma, Tonkin.

DISTRIBUTION.—The type is from Sylhet; we have it from the Khasia Hills; Elwes records it from the Karen Hills, de Nicéville from Tenasserim, Oberthür from Tonkin; our description and figures are from a pair from Darjiling.

#### INDO-MALAYAN ALLIED SPECIES.

*Olina cuneiformis*, *Plastingia cuneiformis*, Semper, Rhop. Philipp. p. 314, pl. 49, fig. 11, ♂ (1892).  
Habitat, Philippines.

#### Genus TAPENA.

*Tapena*, Moore, Lep. Ceylon, i. p. 181 (1881). Watson, Hesp. Ind. p. 121 (1891); id. Proc. Zool. Soc. 1893, p. 60; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 421. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 146.

*Forewing*, vein 12 ends on costa before the end of the cell; discocellulars sub-erect, the lower the longer; cell a little less than two-thirds the length of the costa;



vein 3 emitted about one-sixth before the lower end of the cell, 2 one-fourth from the base; costa evenly arched, apex somewhat acute, outer margin straight to vein 2, then inwardly oblique and slightly concave to the hinder angle, hinder margin of similar length, nearly straight. *Hindwing*, vein 7 emitted a little before upper end of cell, discocellulars and vein 5 faint, the lower discocellular the longer, vein 3 from close to lower end of cell, the origin of vein 2 only a little inwards; costa highly arched in the middle, apex angular, outer margin sinuate, somewhat produced and angled at the end of vein 3, slightly concave above the angle, the wing somewhat square in shape. Antennæ with a moderately fine club, well hooked, with the tips acuminate; palpi porrect, third joint short, obtusely conical; hind tibiæ with two pairs of spurs, male with a long tuft of hair attached along its inner side.

Type, *Tapena thwaitesi*, Moore.

#### TAPENA THWAITESI.

Plate 772, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, ♀, 2d, larva and pupa.

*Tapena thwaitesi*, Moore, Lep. Ceylon, i. p. 181, pl. 67, figs. 2, 2a (1881). Davidson and Aitken, Journ. Bo. Nat. Hist. Soc. 1890, p. 373. Watson, Hesp. Ind. p. 122 (1891). Hampson, Journ. As. Soc. Bengal, 1888, p. 368. Watson, Journ. Bo. Nat. Hist. Soc. 1891, p. 58. Elwes, Trans. Ent. Soc. 1892, p. 659. Watson, Proc. Zool. Soc. 1893, p. 60; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 146, pl. 22, fig. 15 (genitalia). Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 36, pl. 8, fig. 5 (larva and pupa). Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 140.

*Tapena minuscula*, Elwes and Edwards, l.c. p. 147, pl. 18, fig. 18, ♂, and pl. 22, fig. 17 (genitalia).

*Tapena hampsoni*, Elwes and Edwards, l.c. pl. 18, fig. 19, ♂, and pl. 22, fig. 16 (genitalia).

IMAGO.—Male. Upperside dark brown, with a purplish tint. *Forewing* with two sub-apical semi-hyaline white dots near the costa, and sometimes a third very minute dot, an indistinct discal fascia a little darker than the ground colour of the wing. The species varies in the shade of colour; in some examples it is much paler and more brown than in others, showing the discal fascia more plainly. *Hindwing* also with indications of a discal darker shade of colour, not visible in the darker specimens, a white dot at the end of the cell, absent in some examples. Underside similar but paler. Cilia concolorous with the wings. Antennæ with the upper half of the club dull ochreous on the underside, and a whitish streak on the shaft below the club; head, body above and below and the legs concolorous with the wings.

Female. Upperside paler and with an ochreous tint. *Forewing* with three sub-apical spots, more linear and larger than in the male; a larger spot at the end of the cell, with its inner side extending upwards and with a dot between it and the costa, a spot below it in the middle of the first median interspace and a dot outside, between their outer ends at the base of the second median interspace. *Hindwing* with a

prominent white spot at the end of the cell. Underside similar. Antennæ as in the male, a white spot on each side of the collar; palpi greyish-white, with short brown hairs and a white patch on each side below the eyes.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{8}{10}$  inches.

LARVA.—Head with lobe rounded on the vertex, less prominent than in any other of the group, being shallowly though broadly indented; very thin through; of a yellow colour, more or less suffused with dark brown on the upper part, with a marginal red line. Body pure opaque white, tinged with blue. Length, 22 mm.

PUPA is square in front, with a short beak between the eyes, and no spiracular expansions to segment 2. The colour is greenish-white, waxy-looking. Length, 17 mm.

HABITS.—The imago lays many eggs in the young shoots of the plant, but always singly. The young larva on emerging proceeds at once to make a cell by turning over a piece of the edge of a leaf on to the top, and scallops the edge of the cell. It pupates in the cell; the pupa is attached by the tail and by a body-band. The larva feeds on *Dalbergia latifolia*, *D. tamarindifolia*, and *D. volubilis*. The imago is common throughout the damper parts of the district in the cold weather and rains; it is of fast flight, but rests often, on the upperside of leaves generally, though we have seen it also pitch on the undersurface of leaves in the same way that all the other members of the group do. We have bred many. Specimens bred in the wet months are darker than those bred in the dry ones. (Davidson, Bell and Aitken.)

HABITAT.—Sumatra, Borneo, Perak, Burma, Ceylon, South India.

DISTRIBUTION.—The types came from Galle, Ceylon; we have several examples from the Nilgiri Hills, from which our descriptions and figures are taken. We have it also from Karwar, where Davidson, Bell and Aitken bred it; our figures of the larva and pupa are from Davidson's original drawings. Watson records it from the Chin Hills, and Elwes from Perak, Selesseh, Sumatra, Kina Balu, and Bernardmyo. It is in the Hancock Museum, Newcastle, from the Chindwin District, Burma, taken by Adamson.

NOTE.—Elwes and Edwards have erected two species on account of some differences in the genitalia. They were not able to examine the genitalia of any Ceylon specimens, therefore cannot say how they differ from the Burmese and Nilgiri examples. We have examined many specimens from different localities; we find that the size and shade of colour varies much in examples from the same locality, and for the purposes of this work it is impossible for us to recognise species that can only be differentiated by the examination of the genitalia of each male specimen.

## SECTION II.

The imagos of this group rest with their wings fully open; the flight is strong, but of short duration; they rest generally on the upperside of leaves. The larva is spindle-shaped, thickest about the fifth segment, attenuated towards both ends; last segment narrow, rounded at extremity; head round, somewhat bullet-shaped, hardly bi-lobed, large; the colour of the larva is some shade of brown or green, with a collar of a different colour on segment 2; the larva makes a cell by turning over part of the leaf from the edge on to the upperside or underside, lining the inside with silk; the method of making the cell, however, differs in different genera. The pupa is stout, square in front, with a boss between the eyes, and large spiracular expansions to the spiracles of segment 2; it is attached by the tail and a body-band.

## Genus COLADENIA.

*Coladenia*, Moore, Lep. Ceylon, i. p. 180 (1881). Distant, Rhop. Malayana, p. 397 (1886). Watson, Hesp. Ind. p. 118 (1891); id. Proc. Zool. Soc. 1893, p. 49. Leech, Butt. of China, etc. ii. p. 537 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 420. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 125.

The venation of both wings similar to those of the genus *Tapena*. Antennæ with the club moderate but thicker than in *Tapena*, the acuminate portion shorter and curved, not hooked as in that genus, the palpi porrect, terminal joint short, obtusely conical, hind tibiæ with two pairs of spurs, and in the male with a long tuft of hairs attached to the proximal end, except in *lazmi* and its allies, in which the hairs also extend along the inner side of the tibia. *Forewing*, costa evenly arched, outer margin evenly convex, hinder margin nearly straight, about as long as the outer margin, apex sub-acute. *Hindwing* with the outer margin rounded.

Type, *Plesioneura indrani*, Moore.

We put *agni* and its allies into this genus, as Elwes and Edwards have done, and not into the genus *Tapena*, as Watson and de Nicéville did, because the only character in which they differ from typical *Coladenia* is in the slightly different position of the hairs on the hind tibiæ, a character insufficient to separate them into a new genus: in all other respects, in the shape of their wings, in the pattern of their wings and in the form of their antennæ they agree with typical *Coladenia*, and are very different from *thwaitesi*, the type and only species we know of, belonging to the genus *Tapena*.

## COLADENIA TISSA.

Plate 772, figs. 3, ♂, 3a, ♀, 3b, ♀.

- Coladenia tissa*, Moore, Lep. Ceylon, i, p. 180, pl. 67, fig. 6 (1881). Watson, Proc. Zool. Soc. 1893, p. 49; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 126. Frühstorfer, Iris, 1910, p. 66.  
*Coladenia tissa*, Watson (part), Hesp. Ind. p. 118 (1891).

IMAGO.—Male. Upperside dark brown. *Forewing* sparsely covered with ochreous setæ, and with three sub-apical dots in an oblique curve, and sometimes with two very minute dots a little outwards, one above the other, a discal series of four spots, a large one at the end of the cell, another outwardly below it in the first median interspace, a small spot near the base of the second median interspace, and a small spot between the upper spot and the costal margin, all whitish, semihyaline and surrounded with blackish; a blackish discal band which bends outwards at its upper part and includes the sub-apical dots, has a black spot at its lower end in the interno-median interspace with an orange-red centre and a similar spot in the same interspace towards the base; a row of obscure orange-red spots outside the discal band. *Hindwing* covered with ochreous hairs and variegated with obscure orange-ochreous patches or large spots; a small black sub-costal spot one-third from the base, a large black spot at the end of the cell, with a sub-costal similar spot above it and another inwardly below it, a discal black band with a series of orange-ochreous spots outside it; marginal line of both wings thickly black; all the orange-ochreous spots in some examples very obscure. Cilia of both wings brown, with a short white space on the forewing above the hinder angle. Underside paler, markings as above, but all the orange markings darker and more prominent.

Female darker than the male and browner in colour, the orange-ochreous marks obsolete except those outside the discal band; in the forewing there are always five sub-apical dots, all larger than in the male, the spots of the discal series are also larger, and there are two extra conjoined spots tinted with orange in the interno-median interspace; on the underside all the markings are usually very prominent. Antennæ with the upper half of the club and the underside of shaft whitish; palpi and pectus ochreous; head, body above and below and the legs concolorous with the wings, tarsi ochreous-grey.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{6}{10}$  inches.

HABITAT.—Ceylon.

DISTRIBUTION.—The types came from Kandy; described and figured by us from a pair from Trincomali; appears to be confined to the island; has been recorded from many parts of India in error; the wet-season brood of *C. indrani* very closely resembles this species, but can at once be distinguished from *tissa* by the checkered cilia of the

hindwing; we have examined a great many specimens from all parts of India, but have not been able to find any typical *tissa*.

## COLADENIA INDRANI.

Plate 773, figs. 1, ♂, 1a, ♀, 1b, ♀ (Wet-season Brood), 1c, ♂, 1d, ♀, 1e, ♀ (Dry-season Brood), 1f, larva and pupa.

*Hesperia indrani*, Moore, Cat. Lep. Mus. E.I.C. i. p. 253 (1857).

*Plesioneura indrani*, Moore, Proc. Zool. Soc. 1865, p. 789. Swinhoe, Proc. Zool. Soc. 1886, p. 433.

*Coladenia indrani*, Elwes, Trans. Ent. Soc. 1888, p. 460. Watson, Hesp. Ind. p. 118 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 58. Ferguson, id. p. 448. Elwes, Proc. Zool. Soc. 1892, p. 659. Watson, id. 1893, p. 49. de Nicéville, Gazetteer of Sikkim, Butt. p. 177 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 126. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 597; id. idem, xx. 1911, p. 767. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 138. Frühstorfer, Iris, 1910, p. 66.

*Coladenia tissa*, de Nicéville (nec Moore), Journ. As. Soc. Bengal, 1885, p. 54. Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43. Elwes, Trans. Ent. Soc. 1888, p. 460. Watson (part), Hesp. Ind. p. 118 (1891). Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 428. de Nicéville, Gazetteer of Sikkim, Butt. p. 177 (1894). Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 32 (larva and pupa). Aitken and Comber, id. xv. 1903, p. 52. Evans, id. xx. 1910, p. 388.

*Coladenia indrani uposatha*, Frühstorfer, Iris, 1910, p. 66.

Wet-season Brood (Figs. 1, ♂, 1a, ♀, 1b, ♀).

IMAGO.—Male. Upperside much resembling the upperside of *C. tissa*, but the colour is darker and more uniform on both wings, all the obscure pale orange-ochreous markings on the inner parts of the wings being absent, all the spots are much larger, on the forewing the sub-apical spots are elongated and conjoined, there are only the three upper ones; the discal spots twice as large, the cilia of forewing is as in *tissa*, but in the hindwing they are checkered black and white. Underside as dark as the upperside, no orange-ochreous spots on the interior of the wings, the coloration very uniform, markings as on the upperside, but in the forewing the sub-marginal series of orange-ochreous spots is limited to two prominent dark orange spots above the middle, with two or three faintly indicated spots in continuation upwards, and two prominent orange spots close to the hinder margin, and on the hindwing the sub-marginal series of these orange spots is as prominent as it is on the underside of the male of *tissa*. Antennæ, body and legs similar.

Female. Upperside like its own male, except that there is usually a small dot below the three conjoined sub-apical spots. Underside. *Forewing* like the upperside, with an additional orange spot near the base, attached to the innerside of the black spot in the interno-median interspace. *Hindwing* as above, but there are several obscure orange-ochreous patches on the wing as on the underside of the female of *tissa*.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to  $1\frac{8}{10}$  inches.

Dry-season Brood (Figs. 1c, ♂, 1d, ♀, 1e, ♀).

Male. Upperside ochreous-fawn colour, varying somewhat in shade of colour in different examples, sometimes bright ochreous-fawn, and sometimes tinged with a slight shade of brown. *Forewing* with the outer half black, all the markings as in the other form, but the sub-marginal series of orange spots more pronounced. *Hindwing* of a brighter ochreous-fawn, marginal line thickly black, all the spots as in the other form. Underside. *Forewing* all blackish except for a small basal space, markings as on the upperside, the orange spot between the discal series and the hinder margin large. *Hindwing* like the upperside, but more ochreous and brighter in colour.

Female. Upperside paler than the male and much brighter in colour, markings similar, but the sub-marginal series of orange spots complete and prominent, and there are two or three white dots in the black cilia above the white streak near the hinder angle; in the hindwing the marginal black band is broader, and the checkered cilia is more prominent on the underside, the wings are very beautifully marked, all the black portions deep black, all the orange spots very bright and prominent, the sub-marginal series on both wings complete, and in the forewing there are two orange streaks from the base.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{9}{10}$  inches.

LARVA.—Head nearly round from front view, thick through, and with a slight linear depression down the centre of the face; surface finely rugose, clothed with very short, white, star-shaped hairs mixed with a few longer red hairs about the mouth. Posterior half of segment 2 is pure white; anal end thickened, squarish at extremity; surface of body clothed with short, white hairs, similar to those on the head; colour of body dark greenish-chocolate, becoming lighter when the larva is about to pupate; abdomen bluish. Feeds on *Xylia dolabriformis*, Benth., *Grewia microcos*, L., and many other plants of different orders. Length, 19 mm.

PUPA, head with a knob-like process between the eyes pointing forwards and constricted at the base, covered with short, red bristles; surface finely rugose, covered with minute red hairs, spiracular expansion of segment 2 prominent, ear-like, facing forwards, spongy-looking, golden in colour. Pupa stout, constricted somewhat in centre, of a dark red-brown colour, strongly glazed. Length, 15·5 mm.

HABITS.—The habits of the larva in its first stages are similar to the habits of the young larvæ of the last two species (*Caprona ransonnetti*, Felder, and *Odontoptilum angulata*, Felder); in the form of making the last cell, however, it differs, the cell is formed by cutting right across the leaf from edge to edge about the middle, and at right angles to the midrib, which is also partially gnawed through, so that the piece thus separated dies and withers; one side of the part so separated is turned over on to

the top of the other and diagonally across it ; the cell is thickly lined with silk, so that it is difficult to tear it ; an aperture is left in front where the midrib has been gnawed through. The larva is of slow growth, and is very much attacked by spiders, birds, wasps, etc., notwithstanding its strong retreat ; it is caught when out feeding.

The insect is common throughout the district at all seasons ; the golden yellow or brown form in the dry season ; the dark form in the monsoon months ; these two forms differ from each other just in the same degree that *C. taylori*, de Nicéville, differs from *C. ransonnetii*, Felder. The insect is easily captured as it is resting on a leaf, stone, etc., near the ground ; it is fond of shade. Both forms have been bred plentifully by us. (Davidson, Bell and Aitken.)

HABITAT.—India, Ceylon, Burma.

DISTRIBUTION.—The type is marked Bengal ; we have many examples of both the wet and dry season forms from Sikkim, Assam, Madras and Karwar, and have examined many others from various localities ; it is a common species throughout India and Burma ; the *uposatha* of Frühstorfer is the extreme dry-season form ; our figures of the larva and pupa are from Davidson's drawings not previously published ; we have examined the examples in his collection, they are all marked "rains," all have checkered cilia, and are not *tissa*, but the wet-season brood of *indrani*.

#### COLADENIA DAN.

Plate 773, figs. 2, ♂, 2a, ♀, 2b, ♂ (one form), 2c, ♂, 2d, ♀, 2e, ♂ (another form).

*Papilio dan*, Fabricius, Mant. Ins. ii. p. 88 (1787).

*Plesioneura dan*, Butler, Ent. Mo. Mag. 1870, p. 95.

*Coladenia dan*, Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Distant, Rhop. Malayana, p. 398, pl. 35, fig. 27 (1886). Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 391. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27. Manders, Trans. Ent. Soc. 1890, p. 538. Watson, Journ. Bo. Nat. Hist. Soc. 1891, p. 58. Fergusson, id. p. 448. Watson, Hesp. Ind. p. 120 (1891). Elwes (part), Proc. Zool. Soc. 1892, p. 659. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422 ; id. idem, x. 1896, p. 673. Davidson, Bell and Aitken, id. xi. 1897, p. 33 (larva and pupa). Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 127. Swinhoe, Trans. Ent. Soc. 1908, p. 7. Adamson, Trans. Nat. Hist. Soc. Northumberland, etc. 1908, p. 138. Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 388. Frühstorfer, Iris, 1910, p. 66.

*Coladenia dan dhyana*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 138.

IMAGO.—Male. Upperside rufous-brown. *Forewing* with three semi-hyaline small white sub-apical spots from near the costa, the middle one the smallest and well inwards ; in some examples one or both of the lower spots are absent ; a large semi-hyaline spot inside the cell, near its end, its inner side square, its outer side deeply excavated, with a small spot between it and the costa, a small round spot near the base of the second median interspace, a much larger round spot in the middle of the

first median interspace, and a minute spot (sometimes two) below them in the middle of the interno-median interspace, all these spots slightly tinged with ochreous, and varying much in size in different examples; sometimes the large excavated spot in the cell is split into two, sometimes represented by a small round spot immediately below the sub-costal vein near the end of the cell, and sometimes it is entirely absent; there are some brownish indistinct marks on the wing, one in the interno-median interspace before the middle, a series of conjoined discal marks and an indistinct outer marginal band. *Hindwing* with a brown spot at the end of the cell, a discal brown macular band, corresponding in its curve to the outer margin, and a marginal band. Cilia of both wings brown. Underside like the upperside, but duller in colour. *Forewing* similarly marked. *Hindwing* with the brown bands somewhat more distinct, the cell spot with a brown spot on each side of it, and a sub-basal brown spot.

Female similar to the male.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{1}{2}$  inches.

LARVA.—Of this species, the foregoing species and the next following two species (*Coladenia tissa*,\* *Sarangesa purendra*, and *S. dasahara*) are only distinguishable with difficulty, that of *C. tissa* being the largest, the other three much of a size and a good deal smaller than that of *C. tissa*. The larva of *C. dan* is spindle-shaped, has a white collar to segment 2; head round from the front view, shallowly bi-lobed, covered with minute semi-adpressed white transparent hairs in bunches; the head is a good deal larger than segment 2, about equal in diameter to segment 3; the last segment is rounded; the surface of the body is covered with minute, colourless, star-shaped hairs and is minutely punctured; anal margin with eight longish simple hairs and a few branched hairs. Colour is black-brown as to head; the body is greenish-chocolate.

PUPA identical with that of *S. dasahara*, except that the spiracular expansions are longly semicircular, thickened at apex, and rugose; the proboscis is free from the end of the wings to the centre of segment 9 only. Colour of pupa is a dirty greenish-white. Length, 14 mm.

HABITS are exactly similar to those of the larvæ of the genus *Sarangesa*; the cells formed are similar, and the manner of pupation also.

This butterfly, very local in this district, occurs only along the banks of rivers above the ghats, and in the deep river valleys away from the coast below the ghats; it is fond of shade, and rests on the surface of leaves near the ground like the last (*C. tissa*), which it indeed resembles in every way; it is found in thicker jungle than the last. We have bred about a dozen specimens; it varies much in size. (Davidson, Bell and Aitken.)

HABITAT.—Southern India, Burma, Siam, Malay Peninsula.

DISTRIBUTION.—The type came from Tranquebar in S. India; we took it at

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\* *Indrani*, not *tissa*.



Mahableshwur and in several parts of the Bombay district, and have it from Koorg, Ootacamund in the Nilgiris, Rangoon, the Meplay Valley and Siam; Distant records it from Perak, Manders from the Shan States, Elwes from the Karen Hills, Maulmein and Tenasserim, Watson from the Chin Hills, Moore from Mergui, Wood-Mason and de Nicéville from Cachar, Davidson, Bell and Aitken from Karwar, Evans from the Palni Hills, and Fergusson from Travancore. We give figures of the two extreme forms; they may be seasonal, but we have no evidence to prove it. Unfortunately Davidson, Bell and Aitken did not figure the larva and pupa.

## COLADENIA FATIH.

Plate 774, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Hesperia fatih*, Kollar, Hügel's Kaschmir, iv. (2), p. 454, pl. 18, figs. 5, 6 (1848).

*Plesioneura fatih*, Butler, Ent. Mo. Mag. 1870, p. 95.

*Coladenia fatih*, Moore, Proc. Zool. Soc. 1882, p. 263. Doherty, Journ. As. Soc. Bengal, 1886, p. 139.

Watson, Hesp. Ind. p. 119 (1891). Swinhoe, Trans. Ent. Soc. 1893, p. 317. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. de Rhé-Philipe, id. xi. 1898, p. 597. Hannington, id. xx. 1910, p. 372.

*Coladenia dan fatih*, Frühstorfer, Iris, 1910, p. 66.

*Coladenia dan*, Elwes (nec Fabricius), Trans. Ent. Soc. 1888, p. 460. Elwes (part), Proc. Zool. Soc. 1892, p. 659. de Nicéville (nec Fabricius), Gazetteer of Sikkim, Butt. p. 177 (1894). Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 127.

IMAGO.—Male. Upperside rufous-brown, brighter and paler than *dan*, and with an ochreous tint. *Forewing* with the three similar sub-apical spots; the discal spots, however, are quite different, those at the end of the cell and in the middle of the first median interspace are large and quadrate; the spot at the base of the second median interspace is sub-quadrate, and its inner end is wedged into the junction of the other two spots, and there is a small elongated spot between the upper spot and the costa, all the spots conjoined forming a large semi-hyaline macular band in the upper disc, with two separated small dots between them and the hinder margin; some dark suffusion on the outer half of the costa, and a brown outer-marginal even band. *Hindwing* with indistinct brown spot at the cell end, one on each side of a discal band, and a marginal band, all more distinct than in *dan* on account of the paler colour of the wing. Cilia checkered brown and white. Underside. *Forewing* nearly as dark, but duller in colour, markings similar. *Hindwing* with all the wing dark, except for a small space in the middle, which is brighter and paler and somewhat rufous; markings as above.

Female similar to the male, but the underside is generally duller and paler in colour.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to  $1\frac{8}{10}$  inches.

HABITAT.—N.W. Himalayas, Sikkim, Assam.

DISTRIBUTION.—The type came from the Himalayas; we have it from Simla, Ranikhet, Kulu, and the Khasia Hills; Elwes and de Nicéville record it from Sikkim, Hannynghton from Kumaon, de Rhé-Philipe from Masuri.

#### COLADENIA AGNI.

Plate 774, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Plesioneura agni*, de Nicéville, Journ. As. Soc. Bengal, 1883, p. 87, pl. 10, fig. 4, ♀. Elwes, Trans. Ent. Soc. 1888, p. 462.

*Celænorrhinus agni*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 186.

*Tapena agni*, Watson, Hesp. Ind. p. 122 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 59. Elwes, Proc. Zool. Soc. 1892, p. 659. Watson, id. 1893, p. 60. de Nicéville, Gazetteer of Sikkim, Butt. p. 179 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

*Coladenia agni*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 127, pl. 22, figs. 11, 11a (genitalia).

IMAGO.—Male. Upperside ochreous-brown. *Forewing* with five sub-apical small spots from near the costa, the second minute and well inwards, the fourth and fifth also minute outwardly below the others, and one above the other; the discal band of semi-hyaline ochreous white spots, very much as in *C. fatih*, but the two large ones are a little smaller and more square in shape; the costa apex and outer margin suffused with brown. *Hindwing* with a minute black spot at the end of the cell, a discal well-curved series of seven black spots, the uppermost one largest and separated from the others, which are rather close together, the centre ones rather elongated, the others round. Cilia of both wings brown, tipped with white near the hinder angle of forewing and apical third of hindwing. Underside paler and duller in colour, the spots as above, but on the forewing there is a straight discal series of four suffused whitish spots from near the hinder margin, running up outside the band of semi-hyaline spots; palpi grey, with black hairs; head and body above and below and the legs concolorous with the wings.

Female similar, a little paler, the spots a little larger.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma.

DISTRIBUTION.—The types from Sikkim are in the Indian Museum, Calcutta; de Nicéville also records it from the Khasia Hills, and Watson from Tilin Yaw, Upper Burma. Our description and figures are from a pair from Sikkim in our collection, identified by de Nicéville.

#### COLADENIA AGNIOIDES.

Plate 774, figs. 3, ♂, 3a, ♂.

*Coladenia agnioides*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 128, pl. 18, fig. 11; pl. 22, figs. 12, 12a (genitalia).

IMAGO.—Male. This species is distinguished from *agni* in the first place by its dark umber-brown colour, and the dark umber-brown fringe to cells 6 and 7 on the hindwings below; the pale fringe to these cells is not absolutely constant in *agni*, but is well marked in four out of five male specimens examined. The male genitalia also differs considerably; in *agnioides* there is a large dorsal crest on the tegumen, and the upper lobe of the clasp is merely a very small pointed strap-shaped piece; in *agni* the back of the tegumen is simple and the upper lobe of the clasp is at least as wide as the lower lobe, rounded on the upper edge and triangularly pointed. (Elwes and Edwards.)

Expanse of wings, ♂  $1\frac{7}{10}$  inches.

HABITAT.—Naga Hills.

The type is in coll. Elwes; we have not seen it; we therefore give copies of Elwes' figure.

#### COLADENIA LAXMI.

Plate 774, figs. 4, ♂, 4a, ♀, 4b, ♂, 4c, ♀.

*Plesioneura laxmi*, de Nicéville, Journ. As. Soc. Bengal, 1888, p. 290, pl. 13, fig. 5, ♀ (♂ *ex errore*).

*Celænorrhinus laxmi*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 186.

*Tapena laxmi*, de Nicéville, l.c. 1890, p. 388; id. idem, 1891, p. 388, pl. G, fig. 28, ♂; Watson, Hesp.

Ind. p. 123 (1891). Elwes, Proc. Zool. Soc. 1892, p. 59. de Nicéville, Gazetteer of Sikkim,

Butt. p. 179 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

*Coladenia laxmi*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 126, pl. 22, fig. 10 (genitalia).

Frühstorfer, Iris, 1910, p. 67.

IMAGO.—Female. Upperside, both wings dark olive-greenish; an obscure rather broad blackish marginal band. *Forewing* with three sub-apical spots arranged in a crescent, the upper the largest; a discal macular band consisting of an oblong spot on the costa, a large quadrate spot at the end of the cell, a small spot at the base of the second median interspace, a large spot in the middle of the first median interspace, with a minute dot below it in the sub-median interspace, all lustrous semi-diaphanous white; an oval black spot towards the base of the sub-median interspace, a broad sub-marginal band of darker shade than the ground. *Hindwing* with a black spot below the costa towards the base of the wing; two parallel discal series of suffused black spots. Underside, both wings rather paler than on the upperside. *Forewing* marked as above, but with two dots in the sub-median interspace instead of one, forming part of the discal macular band, and surrounded with a black ring. *Hindwing* with all the black spots smaller, much more compact and better defined than on the upperside. Cilia, head and body concolorous with the wings. Antennæ with the shaft brown, ochreous

below just before the base of the club, the club deep black above, paler below, tip ochreous.

The male differs from the female (previously described erroneously as a male) in its smaller size, darker coloration, smaller spots, especially the uppermost spot of the discal macular band of the forewing, and in having one diaphanous and one black spot only in the sub-median interspace, instead of two of each, as in the female.

This species evidently belongs to Mr. Moore's genus *Tapena*, the male agreeing very well in outline with the male of the type species of that genus, *T. thwaitesi*, Moore, from Orissa, South India, Ceylon, and Myitta in Burma. In both species the hind leg of the male is furnished with a very thick tibial bunch of hairs, each one of which is, as seen under a strong lens, strap-shaped, being quite flat, of equal length throughout, and very thin. I have no doubt that *Celænorrhinus buchananii*, mihi, also belongs to the genus *Tapena*, and that, now that both sexes of *T. laxmi* are known, it will prove to be quite distinct. Described from a single example in the collection of Mr. H. J. Elwes, obtained by Mr. W. Doherty, in Perak, in the Malay Peninsula, in January or February, 1890. (de Nicéville.)

Expanse of wings, ♂  $1\frac{4}{10}$ , ♀  $1\frac{7}{10}$  inches.

HABITAT.—Upper Tenasserim, Perak, Borneo, Sumatra.

DISTRIBUTION.—The type, a female, described erroneously as a male from 'Toungyan in Burma, is in the Indian Museum, Calcutta; the type male from Perak is in coll. Elwes; de Nicéville also records it from N. Burma and from the Chin Hills, Elwes from the Kina Balu, Borneo, and Sumatra; it is not in the B. M., and we have not been able to procure any specimens; we therefore give copies of de Nicéville's figures.

#### COLADENIA BUCHANANII.

Plate 775, figs. 1, ♀, 1a, ♀.

*Celænorrhinus buchananii*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 187, pl. B, fig. 2, ♀.

*Tapena buchananii*, Watson, Hesp. Ind. p. 124 (1891); id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

*Coladenia buchananii*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 129.

IMAGO.—Female, very closely allied to *C. laxmi*, mihi, from which it differs in its considerably larger size. Upperside. *Forewing* with the white discal band fully twice as wide, not divided into spots, extending uninterruptedly from the costa to the sub-median nervure, its edges very irregular, its lower portion posterior to the first median nervule much narrower than the rest of the band; it lacks the two small obliquely placed dots found towards the base of the sub-median interspace in *C. laxmi*. *Hind-wing*, instead of possessing two parallel discal macular black bands, has a rounded black

spot towards the end of the discoidal cell, and a discal series of six black spots, of which the anterior one is rounded and well separated from the spot which follows it, the second spot is round, the next pair are the largest and elongated, and the last pair smaller, but also elongated. Cilia of hindwing anteriorly white, posteriorly dark brown. Underside, both wings with the same differences as above, but all the spots of the hindwing more prominent. I believe this to be a species distinct from *C. laxmi*, though a single male of the latter is known, and the former is described from a single female. The difference in size is very considerable, and is greater than is usually found in the opposite sexes of the *Hesperidæ*, and the markings also show marked differences. I have named it after its capturer, Mr. A. M. Buchanan, who obtained it in the Ruby Mine district, Upper Burma.

Expanse of wings, ♀  $2\frac{2}{10}$  inches.

HABITAT.—Upper Burma.

The unique type is in the Indian Museum, Calcutta ; we give copies of de Nicéville's figure.

#### INDO-MALAYAN AND CHINESE ALLIED SPECIES.

*Coladenia eacus*, *Hesperia eachus*, Latreille, Enc. Méth. ix. p. 738 (1823). *Coladenia dan eachus*, Frühstorfer, Iris, 1910, p. 67. Synonym, *Ephyriades dichroa*, Plötz, Jahrb. Nass. Ver. xxxvii. p. 5 (1884), unpublished plate, No. 921. Habitat, Java.

*Coladenia atilia*, *Netocoryne atilia*, Mabille, Le Naturaliste, p. 88 (1888). Habitat, Celebes.

*Coladenia palawana*, *Plesioneura atilia*, var. *palawana*, Staudinger, Iris, 1889, p. 156, pl. 2, fig. 11. Habitat, Philippines.

*Coladenia igna*, *Tapena igna*, Semper, Rhop. Philipp. p. 316 (1892). Habitat, Philippines.

*Coladenia dea*, *Coladenia dan*, var. *dea*, Leech, Butt. of China, etc. ii. p. 568, pl. 38, fig. 10, ♂ (1893). Habitat, W. China.

*Coladenia vitrea*, Leech, l.c. p. 569, pl. 41, fig. 15, ♂ (1893). Habitat, W. China.

*Coladenia mæniata*, Oberthür, Étud. d'Ent. xx. p. 42, pl. 9, fig. 164, ♂ (1896). Habitat, W. China, E. Tibet.

*Coladenia sobrina*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 126, pl. 18, fig. 12, ♂. Habitat, Sumatra.

*Coladenia semperi*, Elwes and Edwards, l.c. p. 128. *Tapena laxmi*, Semper (nec de Nicéville), l.c. p. 316 (1892). Habitat, Luzon, Philippines.

*Coladenia sumatrana*, *Coladenia dan sumatrana*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 138. Habitat, Sumatra.

*Coladenia celebica*, *Coladenia dan celebica*, Frühstorfer, l.c. Habitat, S. Celebes.

#### Genus GEROSIS.

*Gerosis*, Mabille, Wytsmann, Gen. xvii. p. 49 (1893).

Genus *Gerosis*, nov. gen.

CHARACTERS.—General characters of *Celænorrhinus*, and especially *Satarupa*. Appearance slender, wings narrow, nervure 5 of the forewings commencing quite close to the top of the cell, immediately falling obliquely. Palpi porrect, hind tibiæ have two pairs of spurs.

*Geographical Distribution of the Species.*

One specimen from India.

1. *G. hamiltoni*, de Nicéville, Journ. Asiat. Soc. Bengal, 1888 (Khasia Hills).

REMARKS.—*G. hamiltoni* has such peculiar characters that it cannot be placed in the genus *Celænorrhinus* nor *Satarupa*. We have separated it, giving the most prominent characters, for the only example which we possess of this very rare species is in but poor condition. (Mabille.)

NOTE.—Mabille gives an imperfect reference and a wrong locality, unless he means that his specimen came from the Khasia Hills, which is very probable. de Nicéville's type is said to have come from Sylhet, from the Rev. Walter A. Hamilton, but there are many specimens from the outer parts of the Khasia Hills in various collections marked Sylhet. Mabille's diagnosis, such as it is, evidently refers to de Nicéville's *hamiltoni*, de Nicéville put it into the genus *Coladenia* tentatively and with great doubt.

## GEROSIS HAMILTONI.

Plate 775, figs. 2, ♂, 2a, ♂.

*Coladenia hamiltoni*, de Nicéville, Journ. As. Soc. Bengal, 1888, p. 291, pl. 13, fig. 8, ♂. Watson, Hesp. Ind. p. 121 (1891); id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 128.

*Gerosis hamiltoni*, Mabille, Wyttsmann, Gen. xvii. p. 49 (1893).

IMAGO.—Male. Upperside. *Forewing* olive-greenish fuscous, with two very irregular broad discal black fasciæ joined in the middle; three most minute transparent sub-apical dots, the uppermost the largest, placed at the outer edge of the anterior portion of the outer black fascia, a very minute similar spot in the second median interspace, a very attenuated spot across the middle of the first median interspace, both placed on the outer black fascia; the inner margin somewhat broadly irrorated with greyish scales; a sub-marginal indistinct broad blackish fascia. *Hindwing*, ground colour much as in the forewing, but the outer third of the wing irrorated with grey scales, a recurved black macular decreasing band from the costa near the apex of the wing to the second median nervule; the discocellular nervules defined by a pale line. Underside, both wings vinous-fuscous. *Forewing* with the transparent spots as above. *Hindwing* with the disc irrorated with whitish; the macular black band much as above; an anteciliary whitish line. Cilia fuscous. The Rev. Walter A. Hamilton, after whom I have much pleasure in naming it, obtained a single specimen in Sylhet in the spring. It is quite unlike any species known to me, and I place it in the genus *Coladenia* only because it agrees in outline with *C. tissa*, Moore. (de Nicéville.)

Expanse of wings, ♂  $1\frac{6}{10}$  inches.

HABITAT.—Sylhet, Assam.

The type is in the Indian Museum, Calcutta; Mabille records it from the Khasia Hills; it is not in the B. M. We give copies of de Nicéville's figure.

Genus **ABARATHA**.

*Abaratha*, Moore, Lep. Ceylon, i. p. 181 (1881). Distant, Rhop. Malayana, p. 390 (1885). Watson, Hesp. Ind. p. 98 (1891). Frühstorfer, Iris, 1910, p. 88.

*Caprona*, Watson (part), Proc. Zool. Soc. 1893, p. 62; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 421. Elwes and Edwards (nec Wallengren), Trans. Zool. Soc. 1897, p. 150.

*Forewing*, vein 12 ends on costa some distance before the end of the cell, cell two-thirds the length of the costa, discocellulars highly inwardly oblique, in one straight line; vein 3 emitted about one-sixth before the lower end of the cell, 2 from one-third from the base; costa gently arched, apex sub-acute, outer margin evenly convex, as long as the hinder margin, which is straight. *Hindwing*, vein 5 well developed, discocellulars faint, in a slight outward even curve; vein 3 emitted quite close to the lower end of the cell, 2 from about one-third before the end; outer margin highly sinuate, being slightly excavated below the apex and somewhat deeply excavated above vein 4, and again slightly excavated below between vein 3 and the internal vein. Antennæ less than half the length of the costa, shaft slight, club moderate, short, curved, tip blunt; palpi porrect, second joint thickly scaled, third joint short, stout, its tip blunt; hind tibiæ with two pairs of spurs, and with a long stiff brush of hairs from the base of the forelegs.



Type, *Pterygospidea ransonnettii*, Felder.

Watson sinks this to the African genus *Caprona*, but the Indian species differ from the African in the length of the cell of the forewing, the well-developed vein 5 of the hindwing, the robust protruding last joint of the palpi, and in other less important characters.

**ABARATHA RANSONNETTII.**

Plate 775, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, ♀ (Wet-season Brood), 3d, ♂, 3e, ♀, 3f, ♀ (Dry-season Brood), 3g, larva and pupa.

*Pterygospidea ransonnettii*, Felder, Verh. Zool.-bot. Ges. Wien, p. 284 (1868).

*Abaratha ransonnettii*, Moore, Lep. Ceylon, i. p. 182, pl. 97, fig. 1 (1881). Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43. Davidson and Aitken, id. 1890, p. 374, pl. F, figs. 1, 1a (larva and pupa). Watson, Hesp. Ind. p. 99 (1891). Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 448. Betham, id. vii. 1893, p. 428.

*Caprona ransonnettii*, Watson, Proc. Zool. Soc. 1893, p. 62. Swinhoe, Trans. Ent. Soc. 1893, p. 319. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Davidson, Bell and Aitken, id. xi. 1897, p. 30, pl. 8, fig. 4 (larva and pupa). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 150, pl. 23, figs. 20, 20a (genitalia). de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 598. Hannyngton, id. xx. 1910, p. 371. Evans, id. p. 388.

*Pterygospidea potiphera*, Hewitson, Ex. Butt. v. *Pterygospidea*, pl. i. fig. 7 (1873).

*Abaratha taylori*, de Nicéville, Journ. As. Soc. Bengal, 1883, p. 88, pl. 10, fig. 13, ♂.  
*Caprona taylori*, de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 598.

Wet-season Brood (Figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, ♀).

IMAGO.—Male. Upperside dark ochreous-brown. *Forewing* with three small semi-hyaline white sub-apical spots, in an oblique outwardly curved series from near the costa, two within the end of the cell, the upper one minute, often absent; a small spot near the base of the second median interspace, a much larger one in the middle of the first median interspace, and two minute dots inwardly oblique below it; the cell blackish, the basal half of the interno-median interspace and the hinder interspace blackish, a blackish fascia on the outer side of the sub-apical spots, and another hindwards outside the discal spots, a marginal narrow band of pale pinkish-brown, the upper half double, with some pinkish suffusion outside the dark fascia, all very difficult to describe and somewhat indistinct in dark examples. *Hindwing* with a double pinkish-ochreous mark inside the end of the cell, closely followed by a similarly coloured outwardly curved row of spots, one in each interspace, the uppermost one sub-square, the others somewhat elongate; the outer part of the wing in fresh examples smeared with pale-grey scales, a narrow brown band on the outer margin, its inner edge somewhat diffuse. Cilia of forewing dark brown, of hindwing whitish, with small brown patches at the vein ends. Underside. *Forewing* pale rufous-brown, the basal third suffused with white, with an irregular brown line across it, the spots and fasciæ as above, the space beyond them without markings. *Hindwing* white, the extreme outer margin rufous-brown, some blue-grey suffusion inside it, and within this narrow suffusion is a complete series of sub-marginal blackish spots, one in each interspace, and two blacker spots in continuation below the costa, and indications of a pale blue-grey discal lunular band; palpi, pectus, body below and the legs white; head and body above concolorous with the wings.

Female. Upperside paler than the male, the basal and outer brown fasciæ consequently more prominently brown, as also the outer pale markings, which are still paler and more distinct, making the wing more variegated. *Hindwing* with the discal band of pale spots similar, with a few additional pale spots outside, and the discal pale spots have a row of brown spots running through their outer ends, the grey suffusion limited to the outer margin and the abdominal fold. Underside. *Forewing* much paler than in the male, markings similar, the brown patches prominent. *Hindwing* with the white portion more limited and often of a duller colour, more grey than white, all but the uppermost spots of the sub-marginal series more or less joined together into a band; a discal series of small brown spots, one in each interspace.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{8}{10}$  inches.



Dry-season Brood = *taylori* (Figs. 3d, ♂, 3e, ♀, 3f, ♀).

Male and female differ from the other form in being much paler in colour, with an ochreous tinge, and in the hindwing the pale pinkish-ochreous spots and streaks are sometimes obsolete, sometimes faintly indicated, and the underside is usually almost entirely greyish-white, with three transverse series of small dots.

Expanse of wings, ♂ ♀  $1\frac{5}{10}$  to  $1\frac{7}{10}$  inches.

LARVA.—Head slightly bi-lobed, dark chestnut in colour, with the lower third of the face clothed with white adpressed hairs densely, above which are erect white hairs traversed by a band of brown erect hairs; near the vertex of each lobe is a bare patch; the sides of the head are clothed with long curved white hairs; the head is large; the surface of the body is covered with small hair-bearing tubercles, rendering it somewhat rugose; colour green, with a yellowish tinge at the margins of the segments. Length, 28 mm.

PUPA.—Head thick and quadrate, with a small pointed tubercle on the front of each eye, and a larger blunt one between the eyes on the front of the head, which latter tubercle is hairy; the spiracular expansion of segment 2 is kidney-shaped, large, and red-brown in colour; the colour of the pupa is light green spotted with black, as follows: a 5-sided spot at the dorsal front margin of the thorax, another behind the spiracular expansion, eight others in different positions on the thorax, a series of sub-dorsal spots on the abdomen, one to each segment, each spiracle surrounded by black, some black markings about the cremaster, four longitudinal black lines on the wings; surface of pupa finely hairy, with short adpressed and erect hairs. Length, 19 mm.

HABITS.—The egg is laid on the top surface of the leaf; the young larva makes a cell by cutting a circular piece out of the leaf, leaving this piece attached by a hinge and turning it over on to the top of the leaf, where it is fixed down by silk and strongly lined inside with the same material; this piece is small and withers soon to a brown colour; the final cell, and some before it, is made by turning a large piece from the edge over on to the underside of the leaf and fixing loosely with silk; the larva eats holes in the top-covering of the cell thus formed, leaving, however, space enough to rest on, for it rests on the roof of the cell with its back towards the ground; the change to pupa is performed in the cell; the larva feeds on *Helicteres isora*, L.

This insect is very common throughout the district at all seasons; it is very variable in colour, running from bright golden-brown above with few markings to dark brown with many markings; the golden-brown form (named *C. taylori*, de Nicéville, for us by de Nicéville) has been bred in the cold season from larvæ and pupæ similar in all points to those which produce *C. ransonnetii* in the monsoon. The butterfly is rapid of flight and difficult to capture on the wing. (Davidson, Bell and Aitken.)

HABITAT.—India, Ceylon.

DISTRIBUTION.—The type came from Ceylon ; we have both sexes from Kandy and Trincomali, which we describe and figure ; we have it also from Ootacamund, Kolar and Konoor ; Fergusson records it from Travancore, Davidson, Bell and Aitken from Karwar, where they bred it, Evans from the Palni Hills, Aitken from Egutpura, de Rhé-Philipe from Masuri, Hannington from Kumaon, and we have received it from the Khasia Hills.

ABARATHA ALIDA.

Plate 776, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, ♀.

*Abaratha alida*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 394, pl. G, fig. 40, ♂. Frühstorfer, Iris, 1910, p. 89.

*Caprona alida*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422 ; id. idem, x. 1896, p. 674. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 151. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 140.

IMAGO.—Male. Upperside ochreous-brown. *Forewing* with five sub-apical white spots, the three from near the costa in an outwardly oblique straight line, the two lower ones minute, sometimes absent ; a small round dot within the cell before its middle, a spot within the outer end, highly excavated on its outer side, its upper half merely a short curved streak, a round spot in the middle of the first median interspace, a round dot outside towards the base of the second median interspace, a minute dot immediately below the lower spot and a small round spot inwardly below it, both in the interno-median interspace, a very minute dot close to the costa at its middle, all the spots and dots white and semi-hyaline ; an indistinct brown narrow bar before the middle across the interno-median interspace ; and an indistinct, irregular, recurved brown lunular discal line. *Hindwing* with indistinct, lunular, brown, discal and sub-marginal lines ; both wings with brown outer marginal line and white cilia, with small brown patches at the vein ends. Underside pale brown, spots and markings as above, both wings covered and smeared with white scaling, the outer marginal line brown, with a little brown suffusion on its inner side. Antennæ with the underside of the upper half of the club ochreous, a white streak on the lower half, the shaft with white dots. Palpi, body beneath and the legs white ; head and body above concolorous with the wings, a white spot on each side of the head.

Female similar to the male, duller in colour above and not nearly so white beneath, and across the disc of the forewing beneath there is a rather broad, indistinct brownish fascia.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{9}{10}$  inches.

HABITAT.—Burma.

DISTRIBUTION.—The type came from Tilin Yaw. Watson records it from the Chin Hills. There are two females in the Hancock Museum, Newcastle, taken by Adamson at Kathapa and Sagaing in the Chindwin Valley in February, 1894.

## ABARATHA SARAYA.

Plate 776, figs. 2, ♂, 2a, ♀, 2b, ♀.

*Abaratha saraya*, Doherty, Journ. As. Soc. Bengal, 1886, p. 138. Watson, Hesp. Ind. p. 99 (1891).  
*Caprona saraya*, Watson, Proc. Zool. Soc. 1893, p. 62; id. Journ. Bo. Nat. Hist. Soc. ix. 1895,  
 p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 151, pl. 18, fig. 20, ♂, pl. 23, figs. 21,  
 21a (genitalia). Hannyngton, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371.

IMAGO.—Male. Upperside greyish-ochreous. *Forewing* with a short brown sub-apical band enclosing the five sub-apical white spots, which are in an outward curve, the upper three conjoined and larger than usual, a brown spot in the cell near the base with a white dot in it, a larger brown patch near the end of the cell with a large white spot in it, like two spots joined together, the upper one half the size of the lower; a brown, discal macular band from vein 3 hindwards, its inner side enclosing a small round white spot near the base of the second median interspace, a large similar spot in the middle of the first median interspace, with two small round spots below it, inwardly oblique, a small spot between the cell end spot and the costa, an ante-medial, macular brown band, from the sub-costal vein hindwards; the base of the wing brown, the basal half of the costa narrowly brown, a sub-marginal brown macular band. *Hindwing* with the base brown, limited by a brown macular band, a discal and a sub-marginal brown band; both wings with outer marginal brown line and white cilia with brown patches at the vein ends. Underside paler than the upperside, markings similar.

Female. Upperside darker than the male, all the brown bands more continuous and closer together. So well described by Doherty, we give his description *in extenso* :—

“Agrees with Mr. Moore’s description of the genus *Abaratha* except that the apex of the forewing is not acute but right-angled, that of the hindwing decidedly rounded. The outer margin of the hindwing is also more scalloped, and less irregularly angulate. Above, fuscous with the following tawny-ochreous marks: a line of streaks just within the margin; a line of square spots from the costa to the upper median branch, continued to the hind margin by a series of larger and more irregular blurs, removed further from the outer margin; a dull area just beyond the cell, from costa to the middle median; three large irregular spots occupying the middle of the cell, and the two spaces below between the sub-median and the middle median. Also the following translucent spots; five apical ones, the upper three elongate and approximate; one at the end of the cell, almost bifid, with a dot on the costa above it; four on the disc from the sub-median to the upper median, the second from above largest of all and adjoining that at the end of the cell; also one in the cell near the base. All these are surrounded by blackish rings above and below. A blackish marginal line. Cilia

long, alternately black and whitish. *Hindwing* rusty-ochreous, with a marginal dark line, and a discal, a cellular and a sub-marginal row of dusky spots, but no translucent ones. Below paler ochreous, without any rufous tinge, the translucent spots set in small blackish patches, a sub-marginal line of joined dusky spots, and a dark streak near the base from the sub-median to the median veins. *Hindwing* with a black transverse streak at the end of the cell, a fainter one nearer the base of the cell, and a circle of large and conspicuous black spots, nine in all, round the disc, whereof two are between the costal and the sub-costal, and two between the median and the sub-median veins; whitish hairs at the extreme base. Body dull ferruginous above, whitish below."

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{7}{10}$  inches.

HABITAT.—India.

DISTRIBUTION.—The type came from Bagheswar on the Sorju in Kumaon. Doherty described it as a male, but undoubtedly in error. We have a female in good condition from Kuddapah in South India, which corresponds in every respect with Doherty's description. We have not been able to ascertain where his types now are; probably in some private collection in the United States. We have a male from Madras, and there are some males in the B. M. from Kootur Chittapahar. Hannington also records it from Kumaon. It appears to be a very widely spread and very scarce species.

#### ABARATHA SYRICHTHUS.

Plate 776, figs. 3, ♂, 3a, ♀, 3b, ♀ (Dry-season Brood), 3c, ♂, 3d, ♀, 3e, ♀ (Wet-season Brood), 3f, larva and pupa.

*Pterygospidea syrighthus*, Felder, Reise, Nov. Lep. iii. p. 530, pl. 72, figs. 22, 23 (1867). Elwes, Trans. Ent. Soc. 1888, p. 458.

*Pyrgus syrighthus*, Butler, Ent. Mo. Mag. 1870, p. 94.

*Abaratha syrighthus*, Watson, Hesp. Ind. p. 100 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 58. Elwes, Proc. Zool. Soc. 1892, p. 656, pl. 43, fig. 2, ♂, var. Betham, Journ. Bo. Nat. Hist. Soc. vii. 1893, p. 428. Frühstorfer, Iris, 1910, p. 88.

*Caprona syrighthus*, Watson, Proc. Zool. Soc. 1893, p. 62. de Nicéville, Gazetteer of Sikkim, Butt. p. 179 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422; id. idem, x. 1896, p. 674. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 151. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 598. de Nicéville, id. xii. 1899, p. 336. Evans, id. xx. 1910, p. 388. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 140.

*Pyrgus agama*, Moore, MS. Cat. Lep. Mus. E.I.C. i. p. 249, pl. 7, figs. 1, 1a (larva and pupa) (1857).

*Abaratha agama*, Manders, Trans. Ent. Soc. 1890, p. 539.

*Caprona elwesi*, Watson, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 674.

*Abaratha syrighthus elwesi*, Frühstorfer, l.c.

Dry-season Brood = *elwesi* (Figs. 3, ♂, 3a, ♀, 3b, ♀).

IMAGO.—Male. Upperside dark blackish-grey covered with white spots. *Forewing*

with four spots in the cell, commencing with a dot before the middle, a spot in the middle, another towards the end, constricted in its middle, with a dot above it and a lunule at the end, the last two having rows of spots below them, one in each interspace, except the interno-median which has two in each row; three conjugated spots where the sub-apical spots usually are, with the two dots below them, a post-discal series of spots composed of eight spots, the four lower ones in a row a little inwards, the lower two small, and a sub-marginal row of small spots. *Hindwing* with a small spot in the middle of the cell, a lunule at the end, the latter the centre of a middle row of small spots, a post-discal and a sub-marginal row; the cilia of both wings black, with white spots opposite the sub-marginal spots. Underside. *Forewing* white, all but the lower basal portion suffused more or less with blackish-grey, the spots as above. *Hindwing* white, without suffusion, the spots round and black, one at the end of the cell, another above it below the costa, a twin spot below it, towards the base of the interno-median interspace, a discal row of spots, those in the middle smaller than the others, and a sub-marginal row of larger spots; marginal line of both wings black; palpi, body below and the legs white, the long tuft of hairs on the base of foreleg black; head and body above blackish-grey, a white spot on each side of the head. Antennæ with a white streak on the club, and white dots on the shaft.

Female similar to the male.

Expanse of wings, ♂  $1\frac{7}{10}$ , ♀  $1\frac{8}{10}$  inches.

Wet-season Brood (Figs. 3c, ♂, 3d, ♀, 3e, ♀).

Male and female. Markings similar to the male of the other form, but in coloration very much paler and more grey.

Expanse of wings, ♂  $1\frac{3}{10}$ , ♀  $1\frac{1}{2}$  inches.

LARVA feeds upon a species of *Microcos*, bearing the native name of *Talok*, December to February, rather common (in Java). (Horsfield MS.)

HABITAT.—Java, India, Burma.

DISTRIBUTION.—The type came from Java, also the type of *agama*. Hampson records it from the Nilgiris, Evans from the Palni Hills in South India, Watson from the Chin Hills in Upper Burma, Manders from the Shan States, de Nicéville from Toungoo, Elwes from Bhamo and Sikkim, de Rhé-Philipe from Masuri. There are two males and four females in the Hancock Museum, Newcastle, from which our descriptions and figures are taken, captured by Adamson at Bhamo, the dry-season form (= *elwesi*) in June and the wet-season form in August. We also give Horsfield's figures of the larva and pupa, reduced to their proper size.

## INDO-MALAYAN ALLIED SPECIES.

- Abaratha erosula*, *Pterygospidea erosula*, Felder, Reise, Nov. Lep. iii. p. 529, pl. 73, fig. 3 (1867).  
Habitat, Celebes.
- Abaratha siamica*, Swinhoe, Ann. Mag. Nat. Hist. 1907, p. 432; id. Trans. Ent. Soc. 1908, p. 10, pl. i. fig. 9. Habitat, Shan States, Siam.
- Abaratha pelligera*, *Caprona erosula pelligera*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 173; id. Iris, 1910, p. 89. Habitat, Celebes.

## Genus ODONTOPTILUM.

- Odontoptilum*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 217. Watson, Hesp. Ind. p. 104 (1891); id. Proc. Zool. Soc. 1893, p. 61; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 421. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 148.

*Forewing*, vein 12 ends on costa well before end of cell, discocellulars inwardly oblique in a straight line, the lower a little the longer, the cell a little less than two-thirds the length of the costa, vein 3 from one-sixth before lower end of cell, 2 from one-third from the base; costa arched, apex truncate, its termination somewhat acute, in the female the outer margin is angled at the end of vein 4. The outer and hinder margins of equal length. *Hindwing* with vein 5 fairly well developed, discocellulars in an even, gentle, inward curve, the lower the longer, vein 3 emitted from close to lower end of cell, 2 from about one-third before the end, outer margin angled between the ends of veins 6 and 7. Antennæ a little more than half the length of the costa, club moderate, short, curved, tip blunt; palpi porrect, densely clothed, third joint stout, short, blunt; hind tibiæ with two pairs of spurs, and in the male with a dense recumbent tuft of hairs at the base of the fore coxæ.

Type, *Achlyodes swa*, Moore = *Pterygospidea angulata*, Felder; closely allied to the genus *Abaratha*, differs chiefly in its truncate forewing, its angled hindwing and in the nature of the tuft of hairs at the base of the forelegs in the male.

## ODONTOPTILUM ANGULATA.

Plate 777, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, larva and pupa.

- Pterygospidea angulata*, Felder, Verh. Zool.-bot. Ges. Wien, xii. p. 488 (1862); id. Reise, Nov. Lep. iii. p. 529, pl. 73, figs. 10, 11, ♂ (1867). Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43.
- Antigonus angulata*, Moore, Proc. Zool. Soc. 1882, p. 263. de Nicéville, Journ. As. Soc. Bengal, 1883, p. 100. Doherty, id. 1886, p. 138. Hampson, id. 1888, p. 368.
- Odontoptilum angulata*, Watson, Proc. Zool. Soc. 1893, p. 62. Swinhoe, Trans. Ent. Soc. 1893, p. 319. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422; id. idem, x. 1896, p. 674. Davidson, Bell and Aitken, id. xi. 1897, p. 31, pl. 8, fig. 3 (larva and pupa). de Rhé-Philipe, id. xi. 1898, p. 598. Frühstorfer, Iris, 1910, p. 87.
- Tagiades angulata*, Plötz, Jahrb. des Nass. Ver. xxxvii. p. 41 (1884).

- Achlyodes sura*, Moore, MS. Cat. Lep. Mus. E.I.C. i. p. 251 (1857); id. Proc. Zool. Soc. 1865, p. 786.
- Alaratha sura*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 391. Distant, Rhop. Malayana, p. 390, pl. 34, fig. 16, ♂ (1886). Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27.
- Antigonus sura*, Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 441. Elwes, Trans. Ent. Soc. 1888, p. 458. Manders, id. 1890, p. 538. J. J. Walker, id. 1895, p. 475. Watson, Journ. Bo. Nat. Hist. Soc. 1890, p. 388.
- Odontoptilum sura*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 218. Watson, Hesp. Ind. p. 105 (1891). de Nicéville, Gazetteer of Sikkim, Butt. p. 179 (1894). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 149. Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 448. de Rhé-Philipe, id. xviii. 1908, p. 886. Hannington, id. xx. 1910, p. 371. Evans, id. p. 388. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 140.

IMAGO.—Male. Upperside chocolate-brown. *Forewing* with a rather broad chestnut-brown band a little before the middle, outwardly curved and slightly outwardly angled at its middle, a similarly coloured highly sinuous discal band with two semi-hyaline sub-apical whitish spots in it close to the costa, the spots rather elongate, close together, the lower the larger, a small round similar spot at the lower end of the cell, a small spot near the base of the second median interspace, and a thin lunular spot in the middle of the first median interspace, all against the inner side of the discal chestnut band where it curves much inwards, all the outer wing space paler and brighter chestnut colour than the rest of the wing, one or other of the discal spots often absent. *Hindwing* covered with long whitish hairs and crossed by a narrow whitish ante-medial band and a post-medial similar band, the latter runs straight down to near the outer margin at its middle, and then is sharply angled and runs inwards straight to the abdominal margin a little above the anal angle, the former bent sharply round at its lower end, extends across the wing, its inner part angled upwards and joins the outer band at its angle; a rather broad chestnut-brown patch at the apex with a small marginal spot or two below it, marginal line below the patch white. Cilia of forewing and upper part of hindwing brown with white tips, of the remainder of hindwing white with a double brown line in it. Underside. *Forewing* with the sub-apical spots as on the upperside, the costa (narrowly) and the outer third of the wing pale chestnut-brown, the inner two-thirds of the wing covered with white setæ, the ante-medial band and spots as on the upperside. *Hindwing* white, the base slightly suffused with grey, a black spot above the middle of the cell, a larger brown spot towards the apex in the same interspace, the apical patch as above, the outer white band faintly indicated, with some brown marks against it on both its sides and a brown suffused marginal band which becomes obsolete upwards. Antennæ with the underside of the club pale chestnut colour; palpi, head and body above concolorous with the wings; below, the palpi, body and legs are white.

Female like the male above and below, but the hindwing on the underside is purer white, the spots are much larger, and the outer marginal band is composed of large brown spots with a series of smaller sub-marginal spots.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  to 2 inches.

LARVA very similar to that of the last (*Caprona ransonnetii*) in shape and habits; the head, however, has not such long hairs at the margins; it is of the same colour (dark chestnut), and is covered with longish, erect white hairs, there being three patches in a line across the face near the vertex of the head, where the hairs are brown; there is also a line of brown hairs above each jaw; the lower third of the face is clothed with adpressed white hairs. Segment 2 has a broad, glabrous, shiny collar. The surface of the body is covered with short, thick-topped hairs, which are longer on the last segment than anywhere else. Colour is green-yellowish to dark red-brown. Feeds on *Allophylus cobbe*, Bl. Rumph. Length, 22 mm.

PUPA very similar to that of the foregoing species, the spiracular expansion of segment 2 is here smaller, hemispherical in shape and yellow-brown in colour. The colour of the pupa is green, with a yellow tinge on the abdomen. The markings are similar to those of the last, but there are many more black spots. Length, 17 mm.

HABITS.—The egg is laid on the top surface of the leaf as in the last species; the habits of the larva are identical with those of that of *C. ransonnetii*, Felder. It is met with all over the district above and below the ghats, with the exception of the parts immediately bordering on the plains. It is nowhere common. The flight is rapid and jerky, but it often rests on the uppersides of leaves, on flowers, etc. We have bred many. (Davidson, Bell and Aitken.)

HABITAT.—China, India, Burma, the Malay Peninsula and Archipelago.

DISTRIBUTION.—The type came from China, the type of *sura* from N.E. Bengal, it is a common species all over India and Burma, except in the desert tracts, and has been recorded from many places. We give Frühstorfer's local forms in our list of allied species, but we very much doubt their specific distinctness, because none of the specimens from the Malay Archipelago that we have examined show anything more than the ordinary variations found in specimens from every locality.

#### ODONTOPTILUM PYGELA.

Plate 777, figs. 2, ♂, 2a, ♀, 2b, ♀.

*Pterygospidea pygela*, Hewitson, Descr. Hesp. p. 53 (1868); id. Ex. Butt. v. *Pterygospidea*, pl. i. fig. 3 (1873).

*Antigonus pygela*, Druce, Proc. Zool. Soc. 1873, p. 360.

*Tagiades pygela*, Plötz, Jahrb. des Nass. Ver. xxxvii. p. 42 (1884).

*Abaratha pygela*, Distant, Rhop. Malayana, p. 390, pl. 34, fig. 18 (1886). Elwes, Proc. Zool. Soc. 1892, p. 656.



- Odontoptilum pygela*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 219. Watson, Proc. Zool. Soc. 1893, p. 62; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 533. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 149. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 140. Frühstorfer, Iris, 1910, p. 87.
- Odontoptilum pygela ragupta*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 172.
- Odontoptilum pygela javanica*, Frühstorfer, l.c. p. 173.

IMAGO.—Male. Upperside dark blackish-brown. *Forewing* with two sub-apical, semi-hyaline whitish dots near the costa and sometimes two very minute dots below them; an erect band across the middle of the wing, composed of two white somewhat lunular lines that run parallel to each other from the sub-median vein to the lower end of the cell, the inner line then curves a little inwards to the costa, the outer line well outwards to the sub-apical dots, a similar line across the wing close to the base, a post-discal faint band, slightly paler than the ground colour. *Hindwing* with similar white lines, in continuation of those of the forewing, one at the base, a nearly straight and thick line from the middle of the costa to the middle of the abdominal margin, another from the costa, highly sinuous, deeply bent outwards, then curving inwards on to the abdominal margin, a little below the end of the other line, some white marks below the apex, the remaining part of the wing hindwards white, with a sub-marginal grey band, one or two diffuse brown spots in this band near the anal angle. Cilia of both wings concolorous with the wings. Underside. *Forewing* paler than on the upperside, markings similar but indistinct, the base of the wing has a few whitish scales and the pale post-discal band more prominent than it is on the upperside. *Hindwing* white, with some bluish-grey basal suffusion, three rather large sub-costal spots between the grey suffusion and the apex, one at the apex connected with another spot below it on the outer margin, two spots on their inner side, two small sub-marginal spots near the anal angle, and a black outer marginal line. Antennæ black, the club white beneath; palpi white beneath with some ochreous hairs; head and body above blackish-brown, abdomen smeared with white on the terminal half; below, the thorax and legs are grey, the abdomen white; this white area, however, differs somewhat in degree in both sexes in different examples.

Female only differs from the male in having a larger white space on the upperside of the hindwing, the white extending upwards in the middle up to the inner middle line.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to  $1\frac{6}{10}$  inches.

HABITAT.—Borneo, Perak, Malay Peninsula, Burma.

DISTRIBUTION.—The type is Bornean, we have it from Sumatra, Elwes records it from Perak, Palawan Philippines, the Karen Hills and E. Pegu, and it is in the Hancock Museum, Newcastle, from Tavoy, taken by Adamson in October, 1893. It is a slightly variable species, and we have failed to recognise any real specific differences between the Sumatran, Javan and Bornean (typical) forms.

## INDO-MALAYAN ALLIED SPECIES.

- Odontoptilum helias*, *Pterygospidea helias*, Felder, Reise, Nov. Lep. iii. p. 529, pl. 73, figs. 12, 13 (1867). Habitat, Celebes.
- Odontoptilum leptogramma*, *Pterygospidea leptogramma*, Hewitson, Descr. Hesp. p. 53 (1868); id. Ex. Butt. v. *Pterygospidea*, pl. i. fig. 4 (1873). Habitat, Philippines.
- Odontoptilum helisa*, *Odontoptilum helias*, var. *helisa*, Semper, Rhop. Philipp. p. 311 (1892). Habitat, Philippines.
- Odontoptilum mahabina*, *Odontoptilum angulata mahabina*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 172; id. Iris, 1910, p. 87. Habitat, Java.
- Odontoptilum sumatrana*, *Odontoptilum angulata sumatrana*, Frühstorfer, Ent. Zeit. Stuttgart, 1909, p. 172; id. Iris, 1910, p. 87. Habitat, W. Sumatra.

## Genus CTENOPTILUM.

- Ctenoptilum*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 220. Watson, Hesp. Ind. p. 101 (1891); id. Proc. Zool. Soc. 1893, p. 60. Leech, Butt. of China, etc. ii. p. 574 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 421. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 147.

*Forewing*, vein 12 somewhat abruptly bent upwards at its termination and ends on costa some distance before the upper end of the cell, 8 from close to upper end of cell, anastomosing with vein 7 for a short distance from its base; discocellulars in an even outward curve, the lower a little the longer, vein 3 emitted one-sixth before lower end of cell, 2 from about one-third from the base. Costa gently and evenly arched, apex acute, truncate, the wing being somewhat angled at the end of vein 4, the margin between the angle and the apex evenly concave, from vein 4 to the hinder angle the margin is very oblique and slightly sinuate. The outer and hinder margins sub-equal, the latter nearly straight. *Hindwing* with the discocellulars faint, the lower the longer, vein 3 emitted immediately before the lower end of cell, 2 from one-fourth before the end. Costa highly arched near its base, outer margin sharply angled at the ends of veins 7 and 4, the margin excavated between the two angles, making the lower angle well produced and from thence to the anal angle nearly straight. Antennæ more than half as long as the costa of forewing, club moderate, longer than in *Odontoptilum*, gradually thickening, recurved and sharply pointed; palpi porrect, third joint robust, bluntly pointed and very conspicuous; hind tibiæ with two pairs of spurs, the upper pair minute, the male with a long tuft of hairs attached to the proximal end of the hind tibiæ.

Type, *Achlyodes vasava*, Moore.

## CTENOPTILUM VASAVA.

Plate 777, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, ♀.

- Achlyodes vasava*, Moore, Cat. Lep. Mus. E.I.C. i. p. 252 (1857); id. Proc. Zool. Soc. 1865, p. 786.
- Antigonus vasava*, Butler, Proc. Zool. Soc. 1880, p. 152. Elwes, Trans. Ent. Soc. 1888, p. 458.

*Abaratha vasava*, Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27.

*Ctenoptilum vasava*, Watson, l.c. 1890, p. 221; id. Hesp. Ind. p. 103 (1891). Elwes, Proc. Zool. Soc. 1892, p. 656, and 1893, p. 60. Swinhoe, Trans. Ent. Soc. 1893, p. 319. Leech, Butt. of China, etc. ii. p. 575, pl. 41, fig. 13, ♂ (1893). de Nicéville, Gazetteer of Sikkim, Butt. p. 179 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422; id. idem, x. 1896, p. 673. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 148, pl. 22, figs. 18, 19 (genitalia). Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 140.

IMAGO.—Male. Upperside ochreous-ferruginous. *Forewing* with six sub-apical, semi-hyaline whitish spots, the upper four elongate, in a very oblique line from near the costa, the third the longest, protruding outwardly beyond the others, the two lower very small, obliquely inwards, in a line with the outer spot of the discal series, which consists of a large spot in the cell, at its end, its lower half quadrate, its upper portion deeply excavated on its outer side, a twin spot between it and the costa, a round spot below it in the first median interspace, a small round spot outside, near the base of the second median interspace, two dots below in the interno-median interspace, the lower one well inwards, another minute dot (sometimes two) inside in the same interspace, and a larger spot above them near the base of the first median interspace; all the spots whitish and semi-hyaline, edged with blackish-brown, and a discal blackish-brown macular band from the sub-apical spots to the hinder angle of the wing. *Hindwing* with a cluster of semi-hyaline spots before the middle, there being two rows close together of large quadrate spots with excavated sides, the middle ones in the cell, with one on each side and with two small spots in the cell inside them, and four outside them, the upper three close together, all the spots with blackish-brown edges; both wings with marginal brown line and grey cilia. Underside much paler and duller in colour, markings similar, the discal band of the forewing hardly visible. Antennæ blackish above, brown beneath, palpi beneath and pectus white; palpi, head and body above concolorous with the wings.

Female considerably larger than the male. Upperside with all the inner surface of both wings suffused with dark brown, the suffusion on the forewing sometimes extending to the discal band, all the semi-hyaline spots very much larger. Underside similar to the upperside, but much paler, the brown suffusion almost grey and not completely covering the ground colour.

Expanse of wings, ♂  $1\frac{1}{2}$ , ♀  $1\frac{7}{16}$  inches.

HABITAT.—China, India, Burma.

DISTRIBUTION.—The type came from Darjiling, it is in our collection from Tonkin, Kiu-Kiang, Toungoo, Burma, Sikkim and the Khasia Hills. Butler records it from Upper Assam, Elwes from the Karen Hills, Watson from the Chin Hills, and also from Bombay; it is in the Hancock Museum, Newcastle, from Paayi, Lower Chindwin District, taken by Adamson in the month of March; it is a somewhat rare but widely distributed species.

## CTENOPTILUM MULTIGUTTATA.

Plate 778, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Ctenoptilum multiguttata*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 221, pl. E, fig. 10, ♂. Watson, Hesp. Ind. p. 103 (1891). Elwes, Proc. Zool. Soc. 1892, p. 656. Watson, id. 1893, p. 60; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422; id. idem, x. 1896, p. 673. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 148. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 140.

IMAGO.—Male. Upperside of a uniform vinaceous-brown. *Forewing* with the apex less truncated than in *C. vasava*, the outer margin somewhat sinuous, but more evenly rounded, the sub-apical spots with the second, third and fourth from the costa of even size, the discal series similarly disposed, but somewhat smaller and more separated, the small spot at the base of the first median interspace wanting, but there is an additional somewhat prominent small spot inside the cell near the base. *Hindwing* with the outer margin less angular, a spot at the base, a cluster of fourteen spots in the centre of the wing before the middle, all close together, all much of one size and very difficult to describe, with three dots in an obliquely transverse line below them, none of the spots on either wing edged with brown as in *C. vasava*, marginal line brown. Cilia of forewing checkered, brown and white, of hindwing mostly whitish, with a small brown mark at the end of each angle. Underside very pale, markings as on the upperside.

Female like the male, only to be distinguished from it by the absence of the tuft of hairs at the proximal end of the hind tibiæ.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to  $1\frac{6}{10}$  inches.

HABITAT.—Burma.

DISTRIBUTION.—The types are from the Meplay Valley and the Donat Range. Elwes records it from Akyab, and Watson from the Chin Hills; our descriptions and figures are from a pair from Toungoo in the Hancock Museum, Newcastle, taken by Adamson in February, 1881.

## CHINESE ALLIED SPECIES.

*Ctenoptilum chinensis*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 148, pl. 23, figs. 19, 19a (genitalia). *Ctenoptilum vasava*, Leech (nec Moore), Butt. of China, etc. ii. p. 575, pl. 41, fig. 13, ♂ (1893). Habitat, Ningpo, Kiukiang, China.

## Genus DARPA.

*Darpa*, Moore, Proc. Zool. Soc. 1865, p. 781. Watson, Hesp. Ind. p. 106 (1891); id. Proc. Zool. Soc. 1893, p. 58; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 421. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 137.

*Forewing*, vein 12 ends on costa well before end of cell, cell a little less than two-thirds the length of costa, discocellulars in an outwardly oblique straight line, the

lower the longer, vein 3 emitted about one-sixth before the lower end of cell, 2 one-third from the base. Costa evenly convex, apex sub-acute, angular, outer margin very dentate, the largest dentation at the end of vein 3, the next largest at the end of vein 2, their ends rounded, the hinder margin nearly straight, longer than the outer margin. *Hindwing*, vein 7 emitted quite close to upper end of the cell, discocellulars faint, the lower much the longer, vein 3 from close before the lower end of cell, 2 from one-sixth before the end, their bases closer together than usual, wing somewhat longer than broad, costa and outer margin in one continuous round, the latter more or less scalloped. Antennæ slender, more than two-thirds the length of the costa of forewing, club rather long, moderate, gradually formed, tapering to a fine point in a short crook; palpi porrect, third joint blunt, more or less concealed by the hairs of the second; hind tibiæ with two pairs of spurs, the hind femora and tibiæ both with very long fringes.

Type, *Darpa hanria*, Moore.

#### DARPA HANRIA.

Plate 778, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Darpa hanria*, Moore, Proc. Zool. Soc. 1865, p. 781, pl. 42, fig. 2. Elwes, Trans. Ent. Soc. 1888, p. 458. Watson, Hesp. Ind. p. 106 (1891); id. Proc. Zool. Soc. 1893, p. 58. Swinhoe, Trans. Ent. Soc. 1893, p. 318. de Nicéville, Gazetteer of Sikkim, Butt. p. 178 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 137.

IMAGO.—Male. Upperside black. *Forewing* sparsely covered with minute blue-grey scales, and with similar scaling along the veins; three sub-apical spots in a curve from near the costa, all close together, decreasing in size hindwards, a streak across the cell near its end, sharply and pointedly angled outwardly, with a spot below its lower end, near the base of the first median interspace, divided from it by the vein, a thin line across the same interspace farther outwards, sometimes a dot between them, and two spots between the upper end of the discoidal streak and the costa; all semi-hyaline and ochreous-white. *Hindwing* with the lower third of the wing ochreous-white with two large black marginal spots in interspaces 2 and 3, all the veins on the black portion of the wing white, and the lower part of that portion with long recumbent white hairs, the black colour limited hindwards by a discal series of elongated blacker spots, half obliterated by the white hairs. Cilia of both wings concolorous with the wings. Underside. *Forewing* blackish, the outer and lower portions of the wing smeared with bluish-white, being covered with minute scales of that colour, the spots as on the upperside but more ochreous. *Hindwing* white, the upper third of the wing blackish, smeared with bluish-white, containing a square white spot below the middle of the costa, a black spot on each side of it, another below it, a spot near the base and another towards the apex; the two black marginal spots on the white area as on

the upperside. Antennæ black above, white beneath, club with a dull reddish tip; palpi, head and body above black; abdomen with ochreous-white tip, on the underside the palpi white, body and legs grey, tarsi whitish.

Female similar to the male.

Expanse of wings, ♂  $1\frac{1}{2}$ , ♀  $1\frac{8}{10}$  inches.

HABITAT.—N.W. Himalayas, Sikkim, Assam.

DISTRIBUTION.—The type is marked N.E. Bengal, it is recorded by Elwes from Sikkim, by de Rhé-Philipe from Masuri, we have received three examples from the Khasia Hills, it is in the B. M. from Darjiling; our description and figures are from a male from the Khasia Hills and a female from Darjiling.

#### Genus SARANGESA.

*Sarangesa*, Moore, Lep. Ceylon, i. p. 176 (1881). Watson, Hesp. Ind. p. 53 (1891); id. Proc. Zool. Soc. 1893, p. 48; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 420. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 123.

*Hydra*, Mabille, Bull. Soc. Ent. Fr. (6), ix. p. clxxxiii. (1889).

*Sape*, Mabille, Bull. Soc. Ent. Belg. 1891, p. lxxvii.

*Forewing*, vein 12 ends on the costa a little before the end of the cell, discocellulars sub-erect, the lower the longer, vein 3 from close before lower end of cell, 2 from about one-third from the base, the median vein slightly curved upwards between the bases of veins 2 and 3. The cell less than two-thirds the length of the costa. Costa gently arched, outer margin convex, shorter than the hinder margin, which is straight. *Hindwing*, discocellulars very faint, apparently in one straight line and of about equal length, 3 from very close to the lower end of the cell, 2 from a little beyond the middle, costa slightly arched, apex rounded, outer margin somewhat sinuous, wing about as broad as long. Antennæ very slender, about two-thirds the length of the costa of forewing, club moderate, slightly recurved; palpi porrect, third joint short, bluntly conical; hind tibiæ with two pairs of spurs, with a tuft of hairs attached to the proximal end.

Type, *Pyrgus purendra*, Moore.

#### SARANGESA PURENDRA.

Plate 778, figs. 3, ♂, 3a, ♀, 3b, ♀, 3c, larva and pupa.

*Pyrgus purendra*, Moore, Cat. Lep. Mus. E.I.C. i. p. 250 (1857).

*Sarangesa purendra*, Moore, Proc. Zool. Soc. 1882, p. 262. Swinhoe, id. 1884, p. 512, and 1885, p. 146. Doherty, Journ. As. Soc. Bengal, 1886, p. 137. Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43. Watson, Hesp. Ind. p. 54 (1891); id. Proc. Zool. Soc. 1893, p. 48. Betham, Journ. Bo. Nat. Hist. Soc. vii. 1893, p. 427; id. idem, viii. 1894, p. 423. Watson, id. ix. 1895,

p. 422. Davidson, Bell and Aitken, id. xi. 1897, p. 34, pl. 7, fig. 4 (larva and pupa). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 124, pl. 22, figs. 6, 6a (genitalia). de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 597. Aitken and Comber, id. xv. 1903, p. 52. Hannington, id. xx. 1910, p. 371.

IMAGO.—Male. Upperside dark vinaceous-blackish-brown. *Forewing* with three sub-apical dots of equal size in a curve from near the costa, a bar across the cell near its end, its outer side deeply excavated, a small spot between it and the costa, another immediately outside its lower end, with a short linear spot below it, all whitish and semi-hyaline. *Hindwing* with a spot at the end of the cell, a discal and a marginal band all very little darker than the ground colour and very indistinct. Cilia of both wings brown alternated with grey, touched with a little whitish above the hinder angle of the forewing. Underside paler than the upperside, markings similar, an additional whitish indistinct spot on the forewing towards the base of the internomidian interspace. Antennæ black, the shaft with white dots, and a whitish streak on the underside below the club; palpi, head and body above blackish-brown, on the underside the palpi are grey, pectus and legs with grey hairs.

Female. Upperside similar to the male, the semi-hyaline spots on the forewing a little larger. Underside paler than in the male. *Forewing* with the whitish spots larger. *Hindwing* with a whitish spot at the end of the cell, a discal series of whitish lunular spots, and a few more indistinct whitish spots inside the wing.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{4}{10}$  inches.

LARVA exactly similar to that of *C. dan*, Fabricius, except that in this species the collar is rosy-white, and the colour of the body a dark, blackish-olive-green. Length, 17 mm.

PUPA.—Head large, quadrate, with a rounded boss between the eyes, which is clothed with fine, erect, red hairs curved at the points; surface of the body clothed with reddish, short, curved top, hairs, shorter than those on the head; segments 1 and 2 finely rugose; rest of pupa shiny and smooth. Proboscis free from end of wings and reaching end of body (to the cremaster). Length, 14 mm.

HABITS.—Egg laid anywhere on leaf or stalk; the larva on emerging immediately makes a cell by turning over a triangular piece from the edge of the leaf on to the upperside, choosing a small young leaf, and rests in the cell with the head turned round on the side. In the last two stages the larva makes a cell out of two or three leaves, which it binds together strongly with silk, often incorporating a dead leaf, and covers the inside of the cell laxly with silk; it pupates in the cell. Larva feeds on *Blepharis asperima*. The imago is similar in habits to *C. dan*, Fabr. We have found many in Karwar during the monsoon months, settling on the ground and on leaves in shady places. We have bred many, but only below the ghats and in the monsoon. (Davidson, Bell and Aitken.)

HABITAT.—India.

DISTRIBUTION.—A common species all over India ; Moore records it from Bombay, Umballa, Kasaoli and Kangra ; we took it at Bombay, Poona, Mhow, Karachi and Sind, Hyderabad ; we have it also from Ranikhet, Dhera Dhun, Pachmari and Karwar, where Davidson, Bell and Aitken bred it ; de Rhé-Philipe records it from Masuri, Betham from Matheran, Hannington from Kumaon, Doherty from Kunawar. It does not appear to extend into Burma or Ceylon.

### SARANGESA DASAHARA.

Plate 778, figs. 4, ♂, 4a, ♀, 4b, ♂.

*Nisioniades dasahara*, Moore, Proc. Zool. Soc. 1865, p. 787.

*Tagiades dasahara*, Butler, Ent. Mo. Mag. 1870, p. 96.

*Sarangesa dasahara*, Moore, l.c. 1882, p. 263 ; id. Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Doherty, Journ. As. Soc. Bengal, 1886, p. 137. Wood-Mason and de Nicéville, id. p. 390. Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43. Watson, id. 1888, p. 28. Elwes, Trans. Ent. Soc. 1888, p. 450. Manders, id. 1890, p. 537. Watson, Hesp. Ind. p. 54 (1891) ; id. Journ. Bo. Nat. Hist. Soc. 1891, p. 57. Fergusson, id. p. 448. Elwes, Proc. Zool. Soc. 1892, p. 652. Swinhoe, Trans. Ent. Soc. 1893, p. 316. Watson, Proc. Zool. Soc. 1893, p. 48. de Nicéville, Gazetteer of Sikkim, Butt. p. 177 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422 ; id. idem, x. 1896, p. 673. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 124, pl. 22, fig. 7 (genitalia). de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 597. Aitken and Comber, id. xv. 1903, p. 52. de Rhé-Philipe, id. xvi. 1905, p. 721. Hannington, id. xx. 1910, p. 371. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 138. Frühstorfer, Iris, 1910, p. 66.

IMAGO.—Male. Upperside coloured like *S. purendra*, a little darker. *Forewing* with three similar sub-apical dots, a minute dot at the upper end of the cell, with another above it, a very indistinct discal band and indications of a similar middle band, both very slightly darker than the ground colour. *Hindwing* with indications of a discal and a marginal band. Underside much paler, the bands consequently more pronounced, the hindwing with some grey suffusion between the bands and along the abdominal area, caused by minute greyish-white scaling. Cilia as in *S. purendra*.

Female similar to the male, but in the forewing there is an additional dot below the cell, all three being in a line, and there is a dot in the second median interspace a little before its middle. Underside similarly marked, the coloration and bands as in the male. Antennæ, palpi, body and legs much as in *purendra*.

Expansion of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{4}{10}$  inches.

HABITAT.—India, Burma.

DISTRIBUTION.—The types came from Bengal ; it seems to be common all over India and extends into Burma. We have it from the Khasia Hills, Ranikhet, Sikkim and Rangoon, Moore records it from Kangra and Mergui, Elwes from the Naga and



Karen Hills, Mandi, E. Pegu, Ganjam, Tenasserim and Akyab, Watson from Beeling and the Chin Hills, de Rhé-Philipe from Masuri and Lucknow, Fergusson from Travancore, Hannyngton from Kumaon, Manders from the Shan States, Wood-Mason and de Nicéville from Cachar; it does not appear to have been recorded from Ceylon.

SARANGESA DAVIDSONI, nov.

Plate 779, figs. 1, ♂, 1a, ♀, 1b, ♂, and Plate 780, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Sarangesa dasahara*, Davidson, Bell and Aitken (nec Moore), Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 34 (larva and pupa).

IMAGO.—Male. Upperside pale ochreous-brown. *Forewing* with four very minute sub-apical dots in a recurved series from near the costa, a narrow bar across the cell near its end, its outer side excavated, with three dots between it and the costa, a dot towards the base of the second median interspace, and another obliquely inwards before the middle of the first median interspace, all whitish semi-hyaline and very indistinct, one or more of those in the disc often absent, the spots in the disc edged with brown, brown discal and marginal bands very slightly darker than the ground colour, and very faintly indicated. *Hindwing* with a brown spot in the cell, another at the end, a discal, recurved, more or less macular band and a marginal band all very slightly darker than the ground colour and very faintly indicated. Cilia of both wings greyish-white. Underside much paler than the upperside, markings similar, the bands more distinct. Antennæ black, the shaft with minute white dots; palpi, head and body above concolorous with the wings; on the underside the palpi and body white, legs brown above, white beneath.

Female like the male, the semi-hyaline spots on the forewing more distinct.

Expanse of wings, ♂  $1\frac{2}{10}$ , ♀  $1\frac{3}{10}$  inches.

LARVA is not distinguishable from that of *S. purendra*, Moore, except by its colour, which is greenish-chocolate, and by the shape of the head, which is more broadly lobed; it is more narrowly lobed, however, than the head of the larva of *C. dan*, Fabricius. Length, 17 mm.

PUPA same as that of *S. purendra*. The spiracular expansions of segment 2 are semicircular in shape, slightly raised from thorax and face forwards. Body covered with fine, white, simple hairs. Colour a transparent emerald-green. Length, 14 mm.

HABITS same as those of the last two. The larva feeds on an acanthaceous plant allied to *Lepidagathis*, growing in moist places generally. The larva rests in the cell with the head turned round on the side. This insect is like the last in habits. Our specimens were bred above the ghats in the dry season only, they are much lighter in colour than the last insect. This insect differs from typical *S. dasahara* in having a

white, instead of a dark fringe. (We have been so informed by Captain Watson, who has seen our specimens.) Our specimens were bred above the ghats in the dry season only; they are much lighter in colour than the last insect (*purendra*). (Davidson, Bell and Aitken.)

HABITAT.—Mahableshwur, Karwar.

Described and figured from specimens in our collection from Mahableshwur taken by us in May, 1887, where it was common. We have it also from Karwar.

#### SARANGESA HAMPSONI, nov.

Plate 779, figs. 2, ♂, 2a, ♀, 2b, ♂, and Plate 280, figs. 1, ♂, 1a, ♀, 1b, ♀.

*Sarangesa albicilia*, Hampson (nec Moore), Journ. As. Soc. Bengal, 1888, p. 368.

IMAGO.—Male. Upperside dark vinaceous-olive-brown. *Forewing* with a large blackish spot at the end of the cell, another below it, a discal, more or less macular band and a marginal band, all indistinct, being but little darker than the ground colour; three sub-apical dots in a curve from near the costa, two small spots in the cell near its end, with another above them, all in a nearly straight line, two dots outwardly below them, one near the base of the second median interspace, and the other well inwards before the middle of the first median interspace, both within the discal band, a small white spot towards the base inside the cell, and another in the middle of the cell, sometimes absent; in the type specimen these are present only on the right wing. *Hindwing* with a blackish spot at the end of the cell, another between it and the abdominal margin, a discal recurved macular band and a marginal band, all very indistinct; on the left wing there is a white dot on each side of the uppermost spot of the discal band. Cilia of both wings narrowly white. Underside paler than the upperside, both wings being brown. *Forewing* with the upper half suffused with darker brown, markings as on the upper side, the bands and spots, especially those on the hindwing, more prominent. Antennæ with the shaft and club with white spots; palpi, head and body above concolorous with the wings, on the underside the palpi are white, the thorax and abdomen smeared with white, the legs greyish-ochreous.

Female similar to the male.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  inches.

HABITAT.—Nilgiri Hills.

Described and figured from a pair in the B. M. taken by Hampson, marked Western slopes, September, 1888; it can easily be separated from *S. albicilia*, Moore, from Ceylon, by the entirely different colour of the underside.

## SARANGESA ALBICILIA.

Plate 779, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Sarangesa albicilia*, Moore, Lep. Ceylon, i. p. 176, pl. 68, figs. 5, 5a (1881). Watson, Hesp. Ind. p. 55 (1891); id. Proc. Zool. Soc. 1893, p. 48; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 124. Swinhoe, Trans. Ent. Soc. 1908, p. 7.

*Antigonus sezendis*, Plötz, Berl. ent. Zeit. xxix. p. 230 (1885), (unpublished plate No. 1564).

IMAGO.—Male. Upperside vinaceous-olive-brown, both wings more or less covered with minute white scales, especially between the bands. *Forewing* with a large blackish spot at the end of the cell, another below it, a discal band and a marginal band, both rather broad, darker than the ground colour, made somewhat distinct by the white scaling between them; three sub-apical well separated dots from near the costa, the middle one, inwards; two dots in the cell towards its end with a dot above them, the series in an inward curve, a dot towards the base of the second median interspace, and sometimes an indistinct dot below well inwards in the next lower interspace. *Hindwing* with a spot at the end of the cell, one on each side of it, indications of one or two spots near the base, a discal more or less macular band and indications of a narrow macular band near the margin, all slightly darker than the ground colour and very indistinct, outer marginal line of both wings black. Cilia of forewing brown, touched with white, especially at the apex and near the hinder margin; of the hindwing brown at the apex edged with white, becoming pure white on the lower half, broadening hindwards where it contains an inner brown line, and a white suffused line inside the marginal black line. Underside. *Forewing* pale brown, paling hindwards, markings as on the upperside, the bands and spots more prominent. *Hindwing* bluish-white, the blue suffusion darkest towards the base, the costa narrowly suffused with brown, the apex broadly brown, narrowing hindwards and continued from the middle to the anal angle in a series of obscure brownish dots, a pale brown spot inside the end of the cell, a brown line at the end, a larger brown spot above it, near the costa, two small paler spots between it and the abdominal margin, a sub-basal pale spot near the costa, and a discal series of small brown spots, with a large quadrate spot in the series opposite the discoidal end. Antennæ black, the shaft with white dots, the club with a white mark at its end on the underside; palpi, head and body above concolorous with the wings, below they are pure white and the legs are white.

Female similar to the male.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{1}{2}$  inches.

HABITAT.—Ceylon.

Described and figured from a pair from Kandy, from whence the types came; appears to be confined to Ceylon.

SARANGESA SATI.

Plate 779, figs. 4, ♂, 4a, ♀, 4b, ♂.

*Sarangesa sati*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 391, pl. G, fig. 37, ♂. Watson, Proc. Zool. Soc. 1893, p. 48. Betham, Journ. Bo. Nat. Hist. Soc. vii. 1893, p. 427. Watson, id. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 124, pl. 22, fig. 8 (genitalia). Nurse, Journ. Bo. Nat. Hist. Soc. xiv. 1902, p. 513.

IMAGO.—Male. Upperside blackish-brown, with an olivaceous tint. *Forewing* with a white lunule inside a black spot at the end of the cell, a discal series of white dots from near the apex to near the hinder margin, much outwardly curved above its middle, two dots below the costa on the inner side of the series, a dot in the middle of the first median interspace (sometimes two dots), and one towards the base of the interno-median interspace. *Hindwing* with a dot in the cell, and one above and another below it, a dot at the end of the cell and a discal series of dots; both wings with minute marginal dots, all the dots either on or against brown spots rather darker than the ground colour of the wings. Cilia of both wings very broad, its basal half with a double blackish line through it, its outer half checkered black and white. Underside as dark as the upperside, less olivaceous, more blackish; spots as above, much larger and more prominent.

Female similar, all the spots above and below larger. Antennæ black with white dots; palpi, head and body above concolorous with the wings, on the underside the palpi and body are whitish, the legs dark grey.

Expanse of wings, ♂ ♀ 1 to  $1\frac{2}{10}$  inches.

HABITAT.—Kutch, Bhooj, Gujerat, Central Provinces.

DISTRIBUTION.—We took many examples at Deesa; de Nicéville's types, now in the Indian Museum, Calcutta, were from our collection; Betham records it from the Central Provinces, Nurse from Kutch; our description and figures are from a pair in our collection from Bhooj.

### Sub-Family HESPERIINÆ.

In this sub-family we put *Hesperia*, Fabricius, *Spialia*, nobis, *Pyrgus*, Hübner, *Carcharodes*, Hübner, *Thanaos*, Boisduval, and *Gomalia*, Moore.

The first three were put by Watson into sections under *Hesperia*, but he himself states that it is a genus that wants splitting up.\*

The antennæ has the club robust, more or less straight, somewhat curved in *Thanaos* and *Carcharodes*; the palpi are sub-erect, third joint blunt; in the forewing the cell is about two-thirds the length of the costa; vein 12 ends on the costa before the end of the cell; discocellulars sub-erect; vein 3 arises shortly before the lower end of the cell, 2 from before the middle; in the hindwing vein 7 arises just before the upper end of the cell, 3 from just before the lower end, 2 from the middle; in *Carcharodes* it arises a little more inwards, in *Thanaos* a little beyond the middle; all have two pairs of spurs to the hind tibiæ; in *Thanaos* and *Carcharodes* the upper pair are very minute.

Species of the first three genera are distributed all over the world, except in the Australian region, *Thanaos* and *Carcharodes* are palearctic, *Gomalia* is apparently confined to South India and Ceylon.

Doherty says,† “The eggs are small, hard, seven-eighths as high as wide, or even higher, constricted at base, with wide scalloped anastomosing ribs; this group is very distinct, includes *Hesperia* and *Gomalia*.”

The life history of typical *Hesperia* is fairly well known, the type *malvæ*. Linnæus, being a common English species; for the life history of *galba*, Fabricius, the type of *Spialia*, we are indebted to Davidson, Bell and Aitken; their habits of life are very different.

#### Genus HESPERIA.

*Hesperia*, Fabricius, Ent. Syst. iii. (i.) p. 258 (1793). Moore (part), Lep. Ceylon, i. p. 182 (1881).

Watson, Hesp. Ind. p. 152 (1891); id. Proc. Zool. Soc. 1893, p. 64. Leech, Butt. of China, etc. ii. p. 574 (1893); Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 421. Elwes and Edwards. Trans. Zool. Soc. 1897, p. 153.

*Scelothrix*, Rambur, Cat. Lep. Andal. i. p. 63 (1858).

*Forewing*, vein 12 nearly straight for about two-thirds its length, then bent up to the costa some distance before the end of the cell; cell a little less than two-thirds the

\* Proc. Zool. Soc. 1893, p. 65, and Journ. Bo. Nat. Hist. Soc. 1895, p. 423.

† Journ. As. Soc. Bengal, 1886, p. 111.

length of the costa; discocellulars sub-erect, the lower the longer; vein 3 emitted a little before lower end of cell, 2 from a little before the middle, costa nearly straight except at its base, the male with a small costal fold, apex sub-acute, outer margin evenly convex, shorter than the hinder margin which is nearly straight. *Hindwing*, vein 7 emitted quite close to the upper end of cell, discocellulars and vein 5 very faint, 3 emitted immediately before lower end of cell, 2 from a little beyond the middle; costa arched at its base, then nearly straight to the apex, apex and outer margin evenly rounded. Antennæ more than half the length of the costa of forewing, club robust, arcuate, blunt at the tip, no terminal crook; palpi sub-erect, second joint laxly clothed with longish scales, third slender, blunt, almost concealed by the scaling of the second joint; hind tibiæ with two pairs of spurs, and with a tuft of hairs in the male, with a pair of scabbard-shaped scaly and hairy appendages, springing posteriorly from the breast at the base of the hind legs and about one-third the length of the abdomen.

Lang says: \* "The position of the wings during repose is different from that of the butterflies of any of the other families, the hindwings being held in a horizontal position, and the forewings only half erect, the wings are never closed perpendicularly over the trunk, the inner margin of the hindwing is not deflected, but is thrown into a slight fold, so that there is no canal for the reception of the abdomen."

Type, *Papilio malvæ*, Linnæus.

#### HESPERIA CASHMIRENSIS.

Plate 780, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Pyrgus cashmirensis*, Moore, Proc. Zool. Soc. 1874, p. 274, pl. 43, fig. 7.

*Hesperia cashmirensis*, Doherty, Journ. As. Soc. Bengal, 1886, p. 137. Watson, Hesp. Ind. p. 155 (1891); id. Proc. Zool. Soc. 1893, p. 65; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

Elwes and Edwards, Trans. Zool. Soc. 1897, p. 160. Leslie and Evans, Journ. Bo. Nat. Hist. Soc. xiv. 1903, p. 677.

IMAGO.—Male. Upperside fuliginous-black, base of both wings with long bluish-grey hairs. *Forewing* with three sub-apical white spots close together from near the costa, a spot well outside the lowest spot with two more spots in an inwardly oblique line, the middle spot of the three very small, a band of five white spots across the middle of the wing, crossing the end of the cell, the cell spot thickly lunulate, the spot above it duplicate, the spot below it round, the two lowest spots somewhat inwardly oblique. *Hindwing* with two, sometimes three, very obscure white discal dots. Cilia

\* Butt. of Europe, i. p. 335 (1884).

of both wings checkered black and white. Underside pale blackish, base of both wings suffused with bluish. *Forewing* with the spots as on the upperside, but larger, a marginal macular white band from the apex for a short distance, then only faintly indicated hindwards. *Hindwing* with a prominent white spot in the upper middle of the cell, another below in the middle of the first interspace, a broad white discal band with irregular sides, from the costa to the hinder margin, near the anal angle, dislocated at vein 3, then continued hindward by two large conjoined spots, a series of white marginal streaks and two small spots between it and the discal band; marginal line of both wings black. Cilia checkered, pale blackish and white. Antennæ black above, with white dots, pure white beneath, the club on the underside white, marked with black; palpi, head and body above black, beneath, the palpi with long grey and black hairs; legs, brown above, ochreous-grey beneath, the hairs on the breast and legs grey, abdomen whitish.

Female similar to the male, the white middle band of spots in a more or less outward curve, in the male it is nearly straight, all the spots larger, and on the underside the white macular band of the forewing is complete.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{3}{10}$  inches.

HABITAT.—Kashmir, N.W. Himalayas.

DISTRIBUTION.—The type is from Kashmir; we have both sexes from Gulmerg, Killom near Quetta, 10,000 feet elevation, and Ranikhet; Doherty records it from Kumaon, Leslie and Evans from Chitral, Elwes from Kulu, 12,000 feet.

#### CHINESE AND JAPANESE ALLIED SPECIES.

*Hesperia alveus*, *Papilio alveus*, Hübner, Eur. Schmett. i. figs. 461–463 (1803). *Hesperia alveus*, Leech, Butt. of China, etc. ii. p. 579 (1893). Habitat, W. China, Central Asia, Europe.

*Hesperia maculatus*, *Syrictus maculatus*, Bremer and Grey, Schmett. N. China's, p. 11, pl. 3, fig. 6 (1853). Pryer, Rhop. Nippon, p. 35, pl. 10, fig. 21 (1889). Habitat, North and West China, Japan.

*Hesperia zona*, *Scelothrix zona*, Mabille, Ann. Soc. Ent. Fr. 1875, p. ccciv. *Hesperia zona*, Leech, l.c. p. 577, pl. 41, figs. 1, 3. Habitat, Japan, Korea.

*Hesperia albistriga*, *Scelothrix* (*Pyrgus*) *albistriga*, Mabille, l.c. 1876, p. xxvii. *Hesperia albistriga*, Leech, l.c. p. 577, pl. 41, fig. 1.

*Hesperia sinicus*, *Pyrgus sinicus*, Butler, Ann. Mag. Nat. Hist. 1877, p. 96. Habitat, Shanghai.

*Hesperia bieti*, *Syrictus bieti*, Oberthür, Études d'Ent. xi. p. 26, pl. 6, fig. 50 (1886). Habitat, W. China.

*Hesperia tibetanus*, *Syrictus maculatus*, var. *tibetanus*, Oberthür, l.c. xv. p. 20, pl. 3, fig. 27 (1891). Habitat, W. China.

*Hesperia oberthüri*, *Syrictus oberthüri*, Leech, Entom. xxiv. Suppl. p. 59 (June, 1891). *Hesperia oberthüri*, Leech, Butt. of China, etc. p. 579, pl. 41, fig. 5, ♂. Synonym, *Syrictus delavayi*, Oberthür, l.c. xv. p. 20, pl. 3, fig. 31, ♂ (July, 1891). Habitat, W. China, Yunnan.

## Genus PYRGUS.

*Pyrgus*, Hübner, Verz. bek. Schmett. p. 109 (1816).

*Syrichthus*, Boisduval, Icones, p. 230 (1833).

*Hesperia*, Watson (part), Proc. Zool. Soc. 1893, p. 54. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 153.

In venation and general structure similar to the genus *Hesperia*, forewing with a costal fold in the male, but with neither the tuft of hairs on the hind tibiæ nor the hairy appendages from the breast at the base of the hind legs so characteristic of the genus *Hesperia*.

Type, *Hesperia syrichthus*, Fabricius.

## PYRGUS POGGEEI.

Plate 780, figs. 4, ♂, 4a, ♀, 4b, ♀.

*Hesperia poggei*, Lederer, Wien, ent. Mon. 1858, p. 141. Watson, Proc. Zool. Soc. 1893, p. 65; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 159.

*Syrichthus staudingeri*, Speyer, Stett. ent. Zeit. 1879, p. 344.

*Hesperia staudingeri*, Elwes and Edwards, l.c. pl. 23, fig. 23 (genitalia). Leslie and Evans, Journ. Bo. Nat. Hist. Soc. xiv. 1903, p. 677.

*Pyrgus (Syrichthus) proteus*, Staudinger, Stett. ent. Zeit. 1886, p. 253.

*Pyrgus proteus* var. *prometheus*, Groum-Grshimailo, Rhom. Mem. iv. p. 499, pl. 18, fig. 1 (1890).

IMAGO.—Male and female. Upperside slaty-black. *Forewing* with three linear sub-apical spots, close together, divided by the veins, a lunule at the end of the cell, a square spot near the base of the second median interspace, a similar spot below the cell spot, a little before the middle of the first median interspace, two spots below, a little inwards, in the interno-median interspace. *Hindwing* with a sub-basal small spot, a large quadrate twin spot at the end of the cell, a small spot above it and three larger spots below it, all in the form of a discal macular band, a sub-marginal series of small spots from near the anal angle, obsolete upwards, all the spots on both wings white. Cilia of both wings checkered black and white. Underside pale brownish-grey. *Forewing* with all but the outer margin suffused brown. *Hindwing* with the basal half with brown suffusion, markings on both wings as on the upperside but more or less obscure, especially on the hindwing. Antennæ white beneath; palpi beneath and the legs white; head and body above and below concolorous with the wings.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{1}{2}$  inches.

HABITAT.—Central Asia, Quetta, Beloochistan, Chitral.

DISTRIBUTION.—It is in the B. M. from Quetta, Leslie and Evans record it from Chitral; it is very difficult to separate *poggei* from *staudingeri* = *proteus*, or *prometheus*,



there is a very fine series in the B. M. of all of them from many parts of Central Asia, the typical forms are distinguishable, but there are many intergrades connecting them; the discal spots in typical *staudingeri* are smaller than in typical *poggei* and therefore more separated, the lower two in *poggei* are linear spots close together forming a large square twin spot, in *staudingeri* they are quite small, but the size of these spots is by no means constant.

#### Genus SPIALIA, nov.

*Hesperia*, Moore (part), Lep. Ceylon, i. p. 182 (1881). Watson, Hesp. Ind. p. 152 (1891); id. Proc. Zool. Soc. 1893, p. 64; id. Journ. Bo. Nat. Hist. Soc. iv. 1895, p. 421. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 153.

Differs from both *Hesperia* and *Pyrgus* in having no costal fold to the forewing in the male, and from the former also in having neither the tuft of hairs on the hind tibiæ nor the hairy appendages from the breast at the base of the hindlegs; vein 12 of the forewing is also not straight, but somewhat recurved before bending up to the costa, and the antennæ are shorter, being usually less than half the length of the costa of forewing.

The imago rests with its wings closed over its back; when basking in the sun it keeps them three-quarters open.

Type, *Hesperia galba*, Fabricius.

#### SPIALIA GALBA.

Plate 781, figs. 1, ♂, 1a, ♀, 1b, ♀, 1c, larva and pupa.

- Hesperia galba*, Fabricius, Ent. Syst. iii. p. 352 (1793). Moore, Lep. Ceylon, i. p. 183, pl. 71, fig. 6 (1881); id. Proc. Zool. Soc. 1882, p. 263. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 54. Doherty, id. 1886, p. 137. Watson, Hesp. Ind. p. 155 (1891). Ferguson, Journ. Bo. Nat. Hist. Soc. 1891, p. 448. Betham, id. 1893, p. 429. Watson, Proc. Zool. Soc. 1893, p. 65. de Nicéville, Gazetteer of Sikkim, Butt. p. 179 (1894). Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. 1897, p. 29, pl. 8, fig. 6 (larva and pupa). Watson, id. ix. 1895, p. 422; id. idem, x. 1896, p. 675. Aurivillius, Ent. Tidsk. 1897, p. 151. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 157. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 59; id. xiv. 1902, p. 493. Aitken and Comber, id. xv. 1903, p. 52. Hannington, id. xx. 1910, p. 372. Evans, id. p. 388. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 141.
- Pyrgus galba*, Butler, Cat. Fabr. Lep. B. M. p. 281 (1869); id. Ent. Mo. Mag. 1870, p. 94; id. Proc. Zool. Soc. 1881, p. 613. Swinhoe, id. 1884, p. 512, 1885, p. 146, and 1886, p. 433. Forsayeth, Trans. Ent. Soc. 1884, p. 387 (larva and pupa). Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43. Swinhoe, id. p. 280; id. Trans. Ent. Soc. 1893, p. 319.
- Pyrgus superna*, Moore, Cat. Lep. Mus. E.I.C. i. p. 249 (1857); id. Proc. Zool. Soc. 1865, p. 292. Manders, Trans. Ent. Soc. 1890, p. 539.
- Pyrgus evanidus*, Butler, Ann. Mag. Nat. Hist. 1880, p. 223. Swinhoe, Proc. Zool. Soc. 1884, p. 512. Butler, id. 1886, p. 378. Swinhoe, Journ. Bo. Nat. Hist. Soc. 1887, p. 280.

- Hesperia eravidus*, Butler, Proc. Zool. Soc. 1881, p. 612. — Watson, Hesp. Ind. p. 156 (1891); id. Proc. Zool. Soc. 1893, p. 65; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.  
*Hesperia galba*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 157.  
*Hesperia zebra*, Watson (nec Butler), Journ. Bo. Nat. Hist. Soc. 1891, p. 59.

IMAGO.—Male. Upperside black, with a slight olive tint, spotted with white. *Forewing* with three spots in the cell, sub-basal, medial, and terminal, a spot on the sub-median vein below the sub-basal spot, a discal series of eight spots, commencing with three that are sub-apical, close together from near the costa, then two together, the lower the larger, then two larger, more or less square conjugated spots a little inwards and a spot on the sub-median vein still inwards; a complete sub-marginal series of small spots one in each interspace; four short white streaks on the outer half of the costal line. *Hindwing* with a sub-basal spot in the cell, a larger somewhat quadrate spot at the end of the cell, with a smaller spot below it, and a still smaller spot above it, a sub-marginal series of small spots, one in each interspace becoming obsolete upwards. Cilia of both wings checkered, black and white. Underside grey. *Forewing* with the spots as above, but larger. *Hindwing* with the abdominal fold white, the cell spots extended, there being three sub-basal spots, the cell end spot expanded into a continuous white band, with irregular margins from the costa to the abdominal fold; the sub-marginal spots as on the upper side. Cilia of both wings checkered grey and white. Antennæ with the shaft spotted with white above, pure white beneath, except the tip of the club which is dull orange; palpi, head and body above concolorous with the wings, on the underside white, legs also white.

Female usually larger and darker black than the male, markings similar, the spots on the upperside often smaller.

Expanse of wings, ♂ 1, ♀  $1\frac{2}{10}$  inches.

LARVA.—Front view of head round, shallowly bilged, thick, shiny-black, clothed with close yellow fur, interspersed with long white hairs; very long white and black hairs on the sides of the head, the black hairs flattened; jaws red. Segment 3 bright orange with a narrow black collar and a central row of long black hairs. Body cylindrical, rounded at extremity, covered with small white tubercles, each bearing a long white or brown erect hair, the brown ones confined to the front part of the body. Colour green with a darkish dorsal and a white marginal line. Length, 15·5 mm.

PUPA.—Head square with a swelling between the eyes; thorax slightly humped; constriction slight; pupa broadest at centre, circular in transverse section. Spiracular expansions of segment 2 are oval, large, well raised from the thoracic surface, dark chocolate-brown, rounded in outline. Surface finely rugose, covered with long, white, erect hairs, densest on head and around eyes. Colour of body green-yellow, green on thorax, wing cases covered all over with a white powder. Length, 13 mm.

HABITS.—Larva doubles a part of a leaf on the top or bottom of the rest of the

leaf, fastening the cell thus formed with silk all round and lining the inside strongly with silk. The larva rests like those of *Sarangesa* and *Coludenia* with its head turned round on its side. The pupa is formed in a cell, and is fixed by the tail and a body band. In the localities where this butterfly is commonly found at the end of the rains, in the months of September and onwards, there is not a specimen to be seen in the dry weather and the beginning of the rains. The eggs probably lie over on the stems of the plant during the long period during which it is leafless, from December to June.

The imago rests with its wings closed when at rest, although, when basking in the sun, it keeps them three-quarters open. The butterfly is to be found only on the immediate coast in the district, and particularly in sandy open places where it gets the full benefit of the sun, and where the food-plant of the larva, a little straggling ground weed, *Waltheria indica*, is common. The insect is very hard to see, being spotted with grey and black, but is easily captured when once espied, as it often rests to bask on some leaf or stick; its flight is not very rapid; it is not uncommon in the localities where it is found. (Davidson, Bell and Aitken.)

HABITAT.—India, Ceylon, Burma.

DISTRIBUTION.—Recorded by Watson from the Chin Hills, and Pungadaw, Upper Burma, by Manders from Fort Stedman in the Shan States; it is a common species throughout India and Ceylon, and has been recorded from many localities; we took it at Poona, Bombay, Mhow, Karachi, and have it from Ranikhet, Kurnal, Raipur, Madras, Kandy and the Khasia Hills, and it is in the B. M. also from Barrackpur, near Calcutta, Ganjam, Ootacamund, the Shan States and Burma. We cannot separate *Pyrgus evanidus*, Butler, from *galba*; his type from the Hubb river, just outside the Sind border, was taken by us, it only varies from *galba* in its smaller size and in having the white discal band of the hindwing on the underside more or less broken up, in *galba* it is complete; we took many examples of both sexes of *evanidus* in Sind, all in mid-winter; it is undoubtedly the extreme cold-weather form of *galba*. Yerbury took it also at Campbellpur in the cold weather. Our figures of the larva and pupa are from Davidson's original drawings, bred at Karwar.

#### SPIALIA ZEBRA.

Plate 781, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Pyrgus zebra*, Butler, Ann. Mag. Nat. Hist. 1888, p. 207.

*Hesperia zebra*, Watson, Hesp. Ind. p. 156 (1891); id. Proc. Zool. Soc. 1893, p. 65; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

*Hesperia hellas*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 177, pl. B, fig. 9, ♂.

*Hesperia galba*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 157.

IMAGO.—Male and female. Upperside black as in *S. galba*, with white spots.

*Forewing* with a spot in the middle of the cell, a lunule at the end, a spot outside, near the base of the second median interspace, another below the cell end, a spot in the middle of the first median interspace, three sub-apical spots followed sometimes by a minute dot, a spot on the sub-median vein (as in *galba*), an extra dot outside, above it, below the first median interspace spot, and a sub-marginal series of small spots which become obsolete upwards and hindwards. *Hindwing* with a spot at the end of the cell, another (sometimes two) immediately below it, and a sub-marginal series as on the forewing. Cilia of both wings checkered black and white. Underside pale brownish-grey. *Forewing* with the spots as above, but larger. *Hindwing* with the abdominal fold white, the sub-basal dots in a line across the wing, a complete discal band with irregular sides, narrowing hindwards, a sub-marginal more or less complete band of conjoined spots. Antennæ white beneath; palpi beneath, body and legs white; abdomen with brownish-grey bands on the underside; on the upperside the head and body are concolorous with the wings.

Expanse of wings, ♂ ♀ 1 to  $1\frac{2}{10}$  inches.

HABITAT.—N.W. Himalayas.

DISTRIBUTION.—The type male came from Chitta Pahar, the female from Campbellpur, there are six males, and the one female type in the B. M., and we have a male in our collection from Chitta Pahar. Watson records it from the Chin Hills; de Nicéville's type came from Campbellpur.

#### SPIALIA GERON.

Plate 781, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Hesperia geron*, Watson, Proc. Zool. Soc. 1893, p. 66; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 158, pl. 23, fig. 31 (genitalia).

IMAGO.—Male. Upperside brownish-black, spotted with white; the entire surface of both wings sparsely covered with minute ochreous-grey scaling. *Forewing* with a short streak before the middle of the cell, a twin spot in the middle and a lunule at the end, a spot before the middle of the second median interspace; a larger spot before the middle of the first median interspace, with a dot immediately below it, an oval spot on the middle of the sub-median vein, a complete series of sub-marginal dots, and three large conjugated sub-apical spots. *Hindwing* with a sub-basal spot in the cell, a discal band composed of a large round spot at the end of the cell, with three smaller spots close together, beneath it, a sub-marginal row of dots, becoming obsolete upwards and hindwards. Cilia of both wings checkered black and white. Underside grey. *Forewing* suffused with darker slaty-grey, the margins suffused with greenish-white spots as on the upperside. *Hindwing* with the ground colour paler, tinged with

ochreous, spots as above, but the series of sub-marginal dots is complete, and there is an extra large spot below the middle of the costa, the abdominal fold white. Antennæ black, white beneath, tip of club white; palpi beneath, pectus and abdomen white, legs white; head and body above concolorous with the wings, tip of abdomen white.

Female like the male, but all the spots are larger, and the sub-marginal series of white dots on the upperside of the hindwing is complete.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{4}{10}$  inches.

HABITAT.—Persia, Beloochistan.

DISTRIBUTION.—The type came from Quetta, we have both sexes from Quetta and Giridik on the Afghan border; there is an example in the B. M. from Shahrud, Persia.

SPIALIA SAO.

Plate 781, figs. 4, ♂, 4a, ♀, 4b, ♀.

*Papilio sao*, Bergstrasser, Nomencl. ii. pl. 40, figs. 8, 9 (1779). Hübner, Eur. Schmett. i. figs. 471, 472 (1803).

*Pyrgus sao*, Butler, Ent. Mo. Mag. 1870, p. 94.

*Hesperia sao*, Latreille, Enc. Méth. ix. p. 782 (1823). Watson, Proc. Zool. Soc. 1893, p. 65. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 158. Leslie and Evans, Journ. Bo. Nat. Hist. Soc. 1903, p. 677.

IMAGO.—Male. Upperside black, spots white. *Forewing* with a lunular spot in the cell near its end, a thin indistinct whitish line closing the cell, four sub-apical spots close together in a curve from near the costa, the lowest generally minute and indistinct, a spot towards the base of the second median interspace, another inwards below towards the base of the first median interspace, three (sometimes four) obscure white spots below it, in the interno-median interspace and a series of sub-marginal dots. *Hindwing* with a bar-shaped spot closing the cell, a small spot near the base of the second median interspace, a slightly larger spot before the middle of the first median interspace, and a sub-marginal series of dots, becoming obsolete upwards and hindwards. Cilia of both wings checkered black and white. Underside. *Forewing* with the margins chocolate-grey, the inner portion of the wing suffused with black, the base with bluish-grey scales, the spots as on the upperside. *Hindwing* dark chocolate-brown or reddish-brown, the abdominal fold greyish-white, a white patch at the costal base, a white spot in the middle of the cell with another below it on the abdominal margin near the base, a large irregular-shaped spot at the end of the cell, two larger spots in the interspaces above it, and two smaller spots in the interspaces below it, the five spots forming a macular band across the wing, a sub-marginal series of spots, the spots at the apex and on vein 5 very large, the latter running out and joining the white patch on the cilia. Cilia checkered brown and white. Antennæ black above,

pure white beneath, the upper half of the club entirely black; palpi and body beneath and the legs white, palpi, head and body above black, with grey hairs, abdomen with grey, thin, segmental bands, the tip ochreous-grey.

Female like the male, but all the spots are usually a little larger.

Expanse of wings, ♂ ♀,  $1\frac{1}{10}$  to  $1\frac{2}{10}$  inches.

HABITAT.—Europe, Central Asia, N.W. Himalayas.

DISTRIBUTION.—Recorded by Leslie and Evans from Chitral, and there is a pair from the same locality in our collection taken in August, 1901, at 12,000 feet elevation, which we figure.

#### Genus GOMALIA.

*Gomalia*, Moore, Proc. Zool. Soc. 1879, p. 144; id. Lep. Ceylon, i. p. 183 (1881). Watson, Hesp. Ind. p. 158 (1891); id. Proc. Zool. Soc. 1893, p. 67; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 421. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 153.

*Forewing*, vein 12 ends on costa well before end of cell, cell a little more than two-thirds the length of the costa, discocellulars sub-erect, vein 3 emitted close before lower end of cell, 2 from before the middle; the male with a costal fold, costa very slightly arched, apex sub-acute, outer margin evenly convex, shorter than the hinder margin, which is nearly straight. *Hindwing*, vein 7 emitted close to upper end of cell, 3 from close to the lower end, discocellulars and vein 5 very faint, costa highly arched at base, outer margin evenly rounded. Antennæ with somewhat slender club, blunt at the tip, no terminal crook; palpi sub-erect, second joint laxly clothed with longish scales, third joint slender, blunt, more or less concealed by the hairs of the second joint; hind tibiæ with two pairs of spurs.

Type, *Gomalia albofasciata*, Moore.

#### GOMALIA ALBOFASCIATA.

Plate 782, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Gomalia albofasciata*, Moore, Proc. Zool. Soc. 1879, p. 144; id. Lep. Ceylon, i. p. 183, pl. 71, fig. 7 (1881); id. Proc. Zool. Soc. 1882, p. 263. Hampson, Journ. As. Soc. Bengal, 1888, p. 367. Watson, Hesp. Ind. p. 159 (1891); id. Proc. Zool. Soc. 1893, p. 67; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 153. Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 388.

*Gomalia littoralis*, Swinhoe, Proc. Zool. Soc. 1884, p. 513, pl. 47, fig. 4; id. Journ. Bo. Nat. Hist. Soc. 1887, p. 280.

IMAGO.—Male. Upperside with the ground colour brownish-olive-grey. *Forewing* with a basal blackish-brown band, and an ante-medial darker band, the latter with its outer margin limited by a black thick line which extends from the sub-costal vein in

an outward curve to the sub-median vein, its portion crossing the cell edged outwardly by a white lunular mark which closes the end of the cell, a white spot at the base of the second median interspace and another inwards below, almost touching it, in the first median interspace, a large square blackish-brown patch on the costa limited outwardly by three sub-apical conjoined white spots, a similar but smaller patch at the apex, a larger similar patch on the middle of the outer margin, and a small narrow one at the hinder angle. *Hindwing* darker, a white middle band from the sub-costal vein to the abdominal fold, the inner portion of the wing from the band to the base black, containing a white sub-basal spot, a black band narrowing upwards attached to the lower portion of the white band, and a blackish macular, marginal band. Cilia of both wings grey, marked in places with brown. Underside grey. *Forewing* with a darker ante-medial outwardly curved band darker than the ground colour, a white and grey mark at the end of the cell, a broader, grey, discal, more outwardly curved band and a grey band on the lower two-thirds of the margin. Antennæ blackish, the underside of the shaft greyish-white; palpi and body beneath and the legs grey like the colour of the wings; palpi, head and body above brownish-olive, abdomen with whitish, thin segmental bands.

Female similar to the male, usually larger.

Expanse of wings, ♂  $\frac{8}{10}$  to 1 inch, ♀ 1 to  $1\frac{2}{10}$  inches.

HABITAT.—India, Ceylon, Beloochistan.

DISTRIBUTION.—The type came from Ceylon, the type of *littoralis* from Karachi, we took it at Poona and have it from Madras and from Quetta, Evans records it from the Palni Hills and Moore from Kangra; it is a scarce species, though widely distributed within our area.

#### Genus CARCHARODUS.

*Carcharodus*, Hübner, Verz. bek. Schmett. p. 110 (1816). Watson, Proc. Zool. Soc. 1893, p. 67; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 421. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 152.

*Spilothyrus*, Duponchel, Pap. Fr. Diurn. Suppl. p. 415 (1832).

*Hesperia*, Watson (part), Hesp. Ind. p. 152 (1901).

*Forewing*, vein 12 ends on costa well before end of cell, cell rather less than two-thirds the length of the costa, discocellulars sub-erect, the lower the longer, vein 3 emitted a little before the lower end of the cell; 2 from a little before the middle; the male with a costal fold, costa arched at the base, then nearly straight, apex blunt, outer margin convex, a little shorter than the inner margin, which is nearly straight. *Hindwing*, cell more than half the length of the wing, vein 7 emitted a little before the upper end, discocellulars and vein 5 faint, 3 from just before lower end, 2 from a little before the middle; costa highly arched at the

base, outer margin crenulate. Antennæ with the club rather robust, with a very minute blunt crook, palpi sub-erect, third joint blunt, prominent, standing out well beyond the head, second joint laxly scaled, hind tibiæ with two pairs of spurs, the upper pair very minute.

Type, *Papilio lavateræ*, Esper, from Europe.

As pointed out by Watson, this genus can be divided into two groups, in one of which the male has a tuft of hairs on the underside of the forewing, not present in the other.

## SECTION I.

Without the tuft of hairs on the underside of forewing, in the male.

### CARCHARODUS ALCEÆ.

Plate 782, figs. 2, ♂, 2a, ♀, 2b, ♀.

*Papilio alceæ*, Esper, Schmett. i. (2), pl. 51, fig. 3 (1780).

*Pyrgus alceæ*, Butler, Ent. Mo. Mag. 1870, p. 94.

*Carcharodus alceæ*, Watson, Proc. Zool. Soc. 1893, p. 67. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 152. Leslie and Evans, Journ. Bo. Nat. Hist. Soc. xiv. 1903, p. 677.

*Papilio malvarum*, Hoffmannsegg, Ill. Mag. iii. p. 198 (1804). Ochsenheimer, Schmett. Eur. i. 2, p. 195 (1808).

*Hesperia malvarum*, Meigen, Eur. Schmett. ii. p. 55, pl. 54, fig. 1 (1829).

*Papilio malvæ*, Hufnagel (nec Linnaeus), Berl. Mag. ii. p. 66 (1766). Schiff. Wien Verz. p. 159 (1776).

*Hesperia malvæ*, Latreille (nec Linnaeus), Enc. Méth. ix. p. 779 (1823).

IMAGO.—Male. Upperside brown with a slight pinkish tint. *Forewing* with an ante-medial blackish band from the cell to the sub-median vein, filling the outer third of the cell, and divided by the median vein, a white lunule at the end of the cell, a discal series of quadrate blackish-brown marks in the interspaces, a small white spot near the base of the second median interspace, another before the middle of the first median interspace, three sub-apical white dots, all within the discal series, a marginal series of square blackish-brown marks in the interspaces. *Hindwing* with a quadrate blackish-brown spot at the end of the cell, and two below it, all three outwardly edged with white spots, a discal and a marginal series of square blackish-brown marks in the interspaces. Cilia of both wings checkered brown and white.

Female larger than the male. Upperside with the ground colour paler, markings similar. Underside pale greyish markings as above, but indistinct. *Forewing* with the brown wedge at the end of the cell split by a white line; a sub-marginal series of white dots. *Hindwing* whitish, abdominal fold white, two sub-basal white spots, a discal and a sub-marginal series of white spots. Antennæ brown, white beneath, the



club with a red tip, palpi and abdomen white on the underside, thorax and legs grey, the legs white beneath, head and body above concolorous with the wings.

Expanse of wings, ♂  $1\frac{4}{10}$ , ♀  $1\frac{1}{2}$  inches.

HABITAT.—Central Asia, N.W. Himalayas.

DISTRIBUTION.—Recorded by Leslie and Evans from Chitral.

CARCHARODUS SWINHOEI.

Plate 782, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Carcharodus swinhoei*, Watson, Proc. Zool. Soc. 1893, p. 68; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

*Erynnis marrubii*, Butler (nec Rambur), Proc. Zool. Soc. 1880, p. 411. Swinhoe, Trans. Ent. Soc. 1885, p. 305.

*Carcharodus alceæ*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 152.

IMAGO.—Male. Upperside dark olive-brown, or olive-greenish-brown. *Forewing* with the costal fold ochreous when turned over; spots ochreous-white, nearly pure white; all very small; a lunule marked inwardly with blackish at the end of the cell, two small blackish spots below it; two small white spots marked with blackish in the median interspaces, in an inwardly oblique line, two larger blackish spots above the hinder margin a little before and a little beyond the middle, a blackish suffused sub-apical space containing three white dots near the costa in an outwardly oblique curve and some blackish spots on the outer margin. *Hindwing* with ante-medial, discal and sub-marginal series of somewhat spear-shaped blackish marks, a little darker than the ground colour in the interspaces; a white spot at the end of the cell, with some spots hindwards in continuation, and an indistinct series of whitish spots inside the sub-marginal blackish series; all these markings more or less obscure. Underside paler, both wings crossed by four dark bands, the spaces between pale and more or less whitish, the spots as on the upperside. Antennæ black, shaft and club spotted with white on the underside; palpi, head and body above and below and the legs concolorous with the wings, palpi beneath and the pectus grey.

Female like the male, but without the costal fold, the spots a little larger, and in some specimens there is a white spot on the hindwing inside the cell near the base.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{3}{10}$  inches.

HABITAT.—Kashmir, N.W. Himalayas, Kandahar, Quetta.

DISTRIBUTION.—There are many examples in the B. M. from Beluchistan, Afghanistan and Thundiani; we have both sexes from Kandahar, Quetta, Kashmir, Chitral and Thundiani.

## SECTION II.

With a tuft of hairs on the underside of the forewing, in the male.

## CARCHARODUS DRAVIRA.

Plate 783, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Pyrgus dravira*, Moore, Proc. Zool. Soc. 1874, p. 576, pl. 67, fig. 5, ♂. de Nicéville, Journ. As. Soc. Bengal, 1883, p. 88, pl. 10, fig. 5, ♀.

*Erymnis dravira*, Swinhoe, Trans. Ent. Soc. 1885, p. 346.

*Hesperia dravira*, Watson, Hesp. Ind. p. 153 (1891).

*Carcharodus dravira*, Watson, Proc. Zool. Soc. 1893, p. 67; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 422.

*Carcharodus alceæ*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 152.

IMAGO.—Male. Upperside with the ground colour grey, tinged with olive-green, spots white, bands dark brown. *Forewing* with a basal band, divided by the median vein and not reaching the costa, a broad middle band from the middle of the cell to the hinder margin divided by the veins, and outwardly angled in its middle, a similar discal band from the costa to the hinder margin divided by all the veins, and a similar marginal band; all these bands formed of more or less wedge-shaped marks in the interspaces, with their margins somewhat diffuse, giving the wing a variegated appearance; a white thin bar in the cell outwardly limiting the upper part of the middle band, a thin obscure white line closing the cell, three sub-apical spots in a curve from close to the costa, a lunular spot towards the base of the second median interspace and another inwards below, before the middle of the first median interspace, all these five spots within the discal band. *Hindwing* with grey hairs on the abdominal portion, a sub-basal spot in the cell, with a brown patch inside it and another between it and the white spot at the end of the cell, which has a white spot above it and two (sometimes three) white spots below it forming a white, macular middle band, this being immediately followed by a brown, macular discal band, outwardly edged by a whitish obscure series of lunular marks, and a marginal, brown, macular band, making the wing as variegated as the forewing. Cilia of both wings checkered brown and white. Underside with the ground colour grey. *Forewing* with a large basal blackish patch of hairs covering most of its basal half, all the markings as above, but very obscure, with an additional series of obscure sub-marginal dots. *Hindwing* paler, the markings as on the upperside. Antennæ black, white beneath, the upper half of the club entirely black; palpi and body beneath and the legs white, the palpi, head and body brown above, with grey hairs, abdomen with brown segmental bands and a grey tip.

Female only differs from the male in having no costal fold to the forewing; on the underside it is usually a little darker.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  inches.

HABITAT.—Beloochistan, Afghanistan, N.W. Himalayas. There are numerous specimens in the B. M. from the above localities; we took many examples in Quetta and Kandahar.

#### Genus THANAOS.

*Thanaos*, Boisduval, Icones, p. 240 (1833). Watson, Proc. Zool. Soc. 1893, p. 69. Leech, Butt. of China, etc. ii. p. 580 (1893). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 163.

*Forewing*, cell less than two-thirds the length of costa; discocellulars slightly inwardly oblique, the lower the longer; vein 3 shortly before the end of the cell; 2 from a little before the middle; hinder margin longer than the outer margin, male with a costal fold. *Hindwing*, vein 7 emitted close to the end of the cell; discocellulars and vein 5 very faint; 3 emitted before the lower end of the cell; 2 from about the middle; outer margin evenly rounded. Antennæ with the club moderate, bent in a slight curve, bluntly pointed; palpi porrect, second joint laxly clothed, third almost concealed, bluntly conical; hind tibiæ fringed, with two pairs of spurs, the upper pair minute.

Type, *Papilio tages*, Linnæus, from Europe.

#### THANAOS MARLOYI.

Plate 783, figs. 2, ♂, 2a, ♀, 2b, ♀.

*Thanaos marloyi*, Boisduval, Icones, pl. 47, figs. 6, 7 (1833). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 164, pl. 23, figs. 32, 33 (genitalia). Leslie and Evans, Journ. Bo. Nat. Hist. Soc. xiv. 1903, p. 677.

*Hesperia sericea*, Freyer, Neuere Beitr. iii. pl. 245, fig. 4 (1838); Herrich-Schäffer, Schmett. Eur. i. Hesp. figs. 29, 30 (1846).

IMAGO.—Male. Upperside dark brown. *Forewing* crossed by two darker brown bands, medial and discal, both inwardly oblique and composed of linear spots more or less joined together, the spots in the discal band containing white dots, sometimes very obscure, the uppermost one close to the costa the most prominent; an obscure macular band close to the outer margin. *Hindwing* without markings; both wings with the outer marginal line dark brown. Cilia grey, the tips pale. Underside slightly paler than the upperside, without any markings except a small white spot close to the costa of the forewing near the apex.

Female like the male, slightly paler, the transverse bands on the upperside of the forewing a little more prominent; on the underside there are usually two or three

white spots or marks outside the cell end on the forewing and a discal series of white dots from the costa to vein 2.

Antennæ black, ringed with white; palpi, head, body and legs concolorous with the wings; palpi beneath and pectus with white hairs.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{5}{10}$  inches.

HABITAT.—Europe, Asia Minor, Syria, N. Persia, N.W. Himalayas.

DISTRIBUTION.—Recorded from Chitral by Leslie and Evans.

#### CHINESE AND JAPANESE ALLIED SPECIES.

*Thanaos montanus*, *Pyrgus montanus*, Bremer, Bull. Acad. Petr. iii. p. 473 (1861); id. Lep. Ost.-Sib. p. 31, pl. 2, fig. 4 (1864). *Nisioniades montanus*, Pryer, Rhop. Nippon, pl. 35, p. 10, fig. 23 (1889). Synonym, *Thanaos rusticanus*, Butler, Journ. Linn. Soc. Zool. Lond. 1866, p. 58. Habitat, China, Japan, Amurland.

*Thanaos sinina*, *Nisioniades tages* var. *sinina*, Groum-Grshimailo, Hor. Soc. Ent. Ross. xxv. p. 461 (1891). *Thanaos tages* var. *sinina*, Leech, Butt. of China, etc. ii. p. 661 (1893). Habitat, China, Amurland, Europe.

*Thanaos erebus*, *Nisioniades erebus*, Groum-Grshimailo, l.c. Habitat, W. China, N.E. Thibet.

*Thanaos pelias*, *Nisioniades pelias*, Leech, Entom. xxiv. Suppl. p. 60 (1891). *Thanaos pelias*, Leech, Butt. of China, etc. ii. p. 581, pl. 42, fig. 3, ♂ (1893). Habitat, W. China, E. Thibet.

*Thanaos nigrescens*, *Thanaos montanus* var. *nigrescens*, Leech, l.c. fig. 2, ♂ (1893). Synonym, *Thanaos leechii*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 164, pl. 23, fig. 35 (genitalia). Habitat, W. China.

In his classification of the *Hesperiidæ*, Watson puts all the remaining genera into the sub-family *Pamphilinæ*, with vein 5 of the forewing from below the middle of the discocellulars, the middle discocellular being longer than the lower, and he divides them into two sections: (I.) those with the middle discocellular slightly longer than the lower, and (II.) those in which the middle discocellular is considerably longer than the lower; he takes the name, as is usual, of the oldest recorded genus as the name of the sub-family; the genus *Pamphila*, however, stands apart from them all, in having only one pair of spurs to the hind tibiæ, and the fore tibiæ without epiphysis, the species of all the other genera, except the aberrant genus *Itys*, have two pairs of spurs to the hind tibiæ, the fore tibiæ with epiphysis, also the structure of the antennæ with its blunt straight club separates *Pamphila* from all the other genera, except its near allies *Taractrocera*, *Ochus* and *Ampittia*.

We have made a careful examination of the structure of all the genera known to us, and of the few not known to us we have carefully studied the descriptions of the various authors, and we find that these genera can be divided into two divisions by the position of vein 5 of the forewing as suggested by Watson, but the first division

can be easily separated into four groups or sub-families making a natural sequence of genera, and the second division into three, mainly on the structure of the antennæ.

The venation of the whole of the *Hesperiidæ* is so singularly uniform, we must take what characters we can find to differentiate the groups; the position of vein 5 of the forewing divides the entire family into two great divisions, the structure of the antennæ divides them into well-formed groups that carry out the sequence of the genera in a perfectly natural way, and the shape of the wings, the position of the sub-median nervules in both wings, and the secondary sexual characters differentiate the genera also quite naturally.

All the butterflies of this great division, in so far as we know, rest with their wings closed over their backs, assuming that position immediately on settling, and the males never have a costal fold.

#### DIVISION I.

With vein 5 of forewing arising a little below the middle of discocellulars, the middle discocellular being slightly longer than the lower.

#### Sub-Family PAMPHILINÆ.

Antennæ short, club straight, tip blunt; palpi porrect or upturned, second joint densely clothed, hind tibiæ with one pair of spurs in *Pamphila* and without epiphysis on the fore tibiæ, two pairs in the other genera, the fore tibiæ with epiphysis. *Forewing* with the cell less than two-thirds the length of the costa, vein 3 emitted near the lower end of the cell, 2 from beyond the middle. *Hindwing* with the cell about half the breadth of the wing, discocellulars and vein 5 faint, vein 3 from near the lower end of the cell, 2 from, or from beyond the middle, except in *Taractrocera*, when it is nearer the base of the wing.

#### Genus PAMPHILA.

- Pamphila*, Fabricius, Ill. Mag. vi. p. 287 (1807). Westwood, Gen. D. L. p. 521 (1852). Watson, Proc. Zool. Soc. 1893, p. 89. Leech, Butt. of China, etc. ii. p. 585 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 424. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 165.
- Steropes*, Boisduval, Voy. Astrolabe, Lep. p. 167 (1832) (nom. præocc.).
- Carterocephalus*, Lederer, Verh. zool.-bot. Ges. Wien, ii. p. 26 (1853).
- Aubertia*, Oberthür, Études d'Ent. xx. p. 40 (1896) (non descr.).

*Forewing*, vein 12 ends on costa before the end of the cell; cell less than two-thirds the length of the costa; upper discocellular short, but distinct, middle discocellular slightly longer than the lower, vein 5 from below the middle, 3 emitted a little before lower end of cell, 2 from about the middle; costa highly arched near the base, then straight to the apex, which is sub-acute and somewhat produced, outer margin oblique and somewhat convex, shorter than the hinder margin, hinder angle rounded, but well pronounced. *Hindwing* with the cell very long, reaching more than half across the wing, vein 7 emitted a little before the upper end of the cell, discocellulars and vein 5 faint, vein 3 emitted very close to the lower end of the cell, 2 from about one-third before the end; costa much arched near the base, apex somewhat produced, outer margin even, very slightly convex, anal angle blunt, abdominal margin nearly straight. Antennæ short, club stout, straight, rather long, its tip blunt; palpi porrect, densely clothed with laxly set scales almost concealing the third joint, which is short, slender and bluntly conical; hind tibiæ fringed and with only a terminal pair of spurs, fore tibiæ without epiphysis.

Type, *Papilio palæmon*, Pallas, from Europe.

#### PAMPHILA AVANTI.

Plate 783, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Pamphila avanti*, de Nicéville, Journ. As. Soc. Bengal, 1886, p. 255, pl. 11, fig. 10, ♂. Elwes, Trans. Ent. Soc. 1888, p. 452. Watson, Hesp. Ind. p. 159 (1891). de Nicéville, Gazetteer of Sikkim, Butt. p. 181 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 167.

IMAGO.—Male. Upperside. *Forewing* yellow, markings brown, the base brown, costal line also brown; an outwardly oblique band before the middle, composed of two somewhat quadrate, large spots joined together, the lower the smaller and somewhat diffuse, and not reaching the hinder margin, the upper one against the costa, and from it to the base of the wing the costa is broadly brown; a large quadrate spot, constricted at its middle, reaching from the costa, one-third from the apex, to vein 3, its inner margin being just outside the cell, a somewhat broad marginal band, somewhat squarely excavated towards the outer margin, opposite the lower end of the large square spot. *Hindwing* dark brown, with a large discal pear-shaped spot, its point running inwards and upwards, across the outer side of the cell end, a small spot near the outer side of the discal spot; both wings with marginal brown line and pale grey cilia, becoming white on the hindwing. Underside. *Forewing* pale yellow, costal line brown, the macular band before the middle reduced in size, the outer quadrate spot against the costa paler than it is on the upperside, a brownish sub-marginal short streak from the costa, and another on the lower half of the wing. *Hindwing* pale

yellow, suffused with pale rufous, the discal large spot silvery-ochreous, edged with dark rufous, a similarly coloured small spot above it, another in the cell near the base, the abdominal fold whitish, both wings with outer marginal brown line. Antennæ brown above, the club with a yellowish-white tip, on the underside the entire antennæ is yellowish-white; palpi, head, body and legs brown, palpi white beneath, pectus with white hairs, abdomen smeared with white.

Female like the male. Upperside with an additional, somewhat prominent yellow spot near the apex of the hindwing. Underside. *Forewing* with the outer marginal band as on the upperside, but more rufous in colour, otherwise as in the male. *Hindwing* with the ground colour darker rufous, the silvery-ochreous markings as in the male, with an additional apical spot, and a sub-marginal, broken, whitish band.

Expanse of wings, ♂ ♀ 1 to  $1\frac{1}{10}$  inches.

HABITAT.—N.W. Himalayas.

DISTRIBUTION.—The type in coll. Elwes, came from Native Sikkim; there are several examples of both sexes in the B. M. from the Chumbi Valley, taken by Taylor in the month of July; our description and figures are from a pair of them.

#### PAMPHILA DIECKMANNI.

Plate 783, figs. 4, ♂, 4a, ♀, 4b, ♂.

*Carterocephalus dieckmanni*, Græser, Berl. ent. Zeit. 1888, p. 102.

*Pamphila dieckmanni*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 168. Adamson, Trans. Nat. Hist. Soc. Northumberland, etc. 1908, p. 141.

*Carterocephalus gemmata*, Leech, Entom. xxiv. Suppl. p. 59 (June, 1891).

*Pamphila gemmata*, Leech, Butt. of China, etc. ii. p. 588, pl. 41, fig. 18, ♀ (1893). Watson, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 675.

*Carterocephalus demea*, Oberthür, Étud. d'Ent. xv. p. 19, pl. 3, fig. 24 (July, 1891).

*Aubertia demea*, Oberthür, l.c. xx. p. 40 (1896).

IMAGO.—Male. Upperside black, with pure white spots. *Forewing* with two spots in the cell, the first at the basal third, of irregular shape, the other at one-third from the end, bar-shaped across the cell, an equally large, irregular spot below the cell end in the first median interspace with two small spots below it, and a small spot outwards, above it; five sub-apical spots, the first three from near the costa, in a straight line, divided by the veins, the other three smaller, also in a line, close together and placed outwards. *Hindwing* with a white bar across the cell end and a small spot below it. Cilia of both wings brown, pure white at the apex of the forewing and along the costa of the hindwing. Underside paler black. *Forewing* with markings as on the upperside, but larger, a white line across the end of the cell, a white streak at the apex and a white patch at the base. *Hindwing* with two broad transverse white

bands, medial and discal, the first narrowing hindwards, bulged outwards below its middle and ending in a club-shaped form below vein 1, the other straight from the costa to the outer margin, excavated on its outer side opposite the bulged part of the middle band. Antennæ black, strongly ringed with white; palpi covered with white and grey and brown hairs, eyes ringed with white; head and body black, abdomen below white, palpi beneath and pectus white, legs black, with some grey hairs.

Female like the male, but paler and duller in colour and without the white tip to the apex of the forewing.

Expanse of wings, ♂ ♀  $1\frac{2}{16}$  inches.

HABITAT.—Amurland, W. China, Thibet, Chin Hills, Burma.

Recorded by Watson as being a common species at Fort White in the Chin Hills, 6,500 to 7,000 feet elevation. We have several examples from Mou-Pin and Ta-t sien-lou in Western China.

#### INDO-MALAYAN, CHINESE AND JAPANESE ALLIED GENERA AND SPECIES.

- Pamphila juliana*, *Hesperia juliana*, Latreille, Enc. Méth. ix. p. 763 (1823). Snellen, Tijds. voor Ent. 1878, p. 41. Habitat, Java, Celebes.
- Pamphila argyrostigma*, *Carterocephalus argyrostigma*, Eversmann, Bull. Mosc. i. p. 624 (1851). Nordmann, Bull. Mosc. ii. p. 442, pl. 12, figs. 1, 2 (1851). *Pamphila argyrostigma*, Leech, Butt. of China, etc. ii. p. 585 (1893). Habitat, Amurland, Mongolia, Thibet, N. China.
- Pamphila houangty*, *Carterocephalus houangty*, Oberthür, Étud. d'Ent. xi. p. 27, pl. 5, fig. 5 (1886). Habitat, W. China.
- Pamphila abax*, *Carterocephalus abax*, Oberthür, l.c. f. 27 (1886). Habitat, E. Thibet, W. China.
- Pamphila flavomaculatus*, *Carterocephalus flavomaculatus*, Oberthür, l.c. pl. 2, fig. 9 (1886). Habitat, E. Thibet, W. China.
- Pamphila niveomaculatus*, *Carterocephalus niveomaculatus*, Oberthür, l.c. pl. 2, fig. 8, ♂ (1886). *Pamphila niveomaculatus*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 167, pl. 19, fig. 23, ♀. Habitat, E. Thibet, W. China.
- Pamphila pulchra*, Leech, Entom. xxiv. Suppl. p. 59 (June, 1891); id. Butt. of China, etc. ii. p. 586, pl. 40, fig. 20, ♂ (1893). Synonym, *Carterocephalus ops*, Groum-Grshimailo, Hor. Ent. Soc. Ross. xxv. p. 460 (July, 1891). Habitat, N.E. Thibet, W. China.
- Pamphila micio*, *Carterocephalus micio*, Oberthür, l.c. xv. p. 19, pl. 3, fig. 29 (1891). Habitat, E. Thibet, Tse-kow, W. China.
- Pamphila christophi*, *Carterocephalus christophi*, Groum-Grshimailo, Hor. Ent. Soc. Ross. xxv. p. 460 (1891). Synonym, *Aubertia dulcis*, Oberthür, l.c. xx. p. 40, pl. 9, fig. 162 (1896). Habitat, Sinin-Shan Mountains, Thibet.
- Heteropterus morpheus*, *Papilio morpheus*, Pallas, Reise, i. p. 471 (1771). Synonym, *Papilio steropes*, Schiff. Wien, Verz. p. 160 (1776). Esper, Schmett. i. pl. 41, f. 1 (1778). Hübner, Eur. Schmett. i. figs. 473, 474 (1803). Habitat, Europe, Amurland, Korea.
- Heteropterus unicolor*, *Steropes unicolor*, Bremer and Grey, Schmett. N. China's, p. 10, pl. 3, fig. 3 (1853). *Cyclopides unicolor*, Bremer, Bull. Acad. Petr. iii. p. 473 (1861). Habitat, Amurland, C. China, Japan.



## Genus TARACTROCERA.

*Taractrocera*, Butler, Cat. Lep. Fabr. B. M. p. 279 (1869). Moore, Lep. Ceylon, i. p. 172 (1881).  
 Watson, Hesp. Ind. p. 62 (1891); id. Proc. Zool. Soc. 1893, p. 94, pl. 3, fig. 20. Leech, Butt.  
 of China, etc. ii. p. 589 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 425. Elwes  
 and Edwards, Trans. Zool. Soc. 1897, p. 182.

*Forewing*, vein 12 reaches costa well before end of cell; cell less than two-thirds the length of costa; upper discocellular very short, middle and lower discocellulars erect, the lower a little the shorter, vein 5 curving down slightly at its base which is nearer the base of vein 4 than of vein 6, 3 emitted a little before lower end of cell, 2 a little beyond the middle; wing short, triangular, costa very slightly arched, outer margin evenly convex, shorter than the hinder margin. *Hindwing*, vein 7 emitted a little before upper end of cell, discocellulars bent somewhat inwards, faint, vein 5 not traceable; 3 from close to lower end of cell, the base of 2 close to the base of 3, being hardly an eighth from the cell end; costa and outer margin evenly rounded. Antennæ short, about half the length of costa of forewing, club short, broad, in the form of a flattened, hollow disk; palpi upturned, second joint densely scaled, third long, slender, erect and pointed, reaching above the vertex; hind tibiæ with two pairs of spurs, fore tibiæ with epiphysis.



Type, *Hesperia mævius*, Fabricius.

## TARACTROCERA MÆVIUS.

Plate 784, figs. 1, ♂, 1a, ♀, 1b, ♀.

*Hesperia mævius*, Fabricius, Ent. Syst. iii. p. 352 (1793). Aurivillius, Ent. Tidsk. 1897, p. 151.

*Taractrocera mævius*, Butler, Cat. Lep. Fabr. B. M. p. 279, pl. 3, fig. 13 (1869). Moore, Lep. Ceylon, i. p. 172, pl. 70, fig. 5 (1881). Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 385, pl. 17, fig. 2, ♀. Elwes, Trans. Ent. Soc. 1888, p. 455. Hampson, Journ. As. Soc. Bengal, 1888, p. 366. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 28; id. Hesp. Ind. p. 62 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 57. Fergusson, id. p. 447. Betham, id. 1893, p. 427. Watson, Proc. Zool. Soc. 1893, p. 94. de Nicéville, Gazetteer of Sikkim, Butt. p. 181 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 183. Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 53. de Rhé-Philipe, id. xi. 1898, p. 598; id. idem, xiv. 1902, p. 493. Aitken and Comber, id. xv. 1903, p. 52. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 142. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371.

*Taractrocera sagara*, Moore, Proc. Zool. Soc. 1865, p. 792; id. idem, 1882, p. 262. Druce, id. 1883, p. 360. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 54. Doherty, id. 1886, p. 139. Swinhoe, Proc. Zool. Soc. 1886, p. 434.

IMAGO.—Male. Upperside olive-brown, with yellowish-white markings. *Forewing* with a short streak on the median vein in the middle of the cell, another above it at the upper end, with two short small streaks between it and the costa, sometimes connected together; a series of spots in two parts across the disc, three conjoined from the costa near the apex, and four commencing at the base of the second median interspace, divided from each other by the veins, all the spots somewhat quadrate and excavated on their outward sides, two small quadrate spots nearer the margin in the fifth and sixth interspaces. *Hindwing* with a series of small spots in almost a straight line in the middle of the disc. Cilia of both wings grey with white tips. Underside with the colour similar, almost as dark as on the upperside, markings similar, but on the hindwing there is a bar across the end of the cell, and two small sub-apical spots outside it. Antennæ black with white bands, the club with a white basal patch on the underside; palpi above grey with some white hairs, pure white on the underside; head and body concolorous with the wings, abdomen with white segmental bands.

Female. Upperside like the male, but somewhat paler, the spots larger and more prominent. Underside with the markings as on the upperside. *Forewing* with the costal and apical portions whitish, the veins below the costa and at the apex white, a narrow, white outer marginal band and a black marginal line. *Hindwing* entirely suffused with white, all the veins pure white.

Expanse of wings, ♂ ♀ 1 to  $1\frac{2}{10}$  inches.

HABITAT.—India, Ceylon, Burma.

DISTRIBUTION.—In our collection from Mhow, Poona, Ranikhet, Maymyo, Upper Burma, and Trincomali in Ceylon; recorded by Elwes from Sikkim, Calcutta and Ganjam, by Hannington from Kumaon, by de Rhé-Philippe from Lucknow and Masuri, by Aitken and Comber from the Konkan, by Fergusson from Travancore, by Moore from Kangra, by Doherty from Kumaon, and by Adamson from Toungoo and Maulmein; it is widely spread all over India, Burma and Ceylon, but is very local.

#### TARACTROCERA CERAMAS.

Plate 784, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Cyclopides ceramas*, Hewitson, Descr. Hesp. p. 44 (1868).

*Taractrocera ceramas*, Watson, Hesp. Ind. p. 63 (1881). Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43. Hampson, Journ. As. Soc. Bengal, 1888, p. 366. Watson, Proc. Zool. Soc. 1893, p. 94; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 184, pl. 21, fig. 24, ♂. Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 388.

IMAGO.—Male. Upperside rufous-brown, with small orange spots. *Forewing* with eight spots, one in the cell, three conjoined from near the costa before the apex,

two in the middle of the disc, and two close to the outer margin below the apex. *Hindwing* with two pairs of spots in the disc, one pair in the middle and the other near the apex. Cilia of both wings pale brown. Underside. *Forewing* blackish-brown, the spots as above, but paler and duller in colour, and there is a dull orange streak between the costa and subcostal vein. *Hindwing* paler, markings as above, but with an additional spot at the end of the cell, and the entire wing more or less covered with minute orange scales. Antennæ black, the lower half of the club white at the sides, the shaft with white dots; palpi, head and body concolorous with the wings; palpi grey beneath, the abdomen with obscure grey bands on the underside.

Female like the male.

Expanse of wings, ♂ ♀  $\frac{9}{16}$  to 1 inch.

HABITAT.—South India.

DISTRIBUTION—The type is marked Nilgiris; we have both sexes from Ootacamund; Evans records it from the Palni Hills, Aitken from Egutpuri, Elwes from Travancore and Malabar.

#### TARACTROCERA NICÉVILLEI.

Plate 784, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Taractrocera nicévillei*, Watson, Proc. Zool. Soc. 1893, p. 95; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 184, pl. 21, fig. 12, ♂. Aitken and Comber, Journ. Bo. Nat. Hist. Soc. xv. 1903, p. 52. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 142.

*Ampittia coras*, Swinhoe (nec Cramer), Proc. Zool. Soc. 1885, p. 146. Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43. Watson, Hesp. Ind. p. 61 (1891).

*Taractrocera ceramas*, Davidson, Bell and Aitken (nec Hewitson), Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 52 (larva and pupa).

IMAGO.—Male. Upperside rufous-brown with rather large, more or less quadrate, orange spots. *Forewing* with an elongate spot at the end of the cell divided into two by the fold and a short adjoining streak above it, a spot near the costa before the apex divided into three by the veins, a spot outside, its upper inner end often touching the lower outer end of the other spot, two spots in the middle of the disc, with two or three spots below it decreasing in size, all joined together into a discal band. *Hindwing* with a lunulate spot at the end of the cell, often indistinct, and three discal spots, the middle one outside the others, and the largest, the upper one small, the lower one generally divided into two by the second median nervule. Cilia of both wings grey, with a darker inner band. Underside as above. *Forewing* with the costa narrowly suffused with orange, and a marginal row of obscure orange spots from the apex to the end of the first median nervule. *Hindwing* with the discal spots larger than on the upperside and consequently all more or less conjoined, and an additional spot at the

end of the cell, the wing sparsely covered with minute orange scales, and indications of some obscure, small, orange spots on the outer margin. Antennæ black, ringed with white, a white patch at the base of the club on the underside; palpi grey beneath, brown above; head and body above and below concolorous with the wings; abdomen with whitish segmental bands on the underside.

Female like the male, but all the orange spots are usually much smaller and more separated from each other than they are in the male, and in the forewing the spots joined hindwards to the two spots in the middle of the disc are often wanting.

Expanse of wings, ♂ ♀ 1 to  $1\frac{1}{10}$  inches.

LARVA.—Head rounded; not very thick in the line of the longitudinal axis of the larva, face convex, surface rugose, hairy about the jaws, green-white in colour, with the hinder margin black, a black band on the cheek reaching from the vertex to the base, a broad central black line along the sides of the clypeus, another from the apex to the base of the clypeus, and a brown longitudinal streak in the centre of each lobe not reaching the vertex; segment 2 has a thin, black collar joining the two black spiracles; last segment flat, broadly rounded at the extremity; surface of body covered with minute, brown, setiferous tubercles; margin shortly hairy. Colour of body grass-green. Length, 16 mm.

PUPA.—Shape as in the group, head bowed, nearly as broad as the shoulders, a slight constriction between segments 2 and 3; the pupa nearly the same breadth from the shoulders to segment 10; thorax slightly humped and somewhat compressed, transverse section of abdomen absolutely cylindrical from segment 4 to segment 10; cremaster very short, a mere ledge, with a short, triangular tooth at each hinder corner; the cremaster is slightly turned up as in *P. dara*, Moore, and has in the centre of its hinder margin a dense single row of simple red hairs pointing straight backwards; head rounded between the eyes, with elliptical shield-like surface raised from the surface of the head between the eyes, spiracular expansion of segment 2 large, raised, semicircular, spongy-looking as to surface; body covered with erect and semi-erect small red hairs, some erect longish red hairs on the head and eyes; colour of pupa is a watery-looking, dirty cream; cremaster, spiracular expansions, and front of head red-brown. Length, 11.5 mm.

HABITS.—The egg is laid on the underside of the leaf; the larva makes a cylindrical cell, when small, at the side of a leaf; when full grown it makes a cell by folding a leaf longitudinally; when about to pupate it makes a cell at the root of the plant in which some dead leaves are incorporated. All the larvæ obtained were taken when nearly full grown in October; they ceased feeding by the 25th of the month, remained in the larval stage in the cell until the 12th of February, when they commenced to pupate, all about the same time. The pupa lies free within the cell.

The larva, when feeding, wanders somewhat; when disturbed in its cell it will run out and fall to the ground, where it will curl up. The butterfly is common below the ghats in the monsoon months; it skips about amongst the small grasses in open places, on paths, and in the compounds of bungalows on the hills. We were a long time in finding the larvæ, which we obtained for the first time last monsoon. The butterfly is easily caught sunning itself on blades of grass with its wings half open. (Davidson, Bell and Aitken.)

HABITAT.—South India.

DISTRIBUTION.—The types are in the B. M. from Bombay, taken by us. We have both sexes from Bombay in our collection, and have it also from Karwar, where Davidson, Bell and Aitken bred it, but unfortunately did not figure the larva and pupa. They record it as *T. ceramas*, but through Mr. Davidson's great kindness we have had the opportunity of examining one of the specimens bred by them; it is undoubtedly *nicévillei*, and not *ceramas*.

#### TARACTROCERA OBERTHÜRI.

Plate 784, figs. 4, ♂, 4a, ♀, 4b, ♀.

*Taractrocera oberthüri*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 185.

IMAGO.—Male. Upperside dark brown, markings orange-yellow. *Forewing* with two short linear spots close together, at the end of the cell, a quadrate sub-apical spot close to the costa, a similar but somewhat larger spot below, outside, its upper inner end close to the lower outer end of the sub-apical spot, a nearly straight, inwardly oblique discal band of conjoined spots, decreasing in size hindwards, from vein 4 to the sub-median vein, the upper outer end of the band touching or almost touching the lower inner end of the sub-marginal spot; a pale yellowish-white smear or streak on the hinder margin from the bottom of the discal band to near the base of the wing. *Hindwing* with a spot in the middle of the cell, and a discal well-curved band of conjoined spots, from near the costa to near the abdominal margin, the third spot from the upper end elongate and protruding to near the outer margin of the wing. Cilia grey with whitish tips on the forewing, becoming white on the hindwing. Underside. *Forewing* blackish-brown, the costa and outer margin narrowly, the apex broadly pale, dull ochreous, and the spots as on the upperside. *Hindwing* pale blackish-brown, more or less covered with minute whitish scaling, a whitish streak from the middle of the cell to near the outer margin, and another throughout the interspace above the sub-median vein. Antennæ black, the shaft ringed with white, the club smeared with white on the underside; palpi, head and body concolorous with the wings; palpi above and head with some short white hairs; palpi beneath

white, pectus and thorax with some white hairs, abdomen beneath whitish, legs brown, marked with whitish stripes.

Female only differs from the male in having the spots a little larger.

Expanse of wings, ♂ 1, ♀  $1\frac{2}{6}$  inches.

HABITAT.—South India.

DISTRIBUTION.—There are two males in the B. M. from the Anamally Hills, taken by E. S. Roberts in May, 1893, and the type female from Trichinopoly, kindly lent to us by M. Charles Oberthür. Our description and figures are from one of the males in the B. M. and from the type female.

#### TARACTROCERA DANNA.

Plate 785, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Pyrgus danna*, Moore, Cat. Lep. Mus. E.I.C. i. p. 249 (1859).

*Pamphila danna*, Moore, Proc. Zool. Soc. 1865, p. 508, pl. 30, fig. 8.

*Taractrocera danna*, Watson, Hesp. Ind. p. 63 (1891); id. Proc. Zool. Soc. 1893, p. 94. de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 184. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371.

IMAGO.—Male. Upperside black, markings yellowish-white. *Forewing* with the costal line finely white; three indistinct streaks from the base, one on the hinder margin, a short one above the sub-median vein and a long one in the cell, above the median vein, ending in a prominent small spot above the base of the first median nervule, another obliquely above it at the upper end of the cell; three sub-apical spots, divided by the veins, in an inwardly oblique line, two outwardly below them, somewhat near the outer margin, inwardly oblique in the fourth and fifth interspaces, the upper one sometimes duplicated; a discal inwardly oblique band, composed of two lunular spots, in the second and third interspaces, and a narrow sinuous line, across the first interspace. *Hindwing* with a very indistinct spot at the upper end of the cell, a spot before the middle of vein 6, and a line of four spots across the wing in the fifth and three lower interspaces. Cilia of both wings brownish-grey basally, white outwardly. Underside paler than the upperside, all the spots prominent, a sub-costal white streak on the forewing from the base to the end of the cell; on the hindwing the cell spot is very prominent; the entire wing is covered with minute whitish scaling, a white streak throughout the first interspace, and another, less distinct, along the abdominal margin. Cilia of forewing white at the base, chocolate-grey outwardly; of the hindwing white, with a chocolate-grey middle band. Antennæ black, strongly ringed with white, the club smeared with white on the underside; palpi, head and

body above concolorous with the wings; whitish on the underside, as also are the legs.

Female similar to the male, but the white streaks on the upperside of the forewing are more pronounced.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  inches.

HABITAT.—N.W. Himalayas.

DISTRIBUTION.—The type is from the Simla Hills; Moore also records it from Kunawar and Bhutan, Hannington from Kumaon, and de Nicéville from Sikkim. Our description and figures are from a male marked Himalayas and a female marked Bhutan, both in the B. M. They exactly resemble Plötz's coloured figures of his *Pyrgus sumatrensis* from Borneo and Sumatra, unpublished plate No. 905, male and female, a copy of which is in our possession.

#### TARACTROCERA SAMADHA.

Plate 785, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Taractrocera ziclea samadha*, Frühstorfer, Iris, 1910, p. 94.

*Taractrocera ziclea*, Watson (nec Plötz), Journ. Bo. Nat. Hist. Soc. 1897, p. 677, pl. A, fig. 8, ♂.  
Swinhoe (part), Trans. Ent. Soc. 1908, p. 16.

*Padraona nigrolimbata*, Watson (nec Snellen), Journ. Bo. Nat. Hist. Soc. x. 1896, p. 678.

IMAGO.—Male. Upperside. *Forewing* golden-yellow; the base suffused with blackish; a broad black band from the middle of the sub-median vein (which is also black), expanding inwards on that vein to the base, runs up outside the end of the cell to the costa, and throws out a broad branch above vein 4 which abruptly turns up to the apex, and joins the upper end of the outer marginal black band which is excavated opposite the branch, reaches the hinder margin and widens a little at the angle. *Hindwing* black, with a large golden-yellow spot at the end of the cell, and a broad golden-yellow discal band, from the sub-median vein (up which it runs a little) to vein 6, where it is narrowest, ending in an attached spot. Cilia of both wings brown, touched with golden-yellow towards the anal angle. Underside similar, but paler. Antennæ black, ringed with white, the club white on the underside; palpi, head and body brown above, the thorax with some dull yellowish hairs, palpi whitish beneath, abdomen with broad, dull golden-yellow bands, the basal portions hidden by brown hairs.

Female similar to the male, the golden-yellow portions broader and duller in colour.

Expanse of wings, ♂ ♀  $\frac{8}{10}$  to 1 inch.

HABITAT.—Burma.

DISTRIBUTION.—Recorded by Watson from Burma; we have both sexes from Thoungyan, the Ataran Valley, Tenasserim and from Hué Annam; in Trans. Ent. Soc.

1908, p. 16, we recorded this species as *ziclea* of Plötz, following Watson, but since then we have received several examples from Burma, and some typical *ziclea* from the Philippines, and have come to the conclusion that Frühstorfer was perfectly justified in separating the Burman species from *ziclea* and giving it a name; Watson's figure of it is quite good, in colour and pattern it is very like a *Padraona*.

TARACTROCERA QUINTA, nov.

Plate 785, figs. 3, ♂, 3a, ♀, 3b, ♂.

IMAGO.—Male. Upperside orange-yellow. *Forewing* with some short pale blackish streaks from the base, a black spot in the interno-median interspace near the base of vein 2, the sub-median vein black, the costal line black, a black quadrate spot against the outer end of the cell, its inner end continues up to the costa and joins the upper part of the somewhat broad, outer marginal band, which is squarely excavated opposite the quadrate spot, gradually widens hindwards, and has its inner margin sinuous. *Hindwing* black, a large orange-yellow spot in the cell, a discal, orange-yellow band from vein 7 to the sub-median vein, where it joins an orange-yellow streak which extends from the base of the wing to near the outer margin. Cilia of forewing blackish-brown, touched with yellowish at the hinder angle. Cilia of hindwing orange-yellow. Underside marked as above, but the ground colour and black markings much paler than they are on the upperside, especially so on the hindwing. On the forewing the basal marks are deep black, and the marginal band has an orange-yellow outer edging on the upper half of the wing. Antennæ black, strongly ringed with orange-yellow, the club yellow beneath; head and body black, with yellow hairs, abdomen with dark segmental bands; palpi and pectus and the underside of the body whitish, legs yellowish.

Female like the male, but the black markings and outer marginal band of both wings are considerably narrower than in the male, making the orange-yellow colour of both wings much more extensive.

Expanse of wings, ♂ ♀ 1 inch.

HABITAT.—Burma, Annam.

DISTRIBUTION.—There are several examples in the B. M. from the Ataran Valley taken by Bingham; one of which is our male type; we possess several males from Hué, Annam, identical with our Burmese type, and one female. This species is closely allied to *T. archias*, Felder, from Amboina and Java, in which the black streak on the forewing extends interruptedly to the base of the wing on the upperside, and the hindwing below is differently coloured, and in *archias* there is a black streak running up close to the abdominal margin, not represented in *quinta*.



## TARACTROCERA ATROPUNCTATA.

Plate 785, figs. 4, ♂, 4a, ♂.

*Taractrocera atropunctata*, Watson, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 676, pl. A, fig. 9, ♂.

IMAGO.—Male. Upperside dark brown, spots on both wings yellow. *Forewing* with a spot in the middle of the cell, and a short yellow streak above it, between the sub-costal nervules, two spots in the median interspaces, close together, divided by the second median nervule, three sub-apical conjoined spots, the upper one small, the lower two somewhat elongated, two conjoined spots between the lower end of the sub-apical spots and the outer margin. *Hindwing* with a spot in the cell, and a discal series of three or four indistinct spots, all the spots on both wings small. Cilia of both wings greyish-yellow. Underside. *Forewing* dark brown, the costa up to the end of the cell broadly, and the outer margin from the apex to a little below the middle yellow; the spots as on the upperside. *Hindwing* yellow, abdominal fold brown, spots black; a spot in the cell at its base, another above its middle, a larger black spot at the end, extending downwards to near the abdominal fold, divided by the yellow veins into internervular spots; a submarginal series of six spots, the upper two and the fourth and fifth the largest and more or less elongated; both wings with a marginal fine black line.

Female like the male, the spots on the upperside somewhat more prominent.

Expanse of wings, ♂ ♀  $1\frac{1}{10}$  inches.

HABITAT.—Burma, Hong-Kong.

DISTRIBUTION.—The types in the B. M. are from Kalewa on the Chindwin River, Burma, and Watson also records it from Hong-Kong.

Watson says, "The flight weak, settling on grass-stems with the wings closed above the back, and in no way differing in its habits from *T. mævius* or *T. ceramas*."

## INDO-MALAYAN AND CHINESE ALLIED SPECIES.

*Taractrocera archias*, Pamphila archias, Felder, Sitzb. Ak. Wiss. Math. cl. xl. p. 462 (1860).

Synonym, *Hesperia daschaka*, Plötz, Berl. ent. Zeit. xxix. p. 227 (1885), unpublished plate No. 1458. Habitat, Amboina, Java.

*Taractrocera antalcidas*, *Hesperia antalcidas*, Felder, Reise, Nov. Lep. iii. p. 515, pl. 72, fig. 10 (1867).

Habitat, Celebes.

*Taractrocera ardonia*, *Ancyloxypha ardonia*, Hewitson, Descr. Hesp. p. 45 (1868). Habitat, Borneo.

*Taractrocera lineata*, Druce, Proc. Zool. Soc. 1874, p. 109, pl. 16, fig. 7. Habitat, Siam.

*Taractrocera nigrolimbata*, Snellen, Tijd. voor Ent. xix. p. 165, pl. 7, fig. 5 (1876). Synonym,

*Hesperia aliena*, Plötz, l.c. xlv. p. 228 (1883), unpublished plate No. 700. *Taractrocera aliena*, Swinhoe, Trans. Ent. Soc. 1908, p. 16, pl. 1, fig. 20. Habitat, Java.

- Taractrocera rectivitta*, Mabille, Petites Nouv. Ent. 1878, p. 237. Habitat, Celebes.
- Taractrocera ziclea*, Thymelicus ziclea, Plötz, l.c. xlv. p. 289 (1884), unpublished plate No. 786.  
*Taractrocera ziclea*, Swinhoe (part), Trans. Ent. Soc. 1908, p. 16, pl. 2, fig. 22. Synonym,  
*Pamphila luzonensis*, Mabille, Iris, 1889, pp. 145 and 164. Habitat, Philippines.
- Taractrocera talantus*, Thymelicus talantus, Plötz, l.c. p. 230, unpublished plate No. 1506. Habitat,  
 Celebes.
- Taractrocera myconius*, Thymelicus myconius, Plötz, l.c. p. 289, unpublished plate No. 1507. Habitat,  
 Java.
- Taractrocera sangira*, Telesto sangira, Plötz, l.c. xxix. p. 230 (1885), unpublished plate No. 1509.  
*Taractrocera sangira*, Swinhoe, l.c. pl. i. fig. 21. Habitat, Celebes.
- Taractrocera flavoides*, Leech, Butt. of China, etc. ii. p. 590, pl. 40, figs. 10, ♀, 11, ♂ (1893).  
 Habitat, W. China.
- Taractrocera ikramana*, *Taractrocera ziclea ikramana*, Frühstorfer, Iris, 1910, p. 94. Habitat,  
 E. Java.
- Taractrocera tissara*, *Taractrocera ziclea tissara*, Frühstorfer, l.c. p. 95. Habitat, W. Sumatra.

#### Genus AMPITTIA.

- Ampittia*, Moore, Lep. Ceylon, i. p. 171 (1881). Distant, Rhop. Malayana, p. 381 (1885). Watson,  
 Hesp. Ind. p. 61 (1891); id. Proc. Zool. Soc. 1893, p. 95; id. Journ. Bo. Nat. Hist. Soc. ix.  
 1895, p. 426. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 185.

*Forewing*, vein 12 reaches costa well before the end of the cell; cell less than two-thirds the length of costa, shaped like an elongated triangle, the upper discocellular very short but distinct, in almost a straight line with the middle and lower, the last somewhat shorter than the middle discocellular, lower margin of cell somewhat inwardly curved from the base to vein 2, bent upward from vein 3 to the end, vein 3 emitted some little distance from the lower end of the cell in the male, close to the end in the female, 2 from a little beyond the middle; wing short and broad, costa very nearly straight, apex angular, outer margin very convex, a little shorter than the hinder margin. *Hindwing*, vein 7 emitted one-third from the upper end of the cell, curved upwards at its base, the outer margin of the cell inwardly curved from the origin of vein 7 to the cell end, which is rounded, discocellulars faint, vein 5 not traceable, 3 from very close to end of cell, practically touching it, 2 from less than one-fourth before the end; costa and outer margin evenly rounded. Antennæ short, about half the length of the costa of forewing, club moderate, straight, blunt; palpi upturned, densely clothed, third joint erect, its tip, which is bluntly conical, extending higher than the vertex; hind tibiæ with two pairs of spurs, fore tibiæ with epiphysis, the male with a short glandular streak on the upperside of forewing, immediately below the origin of vein 2, but not touching either vein 2 or vein 1.

Type, *Hesperia maro*, Fabricius.

## AMPITTIA DIOSCORIDES.

Plate 786, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, ♀, 1d, larva and pupa.

*Hesperia dioscorides*, Fabricius, Ent. Syst. iii. p. 329 (1793). Aurivillius, Ent. Tidsk. 1897, p. 150.

*Ampittia dioscorides*, Frühstorfer, Iris, 1910, p. 97.

*Hesperia maro*, Fabricius, Ent. Syst. Suppl. p. 432, ♂ (1798).

*Cyclopides maro*, Butler, Cat. Fabr. Lep. B. M. p. 279, pl. 2, fig. 12, ♂ (1869).

*Pamphila maro*, Druce, Proc. Zool. Soc. 1874, p. 109.

*Ampittia maro*, Moore, Lep. Ceylon, i. p. 172, pl. 71, figs. 1, 1a (1881); id. Proc. Zool. Soc. 1882, p. 262. Butler, id. 1883, p. 154. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Wood-Mason and de Nicéville, id. 1886, p. 385. Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Hampson, Journ. As. Soc. Bengal, 1888, p. 366. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27; id. Hesp. Ind. p. 61 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 57. Fergusson, id. p. 447. Betham, id. 1893, p. 427. Watson, Proc. Zool. Soc. 1893, p. 96. de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894). de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 535. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 676. Davidson, Bell and Aitken, id. xi. 1897, p. 54, pl. 8, fig. 10 (larva and pupa). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 186. Adanson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 142. Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 388.

*Telicota maro*, Distant, Rhop. Malayana, p. 383, pl. 35, figs. 14, ♂, 15, ♀ (1886).

*Cyclopides camertes*, Hewitson, Desc. Hesp. p. 43, ♂ (1868). Moore, Proc. Zool. Soc. 1878, p. 74.

*Thymelicus palemonides*, Snellen, Midd. Sum. Lep. p. 28 (1892).

IMAGO.—Male. Upperside. *Forewing* bright golden-yellow, costal line black, outer margin with a broad even black band, slightly but squarely bulged inward at the hinder angle, a broad black band on the hinder margin with two golden-yellow spots in it, one a little before the middle, the other a little beyond the middle; a black band running up from the middle of the hinder marginal band to the costa one-third before the apex, throwing out a cross band from above its middle and joining the marginal band; in some examples this discal band is disconnected from the costa from the cross-bar. *Hindwing* blackish-brown, with an irregular-shaped, short, broad, discal, golden-yellow band, composed of spots divided by the veins, the two centre ones elongated, the lower ones small. Cilia brown, touched in parts with golden-yellow, especially at the anal angle. Underside. *Forewing* as above, but the extreme outer margin is more or less golden-yellow. *Hindwing* with the ground colour golden-yellow, most of the wing covered with minute brown scales, the discal patch as above, edged with pale brown, and a series of pale brown sub-marginal spots all round the wing from the base to the anal angle. Antennæ black, ringed with yellow, the club yellow on the underside and at the tip; palpi, head and body brown above, palpi and head marked with yellow, all yellow beneath.

Female. Upperside dark brown. *Forewing* with a yellow spot at the end of the cell, and a discal series of yellow spots, two, sometimes three, divided by the veins, from near the costa, one-sixth from the apex, two in the middle of the disc in the

median interspaces, and a small one in the interno-median interspace, an indistinct series of sub-marginal yellowish spots on the upper half of the wing. Underside paler. *Forewing* with the spots as above but larger, a yellow sub-costal streak from the base to beyond the middle. *Hindwing* with many minute yellow scales in parts, a discal series of yellowish spots and a sub-marginal series.

Expanse of wings, ♂ ♀ 1 inch.

LARVA.—Head of a semi-elliptical shape, somewhat narrowed at the top, truncated at the base and slightly bi-lobed; the body is cylindrical, somewhat depressed, thickest at segment 5, sloping at the last segment, with the extremity of the anal segment rounded broadly; colour of head transparent-looking, dirty, yellow-white, with a green clypeus, a light brown stripe running down the centre of each lobe from the vertex to the base, and another inside it and parallel to it; eyes black; jaws black; surface finely celled, covered with erect, short, light hairs; surface of body covered with minute, erect, white hairs; segments 3 and 14 covered with brown setiferous tubercles; anal margin with longer hairs than the rest; colour dark green, with a sub-dorsal yellowish band flanked by a whitish line; two lateral and a marginal white line. Length, 20 mm.

PUPA.—Head square, convex at top; eyes prominent; between the eyes in front of the head are two conical excrescences which overhang the eyes somewhat, the two together having the appearance of a small crescent, the horns of which point forwards; proboscis not produced; surface glabrous, shiny; colour grass-green, with the markings of the larva apparent on the abdomen. Length, 16 mm.

HABITS.—The larva lives absolutely in the open when full-grown. Pupa forms on the stems of grass, or rice, with its head downwards, attached by the tail and body band. The larva feeds on rice and grasses. The butterfly rests with its wings closed over its back; it is common throughout the district at all seasons; it is very abundant around rice-fields. The flight is not very rapid, and it rests often, it is fond of basking with its wings half open. We have bred many specimens in cages from the egg. (Davidson, Bell and Aitken.)

HABITAT.—Sikkim, South India, Ceylon, Burma, Malacca, Annam, Sumatra.

DISTRIBUTION.—The type of *dioscorides*, a female, came from Tranquebar, and is in the Museum Tottianum in Copenhagen; the type of *maro*, in the Banksian cabinet in the B. M. from Ceylon; we have both sexes from Hué, Annam, Trevandrum, Madras and Ceylon; Evans records it from the Palni Hills, Fergusson from Travancore, Betham from the Central Provinces, Watson from the Chin Hills, Beeling and Pegu, Moore from Mergui and Ceylon, de Nicéville from Sikkim, Davidson, Bell and Aitken bred it in Kanara; we give copies of Davidson's original drawings of the larva and pupa.

NOTE.—Aurivillius, who examined the type of *dioscorides* in the Copenhagen Museum, says it is the same as *maro*; he says, "A female which, however, has no

antennæ (Fühler), so I cannot say whether it belongs to *Taractrocera* or *Ampittia*. From Moore's drawings of the female of *A. maro*, the type of *dioscorides* differs therein, that the yellow costal spot in front of the middle spot of the forewing is missing and therein, that both wings have a row of little yellow border spots which are more distinct at the tip, but which towards the hinder angle gradually become indistinct;" and with reference to these differences, we can positively state that they are of no consequence, the sub-marginal spots are nearly always more or less indicated in every example of *maro* female, and the uppermost discal spot is more or less obsolete in many examples.

#### AMPITTIA MAROIDES.

Plate 786, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Ampittia maroides*, de Nicéville, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 190, pl. T, fig. 51, ♂ ;  
id. idem, x. 1897, p. 673. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 186.

IMAGO.—Male. Upperside blackish-brown, markings dark ochreous, darker than in *dioscorides* and not so golden-yellow. *Forewing* with a sub-costal streak filling up the space between the costa and the cell divided by the sub-costal vein from a shorter streak within the outer half of the cell, the discal spots as in *dioscorides*, but the lowest spot is well separated from those in the middle of the disc, and the spot near the middle of the interno-median interspace is absent. *Hindwing* with the discal patch of spots more compact, the spots composing the patch longer and fairly uniform in size. Cilia and underside as in *dioscorides*, the brown spots on the hindwing darker, larger and more prominent. Antennæ, palpi and body similar.

Female like that sex of *A. dioscorides*.

Expanse of wings, ♂ ♀ 1 inch.

HABITAT.—Burma, Perak.

DISTRIBUTION.—The type in the Indian Museum, Calcutta, is from Tenasserim; we have a male from Perak, which we figure; it corresponds to de Nicéville's figure and description; we doubt that it is anything more than a darkly marked form of *dioscorides*; some of our examples from Hué, Annam, are intermediate between *dioscorides* and *maroides*; there is an example in the B. M. from Tilin Yaw, Burma, taken the 28th of November, 1889, by Watson.

#### CHINESE ALLIED SPECIES.

*Ampittia delai-lama*, Cyclopides delai-lama, Mabille, Ann. Soc. Ent. Fr. 1876, p. lvi. *Æromachus delai-lama*, Leech, Butt. of China, etc. ii. p. 620, pl. 40, fig. 16, ♂ (1893). *Ampittia delai-lama*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 186. Habitat, W. China, E. Thibet.  
*Ampittia virgata*, Pamphila virgata, Leech, Entom. xxiii. p. 47 (1890). *Padraona virgata*, Leech, Butt.

- of China, etc. ii. p. 598, pl. 40, fig. 15, ♂ (1893). *Ampittia virgata*, Elwes and Edwards, l.c. Habitat, Central China.
- Ampittia maga*, *Pamphila maga*, Leech, Entom. xxiii. p. 48 (1890). *Padraona maga*, Leech, Butt. of China, etc. ii. p. 599, pl. 40, fig. 18, ♂ (1894). *Ampittia maga*, Elwes, l.c. Habitat, Ichang, Ningpo.
- Ampittia trimacula*, *Taractrocera trimacula*, Leech, Entom. xxiv. Suppl. p. 60 (1891). *Padraona Trimacula*, Leech, Butt. of China, etc. ii. p. 599, pl. 40, fig. 17, ♂ (1893). *Ampittia trimacula*, Elwes and Edwards, l.c. Habitat, W. China.
- Ampittia formosana*, Frühstorfer, Iris, 1910, p. 97. Habitat, Formosa.

### Genus OCHUS.

- Ochus*, de Nicéville, Journ. As. Soc. Bengal, 1894, p. 51. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 425. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 185.
- Cyclopides*, Watson (nec Hübner), Hesp. Ind. p. 68 (1891).

*Forewing*, vein 12 ends on costa a little before the end of the cell, cell less than two-thirds the length of the costa, upper discocellular very minute, middle discocellular slightly longer than the lower, vein 5 nearly straight from their junction, 3 from near the lower end of cell, 2 from a little beyond the middle; costa well arched, apex blunt, outer margin rounded, shorter than the hinder margin. *Hindwing*, vein 7 emitted close to the upper end of cell, discocellulars sub-erect, vein 5 traceable, 3 from close to lower end of cell, 2 from beyond the middle; costa and outer margin evenly rounded. Antennæ short, about half the length of costa of forewing, club somewhat long, gradually thickening, tip blunt; palpi porrect, laxly clothed, third joint rather long, hind tibiæ with two pairs of spurs, fore tibiæ with epiphysis.

Type, *Cyclopides subvittatus*, Moore.

### OCHUS SUBVITTATUS.

Plate 786, figs. 3, ♂, 3a, ♀, 3b, ♂.

- Cyclopides subvittatus*, Moore, Proc. Zool. Soc. 1878, p. 692. Doherty, Journ. As. Soc. Bengal, 1886, p. 139. Wood-Mason and de Nicéville, id. p. 392, pl. 17, figs. 6, 6a, ♂. Elwes, Trans. Ent. Soc. 1888, p. 453. Watson, Hesp. Ind. p. 69 (1891). Elwes, Proc. Zool. Soc. 1892, p. 653.
- Ochus subvittatus*, de Nicéville, Journ. As. Soc. Bengal, 1894, p. 52; id. Gazetteer of Sikkim, Butt. p. 181 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 676. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 185. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 142. Frühstorfer, Iris, 1910, p. 97.
- Ochus (Cyclopides) subvittatus*, Hannyngton, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371.
- Cyclopides subradiatus*, Moore, Proc. Zool. Soc. 1878, p. 693.

IMAGO.—Male. Upperside dark vandyke-brown. *Forewing* with one or more chrome-yellow, short streaks divided by the veins in an oblique line below the costa beyond the end of the cell, these streaks vary in number in different examples,

sometimes there are as many as five, decreasing in size hindwards, sometimes none at all. *Hindwing* without markings. Cilia of both wings brown, with yellow marks. Underside. *Forewing* dark brown, a sub-costal chrome-yellow streak from the base to the end of the cell, from thence, round the apex increasing in length, and down the outer margin, shortening in length, the veins are thickly streaked with the same colour, down to the end of the first medial nervule, and from thence to the apex there is a thick chrome-yellow band composed of conjoined spots. *Hindwing* with the actual ground colour dark brown, but all the veins are so thickly chrome-yellow, with some of them connected with each by a sort of transverse band, especially one, sub-marginal, as to give the wing the appearance of being chrome-yellow with brown spots; an outer marginal band also of chrome-yellow conjoined spots. Antennæ black, with thin white rings, club white on the underside; palpi, head and body concolorous with the wings; abdomen whitish on the underside.

Female like the male.

Expanse of wings, ♂ ♀  $\frac{9}{10}$  to 1 inch.

HABITAT.—N.W. Himalayas, Sikkim, Assam, Burma.

DISTRIBUTION.—The types of *subvittatus* came from the Salween district, Burma; the types of *subradiatus* from the Khasia Hills; it is in our collection from the Khasia Hills and Sikkim; it has been recorded by Doherty and by Hannington from Kumaon, by Watson from the Chin Hills, by Elwes from the Naga Hills, and by Adamson from Upper and Lower Burma. Wood-Mason and de Nicéville's figures are very misleading; they have represented the insect many times too large, without saying so.

### Sub-Family ASTICTOPTERINÆ.

Antennæ with the club long, gradual, tip acuminate, bent over; palpi more or less porrect, second joint well clothed, third joint moderate, more or less slender. *Forewing*, vein 12 ends on costa at or before end of cell, 11 curves upwards and nearly touches 12, but does not anastomose with it; cell long, about two-thirds the length of the costa, vein 3 emitted about one-fourth or less from lower end of cell, 2 from, or from a little before or beyond the middle. *Hindwing*, vein 7 from near the upper end of cell, discocellulars and vein 5 faint, 3 from near lower end of cell, 2 from beyond the middle; hind tibiæ with two pairs of spurs, fore tibiæ with epiphysis.

### Genus BARACUS.

*Baracus*, Moore, Lep. Ceylon, i. p. 162 (1881). Watson, Hesp. Ind. p. 150 (1891); id. Proc. Zool. Soc. 1893, p. 114; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 424. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 169.

*Forewing*, vein 12 ends on costa before the end of the cell, 11 curves upwards and runs very close to 12, but does not touch it; cell less than two-thirds the length of the costa, middle discocellular longer than the lower one, vein 5 emitted from below the middle of discocellulars, 3 from close to lower end of cell, 2 from about one-third before the end; wing small, triangular, costa gently curved, apex sub-acute, outer margin convex, hinder angle rounded, hinder margin longer than the outer margin. *Hindwing*, vein 7 emitted close to upper end of cell, 5 almost obsolete, discocellulars faint, vein 3 emitted close to lower end of cell, 2 from less than one-third from the end, wing evenly rounded. Antennæ with the club moderate, gradual, rather long, acuminate and curved; palpi porrect, conspicuous, second joint laxly clothed with long scales, third joint prominent, acuminate; hind tibiæ fringed and with two pairs of spurs.

Type, *Isoteinon vittatus*, Felder.

#### BARACUS VITTATUS.

Plate 787, figs. 1, ♂, 1a, ♀, 1b, ♀.

*Isoteinon vittatus*, Felder, Verh. Zool.-bot. Ges. Wien, xii. p. 480 (1862); id. Reise, Nov. Lep. iii. pl. 74, fig. 21 (1867).

*Baracus vittatus*, Moore, Lep. Ceylon, i. p. 162, pl. 69, figs. 1, 1a (1881). Watson, Hesp. Ind. p. 151 (1891); id. Proc. Zool. Soc. 1893, p. 114; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 170.

IMAGO.—Male. Upperside greyish-white. *Forewing* with the base slightly tinged with bluish-grey, the costa to the end of the cell with a narrow black band which expands hindwards across the cell end, is limited by the second median nervule, then runs broadly down and runs in somewhat on the hinder margin, a small sub-apical grey spot, often absent. *Hindwing* with the costa broadly black, narrowing round the apex, and continued narrowly round the outer margin to the anal angle. Cilia of both wings brown. Underside dull red. *Forewing* with the whole space below the sub-costal vein black, the red space being confined to the costa narrowly and to the apex broadly. *Hindwing* with a broad straight whitish streak, from the base, through the cell, almost reaching the outer margin, another paler streak runs upwards from near the anal angle, the abdominal fold bluish-grey. Antennæ black, dull red beneath and at the tips; palpi with black and grey hairs above, head marked black and grey, body brown with grey hairs; palpi below and pectus whitish, with grey hairs, body beneath and legs concolorous with the wings.

Female. Upperside. *Forewing* dark blackish-brown, a greyish-white streak in the cell, a somewhat obscure greyish-white streak in the interspace below, another on



the basal half of the hinder margin; two quadrate greyish-white spots in the disc near the bases of the sub-median interspaces, with an obscure spot below them, all three divided from each other by veins 2 and 3, three spots above them near the costa divided by the veins, the uppermost one small and obscure. *Hindwing* as in the male, the costal blackish-brown band much broader, and some short pale blackish streaks from the base of the wing in the greyish-white space. Underside as in the male, the discal and sub-costal spots as on the upperside.

Expanse of wings, ♂  $1\frac{2}{10}$ , ♀  $1\frac{1}{2}$  inches.

HABITAT.—Ceylon.

DISTRIBUTION.—In our collection from Nuwara Eliya, also recorded from Ambagamma, and said to be common in the grassy places and swamps 2,000 feet and upwards, being most numerous from December to March.

#### BARACUS SUBDITUS.

Plate 787, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Baracus subditus*, Moore, Proc. Zool. Soc. 1883, p. 534. Hampson, Journ. As. Soc. Bengal, 1888, p. 365. Watson, Hesp. Ind. p. 151 (1891); id. Proc. Zool. Soc. 1893, p. 114; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 171. Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 388.

*Baracus vittatus*, Fergusson (nec Felder), Journ. Bo. Nat. Hist. Soc. 1891, p. 447.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with some pale, dull pinkish streaks from the base near the costa and in the cell, a double ochreous elongated spot, with a small indistinct spot above it below the costa one-third from the apex, and four similar spots in a line beneath them in the median interspaces and the two interspaces beneath them, some of these spots being sometimes more or less indistinct. *Hindwing* without markings. Cilia of both wings ochreous. Underside. *Forewing* much as in *B. vittatus*, but the inner black portion of the wing is usually more squarely shaped. *Hindwing* with the whitish cell streak and the streak on the inner side of the abdominal space narrower than they are in *B. vittatus*, and there are several additional narrow, whitish streaks running in from near the outer margin. Antennæ blackish-brown, spotted with ochreous-white on the underside; palpi beneath and pectus whitish, palpi above, head and body above and below concolorous with the wings.

Female like the male, but the spots on the forewing are usually much smaller.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  inches.

HABITAT.—South India, Ceylon.

DISTRIBUTION.—The type, a female, came from Coonoor, in the Nilgiris; it is in our collection from Ootacamund, 3,000 feet elevation, and a male from Madras in which

all the spots are absent. Evans records it from the Palni Hills, and Fergusson from Travancore. We have a female from Ceylon received from Mackwood.

### BARACUS HAMPSONI.

Plate 787, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, larva and pupa.

*Baracus hampsoni*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 171, pl. 18, fig. 21, ♂.

*Baracus septentrionum*, Hampson (nec Wood-Mason and de Nicéville), Journ. As. Soc. Bengal, 1888, p. 365. Davidson and Aitken, Journ. Bo. Nat. Hist. Soc. 1890, p. 371 (larva and pupa). Davidson, Bell and Aitken, id. xi. 1897, p. 51, pl. 8, f. 11 (larva and pupa).

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with two pairs of linear ochreous spots in a line in the disc, two below the costa and the other two in the median interspaces. *Hindwing* without markings. Cilia of both wings ochreous-brown. Underside. *Forewing* blackish-brown, the costal space smeared with ochreous, with brown streaks between the veins, a small ochreous spot at the upper end of the cell, two pairs of discal spots as on the upperside, and a series of obscure sub-marginal spots from the apex half down the wing. *Hindwing* with the ground colour ochreous, obscured by brown streaks between the ochreous veins. Cilia of both wings grey with an ochreous basal line. Antennæ blackish-brown, ochreous on the underside, banded with brown; palpi whitish beneath; head and body above brown, below paler.

Female similar to the male.

Expanse of wings, ♂ ♀  $1\frac{1}{10}$  to  $1\frac{2}{10}$  inches.

This butterfly and the next (*Taractrocera ceramas*, Hewitson) are very similar in their habits, except that this one frequents places where the grass is high, and is often found in dense jungle. It keeps to the tops of the hills around Karwar, and is never found at a lower level than 800 feet. It is plentiful where found, but is local. We have bred many. The insect has a slow, somewhat jerky flight, and is always found near the ground.

LARVA.—Cylindrical, with a flattened anal segment, somewhat rounded at the extremity; head black, very perfectly round, with a finely reticulated surface; finely and sparsely hairy, with very minute, more or less adpressed hairs, about the jaws the hairs are longest; the head is large for the size of the body; last segment covered with dense, low, conical, brown tubercles; body covered with minute erect hairs. Colour is watery dirty green. Length, 25 mm.

HABITS.—The larva makes a cell as for the group at the point of a leaf, eating the substance of the leaf below the cell, towards the stalk, and leaving the midrib only. The pupa is suspended by the tail, and has a loose body-string; this body-

string is black in colour. The larva feeds on a very long-leafed soft grass. (Davidson, Bell and Aitken.)

HABITAT.—Kanara, South India.

DISTRIBUTION.—A good and distinct species. The types in coll. Elwes came from North Kanara. We have both sexes from Karwar, where Davidson, Bell and Aitken bred it. The larva and pupa now figured are from Davidson's original drawings; Hampson records it from the Nilgiris.

### BARACUS SEPTENTRIONUM.

Plate 788, figs. 1, ♂, 1a, ♀, 1b, ♀.

*Baracus septentrionum*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 379, pl. 18, fig. 4, 4a, ♂. Watson, Journ. Bo. Nat. Hist. Soc. 1886, p. 28. Elwes, Trans. Ent. Soc. 1888, p. 464. Manders, id. 1890, p. 539. Watson, Hesp. Ind. p. 151 (1891); id. Proc. Zool. Soc. 1893, p. 114. de Nicéville, Gazetteer of Sikkim, Butt. p. 185 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 171. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 141.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with an oblique short streak below the middle of the costa with a still shorter one below it, generally obscure, often absent, two sub-apical small spots and an indistinct small spot in the disc in the second median interspace, all dull ochreous, sometimes obscure, sometimes absent. *Hindwing* without markings. Cilia of both wings brownish-ochreous. Underside. *Forewing* black, the costa to the sub-costal vein, the apex broadly, and the outer margin decreasingly dull pinkish-ochreous, varied by pale brown streaks in the interspaces, the two sub-apical spots as on the upperside. *Hindwing* dull pinkish-ochreous, the interspaces streaked with pale brown, the streak through the cell, usual in the genus, more or less represented by the ground colour being left bare of the brownish suffusion. Antennæ blackish-brown, pinkish-ochreous beneath with brown bands, and pinkish at the tip of the club; palpi beneath with white hairs, head and body above and below concolorous with the wings.

Female like the male, the discal and sub-apical spots on the upperside of the forewing somewhat prominent.

Expanse of wings, ♂ ♀  $1\frac{5}{10}$  to  $1\frac{6}{10}$  inches.

HABITAT.—Assam, Sikkim, Burma.

DISTRIBUTION.—The type, a male, in the Indian Museum, Calcutta, came from Cachar, Elwes and de Nicéville record it from Sikkim, Elwes and Watson from Beeling in Burma, Manders from the Shan States; we have it from Katha in Burma.

## INDO-MALAYAN AND CHINESE ALLIED GENERA AND SPECIES.

- Baracus plumbeolus*, *Hesperia plumbeola*, Felder, Reise, Nov. Lep. iii. p. 519, pl. 71, fig. 20, ♂ (1867).  
*Baracus plumbeolus*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 171. Habitat, Luzon, Philippines.
- Barca* \* *bicolor*, *Dejeania bicolor*, Oberthür, d'Étud. d'Ent. xx. p. 40, pl. 9, fig. 163, ♂ (1896). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 169. *Barca bicolor*, de Nicéville, Journ. Bo. Nat. Hist. Soc. xiv. 1902, p. 251. Habitat, Thibet, W. China.

Genus **ASTICTOPTERUS**.

- Astictopterus*, Felder, Wien Ent. Mon. iv. p. 401 (1860). Moore, Lep. Ceylon, i. p. 162 (1881).  
 Distant, Rhop. Malayana, p. 400 (1886). Watson, Hesp. Ind. p. 145 (1891); id. Proc. Zool. Soc. 1893, p. 114. Leech, Butt. of China, etc. ii. p. 630 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 424. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 171.

*Forewing*, vein 12 ends on costa before the end of the cell, 11 curves upwards near its base and runs close to, but does not touch 12; cell broad, less than two-thirds the length of the costa, middle discocellular longer than the lower, consequently vein 5 is emitted from below the middle, 3 emitted well before the lower end of cell, 2 from about the middle; costa very slightly arched at base, then almost straight to the apex, which is sub-acute; outer margin convex, the wing somewhat long for its breadth, the hinder margin being longer than the outer margin, hinder angle somewhat rounded. *Hindwing* with vein 7 from a little before upper end of cell, discocellulars and vein 5 faint, 3 from a little before the lower end of cell, 2 from a little beyond the middle; wing evenly rounded. Antennæ with a gradual and slender club, the tip recurved and pointed; palpi porrect, third joint short, obtusely conical; hind tibiae naked and with two pairs of spurs.

Type, *Astictopterus jama*, Felder.

**ASTICTOPTERUS OLIVASCENS.**

Plate 788, figs. 2, ♂, 2a, ♀, 2b, ♂.

- Astictopterus olivascens*, Moore, Proc. Zool. Soc. 1878, p. 692, ♂ only. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 52. Wood-Mason and de Nicéville, id. 1886, p. 381, ♂ only. Elwes and de Nicéville, id. p. 440. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 28. Manders, Trans. Ent. Soc. 1890, p. 538. Watson, Journ. Bo. Nat. Hist. Soc. 1891, p. 59; id. Hesp. Ind. p. 146 (1891). Elwes, Proc. Zool. Soc. 1892, p. 662. Swinhoe, Trans. Ent. Soc. 1893, p. 327. Watson, Proc. Zool. Soc. 1893, p. 115. Leech, Butt. of China, etc. ii. p. 629, pl. 42, fig. 1. de Nicéville (part), Gazetteer of Sikkim, Butt. p. 185 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 172, pl. 18, fig. 16, ♂.

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\* *Barca*, Cockerell, Entom. xxxi. p. 45 (1898); the genus *Dejeania* being præoccupied in *Diptera*.

Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 141. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 372. Frühstorfer, Iris, 1910, p. 89.

*Astictopterus jama*, Swinhoe (part), Trans. Ent. Soc. 1908, p. 28.

IMAGO.—Male and Female. Upperside dark olive-brown, very uniform in shade of colour and without any markings in either sex. Cilia pale brown with an inner darker brown band. Underside paler, of a somewhat pinkish tint, with indications of transverse slightly darker fasciæ, not always present.

Expanse of wings, ♂ ♀,  $1\frac{6}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—Burma, Sikkim, Assam.

DISTRIBUTION.—The type came from Salween, Maulmein; recorded by Watson from Beeling and the Chin Hills, by Elwes from Margharita in Upper Assam and the Naga and Shan Hills, by Hannington from Kumaon, by Wood-Mason and de Nicéville from Cachar. We have it from the Ataran Valley and Yoongalun, Burma, and Karwar in S. India, and have numerous examples of both sexes from the Khasia Hills. Moore and Wood-Mason and de Nicéville described (the latter figured) the female of *A. kada*, Swinhoe, as the female of this species; the female of *olivascens* is always plainly coloured like the male, without any white sub-apical spots in the forewing.

#### ASTICTOPTERUS KADA.

Plate 788, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Astictopterus kada*, Swinhoe, Trans. Ent. Soc. 1893, p. 328. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. x. 1896, p. 679.

*Astictopterus henrici kada*, Frühstorfer, Iris, 1910, p. 90.

*Astictopterus henrici*, Elwes and Edwards (nec Holland), Trans. Zool. Soc. 1897, p. 172, pl. 18, fig. 17, ♂. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 141.

*Astictopterus olivascens*, Moore, Proc. Zool. Soc. 1878, p. 692, ♀ only. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, pl. 18, fig. 2, ♀ only.

IMAGO.—Male. Upperside olive-brown, somewhat paler and more olive-coloured than in *A. olivascens*, the inner and basal portion of the wings usually darker than the outer. *Forewing* with two white sub-apical spots near the costa about one-sixth from the apex. *Hindwing* without markings. Cilia of both wings olive-brown, considerably paler than the ground colour of the wings. Underside pale pinkish-brown. *Forewing* with the inner portion suffused with dark brown in a triangular form, the sub-apical white spots as on the upperside. *Hindwing* with two rather broad, irregular, transverse brown fasciæ. Antennæ brown, pinkish-grey on the underside; the palpi, head and body brown, grey beneath, the body and legs with a pinkish tinge.

Female like the male, but usually with three sub-apical white spots on the forewing.

Expanse of wings, ♂ ♀  $1\frac{5}{10}$  to  $1\frac{6}{10}$  inches.

HABITAT.—Assam.

DISTRIBUTION.—The types came from the Khasia Hills, from whence we have received a good many examples; Wood-Mason and de Nicéville record it from Cachar; it is allied to the Chinese species *henrici*, Holland; but the coloration and markings of the underside of that species is very different; there are two examples of *henrici* in the B. M. from Hong-Kong, taken by J. J. Walker.

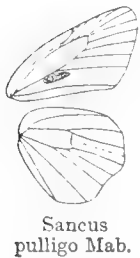
#### INDO-MALAYAN AND CHINESE ALLIED GENERA AND SPECIES.

- Astictopterus jama*, Felder, Wien Ent. Mon. iv. p. 401 (1860). Distant, Rhop. Malayana, p. 401 (1886). Swinhoe (part), Trans. Ent. Soc. 1908, p. 28, pl. 2, fig. 2. Synonym, *Isoteinon melania*, Plötz, Berl. Ent. Zeit. xxix. p. 230 (1885), unpublished plate No. 1522. Habitat, Malacca, Perak, Sumatra.
- Astictopterus fuligo*, Mabille, Ann. Soc. Ent. Fr. 1878, p. 272. Habitat, Java, Sumatra.
- Astictopterus henrici*, Cyclopides henrici, Holland, Trans. Am. Ent. Soc. 1887, p. 124, pl. 2, fig. 5. Synonym, *Cyclopides chinensis*, Leech, Entom. xxiii. p. 48 (1890). *Astictopterus olivascens*, Leech, Butt. of China, etc. ii. p. 629 (1893). *Steropes unicolor*, Mabille, Ann. Soc. Ent. Belg. xxxv. p. lxiv. (1891). Habitat, China.
- Apostictopterus fuliginosus*, Leech, l.c. p. 631, pl. 38, fig. 8, ♂ (1893). Habitat, W. China.
- Astictopterus permagnus*, *Astictopterus fuligo permagnus*, Frühstorfer, Iris, 1910, p. 89. Habitat, Tonkin.
- Astictopterus tonkinianus*, *Astictopterus henrici tonkinianus*, Frühstorfer, l.c. p. 90. Habitat, Tonkin.

#### Genus SANCUS.

- Sancus*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 395. Watson, Proc. Zool. Soc. 1893, p. 87; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 424. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 173.

*Forewing*, vein 12 ends on costa before the end of the cell, 11 curves upwards shortly after its origin, touches 12 and then separates from it, cell about two-thirds the length of the costa, discocellulars erect, the middle longer than the lower, vein 5 from below the middle, median vein curved, making the cell somewhat broad, vein 3 from about one-fifth before lower end of cell, 2 from about the middle. Costa highly arched, apex sub-acute, outer margin convex and oblique, shorter than the hinder margin, the wing long for its breadth, the male with a curiously impressed long oval brand, its upperside touching the median vein, and extending from about the middle of the cell to a little beyond the origin of vein 2, which it also touches.



*Hindwing*, vein 7 from close before upper end of cell, discocellulars faint, vein 3 from a little before lower end of cell, 2 from one-third before the end; wing rounded.

Antennæ with the club elongate, tip recurved and acuminate; palpi with the second joint densely scaled, third joint almost concealed; hind tibiæ with two pairs of spurs.

Type, *Astictopterus subfasciatus*, Moore.

#### SANCUS SUBFASCIATUS.

Plate 789, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, larva and pupa.

*Astictopterus subfasciatus*, Moore, Proc. Zool. Soc. 1878, p. 842. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 380, pl. 18, fig. 1, 1a, ♂. Elwes and de Nicéville, id. p. 440. Hampson, id. 1888, p. 365. Watson, Hesp. Ind. p. 148 (1891). Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 447.

*Sancus subfasciatus*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 395. Elwes, Proc. Zool. Soc. 1892, p. 663. Frühstorfer, Iris, 1910, p. 90.

*Sancus pulligo*, Watson (part), Proc. Zool. Soc. 1893, p. 87; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 677. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 174. Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 63, pl. 8, fig. 8. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 141.

IMAGO.—Male and Female. Upperside uniform dark vinous-brown. Underside paler brown, with two small indistinct ochreous-grey sub-apical spots close to the costa, about one-sixth from the apex of the forewing, and two indistinct transverse fasciæ on the hindwing, slightly darker than the ground colour, not always distinguishable, otherwise there are no markings above or below. Antennæ blackish-brown; palpi, head and body above and below and the legs concolorous with the wings, except the abdomen, which is whitish on the underside.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{8}{10}$  inches.

The imago is fond of damp, shady places, like evergreen forests and beds of nallas. We have bred many at all seasons and in many parts of the district; it is always plentiful where it exists, that is where its food plant grows. The flight is very weak; the insect keeps low down near the ground and pitches often on leaves; it is rarely found basking in the sun.

LARVA.—As in the group, not to be distinguished from *Notocrypta feisthameli*, Boisduval, except that the head is smaller. Length, 31 mm.

PUPA.—As in the group, not to be distinguished from that of *N. feisthameli*, except by the snout (or beak) being slightly turned up.

HABITS.—The same as that of *N. feisthameli* in every particular.

The larvæ are very stout when full grown, and have the habit of resting with the first three segments after the head contracted so as to give the appearance of being humped about the anterior segments, the small head lying with its apex pressed on the second segment; the body is flattened ventrally as the larva always lies closely applied to the resting surface; the anal segments are sloping, and the margin is closely applied to the leaf, rounded at the extremity and somewhat thickened at the

edge; when at rest the fourth segment is more than twice as long as the head; the head is triangular when seen from in front and narrowly bilobed and small for the body.

The imago rests with its wings closed over its back, but basks generally with them half open. (Davidson, Bell and Aitken.)

HABITAT.—Burma, Assam, South India.

DISTRIBUTION.—The types are from Tenasserim; de Nicéville records it from Sibsaghor in Upper Assam, Akyab, Rangoon, and the Donat Range, Elwes from the Karen Hills, Watson from the Chin Hills, Fergusson from Travancore; it is in our collection from Rangoon, Silchar in Cachar, Sibsaghor, and Karwar, where Davidson, Bell and Aitken bred it, and we have received many examples from the Khasia Hills; it is very near to *A. pulligo*, Mabille, from the Malay Archipelago, but that species is more uniformly coloured above and below, and apparently never has any indications of spots or fasciæ on the underside. Our figures of the larva and pupa are from Davidson's original drawings.

#### INDO-MALAYAN ALLIED SPECIES.

- Sancus pulligo*, *Tagiades pulligo*, Mabille, Bull. Soc. Ent. Fr. 1876, p. xxvi. *Sancus pulligo*, Semper, Rhop. Philipp. p. 319, pl. 49, fig. 1, ♂ (1892). Synonyms, *Antigonus kethra*, Plötz, J. B. Nass. Ver. xxxvii. p. 24 (1884), unpublished plate No. 1525. *Antigonus forensis*, Plötz, id. plate 1523. *Astictopterus ulunda*, Staudinger, Iris, ii. p. 146 (1889). Habitat, Malay Archipelago.
- Sancus fuscula*, *Tagiades* (?) *fuscula*, Snellen, Tijd. voor Ent. xxi. p. 42, pl. 2, figs. 3 (1878). *Sancus pulligo*, de Nicéville (nec Mabille), Journ. Bo. Nat. Hist. Soc. 1891, p. 397. Habitat, S.W. Celebes.
- Sancus cellundo*, *Astictopterus cellundo*, Staudinger, Iris, 1889, p. 148. Habitat, North and South Celebes.

#### Genus WATSONIELLA.

*Watsonia*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 220 (nom. præocc.).

*Watsoniella*, Bery, Com. Mus. Buenos Aires, 1898, p. 42.

*Stimula*, de Nicéville, Journ. Bo. Nat. Hist. Soc. xii. 1898, p. 159.

*Forewing*, vein 12 recurved, ends on costa opposite the upper end of the cell, 11 emitted one-third from the end of the cell, passing close to vein 12 from its middle to its end, veins 9 and 8 from close to end, 10 from half way between 11 and 9, cell less than two-thirds the length of the costa; upper discocellular very short, outwardly oblique, the middle and lower discocellulars in an inwardly oblique straight line, the middle a little the longer, vein 3 from close to lower end of cell, 2 from about the middle; costa arched at the base, then nearly straight to the apex, which is sub-acute, outer margin convex, shorter than the hinder margin in both sexes. *Hindwing* with vein 8 bowed, ending at the apex of the wing, 7 from close to upper end of the cell, cell broad, short, less than half the breadth of the wing, discocellulars outwardly oblique, faint, as also is vein 5, 3 from close to lower end of cell, 2 from one-third before the end; costa, apex and outer margin evenly rounded. Antennæ a little more than half the length of the costa of forewing, club gradual, moderate, the tip bent over at nearly a right angle, and moderately pointed;



palpi upturned against the face, second joint densely scaled, third joint short, blunt, obtusely conical, almost hidden by the hairs of the second joint; body moderate, abdomen not quite reaching the end of the hindwing; hind tarsi fringed and with two pairs of spurs; fore tarsi with epiphysis.

Type, *Watsonia swinhoei*, Elwes and Edwards.

#### WATSONIELLA SWINHOEL.

Plate 789, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Watsonia swinhoei*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 220, pl. 20, fig. 6, ♂.

IMAGO.—Male. Upperside dark chocolate-brown with a purplish tinge except at the apex of the forewing, no markings. Underside slightly paler. *Forewing* with the apex and outer margin paler than the inside of the wing, the hinder marginal space broadly, still paler. *Hindwing* with the basal area slightly darker than the rest of the wing, no markings on either wing. Antennæ black, spotted, with yellowish-white on the underside, the tip of the club yellowish-white; palpi, head and body above and below and the legs concolorous with the wings; palpi with some orange-coloured marks at the tips of the hairs of the second joint.

Female like the male, the forewings somewhat longer, with the underside broadly, very pale chocolate-grey along the hinder margin.

Expanse of wings, ♂  $2\frac{2}{10}$ , ♀  $2\frac{3}{10}$  inches.

HABITAT.—Assam.

DISTRIBUTION.—The types in coll. Elwes and several other examples received by us from the Khasia Hills.

#### Genus KORUTHAIALOS.

*Koruthaialos*, Watson, Proc. Zool. Soc. 1893, p. 76, pl. 2, fig. 8; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 424. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 174.

*Corythæolos*, Mabille, Wytzman's Gen. xvii. p. 105 (1904).

*Forewing*; vein 12 reaches costa a little before end of cell, 11 from upper middle of cell, curves upwards and slightly touches 12; cell less than two-thirds the length of the costa, discocellulars somewhat inwardly oblique, the lower the shorter; vein 3 emitted a little before lower end of cell, 2 from the middle; costa evenly arched, apex blunt, outer margin evenly convex. *Hindwing*, vein 7 emitted a little before upper end of cell, discocellulars faint, 5 not visible, 3 from a little before lower end of cell, 2 from about one-third before the end; costa and outer margin evenly rounded. Antennæ with the club slender, gradual, tip bent over; palpi porrect, second joint densely clothed, third joint moderate, erect, hind tibiae naked and with two pairs of spurs.

Type, *Koruthaialos hector*, Watson.



*Koruthaialos rubecula*, Plotz = *hector*, Watson.

## KORUTHAIALOS XANITES.

Plate 790, figs. 1, ♂, 1a, ♀, 1b, ♀.

- Astictopterus xanites*, Butler, Trans. Ent. Soc. 1870, p. 510. Druce, Proc. Zool. Soc. 1873, p. 359.  
Butler, Trans. Linn. Soc. Zool. Lond. 1877, p. 555, pl. 69, fig. 7. Elwes and de Nicéville,  
Journ. As. Soc. Bengal, 1886, p. 440. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 28.  
Watson (part), Hesp. Ind. p. 145 (1891).
- Koruthaialos xanites*, Watson, Proc. Zool. Soc. 1893, p. 77; id. Journ. Bo. Nat. Hist. Soc. ix. 1895,  
p. 429. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 534. Elwes and Edwards,  
Trans. Zool. Soc. 1897, p. 175.
- Astictopterus xanites*, var. *palawites*, Staudinger, Iris, 1889, p. 148.
- Kerana gemmifer*, Semper (nec Butler), Rhop. Philipp. p. 318 (1892). Distant, Rhop. Malayana,  
p. 403, pl. 34, fig. 29 (1886).
- Koruthaialos xanites luzonicus*, Frühstorfer, Iris, 1910, p. 91.
- Koruthaialos xanites namata*, Frühstorfer, l.c.
- Koruthaialos xanites gopaka*, Frühstorfer, l.c.

IMAGO.—Male. Upperside dark, bright, chocolate-brown. *Forewing* with a broad, bright orange discal band from the middle of the costa to the hinder angle, not quite reaching either; the band is more or less rounded at each end, its inner margin slightly sinuous, its outer margin well outwardly curved below its middle. *Hindwing* without markings, a few minute red scales on the outer margin. Cilia of both wings dark brown. Underside slightly paler and duller in colour than the upperside, the band similar. Antennæ blackish-brown with some very minute pale dots on its underside; palpi, head and body above and below, and the legs concolorous with the wings.

Female like the male, the band on the upper side of the forewing somewhat broader; this band on the underside in this sex becomes pale hindwards and expands on the hinder margin for about half its outer length.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{7}{10}$  inches.

HABITAT.—Burma, Malay Peninsula and Archipelago.

DISTRIBUTION.—We have it from the Ataran Valley, it is in the B. M. from the Karen Hills, Druce records it from Borneo, Watson from Malacca and Burma, Elwes and de Nicéville from Tavoy, Semper from the Philippines, and Elwes from Perak and Bali. The orange band of the forewing is very variable in size, hardly any two specimens are exactly similar. We very much doubt that the following form, *rubecula*, Plötz = *hector*, Watson, can be separated from it.

## KORUTHAIALOS RUBECULA.

Plate 790, figs. 2, ♂, 2a, ♀, 2b, ♂.

- Lychnuchus rubecula*, Plötz, Berl. ent. Zeit. xxvi. p. 264 (1882), unpublished plate No. 1348.  
*Koruthaialos rubecula*, Swinhoe, Trans. Ent. Soc. 1908, p. 11. Frühstorfer, Iris, 1910, p. 92.

*Lychmochus latitia*, Plötz, l.c. plate No. 1349.

*Astictopterus xanites*, Distant (nec Butler), Rhop. Malayana, p. 402, pl. 34, fig. 28 (1886). Watson (part), Hesp. Ind. p. 145 (1891). Elwes, Proc. Zool. Soc. 1892, p. 661.

*Koruthaialos hector*, Watson, Proc. Zool. Soc. 1893, p. 77; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 175. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 141.

*Koruthaialos rubecula haraka*, Frühstorfer, Iris, 1910, p. 92.

IMAGO.—Male and Female. Only differs from *K. xanites* in the size of the orange band in the forewing, which is sometimes reduced to a small spot, and sometimes extends from near the costa to a little below the first sub-median nervule, and in size it is usually a little smaller.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  inches.

HABITAT.—Burma, Malay Peninsula and Archipelago.

DISTRIBUTION.—We have typical examples from Rangoon and from Celebes; Watson says it occurs throughout Burma and in Java.

#### KORUTHAIALOS BUTLERI.

Plate 790, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Astictopterus butleri*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1883, p. 98, pl. 10, fig. 3, ♂; id. idem, 1886, p. 380. Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 52. Elwes, Trans. Ent. Soc. 1888, p. 464. Watson, Hesp. Ind. p. 146 (1891). Elwes, Proc. Zool. Soc. 1892, p. 662.

*Koruthaialos butleri*, Watson, Proc. Zool. Soc. 1893, p. 77. Swinhoe, Trans. Ent. Soc. 1893, p. 328. de Nicéville, Gazetteer of Sikkim, Butt. p. 179 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 176.

IMAGO.—Male. Of a uniform dark brown colour, nearly black, with a slight purple tint in certain lights, sometimes without any markings, but usually with indistinct indications of a small orange spot in the upper disc of forewing. Cilia concolorous with the wings. Underside as dark as on the upperside, the discal orange spot larger and usually expanding a little, the hinder marginal space a little paler than the rest of the wing. Antennæ, head and body above and below and the legs concolorous with the wings; palpi below and the pectus with some minute pale marks.

Female only differs from the male in being somewhat larger, and the orange spot more prominent.

Expanse of wings, ♂  $1\frac{4}{10}$  to  $1\frac{1}{2}$ , ♀  $1\frac{1}{2}$  to  $1\frac{7}{10}$  inches.

HABITAT.—Assam, Sikkim, Burma, Mergui.

DISTRIBUTION.—The type from Cachar is in the Indian Museum, Calcutta; we have received it from the Khasia Hills; it is in the B. M. from Burma; Moore records it from Mergui, Elwes from Margharita in Upper Assam, and de Nicéville from Sikkim.

## INDO-MALAYAN ALLIED SPECIES.

- Koruthaialos verones*, *Astictopterus verones*, Hewitson, Ann. Mag. Nat. Hist. 1878, p. 341.  
*Koruthaialos verones*, de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 534. Habitat, Sumatra.
- Koruthaialos focula*, *Lychnuchus focula*, Plötz, Berl. ent. Zeit. xxvi. p. 263 (1882), unpublished plate No. 243, ♂ ♀. *Koruthaialos focula*, Swinhoe, Trans. Ent. Soc. 1908, p. 11. Synonym, *Koruthaialos kophene*, de Nicéville, Journ. Bo. Nat. Hist. Soc. x. 1895, p. 189, pl. T, fig. 49, ♂, 50, ♀. Habitat, Java, Sumatra.
- Koruthaialos kerala*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1896, p. 188, pl. T, fig. 48, ♂. Habitat, Perak, Malay Peninsula, N.E. Sumatra.
- Koruthaialos niasicus*, Frühstorfer, Iris, 1910, p. 91. Habitat, Nias.
- Koruthaialos avidha*, Frühstorfer, l.c. p. 92. Habitat, S. Annam.

## Genus SUADA.

- Suada*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 370. Watson, id. p. 425. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 177.

*Forewing*, vein 12 ends on the costa opposite the end of the cell, 11 bent upwards soon after its origin and touches 12 for some distance, but does not anastomose with it; cell long, about two-thirds the breadth of the wing, upper discocellular rather long, strongly outwardly oblique, middle discocellular straight, slightly oblique, the lower discocellular upright, nearly straight, vein 3 from close to lower end of cell, 2 from before the middle, sub-median vein sinuous; wing long and somewhat narrow; costa nearly straight, apex sub-acute, outer margin rounded from the apex, then slightly convex to the hinder angle, which is rounded; hinder margin straight, a good deal longer than the outer margin. *Hindwing*, vein 8 somewhat curved at the base, then straight to its end, 7 from close to upper end of cell, discocellulars outwardly oblique, faint, vein 5 not traceable, vein 3 from close to lower end of cell, 2 from beyond the middle, sub-median and internal veins straight; wing narrow, costa strongly arched at base, apex and outer margin rounded to the end of vein 2, where it is somewhat excavated, anal angle rounded, abdominal margin straight. Antennæ more than half the length of the costa of forewing, club moderate, acuminate and bent over; palpi somewhat erect, second joint densely clothed, third joint slender, legs long and slender, hind tibiæ with two pairs of spurs.

Type, *Hesperia swerga*, de Nicéville.

## SUADA SWERGA.

Plate 790, figs. 4, ♂, 4a, ♀, 4b, ♂.

- Hesperia swerga*, de Nicéville, Journ. As. Soc. Bengal, 1883, p. 89, pl. 10, fig. 12, ♂.  
*Suastrus swerga*, Elwes, Trans. Ent. Soc. 1888, p. 450. Watson, Hesp. Ind. p. 53 (1891); id. (part) Proc. Zool. Soc. 1893, p. 76. de Nicéville, Gazetteer of Sikkim, Butt. p. 179 (1894).

- Suada swerga*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 372; id. idem, p. 429.  
 de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 534. Elwes and Edwards, Trans.  
 Zool. Soc. 1897, p. 177. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 141.  
 Frühstorfer, Iris, 1910, p. 92.  
*Suastus molleri*, Moore, Trans. Ent. Soc. 1884, p. 49.

IMAGO.—Male. Upperside dark brown. *Forewing* with an elongate, small white spot at the lower end of the cell, a large spot immediately below it in the first median interspace and a small spot outside wedged into the junction of the two other spots, all of them only divided from each other by the veins; three sub-apical white spots, divided from each other by the veins, the two upper ones very minute, and sometimes one or the other is absent; an indistinct spot on the middle of the sub-median vein. *Hindwing* without markings, with some pale brown long hairs in the middle of the disc. Cilia of forewing pale brown, of hindwing grey. Underside. *Forewing* dark brown, the costa and apex broadly ochreous-grey; the spots as on the upperside. *Hindwing* uniformly ochreous-grey without any markings. Antennæ brown, with white dots on the underside; palpi, head and body above concolorous with the wings, grey beneath.

Female like the male.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{6}{10}$  inches.

HABITAT.—Sikkim, Burma, Java.

DISTRIBUTION.—The type male from Sikkim is in the Indian Museum, Calcutta; our description and figures are from a pair in the Hancock Museum, Newcastle, from Bhamo; de Nicéville records it from Beeling, Ataran Valley, the Donat Range, Sikkim, Perak, Java and N. E. Sumatra, Elwes from Arguno in Java.

#### INDO-MALAYAN ALLIED SPECIES.

- Suada scopas*, Heteropterus? (Steropes) scopas, Staudinger, Iris, 1889, p. 161, pl. 2, fig. 12, ♂.  
 Habitat, Palawan, Philippines.  
*Suada catalucos*, Heteropterus? catalucos, Staudinger, l.c. p. 162, pl. 2, fig. 13, ♂. Habitat,  
 Borneo, Philippines.  
*Suada albinus*, Suastus albinus, Semper, Rhop. Philipp. p. 299, pl. 49, fig. 8, ♀ (nec ♂) (1892).  
 Habitat, Mindoro, Philippines.

#### Sub-Family SUASTINÆ.

*Forewing*, vein 12 terminates on the costa before the upper end of the cell, 11 free from 12, arises about one-third before the upper end of the cell; cell long, but less than two-thirds the length of the costa, middle and lower discocellulars usually in an erect straight line, the lower a little the shorter; vein 3 arises from near the lower end of

the cell, 2 from, or from before the middle. *Hindwing*, vein 3 from near the lower end of the cell, 2 from beyond the middle. Antennæ long, nearly two-thirds the length of the costa of forewing, club gradual, the tip shortly bent over; palpi upturned, laxly scaled, third joint blunt, somewhat erect; fore tibiæ with epiphysis; hind tibiæ fringed and with two pairs of spurs.

#### Genus IAMBRIX.

*Iambrix*, Watson, Proc. Zool. Soc. 1893, p. 73, pl. 3, fig. 25; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 425. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 180.

*Astictopterus*, Distant (part), Rhop. Malayana, p. 400 (1885).

*Forewing*, vein 12 reaches costa before end of cell, 11 from about the upper middle; cell somewhat short, but more than half the length of the costa; discocellulars in an erect line, the lower slightly shorter, consequently the base of vein 5 is only a little nearer to 4 than to 6; 3 from close to lower end of cell, 2 from a little beyond the middle; costa evenly arched, apex blunt, wing short and comparatively rather broad, outer margin somewhat rounded, a little shorter than the hinder margin. *Hindwing*, vein 7 emitted close to upper end of cell, discocellulars faint, vein 5 not traceable, 3 from close to end of cell,



*Iambrix*.

almost touching it, 2 from about one-third before the end. Antennæ more than half the length of the costa of forewing, club moderate, gradual, tip curved, pointed; palpi with the second joint densely clothed, third joint long, somewhat slender and erect; hind tibiæ fringed and with two pairs of spurs.

Type, *Nisioniades salsala*, Moore.

#### IAMBRIX STELLIFER.

Plate 791, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Astictopterus stellifer*, Butler, Trans. Linn. Soc. Zool. Lond. 1877, p. 555. Moore, id. 1886, p. 52.

*Iambrix stellifer*, Watson, Proc. Zool. Soc. 1893, p. 76; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 535. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 181. Frühstorfer, Iris, 1910, p. 93.

*Astictopterus salsala*, Watson (part), Hesp. Ind. p. 147 (1891).

IMAGO.—Male and Female. Upperside blackish-brown. Cilia concolorous with the wings. *Forewing* with two or three discal, yellowish-white dots in an oblique line, one in each of the median interspaces, and another sometimes (not always) in the interno-median interspace. Underside very slightly paler than on the upperside, somewhat obscurely variegated with darker shades of colour, a white spot at the upper end of the cell in each wing, and sometimes an obscure dot or two towards the apex. Antennæ black, the shaft pale on the underside, with minute white dots; palpi, head

and body above concolorous with the wings, collar grey; on the underside the body and legs are brown; palpi and pectus grey, abdomen dark grey with a double row of whitish dots.

Female like the male above, the dots on the forewing generally more distinct. Underside. *Forewing* blackish-brown, a dull red smear on the costa to the end of the cell, the hinder marginal space pale; a dot at the end of the cell and the discal dots as on the upperside plainly marked. *Hindwing* entirely covered with minute orange-coloured scales making it dull brownish-orange in colour, a discal row of black spots, the middle one large with a prominent white centre, and the two lowest similar but smaller, but these spots vary much in size and prominence in different examples.

Expanse of wings, ♂ ♀  $1\frac{1}{10}$  to  $1\frac{3}{10}$  inches.

HABITAT.—Malay Peninsula, Burma, Annam.

DISTRIBUTION.—Moore records it from Mergui, Watson from Burma, Elwes from East Pegu and Pulo Laut, de Nicéville from Sumatra; it is in our collection from Singapore and Annam.

#### IAMBRIX SALSALA.

Plate 791, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, ♀, 2d, larva and pupa.

*Nisioniades salsala*, Moore, MS. Cat. Lep. Mus. E.I.C. p. 250 (1857); id. Proc. Zool. Soc. 1865, p. 786.

*Astictopterus salsala*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 52; id. idem, 1886, p. 52. Elwes and de Nicéville, id. p. 440. Wood-Mason and de Nicéville, id. p. 381. Distant, Rhop. Malayana, p. 441, pl. 34, fig. 21 (1886). Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43. Watson, id. 1888, p. 27. Elwes, Trans. Ent. Soc. 1888, p. 464. Manders, id. 1890, p. 538. Watson, Journ. Bo. Nat. Hist. Soc. 1890, p. 388; id. (part) Hesp. Ind. p. 147 (1891). Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 447. Watson, id. p. 59. Elwes, Proc. Zool. Soc. 1892, p. 661. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 429.

*Iambrix salsala*, Watson, Proc. Zool. Soc. 1893, p. 76. Swinhoe, Trans. Ent. Soc. 1893, p. 319. de Nicéville, Gazetteer of Sikkim, Butt. p. 179 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 679. Davidson, Bell and Aitken, id. 1897, p. 44, pl. 8, fig. 9 (larva and pupa). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 181. Crowley, Proc. Zool. Soc. 1900, p. 679. de Nicéville, Journ. As. Soc. Bengal, 1900, p. 233, ♀. Aitken and Comber, Journ. Bo. Nat. Hist. Soc. xv. 1903, p. 52. Swinhoe, Trans. Ent. Soc. 1908, p. 11. Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 388. Frühstorfer, Iris, 1910, p. 93.

*Astictopterus stellifer*, Moore (nec Butler), Lep. Ceylon, i. p. 163 (1881). Swinhoe, Proc. Zool. Soc. 1885, p. 146. Hampson, Journ. As. Soc. Bengal, 1888, p. 365.

*Apustus luteipalpis*, Plötz, Stett. ent. Zeit. xlvii. p. 106 (1886), unpublished plate No. 1489.

IMAGO.—Male. Upperside dark olive-brown with an orange tint. *Forewing* with the discal spots as in *I. stellifer*, but usually larger and more distinct, the entire wing except the apex and outer margin covered with minute orange scales, which also usually cover the discal spots. *Hindwing* without markings, but with the lower two-thirds covered with orange hairs. Cilia of both wings concolorous with the wings.

Underside with the ground colour almost as dark as it is above. *Forewing* with nearly the entire upper half covered with minute orange scales, a white spot at the end of the cell, another half way between it and the outer margin, both broadly ringed with black, and three indistinct white dots below the outer spot in an oblique line with it. *Hindwing* entirely covered with minute orange scales, a more or less complete series of discal white dots in the interspaces, each ringed with black. Antennæ black, club and shaft ochreous-white on the underside, with minute black dots; palpi, head and body blackish-brown, with some orange scaling, orange-grey beneath, the abdomen with grey lateral bands.

Female. Upperside paler and duller in colour. *Forewing* generally with seven semi-hyaline white spots across the disc, four in an outwardly oblique, slightly curved line from near the costa one-fifth from the apex, the fifth immediately below the fourth, very minute, two larger spots in an inwardly oblique line, near the base of the second median interspace and in the middle of the first, and an opaque ochreous-white, indistinct spot in the middle of the interno-median interspace. *Hindwing* without markings. Underside paler and pink-tinted. *Forewing* with the inner area suffused with brown, a spot at the end of the cell, the discal spots as on the upperside. *Hindwing* with a white spot in the middle of the disc, one above it, and another below it, well separated from each other, all these spots both above and below somewhat variable in number in different examples.

Expanse of wings, ♂ ♀  $1\frac{1}{10}$  to  $1\frac{2}{10}$  inches.

LARVA cylindrical, the last segment rounded at the extremity and somewhat depressed, the head triangular in shape seen from in front; colour of head dirty whitish-yellow, with a red-brown marginal band meeting the opposite one on the vertex, an impressed brown line from the vertex to the apex of the clypeus, and a short brown line parallel to this on each side of it running from the centre of the clypeus to half way up the face; clypeus light brown, with a dark brown line from the apex to the base; jaws dark brown; colour of the body is a watery-looking green, on the sides yellow, dorsally spotted minutely with green; a dorsal and sub-dorsal dark green line; surface oily-looking. The hinder edge of the last segment somewhat shortly hairy. Length, 27 mm.

PUPA stout, circular in transverse section, except at the head, where it is oval, the head is broad as the eyes are prominent, constriction dorsal slight; thorax slightly humped; cremaster shortly triangular, pointed, with a single bunch of hooked hairs at extremity, spiracular expansions of segment 2 raised slightly, semicircular, facing forwards, dark brown in colour; proboscis produced to the end of segment 9; surface slightly, shortly hairy. Length, 15 mm.

HABITS.—The imago keeps its wings closed over its back when at rest, it does not like the strong sunlight, but prefers to keep to the underwood in the jungles; the



butterflies are never found in the open country; they fly quickly in curves, and are difficult to see on the wing, but rest often, when they are easily caught; they are generally seen chasing each other. The egg is laid on the upper side of a blade of grass, or on a bamboo leaf near the ground; it is nearly smooth to the eye, dome-shaped, rather higher than broad, and of a dark red colour. The larva makes a more or less lax cell at first, but finally a very tight one by joining the leaf by the edges longitudinally; the larva will often lie on the open surface of a leaf; the pupa is generally formed inside the cell, it is covered with white powder. The larva feeds on *Bambusa arundinaceæ* or on grasses, generally broad-leaved, coarsish grass. (Davidson, Bell and Aitken).

HABITAT.—Sikkim, Assam, South India, Ceylon, Burma, Perak, Java.

DISTRIBUTION.—In our collection from Sikkim, Rangoon, Kandy, Khandalla, Poona, Calcutta, Ranikhet, and the Khasia Hills; recorded by Manders from the Shan States, by Aitken and Comber from the Konkan, by Watson from the Chin Hills and Chin Lushai, by Wood-Mason and de Nicéville from Cachar, by Fergusson from Travancore, by Evans from the Palni Hills, by Aitken from Bombay, by de Nicéville from Calcutta and Sikkim, by Hampson from the Nilgiris, by Elwes from the Karen Hills, Naga Hills, East Pegu, Ganjam, Perak, and W. Java, by Davidson, Bell and Aitken from Karwar; our figures of the larva and pupa are from Davidson's original drawings.

#### INDO-MALAYAN ALLIED SPECIES.

*Iambrix sindu*, *Astictopterus sindu*, Felder, Wien Ent. Mon. iv. p. 401 (1860). Distant, Rhop.

Malayana, p. 402, pl. 35, fig. 30 (1886). Habitat, Perak, Borneo, Sumatra.

*Iambrix obliquans*, *Astictopterus obliquans*, Mabille, Ann. Soc. Ent. Belg. xxxvii. p. 51 (1893).

Habitat, Java.

*Iambrix latifascia*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 182, pl. 21, fig. 9, ♂. Habitat,

Borneo, Sumatra.

*Iambrix vasuba*, *Iambrix salsala vasuba*, Frühstorfer, Iris, 1910, p. 93. Habitat, Tonkin.

*Iambrix niasica*, *Iambrix stellifer niasicus*, Frühstorfer, l.c. Habitat, Nias.

*Iambrix yamanta*, *Iambrix sindu yamanta*, Frühstorfer, l.c. p. 94. Habitat, Kina Balu.

#### Genus PEDESTES.

*Pedestes*, Watson, Proc. Zool. Soc. 1893, p. 81; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 426.

Elwes and Edwards, Trans. Zool. Soc. 1897, p. 192.

*Forewing*, vein 12 ends on the costa opposite the end of the cell; cell less than two-thirds the length of the costa, discocellulars straight, slightly oblique, the lower a little shorter than the middle discocellular, vein 5 thus arises a little below the middle; 3 emitted somewhat close to lower end of cell, 2 from a little beyond the middle, costa

a little arched near the base, then nearly straight to apex, which is sub-acute, outer margin convex, shorter than the hinder margin, the wing comparatively long and somewhat narrow; hinder angle somewhat pronounced. *Hindwing* with vein 7 from a little before upper end of cell; discocellulars and vein 5 faint, 3 emitted from lower end of cell, 2 from about one-third before the end; wing comparatively small, outer margin rounded and even. Antennæ a little more than half the length of the costa of forewing, club long, fairly robust, tip pointed and slightly curved over; palpi with the third joint almost concealed by the hairs of the second joint; hind tibiæ with two pairs of spurs.

Type, *Isoteinon masuriensis*, Moore.

#### PEDESTES MASURIENSIS.

Plate 791, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Isoteinon masuriensis*, Moore, Proc. Zool. Soc. 1878, p. 693; id. idem, 1882, p. 262. Doherty, Journ. As. Soc. Bengal, 1886, p. 138. Elwes, Trans. Ent. Soc. 1888, p. 455. Watson, Hesp. Ind. p. 79 (1891).

*Pedestes masuriensis*, Watson, Proc. Zool. Soc. 1893, p. 81. de Nicéville, Gazetteer of Sikkim, Butt. p. 180 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 193, pl. 24, figs. 40, a, b, c (genitalia). Hannyngton, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371.

IMAGO.—Male. Upperside black. *Forewing* with white spots, a somewhat long, quadrate spot filling the end of the cell excavated on its inner side, a long oval spot below it filling up the first median interspace close to its base; a pointed spot at the base of the second median interspace, its point wedged into them, and sometimes a small spot below the outer end of the lowest spot; three small spots in an outer curve, from near the costa, one-sixth from the apex. *Hindwing* without markings. Cilia of both wings brown, with pale tips. Underside. *Forewing* with the costa narrowly, the apex broadly and the outer margin decreasingly paler than the ground colour of the wing, and tinged with pinkish-ochreous, the spots as on the upperside. *Hindwing* ochreous-brown, without markings, the entire wing being covered with minute ochreous scales. Cilia of both wings white, with brown patches at the vein-ends. Antennæ black, ringed with white, the club whitish on the underside; palpi, head and body concolorous with the wings; palpi below white.

Female like the male, the white semi-hyaline spots on the forewing somewhat larger.

Expanse of wings, ♂ ♀  $1\frac{1}{10}$  to  $1\frac{2}{10}$  inches.

HABITAT.—N.W. Himalayas, Sikkim.

DISTRIBUTION.—We have it from Masuri and Sikkim; the types are from Masuri; Elwes records it from Sikkim, 6,000 feet elevation; Moore from the Kangra Valley, Watson from Kumaon.

## PEDESTES PANDITA.

Plate 791, figs. 4, ♂, 4a, ♀, 4b, ♂.

*Isoteinon pandita*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 181, pl. 2, fig. 14, ♀. Watson, Hesp. Ind. p. 81 (1891). Elwes, Proc. Zool. Soc. 1892, p. 654.

*Pedestes pandita*, Watson, Proc. Zool. Soc. 1893, p. 81. de Nicéville, Gazetteer of Sikkim, Butt. p. 180 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 193, pl. 24, figs. 41a, b (genitalia). Adamson, Trans. N. H. Soc. Northumberland, etc., 1908, p. 143.

IMAGO.—Male and Female. Upperside dark blackish-brown, nearly black; spots white. *Forewing* sparsely covered with minute ochreous scales; a square-shaped spot, constricted at its middle, across the end of the cell; three small spots divided by the veins, from near the costa, one-sixth from the apex; two larger spots close together in the bases of the median interspaces. *Hindwing* without markings. Cilia of both wings brownish-ochreous. Underside brown. *Forewing* with the costa and outer area covered with minute ochreous scales; spots as above. *Hindwing* with the entire surface similarly covered; no markings. Antennæ black, finely ringed with white, club at the tip and on the underside ferruginous; palpi, head and body concolorous with the wings; palpi and pectus on the underside with whitish hairs.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{3}{10}$  inches.

HABITAT.—Sikkim, Burma.

DISTRIBUTION.—We have it from Sikkim, from whence the type, now in the Indian Museum, came; Doherty records it from the Naga Hills; Adamson from Singoo in the Eastern Shan Hills, and from the Chindwin River, Burma.

## INDO-MALAYAN ALLIED SPECIES.

*Pedestes fuscicornis*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 194, pl. 18, fig. 25, ♂, and pl. 24, fig. 43 (genitalia). Habitat, Pulo Laut.

*Pedestes parnaca*, Frühstorfer, Iris, 1910, p. 99. Habitat, Tonkin.

*Pedestes tali*, nov. Male. Upperside like *P. masuriensis*, but much larger, all the white spots on the forewing more than double the size, the white elongated spots in the sub-median interspaces filling up the interspaces from their bases for more than half their length, two short white streaks below them in the interno-median interspace and a longer and more prominent white streak below these close to the hinder margin. Underside with the costa and apical area of the forewing and the entire surface of the hindwing paler and more ochreous than *masuriensis*.

Expanse of wings,  $1\frac{1}{2}$  inches.

HABITAT.—Tali, Haut Yunnan.

Described from two males in perfect condition in our collection.

## Genus SUASTUS.

*Suastus*, Moore, Lep. Ceylon, i. p. 168 (1881). Watson, Hesp. Ind. p. 50 (1891); id. Proc. Zool. Soc. 1893, p. 75; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 425. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 178.

*Forewing*, vein 12 ends on costa well before the end of cell; vein 11 from the upper middle of cell, free from 12, cell less than two-thirds the length of the costa, upper discocellular short, but distinct, the upper end of the cell obliquely bent down, middle and lower discocellulars in an inwardly oblique straight line, the lower a little the shorter, vein 5 consequently being a little nearer to 4 than to 6, 3 emitted at some little distance before lower end of cell, 2 from well before the middle; costa gently and evenly arched, apex sub-acute, outer margin convex; about as long as the hinder margin, not so long in the female. *Hindwing*, vein 7 emitted some little distance before lower end of cell, discocellulars in an inwardly oblique straight line, faint, vein 5 not visible, 3 from close to lower end of cell, 2 from one-fourth before the end, costa arched near its base, outer margin evenly rounded. Antennæ more than half the length of the costa of forewing, club moderate, rather long, with a short pointed curve; palpi upturned, curving backwards over the vertex, second joint densely scaled, third joint slender, long and pointed; hind tibiæ fringed and with two pairs of spurs.

Type, *Hesperia gremius*, Fabricius.

## SUASTUS ADITUS.

Plate 792, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Suastus aditus*, Moore, Journ. As. Soc. Bengal, 1884, p. 49. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 28. Elwes, Trans. Ent. Soc. 1888, p. 450. Watson, Hesp. Ind. p. 52 (1891). Elwes, Proc. Zool. Soc. 1892, p. 651. Watson, id. 1893, p. 76. de Nicéville, Gazetteer of Sikkim, Butt. p. 179 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 679.

*Hesperia sala*, Wood-Mason and de Nicéville (nec Hewitson), Journ. As. Soc. Bengal, 1881, p. 259.

*Suastus sala*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 179, pl. 18, fig. 15, ♂. Adamson (nec Hewitson), Trans. N. H. Soc. Northumberland, etc. 1908, p. 142.

IMAGO.—Male. Upperside dark violet-brown. *Forewing* with two small quadrate, semi-hyaline spots at the end of the cell, the lower the larger, a larger quadrate spot below them near the base of the second median interspace and a small spot outside near the base of the first median interspace, a small indistinct spot immediately above the middle of the sub-median vein. *Hindwing* without markings. Cilia of both wings brown. Underside paler brown. *Forewing* with the spots as on the upperside, the lowest spot attached to a rather large opaque whitish spot which expands hindwards into a whitish suffusion on the hinder margin. *Hindwing* sparsely speckled with minute greyish scales, which form a whitish line on the outer half of the sub-median

vein, indications of two dark brown discal spots, often obsolete. Antennæ black with whitish dots on the underside; palpi, head and body concolorous with the wings on the upperside, dark grey with white hairs on the underside, legs brown, marked with white, the forelegs white beneath.

Female like the male, the white spots somewhat larger.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{3}{10}$  inches.

HABITAT.—Sikkim, Burma, Andaman Islands.

DISTRIBUTION.—The type, a male in the Indian Museum, Calcutta, came from the Andamans; we have it from Port Blair; Elwes and de Nicéville record it from Sikkim, Watson from Burma and the Chin Hills, and Elwes from the Karen Hills and East Pegu; it is in the B. M. also from Rangoon and Beeling. Some authors have put this species as a synonym to *S. sala*, Hewitson, from Singapore; we have carefully examined Hewitson's type, which, in so far as we know, is unique, it does not appear to us to be the same as *aditus*, the wings are longer, it lacks the subapical spot in the forewing and is differently coloured on the underside. Elwes and Edwards' figure represents *aditus*, not *sala*.

#### SUASTUS MINUTA.

Plate 792, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Tagiades minuta*, Moore, Ann. Mag. Nat. Hist. 1877, p. 343; id. Lep. Ceylon, i. p. 176, pl. 68, figs. 4, 4a (1881). Watson, Hesp. Ind. p. 96 (1891).

*Suastus minuta*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 180. Swinhoe, Trans. Ent. Soc. 1908, p. 12.

*Apaustus sinhalus*, Plötz, Berl. ent. Zeit. xxix. p. 228 (1885), unpublished plate No. 1468.

*Suæstus swerga*, Watson (part), Proc. Zool. Soc. 1893, p. 76.

IMAGO.—Male. Upperside dark blackish-brown, without any markings. Cilia of forewing brown, whitish at hinder angle, of hindwing white, with a few brown marks in it. Underside. *Forewing* paler brown, an obscure whitish mark at the upper end of the cell and another (less obscure) in the middle of the interno-median interspace. *Hindwing* with the costal space broadly suffused with brown, the rest of the wing blue-grey, sparsely covered with minute brown scales, thickest towards the outer margin, a small black spot at the end of the cell, a large one in the middle of the interno-median interspace, with a spot or two, more or less obsolescent, above it, a black spot at the anal angle, with one or two obscure spots on the margin in the interspaces above it. Antennæ black, with whitish dots on the underside; palpi, head and body blackish-brown above, grey on the underside, legs brown above, grey beneath.

Female like the male, but with comparatively longer forewing; on the underside, the whitish mark in the middle of the interno-median interspace is large, the grey portion of the hindwing is paler, the anal spot generally absent.

Expanse of wings. ♂ ♀  $1\frac{3}{10}$  to  $1\frac{4}{10}$  inches.

HABITAT.—Ceylon.

The types came from Ceylon, we have both sexes from Kandy.

#### SUASTUS BIPUNCTUS.

Plate 792, figs. 3, ♂, 3a, ♀, 3b, ♀.

*Suastus bipunctus*, Swinhoe, Ann. Mag. Nat. Hist. 1890, p. 346. Watson, Proc. Zool. Soc. 1893, p. 76; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 180, pl. 18, fig. 14, ♂.

*Suastus aditus*, Hampson (nec Moore), Journ. As. Soc. Bengal, 1888, p. 365.

IMAGO.—Male and Female. Upperside black or very dark blackish-brown. *Forewing* with three or four minute white spots in an oblique line across the disc, varying somewhat in size and number in different examples, one in each of the median interspaces, and two towards the apex; in the female the spots are usually larger, and the lower spot is somewhat quadrate, but all these spots vary much in size in both sexes in different examples. *Hindwing* without markings. Cilia of both wings blackish-brown. Underside paler than the upperside. *Forewing* with the spots as above and a small suffused white space in the middle of the interno-median interspace. *Hindwing* paler than the forewing, the inner portion of the wing suffused with ochreous scales, a dark spot at the end of the cell, and a discal series limiting the ochreous suffusion. Antennæ black, with whitish dots on the underside; palpi, head and body blackish-brown above and below, with white hairs on the underside, and whitish segmental bands on the abdomen, and a whitish patch at its base, legs blackish-brown.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{4}{10}$  inches.

HABITAT.—Nilgiri Hills, Burma.

DISTRIBUTION.—The types in the B. M., and several examples of both sexes in our collection are from the Nilgiris; it is also in the B. M. from Haundraw, Attaran Valley and the Daunat Range, Burma.

#### SUASTUS GREMIUS.

Plate 793, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, larva and pupa.

*Hesperia gremius*, Fabricius, Ent. Syst. Suppl. p. 433 (1798). Butler, Cat. Fabr. Lep. B. M. p. 271, pl. 3, fig. 7, ♀ (1869). Moore, Proc. Zool. Soc. 1878, p. 703. Aurivillius, Ent. Tidsk. 1897, p. 150.

*Suastus gremius*, Moore, Lep. Ceylon, i. p. 168 (1881); id. Proc. Zool. Soc. 1882, p. 261. Swinhoe, id. 1885, p. 147, and 1886, p. 433. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 42. Hampson, Journ. As. Soc. Bengal, 1888, p. 365. Elwes, Trans. Ent. Soc. 1888, p. 450. Cotes, Notes on Indian Economic Entomology, i. p. 9 (1889). Davidson and Aitken, Journ. Bo. Nat. Hist. Soc. 1890, p. 370. Watson, Hesp. Ind.

p. 51 (1891). Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 447. Watson, id. p. 57. Watson, Proc. Zool. Soc. 1893, p. 75. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 427. de Nicéville, Gazetteer of Sikkim, Butt. p. 179 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 679. J. J. Walker, Trans. Ent. Soc. 1895, p. 474. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 179. Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 46 (larva and pupa). de Rhé-Philipe, id. xi. 1898, p. 598. Nurse, id. xiv. 1902, p. 513. de Rhé-Philipe, id. p. 493. Aitken and Comber, id. xv. 1903, p. 52. Adamson, Trans. Nat. Hist. Soc. Northumberland, etc. 1908, p. 142. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371. Frühstorfer, Iris, 1910, p. 93.

*Hesperia divodasa*, Moore, Proc. Zool. Soc. 1865, p. 791.

IMAGO.—Male. Upperside olive-brown. *Forewing* with ochreous-white spots, a small one in the middle of the discocellulars, sometimes a minute one above it, three sub-apical small spots, the upper one usually minute, three discal larger spots in an oblique line, the upper one before the middle of the first median interspace, the second (somewhat oval) before the middle of the first median interspace, the third (a long oval) a little beyond the middle of the interno-median interspace; these discal spots varying much in size. *Hindwing* paler than the forewing, with a broad dark costal margin, but without any markings. Cilia of both wings brownish-ochreous. Underside grey tinged with pinkish. *Forewing* with the inner portion below the subcostal vein suffused with black, leaving the apex broadly pinkish-grey, the spots as on the upperside. *Hindwing* clear pinkish-grey without any suffusion, but sparsely covered with whitish scales, a black spot near the upper end of the cell, and three in an oblique row in the median and interno-median interspaces, all ringed with whitish. Antennæ black, tip of club orange, underside of club and shaft whitish; head and body brown above, grey beneath, legs grey, tarsi orange.

Female usually paler than the male, markings similar, but the spots on the forewing are all larger, the two upper discal spots square, the middle spot excavated on its outer side, two conjoined large spots at the cell end; the female is generally (but not always) somewhat larger than the male.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{8}{10}$  inches.

LARVA.—As in the description of the group, cylindrical, with a flattened anal segment somewhat rounded at the extremity; the head is more or less round when looked at from in front and slightly bilobed, jaws strong and large; colour whitish, with a marginal brown band and a central one of the same colour separating along the sides of the clypeus, a brown mark above the jaws, and a large brown oval patch in the centre of each lobe; body colour grey-green with many minute green spots; spiracles pure black; head is large for the body; anal segment flattened, rounded at the extremity. Length, 30 mm.

PUPA.—Not very stout, eyes prominent, thorax slightly humped, constriction slight, spiracular expansions of segment 2 large, ear-shaped, brown in colour; colour

green, with head and abdomen slightly yellowish; pupa covered with a white powder in the cell. Length, 16 mm.

HABITS.—The larva makes a strong cylindrical cell of a leaf longitudinally folded, which it clothes densely with silk, rendering it difficult to tear open; the cell is thickly covered with white powder inside. It feeds on palms (*Caryota*, *Cocos*, *Calamus*, etc.).

This skipper cannot be said to be rare at any season or in any part of the district. It has a rapid flight, and is difficult to capture on the wing. We have bred nearly all our specimens. They keep their wings folded over their backs when at rest; often when basking in the sun they open their lower wings. (Davidson, Bell and Aitken.)

HABITAT.—India, Ceylon, Burma.

DISTRIBUTION.—A common species recorded from many parts of India, Ceylon and Burma; also recorded from Hainan by Moore, and from Hong-Kong by J. J. Walker.

Our figures of the larva and pupa are from Davidson's original drawings not previously published, and copy of a larva figured by Atkinson, bred in Madras on date palms, *Phœnix sylvestris*.

#### SUASTUS SUBGRISEA.

Plate 793, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Hesperia subgrisea*, Moore, Proc. Zool. Soc. 1878, p. 689, pl. 45, fig. 5.

*Suastus subgrisea*, Moore, Lep. Ceylon, i. p. 168 (1881). Watson, Hesp. Ind. p. 53 (1891).

*Suastus gremius*, Watson (part), Proc. Zool. Soc. 1893, p. 76; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 179.

IMAGO.—Male. Upperside olive-brown. *Forewing* with an ochreous-white spot in the first median interspace below the origin of vein 3, a smaller one before the middle of the second median interspace, a diffused small spot in the middle of the interno-median interspace, all three in an outwardly oblique line; indications of two or three sub-apical dots, often quite absent. *Hindwing* without markings. *Forewing* paler, the middle of the wing dark, the spots as on the upperside. *Hindwing* with a dark brown spot at the end of the cell, one in the middle of the first median interspace and another in the middle of interspace 6. Antennæ black, underside of shaft with minute white dots, tip of club orange; palpi, head and body and the legs concolorous with the wings, palpi beneath and the pectus with white hairs.

Female. Upperside paler than the male, markings as on the upperside of *S. gremius*. Underside paler than its own male, with a pinkish tint. *Forewing* with the spots as on the upperside. *Hindwing* with the brown spots as in its own male.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to  $1\frac{7}{10}$  inches.

HABITAT.—Ceylon.



DISTRIBUTION.—The type male in the B. M. is from Ceylon; we have both sexes from Kandy and from the Hot Wells, Trincomali; Watson says it is a form of *gremius*, it is of course closely allied to it, but it is undoubtedly a form confined to Ceylon. *gremius* is a very common Indian species; we have received very many, but neither in our collection nor amongst the numerous specimens in the B. M. is there any specimen at all resembling *subgriseus* from anywhere out of Ceylon, the spotting is not only different, but the underside is quite of a different shade of colour.

## SUASTUS ROBSONI.

Plate 793, figs. 3, ♂, 3a, ♂.

*Suastus robsoni*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 372, pl. Q, fig. 50, ♂. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 180. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 598.

IMAGO.—Male. Upperside, both wings shining dark hair-brown. Cilia cinereous. *Forewing* with a very minute hyaline white spot in the middle of the outer end of the discoidal cell. *Hindwing* rather paler on the disc than elsewhere, owing to the presence of some long dull ochreous hair-like scales. Underside, both wings paler than above. *Forewing* with the inner half of the wing dark hair-brown as on the upperside; the cell spot as above; a pale streak in the middle of the sub-median interspace. *Hindwing* (as seen under a strong magnifying glass) overlaid throughout with dull ochreous scales; an elongated minute black spot at the end of the cell. Abdomen dark brown above, beneath, each segment is ringed with whitish.

Nearest to *Suastus minuta*, Moore, from Ceylon, from which it differs in the cilia of the hindwing being less pure white, and on the underside in having the hindwing practically unmarked, *S. minuta* having its posterior two-thirds pure white, bearing three prominent dark brown spots. In Lieutenant E. Y. Watson's revision of the genera of the *Hesperiidæ* in Proc. Zool. Soc. Lond. 1893, p. 76, there is a misprint bracketing *S. minuta* with *S. swerga*, de Nicéville (= *S. mölleri*, Moore), but the two species are abundantly distinct, and are given separate numbers by Lieutenant Watson. *S. swerga* has a much wider range than was expected; not only does it occur in Sikkim, Beeling in North Tenasserim, the Ataran Valley and on the Daunat Range in Middle Tenasserim, but also in Perak in the Malay Peninsula, and in N.E. Sumatra and Java.

Described from a single example obtained on the 12th July, 1892, by Mr. S. Robson, after whom I have much pleasure in naming the species. (de Nicéville.)

Expanse of wings, ♂  $1\frac{1}{2}$  inches.

HABITAT.—Masuri, Western Himalayas.

We have not seen this species, the type being in the Indian Museum, Calcutta, we therefore give copies of de Nicéville's figure; it is not in the B. M.

#### INDO-MALAYAN ALLIED SPECIES.

- Suastus sala*, *Hesperia sala*, Hewitson, Trans. Ent. Soc. 1866, p. 500. Habitat, Singapore, Java.  
*Suastus tripura*, *Tagiades tripura*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 392, pl. G, fig. 39, ♀. *Suastus tripura*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 180. Synonym, *Carystus albescens*, Mabille, Ann. Soc. Ent. Belg. xxxvii. p. 51 (1893). Habitat, Perak, Pulo Laut, Java, Bali.  
*Suastus migreus*, Semper, Rhop. Philipp. p. 300, pl. 49, fig. 9 (1892). Habitat, Philippines.

#### Sub-Family ERIONOTINÆ.

Antennæ long, more than half the length of the costa of forewing, club gradual, acuminate, the end bent over; palpi upturned in front of the face; second joint generally close against the face, densely scaled, third jointly slender, erect, sometimes nearly concealed by the hairs of the second joint. *Forewing*, vein 12 ends on the costa at or before the end of the cell, 11 free from 12; cell comparatively short, 3 from close to its lower end, 2 from about its middle. *Hindwing*, vein 7 from a little distance before the upper end of the cell, 3 from near the lower end, discocellulars faint, vein 5 not traceable; fore tibiæ with epiphysis, hind tibiæ with two pairs of spurs.

#### Genus ERIONOTA.

- Erionota*, Mabille, Ann. Soc. Ent. Belg. xxi. p. 34 (1878). Distant, Rhop. Malayana, p. 393 (1886). Watson, Hesp. Ind. p. 107 (1891); id. Proc. Zool. Soc. 1893, p. 86; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 428. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 217.  
*Unkana*, Distant, Rhop. Malayana, p. 369 (1886). Watson, Hesp. Ind. p. 4 (1891); id. Proc. Zool. Soc. 1893, p. 123. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 234.

*Forewing*, vein 12 ends on costa before the end of the cell; cell less than two-thirds the length of the costa; discocellulars slightly oblique, the upper one very minute, the middle discocellular longer than the lower; vein 5 from their junction; upper end of the cell angular, a short internal vein running into the cell from near the base of vein 3; vein 3 emitted about one-eighth before the lower end of cell, the lower margin of the cell somewhat angled from the base of vein 3 to the end of the cell, vein 2 from before the middle; wing long and comparatively narrow, costa gently arched, apex produced, outer margin very slightly convex in the male, more so in the female,

somewhat shorter than the hinder margin, apex of the wing sub-acute. *Hindwing*, vein 7 emitted from a little beyond the upper middle of the cell; upper discocellular erect, lower strongly outwardly oblique; vein 5 obsolescent, 3 from close to lower end of cell, 2 from about one-third before the end; wing ample, broader than long, outer margin sinuate, slightly lobed before the anal angle. Antennæ more than half the length of the costa of forewing, club gradual, of moderate thickness, the end bent over, ending in a fine point; palpi with the second joint densely clothed, pressed close against the face, third joint concealed; hind tibiæ fringed and with two pairs of spurs.

Type, *Papilio thrax*, Linnæus.

## ERIONOTA THRAX.

Plate 794, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, larva and pupa.

*Papilio thrax*, Linnæus, Syst. Nat. i. (2), p. 794 (1767). Donovan, Ins. Ind. pl. 49, fig. 2 (1800).

*Hesperia thrax*, Latreille, Enc. Méth. ix. p. 748 (1823). Moore, Cat. Lep. E.I.C. i. p. 254, pl. 7, figs. 5, 5a, larva and pupa (1857).

*Casyapa thrax*, Druce, Proc. Zool. Soc. 1873, p. 358. Piepers, Tijd. voor Ent. xix. p. 2 (1876). Staudinger, Ex. Schmett. p. 291, pl. 98 (1888).

*Erionota thrax*, Mabille, Ann. Soc. Ent. Belg. xxi. p. 35 (1878). Distant, Rhop. Malayana, p. 393, pl. 34, fig. 17 (1886). Staudinger, Lep. Palawan, p. 134 (1889). Watson, Hesp. Ind. p. 107 (1891). Semper, Rhop. Philipp. p. 312, pl. B, fig. 10, larva and pupa (1892). Elwes, Proc. Zool. Soc. 1892, p. 656. Swinhoe, Trans. Ent. Soc. 1893, p. 321. Watson, Proc. Zool. Soc. 1893, p. 86. de Nicéville, Gazetteer of Sikkim, Butt. p. 181 (1894). de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 538. J. J. Walker, Trans. Ent. Soc. 1895, p. 476. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 217. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 599. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 143. Hannyngton, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371. Frühstorfer, Iris, 1910, p. 102.

*Teligonus thrax*, de Nicéville, Journ. As. Soc. Bengal, 1882, p. 65; id. idem, 1885, p. 52. Elwes, Trans. Ent. Soc. 1888, p. 459.

IMAGO.—Male. Upperside chocolate-brown, with a somewhat ochreous tint. *Forewing* with three large, semi-hyaline ochreous spots, one semi-quadrate with its outer edge excavated, filling up the outer part of the cell, but not reaching the end; another longer quadrate spot, filling up the middle of the first median interspace, sometimes with even sides, sometimes one or other or both sides excavated, a much smaller spot of irregular shape before the middle of the second median interspace. *Hindwing* without markings. Cilia of both wings grey. Underside pale chocolate-brown, spots of forewings as above, the inner part of the wing suffused with blackish-brown; the hindwing generally uniformly coloured, sometimes with some indistinct brownish suffusion on its inner portion. Antennæ black, the club greyish-white on the underside; palpi, head and body above and below and the legs concolorous with the wings.

Female like the male, but larger.

Expanse of wings, ♂ ♀  $2\frac{8}{10}$  to  $3\frac{2}{10}$  inches.

LARVA white, covered with a waxy powder and has a black heart-shaped head. It lives in a shelter made of a portion of rolled-up leaf. To make this shelter it has to cut into the edge of the enormous leaves of the wild or cultivated *Musa*, or plantains, to obtain a suitable segment to be rolled up.

PUPA whitish, covered with the same white powder as is the larva and is hidden from view in its dining-room. The powder is of the greatest service to the animal, as in consequence of the heavy showers of rain of the Tropics, much water often collects in the rolled-up leaf, and the pupa, if not so protected, would soon be drowned and rot; as it is, the powder keeps the pupa dry until the water has drained away or dried up.

The butterfly emerges from the pupa in the afternoon at 2 or 3 p.m., and is on the wing before sunrise or after sunset. (de Nicéville and Martin.)

HABITAT.—India, Burma, Malay Peninsula, Java, Sumatra, Borneo, Hong-Kong.

DISTRIBUTION.—A species widely spread all over India; we have it from many parts; it does not appear to occur in Ceylon or the Andaman or Nicobar Islands.

The figure of the larva is from Grote's original drawing.

#### ERIONOTA ACROLEUCA.

Plate 794, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Teligonus acroleucus*, Wood-Mason and de Nicéville, Proc. As. Soc. Bengal, September, 1881, p. 143.

*Hesperia acroleuca*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1881, p. 260.

*Teligonus acroleuca*, Elwes, Trans. Ent. Soc. 1888, p. 459.

*Erionota acroleuca*, Watson, Hesp. Ind. p. 107 (1891). Swinhoe, Trans. Ent. Soc. 1893, p. 321.

Watson, Proc. Zool. Soc. 1893, p. 86. de Nicéville, Gazetteer of Sikkim, Butt. p. 181 (1894).

Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Frühstorfer, Iris, 1910, p. 102.

*Hesperia hiraca*, Moore, Trans. Ent. Soc. 1881, p. 313, ♀.

*Teligonus lara*, Swinhoe, Ann. Mag. Nat. Hist. 1890, p. 365.

*Erionota thrax*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 217.

IMAGO.—Male. Upperside dark brown, somewhat olive-brown, of an entirely different shade of colour to that of *thrax*. Forewing with the apex pale, generally ashy-white; spotting similar. Hindwing without markings. Cilia dusky at apex of forewing, gradually becoming pale yellow towards the hinder angle, all pale yellow on the hindwing. Underside very little paler than on the upperside, purple tinted in parts, making the surface somewhat variegated, markings as in *thrax*. Antennæ black, the club on the underside pure white, the terminal hook red beneath; palpi, head and body above and below and the legs concolorous with the wings, eyes red.

Female like the male, the spots larger.

Expanse of wings, ♂ ♀  $2\frac{2}{10}$  to  $2\frac{4}{10}$  inches.

HABITAT.—Sikkim, Assam, Andamans, Nicobars, South India.

DISTRIBUTION.—The types from the Andamans are in the Indian Museum, Calcutta. We have it from the Khasia Hills and from Kolar in South India. The type of *larva* came from the Nicobars; de Nicéville records it also from Sikkim.

## ERIONOTA ATTINA.

Plate 794, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, ♀.

*Hesperia attina*, Hewitson, Trans. Ent. Soc. 1866, p. 489, ♀.

*Unkana attina*, Distant, Rhop. Malayana, p. 371, pl. 34, fig. 30, ♀ (1886). Semper, Rhop. Philipp. p. 288 (1892). Watson, Hesp. Ind. p. 4 (1891); id. Proc. Zool. Soc. 1893, p. 123. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 234. Swinhoe, Trans. Ent. Soc. 1908, p. 30. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 144. Frühstorfer, Iris, 1911, p. 18.

*Erionota attina*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 538.

*Hesperia latreillei*, Felder, Reise, Nov. Lep. iii. p. 511, pl. 71, fig. 8, ♀ (1866).

*Ismene batara*, Moore, MS. Cat. Lep. Mus. E.I.C. i. p. 249, ♂ (1857).

*Unkana batara*, Distant, l.c. p. 370, pl. 34, fig. 11, ♂ (1886). Elwes, Proc. Zool. Soc. 1892, p. 645.

*Goniloba cruda*, Herrich-Schäffer, Prod. Syst. Lep. iii. p. 75 (1869).

*Hesperia anitta*, Plötz, Stett. ent. Zeit. xliii. p. 339 (1882), unpublished plate No. 1374, ♂.

*Unkana attina palawana*, Frühstorfer, Iris, 1911, p. 19.

*Unkana attina mindanaensis*, Frühstorfer, l.c.

IMAGO.—Male. Upperside dark fuliginous-brown with an ochreous tint. *Forewing* with greyish-white semi-transparent spots, a large one crossing the cell near its end, more or less excavated on both sides, a large subquadrate spot near the base of the first median interspace, a smaller spot near the base of the second median interspace, one in each of the next two upper interspaces, very small and nearly in a line with the discal spots, and four equally small spots from near the costa, the upper three somewhat elongate, the uppermost one sometimes obsolete, these six spots forming an outwardly acute angle, a pale streak near the middle of the hinder margin, not always present. *Hindwing* without markings. Cilia of both wings ochreous-white. Underside paler, with a chocolate-grey tint. *Forewing* with the margins broadly much paler than the middle of the wing, the spots as on the upper side. *Hindwing* with greyish-white streaks in the interspaces, two or three at the base of the wing, and a discal and a marginal middle series. Antennæ blackish-brown, the shaft spotted with white on the underside, the club with the tip and on the underside rufous; palpi, head, body and legs concolorous with the wings, the abdomen with indistinct grey bands; on the underside the palpi are pinkish spotted with white, and there is a white spot on each side below the eyes.

Female. Upperside black. *Forewing* with some ochreous scaling at the base, and some whitish hairs at the base of the interno-median interspace, the spots as in the male, usually larger and pure white in colour. *Hindwing* with a very large white patch on the middle of the wing, occupying the outer part of the cell and the inner halves of the median interspaces, and of the interspace above them, the white colour expanding towards the abdominal area to the margin in a greyish suffused form, also reaching the base of the wing, but not extending to the anal angle. Cilia of forewing brown, of hindwing brown, with white tips. Underside paler black. *Forewing* with the spots as on the underside, and five quadrate, grey spots on the outer margin from the apex, increasing in size hindwards. *Hindwing* with the costal space narrowly and irregularly blackish, the anal space broadly blackish, its upper part extending to the middle of vein 5, all the rest of the wing white, suffused with grey at the base and outer portion and the veins blackish. Antennæ black, on the underside the shaft is spotted finely with white, and upper half of the club is white; palpi, head and thorax black, with some grey and white hairs on the thorax, abdomen white with blackish rather broad bands, the basal third covered with grey hairs. Underside, palpi and pectus white, thorax and legs grey, abdomen as on the upperside.

Expanse of wings, ♂ ♀  $2\frac{1}{2}$  to  $2\frac{9}{10}$  inches.

HABITAT.—Burma, Malay Peninsula and Archipelago.

DISTRIBUTION.—The type, a female, is described as from India; the type of *batara*, a male from the Malay Peninsula; we have it from Tenasserim and from Kuching in Borneo; Felder's and Plötz's types are from Java; Semper records it from the Philippines, de Nicéville and Martin from Sumatra, Adamson from Maulmein, a male taken on the 22nd of August, and numerous examples taken by him at different seasons.

#### INDO-MALAYAN AND CHINESE ALLIED GENERA AND SPECIES.

- Erionota sybirita*, *Hesperia sybirita*, Hewitson, Ann. Mag. Nat. Hist. 1876, p. 451. *Hidari sybirita*, Distant, Rhop. Malayana, p. 395, pl. 35, fig. 24 (1886). *Gangara sybirita*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 218. Habitat, Singapore, Borneo.
- Erionota mabillei*, *Erionota (Casyapa) mabillei*, Staudinger, Iris, ii. p. 135 (1889). *Unkana mabillei*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 235. Habitat, Philippines.
- Erionota sakita*, Ribbe, Iris, 1890, p. 76. Habitat, Celebes.
- Erionota grandis*, *Plesioneura grandis*, Leech, Entom. xxiii. p. 47 (1890). *Hidari grandis*, Leech, Butt. of China, etc. ii. p. 633, pl. 39, fig. 13, ♂ (1893). Habitat, W. China.
- Erionota sanguinoculus*, Martin, Enige neue Tag. von Nordost-Sumatra, p. 5 (1895). de Nicéville, and Martin, Journ. As. Soc. Bengal, 1895, p. 538. *Gangara sanguinoculus*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 218, pl. 20, fig. 17. Habitat, N.E. Sumatra, Perak.
- Ilma irvina*, *Lychnuchus irvina*, Plötz, Berl. ent. Zeit. 1882, p. 263. Synonym, *Ilma jovina*, Swinhoe, Ann. Mag. Nat. Hist. 1905, p. 613. Habitat, E. Celebes.

## Genus GANGARA.

*Gangara*, Moore, Lep. Ceylon, i. p. 164 (1881). Distant, Rhop. Malayana, p. 394 (1886). Watson, Hesp. Ind. p. 110 (1891); id. Proc. Zool. Soc. 1893, p. 86; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 428. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 217.

*Forewing*, vein 12 ends on costa before the end of the cell; cell short, a little more than half the length of the costa, upper end of cell rounded, a short internal vein from near the base of vein 3, upper discocellular very short middle and lower in an almost erect, straight line, the lower the shorter; vein 3 emitted about one-sixth from lower end of cell, the lower margin of the cell angled a little from its base to the cell end; vein 2 emitted about one-third from the base; costa arched at the base, then evenly and gently curved to the apex, apex blunt, somewhat truncate, wing long, outer margin convex, shorter than the hinder margin. *Hindwing*, vein 7 emitted about one-fourth before the upper end of cell, upper discocellular faint, erect, shorter than the lower, which is well developed and outwardly oblique; vein 3 from a little before the lower end of cell, 2 from before the middle, outer margin sinuous. Antennæ and palpi as in *Erionota*; hind tibiæ slightly fringed and with two pairs of spurs. Male with a linear glandular streak above the middle of vein 1 of the forewing, and a double streak on each side of the basal half of vein 2; on the hindwing the lower margin of the cell between veins 2 and 3 and the basal halves of those veins are much swollen; the underside of the forewing has a patch of erect hairs extending from vein 1 to the hinder margin, and the upperside of the hindwing is thickly clothed with long hairs from its base concealing the swollen veins; abdomen with dorsal tufts of hairs.

Type, *Papilio thyrsis*, Fabricius.

## GANGARA THYRSIS.

Plate 795, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, larva and pupa.

*Papilio thyrsis*, Fabricius, Syst. Ent. p. 532 (1775).

*Teligonus thyrsis*, Butler, Cat. Fabr. Lep. B. M. p. 262 (1869). Moore, Proc. Zool. Soc. 1877, p. 594. Elwes, Trans. Ent. Soc. 1888, p. 459.

*Gangara thyrsis*, Moore, Lep. Ceylon, i. p. 165, pl. 66, figs. 3, 3a (1881). de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Swinhoe, Proc. Zool. Soc. 1885, p. 148. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 381. Distant, Rhop. Malayana, p. 394, pl. 35, fig. 13 (1886). Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 42. Watson, id. 1888, p. 27. Hampson, Journ. As. Soc. Bengal, 1888, p. 365. Davidson and Aitken, Journ. Bo. Nat. Hist. Soc. 1890, p. 369. Cote's notes on Indian Economic Ent. No. 4, p. 204 (1890). Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 447. Watson, Hesp. Ind. p. 110 (1891). Semper, Rhop. Philipp. p. 313 (1892). Swinhoe, Trans. Ent. Soc. 1893, p. 321. Watson, Proc. Zool. Soc. 1893, p. 87. de Nicéville, Gazetteer of Sikkim, Butt. p. 181 (1894). de Nicéville and Martin.

Journ. As. Soc. Bengal, 1895, p. 539. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 680. Davidson, Bell and Aitken, id. xi. 1897, p. 42 (larva and pupa). Aitken and Comber, id. xv. 1903, p. 54. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 218. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 143. Frühstorfer, Iris, 1910, p. 102.

*Hesperia pandia*, Moore, Cat. Lep. Mus. E.I.C. i. p. 254, pl. 7, fig. 10, larva, 10a, pupa (1857); id. Proc. Zool. Soc. 1865, p. 790.

*Erionota thyrsis*, Staudinger, Lep. Palawan, p. 134 (1889).

*Gangara thyrsis yasodara*, Frühstorfer, l.c.

*Gangara thyrsis pandia*, Frühstorfer, l.c.

*Gangara thyrsis philippensis*, Frühstorfer, l.c. p. 103.

IMAGO.—Male. Upperside dark chocolate-brown. *Forewing* with semi-hyaline, ochreous, quadrate spots; a very large spot filling the cell space near its end, excavated on its outer side; another slightly smaller filling up the middle of the first median interspace, a much smaller spot irregular in shape in the middle of the second median interspace, two small spots close together near the costa, one-sixth from the apex, and a spot outwards in the next lower interspace, well separated from the others. *Hindwing* without markings. Cilia of forewing brown, becoming whitish towards the hinder margin, of hindwing whitish throughout, tipped with brown. Underside dark brown, variegated with purplish shading. *Forewing* with some whitish scaling towards the apex, the hinder marginal space broadly whitish, spots as on the upperside. *Hindwing* more or less covered with whitish scaling, which thicken into three indistinct bands across the wing, giving the wing a variegated appearance. Antennæ black, grey on the underside; palpi, head and body above and below and the legs concolourous with the wings.

Female like the male, the ochreous spots of the forewing a little larger.

Expanse of wings, ♂  $2\frac{6}{10}$  to 3, ♀ 3 to  $3\frac{3}{10}$  inches.

LARVA occurs in Sumatra throughout the year where *Calamus* grows, on which the white waxy-powdered downy larva feeds.

PUPA hidden in three rolled-up leaves, and is fixed by the extremity of the abdomen to a woven tripod in such a way that it can move in all directions. As soon as the shelter is touched it makes such a loud rattling noise that any one would be at least startled or frightened on hearing it. Like *E. thraax*, the butterfly emerges from the pupa late in the afternoon (from 3 to 5 p.m.), and flies after sunset. (de Nicéville and Martin.)

LARVA.—Head large, much higher than broad, heart-shaped, dark brown in colour, the colour being however hidden by a white cerous secretion which covers all but the clypeus; slightly hairy on the sides and about the jaws; body cylindrical, broadest about segment 5; anal end high, sloping slightly, and broadly rounded at extremity; surface of body slightly hairy, with light, erect, shortish hairs, especially laterally;



colour of body rose-brown dorsally, excepting on segments 2 and 3, which are pale sea-green like the sides; the larva exudes a white secretion from the surface which hides the green colour and only allows the brown to appear in patches; this secretion takes the form of long feathery threads arranged in bunches dorsally, being most dense on the sides of the first three segments. Length, 62 mm.

PUPA.—Eyes very prominent; thorax moderately humped; wings very slightly expanded behind the shoulders; section of abdomen very nearly circular; proboscis nearly half as long again as the total length of the pupa; segment 12 quite square at the end, with a tooth at each corner, segment 13 appearing as a thin oval piece tacked on behind; cremaster oblong, stout, curved, not one-third the breadth of segment 12; the pupa is broadest at the shoulders and highest at the apex of the thorax, is fixed only by the tail, and rattles against the sides of the cell when disturbed, making a creaking noise by rubbing the abdominal segments together at the margins. The inside of the cell is covered thickly with white powder. Length, 40 mm.

HABITS.—The imago when at rest folds its wings over its back; the butterfly is a dusk-flier, only appearing in the morning and evening, it has a rapid flight and is fond of flowers; the larva lies with its head turned round on its side; it feeds on *Cocos nucifera*, Linnæus, and *Calamus rotang*, Linnæus, and *Caryota urens*, Linnæus. This is our largest skipper. It is only seen flying at dusk, resting on tree-trunks, rocks, and on the underside of leaves in the darkest places in the jungle during the hours of sunlight. It comes to flowers in the dusk, but is very rapid on the wing and is very difficult to capture; the larva is, however, very abundant all over the district, and we have bred the butterfly in numbers. (Davidson, Bell and Aitken.)

HABITAT.—India, Ceylon, Burma, Andamans, Malay Peninsula and Archipelago.

DISTRIBUTION.—A common species; our figures of the larva and pupa are from Davidson's original drawings not previously published. We cannot separate the specimens from the Malay Archipelago from the Indian examples.

#### Genus PADUKA.

*Paduka*, Distant, Rhop. Malayana, p. 375 (1886). Watson, Hesp. Ind. p. 18 (1891); id. Proc. Zool. Soc. 1893, p. 85; id. Journ. Eo. Nat. Hist. Soc. ix, 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 219.

*Forewing*, vein 12 reaches the costa before the end of the cell, vein 7 emitted a little before upper end of cell, upper discocellular short, nearly in a line with the upper margin of the cell, middle and lower discocellulars nearly erect, the middle one the longer, vein 5 arising nearer to 4 than to 6; vein 3 emitted one-third from the lower end of cell, 2 from before the middle, cell less than two-thirds the length of the costa; costa somewhat arched at its middle, apex somewhat acute, the wing produced

in a rather acute triangular form, outer margin almost straight, a little shorter than the hinder margin. *Hindwing*, vein 7 from about one-third before the upper end of the cell, cell short, less than half the breadth of the wing, discocellulars outwardly oblique, vein 5 absent, the lower end of the cell bent upwards at vein 2, veins 3 and 2 with their bases close together from a little before the lower end of the cell, outer margin sinuate, somewhat produced at the anal angle, costa and apex rounded. In the male, vein 3 of the forewing is a little further from the end of the cell than it is in the female; the male has a discal patch of silky hairs on the upperside of the forewing, a long tuft of hairs on the underside at the base of the sub-median vein, and two glandular streaks on veins 2 and 3 of the hindwing, making them somewhat bent and swollen. Antennæ long, about two-thirds the length of the costa of forewing, club moderate, long, gradual, shortly pointed at the tip, which is bent over; palpi with the second joint pressed closely against the face, densely scaled, third joint concealed; hind tibiæ with two pairs of spurs, the upper pair minute.

Type, *Hesperia lebadea*, Hewitson.

#### PADUKA LEBADEA.

Plate 795, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, ♀, 2d, larva and pupa.

*Hesperia lebadea*, Hewitson, Exot. Butt. iv. Hesp. pl. 2, figs. 22, 23 (1868).

*Paduka lebadea*, Elwes, Proc. Zool. Soc. 1892, p. 647. Watson, id. 1893, p. 86; id. Journ. Bo. Nat.

Hist. Soc. ix. 1895, p. 429. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 539.

Elwes and Edwards, Trans. Zool. Soc. 1897, p. 219. Frühstorfer, Iris, 1911, p. 9.

*Ismene lebadea* var. *andamanica*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1881, p. 254.

*Ismene subfasciata*, Moore, Proc. Zool. Soc. 1878, p. 686.

*Matapa subfasciata*, Moore, Lep. Ceylon, i. p. 164, pl. 64, figs. 3, a, b (1881). Watson, Hesp. Ind. p. 24 (1891).

*Paduka glandulosa*, Distant, Rhop. Malayana, p. 376, pl. 35, fig. 5, ♂ (1886). Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 26.

IMAGO.—Male. Upperside dark umber-brown, the margins slightly paler, the discal patch of silky hairs on the forewing somewhat glossy and with a slight tint of purple in certain lights, no markings on either wing. Cilia of both wings ochreous-grey. Underside paler. *Forewing* with a pale, indistinct, ochreous, sub-costal streak from base to end of cell, and a large and very indistinct pale sub-apical patch; hinder marginal space dull, pale ochreous-grey. *Hindwing* with a broad, pale, greyish straight fascia across the wing, a little before the middle, slightly tinted with pinkish. Antennæ black, the club whitish on the underside; eyes red; palpi, head and body above and below and the legs concolorous with the wings, abdomen with a small ochreous anal tuft.

Female has three deep yellow spots on the forewing, and closely resembles *Erionota thrax*; on the underside it is similar to its male.

Expanse of wings, ♂ ♀ 2 to 2½ inches.

LARVA pale purplish-grey, with indistinct darker transverse dorsal lines; head black-spotted; feeds on *Palmaceæ*; pale olivaceous-yellow. (Moore.)

HABITAT.—Sikkim, Burma, Malay Peninsula and Archipelago.

DISTRIBUTION.—The type is from Borneo, the type of *subfasciata* from Ceylon, the type of *glandulosa* from Singapore, Wood-Mason and de Nicéville record the variety *andamana* from the Andaman Islands, de Nicéville and Martin record *lebedea* from Sumatra, Watson records it from Beeling in Burma, Elwes from Perak, Pulo Laut, Java and Sikkim. We have a male from Melang; our figures of the larva and pupa are from Sir W. H. Gregory's original drawings of the larva and pupa of *subfasciata*, bred in Ceylon.

#### INDO-MALAYAN AND CHINESE ALLIED SPECIES.

*Paduka alexandra*, *Erionota alexandra*, Semper, Rhop. Philipp. p. 312 (1892). Habitat, Philippines.

*Paduka toradja*, Frühstorfer, Iris, 1911, p. 9. Habitat, E. Celebes.

#### Genus PUDICITIA.

*Pudicitia*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, pp. 379 and 427. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 216.

*Forewing*, vein 12 ends on costa before the end of the cell; cell long, but less than two-thirds the length of the costa; upper discocellular short, stout, outwardly oblique, middle and lower discocellulars in a strongly inwardly oblique straight line, the lower the shorter; vein 3 emitted some distance before the lower end of the cell, 2 from before the middle; sub-median vein straight, with a narrow band of modified scales, placed anteriorly against its basal second and third fifths; costa slightly and evenly arched, apex somewhat acute, outer margin convex below the apex, then nearly straight to the hinder angle, which is rounded, hinder margin straight, a good deal longer than the outer margin. *Hindwing*, vein 8 well curved, ends at the apex of the wing, 7 from well before the upper end of the cell, cell about half the breadth of the wing, discocellulars faint, vein 5 not traceable, 3 from close to the lower end of the cell, 2 from beyond the middle; sub-median and internal veins nearly straight; costa highly arched at its base, apex rounded, outer margin convex, slightly emarginate at the end of vein 2, abdominal margin rounded. Antennæ about half the length of the costa of forewing, with a well formed club, acuminate and bent over; palpi densely scaled, the second joint pressed closely against the face, the third joint hidden by the hairs of the second; hind tibiæ with two pairs of spurs.

Type, *Parnara pholus*, de Nicéville.

## PUDICITIA PHOLUS.

Plate 796, figs. 1, ♂, 1a, ♀, 1b, ♀.

*Parnara pholus*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 172, pl. B, fig. 3, ♀. Watson, Hesp. Ind. p. 47 (1891). de Nicéville, Gazetteer of Sikkim, Butt. p. 181 (1894).

*Pudicitia pholus*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 381. Watson, id. p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 216.

IMAGO.—Male. Upperside, both wings rich brown with a shining vinous tinge, the spots translucent rich ochreous. *Forewing* with three conjugated sub-apical spots, the first a mere dot, the next twice as large, the lowest four times as large as the middle spot; two well separated spots towards the end of the cell placed inwardly obliquely; a spot about twice the size of these in the middle of the second median interspace, another much larger one completely filling the first median interspace below the innermost spot in the cell, another spot below this at about the middle of the sub-median interspace and touching that nervure. Cilia concolorous with the wing. *Hindwing* with a small round spot near the end of the cell, three equal-sized spots in a straight line on the disc separated by the second and third median nervules; the base of the wing and the abdominal margin clothed with large yellowish-brown setæ. Cilia pale yellow. Underside, both wings as above, but the coloration duller. *Forewing* with the spot in the sub-median interspace much larger, its edges diffused pale yellow. *Hindwing* as on the upperside. Antennæ and legs black throughout; top of head, thorax, and top of abdomen decreasingly clothed with long iridescent bronze-green hairs, thorax below duller.

Female larger than the male. *Forewing* with the lowest sub-apical spot larger than in the male, the two spots in the cell conjoined; otherwise as in the male.

Expanse of wings, ♂  $2\frac{4}{10}$ , ♀  $2\frac{6}{10}$  inches.

Described from a male obtained by Mr. Wylly, and a female by the native collectors of Mr. Otto Möller near Buxar Bhutan. I know of no near ally to this fine species, the largest in the genus hitherto described. (de Nicéville.)

HABITAT.—Bhutan, Sikkim, Assam.

DISTRIBUTION.—Recorded by de Nicéville also from Sikkim and from the Khasia Hills, it must be a very rare species; there is a male from Darjiling in the B. M. de Nicéville's description of this species is so clear, we give it *in extenso*; our figures of the male are from the specimen in the B. M.; we have not been able to procure a female, we therefore give copies of de Nicéville's figure.

### Sub-Family MATAPINÆ.

Antennæ long, more than half the length of the costa of forewing, club long, generally slender, terminating in a pointed crook; palpi, second joint densely clothed, more or less upturned in front of the face; third joint short, generally almost entirely concealed by the scaling of the second joint. *Forewing*, vein 12 ends on costa at or before end of cell, 11 free from 12; cell long, more than half the breadth of the wing, vein 3 emitted close to or a little before the lower end of cell, 2 from before the middle, except in *Sebastonyma*, when its origin is beyond the middle. *Hindwing* with vein 7 emitted well before upper end of cell, except in *Scobura* and *Arnetta* when its base is near the end, discocellulars and vein 5 faint, vein 5 often not traceable, 3 from close to lower end of cell; hind tibiæ with two pairs of spurs; fore tibiæ with epiphysis.

#### Genus ACERBAS.

*Acerbas*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 381. Watson, id. p. 427. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 215.

*Forewing*, vein 12 ends on the costa before the end of the cell, cell narrow, long, more than two-thirds the length of the costa; upper discocellular short, strongly outwardly oblique, middle discocellular upright, concave, slightly longer than the lower, which is straight and slightly inwardly oblique, vein 5 arising from their junction is consequently slightly nearer to vein 4 than to 6; vein 3 emitted some distance before the lower end of the cell, 2 from near the base of the wing; sub-median vein curved; wing triangular, rather narrow, costa very slightly arched, apex somewhat rounded, outer margin straight down below the costa, then inwardly oblique, hinder margin straight, longer than the outer margin; a large conspicuous patch of plush-like modified scales on the middle of the underside of the wing. *Hindwing*, vein 8 gently curved, ends at the apex of the wing, 7 emitted well before the upper end of the cell, discocellulars and vein 5 faint, 3 from close to lower end of cell, 2 from beyond the middle, cell about half the breadth of the wing, sub-median and internal veins straight; wing longer than broad, costa highly arched at the base, then gently arched to the apex, outer margin rounded, very slightly sinuous at the end of the sub-median vein; anal angle rounded, abdominal margin straight. Antennæ long, more than half the length of the costa of forewing, club moderate, ending in a pointed crook; palpi upturned, second joint densely scaled, third joint almost concealed; fore tibiæ with epiphysis; hind tibiæ with two pairs of spurs.

Type, *Hesperia anthea*, Hewitson.

## ACERBAS ANTHEA.

Plate 796, figs. 2, ♂, 2a, ♀, 2b, ♀.

*Hesperia anthea*, Hewitson, Desc. Hesp. p. 29 (1868).*Plesioneura? anthea*, Distant, Rhop. Malayana, p. 404, pl. 35, fig. 32, ♀ (1886).*Acerbas anthea*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 382. Watson, id. p. 429. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 537. de Nicéville, Journ. Bo. Nat. Hist. Soc. xii. 1899, p. 336. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 215. Frühstorfer, Iris, 1910, p. 101.*Cobalus ciliata*, Butler, Trans. Linn. Soc. Zool. Lond. 1877, p. 554.

IMAGO.—Male. Upperside dark blackish-brown, slightly paling towards the base in both wings. *Forewing* with five semi-hyaline white spots, two obliquely in the disc, in the median interspaces, the upper one a little the larger, and three small sub-apical spots of equal size, in an outwardly oblique curve and well separated from each other. *Hindwing* with a broad, short discal, white band, with the black veins running through it. Cilia of both wings white. Underside slightly paler, the markings as on the upperside, but the white discal band of the hindwing is somewhat larger.

Female like the male, but the white band on the upperside of the hindwing is larger, and on the underside it crosses the whole wing.

Expanse of wings, ♂ ♀ 1½ inches.

HABITAT.—Burma, Malay Peninsula, Perak, Sumatra.

DISTRIBUTION.—The type female is from Singapore; there is a male in the B. M. from Malacca; de Nicéville records it from Tenasserim, de Nicéville and Martin from Sumatra, Distant from Perak, and Elwes from Pulo Laut.

## INDO-MALAYAN ALLIED GENERA AND SPECIES.

*Acerbas duris*, *Carystus duris*, Mabille, Comptes Rendus, Soc. Ent. Belg. iii. p. lix. (1883). *Lotengus duris*, Semper, Rhop. Philipp. p. 289, pl. 49, fig. 7, ♀ (1892). *Acerbas duris*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 216. Habitat, Philippines, Kina Balu, Borneo.

*Acerbas nitidifascia*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 216, pl. 20, fig. 9, ♂, and pl. 24, fig. 51 (genitalia). Habitat, Labuan, Borneo.

*Acerbas tagiadoides*, *Acerbas anthea tagiadoides*, Frühstorfer, Iris, 1910, p. 101. Habitat, Java.

*Sabera cæsina*, *Hesperia cæsina*, Hewitson, Trans. Ent. Soc. 1866, p. 491. *Sabera cæsina*, Swinhoe, id. 1908, p. 31. Frühstorfer, l.c. Habitat, Waigiou, Brunei, N. Borneo, N. Guinea.

## Genus HYAROTIS.

*Hyarotis*, Moore, Lep. Ceylon, i. p. 174 (1881). Distant, Rhop. Malayana, p. 397 (1886). Watson, Hesp. Ind. p. 117 (1891); id. Proc. Zool. Soc. 1893, p. 82; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 426. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 197.

*Forewing*, vein 12 ends on costa before the end of cell; cell less than two-thirds the length of the costa; discocellulars inwardly oblique, the middle one the longer,

vein 5 being emitted from below the middle ; 3 from close to lower end of cell, 2 from before the middle ; costa gently and evenly arched ; apex produced, more in the male than in the female, the outer margin very slightly convex in the male, more rounded in the female, the outer and hinder margins being of about equal length. *Hindwing*, vein 7 emitted about one-fourth before upper end of cell ; discocellulars faint concave, 5 not traceable, 3 emitted very close to lower end of cell, 2 from about one-third before the end, wing rather longer than broad in the male, more rounded in the female, outer margin even ; no secondary sexual characters in the male. Antennæ long, more than two-thirds the length of the costa of forewing ; club slender, elongate, with a short curved crook and pointed tip ; palpi erect, third joint obtusely conical, short, almost entirely concealed by the thick hairs of the second joint ; hind tibiæ with two pairs of spurs.

Type, *Papilio adrastus*, Cramer.

#### HYAROTIS ADRASTUS.

Plate 796, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Papilio adrastus*, Cramer, Pap. Exot. iv. pl. 319, figs. F, G (1780).

*Tagiades adrastus*, Druce, Proc. Zool. Soc. 1874, p. 109.

*Hyarotis adrastus*, Moore, Lep. Ceylon, i. p. 174, pl. 67, figs. 5, 5a (1881) ; id. Proc. Zool. Soc. 1882, p. 267. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 54. Wood-Mason and de Nicéville, id. 1886, p. 389. Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Distant, Rhop. Malayana, p. 397, pl. 34, fig. 4 (1886). Elwes, Trans. Ent. Soc. 1888, p. 460. Hampson, Journ. As. Soc. Bengal, 1888, p. 367. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27 ; id. idem, 1891, p. 58. Fergusson, id. p. 448. Watson, Hesp. Ind. p. 117 (1891). Elwes, Proc. Zool. Soc. 1892, p. 572. Watson, Proc. Zool. Soc. 1893, p. 82. de Nicéville, Gazetteer of Sikkin, Butt. p. 180 (1894). J. J. Walker, Trans. Ent. Soc. 1895, p. 476. Watson, Journ. Ro. Nat. Hist. Soc. ix. 1895, p. 429 ; id. idem, x. 1896, p. 680. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 197. Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 53. de Rhé-Philipe, id. x. 1898, p. 599. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 143. Frühstorfer, Iris, 1910, p. 97. Hannyngham, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 372. Evans, id. p. 389.

*Hyarotis adrastus meluchus*, Frühstorfer, Iris, 1910, p. 98.

*Hyarotis adrastus palawensis*, Frühstorfer, l.c.

*Hyarotis adrastus mindanaensis*, Frühstorfer, l.c.

*Hesperia prabha*, Moore, Cat. Lep. Mus. E.I.C. i. p. 253 (1857).

*Plesioneura prabha*, Moore, Proc. Zool. Soc. 1865, p. 790.

*Hesperia phœnicis*, Hewitson, Ex. Butt. Hesp. pl. 4, figs. 36, 37 (1869).

IMAGO.—Male. Upperside dark olive-brown, nearly black ; spots semi-hyaline, white. *Forewing* with three sub-apical dots in an outwardly oblique curve, a sub-quadrangle spot constricted at its middle, crossing the end of the cell, another below it, a little outwards, near the base of the second median interspace, a small dot outside them

near the base of the first median interspace, and a small spot in the middle of the interno-median interspace. *Hindwing* without markings. Cilia of both wings variegated, brown and ochreous-grey. Underside with the basal third dark brownish-black with a pinkish tint. *Forewing* with the spots as above, the dark area extending a little beyond the middle series; the outer parts of the wing pale purplish-brown, the dark colour running up the disc from the first median interspace in the form of a discal shade, narrowing upwards to the costa, a large, more or less suffused white spot above the middle of the hinder margin. *Hindwing* with the outer portion of the wing coloured as in the forewing, the dark basal area limited by a thin sinuous white band from near the costa beyond its middle to the sub-median vein before its middle; a short dark brown shaded band in the middle of the disc. Antennæ black. Underside of the club whitish, with brown dots on it; palpi, head and body concolorous with the wings, palpi below dark grey with whitish sides.

Female like the male, but usually much larger; all the spots very much larger.

Expanse of wings, ♂  $1\frac{6}{10}$ , ♀  $2\frac{1}{10}$  inches.

HABITAT.—India, Burma, Andamans, Ceylon, Siam, Malay Peninsula, and Archipelago.

DISTRIBUTION.—In our collection from Sikkim, Chini, Amhurst, Bhamo, Ceylon, Andamans, Hong-Kong; recorded by Elwes also from the Karen Hills, E. Pegu, Java and the Philippines; by Druce from Siam; by Hannyngton from Kumaon, by Watson from Pougadaw, Burma; by Moore from Mergui and Kangra; by Adamson from Upper Tenasserim; by Davidson, Bell and Aitken from Karwar; by Evans from the Palni Hills; by Fergusson from Travancore, and by de Rhé-Philipe from Masuri. Cramer's type is said to have come from Surinam, but this is of course erroneous.

#### Genus MATAPA.

*Matapa*, Moore, Lep. Ceylon, i. p. 163 (1881). Distant, Rhop. Malayana, p. 377 (1885). Watson, Hesp. Ind. p. 21 (1891); id. Proc. Zool. Soc. 1893, p. 85; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 427. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 208.

*Forewing*, vein 12 ends on costa opposite the end of the cell; cell less than two-thirds the length of costa, discocellulars strongly inwardly oblique, the lower slightly shorter than the middle, vein 5 arising from their junction; vein 3 emitted a little less than one-sixth before lower end of cell, 2 from a little before the middle, lower margin of cell slightly angled at vein 3; costa slightly arched near base, then nearly straight to apex which is somewhat produced and sub-acute, outer margin very slightly convex, about equal in length with the hinder margin in the male, shorter than the hinder margin in the female, the wing being comparatively longer. *Hindwing*, vein 7 emitted more than one-fourth before upper end of cell, discocellulars faint, vein 5 obsolete, 3 from very close to lower end of cell, almost touching it, 2 from about



one-sixth before the end; outer margin evenly rounded except between veins 3 and 1, where it is slightly excised. Antennæ more than half the length of costa of forewing, club somewhat thickened with a pointed rather long crook; palpi with the second joint densely scaled, third joint concealed; hind tibiæ with two pairs of spurs. Male with an oblique, linear, glandular streak on the upperside of the forewing, extending from vein 3 as far as vein 1.

Type, *Hesperia aria*, Moore.

#### MATAPA ARIA.

Plate 797, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, larva and pupa.

*Hesperia aria*, Moore, Cat. Lep. Mus. E.I.C. i. p. 254 (1857).

*Ismene aria*, Moore, Proc. Zool. Soc. 1865, p. 784; id. idem, 1878, p. 703.

*Matapa aria*, Moore, Lep. Ceylon, i. p. 164, pl. 66, figs. 1, 1a (1881). de Nicéville, Journ. As. Soc. Bengal, 1885, p. 52. Wood-Mason and de Nicéville, id. 1886, p. 381. Distant, Rhop. Malayana, p. 378, pl. 35, fig. 8 (1886). Hampson, Journ. As. Soc. Bengal, 1888, p. 365. Elwes, Trans. Ent. Soc. 1888, p. 442. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27. Davidson and Aitken, id. 1890, p. 372, pl. F, figs. 3, 3a (larva and pupa). Semper, Rhop. Philipp. p. 294 (1892). Watson, Hesp. Ind. p. 22 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 54. Fergusson, id. p. 447. Elwes, Proc. Zool. Soc. 1892, p. 648. Swinhoe, Trans. Ent. Soc. 1893, p. 320. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 426. Watson, Proc. Zool. Soc. 1893, p. 85. de Nicéville, Gazetteer of Sikkim, Butt. p. 181 (1894). J. J. Walker, Trans. Ent. Soc. 1895, p. 473. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 680. Davidson, Bell and Aitken, id. xi. 1897, p. 41 (larva and pupa). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 209. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 599. Aitken and Comber, id. xv. 1903, p. 54. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 143. Frühstorfer, Iris, 1910, p. 100.

IMAGO.—Male. Upperside dark chocolate-brown, without any markings, the glandular streak on the forewing straight, grey, edged inwardly with dark brown. Cilia of both wings white, tinged with yellow hindwards. Underside. *Forewing* with the middle portion from the base to the outer margin dark blackish-brown. *Hindwing* uniform ferruginous-brown. Antennæ black, white beneath, with narrow black bands; eyes red; head and body above and below and the legs concolorous with the wings.

Female like the male, but paler and somewhat ochreous-brown, the underside ferruginous-brown as in the male; abdomen with an ochreous tip.

Expanse of wings, ♂  $1\frac{6}{10}$ , ♀ 2 inches.

LARVA.—Head only a little higher than broad; somewhat heart-shaped, but rather depressed on the vertex, which is the narrowest part, it is thick in the direction of the longitudinal axis of the larva, larger a good deal than segment 2, slightly bi-lobed, reddish-yellow in colour. Body more or less cylindrical, though somewhat depressed, being highest at the twelfth segment and also broadest. Anal segment rounded at the end, slightly sloping; spiracles black; colour of the body pure, opaque

white, with a bluish tinge, strongest on segments 2, 3 and 4; under parts bluish-white. A narrow black collar near the hind margin of segment 2. Length, 32 mm.

PUPA.—Longish, not particularly stout, the thorax humped, a moderate constriction dorsally, the shoulders being the broadest part of the body, the apex of the thorax the highest, the transverse section of thorax circular, oval at the sixth segment to the end; there is no spiracular expansion; the proboscis is free after the end of the wings; the head is broad, with a boss between the eyes; the eyes are very prominent, the pupa is fixed only by the tail, and rattles about in the cell when disturbed; shoulders slightly angulated; a low transverse, flattened ridge, yellow in colour, across the top of the thorax; abdomen a good deal depressed, oval in transverse section; constricted between the segments; cremaster square, thin; thorax humped strongly. Length, 28 mm.

HABITS.—The larva makes a cell by gnawing through the midrib half-way up the leaf, separating the top half from the basal half by eating a line across; the latter half is joined by the edges and withers, hardening into a perfectly cylindrical curved cell; this cell is lined inside thickly with silk, drawn under the green half and fastened there, being thus protected from wet; the mouth of the cell is at the point where the midrib has been gnawed through. In the last three stages the cell is made of a leaf spirally rolled into a cylindrical tube, the leaf being cut across near the base, so as to allow the tube to hang by a small strip; the inside of the cell is lined with silk disposed in short, thick, horizontal lines. The egg is dome-shaped and bears long hairs, it is laid on the underside of a leaf near the point. The young larva is red in colour; the larva feeds on bamboos, principally on *Teinostachyum*.

This insect is plentiful at all seasons in the more densely forest-clad parts of the district. It appears in the early morning and about twilight in the evening, flying about flowers, and settling low down on leaves, etc., in shady places. We have bred many specimens at all seasons, and have noticed that those bred in the dry-season are much lighter in colour than those bred in the monsoon months. This butterfly, when at rest, folds its wings over its back. (Davidson, Bell and Aitken).

HABITAT.—India, Ceylon, Burma, Andamans, China, Malay Peninsula and Archipelago.

DISTRIBUTION.—The types are marked Bengal; we have it in our collection from the Donat Range, Ataran Valley, Ceylon, Hue, Annam, Brunei, Borneo, the Philippines, Karwar, and many examples of both sexes from the Khasia Hills; Elwes records it also from Sikkim, E. Pegu, Ganjam, Java and Bali; Moore from Hainan; de Rhé-Philippe from Masuri; Fergusson from Travancore; Betham from the Central Provinces; Aitken and Comber from the Konkan; de Nicéville from Calcutta; J. J. Walker from Hong-Kong; Wood-Mason and de Nicéville from Cachar and the Andamans; Davidson, Bell and Aitken from Karwar; our figures of the larva and pupa are from Davidson's original drawings.

## MATAPA PURPURASCENS.

Plate 797, figs. 2, ♂, 2a, ♂.

*Matapa purpurascens*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 209, pl. 20, fig. 1, ♂, and pl. 24, fig. 48 (genitalia). Frühstorfer, Iris, 1910, p. 100.

IMAGO.—Male. Upperside brown, with a purple shade which is strongest on the apical half of the forewing; sex mark blackish. Underside brown, forewing with the dorsum and apex suffusedly paler. Fringe of the forewing whitish-grey, of the hindwing deep yellow from the tornus about as far as vein 6, thence to the apex brown. Antennæ brown, spotted with yellowish beneath, club yellowish on the underside; clothing of palpi, body and legs concolorous with the wings.

Expanse, 40 mm.

HABITAT.—Khasia (Hamilton), E. Pegu (Doherty).

Described from two males in coll. Elwes, where, however, there is no female which can be certainly identified as the female of this species, although there are two purpurescent females, one from Sikkim with the underside entirely pale grey-brown, and the other from Tavoy with the underside as in *M. druna*; both these females have the clothing of the apex of the abdomen yellow.

This species is nearest to *M. druna*, Moore, from which it differs in having a purple shade on the forewing above, and also in the clasp form of the male. (Elwes and Edwards.)

We have three males of this species from the Khasia Hills, but have not been able to procure a female; it is undoubtedly distinct from all the other Indian species; on one of our specimens is the following note by Watson:—" *Matapa*, not *shalgrama*, it is what usually stands as *druna*, but is quite distinct."

## MATAPA DRUNA.

Plate 797, figs. 3, ♂, 3a, ♀, 3b, ♀.

*Hesperia druna*, Moore, Cat. Lep. Mus. E.I.C. i. p. 254.

*Ismene druna*, Moore, Proc. Zool. Soc. 1865, p. 784; id. idem, 1878, p. 842. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1881, p. 255, ♀.

*Matapa druna*, Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 439. Elwes, Trans. Ent. Soc. 1888, p. 441. Watson, Hesp. Ind. p. 23 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 55. Elwes, Proc. Zool. Soc. 1892, p. 649. Watson, id. 1893, p. 85. de Nicéville, Gazetteer of Sikkim, Butt. p. 181 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 680. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 210, pl. 24, fig. 49 (genitalia). Frühstorfer, Iris, 1910, p. 100.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with the tips somewhat paler, the glandular streak somewhat curved, rather thickly grey, edged inwardly with dark brown. Cilia greyish-white. Underside with a somewhat purplish tint, an indistinct, dull orange-red sub-costal streak from the base to near the end of the

wing, tips and hinder marginal space slightly paler than the rest of the wing. Antennæ black, underside greyish, or greyish-white; palpi, head and body above and below concolorous with the wings; eyes brown.

Female. Upperside paler and browner than the male, indications of a dull, orange-red sub-costal streak from the base to the middle, more apparent in some examples than in others. Underside. *Forewing* with the orange-red sub-costal streak more distinct, the apical space broadly suffused with pale rufous. *Hindwing* entirely suffused with pale rufous, this colour on both wings having a tint of ochreous.

Expanse of wings, ♂  $2\frac{1}{10}$ , ♀  $2\frac{3}{10}$  inches.

HABITAT.—Sikkim, Burma, Andamans, Borneo.

DISTRIBUTION.—The type is marked Bengal; we have both sexes in our collection from Sikkim; Elwes records it from the Karen Hills, Tavoy, and Kina Balu; Watson from the Chin Hills and Rangoon; Moore from Tenasserim; Wood-Mason and de Nicéville from the Andamans.

#### MATAPA SASIVARNA.

Plate 798, figs. 1, ♂, 1a, ♀, 1b, ♀.

*Ismene sasivarna*, Moore, Proc. Zool. Soc. 1865, p. 784.

*Matapa sasivarna*, Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 52. Elwes, Trans. Ent. Soc. 1888, p. 441. Watson, Hesp. Ind. p. 23 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 55. Elwes, Proc. Zool. Soc. 1892, p. 649. Swinhoe, Trans. Ent. Soc. 1893, p. 320. Watson, Proc. Zool. Soc. 1893, p. 85. de Nicéville, Gazetteer of Sikkim, Butt. p. 181 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 210. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 143. Frühstorfer, Iris, 1910, p. 100.

IMAGO.—Male. Upperside dark chocolate-brown. *Forewing* with an oblique, somewhat curved, grey glandular streak inwardly edged with dark brown. Cilia greyish-white, nearly pure white. *Hindwing* with the cilia from the anal angle for two-thirds of the margin orange, decreasing in length upwards, then brown to the apex. Underside similarly coloured. *Forewing* with the margins broadly paler. *Hindwing* uniformly coloured. Antennæ black, eyes scarlet; palpi, head and body above and below and the legs concolorous with the wings, tip of abdomen orange.

Female paler than the male and duller in colour, otherwise identical, except that the wings are somewhat longer, and of course there is no sex mark.

Expanse of wings, ♂  $1\frac{8}{10}$ , ♀  $1\frac{9}{10}$  to 2 inches.

HABITAT.—Sikkim, Assam, Burma, Malay Archipelago.

DISTRIBUTION.—The types are marked Bengal; we have it from Sikkim, and have received a good many examples of both sexes from the Khasia Hills; Elwes records it also from the Karen Hills, E. Pegu, Tavoy, Perak and Pulo Laut; Adamson from Tenasserim and Bhamo; Moore from Mergui; Watson, from Tilin Yaw and the Chin Hills.

## MATAPA SHALGRAMA.

Plate 798, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Matapa shalgrama*, de Nicéville, Journ. As. Soc. Bengal, 1883, p. 85. Elwes, Trans. Ent. Soc. 1888, p. 442. Watson, Hesp. Ind. p. 24 (1891). Elwes, Proc. Zool. Soc. 1892, p. 649. Swinhoe, Trans. Ent. Soc. 1893, p. 320. Watson, Proc. Zool. Soc. 1893, p. 85. de Nicéville, Gazetteer of Sikkim, Butt. p. 181 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 210. Frühstorfer, Iris, 1910, p. 100.  
*Hesperia aria*, Hewitson (nec Moore), Exot. Butt. iv. Hesp. pl. 3, figs. 24, 25, ♀ (1868).

IMAGO.—Male. Upperside rich chocolate-brown, slightly paler at the apex of the forewing, the discal stigma on the forewing grey, no markings on either wing. Cilia of forewing yellowish-white; of the hindwing a little brighter yellow, shading off into yellowish-brown at the apex. Underside slightly paler than the upperside, without any markings, eyes red. Antennæ black, underside yellowish-white, tip of club dull orange-yellow; palpi, head and body above and beneath and the legs concolorous with the wings.

Female like the male, but paler and duller in colour. Underside paler than the upperside, all the margins of the forewing much paler than the inner portion, tip of abdomen orange, eyes red.

Expanse of wings, ♂ ♀  $2\frac{1}{10}$  to  $2\frac{2}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma, Malayana.

DISTRIBUTION.—The types from Sikkim are in the Indian Museum, Calcutta; our description and figures are from a pair in the B. M. from Burma; Elwes records it from the Karen Hills, E. Pegu, Pulo Laut, Bali and Java.

## INDO-MALAYAN ALLIED GENERA AND SPECIES.

- Matapa celsina*, *Hesperia celsina*, Felder, Reise, Nov. Lep. iii. p. 512, pl. 71, fig. 12, ♀ (1867).  
*Pamphila celsina*, Staudinger, Exot. Tagf. p. 298, pl. 99, ♂ (1888). *Pirdana celsina*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 224. Synonym, *Ismene assur*. Mabille, Ann. Soc. Ent. Fr. 1876, p. 261. Habitat, Celebes.
- Matapa neglecta*, *Ismene neglecta*, Mabille, l.c. p. 268. Habitat, Philippines.
- Matapa pulla*, *Hesperia pulla*, Plötz, Stett. ent. Zeit. xliii. p. 315 (1882), unpublished plate No. 256  
 Habitat, Java.
- Matapa ractaya*, *Matapa celsina ractaya*, Frühstorfer, Iris, 1910, p. 101. Habitat, Philippines.
- Ge geta*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 373, pl. Q, fig. 51, ♂. Habitat, Penang, Java, Borneo, Sumatra.
- Sepa noctis*, *Pamphila noctis*, Staudinger, Iris, 1889, p. 143. *Sepa noctis*, Elwes and Edwards, l.c. p. 214. Synonym, *Pamphila perfusca*, Mabille, Ann. Soc. Ent. Belg. xxxvii. p. 53 (1893).  
 Habitat, Philippines, Borneo, Java, Sumatra.
- Sepa cronus*, de Nicéville, Journ. As. Soc. Bengal, 1894, p. 50, pl. 5, fig. 4, ♂. Habitat, Sumatra, Borneo.

- Sepa cicatrosa*, Elwes and Edwards, l.c. p. 212, pl. 19, fig. 4, ♂. Habitat, Kina Balu, Borneo.  
*Sepa miosticta*, Parnara miosticta, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 385, pl. G, fig. 31. *Sepa miosticta*, Elwes and Edwards, l.c. p. 217. Habitat, Perak.  
*Sepa guttulifera*, Elwes and Edwards, l.c. pl. 19, fig. 8, ♂. Habitat, Borneo.  
*Sepa cinnamomea*, Elwes and Edwards, l.c. p. 213, pl. 19, fig. 25, ♂. Habitat, Kina Balu.  
*Sepa biseriata*, Elwes and Edwards, l.c. p. 213. Habitat, Philippines.  
*Sepa ciliata*, Elwes and Edwards, l.c. p. 214, pl. 19, fig. 22. Habitat, Pulo Laut.

#### Genus ISMA.

- Isma*, Distant, Rhop. Malayana, p. 386 (1886).  
*Lophoides*, Watson, Proc. Zool. Soc. 1893, p. 84. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 84.

*Forewing*, vein 12 terminates on costa well before the end of the cell; cell less than two-thirds the length of the costa, discocellulars sub-erect, the lower a little the shorter, vein 5 straight, emitted from a little below the middle, 3 emitted a little before the lower end of cell, 2 from close to the base in the male, somewhat farther inwards in the female; costa gently arched, apex somewhat produced, outer margin slightly convex, a little shorter than the hinder margin. *Hindwing*, vein 7 emitted well before the upper end of cell, discocellulars and vein 5 faint, 3 emitted a little before the lower end of cell, 2 a little beyond the middle, outer margin evenly rounded. Antennæ long, club slender, elongate, with a short terminal crook; hind tibiæ naked, with two pairs of spurs.

Male with an oval glandular patch at the base of the forewing, more conspicuous on the underside, with a tuft of longish hairs, directed upwards, affixed to the hinder margin of the forewing on the underside, with a similar tuft of laxly set hairs on the upperside of the hindwing near the base of the costal margin, and with a fringe of long hairs at the anal angle of hindwing.

Type, *Isma obscura*, Distant, from Singapore.

The above is mostly taken from Watson's description of his genus *Lophoides*, type *iapis*, de Nicéville, which is congeneric with *obscura*, Distant, the type of Distant's genus *Isma*. Elwes has sunk *Isma* to *Lophoides*, because Distant's description of his genus is faulty; to follow this ruling, one would have to upset nearly all the genera of the old authors.

Watson in P.Z.S. 1893, p. 83, described a genus which he called *Isma*, Distant, giving *obscura*, Distant, as the type; but as pointed out by de Nicéville, in the Journal of the Bombay Nat. Hist. Soc. 1895, p. 378, Watson was under the erroneous impression that *Hesperia cephalata*, Hewitson, was congeneric with *Isma obscura*, Distant. He had never seen *obscura*, and made his description from *cephalata*, and Elwes has very properly given a new generic name (*Scobura*) to that species and its allies, Trans. Zool. Soc. 1897, p. 204.

## ISMA PROTOCLEA.

Plate 798, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Goniloba protoclea*, Herrich Schäffer, Prodrömus, 1869, p. 195, No. 44. Plötz, unpublished plate. No. 554.

*Isma protoclea*, Swinhoe, Trans. Ent. Soc. 1908, p. 14. Frühstorfer, Iris, 1910, p. 99.

*Isoteinon iapis*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 213, pl. E, fig. 9, ♂. Watson, Hesp. Ind. p. 86 (1891).

*Lophoides iapis*, Watson, Proc. Zool. Soc. 1893, p. 84; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 196, pl. 24, fig. 44, 44a (genitalia).

IMAGO.—Male. Upperside dark shining brown, darkest on the outer margins; spots yellowish-white, nearly pure white. *Forewing* with two spots in the cell towards its end, the lower linear, the upper round and small, three discal spots placed in an inwardly oblique, almost straight line, a large one before the middle of the first median interspace, varying in shape in different examples, generally sub-quadrate, this spot is close below the cell spots; the next spot is near the base of the second median interspace, much smaller and round, the upper one is on vein 5, is quite minute and sometimes absent, two sub-apical dots, above the last-mentioned dot, divided by vein 7, the upper one sometimes absent. *Hindwing* unmarked, the abdominal margin and the anal angle fringed with long hairs, the anal fringe being conspicuously produced. Underside paler, sparsely covered with minute yellowish-white scales. *Forewing* with the hinder margin broadly yellowish-white; a tuft of long black hairs attached to the margin. *Hindwing*, a dark spot at the end of the cell, and four or five discal spots, all very obscure. Antennæ black, the club all but its tip yellowish-white on the underside; palpi, head, body and legs brown; palpi and abdomen beneath pale grey. Cilia of forewing brown, of hindwing cinereous.

Female like the male, but without the fringe of hairs at the anal angle and without the tuft of long black hairs attached to the hinder margin of the forewing on the underside.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{1}{2}$  inches.

HABITAT.—Burma, Mergui, Malay Peninsula, Sumatra.

DISTRIBUTION.—The type came from the Malay Peninsula, the type of *iapis* from Johore in the Malay Peninsula; de Nicéville also records it from Mergui, Frühstorfer from Java and Pulo Laut, Watson from Burma; we have a male from the Dounat Range; there is a female in the Hancock Museum, Newcastle, from Burma, taken by Adamson, and both sexes from Sumatra in the B. M.

## INDO-MALAYAN ALLIED SPECIES.

*Isma obscura*, Distant, Rhop. Malayana, p. 386, pl. 35, fig. 19 (1886). Habitat, Singapore.

*Isma vulso*, Pamphila vulso, Mabille, Ann. Soc. Ent. Belg. xxxvii. p. 55 (1893). *Lophoides vulso*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 196. Habitat Java Sumatra, Bali.

*Isma purpurascens*, Lophoides purpurascens, Elwes and Edwards, l.c. pl. 18, figs. 26, ♂, 27, ♀, and pl. 24, figs. 45, 45a (genitalia). Habitat, Pulo Laut, Borneo.

*Isma binotatus*, Lophoides binotatus, Elwes and Edwards, l.c. pl. 18, fig. 28, ♀. Habitat, Kina Balu, Borneo.

#### Genus ITYS.

*Itys*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 377. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 200.

Male. *Forewing* triangular, rather lengthened; costa very straight; apex acute; outer margin convex; inner angle rather acute; inner margin straight, considerably longer than the outer margin; costal nervure terminating on the costa well before the apex of the discoidal cell; sub-costal nervules arising at decreasing distances apart; discoidal cell long, more than half, less than two-thirds, the length of the wing, narrow; upper discocellular nervule stout, short, strongly outwardly oblique; middle and lower discocellulars sub-erect (slightly inwardly oblique), straight, thin, the middle rather longer than the lower; second median nervule arising well before the lower end of the cell; first median arising a little nearer to the lower end of the cell than to the base of the wing; sub-median nervure straight; a long sexual tuft of hairs attached to the inner margin of the wing towards the base and turned under and forwards. *Hindwing* elongated, much longer than broad; costa greatly arched at the base, convex to the apex; outer margin regularly rounded to the anal angle; abdominal margin straight; costal nervure well arched, terminating at the apex of the wing; first sub-costal nervule arising long before the apex of the cell; discocellular nervules almost erect, slightly only outwardly oblique, strongly concave; discoidal nervure obsolete; second median nervule arising a little before the lower end of the cell; first median arising about twice as far from the second as the second does from the first; sub-median and internal nervures straight. Antennæ long, more than half the length of the costa of the forewing, with an elongated slender club, the terminal crook short. Palpi porrect, densely hairy, third joint invisible, hidden amongst the hairs of the second joint. Thorax rather stout, abdomen slender, reaching just to the anal angle of the hindwing. Legs, hindleg, femur fringed throughout its length, not tufted; tibia with a single pair of long spines at its distal end. Type, *Itys iadera*, de Nicéville.

This genus may be nearest to *Isma*, Distant, of which *I. obscura*, Distant, is the type, a species I have not seen, and which appears to be very badly figured (Rhop. Malay. p. 36, n. 1, pl. xxxv. fig. 19, n. 1886), nor is the sex stated of the specimen described. Lieutenant Watson's diagnosis of the genus *Isma* was drawn up from *Hesperia ephala*, Hewitson, which may or may not be congeneric with *Isma obscura*. *Itys* is certainly very near to the genus *Arnetta*, Watson, Proc. Zool. Soc. Lond. 1893, p. 81, of which *Isoteinon atkinsoni*, Moore, is the type. It differs from that



species in the forewing being more elongated, the inner margin being longer than (instead of the same length as) the outer margin; the discoidal cell is longer and narrower, the second median nervule arises nearer the lower end of the cell; there is also a greater space between the origins of the first and second median nervules, the sub-median nervule is straight instead of being greatly distorted in the middle; the inner margin is straight, in *A. atkinsoni* it is lobed towards the base, the lobed portion being turned under; the hindwing is more elongated, the discoidal nervule is obsolete; in *A. atkinsoni* it is fairly well-developed; lastly, the palpi differ considerably, the third joint being entirely hidden beneath the long hairs of the second joint instead of being projected far beyond that joint. In *Arnetta atkinsoni* the male has the bases of the first and second median nervules of the hindwing much swollen, this character being found also in the genera *Gangara*, Moore, and *Paduka*, Distant, but is absent in the genus *Itys*. (de Nicéville.)

#### ITYS MICROSTICTUM.

Plate 799, figs. 1, ♂, 1a, ♂.

*Isoteinon microstictum*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 385, pl. 17, figs. 3, ♂, 3a, ♀. Watson, Hesp. Ind. p. 82 (1891).

*Itys microstictum*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 379. Watson, id. p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 200.

IMAGO.—Male. Upperside, both wings dark vandyke-brown, suffused with purple, especially on the costal and outer margins and the veins; the cilia ochreous-grey. *Forewing* with five small semi-transparent white lustrous spots, two (the first of which is very minute) before the apex, and three discal, one geminated in the cell consisting of an anterior outwardly convex thin crescentic and a posterior triangular portion, another about the same size behind and a little external to this between the first and second median nervules sub-crescentic in shape, with its convexity turned towards the base, and a third squarish external to and in front of, and rather less than half the size of, this again between the second and third median nervules. Underside. *Forewing* lighter than above, the translucent spots as on the upperside; with an indistinct sub-marginal band of spots darker than the ground; a dark anteciliary line; the cilia obsoletely intersected at the veins with dark; and an indistinct whitey-brown spot touching the first median nervule and the satiny patch extending from the base nearly to the outer angle and from the interno-median fold to the inner margin of the wing, which bears a conspicuous fringe of slate-grey setæ in part projecting straight backwards and outwards from the edge and in part turned up so as to lie spread out fan-wise over the satiny-ashy patch. *Hindwing* darker and more suffused with purple than the forewing, with a dark anteciliary line, but even less distinctly intersected cilia; with some dark mottling indistinctly arranged in three bands, one sub-basal and

two closer together, discal or sub-marginal, and with an indistinct dot between the costal and sub-costal nervures, another near the end of the cell, on one side only in one specimen, and on both sides in the other, a third between the second and third median nervules in one specimen, and a fourth between the first and second in the other, all ochreous-white.

Female. Upperside, both wings much lighter than in the male. *Forewing* with the spots much larger and more numerous, there being an additional sub-apical one, a very minute dot just in front of the third median nervule, both semi-transparent, and a third opaque yellow one (present in one male) touching the sub-median nervure in front, and the third discal spot being quadrate with the inner and outer ends roundly emarginate. Underside, both wings with the dark markings more distinct than in the male. *Forewing* devoid of the ashy patch and fringe of setæ seen in the opposite sex. *Hindwing* with two dots behind the costal nervure instead of one, one in the cell, and another between the second and third median nervules on one side only so minute as to be scarcely discernible.

Expanse of wings, ♂  $1\frac{4}{10}$ , ♀  $1\frac{5}{10}$  inches.

Allied to *I. flavipennis*, de Nicéville (Journ. A. S. B. vol. liv. part 2, p. 122, pl. ii. fig. 4, ♀ (1855), but differs in markings, and notably in the colour of the ground of the underside, which is pale vandyke-brown in *I. microstictum* and ferruginous-ochreous in *I. flavipennis*.

Two males, Silcuri, 25th and 26th May; one female, Silcuri, 28th May.

We have not seen this species; the types are in the Indian Museum, Calcutta; we therefore give Wood-Mason and de Nicéville's description and copies of their figures.

#### INDO-MALAYAN ALLIED SPECIES.

*Irys iadera*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 379, pl. Q, fig. 52, ♂. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 536. Habitat, Sumatra, Penang, Malay Peninsula.

#### Genus SEBASTONYMA.

*Sebastonyma*, Watson, Proc. Zool. Soc. 1893, p. 81; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 426. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 192.

*Forewing*, vein 12 ends on costa opposite the end of the cell; cell less than two-thirds the length of the costa, discocellulars slightly oblique, the lower one shorter than the middle; vein 3 emitted a short distance before the lower end of the cell, 2 from close to 3, the base of 2 being about the same distance from 3 as 3 is from the end. Costa very slightly and evenly curved, almost straight, apex sub-acute, outer margin slightly convex, shorter than the hinder margin. *Hindwing*, vein 7 emitted a

little before the upper end of the cell, discocellulars faint, vein 5 not traceable; vein 3 emitted a little before the lower end of the cell, 2 from beyond the middle, the lower margin of the cell bent downwards at the point where this vein arises; wing evenly rounded, somewhat small in comparison with the forewing; costa strongly arched at its base. Antennæ rather long, more than half the length of costa of forewing, with a long slender club which has a short apical crook and pointed tip; palpi with the first two joints clothed with thick hairs, third joint minute, obtusely conical; hind tibiæ naked, with two pairs of spurs.

Male with a tuft of hair affixed at the base of the inner margin on the underside of the forewing and pointing upwards, and a large sub-oval patch of androconia near the base of the median vein, inside the cell, and nearly filling that portion of it.

Type, *Hesperia dolopia*, Hewitson.

#### SEBASTONYMA DOLOPIA.

Plate 799, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Hesperia dolopia* Hewitson, Descr. Hesp. p. 27 (1868); id. Ex. Butt. v. pl. 55, figs. 60, 61 (1873).

*Hilpe dolopia*, Moore, Proc. Zool. Soc. 1878, p. 690. Elwes, Trans. Ent. Soc. 1888, p. 455.

Manders, id. 1890, p. 538. Watson, Hesp. Ind. p. 74 (1891). Elwes, Proc. Zool. Soc. 1892, p. 653.

*Sebastonyma dolopia*, Watson, Proc. Zool. Soc. 1893, p. 81. Swinhoe, Trans. Ent. Soc. 1893, p. 319.

de Nicéville, Gazetteer of Sikkim, Butt. p. 180 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix.

1895, p. 429; id. idem, x. 1896, p. 679. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 192.

Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 143.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with a white twin spot across the end of the cell, three spots (the upper one very minute and sometimes absent) in an outwarly oblique line from near the costa one-sixth from the apex, two larger spots in the disc, near the bases of the two median interspaces, and an obscure spot before the middle of the interno-median interspace, all in an inwardly oblique line; indications of a thin series of obscure sub-marginal marks from near the apex to the middle of the margin. *Hindwing* with the white transverse band of the underside represented by a pale ochreous transverse shade. Cilia of both wings whitish with quadrate brown spots opposite the ends of the veins. Underside with the ground colour slightly paler. *Forewing* with the spots as on the upperside, but whiter and more distinct, the sub-marginal series well pronounced, a white smear above the hinder margin. *Hindwing* with a short sub-basal transverse white streak, a broad white band with irregular edges across the wing before the middle, a sub-marginal white thin band or line from the outer end of the white band which thickens above the

anal angle and curves upwards for a short distance. Cilia as on the upperside. Antennæ black with thin white rings; palpi, head and body above concolorous with the wings, palpi and head with some white hairs; palpi grey beneath, body brown, with some whitish hairs.

Female like the male, but slightly paler in colour.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{4}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma.

DISTRIBUTION.—We have received many examples from the Khasia Hills, and have it from Sikkim; recorded by Moore from Darjiling; by Elwes from the Naga Hills, Karen Hills, and E. Pegu; by Watson from the Chin Hills; by Manders from the Shan States, and by Adamson from Bhamo and the Upper Chindwin in Burma.

### Genus SCOBURA.

*Scobura*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 204.

*Isma*, Watson (nec Distant), Proc. Zool. Soc. 1893, p. 83.

*Forewing*, vein 12 ends on costa well before the end of the cell; cell less than two-thirds the length of the costa; discocellulars sub-erect, the lower slightly shorter than the middle, vein 5 from a little below the middle, vein 3 emitted close to lower end of cell, two from about one-third from the base; costa evenly and gently arched, apex sub-acute, outer margin convex, shorter than the hinder margin. *Hindwing*, vein 7 emitted near the upper end of cell, discocellulars faint, strongly outwardly oblique, 5 not traceable, 3 emitted quite close to lower end of cell, 2 from about one-third before the end, outer margin of the wing evenly rounded; costa highly arched before its middle. Antennæ more than half the length of costa of forewing, club slender, long, a short terminal pointed crook; palpi porrect, third joint slender, almost concealed, bluntly conical; hind tibiæ naked, with two pairs of spurs.

Type, *Hesperia cephalæ*, Hewitson.

### SCOBURA CEPHALA.

Plate 799, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Hesperia cephalæ*, Hewitson, Ent. Mo. Mag. 1876, p. 152; id. Descr. Lep. Coll. Atk. p. 4 (1879).

*Isoteinon cephalæ*, Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 28. Elwes, Trans. Ent. Soc. 1888, p. 456, pl. 11, fig. 10, ♂. Watson, Hesp. Ind. p. 80 (1891). Elwes, Proc. Zool. Soc. 1892, p. 654.

*Isma cephalæ*, Watson, Proc. Zool. Soc. 1893, p. 84. de Nicéville, Gazetteer of Sikkim, Butt. p. 180 (1894).

*Zographætus cephalæ*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 679. Adamson, Trans. N. H. Soc. Northumberland, etc. 1903, p. 143.

*Scobura cephalæ*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 205.

*Isma isota*, Swinhoe, Trans. Ent. Soc. 1893, p. 320.

IMAGO.—Male. Upperside dark blackish-brown, nearly black; spots white, semi-hyaline. *Forewing* with a spot at the lower end of the cell, a much larger quadrate spot immediately below it in the first median interspace, three small sub-apical spots, divided by the veins, the lowest the largest and another well separated from them, near the outer margin below the apex; a small opaque white spot before the middle of the interno-median interspace. *Hindwing* with a large spot outside the end of the cell, a smaller one close to the base of the first median interspace. Cilia of both wings brown marked with ochreous-white. Underside. *Forewing* with the costal space narrowly and evenly, the apex broadly, the outer margin decreasingly dull, ochreous-yellow; the interior portion of the wing suffused with black; the spots as on the upperside. *Hindwing* dull ochreous-yellow, the spots as above, encircled with pale brown, and some pale brown marks on the outer margin. Antennæ black, ringed with white, the club with an ochreous-red tip; palpi, head and body above concolorous with the wings; palpi and head with short grey hairs, ochreous-grey beneath.

Female like the male, the spots larger, an extra minute spot attached to the spot at the lower end of the cell of forewing, on the underside the outer portion is somewhat suffused with blackish, the white spots heavily marked, especially on their lower side, and there is a narrow blackish outer marginal band.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{4}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma.

DISTRIBUTION.—The type is from Darjiling; we have both sexes from the Khasia Hills and from Yoomgalum, in Burma; Elwes records it from the Karen Hills, E. Pegu, and Tavoy; Watson from the Chin Hills, Beeling, and Tilin Yaw in Upper Burma.

### SCOBURA CEPHALOIDES.

Plate 799, figs. 4, ♂, 4a, ♂.

*Hesperia? cephaloides*, de Nicéville, Journ. As. Soc. Bengal, 1888, p. 288, pl. 13, fig. 4, ♂.

*Isoteinon cephaloides*, Watson, Hesp. Ind. p. 80 (1891). Elwes, Proc. Zool. Soc. 1892, p. 654.

*Zographætus cephaloides*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429.

*Scobura cephaloides*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 206. Frühstorfer, Iris, 1910, p. 100.

IMAGO.—Male. Upperside, both wings dark purplish-brown. Cilia alternately black and white. *Forewing* with a large somewhat square spot at the end of the cell, a little larger rhomboidal one below it in the first median interspace, and a much smaller square one at the middle of the second median interspace, three small conjoined round sub-apical dots, of which the upper one is the largest, the middle one the smallest, all

translucent white; an opaque dot touching the sub-median nervure in the middle of the sub-median interspace. *Hindwing* with three translucent white spots forming an equilateral triangle, of which the two at the base are the largest and equal, and the apical one is a mere dot. Underside. *Forewing* with a broad costal streak occupying the upper half of the discoidal cell and reaching to just beyond the middle of the wing, and an apical patch, bright chrome-yellow, between which streak and patch the ground-colour is castaneous, the rest of the wings black; the translucent white spots as on the upperside, but with two additional small black spots between the lowest of the sub-apical series and the spot in the second median interspace. *Hindwing* with the basal half of the wing chrome-yellow, the outer half castaneous; a small round castaneous spot near the base of the wing, the three discal translucent spots as on the upperside, but with two additional opaque round spots, one near the costa at the inner edge of the castaneous portion of the wing, the other in the middle of the sub-median interspace, all five spots surrounded by a fine black line; there are traces of a series of blackish spots between the veins near the margin. Head, thorax and abdomen black above, beneath, legs and palpi chrome-yellow.

Very near to, but quite distinct from, *Hesperia cephalo*, Hewitson,\* a fairly common Sikkim species, from which it differs in its larger size and in the following particulars:—The sub-apical series of spots on the forewing has the middle spot the smallest and the upper one the largest, while in *H. cephalo* the series is an increasing one; in *H. cephalo* the spot below these is in the lower discoidal interspace, in *H. cephaloides* it is in the second median interspace; on the hindwing, in *H. cephaloides* it is in the second median interspace; on the hindwing, in *H. cephaloides* there are three small spots, in *H. cephalo* there are two only, both large, the outer one very large; on the underside, in *H. cephalo* the costal yellow streak extends uninterruptedly from the base to the apex, in *H. cephaloides* it is interrupted by a large castaneous patch; in *H. cephalo* the hindwing is entirely yellow, in *H. cephaloides* the basal half only is yellow, the outer half being castaneous; the spots too are very different and in greater number and occupy different positions.

I am indebted to Mr. B. Noble, the Curator of the Phayre Museum, Rangoon, for the opportunity of describing this interesting species, of which he has obtained two specimens. They were captured by the native collector attached to that institution in the Karen Hills in April, 1887.

Expanse of wings, ♂  $1\frac{6}{10}$  inches.

HABITAT.—Burma.

DISTRIBUTION.—The type from the Karen Hills is in the Phayre Museum, Rangoon. Elwes records it also from the Naga Hills and from Bernardmyo; we have not seen

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\* Ent. Mo. Mag. xiii. p. 152 (1876).

this species; it is not in the B. M.; we therefore give de Nicéville's description and copies of his figure.

#### INDO-MALAYAN ALLIED SPECIES.

- Scobura phiditia*, *Hesperia phiditia*, Hewitson, Trans. Ent. Soc. 1866, p. 501. *Suastus phiditia*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 180. *Scobura phitidia*, Swinhoe, Trans. Ent. Soc. 1908, p. 13. Synonym, *Scobura martini*, Elwes and Edwards, l.c. p. 205, pl. 18, fig. 22, ♀. Habitat, Sumatra.
- Scobura bononia*, *Hesperia bononia*, Hewitson, Desc. Hesp. p. 29 (1868); id. Exot. Butt. v. Hesp. pl. 7, figs. 75, 76 (1876). Habitat, Sumatra, Borneo.
- Scobura feralia*, *Hesperia feralia*, Hewitson, Desc. Hesp. p. 31 (1868); id. Exot. Butt. iv. Hesp. pl. 4, fig. 32 (1869). Habitat, Borneo, Java.
- Scobura inarime*, *Isma inarime*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 391, pl. G, fig. 38, ♂. *Scobura inarime*, Elwes and Edwards, l.c. p. 206, pl. 24, fig. 47 (genitalia). Synonym, *Pamphila zetis*, Mabille, Ann. Soc. Ent. Belg. xxxvii. p. 55 (1893). Habitat, Perak, Pulo Laut, Java.
- Scobura fenestrata*, Elwes and Edwards, l.c. p. 206, pl. 19, fig. 16, ♂, and pl. 24, fig. 46 (genitalia). Habitat, Pulo Laut, Borneo.
- Scobura concinna*, Elwes and Edwards, l.c. pl. 19, fig. 12, ♀. Habitat, Pulo Laut, Borneo.
- Scobura bipunctata*, Elwes and Edwards, l.c. p. 207, pl. 19, fig. 2, ♀. Habitat, Palawan, Philippines.
- Scobura umbrosa*, Elwes and Edwards, l.c. pl. 19, fig. 1, ♀. Habitat, Kina Balu, Borneo.

#### Genus ZOGRAPHETUS.

*Zographetus*, Watson, Proc. Zool. Soc. 1893, p. 84; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 427. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 200.

*Forewing*, vein 12 ends on costa a little before the end of the cell, discocellulars sub-erect, the lower slightly shorter than the middle, vein 5 nearer to 4 than to 6; vein 3 emitted near the lower end of cell, 2 close to the base; costa gently arched, apex somewhat produced and sub-acute, outer margin convex, shorter than the hinder margin. *Hindwing*, vein 7 arises a little more than one-third before the upper end of cell; vein 3 from near the lower end of cell, 2 from one-fourth before the end, lower margin of cell slightly angled at vein 2, outer margin rounded in the male, somewhat produced at the apex in the female. Antennæ about two-thirds the length of costa of forewing, club moderate, elongate, with a short pointed crook; palpi with the third joint minute, obtusely conical; hind tibiæ with two pairs of spurs; male with two pairs of linear glandular streaks on the upperside of the forewing, the upper pair on either side of vein 2 at its bifurcation, the lower two immediately beneath these on either side of vein 1.

Type, *Isoteinon satwa*, de Nicéville.

## ZOGRAPHETUS SATWA.

Plate 800, figs. 1, ♂, 1a, ♀, 1b, ♂.

- Isoteinon satwa*, de Nicéville, Journ. As. Soc. Bengal, 1883, p. 86, pl. 10, fig. 15, ♂. Doherty, id. 1886, p. 139. Elwes, Trans. Ent. Soc. 1888, p. 456. Watson, Journ. Bo. Nat. Hist. Soc. 1891, p. 58; id. Hesp. Ind. p. 79 (1891). Elwes, Proc. Zool. Soc. 1892, p. 654.
- Zographetus satwa*, Watson, Proc. Zool. Soc. 1893, p. 85. Swinhoe, Trans. Ent. Soc. 1893, p. 320. de Nicéville, Gazetteer of Sikkim, Butt. p. 180 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 679. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 201. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 143. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with five or six semi-hyaline spots, one at the end of the cell, a larger, somewhat quadrate spot close below it in the first median interspace, and a spot in the second median interspace, all close together in a triangular form; two sub-apical small spots, the lower the larger (sometimes a minute one above them), divided by the veins, a somewhat indistinct, white, opaque spot in the middle of the interno-median interspace in an outwardly oblique line with the two discal spots. *Hindwing* without markings, except for two or three indistinct, minute white spots before the middle in some examples, often absent in others. Cilia brownish on forewing, greyish-white on hindwing. Underside chocolate-brown, covered with minute pinkish-ochreous scales. *Forewing* with the costal space above the cell smeared with purplish-ochreous, the outer and hinder marginal spaces paler than the interior portion of the wing, the basal portion of the hinder marginal space also smeared with dull pinkish-ochreous. *Hindwing* uniformly pinkish-ochreous, a dark spot inside the cell towards the base, another above it, and another above the end of the cell, all somewhat indistinct. Antennæ black, the shaft spotted with white on the underside, the apical half of the club white beneath, its tip orange; palpi, head and body above concolorous with the wings, ochreous-white beneath.

Female like the male, spots somewhat larger.

Expanse of wings, ♂  $1\frac{4}{10}$ , ♂  $1\frac{1}{2}$  inches.

HABITAT.—N.W. Himalayas, Sikkim, Assam, Burma.

DISTRIBUTION.—The types from Darjiling are in the Indian Museum, Calcutta; we have it from the Sikkim and the Ataran Valley in Burma, and have received many examples from the Khasia Hills. Elwes records it also from the Karen Hills, E. Pegu and Perak; Watson from the Chin Hills, the Yaw district, Upper Burma, and from Orissa; Doherty from Kumaon.

## ZOGRAPHETUS FLAVIPENNIS.

Plate 800, figs. 2, ♀, 2a, ♀.

- Isoteinon flavipennis*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 122, pl. 2, fig. 4, ♀. Elwes,



Trans. Ent. Soc. 1888, p. 456. Watson, Hesp. Ind. p. 81 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 58.

*Zographetus flavipennis*, Watson, Proc. Zool. Soc. 1893, p. 85. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 202.

IMAGO.—Female. Upperside brown. *Forewing* with the outer area darker and glossed with purplish; spots white, semi-hyaline; two at the end of the cell, the upper one small, two obliquely near the bases of the median interspaces, both semi-quadrate, the lower one about twice as large as the other, these two spots close to the cell spots, a small spot in the interno-median interspace, against the sub-median vein, in an inwardly oblique line with the two discal spots; two sub-apical spots, the upper one minute. *Hindwing* without markings, but with a patch of long ochreous hairs in the middle of the disc and on the abdominal margin. Cilia of both wings brown, becoming grey on the lower half of the hindwing. Underside. *Forewing* with the costa and apex broadly ferruginous-ochreous, the rest of the wing blackish, the spots as on the upperside. *Hindwing* entirely ferruginous-ochreous, more or less suffused with brown, a small space in the upper middle of the wing paler than the rest of the wing, a brown spot at the end of the cell, a spot above it, and a discal series of six spots, all rather indistinct. Antennæ black, with ochreous dots on the underside, the club, all except its extreme tip, pale ochreous beneath.

Expanse of wings, ♀  $1\frac{4}{10}$  inches.

HABITAT.—Sikkim, Bhutan, Burma, Andamans.

DISTRIBUTION.—The type from Bhutan is in the Indian Museum, Calcutta; de Nicéville also records it from Sikkim and the South Andaman Islands.

Described from a female in our collection from Sikkim, identified by de Nicéville as his *flavipennis*. He says the male does not differ from the female, but we have not been able to procure a male for description and figuring; unfortunately his figure is that of a female; it is much too brightly coloured, his description agrees better with ours than with his figure.

#### ZOGRAPHETUS FLAVALUM.

Plate 800, figs. 3, ♂, 3a, ♂.

*Isoteinon flavalum*, de Nicéville, Proc. Zool. Soc. 1887, p. 463, pl. 40, fig. 10, ♂. Elwes, Trans.

Ent. Soc. 1888, p. 456. Watson, Hesp. Ind. p. 83 (1891). de Nicéville, Gazetteer of Sikkim, Butt. p. 83 (1894).

*Zographetus flavalum*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 202.

IMAGO.—Male. Upperside dark brown. *Forewing* with six semi-diaphanous, ochreous-white spots; three sub-apical in a slightly curved series, the lowest much the largest, close to the second, the upper one very minute and well separated from the others; three spots in the disc close to each other, all more or less quadrate, divided

from each other by the veins, the smallest at the lower end of the cell, one at the base of the second median interspace, somewhat elongate, and the third, very much the largest, near the base of the first median interspace. *Hindwing* without markings, the middle of the disc clothed with long greenish-ochreous hairs. Cilia of both wings cinereous. Underside. *Forewing* with the interior portion blackish-brown, the costal space above the cell, the apex broadly, the hinder marginal space below the cell and vein 2 dull yellow, the outer margin decreasingly hindward of the same colour. *Hindwing* with the entire surface uniformly dull yellow, the apex and outer margin narrowly dark brown, increasing in width hindwards to the anal angle, a small black spot near the end of the cell at its middle, three small black spots with white centres close together, one each in the middle of the median interspaces, and the third immediately below, the three divided from each other by the median branches; a fourth minute black spot well separated from the others towards the apex. Antennæ black, the club tipped with white; palpi and head with yellow and brown hairs, body above and below and the legs concolorous with the wings.

Expanse of wings, ♂  $1\frac{2}{10}$  inches.

HABITAT.—Sikkim.

Described from the unique type specimen in the Tring Museum, kindly lent to us for that purpose; we cannot trace the usual secondary sexual characters of this genus in this specimen, but in venation and general structure it is a true *Zographetus*.

#### ZOGRAPHETUS OGYGIA.

Plate 800, figs. 4, ♂, 4a, ♀, 4b, ♀.

*Hesperia ogygia*, Hewitson, Trans. Ent. Soc. 1866, p. 500.

*Zographetus ogygia*, Watson, Proc. Zool. Soc. 1893, p. 85. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 536. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429; id. idem, x. 1896, p. 679. Davidson, Bell and Aitken, id. xi. 1897, p. 53. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 203.

IMAGO.—Male. Upperside dark brown. *Forewing* with two yellowish-white spots at the end of the cell, the upper one minute, a larger sub-quadrate spot immediately below them in the first median interspace, divided from the lower cell spot by the median vein, a small round spot close outside the junction of these two spots at the base of the second median interspace, a small spot above in interspace 6, with two minute dots obliquely above it, forming the sub-apical series. *Hindwing* without markings. Cilia white with a thin brown base. Underside paler, of a pinkish-brown colour. *Forewing* with its middle narrowly blackish, the spots as on the upperside. *Hindwing* with a brown spot in the cell, another at its end, and a discal whorl of brown spots, all very indistinct. Antennæ black, ringed with white,

the upper part of the club smeared with white on the underside, the tip orange-red : palpi, head and body above and below and the legs concolorous with the wings.

Female like the male, but there is an additional whitish spot in the discal series of the forewing, in the interno-median interspace, against the middle of the sub-median vein, and the ground colour of the underside of the hindwing is paler.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  inches.

HABITAT.—Burma, South India, Borneo, Sumatra.

DISTRIBUTION.—The type is from Sumatra; Watson records it from the Chin Hills; Davidson, Bell and Aitken from Kanara; it is in the B. M. from Thoungyen, Burma; Elwes records it also from Pulo Laut and Labuan.

#### INDO-MALAYAN ALLIED SPECIES.

*Zographetus durga*, *Apaustus durga*, Plötz, Stett. ent. Zeit. xlv. p. 153 (1884), unpublished plate No. 748. *Isoteinon durga*, Semper, Rhop. Philipp. p. 306, pl. 49, fig. 10, ♂ (1892). *Zographetus durga*, Swinhoe, Trans. Ent. Soc. 1908, p. 13, pl. i. fig. 19. Habitat, Philippines.

*Zographetus ogygioides*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 203, pl. 19, fig. 9. Habitat, Kina Balu, Banguay, Borneo.

*Zographetus auriferus*, Elwes and Edwards, l.c. pl. 19, fig. 13, ♂. Habitat, Nias.

#### Genus ARNETTA.

*Arnetta*, Watson, Proc. Zool. Soc. 1893, p. 81; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 427. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 198.

*Forewing*, vein 12 reaches the costa opposite the end of the cell; cell less than two-thirds the length of costa; discocellulars sub-erect, the lower a little the shorter, vein 5 arising a little below their middle; vein 3 emitted about one-sixth before lower end of cell, 2 from the middle; costa gently arched, apex sub-acute, outer margin convex, about the same length as the hinder margin. *Hindwing*, vein 7 from close to upper end of cell, discocellulars and vein 5 faint; 3 from close to lower end of cell, the base of vein 2 a short distance from the base of vein 3; outer margin evenly rounded. Antennæ less than two-thirds the length of costa of forewing, club slender, moderately long, with a short pointed crook; palpi porrect, second joint densely scaled, third joint projecting horizontally in front of the face, short, obtusely conical; hind tibiæ with two pairs of spurs. No secondary sexual characters, except for a tuft of long hairs in the males of the type species, attached along the basal half of the hinder margin of the forewing which are turned up and spread out fanwise over the underside of the hindwing.

Type, *Isoteinon atkinsoni*, Moore.

## ARNETTA VINDHIANA.

Plate 801, figs. 1, ♂, 1a, ♀, 1b, ♂.

- Isoteinon vindhiana*, Moore, Proc. Zool. Soc. 1883, p. 533. Hampson, Journ. As. Soc. Bengal, 1888, p. 267. Watson, Hesp. Ind. p. 84 (1891). Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 427.
- Arnetta vindhiana*, Watson, Proc. Zool. Soc. 1893, p. 82; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 199, pl. 18, fig. 24, ♂. Aitken and Comber, Journ. Bo. Nat. Hist. Soc. xv. 1903, p. 53. Evans, id. xx. 1910, p. 389.
- Isoteinon nilgiriana*, Moore, Proc. Zool. Soc. 1883, p. 533. Swinhoe, id. 1885, p. 147; id. idem, 1886, p. 433. Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43. Hampson, l.c. (1888). Watson, Hesp. Ind. p. 84 (1891). Betham, Journ. Bo. Nat. Hist. Soc. viii. 1894, p. 423.
- Isoteinon modesta*, Moore, Proc. Zool. Soc. 1883, p. 434. Hampson, l.c. (1888). Watson, Hesp. Ind. p. 84 (1891).

IMAGO.—Male. Upperside olive-brown, with a slight ochreous tint. *Forewing* with a small semi-hyaline white spot at the upper end of the cell, three sub-apical dots from near the costa, divided by the veins, in a nearly straight line downwards; two larger spots placed obliquely in the middle of the disc, divided by the second median nervule. Cilia of both wings dull ochreous, with an inner indistinct brownish narrow band. Underside brownish-pinkish-ochreous. *Forewing* with the middle portion from the base to near the outer margin suffused with brown, the spots as on the upperside. *Hindwing* with an indistinct spot at the end of the cell, another above it, an indistinct series of discal spots. Antennæ blackish-brown; ochreous-red beneath and at the tip of the club; palpi, head and body brown above, with some greyish-white, short hairs; beneath greyish-white.

Female like the male, the white spots on the forewing somewhat larger.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  inches.

HABITAT.—South India.

DISTRIBUTION.—The type is from Jubbulpur; Evans records it from the Palni Hills; we took it at Matheran, Lanaoli and Mhow; Betham records it from the Central Provinces; Aitken and Comber from the Konkan; Hampson from the Nilgiris; the types of *nilgiriana* and *modesta* are from Konoor; Aitken records it from Thanā, near Bombay.

## ARNETTA ATKINSONI.

Plate 801, figs. 2, ♂, 2a, ♀, 2b, ♀ (Wet-season brood), 2c, ♂, 2d, ♀, 2e, ♀ (Dry-season brood).

- Isoteinon atkinsoni*, Moore, Proc. Zool. Soc. 1878, p. 693, pl. 45, fig. 10. Elwes, Trans. Ent. Soc. 1888, p. 455. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 28; id. Hesp. Ind. p. 77 (1891). Elwes, Proc. Zool. Soc. 1892, p. 653.
- Arnetta atkinsoni*, Watson, Proc. Zool. Soc. 1893, p. 82. Swinhoe, Trans. Ent. Soc. 1893, p. 319. de Nicéville, Gazetteer of Sikkim, Butt. p. 180 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 199. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 143.

*Isotcinon subtestaceus*, Moore, Proc. Zool. Soc. 1878, p. 844. Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 441. Watson, Hesp. Ind. p. 78 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 57.

*Arnetta subtestacea*, Watson, l.c. x. 1896, p. 680.

*Isotcinon khasianus*, Moore, Proc. Zool. Soc. 1878, p. 693. Watson, Hesp. Ind. p. 78 (1891).

*Arnetta khasiana*, Swinhoe, Trans. Ent. Soc. 1893, p. 319.

Wet-season Brood (Figs. 2, ♂, 2a, ♀, 2b, ♀).

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with six or seven semi-hyaline spots; a round spot at the end of the cell; three small sub-apical spots divided by the veins in an outwardly oblique curve; two inwardly oblique in the middle of the disc in the second and first median interspaces, and sometimes a smaller spot immediately above the upper discal spot. *Hindwings* without markings. Cilia of both wings brown at its base, checkered-brown and ochreous-grey at the tips. Underside nearly as dark as it is above, covered with minute ochreous scales, densest along the costa of forewing. *Forewing* with the spots as on the upperside. *Hindwing* with a minute white spot at the end of the cell, and a discal series of eight small white dots, one or other of them absent in some examples. Antennæ black above, whitish beneath; palpi, head and body above and below concolorous with the wings; palpi whitish on the underside.

Female like the male, the white spots larger and more prominent, especially on the underside of the hindwing.

Expanse of wings, ♂ ♀  $1\frac{1}{10}$  inches.

Dry-season Brood (Figs. 2c, ♂, 2d, ♀, 2e, ♀) = *subtestaceus*.

Male and Female. Upperside like the wet-season form, the ground colour a shade paler, and the spots of forewing usually a little larger. Underside, brownish-grey with a pinkish tint. *Forewing* with the inner portion suffused with dark brown, the costal and hinder margins narrowly and the outer margin broadly paler; the spots as on the upperside. *Hindwing* uniformly pale in colour, with very minute spots as in the wet-season form, but usually very indistinct, and in many examples some of them are indistinguishable.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{3}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma.

DISTRIBUTION.—The type is from Darjiling, the type of *subtestaceus* from Tenasserim, and the type of *khasianus* from the Khasia Hills; we have received a good many examples of both forms from the Khasia Hills, and have specimens from Rangoon, Maundrum and Sikkim; Elwes records it also from the Karen and Naga Hills; Watson from Beeling and the Chin Hills.

## ARNETTA BINGHAMI.

Plate 801, figs. 3, ♂ 3a, ♂.

*Arnetta binghami*, Swinhoe, Ann. Mag. Nat. Hist. 1907, p. 433; id. Trans. Ent. Soc. 1908, p. 13, pl. i. fig. 18.

IMAGO.—Male. Upperside dark blackish-brown. *Forewing* narrower than usual, two white semi-hyaline minute spots at the end of the cell, a small lunular semi-hyaline spot below the end and a little beyond it, a small white spot a little outside the upper end of the lunule, two white sub-apical dots. *Hindwing* without markings. Underside slightly paler than on the upperside, markings similar except that the two sub-apical dots of the forewing are wanting. Antennæ white at the tips, and with white crook; palpi brown beneath, not white as is usual in the species of this genus. Superficially like a *Parnara*, but has the venation and antennæ of *Arnetta*.

Expanse of wings, ♂  $1\frac{1}{2}$  inches.

HABITAT.—Salween Valley, Tavoy, Burma. (Bingham.)

Type in the B. M., and another male from the Salween Valley.

## Genus AËROMACHUS.

*Aëromachus*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 214. Watson, Hesp. Ind. p. 65 (1891); id. Proc. Zool. Soc. 1893, p. 80. Leech, Butt. of China, etc. ii. p. 617 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 426. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 187.

*Forewing*, vein 12 ends on the costa before the end of the cell, cell less than two-thirds the length of the costa; vein 5 from slightly below the middle of discocellulars, 3 from well before the lower end of the cell, cell bent upwards from the origin of vein 3, the base of vein 2 very close to the base of vein 3, about as far from it as the base of vein 3 is from the end of the cell; costa very slightly and evenly curved, apex well pronounced, outer margin convex, shorter than the hinder margin. *Hindwing*, vein 7 from well before the upper end of the cell, with an upward curve at its base, the upper margin of the cell bent downwards from the base of vein 7 to its end; discocellulars and vein 5 very faint; 3 from close to lower end of cell, 2 from beyond the middle, outer margin of the wing even; the male with a short discal stigma on the upperside of the forewing from the base of vein 3 to a little below the middle of the sub-median vein. Antennæ with the club robust, a short terminal crook, and pointed tip, palpi with the second joint pressed closely against the face, third joint correct, short, obtusely conical, hind tibiæ with two pairs of spurs.

Type, *Thanaos stigmata*, Moore.

**ÆROMACHUS STIGMATA.**

Plate 802, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Thanaos stigmata*, Moore, Proc. Zool. Soc. 1878, p. 694; id. idem, 1882, p. 262. Elwes, id. p. 407. de Nicéville, Journ. As. Soc. Bengal, 1882, p. 66; id. idem, 1885, p. 122, pl. 2, fig. 2, ♂. Doherty, id. 1886, p. 139. Elwes, Trans. Ent. Soc. 1888, p. 452.

*Æromachus stigmata*, Watson, Journ. Bo. Nat. Hist. Soc. 1890, p. 216; id. Hesp. Ind. p. 68 (1891). Elwes, Proc. Zool. Soc. 1892, p. 652. Watson, Proc. Zool. Soc. 1893, p. 80. Swinhoe, Trans. Ent. Soc. 1893, p. 319. de Nicéville, Gazetteer of Sikkim, Butt. p. 179 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. de Rhé-Philipe, id. xi. 1898, p. 599. Swinhoe, Trans. Ent. Soc. 1908, p. 12, pl. i. fig. 17. Hannyngham, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371.

*Apastus discreta*, Plötz, Berl. ent. Zeit. xxix. p. 232 (1885), unpublished plate No. 1477.

*Æromachus discreta*, Frühstorfer, Iris, 1910, p. 97.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with a short straight band of raised black scales from the middle of the sub-median nervure to the base of the second median nervule, and a very indistinct upper discal series of pale dots. *Hindwing* without markings. Cilia grey. Underside paler. *Forewing* with some minute whitish scales on the costa and outer portions and on the veins; a discal curved series of whitish spots from near the costa to the first median interspace, one in each interspace, and indications of a similar sub-marginal series. *Hindwing* more or less entirely covered with minute whitish scales, two narrow whitish sub-marginal bands, the veins whitish, the bands with dark spots between them and on each side filling up the interspaces between the whitish veins, and a largish round blackish spot outwardly edged with whitish at the end of the cell. Antennæ blackish-brown, unmarked; palpi, head and body concolorous with the wings, palpi and abdomen whitish on the underside.

Female only differs from the male in having no band on the upperside of the forewing.

Expanse of wings, ♂ ♀  $\frac{9}{10}$  to 1 inch.

HABITAT.—N.W. Himalayas, Sikkim, Assam.

DISTRIBUTION.—The types are from Masuri, 7,000 feet elevation; it is in our collection from Ranikhet, Mandi, Kulu, and Sikkim; we have received many examples from the Khasia Hills; recorded by Hannyngham from Kumaon, by Elwes from the Naga Hills, by de Nicéville from the Palni Hills in South India, and by Frühstorfer from Tonkin, but the last two records probably refer to the following species.

**ÆROMACHUS DUBIUS.**

Plate 802, figs. 2, ♂, 2a, ♂.

*Æromachus dubius*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 190, pl. 19, fig. 10, ♂, and pl. 23, fig. 39a (genitalia). Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 389.

IMAGO.—Male. Upperside dark (olive-brown), the post-medial series of spots on

the forewing very indistinct or wanting, sex mark on the forewing a small inconspicuous fold of raised scales in cell 1A, next vein 1A near the middle. Underside forewing umber-brown, the apical and costal regions similar to the hindwing, a small pale spot near the upper distal angle of the cell, the post-medial series of pale spots represented by about six spots, which become gradually fainter in their course from cells 8-3, a pale anteciliary line, hindwing ochreous-brown by reason of a close sprinkling of yellow scales on the umber-brown ground, the post-medial and sub-terminal series of pale spots very indistinct or wanting, a pale anteciliary line. Fringes greyish-white, the short scales grey-brown. Antennæ above blackish, minutely spotted with yellowish, beneath greyish-yellow, the shaft spotted with black. Second joint of palpi clothed with yellow and black hairs intermixed. Body above concolorous with the wings, beneath with greyish-yellow pubescence. Legs with greyish-yellow scaling. Tegumen (seen from above) with a small rounded projection near the apex on each side, beyond which it is produced in a bluntly rounded triangle.

Female differs from the male in wanting the sex mark and in having the pale spots proper to the underside more strongly developed, and consequently the post-medial series appears faintly in the costal portion of the upperside of the forewing.

Expanse of wings, 21-21½ mm.

HABITAT.—Palni Hills, Permaad, Travancore. Described from four males and one female. Of the species known to us this comes nearest to *A. jhora*, de Nicéville, from which, however, it differs in the form of the tegumen as well as in the spotting of the wings (Elwes and Edwards). We have not seen this species, we therefore give Elwes and Edwards' description and copies of their figure.

#### INDO-MALAYAN, JAPANESE AND CHINESE ALLIED SPECIES.

*Æromachus inachus*, *Pyrgus inachus*, Ménétris, Bull. Acad. Petr. xvii. p. 217 (1859). Fryer, Rhop.

Nippon, p. 35, pl. 10, fig. 20 (1889). Habitat, Japan, W. China, Amurland.

*Æromachus catocyaneus*, *Pamphila catocyanea*, Mabille, Ann. Soc. Ent. Fr. 1876, p. lv. *Æromachus catocyanea*, Leech, Butt. of China, etc. ii. p. 618 (1893). Habitat, Thibet.

*Æromachus piceus*, Leech, l.c. p. 618, pl. 41, fig. 16, ♂ (1893). Habitat, Moupin, E. Thibet.

*Æromachus chinensis*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 189. Habitat, W. China.

*Æromachus javanicus*, Elwes and Edwards, l.c. p. 191, pl. 19, fig. 24, ♂. Habitat, W. Java.

#### Genus MACHACHUS, nov.

Differs from the genus *Æromachus* in having no secondary sexual character. *Forewing* with vein 3 emitted quite close to lower end of cell, 2 from about one-third before the end, their bases being well separated from each other, in *Æromachus* vein 3 is emitted well before the end and the bases of veins 3 and 2 are close together. *Hindwing* with the upper margin of the cell not bent downwards from the base of



vein 7 which is straight and is emitted close to the upper end of the cell, 2 from one-third before the end.

Type, *Thanaos jhora*, de Nicéville.

#### MACHACHUS JHORA.

Plate 802, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Thanaos jhora*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 122, pl. 2, fig. 12, ♂. Elwes, Trans. Ent. Soc. 1888, p. 453.

*Æromachus jhora*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 216. Fergusson, id. 1891, p. 447. Watson, Hesp. Ind. p. 68 (1891). Elwes, Proc. Zool. Soc. 1892, p. 652. Watson, id. 1893, p. 80. Swinhoe, Trans. Ent. Soc. 1893, p. 319. de Nicéville, Gazetteer of Sikkim, Butt. p. 180 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 190, pl. 23, figs. 37, 37a (genitalia).

IMAGO.—Male. Upperside dark brown. *Forewing* with a recurved discal series of obscure minute pale dots. *Hindwing* unmarked. Cilia of both wings white with brown patches and a brown base. Underside paler brown, the outer half of the costal area of the forewing broadly, and the entire surface of the hindwing covered with minute greenish-ochreous scales. *Forewing* with the discal series of dots as on the upperside, but usually more distinct. *Hindwing* with indications of discal and sub-marginal series of very obscure pale spots. Antennæ black, whitish beneath; palpi with grey and white hairs; head and body above and below concolorous with the wings, thorax beneath and the pectus with grey hairs.

Female like the male, the discal dots of the forewing on the upperside often not visible, on the underside there is an ochreous dot at the end of the cell of the forewing, and a discal and a sub-marginal series of somewhat obscure ochreous dots in both wings.

Expanse of wings, ♂ ♀  $\frac{9}{10}$  to 1 inch.

HABITAT.—Sikkim, Assam, Burma.

DISTRIBUTION.—The type is from Sikkim; we have received many examples from the Khasia and Jaintia Hills; Watson records it from Toungoo and Elwes from Bernardmyo; Fergusson records it from Travancore, but his record probably refers to *Æromachus dubius* of Elwes and Edwards, which closely resembles this species.

#### MACHACHUS KALI.

Plate 802, figs. 4, ♂, 4a, ♀, 4b, ♂.

*Thanaos kali*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 123, pl. 2, fig. 3, ♂. Elwes, Trans. Ent. Soc. 1888, p. 453.

*Æromachus kali*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 217. Watson, Hesp. Ind. p. 67 (1891). Elwes, Proc. Zool. Soc. 1892, p. 652. Watson, id. 1893, p. 80. de Nicéville, Gazetteer of Sikkim, Butt. p. 180 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 192.

IMAGO.—Male. Upperside dull purplish-black; without any markings. Cilia cinereous. Underside similar, the outer margins slightly paler. *Forewing* with a complete discal series of violet-white spots from near the costa to near the hinder margin, the series outwardly angled opposite the cell, also a sub-marginal somewhat suffused series of lunular similarly coloured spots. *Hindwing* with a discal and sub-marginal series of larger, similarly coloured spots. Antennæ black, the club whitish beneath; palpi with grey hairs; head and body above and below and the legs concolorous with the wings.

Female like the male.

Expanse of wings, ♂ ♀  $1\frac{1}{10}$  inches.

HABITAT.—Sikkim, Burma.

DISTRIBUTION.—The type male is from Sikkim and is in the Indian Museum, Calcutta; Elwes records it from the Naga Hills and Bernardmyo; we have it from Rangoon.

#### MACHACHUS INDISTINCTA.

Plate 802, figs. 5, ♂, 5a, ♀, 5b, ♂.

*Thanaos indistincta*, Moore, Proc. Zool. Soc. 1878, p. 694; id. Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27. Hampson, Journ. As. Soc. Bengal, 1888, p. 366.

*Æromachus indistincta*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 216. Watson, Hesp. Ind. p. 66 (1891); id. Proc. Zool. Soc. 1893, p. 80; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 536. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 191, pl. 19, fig. 11, ♂, and pl. 23, fig. 39 (genitalia). Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 55 (larva and pupa). Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 143.

*Thanaos obsoleta*, Moore, Proc. Zool. Soc. 1878, p. 694.

*Æromachus obsoleta*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 217. Watson, Hesp. Ind. p. 67 (1891); id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429.

IMAGO.—Male. Upperside uniform olive-brown, without any markings; in some examples there are very faint indications of some discal and sub-marginal marks. Cilia concolorous with the wings, slightly paler at the tips. Underside paler; a small whitish spot at the end of the cell, sometimes absent, an indistinct whitish and outwardly curved discal, thin band from near the costa halfway down the wing, the upper and outer portions of the wing sparsely covered with minute white scales. *Hindwing* entirely covered with minute white scales, traces of a whitish outwardly curved discal band and a very indistinct series of sub-marginal spots a little darker than the ground colour. Antennæ black, ringed with white, club whitish on the underside, all except its tip; palpi, head and body above concolorous with the wings, whitish on the underside.

Female similar to the male.

Expanse of wings, ♂ ♀  $\frac{8}{10}$  inch.

LARVA very like that of *A. maro*, Fabricius (= *Ampittia dioscorides*, Fabricius); head half-elliptic, higher than broad, finely hairy about the mouth; colour green; jaws yellow; colour whitish-green, with dark green showing through in small spots; a dark dorsal line; a white lateral distinct line, and a sub-marginal, white, indistinct line. Length 19 mm.

PUPA.—Head square; eyes prominent, with a conical parrot beak of moderate length; thorax ending square behind; shoulders rounded; segment 5 has a small dorsal point under which the suspension-band passes, this point being directed forwards; proboscis free to the end of segment 10; cremaster nearly parallel-sided, minutely hairy round the margin, surface of pupa extremely minutely hairy under a lens; colour a dark watery-looking green, with a fine sub-dorsal and lateral white line and an obsolescent white spiracular line. Length 14 mm.

HABITS.—Egg laid anywhere on dead or green leaves, but nearly always on the underside; larva makes a lax cell; when full grown the larva makes an open cell, lying on the underside of the leaf, where it changes into pupa, fastening itself by the tail and a body-band; the egg is very large for the size of the insect; hemispherical in shape, somewhat depressed; 18 thin low ridges from top to base; white in colour; the larva feeds on grasses, and generally on short grasses. This little skipper is extremely local in this district, but occurs in quantities where found; such is our experience; in the months of November and December we found it in the valley of the Kalinaddi, far away from the coast, in numbers; in January there was hardly a specimen to be seen. The spot where we found it was a piece of marshy ground surrounded by dense jungle. It is a greedy flower-feeder; flies low down near the ground among the grass and settles often; it is extremely difficult to see, being so small. We have noticed odd individuals now and again at different times of the year; always in nullah beds and in thick jungle country. We have bred two specimens; we possessed very few specimens until we came across the lot mentioned above, when we obtained as many as we wished. (Davidson, Bell and Aitken.)

HABITAT.—South India, Ceylon, Burma, Java, Sumatra.

DISTRIBUTION.—The type came from Salween, Maulmein; Moore records it also from Mergui, Elwes from Bernardmyo, Tavoy in Burma, and from Java; de Nicéville and Martin from Sumatra, Adamson from Toungoo, Hampson from the Nilgiris, de Nicéville from the Palni Hills; Davidson, Bell and Aitken bred it at Karwar, but unfortunately did not figure the larva and pupa; we have it in our collection from the Ataran Valley in Burma and from Sumatra.

## INDO-MALAYAN AND CHINESE ALLIED SPECIES.

- Machachus musca*, Pamphila(?) *musca*, Mabille, Bull. Soc. Ent. Fr. 1876, p. xxvi. *Æromachus musca*, Semper, Rhop. Philipp. p. 305 (1892). Habitat, Philippines.
- Machachus nanus*, Cyclopides *nanus*, Leech, Entom. xxiii. p. 49 (1890). *Æromachus nanus*, Leech, Butt. of China, etc. ii. p. 620, pl. 40, fig. 21, ♂ (1893). Habitat, Shanghai, Ichang.

## DIVISION II.

In the remaining genera the middle discocellular of the forewing is much longer than the lower, generally nearly (sometimes quite) twice as long, vein 5 arising from their junction much closer to the lower end of the cell than to vein 6, curving upwards to get into position between veins 4 and 6 before reaching the outer margin of the wing. They can be divided into three natural sub-families forming a regular graduated series throughout.

## Sub-Family NOTOCRYPTINÆ.

Antennæ with a short terminal crook; palpi porrect, second joint inclining upwards, densely scaled, third minute, bluntly conical; hind tibiæ with two pairs of spurs. Wings broad. *Forewing* with the outer margin rounded, discocellulars sub-erect; cell long, but less than two-thirds the length of the costa, vein 3 from close to lower end of cell; 2 from about one-third from the base. *Hindwing*, vein 7 emitted close to upper end of cell; discocellulars and vein 5 very faint, but distinguishable; vein 3 from close to lower end of cell, 2 from beyond the middle. No secondary sexual characters.

## Genus NOTOCRYPTA.

- Plesioneura*, Felder, Wien Ent. Mon. vi. p. 29 (1862) (nom. præocc.). Moore, Lep. Ceylon, i. p. 177 (1881). Distant, Rhop. Malayana, p. 399 (1886). Watson, Hesp. Ind. p. 125 (1891).
- Notocrypta*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 188. Watson, Proc. Zool. Soc. 1893, p. 112. Leech, Butt. of China, etc. ii. p. 626 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 431. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 238.

*Forewing*, vein 12 ends on costa opposite the end of the cell; cell less than two-thirds the length of the costa, discocellulars sub-erect, the lower much shorter than the middle discocellular, vein 3 emitted close to lower end of cell, 2 from about one-third from the base; costa slightly arched, the wing somewhat apically produced in the male. apex blunt, outer margin rounded, about as long as the hinder margin in the male; in the female the hinder margin is somewhat longer, the outer margin consequently being less oblique. *Hindwing* with vein 7 from close to upper end of cell, discocellulars and vein 5 very faint, 3 from close to lower end of cell, the cell inconspicuously angled

at the origin of vein 2, 2 from less than one-third before the end, costa and outer margin evenly rounded. Antennæ more than half the length of the costa of forewing; club moderate, with a short abrupt, pointed crook; palpi porrect, second joint densely clothed, inclining a little upwards, third joint porrect, minute, bluntly conical, almost concealed; hind tibiæ naked and with two pairs of long spurs.

Type, *Plesioneura curvifascia*, Felder, from China.

## NOTOCRYPTA FEISTHAMELII.

Plate 803, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, larva.

*Thymele feisthamelii*, Boisduval, Voy. Astr. Lep. p. 159, pl. 2, fig. 7 (1832).

*Plesioneura feisthamelii*, Druce, Proc. Zool. Soc. 1873, p. 511.

*Notocrypta feisthamelii*, Watson, Proc. Zool. Soc. 1893, p. 113. Leech, Butt. of China, etc. ii. p. 627 (1893). de Nicéville, Gazetteer of Sikkim, Butt. p. 185 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Davidson, Bell and Aitken, id. xi. 1897, p. 62 (larva and pupa). Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 239. Mackinnon and de Nicéville, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 599, pl. W, fig. 28 (larva). Swinhoe, Trans. Ent. Soc. 1908, p. 26. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 144. Frühstorfer, Iris, 1911, p. 22.

*Plesioneura alysos*, Moore, Proc. Zool. Soc. 1865, p. 789; id. idem, 1877, p. 593; id. Lep. Ceylon, i. p. 178, pl. 67, figs. 3, ♂, 3a, ♀, 3b, larva and pupa (1881). de Nicéville, Journ. As. Soc. Bengal, 1881, p. 60. Moore, Proc. Zool. Soc. 1882, p. 263. Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 440. Distant, Rhop. Malayana, p. 399, pl. 34, fig. 7, ♂ (1886). Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 54. Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43. Watson, id. 1888, p. 27. Elwes, Trans. Ent. Soc. 1888, p. 461.

*Notocrypta alysos*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 189. Fergusson, id. 1891, p. 448. Watson, Hesp. Ind. p. 126 (1891). Elwes, Proc. Zool. Soc. 1892, p. 658. J. J. Walker, Trans. Ent. Soc. 1895, p. 473. Swinhoe, Trans. Ent. Soc. 1908, p. 26. Hannyngton, Journ. Bo. Nat. Hist. Soc. 1910, p. 372. Frühstorfer, Iris, 1911, p. 23.

*Plesioneura varians*, Maassen, pict. i. pl. 39, fig. 11. Plötz, Berl. ent. Zeit. xxvi. p. 262 (1882), unpublished plate No. 237.

*Notocrypta varians*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 192.

*Plesioneura chimæra*, Plötz, l.c. unpublished plate No. 238.

*Notocrypta chimæra*, de Nicéville, l.c.

IMAGO.—Male. Upperside black. *Forewing* with a broad, post-medial, transverse, white band, in a slight outward curve, composed of three large conjoined spots, the upper one filling the end of the cell, its upper margin usually somewhat rounded, the two lower spots in the first median and lower interspaces more or less quadrate, two or three sub-apical white dots in a nearly straight line from near the costa, another in interspace 4 towards the outer margin and sometimes another inwards in interspace 3, all these dots small, varying in number in different examples and sometimes entirely absent. *Hindwing* without markings. Cilia of forewings brown, of hindwing paler and somewhat greyish. Underside paler than the upperside, the outer margins slightly

suffused with grey. *Forewing* with a whitish, somewhat suffused mark attached to the upper end of the post-medial white band, but not quite touching the costa, the dots as on the upperside. Antennæ black, with a whitish smear on the underside of the club; palpi, head and body above and below and the legs concolorous with the wings.

Female like the male.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to 2 inches.

LARVA very stout when full grown, and has the habit of resting with the first three segments after the head contracted, so as to give the appearance of being humped about the anterior segments, the relatively small head lying with its apex pressed on the second segment; the body is flattened ventrally as the larva always lies closely applied to the resting surface; the anal segments are sloping, and the margin is closely applied to the leaf, rounded at the extremity and somewhat thickened at the edge, when at rest the fourth segment is more than twice as long as the head; the head is triangular when seen from in front, chocolate-brown in colour, narrowly bilobed and small for the body, which is dark indigo-green; anal segment whitish-yellow. Length 31·23 mm.

PUPA cylindrical, very slightly constricted dorsally, only behind thorax, produced into a conical snout, squarely blunt at tip, the eyes being prominent, the abdomen is tapering, and in a thin, long more or less broadly triangular, curved cremaster, the proboscis is produced beyond the wings, and reaches to end of cremaster, the colour of the pupa is a watery bright green, length 32·75 mm.

HABITS.—The imago rests with its wings closed over its back, but basks with them half open; they are insects of damp and shade, frequenting the beds of nullahs and damp evergreen portions of the district; they are not very strong flyers, and rest often, and always close to the ground, on a convenient upperside of a leaf; the larva makes a lax cell by turning over a triangular piece from the edge on to the upper surface of the cell. This butterfly is of common occurrence in moist thick jungles above the ghats, especially in evergreen jungles. We have bred numbers in the dry weather above the ghats, though never in Karwar in the monsoon; the larva feeds on *Maranta*. (Davidson, Bell and Aitken.)

HABITAT.—India, Burma, Ceylon, Andamans, China, Malay Peninsula; a common species recorded from many parts within our limits.

#### NOTOCRYPTA RESTRICTA.

Plate 803, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, larva and pupa.

*Plesioneura restricta*, Moore, Lep. Ceylon, i. p. 178 (1881). Wood-Mason and de Nicéville, Journ.

As. Soc. Bengal, 1887, p. 390, pl. 17, fig. 5, ♂. Elwes, Trans. Ent. Soc. 1888, p. 461.

*Notocrypta restricta*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 189. Watson, Hesp. Ind.

p. 128 (1891). Watson, Journ. Bo. Nat. Hist. Soc. 1891, p. 58. Fergusson, id. p. 448. Betham, id. 1893, p. 428. Watson, Proc. Zool. Soc. 1893, p. 113. Swinhoe, Trans. Ent. Soc. 1893, p. 327. Leech, Butt. of China, etc. ii. p. 627, pl. 38, fig. 3, ♂ (1893). de Nicéville, Gazetteer of Sikkim, Butt. p. 185 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 680. Davidson, Bell and Aitken, id. xi. 1897, p. 62, pl. 8, fig. 7 (larva and pupa). de Rhé-Philipe, id. xi. 1898, p. 599. Hannynghton, id. xx. 1910, p. 372. Evans, id. p. 389. Frühstorfer, Iris, 1911, p. 21, fig. 1 (genitalia).

*Udaspes restricta*, Manders, Trans. Ent. Soc. 1890, p. 538.

*Notocrypta feisthamelii*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 239.

IMAGO.—Male and female very similar to *N. feisthamelii*; the post-medial white band on the forewing is somewhat more irregular in shape, the middle spot being a little more outward, all the white dots are larger and more prominent; the dot in interspace 3 represented by a short transverse white streak; on the underside the post-medial white band stops abruptly on the sub-costal vein, and there is a white short streak against the eyes on each side of the face; the genitalia also is not identical with that of *feisthamelii*, the genitalia of nearly all the species of this genus are more or less similar, but have perfectly good specific distinctions which only become apparent on examination of enlarged photographs of them.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to 2 inches.

LARVA as in *feisthamelii*, but with a black head, broadly whitish-yellow in the centre of each lobe. Length 37·5 mm.

PUPA also like that of *feisthamelii*; proboscis produced well beyond the end of the cremaster; same length as *feisthamelii*.

HABITS.—Pupa formed on the underside of a leaf. In the monsoon round Karwar this skipper is very plentiful in damp shady places, like evergreen forests and beds of nullahs; it has a weakish flight, and is fond of basking low down among leaves, etc. We have reared many in the monsoon at Karwar, and a few above the ghats in the dry weather; it is found throughout the district, though not common in the dry months. (Davidson, Bell and Aitken.)

HABITAT.—India, Ceylon, Burma.

DISTRIBUTION.—The types are from Ceylon, recorded by Elwes from Sikkim, by Manders from the Shan States, by Hannynghton from Kumaon, by Evans from the Palni Hills, by Fergusson from Travancore, by Watson from the Chin Hills, by de Rhé-Philipe from Masuri; we have both sexes from several Indian localities and many examples from the Khasia Hills; Elwes and Edwards in their revision of the Hesperiidæ sink it to *feisthamelii*, on account of the similarity of the genitalia, but Davidson, Bell and Aitken's life history is sufficient proof of the distinctness of the species.

## NOTOCRYPTA PARALYSOS.

Plate 803, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Plesioneura paralysos*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1881, p. 257.

*Notocrypta paralysos*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 189. Watson, Hesp. Ind. p. 127 (1891); id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 241.

IMAGO.—Male and Female. Very similar to *N. feisthamelii*, the wings somewhat shorter and broader, the post-medial white band of the forewing very similar both above and below, but there is a small white spot opposite the cell end, towards the outer margin, and there are no sub-apical dots, and on the underside of the hindwing there is a small white spot inside the end of the cell and another below it, nearly half way between it and the outer margin, and there is a white mark on each side of the face as in *N. restricta*.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—Andaman Islands.

We possess examples of both sexes from Port Blair.

## NOTOCRYPTA ALBIFASCIA.

Plate 804, figs. 1, ♂, 1a, ♀, 1b, ♀.

*Plesioneura albifascia*, Moore, Proc. Zool. Soc. 1878, p. 843, pl. 53, fig. 3, ♂. Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 440.

*Notocrypta albifascia*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 190. Watson, Hesp. Ind. p. 128 (1891); id. Proc. Zool. Soc. 1893, p. 113; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Frühstorfer, Iris, 1911, p. 24.

*Notocrypta feisthamelii*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 239.

IMAGO.—Male. Upperside black. *Forewing* with a white post-medial band, much straighter and narrower than in *N. feisthamelii* or *N. restricta*, the upper two spots of equal size, more or less quadrate, a slight excavation between their outward ends, the last spot smaller, narrowing hindwards, its lower end round, no white dots. *Hindwing* as usual without markings. Underside somewhat paler than the upperside, very uniform in colour, markings as on the upperside. Antennæ black; palpi, head and body above and below and the legs concolorous with the wings, pectus and the entire abdomen beneath dull whitish.

Female like the male, but there is sometimes a white dot towards the outer margin opposite the cell of the forewing.

Expanse of wings, ♂  $1\frac{1}{2}$ , ♀  $1\frac{6}{10}$  inches.

HABITAT.—Burma, Tonkin, Annam, Siam, Java, Borneo.

DISTRIBUTION.—The type in the B. M. is from Tenasserim, recorded by Frühstorfer from Tonkin, Annam and Siam, by Elwes from Java and Borneo.



## NOTOCRYPTA MONTEITHI.

Plate 804, figs. 2, ♂, 2a, ♀, 2b, ♀.

*Plesioneura monteithi*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 391, pl. 18, figs. 3, 3a, ♀.

*Notocrypta monteithi*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 190. Watson, Hesp. Ind. p. 129 (1891); id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 544. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 241. Frühstorfer, Iris, 1911, p. 27.

IMAGO.—Male. Upperside dark brown, with a vinous tinge. *Forewing* with a discal band of four semi-transparent white spots divided by the veins, one oblong, at the end of the cell, another also oblong, below it, near the base of the first median interspace, the third smaller, at the base of the second median interspace, wedged into the junction of the other two spots, the fourth spot half the size of the first and second, in the interno-median interspace. *Hindwing* without markings. Underside. *Forewing* with the spots as on the upperside, with three sub-costal streaks connecting the discal band with the costa (these are sometimes indicated on the upperside), the lowest spot of the band much larger than it is on the upperside, reaching the sub-median vein and outwardly diffused. Cilia of both wings concolorous with the wings.

Female like the male.

Expanse of wings, ♂ ♀  $1\frac{7}{16}$  inches.

HABITAT.—Cachar, Borneo, Singapore, Sumatra.

DISTRIBUTION.—The type from Irangmara, Cachar, is in the Indian Museum, Calcutta; Elwes records it from Borneo, de Nicéville and Martin from Sumatra; our description and figures are from a pair from Singapore in the B. M.

## NOTOCRYPTA BASIFLAVA.

Plate 804, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Plesioneura basiflava*, de Nicéville, Journ. As. Soc. Bengal, 1888, p. 290, pl. 13, fig. 7, ♂. Hampson, id. p. 368.

*Notocrypta basiflava*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 193. Watson, Hesp. Ind. p. 130 (1891). Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 448. Watson, Proc. Zool. Soc. 1893, p. 113; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 241.

IMAGO.—Male. Upperside dark glossy blackish-brown, almost black. *Forewing* with a short post-medial semi-hyaline, white, fairly broad band, composed of two semi-quadrate, rather long, conjugated spots, filling up the end of the cell, the lower spot the larger, a still larger semi-quadrate spot below extending to the first median nervule, only divided from the upper spots by the median vein, its outer end extending somewhat outwards. *Hindwing* without markings. Cilia of both wings brown.

Underside almost as dark as the upperside. *Forewing* with markings similar. *Hindwing* with a chrome-yellow basal patch, varying in extent in different examples, in the type specimen the basal third of the wing is so coloured, in some examples from the Nilgiris the chrome-yellow basal patch is much more limited. Antennæ black, without markings; palpi, head and body above and the legs concolorous with the wings, palpi and thorax below greyish, abdomen cinereous.

Female like the male, the spots on the forewing a little larger.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  inches.

HABITAT.—Southern India.

DISTRIBUTION.—The type came from Travancore; we possess a male from the Nilgiris, it is a rare species; our description and figures are from the male in our collection and from a female in the B. M., also from the Nilgiris.

#### INDO-MALAYAN AND CHINESE ALLIED SPECIES.

*Notocrypta curvifascia*, *Plesioneura curvifascia*, Felder, Wien Ent. Mon. vi. p. 29 (1862). *Notocrypta curvifascia*, Leech, Butt. of China, etc. ii. p. 626, pl. 38, fig. 1, ♂ (1893). Habitat, W. China.

*Notocrypta pria*, *Plesioneura pria*, Druce, Proc. Zool. Soc. 1873, p. 359. Habitat, Borneo.

*Notocrypta volux*, *Plesioneura volux*, Mabille, Ann. Soc. Ent. Belg. 1883, p. lvi. Habitat, Luzon, Philippines.

*Notocrypta clavata*, *Plesioneura clavata*, Staudinger, Iris, 1889, p. 153, pl. 2, fig. 9. Habitat, Palawan, Philippines.

*Notocrypta celebensis*, *Plesioneura celebensis*, Staudinger, l.c. Habitat, Celebes.

*Notocrypta singularis*, *Carystus singularis*, Mabille, Ann. Soc. Ent. Belg. xxxvii. p. 51 (1893). Habitat, W. Java.

*Notocrypta rectifascia*, *Notocrypta feisthamelii* var. *rectifascia*, Leech, Butt. of China, etc. ii. p. 628, pl. 38, fig. 2, ♂ (1893). Habitat, W. China.

*Notocrypta quadrata*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 241, pl. 20, fig. 3, ♂. Habitat, Kina Balu, Borneo.

*Notocrypta inornata*, Elwes and Edwards, l.c. fig. 15, ♂. Habitat, Kina Balu.

*Notocrypta avattana*, Frühstorfer, Iris, 1911, p. 22, fig. 2 (genitalia). Habitat, Java.

*Notocrypta alinkara*, Frühstorfer, l.c. Habitat, Mindanao, Philippines.

*Notocrypta devadatta*, Frühstorfer, l.c. p. 24, fig. 3 (genitalia). Habitat, W. Sumatra.

*Notocrypta sidha*, Frühstorfer, l.c. Habitat, Java.

*Notocrypta yaya*, Frühstorfer, l.c. p. 25. Habitat, S. Celebes.

#### Genus UDASPES.

*Udaspes*, Moore, Lep. Ceylon, i. p. 177 (1881). Distant, Rhop. Malayana, p. 398 (1886). Watson, Hesp. Ind. p. 124 (1891); id. Proc. Zool. Soc. 1893, p. 113; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 432. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 243.

*Forewing*, vein 12 reaches costa just before the end of cell, cell long, but less than two-thirds the length of costa, discocellulars sub-erect, the lower considerably the

shorter, vein 5 thus being much nearer to 4 than to 6, 3 from close to lower end of cell, 2 from about one-third from the base, costa fairly well arched, apex sub-acute, outer margin evenly rounded, shorter than the hinder margin. *Hindwing*, vein 7 emitted close to upper end of cell, discocellulars and vein 5 very faint, 3 from close to lower end of cell, 2 from about one-fourth before the end, lower margin of cell slightly angled at the origin of vein 2, costa and outer margin evenly rounded. Antennæ more than half the length of costa of forewing, club moderate, with a short pointed crook; palpi porrect, second joint inclining a little upwards, densely scaled, third joint minute, bluntly conical; hind tibiæ fringed and with two pairs of long spurs.

Type, *Papilio folus*, Cramer.

#### UDASPES FOLUS.

Plate 805, figs. 1, ♂, 1a, ♀, 1b, ♀, 1c, larva and pupa.

*Papilio folus*, Cramer, Pap. Exot. i. pl. 74, fig. 7 (1779).

*Hesperia folus*, Moore, Cat. Lep. Mus. E.I.C. i. p. 252, pl. 7, figs. 7, 7a (larva and pupa) (1859).

*Tagiades folus*, Butler, Cat. Fabr. Lep. B. M. p. 283 (1869).

*Plesioneura folus*, Druce, Proc. Zool. Soc. 1874, p. 109. Butler, id. 1877, p. 615; id. idem, 1880, p. 669.

*Udaspes folus*, Moore, Lep. Ceylon, i. p. 177, pl. 68, figs. 3, 3a (1881); id. Proc. Zool. Soc. 1882, p. 263. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 54. Swinhoe, Proc. Zool. Soc. 1885, p. 146. Doherty, Journ. As. Soc. Bengal, 1886, p. 139. Distant, Rhop. Malayana, p. 398, pl. 34, fig. 3 (1886). Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 43. Watson, id. 1888, p. 27. Hampson, Journ. As. Soc. Bengal, 1888, p. 368. Elwes, Trans. Ent. Soc. 1888, p. 461. Manders, id. 1890, p. 538. de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 388. Davidson and Aitken, id. p. 372. Watson, id. 1891, p. 55. Fergusson, id. p. 448. Watson, Hesp. Ind. p. 125 (1891). Elwes, Proc. Zool. Soc. 1892, p. 655. Swinhoe, Trans. Ent. Soc. 1893, p. 327. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 428. Watson, Proc. Zool. Soc. 1893, p. 114. de Nicéville, Gazetteer of Sikkim, Butt. p. 185 (1894). Betham, Journ. Bo. Nat. Hist. Soc. 1894, p. 423. Watson, id. ix. 1895, p. 435. J. J. Walker, Trans. Ent. Soc. 1895, p. 476. Watson, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 680. Davidson, Bell and Aitken, id. p. 61 (larva and pupa). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 243. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 599; id. idem, xiv. 1902, p. 493. Aitken and Comber, id. xv. 1903, p. 54. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 144. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 372. Evans, id. p. 389. Frühstorfer, Iris, 1911, p. 28.

*Hesperia cicero*, Fabricius, Ent. Syst. iii. p. 338 (1793). Aurivillius, Ent. Tidsk. 1897, p. 150.

IMAGO.—Male. Upperside black, the basal half of both wings covered with minute yellowish scales, markings pure white, semi-hyaline. *Forewing* with a large white spot filling up the end of the cell, two similar conjoined spots outwardly below it extending from beneath vein 4 to the sub-median vein, hardly separated from each other by vein 2; four conjugated sub-apical spots, the uppermost one minute, two similar spots below them nearer the outer margin, a small spot between these and the

two large conjoined spots. *Hindwing* with a very large medial white patch with its margin sinuous all round; abdominal area covered with yellowish hairs. Underside paler. *Forewing* with the markings as on the upperside. *Hindwing* with the white medial patch extending to the abdominal margin from near the costa to one-third above the anal angle, the extension suffused with grey, also extending narrowly to the outer margin, double blackish-brown lunular marks, within the white space at the bases of the sub-median nervules. Cilia blackish, alternated with white. Antennæ black; palpi, head and body concolorous with the wings, whitish on the underside, legs brown above, whitish beneath.

Female like the male, but the spots are larger.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{8}{10}$  inches.

LARVA very stout when full grown, and has the habit of resting with the first three segments after the head contracted, so as to give the appearance of being humped about the anterior segments, the relatively small head lying with its apex pressed on the second segment; the body is flattened ventrally, as the larva always lies closely applied to the resting surface; the anal segments are sloping, and the margin is closely applied to the leaf, rounded at the extremity, and somewhat thickened at the edge; when at rest, the fourth segment is more than twice as long as the head; the head is triangular when seen from in front, and narrowly bilobed and small for the body, head black, with the surface rugose and shiny; each segment slightly swollen around the spiracles; surface of body glabrous, greasy-looking; colour of body a watery, very dark indigo-green, the tracheæ showing through as white threads; a dark dorsal pulsating line; end segment whitish; segments 2 and 3 yellowish, as well as the margins of segments 4 and 5. Length 37 mm. A good deal more when fully stretched out.

PUPA cylindrical, very slightly constricted dorsally only, behind thorax, produced into a long conical snout squarely blunt at tip; the eyes prominent; the abdomen tapering and ends in a thin, long, more or less tapering, curved cremaster; the proboscis reaches to the end of the cremaster, the colour is a watery bright green. Length 32·75 mm.

HABITS.—The larva feeds on *Curcuma aromatica*, the imago rests with its wings closed over the back, but basks generally with them half open; they are insects of damp and shade, frequenting the beds of nullahs and damp evergreen portions of the district, they are not very strong fliers, and rest often, and always close down near the ground on a convenient upperside of a leaf. The larva makes a lax cell by turning over a triangular piece from the edge on to the upper surface of a leaf. We have bred some individuals of *Udaspes folus* from pupæ that have lain over for nearly two months after the rains; the individuals differed from the pupæ that came out in the normal time in having the tip of the forewing decidedly bleached or faded. The larva is to be

had in any number during the rains. In the dry weather, owing to the food-plant dying down, it is not at all common anywhere. (Davidson, Bell and Aitken.)

HABITAT.—India, Ceylon, Burma, China, Malay Peninsula, Java, Siam, Sambawa, Bali.

A very common species, recorded from many localities within our limits. The larva and pupa are from Davidson's original drawings, not previously published.

#### Genus TAMELA, nov.

*Kerana*, Distant (part), Rhop. Malayana, p. 402 (1886). Watson, Hesp. Ind. p. 148 (1891); id. Proc. Zool. Soc. 1893, p. 115; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 430. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 220.

*Forewing*, vein 12 ends on costa before end of cell; cell long, nearly two-thirds the length of costa, discocellulars in an oblique straight line, the lower about half as long as the middle discocellular, vein 3 from a little before lower end of cell, 2 from about one-third from the base, sub-median vein recurved; costa slightly arched, apex blunt, outer margin evenly rounded, about as long as the hinder margin in the male, the hinder margin somewhat the longer in the female. *Hindwing*, vein 7 emitted close to upper end of cell, discocellulars and vein 5 faint, 3 from close to the lower end of the cell, 2 from less than one-third from the end; costa and outer margin evenly rounded. Antennæ long, more than half the length of the costa of forewing; club moderate, with a pointed crook; palpi with the second joint inclining upwards, densely scaled, third joint minute, bluntly conical; hind tibiæ with short recumbent hairs and with two pairs of long spurs; no secondary sexual characters.

Type, *Nisoniades diocles*, Moore.

Differs from the genus *Kerana* in the absence of the strongly marked secondary sexual characters on both wings in that genus, and in many other important characters; the type of *Kerana* is *Astictopterus armatus*; the contour of the wings is different, the costa of the forewing in *armatus* is much more highly arched, the hindwing is shorter; the anteunæ of *armatus* has a shorter and more gradual club containing on its underside short stiff bristles up to its tip, a character altogether absent in *diocles*; in the forewing the origin of vein 3 is much farther from the lower end of the cell than it is in *diocles*, nearly twice as far; and in the hindwing also the origin of vein 3 is much farther from the lower end of the cell.

#### TAMELA DIOCLES.

Plate 805, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Nisoniades diocles*, Moore, Proc. Zool. Soc. 1865, p. 787.

*Astictopterus diocles*, Druce, Proc. Zool. Soc. 1873, p. 359. Moore, id. 1878, p. 842. Moore, Journ.

- Linn. Soc. Zool. Lond. 1886, p. 52. Elwes, Trans. Ent. Soc. 1888, p. 463. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 28. Manders, Trans. Ent. Soc. 1890, p. 538.
- Kerana diocles*, Distant, Rhop. Malayana, p. 403, pl. 34, fig. 8 (1886). Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 439. Wood-Mason and de Nicéville, id. p. 381. Watson, Hesp. Ind. p. 148 (1891). Elwes, Proc. Zool. Soc. 1892, p. 663. Swinhoe, Trans. Ent. Soc. 1893, p. 328. Watson, Proc. Zool. Soc. 1893, p. 115. de Nicéville, Gazetteer of Sikkim, Butt. p. 185 (1894). de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 539. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 222. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 144. Hannyngton, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 372. Frühstorfer, Iris, 1911, p. 9.

IMAGO.—Male. Upperside uniform deep glossy olive-brown without any markings. Underside somewhat paler, the hinder marginal space of the forewing and a broad discal space running close to the outer margin in some specimens, paler than the rest of the wing. Antennæ black, the upper part of the shaft and the club almost to the tip white on the underside. Cilia of both wings, palpi, head and body above and below and the legs concolorous with the wings.

Female like the male, but paler and duller in colour.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  to  $2\frac{3}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma, Malay Peninsula and Archipelago.

DISTRIBUTION.—The types are marked Bengal; we have it from Sikkim, Johore and Brunei, Borneo, and have received many examples from the Khasia Hills; Hannyngton records it also from Kumaon, Manders from the Shan States, Moore from Tenasserim and Mergui, Elwes and de Nicéville from Tavoy, Watson from Meetan, 3,000 feet elevation, Elwes from Sikkim, 3,000 feet elevation, Perak, Java, Pulo Laut and Nias; de Nicéville and Martin from Sumatra. We give, in our statement of allied species, a list of local forms described by various authors; without examining the types it is impossible to express any opinion about them; we have, however, seen examples from several of the localities mentioned by them, which we cannot separate from *diocles*.

#### INDO-MALAYAN ALLIED GENERA AND SPECIES.

- Tamela fumatus*, *Tagiades fumatus*, Mabille, Bull. Soc. Ent. Fr. 1876, p. 26; id. Ann. Soc. Ent. Fr. 1876, p. 271. Habitat, Luzon, Philippines.
- Tamela gemmifer*, *Astictopterus gemmifer*, Butler, Trans. Linn. Soc. Zool. Lond. 1877, p. 555. *Kerana gemmifer*, Distant, Rhop. Malayana, p. 403, pl. 34, fig. 29 (1886). Habitat, Borneo, Perak, Natuna Island.
- Tamela maura*, *Tagiades maura*, Snellen, Midd. Sum. Lep. p. 28 (1892). Habitat, Sumatra.
- Tamela fulgur*, *Kerana fulgur*, de Nicéville, Journ. As. Soc. Bengal, 1894, p. 55, pl. i. fig. 6, ♀; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 383, pl. Q, fig. 54, ♂. Habitat, Sumatra.
- Tamela prabha*, *Kerana diocles prabha*, Frühstorfer, Iris, 1911, p. 10. Habitat, Basiland Island, Philippines.

- Tamela evaira*, Kerana diocles evaira, Frühstorfer, l.c. Habitat, Siam.  
*Tamela sumara*, Kerana diocles sumara, Frühstorfer, l.c. Habitat, Nias.  
*Tamela vasuba*, Kerana diocles vasuba, Frühstorfer, l.c. Habitat, W. Java.  
*Tamela savara*, Kerana diocles savara, Frühstorfer, l.c. Habitat, Kina Balu, N. Borneo.  
*Tamela dombya*, Kerana gemmifer dombya, Frühstorfer, l.c. Habitat, N. Borneo.  
*Tamela vajrada*, Kerana vajrada, Frühstorfer, l.c. p. 11. Habitat, Kina Balu.  
*Kerana armata*, Astictopterus armata, Druce, Proc. Zool. Soc. 1873, p. 359, pl. 33, fig. 7. Kerana armata, Distant, Rhop. Malayana, p. 402, pl. 35, fig. 31 (1886). Habitat, Perak, Borneo, Nias.

### Sub-Family PLASTINGIINÆ.

Antennæ long, more than half the length of the costa of forewing, generally about two-thirds the length, club moderate or slender, the tip more or less evenly curved; palpi upturned in front of the face, second joint densely scaled, third short, more or less concealed by the clothing of the second joint; hind tibiæ with two pairs of spurs. *Forewing* somewhat apically produced, vein 3 emitted near the lower end of the cell, 2 from before the middle, except in the genus *Creteus*, in which the bases of veins 3 and 2 are a little more inwards. *Hindwing* with the discocellulars and vein 5 faint, veins 3 and 2 from close to lower end of cell, their bases being generally close to each other.

#### Genus PLASTINGIA.

- Plastingia*, Butler, Ent. Mo. Mag. 1870, p. 95. Distant, Rhop. Malayana, p. 396 (1885). Watson, Hesp. Ind. p. 113 (1891); id. Proc. Zool. Soc. 1893, p. 118; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 430. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 224.

*Forewing*, vein 12 ends on costa well before the end of the cell, cell less than two-thirds the length of the costa, upper discocellular very minute, middle and lower discocellulars inwardly oblique, the lower the shorter; vein 3 emitted about one-eighth before lower end of cell, 2 from before the middle, being a little more than one-third from the base, lower margin of the cell bowed downwards at the origin of vein 2; costa slightly arched, apex blunt, outer margin convex, about as long as the hinder margin in the male, somewhat shorter in the female, making the wing comparatively longer. *Hindwing*, vein 7 emitted one-fifth before upper end of cell, discocellulars and vein 5 faint, vein 3 emitted close to lower end of cell, 2 about one-fourth before the end; lower margin of cell bent downwards at vein 2; wing somewhat elongate, the outer margin rounded to the end of the sub median vein and from thence slightly sinuous. Antennæ long, quite two-thirds the length of the costa of forewing, club slender, gradual, rather long, gently curved at the end, which is pointed; palpi

prominent, curling round upwards, second joint densely scaled, third joint minute, obtusely conical; hind tibiæ slightly fringed at the side and with two pairs of spurs.

Type, *Hesperia* (?) *tessellata*, Hewitson.

#### PLASTINGIA NAGA.

Plate 805, figs. 3, ♂, 3a, ♀, 3b, ♀.

*Hesperia* (?) *naga*, de Nicéville, Journ. As. Soc. Bengal, 1883, p. 89, pl. 10, fig. 2, ♀.

*Plastingia naga*, Watson, Hesp. Ind. p. 115 (1891). Semper, Rhop. Philipp. p. 314 (1892).

Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc.

1897, p. 229. Frühstorfer, Iris, 1911, p. 15.

*Plastingia tessellata*, Watson (part), Proc. Zool. Soc. 1893, p. 118.

*Plastingia tessellata*, Adamson (nec Hewitson), Trans. Nat. Hist. Soc. Northumberland, etc. 1908, p. 144.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with a dull yellow narrow sub-costal streak from the base to near end of cell; another similar streak immediately above the hinder margin, and a very fine, indistinct short streak in the middle between them; an ochreous-white semi-hyaline spot at the end of the cell, a larger spot in the first median interspace below the base of vein 3, a somewhat smaller spot outside, near the base of the second median interspace, the three spots placed in a triangular form, a sub-apical small spot well away from the costa in a line with the cell spot. *Hindwing* with an elongated streak of dull yellow hairs through the cell, more or less forked at its end, and two similar streaks near the abdominal margin. Cilia brown, touched with cinereous in parts on the hindwing. Underside. *Forewing* blackish-brown, but paler than on the upperside, the ochreous-white semi-hyaline spots as above, a narrow white streak immediately below the costa, for half its length from the base, a whorl of short white sub-apical streaks divided into two parts by the sub-apical ochreous-white semi-hyaline spot, and a series of similar white streaks close to the outer margin, decreasing in length hindwards and not reaching the hinder angle. Cilia white, alternated with blackish-brown opposite the vein-ends. *Hindwing* black, the entire surface, to the sub-median vein covered with short white streaks in the interspaces, a white streak down the sub-median vein and one or two white marks in the abdominal fold. Cilia white basally, cinereous outwardly. Antennæ blackish-brown, the hinder half of the club white beneath; palpi, head and body above and below and the legs concolorous with the wings; head with some white marks, thorax with dull yellow hairs, abdomen with whitish segmental bands; palpi beneath and pectus white.

Female like the male, but the ground colour of both sides somewhat paler, the white sub-apical streaks and the marginal streaks on the underside of the forewing generally duller, the white streaks on the hindwing broader, the white marks in the abdominal fold enlarged into a prominent streak.



Expanse of wings, ♂  $1\frac{6}{10}$ , ♀  $1\frac{7}{10}$  inches.

HABITAT.—Assam, Burma, Sumatra, Philippines.

DISTRIBUTION.—The type, a female in the Indian Museum, Calcutta, came from Sibsaghor in Upper Assam. We have both sexes from the Khasia and Jaintia Hills, from which our figures and description are taken; Adamson records it from Amherst, Burma; Elwes from Eastern Pegu, and Lawas, N. Borneo; Semper from E. Mindanao, Philippines; it is near but undoubtedly distinct from *P. tessellata*, Hewitson = *eulepis*, Felder, from the Celebes, the types of which we have carefully examined.

#### PLASTINGIA LATOIA.

Plate 806, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Hesperia latoia*, Hewitson, Descr. Hesp. p. 34 (1868); id. Exot. Butt. v. Hesp. pl. vi. figs. 62, 63 (1873).

*Plastingia latoia*, Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 227, pl. 24, fig. 53 (genitalia). Frühstorfer, Iris, 1911, p. 13.

*Plastingia callineura*, Watson (part), Hesp. Ind. p. 113 (1891); id. Proc. Zool. Soc. 1893, p. 118.

IMAGO.—Male. Upperside dark chocolate-brown. *Forewing* with a dark orange sub-costal streak from the base ending in a point at one-third before the apex, with a small orange spot below its end, all the other markings orange-ochreous; two elongated sub-apical spots, an inwardly oblique straight band of five elongated spots, commencing with a small one in interspace 5, somewhat near the outer margin, the next spot in interspace 4 is much larger, the rest increasing in size hindwards, the spot in interspace 2 long and sub-quadrate, filling more than half the interspace, all the above semi-hyaline; the lowest spot is in the interno-median interspace and is opaque and darker orange-ochreous than the others, and narrows basally. *Hindwing* with a short discal, orange-ochreous band, its inner side connected with a similarly coloured streak from the base of the wing, and there is another orange-ochreous streak along the inner side of the abdominal fold. Cilia of both wings orange. Underside bright orange. *Forewing* with a pale ochreous patch filling the inner two-thirds of the interno-median interspace; costal line black, a black streak along the sub-costal vein, a thicker black streak, interrupted at its middle along the median vein, a submarginal series of elongated blackish spots with square ends, the lower ones larger than the others, the series ending in a suffused black patch at the hinder angle, the black colour running up the hinder margin. *Hindwing* with black streaks, one in the cell, a discal series of short streaks, a thick streak from the base along each side of the abdominal fold ending in a black patch at the anal angle. Antennæ black, its tip orange; palpi above with orange and black hairs, thorax with ochreous-grey setæ, abdomen black with orange segmental bands; on the underside the palpi are ochreous-grey, the thorax

grey, abdomen ochreous with thin black segmental bands, legs black above, ochreous beneath.

Female like the male, the forewing has a spot attached above the large discal spot, and the spot below the subcostal streak is much larger than it is in the male, and on the underside the ground colour of the wings is ochreous-grey.

Expanse of wings, ♂  $1\frac{2}{10}$ , ♀  $1\frac{1}{2}$  inches.

HABITAT.—Mergui, Malay Peninsula and Archipelago.

DISTRIBUTION.—A single specimen taken by Dr. Anderson in Sullivan Island, now in the Indian Museum, Calcutta, is the only record within our limits; the type came from Singapore; Elwes records it from Pulo Laut, E. Java, and Sumatra; we have a male from Borneo; it is abundantly distinct from *P. callineura*, Felder, the type of which is now before us.

#### PLASTINGIA MARGHERITA.

Plate 806, figs. 2, ♂, 2a, ♂.

*Plastingia margherita*, Doherty, Journ. As. Soc. Bengal, 1889, p. 131, pl. 10, fig. 5, ♂. Watson, Hesp. Ind. p. 115 (1891). Elwes, Proc. Zool. Soc. 1892, p. 657. Watson, id. 1893, p. 118; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 227, pl. 24, fig. 54, 54a (genitalia).

IMAGO.—Male. Above black, with light golden-ochreous translucent markings, and rich orange-ochreous opaque ones. Of the former there are on the *forewing* two unusually large, elongate-quadrate, sub-apical ones, separated by a vein, the lower longest; one large oblique cellular one of hour-glass shape; and three discal ones in echelon, of which one is very large, occupying the entire breadth of the lower median space, irregularly pentagonal, twice as long as broad, separated from the cell-spot only by the black median vein; the other two smaller, elongate, broadest outwardly. Also with the following opaque markings: one above the cell and one in the interno-median space extending obliquely from the internal vein not far from the base to the lower median vein, which separates it from the basal part of the larger discal spot. *Hindwing* with a large irregular ochreous patch in the disc just beyond the cell, consisting of two translucent areas joined by the opaque orange-ochreous base of the upper median space, the outer one larger, obliquely quadrate, between the lower sub-costal and upper median branches, the other occupying the basal part of the lower median space. Below blackish, the veins, except near the abdominal margin of both wings, widely bordered with reddish-ochreous. *Forewing* with the rufous costal area extending over the upper part of the cell; that in the interno-median space much larger and paler than above. *Hindwing* with a number of lustrous lilac markings in the black spaces between the reddish nerve-rays, namely, two in the cell, the basal one elongate, one at the base of the costa, elongate, two in the upper sub-costal space, the outer one

elongate, one in the lower sub-costal space, quadrate, and three in the median and sub-median spaces, in a line receding from the border. Cilia ochreous.

One male, *Margherita*, and a similar one, *Sadiya*. The species is a local form (differing in the large sub-apical spots, the absence of the outer—fourth—discal spot, the undivided cell-spot separated from the interno-median one, and in the ochreous patch of the hindwing consisting of two hyaline and one opaque space and confined to the disc) of another found in the three Indo-Malayan islands, the Malayan Peninsula and Mergui, but everywhere rare. The Javanese form (*callineura*) seems, judging from my specimens, to differ but slightly. The single, very worn Mergui specimen, taken by Dr. Adamson, has been identified by Mr. Moore as *Plastingia latoia*, Hewitson. But that species (and *P. callineura*, Felder, which is regarded as conspecific with it) has been described and figured by Hewitson, Felder and Distant, with ochreous sub-marginal spots on the hindwing below, no blue ones being mentioned. In any case the above-mentioned characters separate my species as a distinct local form.

The egg of several species of *Plastingia* examined by me generally resembles that of *Suastus*. But like those of *Hesperia satwa*, de Nicéville, and the species of *Cupitha*, though in a lesser degree, it possesses a large crown-like mass of white cells apically, surrounding the micropyles, as delicate in structure as the finest lace. They are the most beautiful butterfly-eggs known to me. (Doherty.)

Expanse of wings, ♂  $1\frac{1}{2}$  inches.

HABITAT.—Assam.

DISTRIBUTION.—The unique type from Margherita, in Upper Assam, is in Coll. Elwes; we have not seen it, and therefore give copies of Doherty's figure.

#### PLASTINGIA CALLINEURA.

Plate 806, figs. 3, ♂, 3a, ♂.

*Hesperia callineura*, Felder, Reise, Nov. Lep. iii. p. 513, pl. 71, figs. 9, 10 (1866).

*Plastingia callineura*, Druce, Proc. Zool. Soc. 1873, p. 359. Butler, Trans. Linn. Soc. Zool. 1877, p. 355. Mabille, Ann. Soc. Ent. Belg. xxi. p. 36 (1878). Plötz, Stett. Ent. Zeit. xlv. p. 148 (1884). Distant, Rhop. Malayana, p. 396, pl. 35, fig. 26 (1886). Watson (part), Hesp. Ind. p. 113 (1891); id. Proc. Zool. Soc. 1893, p. 118; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 226, pl. 24, fig. 52 (genitalia). Frühstorfer, Iris, 1911, p. 13.

IMAGO.—Male. Upperside. *Forewing* blackish-brown, the spots pale ochreous and semi-hyaline; two sub-apical, the upper one very small, a small bifid spot outwardly below them, and an unusually broad, discal series of five spots divided by the veins, consisting of a long narrow spot in the lower basal half of the third median interspace, a short broad one near the base of the second median interspace, a very

long spot in the first median interspace and a long narrow streak in the interno-median interspace; a long narrow streak near the lower end of the cell attached to the inner upper half of the largest spot, with a small elongated spot above and well separated from it. *Hindwing* with a short pale ochreous, semi-hyaline discal band, filling up more than the basal halves of interspaces 2, 3 and 4, and extending hindwards a little below interspace 2. Cilia of both wings ochreous-white, becoming darker ochreous towards the anal angle of the hindwing. Underside with the ground colour ochreous-grey tinged with pinkish. *Forewing* with the spots as above, costal line black, a black streak through the cell, some black at the base and the end of the cell, continued in a streak above the uppermost discal spot; a series of short, black sub-marginal streaks from the apex ending in a large black space outside the discal spots, filling the hinder angle and extending up the hinder margin. *Hindwing* with all the cell and the interspaces on both sides of the discal band with short black streaks, the streaks near the abdominal margin continued to the base of the wing and terminating hindwards in a large black patch at the anal angle. Antennæ broken; palpi and thorax above touched with ochreous hairs, the body above is concolorous with the wings, abdomen with pale ochreous segmental bands; on the underside the palpi, pectus and abdomen are ochreous-grey, the thorax blackish, the abdomen with bands as on the upperside; the legs ochreous.

Expanse of wings, ♂  $1\frac{7}{10}$  inches.

HABITAT.—Java, Burma.

DISTRIBUTION.—Felder's type, kindly lent to us by the Honourable Walter Rothschild, and from which our description and figures are taken, is from Java; Elwes and Edwards record it from Eastern Pegu; it must be a very rare species; we have never obtained it, and it is not in the B. M.; it is altogether quite different from *latoia*, with which Watson put it; the spots on the discal band of the forewings in Felder's figure are too small.

#### PLASTINGIA NOËMI.

Plate 806, figs. 4, ♂, 4a, ♂.

*Plastingia noëmi*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 120, pl. 2, fig. 15, ♂. Elwes, Trans. Ent. Soc. 1888, p. 460. Watson, Hesp. Ind. p. 114 (1891). Elwes, Proc. Zool. Soc. 1892, p. 657. Watson, id. 1893, p. 118. de Nicéville, Gazetteer of Sikkim, Butt. p. 186 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 230, pl. 24, fig. 57, 57a (genitalia).

IMAGO.—Male. Upperside black. *Forewing* with a fusiform chrome-yellow streak on the costa from the base to nearly half the length of the wing, a similarly coloured streak placed below the median nervure and divided by the sub-median into two unequal parts, the lower portion the smaller, extending to rather more than half

the inner margin of the wing from the base, and with two or three sub-apical conjoined increasing spots, two lengthened spots at the end of the cell placed one above the other, the upper one the smaller, a triangular spot towards the base of the second median interspace, a much larger one towards the base of the first, all semi-transparent yellowish-white. *Hindwing* with a chrome-yellow patch placed in the middle of the disc just beyond the cell, and divided by the black nervules. Underside. *Forewing* black, the costa narrowly, the apex very widely, and a patch placed in the middle of the sub-median interspace chrome-yellow; the semi-transparent spots as above, five rounded small black spots placed in an outwardly-angled sub-apical series. *Hindwing* chrome-yellow, the margin increasingly to the anal angle, then decreasingly up the abdominal margin black, a sub-basal spot, another at the end of the cell, a series of eight spots placed round the cell, all black. Antennæ black, the club yellow; thorax and base of abdomen above clothed with long greenish-ochreous hairs, the rest of the abdomen black ringed with yellow, the thorax and legs beneath chrome-yellow. (de Nicéville.)

Expanse of wings, ♂  $1\frac{6}{10}$  inches.

HABITAT.—Sikkim.

We have not seen this species, the type being in the Indian Museum, Calcutta; we give copies of de Nicéville's figure; it is not in the B. M.

#### PLASTINGIA CORISSA.

Plate 806, figs. 5, ♂, 5a, ♀, 5b, ♀.

*Hesperia corissa*, Hewitson, Ann. Mag. Nat. Hist. 1876, p. 455.

*Plastingia corissa*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 229. Swinhoe, Trans. Ent. Soc. 1908, p. 28. Frühstorfer, Iris, 1911, p. 16.

*Plastingia drancus*, Plötz, Stett. Ent. Zeit. xlv. p. 149 (1884); unpublished plate, No. 726.

*Isoteinon indrasana*, Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 441, pl. 20, fig. 5, ♀. Watson, Hesp. Ind. p. 86 (1891).

*Zographetus indrasana*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 429.

IMAGO.—Male. Upperside brown, with an ochreous tint. *Forewing* with some ochreous setæ at the base; two sub-apical spots, the upper one small, a round spot at the lower end of the cell, a large sub-quadrate spot close below it, near the base of the first median interspace, a much smaller similar spot, close to its upper outer end, in the middle of the second median interspace, all these spots yellowish-white and semi-hyaline, a long spear-shaped dark ochreous streak before the middle of the interno-median interspace on the sub-median vein. *Hindwing* with the basal and lower portions covered with long ochreous hairs; a dark ochreous patch composed of two or three conjoined streaks outside the cell end and at the base of the second

median interspace. Cilia of forewing brown, becoming grey hindwards; of hindwing grey, becoming ochreous hindwards. Underside. *Forewing* with more than the lower half blackish, the upper portion of the wing and the apex broadly reddish-ochreous, the spots as on the upperside, the dark ochreous streak of the upperside replaced by a white spot. *Hindwing* uniform reddish-ochreous, without any markings. Antennæ black, its underside whitish, the shaft with thin blackish bands; palpi with ochreous-grey and brown hairs; head and body above and below concolorous with the wings.

Female like the male, but the spots are smaller.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to  $1\frac{6}{10}$  inches.

HABITAT.—Borneo, Burma.

DISTRIBUTION.—Hewitson's type male, which is unique in the B. M., and from which our description and figures are taken, is from Borneo; the type female of *indrasana* from Tavoy, Burma, is in the Indian Museum, Calcutta; de Nicéville made *indrasana* a synonym to *corissa*.

#### PLASTINGIA SUBMACULATA.

Plate 807, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Plastingia submaculata*, Staudinger, Iris, ii. p. 149, pl. 2, fig. 8, ♂ (1889). Elwes and Edwards,

Trans. Zool. Soc. 1897, p. 230. de Nicéville, Journ. As. Soc. Bengal, 1900, p. 268.

*Isma submacula*, Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 47.

*Pedestes submacula*, Frühstorfer, Iris, 1910, p. 99.

*Pedestes maculicornis*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 193, pl. 18, fig. 23, ♂, and pl. 24, fig. 42 (genitalia).

*Pedestes fuscicornis*, Elwes and Edwards, l.c. p. 194, pl. 18, fig. 25, ♂, and pl. 24, fig. 43 (genitalia).

IMAGO.—Male. Upperside dark olive-brown, of about the same colour as *P. naga*, de Nicéville. *Forewing* with similar streaks from the base, one sub-costal and the other near the hinder margin, the spots whiter than in *naga*, but similarly disposed, a large sub-quadrate one near the base of the first median interspace, two spots in the cell, one above the other (in *naga* there is only one), the lower spot immediately above the large spot, another sub-quadrate spot before the middle of the second median interspace, no sub-apical spots. *Hindwing* without markings. Cilia of both wings white, with small brown patches at the vein ends on the forewing, the base of cilia on both wings brown. Underside dark greenish-yellow, the ground colour is really dark brown, but the costa and apical space of the forewing and the entire surface of the hindwing are covered with minute greenish-yellow scales. *Forewing* with the lower part dark brown, the spots as on the upperside, a large whitish streak below the lowest discal spot, the hinder margin narrowly whitish, a recurved sub-apical series of blackish spots. *Hindwing* with a black spot at the end of the cell and an all-round

series of black spots commencing with two in interspace 7, one of them being near the base, one in each lower interspace and two in the interno-median interspace, the last of these near the base, also an indistinct marginal series of blackish lunular marks, increasing in size hindwards, ending in a little blackish suffusion at the anal angle. Antennæ black, the shaft with white dots beneath, the club whitish below, its tip dull orange; palpi, head and body above concolorous with the wings, abdomen with greyish-yellow bands; on the underside the palpi, body and legs are greenish-yellow, like the colour of the hindwing, the palpi beneath with yellowish-grey and black scales.

Female similar to the male.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  inches.

EGG.—The egg is laid on the underside of the leaves. It is dome-shaped, standing on a narrow band. It has fourteen "meridians" which start from the top of the band and run towards the top of the dome; these meridians are thin and raised above the surface. The surface is very finely lined transversely to the meridians. The colour is greenish, with the meridians brown. As the egg found was empty, the larva having eaten its way out of the top and made a large hole, the fact as to whether the meridians meet at the top of the egg cannot be stated. Breadth 0·8 mm.

LARVA.—The head is semi-elliptical in shape, slightly rough as to surface, somewhat shiny, very light yellow-brown in colour, with a dark brown band down the back (not visible from the front) just reaching the jaws, a brown medial line splitting down the sides of the clypeus, and a somewhat brownish line, broadest in the middle of its length, on each lobe of the face, starting from the clypeus, and diverging from the middle line of the face, and nearly reaching the vertex of the lobe; the jaws and the lower parts of the clypeus dark brown; the head is much larger than the second segment. Body broadest at segment 5, sub-cylindrical in shape, the last segment, ending semicircularly, is sloping and rather large, slightly corrugated on the dorsum towards the posterior margin, and with a small, lateral, round, tubercular, light yellow-brown spot. All the segments are clearly distinguished. The spiracles are of the ordinary size, rather round (actually slightly oval), light yellowish-brown in colour. Each segment has a good many colourless glossy-looking spots towards its front margin; these spots are small, but clearly visible under the lens. The surface of the body is finely frosted and dull, destitute of hairs except round the margin of segment 14. General colour of the larva bluish-greeny-white, beneath yellowish-green. Total length, 22 mm.

PUPA like that of *Suastus gremius*, Fabr. Head as broad if not broader than at the shoulders, and is, together with the segment 2, very large for the pupa and is slightly bowed. Thorax slightly short, strong, convex, but only slightly humped. Body of the same breadth from the shoulders to segment 8, and tapering to the end; constricted between segments 2 and 3; the body is circular in transverse section from

segments 3 to 13; spiracular expansion of segment 2 large, nearly flush with the thorax, semicircular in shape, dark brown in colour; spiracles small, linear, dark red-brown; surface of the body finely rugose. Eyes and cremaster covered with short erect hairs, surface of pupa bearing short erect hairs as seen under the lens, with slightly longer hairs on the posterior portion. Cremaster hexagonal, small, with next to no suspensory hairs, brown. The pupa has the head green with a shade of brown, the thorax is green, and the abdomen waxy-yellow; the surface is covered with a white powder. The cell in which it is formed is tightly closed, and the pupa is attached very slightly by the tail only.

HABITS.—The habits of the larva are similar to those of *S. gremius*, the cell being made tightly, clothed with silk inside, and the edge eaten in crenulations. The larva eats above the cell towards the point of the leaf, leaving the midrib, and pupates in the cell. Great quantities of old cells are found, pointing to the fact that the larvæ are very liable to the attacks of enemies. The food plants are always found in dark shady evergreen jungle. The pupa cell is cut free by the larva before pupation and falls to the ground, and no pupa is therefore ever found except among the rubbish at the foot of the plant.

This butterfly appears in the second Kanara list as *Isma submaculata*, Staud. In Trans. Zool. Soc. xiv. p. 230, Elwes and Edwards place it in the genus *Plastingia*, in which it was originally described, but say they have not seen a specimen of it. On page 193 they describe *Pedestes maculicornis* as a new species from Pulo Laut. In my opinion this species is a synonym of *P. submaculata*. In my collection there are specimens from Kanara, Cachar, the Daunat Range, Perak and Pulo Laut. It was originally described from Palawan. In spite of the key to the species of the genus *Pedestes* given by Elwes and Edwards on p. 193, I am unable to separate *P. fuscicornis*, described by those gentlemen also from Pulo Laut, from their *P. maculicornis*. (de Nicéville.)

HABITAT.—South India, Burma, Malay Peninsula and Archipelago.

DISTRIBUTION.—The type came from Palawan; de Nicéville records it from Kanara, Cachar, the Daunat Range, Burma, Perak and Pulo Laut; Davidson, Bell and Aitken also record it from Kanara, their specimen, which was submitted to de Nicéville and identified by him, a perfect specimen, has been lent to us for figuring; before seeing de Nicéville's notes in the Journal of the Asiatic Society of Bengal we had come to the conclusion that the two *Pedestes* erected by Elwes and Edwards, *maculicornis* and *fuscicornis*, with recurved terminal crook to their antennæ, were identical with *Plastingia submaculata*. In putting this species into the genus *Pedestes*, de Nicéville could not have examined the structure of his specimens, it has the underside pattern of *Pedestes*, but has the structure and antennæ of *Plastingia*; the form of the antennæ at once separates it from the genus *Pedestes*, the antennæ being long, club slender,



with a recurved terminal crook, tip acuminate, as stated by Watson, whereas the antennæ of *Pedestes*, as also stated by Watson, are short, club robust, arcuate with no distinct terminal crook, tip acuminate.

## PLASTINGIA PUGNANS.

Plate 807, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Parnara pugnans*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 384, pl. G, fig. 30, ♀. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 284.

IMAGO.—Male. Upperside ochreous-brown, spots ochreous-white. *Forewing* with two linear spots well separated from each other at the end of the cell, the lower the longer, three sub-apical small spots, the lowest the largest; a large, elongate, sub-quadrate spot in the first median interspace, its upper inner half only separated from the lower cell spot by the median vein, its outer upper end nearly touching two elongated spots at the bases of interspaces 3 and 4, these four spots being close together and only divided from each other by the veins, a small dot between the lower sub-apical spot and the uppermost discal spot.

*Hindwing* without markings, the lower half of the wing covered with long, dull ochreous hairs. Cilia of both wings brown. Underside paler and duller in colour, markings similar, the hindwing without the ochreous hairs. Antennæ black, dull ochreous-red beneath; palpi with black and white hairs; head and body concolorous with the wings, thorax beneath with some grey and white hairs, the anal half of the abdomen with some whitish bands on the underside, legs ochreous-brown.

Female like the male.

Expanse of wings, ♂ ♀  $1\frac{1}{10}$  to  $1\frac{1}{2}$  inches.

HABITAT.—Borneo, Sumatra, Nias, Burma.

DISTRIBUTION.—The types in the Indian Museum, Calcutta, are from Borneo; de Nicéville also records it from Nias and Sumatra; it is in our collection from Brunei, Borneo, and from the Ataran Valley, Burma; Elwes records it also from Pulo Laut.

## INDO-MALAYAN ALLIED SPECIES.

*Plastingia tessellata*, *Hesperia tessellata*, Hewitson, Trans. Ent. Soc. 1866, p. 494. Synonym, *Hesperia eulepis*, Felder, Reise, Nov. Lep. p. 517, pl. 72, fig. 12, ♀ (♂ *ex errore*) (1867). Habitat, Celebes.

*Plastingia flavescens*, *Hesperia flavescens*, Felder, l.c. p. 517, pl. 72, figs. 7, ♂, 8, 9, ♀ (1867). *Plastingia flavescens*, de Nicéville and Martin, l.c. p. 541. Habitat, Celebes.

*Plastingia liburnia*, *Hesperia liburnia*, Hewitson, Descr. Hesp. p. 33 (1868); id. Exot. Butt. v. Hesp. pl. 6, figs. 58, 59 (1873). *Plastingia liburnia*, Semper, Rhop. Philipp. p. 313 (1892). Habitat, Philippines.

*Plastingia helena*, Butler, Lep. Exot. p. 190, pl. 64, fig. 3 (1874). Habitat, Borneo.

- Plastingia telesinus*, *Carystus telesinus*, Mabille, *Pet. Nouv. Ent.* ii. p. 205 (1878). *Suastus telesinus*, Semper, l.c. p. 300 (1892). Synonym, *Carystas lænas*, Mabille, *Rendus Soc. Ent. Belg.* iv. p. cxix. (1891). Habitat, Philippines.
- Plastingia vermiculata*, *Hesperia vermiculata*, Hewitson, *Ann. Mag. Nat. Hist.* 1878, p. 346. *Plastingia vermiculata*, de Nicéville, *Journ. As. Soc. Bengal*, 1894, p. 56, pl. 5, fig. 15, ♂. Habitat, Sumatra.
- Plastingia palawana*, *Plastingia tessellata*, var. *palawana*, Staudinger, *Iris*, 1889, p. 149. Habitat, Philippines.
- Plastingia flavia*, *Plastingia callineura flavia*, Staudinger, l.c. p. 150. Habitat, Palawan, Philippines.
- Plastingia viburnia*, Semper, l.c. p. 314 (1892). Habitat, Mindoro, Philippines.
- Plastingia frühstorferi*, Mabille, *Ann. Soc. Ent. Belg.* xxxvii. p. 52 (1893). Elwes and Edwards, *Trans. Zool. Soc.* 1897, p. 227, pl. 19, fig. 19, ♂, and pl. 24, figs. 55, 55a (genitalia). Habitat, Java, Sumatra.
- Plastingia aurantiaca*, Elwes and Edwards, l.c. p. 228, pl. 19, fig. 17, ♂. Habitat, N. Borneo.
- Plastingia similis*, Elwes and Edwards, l.c. p. 230, pl. 19, fig. 18, ♂, and pl. 24, figs. 56, 56a (genitalia). Habitat, Pulo Laut.
- Plastingia niasana*, Frühstorfer, *Ent. Zeit. Stuttgart*, 1909, p. 171. Habitat, Nias.
- Plastingia natuna*, *Plastingia helena natuna*, Frühstorfer, l.c. Habitat, Natuna Island.
- Plastingia mangolina*, *Plastingia tessellata mangolina*, Frühstorfer, l.c. Habitat, Sula-Mangoli, Sula-Besi, East of Celebes.
- Plastingia samanga*, *Plastingia flavescens samanga*, Frühstorfer, l.c. Habitat, S. Celebes, Samanga.
- Plastingia atala*, *Plastingia flavescens atala*, Frühstorfer, l.c. p. 172. Habitat, Central Celebes Dongala.
- Plastingia pellationia*, *Plastingia naga pellationia*, Frühstorfer, l.c. p. 172. Habitat, W. Java.
- Plastingia valenia*, *Plastingia naga valenia*, Frühstorfer, l.c. Habitat, E. Java.
- Plastingia patmapana*, Frühstorfer, *Iris*, 1911, p. 17. Habitat, W. Java.

#### Genus LOTONGUS.

- Lotongus*, Distant, *Rhop. Malayana*, p. 371 (1886). Watson, *Proc. Zool. Soc.* 1893, p. 121; id. *Journ. Bo. Nat. Hist. Soc.* ix. 1895, p. 430. Elwes and Edwards (part), *Trans. Zool. Soc.* 1897, p. 230.
- Zea*, Distant, l.c. p. 377 (1886).

*Forewing*, vein 12 ends on costa about opposite the end of the cell, cell less than two-thirds the length of the costa; upper discocellular minute, middle and lower discocellulars in an inwardly oblique, nearly straight line, the lower much the shorter, vein 5 from their junction; vein 3 emitted about one-eighth from the end of the cell, 2 from a little before the middle, its base about as far from the base of the wing as it is from the base of vein 3; costa somewhat convex near the base, then almost straight to the apex, which is blunt; outer margin convex below the apex, then nearly straight to the hinder angle, which is well pronounced, outer margin somewhat longer than the

hinder margin in the male, a little shorter than the hinder margin in the female, the wing being narrower apically in the male sex than it is in the female. *Hindwing*, vein 7 arises well before the upper end of the cell, discocellulars faint, outwardly oblique, vein 5 also faint, vein 3 emitted quite close to lower end of cell, 2 from about one-third before the end; wing longer in the male than it is in the female, outer margin evenly rounded to the end of vein 2, where it has a slight inward curve. Antennæ long, nearly two-thirds the length of the costa of forewing, club moderate, with a long, pointed, terminal curve; palpi with the second joint curved upwards, in front of the face, densely clothed, third joint short, blunt, nearly concealed; hind tibiæ fringed and with two pairs of spurs.

Type, *Eudamus calathus*, Hewitson.

### LOTONGUS CALATHUS.

Plate 807, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, ♀.

*Eudamus calathus*, Hewitson, Ann. Mag. Nat. Hist. 1876, p. 353.

*Lotongus calathus*, Distant, Rhop. Malayana, p. 371, pl. 34, fig. 14 (1886). Watson, Proc. Zool. Soc. 1893, p. 121; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 541. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 231. de Nicéville, Journ. Bo. Nat. Hist. Soc. xii. 1899, p. 336. Swinhoe (part), Trans. Ent. Soc. 1908, p. 29. Frühstorfer, Iris, 1911, p. 17.

*Hesperia traviata*, Plötz, Stett. ent. Zeit. xvii. p. 91 (1886), unpublished plate No. 1366.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with two conjoined white spots within the cell towards its end, one above the other, two in an inwardly oblique line in the disc, both somewhat obliquely elongate, the lower one in the first median interspace before its middle, much the larger, the other near the base of the second median interspace, two very minute and indistinct sub-apical dots.

*Hindwing* without markings. Underside slightly paler than the upperside. *Forewing* with spots similar but larger and more prominent and somewhat ochreous-tinted; two white opaque streaks in the interno-median interspace, the upper one short and somewhat indistinct. *Hindwing* immaculate. Cilia of both wings above and below concolorous with the wings.

Female. Upperside usually darker than the male. *Forewing* with the spots pure white and very large; a quadrate spot filling up the outer third of the cell, a similar spot immediately below it, and an angular small white spot at the base of the second median interspace, wedged into the junction of the other two; a small white spot on the middle of the sub-median vein. Cilia brown. *Hindwing* without spots, the apex white and the entire cilia white. Underside like the upperside, but there is an additional large quadrate white spot connecting the cell spot with the costa, and there

are two white streaks attached to the lower end of the discal band of spots. *Hindwing* with the apex broadly white, the white colour narrowing down the outer margin.

Expanse of wings, ♂ ♀ 2 inches.

HABITAT.—Burma, Malay Peninsula, Sumatra.

DISTRIBUTION.—The type, a female, came from Sumatra, there is a female in the B. M. from Tavoy in Burma, from which our figures are taken, which exactly resembles Hewitson's type; Plotz's type is also from Sumatra, Distant records it from the Malay Peninsula, de Nicéville from Toungoo and the Daunat Range, Burma; in our paper in Trans. Ent. Soc. 1908 we put *parthenope* and its allies as synonyms to *calathus* as Elwes and Edwards have done, but we have been able to examine more material since then. Hewitson's type female is so very different to any of the females of the *parthenope* group we think it best to keep them separate.

#### LOTONGUS SARALA.

Plate 808, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Parnara sarala*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 173, pl. B, fig. 6, ♀. Watson,

Hesp. Ind. p. 48 (1891). Leech, Butt. of China, etc. ii. p. 615, pl. 38, fig. 11, ♂ (1893).

*Caltois sarala*, Swinhoe, Trans. Ent. Soc. 1893, p. 324.

*Lotongus sarala*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 233, Frühstorfer, Iris, 1911, p. 17.

IMAGO.—Male. Upperside purple-black. *Forewing* with three dull yellowish, thin, indistinct streaks on the basal third, one above the cell, one in the cell and one on the sub-median vein; two elongate-oval white spots at the end of the cell, one above the other, not quite touching each other, a similar spot outside, near the base of the second median interspace, and one three times the size near the base of the first median interspace, its outer edge concave, a small white spot below on the middle of the sub-median vein. *Hindwing* with the costa narrowly pale, a yellowish-white short streak on it before the apex, a short, rather broad yellowish-white band in the upper middle of the wing, a similarly coloured short streak on the abdominal margin in continuation of it, with a narrow whitish streak between them from the base of the wing. Cilia of both wings blackish-brown, becoming yellowish-white towards the anal angle of the hindwing. Underside coloured like the upperside, perhaps a trifle paler. *Forewing* with the white spots as above; between the cell spots and the costa there is a large yellowish-white patch, the hinder marginal space is broadly pale and has in its middle, just above the hinder margin, two suffused white spots close together. *Hindwing* with the transverse yellowish-white band broader and carried up to the costa, broadening upwards, the spot on the abdominal margin much larger, the streak between it and the lower end of the band absent. Antennæ black,

the club whitish beneath; palpi, head and body concolorous with the wings, clothed with bronzy-green hairs on the upperside, the palpi beneath and the pectus with white hairs.

Female like the male, the spots on the forewing larger.

Expanse of wings, ♂  $1\frac{8}{10}$  to  $1\frac{9}{10}$ , ♀ 2 inches.

HABITAT.—Assam, W. China.

DISTRIBUTION.—The type, a female from the Khasia Hills, is in the Indian Museum, Calcutta; we possess a male from the Khasia Hills, and there are both sexes from the same locality in Coll. Elwes; Leech records it from Omeishan, China; Frühstorfer from Tonkin.

#### LOTONGUS AVESTA.

Plate 808, figs. 2, ♂, 2a, ♀, 2b, ♀.

*Hesperia avesta*, Hewitson, Descr. Hesp. p. 30 (1868).

*Lotongus avesta*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 383, pl. Q, fig. 56, ♀ (♂ *ex errore*).

Watson, id. p. 435. Elwes and Edwards, Proc. Zool. Soc. 1897, p. 233. Frühstorfer, Iris, 1911, p. 17.

IMAGO.—Male. Upperside shining hair-brown. *Forewing* with two discal, semi-hyaline, ochreous-white, nearly round spots, one near the base of the second median interspace, and the other a somewhat larger spot placed obliquely inwards in the first median interspace. *Hindwing* without markings. Cilia of both wings brown, with greyish-white tips. Underside paler. *Forewing* with the two discal spots as on the upperside, a large bright ochreous patch extending from the costa into the cell a little before its end, the anal and hinder marginal areas suffused with white. *Hindwing* with a somewhat broad, straight, ochreous band across the wing, from the costa beyond its middle to the abdominal margin one-third from the base, the band slightly disjointed by the costal fold. Antennæ dark brown, the upper half of the club ochreous-white; palpi, head and body above concolorous with the wings, ochreous-white on the underside, legs ochreous.

Female like the male, but the wings are more squarely built.

Expanse of wings, ♂ ♀  $1\frac{9}{10}$  inches.

HABITAT.—Burma, Malay Peninsula and Archipelago.

DISTRIBUTION.—The type is from Sumatra; Elwes records it from Kina Balu and Pulo Laut, de Nicéville from the Ataran Valley, Burma; de Nicéville's identification was made with doubt, but his figure exactly resembles the species, it is a true *Lotongus*.

## INDO-MALAYAN ALLIED GENERA AND SPECIES.

- Lotongus schædia*, *Hesperia schædia*, Hewitson, Ann. Nat. Hist. 1876, p. 452. *Lotongus schædia*, de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 542. Synonym, *Lotongus maculatus*, Distant, Rhop. Malayana, p. 372, pl. 35, fig. 1 (1886). Habitat, Sumatra.
- Lotongus onara*, *Hesperia onara*, Butler, Trans. Ent. Soc. 1870, p. 498; id. Lep. Exot. p. 166, pl. 59, fig. 11, ♀. *Lotongus onara*, de Nicéville, Journ. Bo. Nat. Hist. Soc. xii. 1898, p. 156, pl. AA, fig. 32, ♂. Synonym, *Lotongus onara adorabilis*, Frühstorfer, Iris, 1911, p. 18. Habitat, Sumatra.
- Lotongus mythecca*, *Hesperia mythecca*, Hewitson, Ann. Mag. Nat. Hist. 1877, p. 81. *Zea mythecca*, Distant, Rhop. Malayana, p. 377, pl. 35, fig. 7 (1886). Habitat, Perak, Sumatra.
- Lotongus taprobanus*, *Hesperia taprobanus*, Plötz, Berl. ent. Zeit. xxix. p. 226 (1885), unpublished plate No. 1371; id. idem, xlvii. p. 92 (1886). *Zea taprobanus*, Swinhoe, Trans. Ent. Soc. 1908, p. 31. Synonym, *Zea mytheccoides*, de Nicéville, Journ. Bo. Nat. Hist. Soc. xii. 1898, p. 157, pl. AA, fig. 33, ♂, 34 ♀. Habitat, Celebes (Ceylon, fide Plötz, *ex errore*).
- Lotongus parthenope*, *Hesperia parthenope*, Plötz, Stett. ent. Zeit. xlvii. p. 91 (1886), unpublished plate No. 1365 ♂. Weymer, id. xlviii. p. 17, pl. 2, fig. 8, ♀ (1887). *Lotongus parthenope*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1892, p. 354, pl. J, fig. 4, ♂, 5, ♀. Habitat, Nias.
- Lotongus excellens*, *Proteides excellens*, Staudinger, Iris, 1889, p. 141, pl. 2, fig. 6. Habitat, Philippines.
- Lotongus aliena*, *Plesioneura aliena*, Staudinger, l.c. p. 155. Habitat, Palawan.
- Lotongus zalates*, *Proteides zalates*, Mabille, Ann. Soc. Ent. Belg. xxxvii. p. 52 (1893). Habitat, Borneo.
- Lotongus surus*, *Proteides surus*, Mabille, Bull. Soc. Ent. Fr. 1895, p. lix. Habitat, Borneo.
- Zampa zenon*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 391, pl. Q, fig. 58. Habitat, Pulo Laut, Borneo.

## Genus ZELA.

- Zela*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 386. Watson, id. p. 431.
- Lotongus*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 230.

*Forewing*, vein 12 ends on costa opposite the upper end of cell, cell broader than in *Lotongus*, its upper margin curving downwards at its end, its lower margin curving upwards from the base of vein 2 to its end, consequently the upper discocellular is rather longer than usual, is highly outwardly oblique, being in nearly a straight line with the upper margin, the middle discocellular upright concave, much longer than the lower which is straight and inwardly oblique; vein 3 emitted about one-sixth before lower end of cell, 2 from the middle; sub-median vein straight; costa nearly straight, only slightly arched before the middle, apex acute, outer margin nearly straight, very slightly convex, about as long as the hinder margin. *Hindwing*, vein 8 arched, ending at the apex of the wing, 7 from one-fourth before upper end of cell, cell broad, short, less than half the breadth of the wing, discocellulars faint, vein 5 traceable but very faint, 3 from close to lower end of cell, the base of vein 2 about twice as far from

3 as that vein is from the cell end, sub-median and internal veins straight; wing slightly longer than broad, somewhat circular in shape, the costa, apex and outer margin being evenly rounded, slightly emarginate at the end of vein 2. Antennæ long, much as in *Zampa*; palpi curved upwards against the face, second joint densely hairy, third hidden; hind tibiæ heavily fringed and with two pairs of spurs.

The secondary sexual character consists of an oblique linear glandular streak of very thick scales on the upperside of the forewing, from about the middle of the sub-median vein to a little before the base of vein 3, the lower portion of the streak in the sub-median interspace is nearly upright, and divided into two by the internervular fold, the anterior portion is outwardly oblique.

Type, *Zela zeus*, de Nicéville.

#### ZELA OPTIMUS.

Plate 808, figs. 3, ♂, 3a, ♂.

*Lotongus zeus optimus*, Frühstorfer, Iris, 1911, p. 18.

*Lotongus zeus*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 232.

IMAGO.—Male. Upperside chocolate-brown. *Forewing* with the apex and outer margin somewhat paler than the rest of the wing; spots white; an oval spot at the lower end of the cell, a minute dot above it; a lunular small spot near the base of the first median interspace just outside the sex mark, and a smaller round spot obliquely above it near the base of the first median interspace; a long, black, linear sex mark, erect, across the middle of the interno-median interspace, not touching either the submedian vein or the first sub-median nervule, and disjointed at its middle, and continued in an outwardly oblique line to near the origin of the second median nervule, without any break. Cilia grey. *Hindwing* covered with long chocolate-brown hairs, no markings. Cilia brown at the apex, then orange hindwards, this colour running brightly up the abdominal margin, the abdominal space being tinted with orange. Underside paler. *Forewing* with the upper and outer parts paler than the middle portion of the wing, the hinder margin broadly very pale, the spots as on the upperside. *Hindwing* uniformly dark chocolate-brown, with an indistinct small ochreous spot at the end of the cell, the orange cilia widening into an orange spot at the anal angle, and not running up the abdominal margin. Antennæ blackish-brown, paler beneath, the club with a whitish mark on the underside; palpi and top of head dark grey, body above and below and the legs concolorous with the wings.

Expanse of wings, ♂ 2 inches.

HABITAT.—Assam.

Described and figured from the type specimen in our collection from the Khasia

Hills, which will be deposited, as is usual with all our types, in the National collection ; it is allied to, but is abundantly distinct from *Zela zeus*, the type of the genus.

#### INDO-MALAYAN ALLIED SPECIES.

*Zela zeus*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 388, pl. Q, fig. 57, ♂. Habitat, Pulo Laut, Borneo, Sumatra.

#### Genus HIDARI.

*Hidari*, Distant, Rhop. Malayana, p. 395 (1886). Watson, Hesp. Ind. p. 111 (1891); id. Proc. Zool. Soc. 1893, p. 123. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 431. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 235.

*Forewing*, vein 12 reaches costa a little before upper end of cell ; cell less than two-thirds the length of costa ; upper discocellular very minute, middle and lower inwardly oblique in almost a straight line, the middle discocellular twice as long as the lower, consequently vein 5 which arises at their junction as usual has its base rather near the lower end of discocellulars and curves upwards, reaching the outer margin midway between the ends of veins 6 and 4 ; vein 3 emitted about one-sixth before the lower end of the cell, 2 from the middle ; costa gently and evenly arched, outer half of the wing narrowly angular, the outer margin being oblique, convex below the blunt apex, then nearly straight to the hinder angle, longer in the male than the hinder margin ; shorter in the female. *Hindwing*, vein 7 emitted well before upper end of cell, cell about half the breadth of the wing, discocellulars (outwardly oblique) and vein 5 faint ; vein 3 emitted near the lower end of cell, the base of vein 2 about as near 3 as the base of that vein is from the end of the cell ; outer margin evenly rounded down to the very slight anal lobe. Antennæ long, about two-thirds the length of costa of forewing, club long, gradually robust, with a long, acuminate, terminal, even curve ; palpi upturned appressed in front of the face, very densely scaled, third joint short, blunt, almost entirely concealed ; hind tibiæ fringed and with two pairs of spurs, the upper pair short.

Type, *Hesperia irava*, Moore.

#### HIDARI THRAX.

Plate 809, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Celænorhinus thrax*, Hübner (nec Linnæus), Zutr. Ex. Schmett. figs. 875, 876 (1832).

*Hesperia irava*, Moore, Cat. Lep. E.I.C. i. p. 254 (1857). Plötz, Stett. ent. Zeit. xliii. p. 328 (1882).

*Casyapa irava*, Butler, Trans. Linn. Soc. Zool. Lond. 1877, p. 553.

*Erionota irava*, Moore, Trans. Linn. Soc. Zool. Lond. 1886, p. 52.

*Hidari irava*, Distant, Rhop. Malayana, p. 395, pl. 34, fig. 15, ♀ (1886). Watson, Hesp. Ind.



p. 112 (1891). Elwes, Proc. Zool. Soc. 1892, p. 657. Watson, id. 1893, p. 124; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 235. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 144. Frühstorfer, Iris, 1911, p. 19.

*Hesperia irava*, Plötz, Stett. ent. Zeit. xliii. p. 328 (1882).

*Hesperia hypæra*, Hewitson, Descr. Hesp. p. 25 (1868).

IMAGO.—Male. Upperside dark chocolate-brown. *Forewing* with the apex paler, the base slightly tinted with ochreous, and with five semi-hyaline yellowish spots, a large quadrate spot with excavated sides at the end of the cell, a similar-sized somewhat oval spot below its outer end in the first median interspace, a smaller spot below the last in the second median interspace, a similar spot below, almost in a line with them in the interno-median interspace, a little beyond its middle, a small spot (sometimes two small spots) in a line with the discal spots, near the costa. *Hindwing* without markings. Cilia of both wings brown. Underside. *Forewing* with the costal area above the cell and the apical third of the wing pinkish-ochreous-brown, much paler than the rest of the wing, which is blackish-brown, nearly black; the spots as on the upperside, and two or three indistinct brown dots towards the apex in continuation of the apical series. *Hindwing* uniformly coloured like the apical portion of the forewing without any markings, except for indications of some small discal spots in a curved series, not always present. Antennæ brown, the shaft mostly pinkish-white on the underside, pure white below the club, the upper half of the club rufous; palpi, head and body above and below and the legs concolorous with the wings, palpi below tinged with ochreous.

Female. Upperside much paler than the male and more brown in colour, the costa to end of cell and the upper portion of the base more or less suffused with dull ochreous, markings as on the upperside; all the spots larger. Underside as in the male; body above with dull ochreous hairs, anal tuft dull ochreous.

Expanse of wings, ♂  $2\frac{4}{10}$ , ♀  $2\frac{7}{10}$  inches.

LARVA, occurs throughout the year in every following generation, everywhere where the cocoanut palm grows, on the leaves of which the larva feeds. The female always lays the eggs on young leaves, and the larvæ are sometimes abundant, so abundant as to do appreciable damage to the palms by devouring all the leaves. The larva is of a dirty green colour with a sub-dorsal black stripe and an ochreous head, and is hidden from view between two leaves of the food plant woven together.

PUPA reddish-brown.

The butterflies are on the wing early in the morning and after sunset. In the day time they rest with folded wings in dark places near houses. Once in 1892 all the cocoanut trees near the Manager's house at Namoe Oekor were eaten up by the larvæ, and later hundreds of butterflies took shelter during the day in the house.

None of them rested on the whitewashed walls, but all on the dark curtains and portières. (de Nicéville and Martin.)

HABITAT.—Burma, Mergui, Ceylon, Malay Peninsula and Archipelago.

DISTRIBUTION.—Moore's types are from Java; we have both sexes from Perak and Singapore; Distant records it from Malacca and Penang, Elwes from Java and Bali, Frühstorfer from Sumatra, Moore from Mergui, and Watson from Tavoy in Burma; it is in the B. M. from Ceylon. Hübner's name must have preference, although given to the specimens he figured through error, his figures clearly representing the insect.

#### HIDARI BHAWANI.

Plate 809, figs. 2, ♂, 2a, ♀, 2b, ♀.

*Hidari bhawani*, de Nicéville, Journ. As. Soc. Bengal, 1888, p. 291, pl. 13, fig. 6, ♂. Watson, Hesp. Ind. p. 112 (1891); id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 236. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 144.

IMAGO.—Male. Upperside ochreous-brown. *Forewing* with semi-transparent yellowish-white spots, one just before the end of the cell, much constricted in its middle, and a series of four spots in an almost straight, inwardly oblique line, beginning with an oval spot in the upper discoidal interspace, a larger and sub-quadrate spot in the second median interspace, a still larger spot, with its outer side concave in the middle of the first median interspace, and a small opaque white spot in the interno-median interspace on the sub-median vein. *Hindwing* without markings. Cilia of forewing brown touched with white, of the hindwing brown with white tips at the apex becoming white hindwards. Underside. *Forewing* brown with the costa and apex broadly brownish-ochreous, striated with fine brown lines, the spots as on the upperside, but with two minute spots above the uppermost spot. *Hindwing* uniformly brownish-ochreous, entirely covered with fine brown striations, with a straight brown streak below the costa from the base to the outer margin below the apex, and another brown straight streak near and parallel to the abdominal margin from the base to the outer margin near the anal angle, increasing in breadth hindwards. Antennæ pale ochreous marked with brown, the lower third of the club black, the anterior portion white; palpi, head and thorax paler than the colour of the wings, being covered with ochreous-grey hairs with a line of dark brown hairs running down the middle, abdomen brown; on the underside the palpi and pectus are nearly white, the body and legs concolorous with the hindwings.

Female like the male, the spot on the sub-median vein larger, the brown area of the forewing on the underside more limited, the pale costal space being much broader, the hinder margin of that wing is also much longer than it is in the male.

Expanse of wings, ♂  $2\frac{2}{10}$ , ♀  $2\frac{4}{10}$  inches.

HABITAT.—Burma.

DISTRIBUTION.—The type male from the Aracan coast taken by Bingham is in Coll. Druce, the type of the female, now described and figured for the first time, is in the Hancock Museum, Newcastle, it was taken near Akyab by Adamson in February, 1883, basking on a dead palm branch, and has been very kindly lent to us for figuring. We know of no other record of this very scarce species.

#### INDO-MALAYAN ALLIED GENERA AND SPECIES.

*Hidari sybirita*, *Hesperia sybirita*, Hewitson, Ann. Mag. Nat. Hist. 1876, p. 451. *Hidari sybirita*, Distant, Rhop. Malayana, p. 395, pl. 35, fig. 24 (1886). Habitat, Singapore.

*Hidari harmadus*, *Astictopteron harmadus*, Hewitson, Ann. Mag. Nat. Hist. 1878, p. 341. *Hidari harmadus*, de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 543. Synonym, *Hidari staudingeri*, Distant, l.c. fig. 25 (1886). Habitat, Perak, Malay Peninsula, Sumatra.

*Hidari deserna*, Martin, Einige neue Tagschmett. von Nordost Sum. p. 6 (1895). Habitat, Sumatra.

*Eetion elia*, *Hesperia elia*, Hewitson, Trans. Ent. Soc. 1866, p. 489. *Unkana elia*, Distant, Rhop. Malayana, p. 370, pl. 34, fig. 25 (1886). *Eetion elia*, de Nicéville and Martin, l.c. p. 543. Swinhoe, Trans. Ent. Soc. 1908, p. 31. Synonym, *Hesperia eberus*, Plötz, Berl. ent. Zeit. xxix. p. 226 (1885), unpublished plate No. 1373. Habitat, Malay Peninsula, Sumatra.

*Eetion martini*, *Zea martini*, Distant, Ann. Mag. Nat. Hist. 1887, p. 274. *Eetion martini*, de Nicéville and Martin, l.c. *Acerbas martini*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 216, pl. 24, fig. 54 (genitalia). Habitat, Malay Peninsula, Sumatra.

*Eetion magniplaga*, *Eetion elia magniplaga*, Frühstorfer, Iris, 1911, p. 19. Habitat, Kina Balu, N. Borneo.

*Eetion ayankara*, *Eetion elia ayankara*, Frühstorfer, l.c. Habitat, Perak.

#### Genus PIRDANA.

*Pirdana*, Distant, Rhop. Malayana, p. 376 (1885). Watson, Hesp. Ind. p. 20 (1891); id. Proc. Zool. Soc. 1893, p. 116; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 430. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 223.

*Forewing*, vein 12 reaches costa well before end of cell, cell nearly two-thirds the length of the costa; upper discocellular very minute, middle and lower discocellulars inwardly very oblique, the middle one much the longer, vein 5 from their junction, curves upwards and ends on the outer margin at an even distance between 4 and 6; lower margin of cell straight to its end, vein 3 emitted a little before the end, 2 at about one-third from the base; costa moderately and evenly arched, the wing narrow and produced, the apex, however, is not acute, outer margin very slightly convex, about as long as the hinder margin. *Hindwing*, cell short, less than half the breadth of the wing; vein 7 emitted very close to upper end of cell, its base almost touching

it; discocellulars in a straight outwardly oblique line; vein 5 not visible; 3 emitted very close to lower end of cell, the base of vein 2 close to it; outer margin evenly rounded, down to the anal lobe, which is slight. Antennæ long, quite two-thirds the length of the costa of forewing, club gradual, slender, rather long, tip acuminate, slightly curved over; palpi with the second joint densely clothed, third minute, thick and somewhat blunt; hind tibiæ fringed with two pairs of spurs, the upper pair small, the lower pair of moderate length.

Type, *Hesperia hyela*, Hewitson.

#### PIRDANA RUDOLPHEI.

Plate 809, figs. 3, ♂, 3a, ♂.

- Pirdana rudolphei*, Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 438, pl. 20, fig. 6, ♂.  
 Elwes, Trans. Ent. Soc. 1888, p. 441. Watson, Hesp. Ind. p. 20 (1891). de Nicéville, Gazetteer of Sikkim, Butt. p. 185 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. de Nicéville, id. xii. 1899, p. 336 (note). Frühstorfer, Iris, 1911, p. 12.  
*Pirdana hyela*, Elwes (part), Proc. Zool. Soc. 1892, p. 647. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 223.

IMAGO.—Male. Upperside rich vinous-brown, no markings. *Forewing* with the cilia brown. *Hindwing* with the cilia brown to the end of vein 2, from thence to the anal angle it is bright orange, the cilia increasing in length hindwards, the orange colour extending upwards a little inside the margin, leaving a short tooth-like brown mark at the end of vein 1. Underside with the ground colour as on the upperside, but slightly paler. *Forewing* with the hinder margin broadly ochreous-grey up to the first median nervure, but hardly reaching the outer margin; all the veins bronzy-green, except on the basal two-thirds of the lower margin of the cell, vein 2 and the submedian vein. *Hindwing* with all the veins similarly streaked, but darker green and more prominent; the orange cilia at the anal angle as on the upperside. Antennæ black, grey beneath; palpi, head and body above concolorous with the wings; on the underside the palpi are orange, pectus dull greyish-orange, thorax brown with some dull orange marks, abdomen grey tinged with orange, with blackish bands.

Expanse of wings, ♂ 2 inches.

Female unknown to us; de Nicéville says: "In Colonel Lang's collection is a very old specimen from Sikkim, without head or abdomen, which we believe to be the female of this species. On the upperside of both wings it is obscurely glossed with green on the basal two-thirds, the forewing is rather broader, the outer margin slightly convex; and on the hindwing the orange colour at the anal angle is rather broader (not nearly so broad as in *P. ismene* or *P. hyela*), and the cilia are throughout orange. Underside paler than in the male, the ground-colour obscure green rather than brown,

the orange coloration at the anal angle of hindwing as on upperside, but rather broader. Expanse, ♀ 2·25 inches."

HABITAT.—Burma, Sikkim, Assam.

DISTRIBUTION.—The type male from Tavoy in Burma is in the Indian Museum, Calcutta; de Nicéville also records it from the Khasia Hills; our description and figures are from a perfect male specimen from the Khasia Hills in our collection. Elwes and de Nicéville's figure is misleading, the artist has made the upperside of the palpi orange, it should be concolorous with the wings as stated by them in their description. We agree with de Nicéville\* that *rudolpheii* is distinct from *hyela*; it lacks the beautiful blue-green gloss between the veins on the upperside, and there is much less orange-ochreous at the anal angle of the hindwings.

#### PIRDANA DISTANTI.

Plate 810, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Pirdana distanti*, Staudinger, Iris, 1889, p. 141. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 224.

de Nicéville, Journ. Bo. Nat. Hist. Soc. xii. 1899, p. 336. Frühstorfer, Iris, 1911, p. 12.

*Pirdana pavona*, de Nicéville, Journ. As. Soc. Bengal, 1895, p. 540.

IMAGO.—Male. Upperside rich vinous-brown, much as in *P. rudolpheii*, no markings. Cilia of both wings as in *P. rudolpheii*, but the orange portion of it broadening more considerably at the anal angle, giving the appearance of a large orange anal lobe. Underside very different to that of *rudolpheii*, the colour being almost entirely dark brownish-green, instead of being brown with the veins striated with green, as in that species, all but the hinder marginal portion of the forewing and the entire surface of the hindwing being suffused with green, the hinder marginal portion of the forewing is paler than it is in *rudolpheii* and is orange-tinted, the cilia of the hindwing is orange-grey, and there is a conspicuous dull orange patch at the anal angle. Antennæ black, grey beneath; palpi, head and body above concolorous with the wings; below, the palpi, pectus and abdomen dull orange, thorax orange-grey, abdomen with some orange-grey lateral bands.

Female like the male, slightly paler and duller in colour on both sides.

Expanse of wings, ♂ ♀  $2\frac{3}{10}$  inches.

HABITAT.—Burma, Malay Peninsula and Archipelago.

DISTRIBUTION.—The type came from Malacca, the type of *pavona* from Java; recorded by de Nicéville from Toungoo, by Elwes from E. Pegu, Labuan, Perak, Buitenzorg; we have both sexes also from Nias.

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\* Journ. Bo. Nat. Hist. Soc. xii. 1899, p. 336.

## INDO-MALAYAN ALLIED SPECIES.

- Pirdana ismene*, *Hesperia ismene*, Felder, Reise, Nov. Lep. iii. p. 512, pl. 73, figs. 4, 5 (1867).  
*Pirdana ismene*, Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 438. Habitat, Celebes.
- Pirdana hyela*, *Hesperia hyela*, Hewitson, Descr. Hesp. p. 23 (1867). *Pirdana hyela*, de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 540. Habitat, Java, Sumatra.
- Pirdana sargon*, *Ismene sargon*, Mabille, Ann. Soc. Ent. Fr. 1876, p. 261. *Pirdana sargon*, Frühstorfer, Iris, 1911, p. 12. Habitat, Celebes.
- Pirdana albicornis*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 224, pl. 21, fig. 14, ♂. Habitat, Kina Balu, Borneo.
- Pirdana scanda*, *Pirdana hyela scanda*, Frühstorfer, l.c. Habitat, E. Java.

## Genus CERANE.

*Cerane*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 242.

*Forewing*, vein 12 recurved, terminates on costa opposite the end of the cell; cell long, about two-thirds the length of costa, upper discocellular distinct, outwardly oblique, middle and lower discocellulars nearly erect, the lower the shorter, vein 5 from their junction, slightly curved; 3 from close to lower end of cell, 2 from about one-third from the base. Costa slightly and evenly arched, apex somewhat acute, outer margin convex to the end of vein 5, then nearly straight to the hinder angle, which is rounded, hinder margin about one-third shorter than the costa, making the wing apically produced. *Hindwing*, vein 7 emitted near the upper end of cell, discocellulars and vein 5 faint; 3 and 2 from close to lower end of cell, the base of 2 being about twice as far from 3 as the base of 3 is from the cell end. Costa highly arched at its base, then evenly convex, apex and outer margin evenly rounded. Antennæ long, about two-thirds the length of the costa of the forewing, club long, slender, gradual, the tip evenly curved and acuminate; palpi with the second joint densely scaled, upturned in front of the face, third joint erect, obtusely conical, partially concealed by the scaling of the second joint; hind tibiæ fringed and with two pairs of spurs.

Type, *Notocrypta næra*, de Nicéville.

## CERANE NÆRA.

Plate 810, figs. 2, ♂, 2a, ♀, 2b, ♂.

- Notocrypta næra*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 379, pl. G, fig. 27, ♀. Elwes, Proc. Zool. Soc. 1892, p. 658. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 544.
- Cerane næra*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 242. Frühstorfer, Iris, 1911, p. 28.

IMAGO.—Male. Upperside black. *Forewing* with a white patch, consisting of an oval spot at the lower end of the cell joined to a smaller sub-quadrate spot above it, and

joined on its lower side to a larger sub-quadrate spot in the first median interspace with a small spot at the base of the second median interspace wedged in between their outer sides. *Hindwing* unmarked. Cilia of both wings blackish-brown. Underside slightly paler than the upperside, the hinder marginal space of the forewing pale brown; the spots as above. Antennæ black, the club whitish on the underside; palpi, head and body black; the palpi beneath spotted with white scaling, pectus and thorax with white hairs, abdomen with white patches down its middle.

Female like the male, but the white patch on the forewing is composed of spots twice as large as those on the male, and the hinder marginal area of that wing on the underside is whitish on its outer half.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{4}{10}$  inches.

HABITAT.—Burma, Malay Peninsula and Archipelago.

DISTRIBUTION.—The types from Perak are in the Indian Museum, Calcutta; there is a specimen from Singapore in the B. M. in the Hewitson Coll.; we have both sexes from N. Borneo; de Nicéville and Martin record it from Sumatra, de Nicéville from Tenasserim.

#### INDO-MALAYAN ALLIED SPECIES.

*Erane microthyrus*, Plesioneura microthyrus, Mabille, Comptes Rendus Soc. Ent. Belg. iii. p. lvii (1883). *Erane microthyrus*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 242. Habitat, Philippines.

*Erane pusilla*, *Erane næra pusilla*, Frühstorfer, Iris, 1911, p. 28. Habitat, W. Java.

#### Genus CRETEUS.

*Creteus*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 385. Watson, id. p. 431. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 233.

*Forewing*, vein 12 ends on the costa opposite the end of the cell, cell less than two-thirds the length of the costa, upper discocellular short, stout, outwardly oblique, middle and lower discocellulars in a strongly inwardly oblique straight line, the lower a good deal the shorter, vein 3 from close to lower end of cell in the male, a little farther inwards in the female, 2 from a little before the middle, with a streak of modified scales along its middle third. Costa slightly arched near its base, then straight to the apex, which is somewhat acute, outer margin convex at its upper half, then nearly straight to the hinder angle, which is somewhat rounded but well pronounced, hinder margin straight, about as long as the outer margin. *Hindwing*, vein 7 emitted well before upper end of cell, cell extending to about half the breadth of the wing, discocellulars faint, vein 5 not traceable; 3 and 2 from close to lower end of cell, the base of 3 a little farther from the cell end than from the base of

vein 2; sub-median and internal veins nearly straight. Costa strongly arched at its base, then slightly curved to the apex, the apex and outer margin evenly rounded, very slightly excavated at the end of vein 2, giving the anal angle a somewhat lobed-like appearance, abdominal margin slightly convex, heavily fringed with long hair-like scales. Antennæ more than half the length of the costa of forewing, the club somewhat stout, its tip evenly curved; palpi with the second joint upturned in front of the face, very densely scaled, the third joint also scaled, somewhat porrect, thorax robust, legs densely hairy, hind tibiæ with two pairs of spurs, quite hidden by the hairs.

Type, *Hesperia cyrina*, Hewitson.

#### CRETEUS CYRINA.

Plate 810, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Hesperia cyrina*, Hewitson, Ann. Mag. Nat. Hist. 1876, p. 450. Watson, Hesp. Ind. p. 160 (1891).

*Creteus cyrina*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 386. Watson, id. p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 233.

*Parnara parca*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 174, pl. B, fig. 10, ♀. Watson, Hesp. Ind. p. 49 (1891).

*Calloris parca*, Swinhoe, Trans. Ent. Soc. 1893, p. 324.

IMAGO.—Male. Upperside very dark purple-brown, nearly purple-black, spots pure white. *Forewing* with two small spots, one above the other inside the cell near its end, three smaller sub-apical spots, the upper one linear, a small round spot immediately below it, and a dot almost level with it outwards; a spot in the middle of the second median interspace, a much larger one, its outer side excavated, towards the base of the first median interspace, a spot in the middle of the interno-median interspace on the sub-median vein, these three spots in an inwardly oblique line with each other. *Hindwing* with a spot in the cell, another above it, and three discal spots, the upper one in interspace 6, well separated from the lower two, which are in the median interspaces, rather close together, all these spots small and of equal size. Cilia of both wings black, orange on the lower half of the hindwing. Underside coloured like the upperside, the markings similar, but there are two extra equal-sized spots on the hindwing near the abdominal margin, one above the other and well separated from each other, and the lower third of both wings has a narrow whitish smear on the outer margin, the corresponding cilia on the forewing being whitish and on the hindwing ochreous-white; palpi, head and body above and below purple-black, the dense hairs on the legs very dark purple-black, the tarsi ochreous, the sides of the abdomen ochreous-grey finely banded with black, the tip orange.

Female like the male, but more brown in colour, all the white spots much larger, the orange portion of the cilia deeper.



Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—Sikkim, Assam.

DISTRIBUTION.—The type is marked Darjiling, the type of *parva* from Sikkim; we have it from the Khasia Hills; Elwes records it also from Kina Balu, with all the spots smaller than they are in the Indian form; it is a rare species.

### Genus PITHAURIA.

*Pithauria*, Moore, Proc. Zool. Soc. 1878, p. 689. Distant, Rhop. Malayana, p. 378 (1886).  
Watson, Hesp. Ind. p. 26 (1891); id. Proc. Zool. Soc. 1893, p. 119. Leech, Butt. of China, etc.  
ii. p. 631 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 431. Elwes and Edwards,  
Trans. Zool. Soc. 1897, p. 237.

*Forewing*, vein 12 ends on costa well before end of cell, cell less than two-thirds the length of costa; upper discocellular minute, middle and lower discocellulars in an inwardly oblique straight line, the middle much the longer, vein 5 from their junction, curved upwards from its base; vein 3 emitted a little less than one-fourth from the lower end of the cell, 2 from a little beyond the middle, the base of vein 2 being about as far from the base of vein 3 as the base of that vein is from the end of the cell; the wing somewhat produced at the apex; costa slightly arched, apex sub-acute, outer margin convex, about as long as the hinder margin. *Hindwing*, vein 7 emitted from close to upper end of cell, the upper margin of the cell curved downwards from the base of vein 7 to the cell end; discocellulars in an outwardly oblique straight line, vein 5 not traceable, veins 3 and 2 emitted at equal distances apart close to the lower end of the cell; cell short, less than half the breadth of the wing; costa and apex rounded, the outer margin even. Antennæ a little more than half the length of the costa of forewing, club slender, elongate, with a slender terminal curve; palpi with the second joint laxly scaled, pressed close against the face, third joint minute; hind tibiæ naked, with two pairs of spurs; fore coxæ conspicuously tufted in the male.

Type, *Ismene murdava*, Moore.

### PITHAURIA MURDAVA.

Plate 811, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Ismene murdava*, Moore, Proc. Zool. Soc. 1865, p. 784.

*Pithauria murdava*, Moore, Proc. Zool. Soc. 1878, p. 689, pl. 45, fig. 13. Distant (part), Rhop. Malayana, p. 371, pl. 35, fig. 9, ♂ (1868). Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27. Elwes, Trans. Ent. Soc. 1888, p. 443. Manders, id. 1890, p. 537. Watson, Hesp. Ind. p. 27 (1891). Elwes, Proc. Zool. Soc. 1892, p. 649. Swinhoe, Trans. Ent. Soc. 1893, p. 328. Watson, Proc. Zool. Soc. 1893, p. 119. de Nicéville, Gazetteer of Sikkim, Butt. p. 186 (1894).

Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 237. Frühstorfer, Iris, 1911, p. 19.

IMAGO.—Male. Upperside olive-brown. *Forewing* with some ochreous-white setæ, thickly above the costal vein, and the basal two-thirds of the interspaces below the cell, sparsely in the cell and outer portions of the wing; six ochreous spots, two (one above the other) inside the end of the cell, and one in each of the median interspaces before their middle, two smaller sub-apical spots below the costa, divided from each other by vein 7 near its base. *Hindwing* with the costa pale, the entire wing covered with long ochreous-white hairs; no markings. Underside paler than the upperside. *Forewing* with a blackish shade from the base across the middle of the wing to near the outer margin, spots as on the upperside. *Hindwing* usually with two or three small ochreous-white spots of a discal series, varying in number in different examples, sometimes all absent. Cilia brown basally, whitish outwardly, the whitish outer portion marked with brown on the forewing. Antennæ black, the shaft spotted with white on the underside, the basal half of the club grey beneath, the upper half of the club orange; palpi, head and body above concolorous with the wings, covered with yellowish and white hairs; on the underside the palpi, pectus and abdomen are greyish-white, thorax brown.

Female like the male, but on the underside of the hindwings the discal series of ochreous-white spots is usually complete and prominent.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{9}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma, Malay Peninsula.

DISTRIBUTION.—The type is from Darjiling; we have examples of both sexes from Sikkim and the Ataran Valley, Burma, and have received many specimens from the Khasia Hills; Manders records it from the Shan States, Elwes from the Naga Hills, Watson from Beeling, in Burma, and Distant from the Malay Peninsula.

#### PITHAURIA STRAMINEIPENNIS.

Plate 811, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Pithauria stramineipennis*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 388, pl. 15, fig. 5, ♂. Elwes and de Nicéville, id. p. 441. Elwes, Trans. Ent. Soc. 1888, p. 443. Watson, Hesp. Ind. p. 27 (1891). Elwes, Proc. Zool. Soc. 1892, p. 649. Swinhoe, Trans. Ent. Soc. 1893, p. 328. Watson, Proc. Zool. Soc. 1893, p. 119. Leech, Butt. of China, etc. ii. p. 631, pl. 41, fig. 19, ♂ (1893). de Nicéville, Gazetteer of Sikkim, Butt. p. 186 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 237. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 144. Frühstorfer, Iris, 1911, p. 19.

*Pithauria murdava*, Distant, Rhop. Malayana, p. 371 (part) (description of female only) (1886).

IMAGO.—Male. Upperside blackish-brown. *Forewing* with the semi-hyaline spots disposed exactly as in *P. murdava*, but of a purer white colour; more than the basal half of the wing covered with whitish setæ, the double spot inside the cell end sometimes very indistinctly represented and sometimes absent. *Hindwing* with the whole interior space covered with whitish hairs, leaving the outer margin blackish-brown, with the whitish hairs running into it, especially on the veins. Underside pale ochreous-brown. *Forewing* with the hinder marginal space broadly whitish, its middle portion extending upwards to the median vein, spots as on the upperside. *Hindwing* much as in *murdava*. Antennæ also as in *murdava*; palpi, head and body above with whitish hairs; on the underside the palpi, pectus and abdomen are nearly pure white; the brown thorax and legs marked with white.

Female like the male, but somewhat paler, the spots larger.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $2\frac{1}{10}$  inches.

HABITAT.—Sikkim, Assam, Cachar, Bhutan, Burma, China, Malay Peninsula. The types from Sikkim are in the Indian Museum, Calcutta. We possess both sexes from Sikkim, and have received many examples from the Khasia Hills; Wood-Mason and de Nicéville also record it from Cachar; Elwes from Momeit and Ponsekai, Tavoy, and the Naga Hills; Adamson from Tenasserim, Bhamo and the Upper Chindwin, all in Burma; Distant from the Malay Peninsula, and Leech from China.

#### Genus PITHAURIOPSIS.

*Pithauriopsis*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 387. Watson, Hesp. Ind. p. 28 (1891); id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 431.

*Pithauria*, Watson (part), Proc. Zool. Soc. 1893, p. 119. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 237.

*Forewing*, vein 12 ends on the costa before the end of the cell, venation as in the genus *Pithauria*, but vein 3 is emitted a little farther from the lower end of the cell, its base being consequently somewhat nearer to the base of vein 2 than it is in that genus; the sub-median vein is strongly sinuated in consequence of a prominent bilobed glandular sexual mark in the male, extending downwards from the base of vein 2, "consisting of two unequal slight depressions of the wing membrane, separated from each other by the interno-median fold, and converted by over-arching, stiff, modified scales into pouches, which are fitted with a soft, fine and adhesive brown woolly substance";\* contour of the wing as in *Pithauria*. *Hindwing* differs in venation from *Pithauria*, vein 7 being strongly arched upwards from its base, the upper end of the cell from the base of vein 7 being correspondingly strongly arched downwards

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\* Wood-Mason and de Nicéville's description of the glandular organ.

forming the shape of a tuning-fork, the outer margin of the wing straighter, the wing somewhat produced anally. Antennæ, palpi and general structure as in *Pithauria*.

Type, *Pithauriopsis aitchesoni*, Wood-Mason and de Nicéville.

#### PITHAURIOPSIS MARCENA.

Plate 811, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, ♀.

*Hesperia marsena*, Hewitson, Trans. Ent. Soc. 1866, p. 498; id. Exot. Butt. pl. 5, figs. 51, 52, ♀ (1873).

*Baoris marsena*, Watson, Proc. Zool. Soc. 1893, p. 106.

*Halpe marsena*, de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 547.

*Pithauria marsena*, Frühstorfer, Iris, 1911, p. 19.

*Hesperia ornata*, Felder, Reise, Nov. Lep. iii. p. 515, pl. 72, fig. 6, ♀ (1867).

*Parnara ornata*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 382, pl. 18, figs. 7, 7a, ♂ (♀ *ex errore*). Watson, Hesp. Ind. p. 38 (1891).

*Halpe ornata*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 268.

*Pithauriopsis aitchesoni*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 387, pl. 15, fig. 4, ♂. Watson, Hesp. Ind. p. 28 (1891). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 544.

*Pithauria aitchesoni*, Watson, Proc. Zool. Soc. 1893, p. 119. Elwes and Edwards, l.c. p. 238.

IMAGO.—Male. Upperside bronzy-brown. *Forewing* with grey hairs at the base, forming four short streaks, one on the costa, another in the cell, one on the sub-median, and the fourth, the longest of all, along the hinder margin, spots ochreous-white; two oblong spots in the cell, well separated one above the other, the upper one the smaller, placed a little obliquely outwards (in *Pithauria* these spots are always obliquely inwards) above the base of vein 2, two small sub-apical spots, the lower the larger, an oval spot in each of the median interspaces in a strongly oblique inward line, the lower the larger, the discal stigma centred with white. *Hindwing* with all but the costa and outer margin covered with long, grey hairs. Underside reddish-brown. *Forewing* with the lower portion blackish, the spots as above, the two cell spots sometimes touching each other, indications of a sub-marginal series of yellowish dots from the apex to the middle of the wing. *Hindwing* with a white sub-costal smear (not always present), and an indistinct yellowish streak on the abdominal margin; a discal series of small yellowish-white spots, one in the sub-costal interspace and two in the median interspaces, and indications of a series of sub-marginal spots, not always present. Cilia of both wings with blackish base, with ochreous-cinereous tips. Antennæ black, the club whitish beneath, the tips orange; palpi, head and body above and below and the legs concolorous with the wings; palpi beneath and the pectus yellowish-white.

Female. Upperside like the male, paler and browner in colour, without the

sexual brand, the basal hairs somewhat ochreous, the spots of the forewing larger. Underside violet-brown. *Forewing* marked as above. *Hindwing* with a white subcostal streak, from the base to the middle, a discal series of white spots, commencing in a narrow streak in cell 6, the spots mostly oblong in shape and most of them somewhat small, and indications of a sub-marginal series, not always present.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—Assam, Burma, Tonkin, Java, Borneo, Sumatra and Nias.

DISTRIBUTION.—Hewitson's type, a female, came from Sumatra; the type of *ornata*, also a female, from Java; the type of *aitchesoni*, a male, from Cachar; we possess a male from the Ataran Valley, Burma; de Nicéville and Martin record it from Sumatra, and Frühstorfer from Borneo and Nias.

NOTE.—Frühstorfer says,\* “Herr Piepers caught in Java the *aitchesoni* form of male in copula with *marsena* female; Herr Piepers sent me a figure of these in coitu.” Elwes correctly describes † the female of *aitchesoni* from a specimen in Coll. Staudinger, which corresponds with Hewitson's type of *marsena* = *ornata*, Felder. Our figures are from a male from Tenasserim and of the female from Felder's type. We have a female from Nias with all the spots and streaks on the underside of the hindwing greatly reduced in size.

### Sub-Family ERYNNINÆ.

Antennæ with a short terminal more or less abrupt crook; palpi with the second joint more or less densely scaled, third joint minute, obtusely conical; hind tibiae mostly naked and with two pairs of spurs. *Forewing*, vein 3 emitted close to lower end of cell (a little further inwards in *Cupitha* and *Iton*). *Hindwing*, vein 7 emitted some little distance before upper end of cell; discocellulars faint, vein 5 absent; 3 and 2 from close to lower end of cell, their bases very near each other.

### Genus AUGIADES.

*Augiades*, Hübner, Verz. bek. Schmett. p. 112 (1816). Watson, Proc. Zool. Soc. 1893, p. 103.

Leech, Butt. of China, etc. ii. p. 601 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 432. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 246.

*Forewing*, vein 12 ends on the costa before end of cell, cell less than two-thirds the length of costa; upper discocellular minute, middle and lower discocellulars

\* Iris, 1911, p. 20.

† Trans. Zool. Soc. 1897, p. 238.



inwardly oblique, the middle one indented inwards below its middle, and twice as long as the lower, vein 5 being emitted close to lower end of discocellulars; 3 from close to lower end of cell, 2 from before the middle, its base somewhat more inwards in the male than in the female; costa arched at the base, then almost straight to the apex, which is sub-acute, outer margin convex, more so in the female than in the male; the male with a linear discal stigma extending from the origin of vein 3 to vein 1. *Hindwing*, vein 7 emitted about one-sixth before upper end of cell, discocellulars faint, vein 5 absent, 3 from close to lower end of cell, the base of vein 2 about twice as far from 3 as 3 is from the end of the cell; costa and outer margin evenly rounded. Antennæ more than half the length of the costa of forewing, club somewhat robust, ending in a pointed, short crook; palpi upturned, second joint densely scaled, third joint short, obtusely conical, hind tibiæ fringed and with two pairs of spurs.

Type, *Papilio sylvanus*, Esper.

#### AUGIADES SIVA.

Plate 812, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Pamphila siva*, Moore, Proc. Zool. Soc. 1878, p. 692.

*Telicota siva*, Watson, Hesp. Ind. p. 57 (1891). Elwes, Proc. Zool. Soc. 1892, p. 651. Swinhoe, Trans. Ent. Soc. 1893, p. 321.

*Augiades siva*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 247, pl. 19, fig. 28, ♂.

IMAGO.—Male. Upperside dark brown tinted with ochreous. *Forewing* with a dull greyish-ochreous, sub-costal streak from the base, ending in a point opposite the end of the cell; spots pale ochreous, two spots touching each other inside the cell end, the lower one connected with a very dull greyish-ochreous streak from near the base, running above the lower margin of the cell, a somewhat quadrate spot near the base of the second median interspace, a larger spot with pointed inner end, filling up the base of the first median interspace separated from the upper spot by vein 3, a somewhat elongated spot in the interno-median interspace, darker ochreous, with a small spot attached to its upper, outer end, nearly connecting it with the middle spot, these four spots forming an inwardly oblique, discal macular band; three sub-apical, somewhat elongated small spots in an outwardly oblique line from near the costa; discal stigma black. *Hindwing* with the spots darker coloured, somewhat oval, all the same size, one at the end of the cell, and a discal whirl of three spots, one in each median interspace, and the third in interspace 6 with some ochreous suffusion between it and the middle spot. Cilia of forewing brown, becoming whitish hindwards, entirely whitish on the hindwing. Underside. *Forewing* pale ochreous-brown on the costal

and outer marginal portions, blackish-brown on the rest of the wing, spots as on the upperside, the lowest spot of the discal series white, not ochreous, more expanded, and suffused. *Hindwing* uniformly darker brown tinted with ochreous, the cell spot faint, often absent, the three discal spots as on the upperside, but somewhat smaller and pure white. Antennæ black, the shaft dotted with white on the underside, the club with an ochreous tip, and an ochreous streak on the basal half of the underside; head and body above concolorous with the wings; on the underside the palpi and pectus are greyish-white, and there are some similarly coloured hairs and setæ on the thorax and abdomen; the linear discal stigma on the forewing black.

Female darker than the male both above and below, without the ochreous tint, and without the dull greyish-ochreous streaks in and above the cell on the upperside of the forewing, and the underside of both wings has a pinkish tint; the spots as in the male.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{1}{2}$  inches.

HABITAT.—Assam, Sikkim, Burma.

DISTRIBUTION.—The type came from the Khasia Hills, from whence we have received many examples of both sexes; we have it also from Sikkim, sent to us by Irvine; Elwes records it also from Pegu and from Bernardmyo.

#### AUGIADES BRAHMA.

Plate 812, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Pamphila brahma*, Moore, Proc. Zool. Soc. 1878, p. 691, pl. 45, fig. 8.

*Telicota brahma*, Watson, Hesp. Ind. p. 57 (1891).

*Augiades brahma*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 680.

Elwes and Edwards, Trans. Zool. Soc. 1897, p. 248, pl. 25, fig. 61b (genitalia). de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 599.

*Telicota augiades-brahma*, Hannyngton, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371.

IMAGO.—Male. Upperside much resembling the upperside of *A. siva*, but lighter in colour and more ochreous, the basal portion of both wings much more ochreous-tinted; \* the sub-costal streak of the forewing is broader, with similar dull ochreous-grey streaks on the basal portions of the interspaces, all more or less suffused together; the lowest spot of the sub-apical three somewhat elongate, an extra dot at the costa in the discal series of the hindwing, the elongated spot in the interno-median interspace narrower than it is in *siva*, the discal stigma with a white middle streak, in *siva* it is black. Underside paler, more strongly pink-tinted, the sub-apical spots of the forewing usually absent, the discal series more obscure, the upper ones and the cell spots sometimes obsolescent; in the hindwing the discal series is very obscure. Antennæ black, the shaft on the underside dotted with white, the club pinkish beneath.

\* The coloration of Moore's figure is much too ochreous and is very misleading.

Female like the male, but less ochreous above, the spots more prominent. Underside as in the male.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{6}{10}$  inches.

HABITAT.—N.W. Himalayas, Chin Hills.

DISTRIBUTION.—The types came from Masuri, 7,000 feet elevation; Hannington records it from Kumaon, Watson from the Chin Hills; we have it from Nepal.

#### AUGIADES SUBHYALINA.

Plate 812, figs. 3, ♂, 3a, ♀, 3b, ♂ 3c, ♀.

*Hesperia subhyalina*, Bremer and Grey, Schmett. N. China's, p. 10, pl. 3, fig. 4 (1853).

*Pamphila subhyalina*, Menétriés, Cat. Mus. Petr. Lep. i. pl. 5, fig. 7 (1855).

*Augiades subhyalina*, Leech, Butt. of China, etc. ii. p. 602, pl. 41, fig. 8, ♂ (1893). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 247, pl. 24, fig. 58 (genitalia).

IMAGO.—Male. Upperside ochreous-brown. *Forewing* with the costa up to and beyond the sub-apical spots dark ochreous divided by the brown sub-costal veins, the cell with two dark ochreous streaks from the base ending in two elongated spots at the cell end, the streaks divided from each other by a brown line and from the costal streak by the upper margin of the cell; the space below the cell up to the sex mark and the basal half of the hinder marginal space below the sub-median vein also dark ochreous, the sub-apical spots and the discal series disposed much as in *A. brahma*, but all darker ochreous, and there are two small dark ochreous dots above the discal series. *Hindwing* with a spot at the end of the cell, and a discal whorl of five spots ending in the first median interspace, all dark ochreous, but somewhat suffused in some examples; the abdominal half of the wing more or less covered with dark ochreous hairs. Cilia of both wings ochreous. Underside dull greyish-ochreous. *Forewing* with the lower half blackish, the costal and cell streaks and the sub-apical spots present, but somewhat indistinct, the discal series as on the upperside, but paler, the lowest spot white, its outer end forked. *Hindwing* uniform in colour, darker and browner than the colour of the forewing, the ochreous spots present, but somewhat obscure. Antennæ black, the shaft spotted with white on the underside, the club tipped with pale red, its hinder portion on the underside whitish; eyes ringed with white; palpi grey above, whitish beneath; pectus whitish; head and body above and below concolorous with the wings; legs more or less ochreous, with whitish hairs between them on the thorax.

Female. Upperside brown, tinted with ochreous, dull and uniform in colour, all the spots larger and nearly white and more or less elongated, the discal series on the forewing completed up to the sub-apical spots by the addition of two spots one above the other, placed a little outwards. Cilia of both wings nearly white. Underside very



much paler, the spots as on the upperside, and both wings with elongated marginal spots in pairs in each interspace, sometimes very obscure.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—Assam, China, Japan.

DISTRIBUTION.—Elwes records it from the Khasia Hills; we also have it from the same locality; also from China and from Nikko in Japan. The Assam specimens are a little smaller than the others, but otherwise do not specifically differ.

#### CHINESE AND JAPANESE ALLIED SPECIES.

*Augiades venata*, *Hesperia venata*, Bremer and Grey, Schmett. N. China's, p. 11, pl. 3, fig. 5 (1853).

Habitat, China, Japan, Corea.

*Augiades ochracea*, *Pamphila ochracea*, Bremer, Bull. Acad. Pet. iii. p. 473 (1861); id. Lep. Ost. Sib. p. 33, pl. i. fig. 11 (1864). *Augiades ochracea*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 248, pl. 24, fig. 60 (genitalia). Habitat, Japan, Amurland, Island of Askold.

*Augiades bouddha*, *Pamphila bouddha*, Mabille, Ann. Soc. Ent. Fr. 1876, p. lvi. *Augiades bouddha*, Leech, Butt. of China, etc. ii. p. 603, pl. 41, fig. 7, ♂, 14, ♀ (1893). Habitat, Moupin, China.

*Augiades selas*, *Pamphila selas*, Mabille, Pet. Nouv. ii. p. 233 (1878). Habitat, Chinese Thibet.

*Augiades rukuchina*, *Pamphila rukuchina*, Butler, Cist. Ent. ii. p. 285 (1878). *Hesperia rukuchina*, Pryer, Rhop. Nippon, p. 34, pl. 10, fig. 16a, ♂, b, ♀ (1889). Habitat, Japan.

*Augiades herculea*, *Pamphila herculea*, Butler, Ann. Mag. Nat. Hist. 1881, p. 140. Habitat, Nikko, Japan.

*Augiades thibetana*, *Pamphila subhyalina* var. *thibetana*, Oberthür, Étud. d'Ent. xi. p. 28, pl. 6, fig. 45 (1886). Habitat, West and Central China.

*Augiades cratæis*, Leech, Butt. of China, etc. ii. p. 603, pl. 41, figs. 9, ♂, 11, ♀ (1893). Habitat, Omeishan.

*Augiades consors*, Leech, l.c. p. 604, pl. 41, fig. 10, ♀ (1893). Habitat, Moupin.

*Augiades sylvanoides*, Leech, l.c. p. 605, pl. 41, fig. 4, ♂ (1893). Habitat, W. China.

*Augiades similis*, Leech, l.c. p. 605, pl. 41, fig. 6, ♂ (1893). Habitat, W. China.

*Augiades majuscula*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 249, pl. 19, fig. 21, ♂, and pl. 25, fig. 61 (genitalia). Habitat, China.

#### Genus CUPITHA.

*Cupitha*, Moore, Journ. As. Soc. Bengal, 1884, p. 47. Watson, Hesp. Ind. p. 64 (1891); id. Proc. Zool. Soc. 1893, p. 111; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 432. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 245.

*Forewing*, vein 12 reaches costa before the end of cell; cell about two-thirds the length of the costa; vein 3 emitted about one-eighth before the lower end of cell, 2 from the middle; costa arched at the base, then nearly straight to the apex, which is sub-acute, outer margin convex, about as long as the hinder margin, a short tuft of hair in the male attached to the underside close to the origin of vein 1. *Hindwing*,

vein 7 emitted a little before the upper end of cell, discocellulars very faint, vein 5 absent, veins 3 and 2 close together near the lower end of the cell; in the male there is a glandular patch at the origin of vein 2 distorting the lower margin of the cell and altering the relative positions of veins 2 and 3; costa highly arched at the base, then nearly straight towards apex, which is rounded and well pronounced, outer margin evenly convex, hinder angle also well pronounced. Antennæ about half as long as the costa of forewing, club moderate, with a pointed, abrupt crook; palpi with the second joint densely scaled, third joint minute, obtusely conical; hind tibiæ nearly naked and with two pairs of spurs.

Type, *Cupitha tympanifera*, Moore.

#### CUPITHA PURREEA.

Plate 813, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Pamphila purreea*, Moore, Proc. Zool. Soc. 1877, p. 594, pl. 58, fig. 10. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1881, p. 261.

*Cupitha purreea*, Moore, Journ. As. Soc. Bengal, 1884, p. 48. Hampson, id. 1888, p. 366. Elwes, Trans. Ent. Soc. 1888, p. 452. Watson, Journ. Bo. Nat. Hist. Soc. 1891, p. 57; id. Hesp. Ind. p. 64 (1891). Elwes, Proc. Zool. Soc. 1892, p. 652. Watson, id. 1893, p. 112. de Nicéville, Gazetteer of Sikkim, Butt. p. 184 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 680. Davidson, Bell and Aitken, id. xi. 1897, pp. 39, 40 (larva and pupa). Evans, id. xx. 1910, p. 389. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 245. Frühstorfer, Iris, 1911, p. 28.

*Cupitha tympanifera*, Moore, Journ. As. Soc. Bengal, 1884, p. 48.

IMAGO.—Male. Upperside blackish-brown, markings gamboge-yellow. *Forewing* with a broad sub-costal streak from the base, ending in a point about the middle of the wing and a post-medial band, varying in width in different examples, commencing in a pointed wedge-shaped streak from the base, running above the sub-median vein to a little beyond its middle, then inclining obliquely upwards to about one-fourth from the apex, with a large knob below its middle and a smaller knob at its end. *Hindwing* with a transverse band varying in width in different examples, extending from the middle of vein 1 to the middle of vein 6; its edges irregular, and in some examples it runs up narrowly and obscurely along the costal border. Cilia pure yellow at the anal angle of the hindwing, becoming more and more touched with brown upwards. Underside dull gamboge-yellow. *Forewing* with a black streak filling the whole of the cell to near its end and extending downwards somewhat at its middle; a black bar across the end of the cell, a large black patch at the hinder angle. *Hindwing* with one, sometimes two black streaks down the wing near the abdominal margin. Antennæ black, the shaft yellowish beneath, the tip of the club pale red; palpi, head and body

above concolorous with the wings, with some yellowish-grey hairs, abdomen with yellowish segmental bands, underside gamboge-yellow.

Female like the male, the bands usually broader.

Expanse of wings, ♂  $1\frac{1}{10}$  to  $1\frac{2}{10}$ , ♀  $1\frac{1}{2}$  inches.

LARVA is broadest at the twelfth segment; the head is heart-shaped, the vertex being the narrow side, and is slightly bi-lobed, very finely velute, and chocolate-brown in colour, larger than segment 2. Body cylindrical, depressed at the last 4 segments, squarish at the extremity, segment 2 has a broad, shiny, red-brown collar. Surface covered with small, light, erect hairs. Colour light green, yellowish on segments 3 and 4; posterior segments yellowish; a dorsal brown line on segment 11 to end; a green dorsal line on segments 2 to 10, the margins of segments 11, 12, 13 are marked with brown. Length, 25 mm.

PUPA.—Head rounded in front, with a semicircularly rounded boss, which is flattened above and below between the eyes, and covered with long, stiff, erect, white hairs; on the vertex of the head is a sub-dorsal sharp point covered with long adpressed hairs; eyes prominent, with long erect hairs on hinder margin. Anal segment with a sub-dorsal tuft of long, erect hairs. Spiracular expansion of segment 2 raised, oval, moderately large, and brown in colour; thorax stout, abdomen gradually decreasing in diameter to the end; cremaster stout, square, square at the extremity, set with strong, red, hooked hairs all round the margin; surface of body covered with small, stiff erect hairs; colour light olive-green; shape that of *Telicota*. Length, 14 mm. Fixed by the tail only. The imago at rest folds the wings over the back.

The larva makes a cell by gnawing through the midrib half-way up the leaf, separating the top half from the basal half by eating a line across; the eaten half is joined by the edges and withers, hardening into a perfectly cylindrical curved cell; this cell is lined inside thickly with silk, drawn under the green half and fastened there, being thus protected from the wet; the mouth of the cell is at the point where the midrib has been gnawed through. The larva makes a tight and cylindrical cell at the edge of the leaf by turning over an oblong piece on to the top.

We bred this insect on *Terminalia paniculata* from the larva long before we ever saw one on the wing; it has been caught twice latterly in Karwar at the end of the monsoon, but these were the only two occasions it has ever been seen below the ghats near the sea coast. In the cold season we have bred many above the ghats as well as in the valley of the Kalinaddi river, thirty miles from the coast. We have once seen the butterfly in the cold weather in what might be called its wild state, and then it had only just emerged from its pupa. It is probably a dusk, if not a night flyer. It inhabits the densest jungles, generally near water. The larva feeds also on *Terminalia belerica* and *Combretum ovalifolium*. (Davidson, Bell and Aitken.)

HABITAT.—Sikkim, Assam, S. India, Burma, Andamans, Java, Nias, Philippines.

DISTRIBUTION.—The type was from the Andamans, the type of *tympanifera* from Pegu. We have it from Sikkim, the Andamans and the Khasia Hills. Watson records it from the Chin Hills and from Orissa; Evans from the Palni Hills; Hampson from the Nilgiris; Elwes from the Karen Hills, Java, Nias and the Philippines; Davidson, Bell and Aitken from Karwar, where they bred it, but unfortunately did not figure the larva or pupa.

#### INDO-MALAYAN ALLIED SPECIES.

- Cupitha verruca*, Pamphila verruca, Mabille, Bull. Soc. Ent. Fr. 1889, p. 84. Habitat, Sumatra.  
*Cupitha lycorias*, Pamphila lycorias, Mabille, Ann. Soc. Ent. Belg. xxxvii. p. 54 (1893). Habitat, E. Java.  
*Cupitha alara*, *Cupitha purreea alara*, Frühstorfer, Iris, 1911, p. 29. Pamphila verruca, Staudinger (nec Mabille), Iris, 1889, p. 146, pl. 2, fig. 7, ♀. Habitat, Celebes, Philippines.

#### Genus TELICOTA.

- Telicota*, Moore, Lep. Ceylon, i. p. 169 (1881). Distant, Rhop. Malayana, p. 381 (1886). Watson, Hesp. Ind. p. 55 (1891); id. Proc. Zool. Soc. 1893, p. 102. Leech, Butt. of China, etc. ii. p. 600 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 432. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 249.

*Forewing*, vein 12 ends on costa some distance before end of cell; cell long, very little less than two-thirds the length of the costa; upper discocellular minute, middle and lower in an inwardly curved oblique line, the middle much the longer, vein 5 from their junction rather close to the lower end of the cell, curved well upwards at its origin, vein 3 emitted some little distance before the lower end of the cell in the male, quite close to the end in the female, vein 2 a little beyond the middle in the male, rather closer to the cell end in the female; costa very slightly arched before its middle; apex sub-acute, outer margin convex, oblique, somewhat shorter than the hinder margin; the wing narrow, the oblique outer margin giving the outer portion of the wing a narrow triangular shape. *Hindwing*, vein 7, from well before upper end of cell, the cell margin curving downwards from the base of 7 to its end; discocellulars outwardly oblique, faint, vein 5 absent, 3 emitted close to lower end of cell, 2 from twice the same distance from the origin of 3; costa and outer margin evenly rounded to vein 2, where the margin is slightly excavated, making the anal angle somewhat lobed. Antennæ more than half the length of costa of forewing, club stout, with a short and pointed terminal crook; palpi upturned, the second joint laxly scaled, third joint sub-erect, bluntly conical; hind tibiæ naked and with two pairs of spurs. The male with a linear discal stigma on the upperside of the forewing extending from the

lower end of the cell to the middle of the sub-median vein, veins 2 and 3 passing through it.

Type, *Papilio augias*, Linnæus.

#### TELICOTA AUGIAS.

Plate 813, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, ♀.

- Papilio augias*, Linnæus, Syst. Nat. i. p. 794 (1767). Fabricius, Mant. Ins. ii. p. 84 (1787).  
 Donovan, Ins. Ind. pl. 48, fig. 1 (1800).  
*Hesperia augias*, Latreille, Enc. Méth. ix. p. 767 (1823).  
*Phemiades augias*, Hübner, Zutr. figs. 227, 228 (1837).  
*Pamphila augias*, Westwood, in Doubleday and Hewitson's Diurn. Lep. p. 522 (1852). Moore,  
 Proc. Zool. Soc. 1865, p. 792. Druce, id. 1874, p. 109.  
*Telicota augias*, Moore, Lep. Ceylon, i. p. 169 (1881). Swinhoe, Proc. Zool. Soc. 1885, p. 147; id.  
 idem, 1886, p. 433. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 384.  
 Distant, Rhop. Malayana, p. 382, pl. 34, fig. 23 (1886). Aitken, Journ. Bo. Nat. Hist. Soc.  
 1887, p. 43. Elwes, Trans. Ent. Soc. 1888, p. 451. Manders, id. 1890, p. 537. Watson, Hesp.  
 Ind. p. 55 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 57. Elwes, Proc. Zool. Soc. 1892,  
 p. 651. Watson, id. 1893, p. 103. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 427.  
 de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894); id. Journ. As. Soc. Bengal, 1895, p. 53.  
 Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 680. Elwes and  
 Edwards, Trans. Zool. Soc. 1897, p. 251, pl. 25, figs. 62, 62a (genitalia). Adamson, Trans. N. H.  
 Soc. Northumberland, etc. 1908, p. 144. Frühstorfer, Iris, 1911, p. 29.  
*Hesperia colon*, Fabricius, Syst. Ent. p. 531 (1775); id. Ent. Syst. iii. (1), p. 327 (1793). Aurivillius,  
 Ent. Tidsk. 1897, p. 149.

IMAGO.—Male. Upperside. *Forewing* golden-ochreous, costal and outer marginal line black, a narrow, pale blackish streak beneath the upper and lower margins of the cell, a broad, black, more or less oval-shaped band from the lower end of the cell to the middle of the sub-median vein, containing a linear discal stigma throughout its length, with some pale obscure spots in continuation upwards towards the apex of the wing; all the veins black, some blackish suffusion on the hinder marginal area below the sub-median vein, a black, macular, marginal band consisting of elongated square spots, decreasing in size upwards, one in each interspace. *Hindwing* black, a golden-orange, rather large spot at the end of the cell, a large discal patch of that colour, from above vein 6 to below vein 2 where it joins a golden-yellow streak which runs through interspace 1 from its base to its end, the patch divided by the black veins 2, 3, 4 and 6, into elongated spots mostly scalloped on their outer sides and rounded on their inner sides. Cilia of both wings yellow, touched with brown on the upper part of the forewing. Underside. *Forewing* brownish-ochreous, the basal half of the cell, the space below it and the discal band black, the discal band with some diffused marks and spots continued up to the apex; the outer marginal band of the upperside represented

obscurely down to vein 2, from whence it is continued broadly black round the hinder angle, all the veins black. *Hindwing* brownish-ochreous, somewhat darker than the forewing, the discal patch indicated by black spots round its margins. Antennæ black, white beneath, the shaft spotted with black, the club with a dull red tip; palpi ochreous above, white beneath, pectus white; head and body brown above, covered with ochreous hairs, abdomen whitish beneath.

Female. Upperside, both wings mostly blackish-brown. *Forewing* with an ochreous streak along the costa, and an ochreous spot at the end of the cell, three sub-apical ochreous spots, a discal ochreous outwardly oblique band divided by the veins into elongated spots from the sub-median vein, the spots narrowing upwards, excavated on their outer sides, ending in two small spots or dots towards the apex outside the lower end of the sub-apical spots. *Hindwing* with a discal ochreous band and abdominal streak as in the male. Cilia of both wings whiter. Underside much as in the male; the upperside varies in different examples in the extent and breadth of the ochreous markings.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{1}{2}$  inches.

HABITAT.—Sikkim, Assam, Central and Southern India, Burma, Siam, Andamans, Ceylon, Hong Kong, Formosa, Malay Peninsula and Archipelago.

DISTRIBUTION.—A common species in most of the above-mentioned localities; we took many specimens in Mhow, Poona and Bombay; Elwes records it also from E. Pegu and the Naga Hills, Manders from the Shan States, Druce from Siam, Watson from the Chin Hills, Aitken from Nassik, and Betham from the Central Provinces.

#### TELICOTA BAMBUSÆ.

Plate 813, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, larva and pupa.

*Pamphila bambusæ*, Moore, Proc. Zool. Soc. 1878, p. 691, pl. 45, fig. 11.

*Telicota bambusæ*, Moore, Lep. Ceylon, i. p. 170, pl. 71, fig. 4 (1881). de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Doherty, id. 1886, p. 139. Elwes and de Nicéville, id. p. 440. Wood-Mason and de Nicéville, id. p. 384. Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Distant, Rhop. Malayana, p. 382, pl. 35, fig. 12 (1886). Elwes, Trans. Ent. Soc. 1888, p. 450. Hampson, Journ. As. Soc. Bengal, 1888, p. 366. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27. Manders, Trans. Ent. Soc. 1890, p. 537. Davidson and Aitken, Journ. Bo. Nat. Hist. Soc. 1890, p. 372. Fergusson, id. 1891, p. 447. Watson, id. p. 103. Watson, Hesp. Ind. p. 56 (1891); id. Proc. Zool. Soc. 1893, p. 103. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 427. Swinhoe, Trans. Ent. Soc. 1893, p. 321. de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894). Leech, Butt. of China, etc. ii. p. 600 (1893). J. J. Walker, Trans. Ent. Soc. 1895, p. 475. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 680. Davidson, Bell and Aitken, id. xi. 1897, p. 51 (larva and pupa). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 251, pl. 25, fig. 63 (genitalia). de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 600. Crowley, Proc. Zool. Soc. 1900, p. 511. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc.

xiv. 1902, p. 493. Aitken and Comber, id. xv. 1903, p. 54. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 145. Hannyngton, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371. Evans, id. p. 389. Frühstorfer, Iris, 1911, p. 29.

IMAGO.—Male. Upperside. *Forewing* much as in *T. augias*, but the discal black band is narrower and more uniform, and is continued up to the outside of the upper end of the cell, where it terminates in a square patch, its outer side extending somewhat outwards, and the outer marginal black band is much broader and more uniform in width, expands at the apex and is complete and not macular as in *augias*, its inner edge irregular. *Hindwing* with the black portions blacker, the cell spot similar, the discal band and abdominal streak also similar, but the band is more uniform in width. Cilia similar. Underside like the underside of *T. augias*, the black markings more pronounced; the black spots on the hindwing indicating the discal patch much more prominent, and there is a blackish streak near the anal angle in each of the two anal interspaces. Antennæ, palpi, head and body as in *T. augias*.

Female like its own male, but on the upperside the basal half of the cell of the forewing is usually black, and there is no cell spot in the hindwing.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{1}{2}$  inches.

LARVA, as in the group, cylindrical; head round and thick; colour yellow, with a central dark line down the face, broadening out at the clypeus, and a black spot at the eyes; the colour may vary from this to a dark rich black-brown all over; last segment rounded and flattened at extremity; colour of body is a watery grass-green, yellowish at anterior margins of anterior segments. Length, 34 mm.

PUPA, as in the group, circular in transverse section, spiracular expansions of segment 2 are large and ear-like, red-brown in colour, cremaster is a truncated triangle in shape, with a large tooth at each hinder corner, and set with spare bristles on the hinder margin; the thorax is slightly compressed; the surface is covered with fine, red, short hairs; the head is somewhat inclined, colour is red-brown, with greenish wing-cases. Length, 19 mm.

HABITS.—The larva makes its cell in a cylindrical shape by folding a leaf lengthways, lining it inside densely with silk; it pupates in the cell. The egg is laid on a young leaf. The butterfly is very common at all seasons throughout the district; it basks on bamboo leaves, etc., in the sun, with its wings half open, when it is easily caught; it is an insect of very rapid flight. We have bred it at all seasons above and below the ghats. (Davidson, Bell and Aitken.)

HABITAT.—India, Burma, Ceylon, Andamans, Malay Peninsula.

DISTRIBUTION.—The types are from Calcutta; it is a very common species all over India up to the Himalayas, and has been recorded from many localities; our figures of the larva and pupa are from Davidson's original drawings not previously published.

## INDO-MALAYAN ALLIED SPECIES.

- Telicota eurotas*, Pamphila eurotas, Felder, Sitzb. Ak. Wiss. Math.-nat. Cl. xl. p. 461 (1860).  
Habitat, Amboina, Philippines.
- Telicota pythias*, Pamphila pythias, Mabille, Pet. Nouv. ii. p. 234 (1878). Habitat, Java.
- Telicota rahula*, *Telicota bambusæ rahula*, Frühstorfer, Iris, 1911, p. 30. Habitat, S. Celebes.
- Telicota rasana*, *Telicota bambusæ rasana*, Frühstorfer, l.c. Habitat, Palawan, Philippines.

## Genus CORONE.

- Corone*, Mabille, Pet. Nouv. Ent. i. p. 205 (1878).
- Telicota*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 249.
- Telicota* *Artengruppe Corone*, Frühstorfer, Iris, 1911, p. 41.

*Forewing*, vein 12 ends on the costa well before the end of the cell; cell long, nearly two-thirds the length of the costa, upper discocellular minute, outwardly oblique, middle and lower discocellulars inwardly oblique, the middle discocellular inwardly abruptly curved at its lower extremity before joining the lower; vein 3 from quite close to the lower end of the cell, not half as far from it as it is in the genus *Telicota*, 2 from before the middle, in *Telicota* the bases of veins 3 and 2 are at least one-third nearer each other than are the bases of 3 and 4; wing-shaped as in *Telicota*. *Hindwing*, vein 7 emitted well before the upper end of the cell, the cell margin bent down from its base to the cell end; discocellulars outwardly oblique, very faint, vein 5 absent; 3 and 2 from close to the lower end of the cell, their bases at about equal distances apart. Antennæ, palpi and legs as in *Telicota*. No secondary sexual characters.

Type, *Corone ismenoides*, Mabille, from Australia.

## CORONE PALMARUM.

Plate 814, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, ♀.

- Pamphila palmarum*, Moore, Proc. Zool. Soc. 1878, p. 690, pl. 45, figs. 6, 7, ♂, ♀.
- Padraona palmarum*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Wood-Mason and de Nicéville, id. 1886, p. 384. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27; id. Hesp. Ind. p. 60 (1891). Elwes, Proc. Zool. Soc. 1892, p. 652. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 427. Watson, Proc. Zool. Soc. 1893, p. 102; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 547.
- Telicota palmarum*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 252, pl. 25, figs. 64, 64a (genitalia). Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 145. Frühstorfer, Iris, 1911, p. 41.

IMAGO.—Male. Upperside. *Forewing* golden-ochreous, colour very similar to that of *Telicota augias*, the costa and all the veins and a line through the middle of the



cell blackish-brown; outer marginal border blackish-brown, broadest at the apex and hinder angle, its inner margin sinuous, curving inwards opposite the cell, then gradually widening hindwards, a blackish-brown streak from the base running immediately below the median vein, expanding gradually outwards, narrows at the cell end, then expands into a patch outside the cell which reaches the costa, being somewhat constricted in its middle, the sub-median vein heavily blackish-brown. *Hindwing* blackish-brown, some golden-ochreous hairs at the base and along the abdominal area, a somewhat large oval golden-ochreous spot at the end of the cell, and a somewhat broad, short, discal band of the same colour, divided by the blackish-brown veins, from a little above vein 6 to near the internal vein, with a thin golden-ochreous streak running from this end to the margin. Cilia of forewing blackish-brown, of the hindwing golden-ochreous. Underside orange-ochreous. *Forewing* with the basal half of the cell and all the basal space below it dark blackish-brown, this colour running narrowly to the cell end and along the hinder margin, leaving a costal streak, the outer half of the cell, and a discal band from the costa orange-ochreous, curving well outwards, then inwardly oblique to near the hinder margin, divided by the veins into elongate subquadrate spots which increase in size hindwards, costal and outer marginal lines finely blackish-brown. *Hindwing* uniformly orange-ochreous, darker than the forewing, the discal band as on the upper-side, divided by the veins and finely edged on both sides with blackish-brown. Antennæ black, the upper half of the shaft with minute ochreous dots on its underside, and a smear of the same colour on the lower half of the club; palpi ochreous and blackish-brown; head dull ochreous, with a transverse brown band in front and another behind, thorax with ochreous setæ, abdomen with indistinct similarly coloured bands; on the underside the palpi, body and legs are of the colour of the hindwing.

Female. Upperside chocolate-brown, the markings dull brownish-ochreous. *Forewing* with a large spot at the end of the cell, and a narrow band divided into spots by the veins, commencing very narrowly at the costa near the apex angled almost acutely outwards, then inwardly oblique and almost straight to near the middle of the hinder margin, gradually broadening hindwards. *Hindwing* with indications of a small cell spot, and with a discal band, much narrower than the discal band of the male. Cilia of forewing brown, of the hindwing ochreous-white. Underside paler and duller in colour, markings similar.

Expanse of wings, ♂  $1\frac{6}{10}$  to  $1\frac{7}{10}$ , ♀  $1\frac{8}{10}$  to 2 inches.

LARVA feeds on the date and cocoanut palms. (Indian Museum Notes, v., No. 3, p. 126, pl. 9, larva.)

HABITAT.—Sikkim, Assam, Bengal, Burma, Nikobars.

DISTRIBUTION.—The types came from Calcutta, it is a widely spread but rare species; our description and figures are from a male in our collection from the Khasia Hills and two females from Maulmein in the Hancock Museum, Newcastle, taken by

Adamson in January, 1879; Elwes records it from the Karen Hills, Margharita, in Upper Assam, and from Perak, de Nicéville from Sikkim and Cachar, Watson from Beeling in Burma and from the Nikobars.

#### INDO-MALAYAN ALLIED GENERA AND SPECIES.

- Corone augiades*, Pamphila augiades, Felder, Sitzb. Ak. Wiss. Math.-nat. Cl. xl. p. 461 (1860).  
*Hesperia augiades*, Felder, Reise, Nov. Lep. iii. pl. 72, fig. 5 (1867). *Telicota augiades*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 253, pl. 25, figs. 65, 65a (genitalia). Habitat, Amboina, Java.
- Corone prusias*, Pamphila prusias, Felder, Sitzb. Ak. Wiss. Math.-nat. Cl. xliii. p. 44 (1861). *Telicota prusias*, Elwes and Edwards, Trans. Zool. Soc. p. 251, pl. 19, fig. 14, ♂. Habitat, Celebes, Amboina, Philippines.
- Corone acalle*, *Hesperia acalle*, Hopffer, Stett. ent. Zeit. 1874, p. 41. *Telicota palmarum acalle*, Frühstorfer, Iris, 1911, p. 42. Habitat, S. Celebes.
- Corone chrysozona*, *Hesperia chrysozona*, Plötz, Stett. ent. Zeit. 1883, p. 237, unpublished plate No. 709. *Corone chrysozona*, Swinhoe, Trans. Ent. Soc. 1908, p. 20, pl. 2, fig. 11. Habitat, Philippines.
- Corone kühni*, *Hesperia kühni*, Plötz, l.c. 1886, p. 101. *Telicota kühni*, Frühstorfer, l.c. (note). Synonym, *Telicota subrubra*, Holland, Proc. Bost. Soc. 1890, p. 79, pl. 4, fig. 4. *Telicota simplex*, Elwes and Edwards, l.c. pl. 19, fig. 15, ♂. Habitat, Celebes.
- Corone hercules*, Pamphila hercules, Mabille, Bull. Soc. Ent. Fr. 1889, p. lxxxv. Habitat, Celebes.
- Corone insularis*, *Telicota insularis*, Elwes and Edwards, l.c. p. 252, pl. 19, figs. 26, ♂, 27, ♀. Habitat, Pulo Laut, Borneo.
- Corone raktaja*, *Telicota palmarum raktaja*, Frühstorfer, l.c. p. 41. Habitat, W. Java, Sumatra.
- Corone matinus*, *Telicota prusias matinus*, Frühstorfer, l.c. p. 44. *Padraona kühni*, Semper (nec Plötz), Rhop. Philipp. p. 302 (1892). Habitat, Luzon, Philippines.
- Corone sariputra*, *Telicota prusias sariputra*, Frühstorfer, l.c. Habitat, Palawan, Philippines.
- Corone kreon*, *Telicota insularis kreon*, Frühstorfer, l.c. Habitat, Kina Balu, Borneo.
- Corone androstheneis*, *Telicota hercules androstheneis*, Frühstorfer, l.c. Habitat, S. Celebes.

#### Genus PADRAONA.

- Padraona*, Moore, Lep. Ceylon, i. p. 170 (1881). Distant, Rhop. Malayana, p. 381 (1886). Watson, Hesp. Ind. p. 57 (1891); id. Proc. Zool. Soc. 1893, p. 101. Leech, Butt. of China, etc. ii. p. 595 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 432.
- Telicota*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 249.

*Forewing*, vein 12 ends on costa a little before end of cell, cell less than two-thirds the length of costa, upper discocellular minute, lower and middle somewhat inwardly oblique, the middle the longer, but not nearly so long in proportion as it is in the genus *Telicota*, vein 5 from their junction being much less curved at its base; vein 3 emitted close to lower end of cell, in *Telicota* its base is farther inwards, vein 2 from the

middle, in both sexes alike; wing short and not nearly so produced apically as it is in *Telicota*; costa more arched, outer margin more convex, less oblique, shorter than the hinder margin. *Hindwing*, vein 7 emitted a little before the upper end of cell, the upper margin of the cell not curving downwards at its end, as it does in *Telicota*; discocellulars faint, vein 5 absent, 3 emitted quite close to lower end of cell, 2 from rather close to the base of 3; costa and outer margin evenly rounded, a slight excision between veins 2 and 1b. Antennæ more than half the length of costa of forewing, club moderate, not nearly so stout as it is in *Telicota*, with a short, pointed, terminal crook; palpi upturned, densely scaled, third joint short, slender, obtusely conical; hind tibiæ naked and with two pairs of spurs, no secondary sexual characters; the coloration and pattern of the wings very similar in nearly all of the species.

Type, *Pamphila mæsa*, Moore = *dara*, Kollar.

#### PADRAONA DARA.

Plate 814, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, ♀.

- Hesperia dara*, Kollar, Hügel's Kaschmir, iv. p. 455 (1848). Elwes, Proc. Zool. Soc. 1882, p. 407.
- Padraona dara*, Moore, Proc. Zool. Soc. 1882, p. 262. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Doherty, id. 1886, p. 139. Wood-Mason and de Nicéville, id. p. 385. Watson, Journ. Bo. Nat. Hist. Soc. 1891, p. 57; id. Hesp. Ind. p. 57 (1891). Elwes, Proc. Zool. Soc. 1892, p. 651. Swinhoe, Trans. Ent. Soc. 1893, p. 321. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 427. Watson, Proc. Zool. Soc. 1893, p. 102. de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 681. de Rhé-Philipe, id. xiv. 1902, p. 493. Swinhoe, Trans. Ent. Soc. 1908, p. 19.
- Telicota (Padraona) dara*, de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 600. Hannington, id. xx. 1910, p. 371.
- Telicota dara*, Elwes, Trans. Ent. Soc. 1888, p. 451. Manders, id. 1890, p. 537. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 254, pl. 25, figs. 69, 69a (genitalia). Leslie and Evans, Journ. Bo. Nat. Hist. Soc. xiv. 1903, p. 677. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 145. Frühstorfer, Iris, 1911, p. 35.
- Pamphila mæsa*, Moore, Proc. Zool. Soc. 1865, p. 509, pl. 30, fig. 9.
- Padraona mæsa*, Swinhoe, Proc. Zool. Soc. 1886, p. 433. de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 388.
- Pamphila zebra*, Mabille, Pet. Nouv. Ent. p. 167 (1877).
- Hesperia nala*, Plötz, Stett. ent. Zeit. xlv. p. 231 (1883), unpublished plate No. 1464.

IMAGO.—Male. Upperside. *Forewing* with the cell orange-ochreous, with a brown streak in it from the base to its middle, the space above it also ochreous, with the veins and costal line brown, a brown rather broad band from the base, filling up the space between the cell and the sub-median vein, bending upwards a little beyond the middle, narrowing a little with irregular edges, throwing out a curved branch below the costa which does not reach the outer marginal band at the apex, the outer marginal

brown band is fairly broad, and between it and the middle band is an orange-ochreous band of five spots formed by the brown veins, all more or less scalloped on their outer sides, the first three in an outwardly oblique line, the upper two a little outwards and attached to two (sometimes three) rather elongated, orange, sub-apical spots from near the costa a little inwards, an orange streak below the sub-median vein from the lower end of the discal orange series, fining to a point near the base. *Hindwing* blackish-brown, with an orange spot inside the cell-end, a discal band of three conjoined, somewhat quadrate spots and a streak of ochreous hairs on vein 1. Cilia of both wings brown, whitish at hinder angle of forewing, orange-ochreous at the anal angle of hindwing. Underside. *Forewing* blackish-brown, paler tinted and somewhat ochreous in the apical and outer marginal areas, the orange-ochreous markings as on the upper-side. *Hindwing* paler, with more or less of a somewhat greenish tint, especially in freshly emerged examples, the discal band dark-edged, three or four obscure pale and dark spots in the upper part of the wing. Antennæ black, the shaft spotted with white on the underside, the club whitish beneath; palpi, head and body above concolorous with the wings, palpi, pectus and abdomen whitish beneath.

Female like the male, but the orange-ochreous markings are generally narrower, and the brown spots in the upper part of the hindwing on the underside more distinct.

Expanse of wings, ♂ ♀,  $1\frac{2}{10}$  to  $1\frac{4}{10}$  inches.

HABITAT.—North-West Himalayas, Sikkim, Assam, North Burma.

DISTRIBUTION.—The type came from the Himalayas. Moore records it from Kangra, his types of *mæsa* from Simla and Kunawar, Elwes from Sikkim, the Naga and Karen Hills, Watson from the Chin Hills, de Rhé-Philippe from Masuri and Lucknow, de Nicéville from Chin Lushai, Manders from the Shan States, Doherty and Hannington from Kumaon, Leslie and Evans from Chitral, Betham from the Central Provinces; we have both sexes from several northern localities in India and Burma and from the Khasia Hills.

#### PADRAONA SATRA, nov.

Plate 814, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Telicota tropica satra*, Frühstorfer, MS. Iris, 1911, p. 39.

IMAGO.—Male. Upperside with the colour and markings much as in *P. dara*. *Forewing* orange-ochreous, base blackish-brown, a streak from it below the costa to its middle, a discal band proceeding broadly from the blackish-brown base to the middle of the wing, then abruptly straight upwards to the costa about a fifth from the apex, throwing out an outwardly curved branch before reaching the costa, to the apex where there is a small squarish patch connected with the rather broad outer marginal blackish-brown band, differing from *P. dara* in having more orange-ochreous and less

blackish-brown, and in the shape of the middle blackish-brown band. *Hindwing* as in *P. dara*, but the orange-ochreous cell-spot is larger and clearer, the discal band is straighter and the orange-ochreous streak inside the abdominal area is more or less obsolete. Underside. *Forewing* as on the upperside. *Hindwing* ochreous, more or less suffused with minute brown scales, the cell spot and discal band strongly edged with black, and there are three deep black spots below the costa, and a spot below the outer one. Antennæ black, spotted with white on the underside of the shaft, the club whitish beneath; palpi, head and body above blackish as in *P. dara*.

Female like the male, but the blackish-brown colour on the upperside of both wings much more extensive, leaving very narrow orange-ochreous bands.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  inches.

HABITAT.—Ceylon.

DISTRIBUTION.—Frühstorfer records it from Ceylon; we possess two male examples from Kandy, and our female figure is from an example in the B. M., also from Kandy; Frühstorfer informs us that his is an MS. name, not described; the types of both sexes are now in the B. M.

#### PADRAONA RECTIFASCIATA.

Plate 815, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, ♀.

*Telicota rectifasciata*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 254, pl. 21, fig. 17, ♂, and pl. 25, figs. 68, 68a (genitalia). Frühstorfer, Iris, 1911, p. 34.

IMAGO.—Male. Upperside. *Forewing* bright orange-ochreous, brighter coloured than in *dara*, a thin blackish-brown streak along the upper side of the cell, a blackish-brown band from the base as in *dara*, its sides even, not sinuous as in *dara*, otherwise very similar in shape, the lower portion of it, before it turns upwards, covered with bright orange-ochreous scales, the outer marginal band much as in *dara*, all the veins blackish-brown. *Hindwing* much as in *dara*, but the orange-ochreous portions brighter in colour. Cilia of forewings orange-grey, of hindwings bright orange-ochreous. Underside much as in *dara*, but all the ochreous portions much brighter; in the forewing, the lower black portions much blacker, the hindwing suffused with ochreous, often nearly obliterating most of the markings. Antennæ black, ringed with ochreous, the club ochreous beneath and at the tip; palpi, head and body covered with ochreous hairs on the upperside and uniformly ochreous beneath.

Female like the male, but duller in colour, all the ochreous portions much more limited.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  inches.

HABITAT.—Sikkim, Burma.

DISTRIBUTION.—The types are recorded from Sikkim and E. Pegu; our description and figures are from a male from Toungoo in the B. M., and a female in our collection from Sikkim, which has long been separated as a new species waiting for a male before describing it; Elwes and Edwards say that the genitalia differs from that of *dara*; it is, we believe, quite distinct from *dara*, but is very near *satra* from Ceylon; there are also two males in the B. M. marked Daunat Range, taken by Bingham.

PADRAONA MÆSOIDES.

Plate 815, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, larva and pupa.

- Pamphila mæsoides*, Butler, Trans. Linn. Soc. Zool. Lond. 1879, p. 554.  
*Padraona mæsoides*, Moore, Lep. Ceylon, i. p. 171, pl. 71, figs. 5, 5a (1881); id. Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Doherty, Journ. As. Soc. Bengal, 1886, p. 139 (genitalia). Watson, Hesp. Ind. p. 58 (1891). Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 447. Elwes, Proc. Zool. Soc. 1892, p. 651. Watson, id. 1893, p. 102. de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 681.  
*Telicota (Padraona) mæsoides*, de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 600.  
*Telicota mæsoides*, Distant, Rhop. Malayana, p. 383, pl. 34, fig. 24 (1886). Hampson, Journ. As. Soc. Bengal, 1888, p. 366. Elwes, Trans. Ent. Soc. 1888, p. 451. J. J. Walker, id. 1895, p. 475. Frühstorfer, Iris, 1911, p. 37.  
*Padraona pseudomæsa*, Moore, Lep. Ceylon, i. p. 170. Hampson, Journ. As. Soc. Bengal, 1888, p. 366. Watson, Hesp. Ind. p. 59 (1891). Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 447. Watson, Proc. Zool. Soc. 1893, p. 102; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 681. Crowley, Proc. Zool. Soc. 1900, p. 510. Swinhoe, Trans. Ent. Soc. 1908, p. 17.  
*Telicota pseudomæsa*, Frühstorfer, Iris, 1911, p. 38.  
*Hesperia zatilla*, Plötz, Stett. ent. Zeit. xlvii. p. 103 (1886), unpublished plate No. 1462.  
*Telicota dara*, Hampson (nec Kollar), Journ. As. Soc. Bengal, 1888, p. 366. Elwes (part), Trans. Zool. Soc. 1895, p. 254. Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi, 1897, p. 43 (larva and pupa).

IMAGO.—Male. A much smaller insect than *P. dara*, markings somewhat similar, as is the case in so many of this genus; the golden-yellow colour on the wings is distinctly paler. *Forewing* with a costal brown line, the cell and space above it golden-yellow, a short brown streak from the base within the cell, the veins running through the yellow space brown; the medial brown band has even edges on both sides, not sinuous as in *P. dara*, and curves up more abruptly, otherwise the markings are similar. *Hindwing* as in *dara*, but the discal yellow band has an extra small spot attached to (sometimes slightly separated from) its upper end. Cilia of both wings yellow, with brown patches on the forewing. Underside with the markings much as in *dara*, but the ground colour of both wings is suffused with rich orange-ochreous, the outer margin of the forewing is of that colour except at the hinder angle, the outer

margin of the discal ochreous band strongly lined with blackish-brown; the hindwing with the abdominal area suffused with some brown scaling, the edges of the orange-ochreous discal band also strongly lined with blackish-brown, and the upper spots dark and well pronounced. Antennæ, palpi, head and body as in *dara*.

Female like the male, but duller in colour.

Expanse of wings, ♂ ♀  $\frac{9}{10}$  to 1 inch.

LARVA, cylindrical, the last segment rounded at the extremity and somewhat depressed, the head triangular in shape as seen from in front, head dark brown or black with a white marginal band not meeting on the vertex and ending at the jaws; segment 2 with a black dorsal collar, colour transparent-looking green, with a darkish, not very conspicuous, dorsal line; abdomen light green; anal segment with short, light, fine hairs round the margin. Length 25 mm.

PUPA as in the group, stout, circular in transverse section, head slightly bowed, broad, eyes prominent, the last segment is square at the extremity; cremaster short, strong, ending square, with two strong converging ridges on the dorsum which end each in a sharp, turned up, short point behind; spiracular expansion of segment 2 large, ear-like, oval, facing forwards, red-brown in colour, with a spongy-looking surface; proboscis produced free to hinder margin of segment 9; surface finely rugose, with short hairs from segment 8 to end of dorsum; some longish, stiff hairs on front of the head and round the eyes; colour light green, strongly suffused with red-brown, especially on the top of segments 1 to 3.

HABITS.—The cell is made of a leaf folded into a cylindrical tube by joining the two edges longitudinally, the larva eats the leaf above at the base, leaving the cell attached by the midrib of the stalk; often finally the cell falls to the ground, when the larva pupates inside it. The larva feeds on bamboos, chiefly on *Teinostachyum*, the egg being laid always on a leaf near the ground. The butterfly is fairly common throughout the district; it has been noticed everywhere and at all seasons. We have bred many in the rains and in the cold weather. (Davidson, Bell and Aitken.)

HABITAT.—India, Burma, Andamans, Ceylon, Hong Kong, Malay Peninsula.

DISTRIBUTION.—A common species throughout India. We have it also from Ceylon and the Andamans; Elwes records it from the Naga Hills, Sikkim, and Perak, Watson from the Chin Hills, Doherty from Kumaon, de Rhé-Philipe from Masuri, Fergusson from Travancore, J. J. Walker from Hong Kong, Moore from Mergui.

NOTE.—Doherty says,\* “Differs from the preceding (*dara*) chiefly in the rich dark tawny-ochreous colour of the underside, *dara* being greenish-yellow set with dark scales. The markings are almost exactly alike. The prehensores are singularly different; seen from above, the uncus of *dara* is gradually acuminate; that of

\* Journ. As. Soc. Bengal, 1886, p. 139.

*mæsoides* abruptly truncate and slightly bilobed; seen from the side the uncus of *dara* is slender, tapering and pointed at the top, that of *mæsoides*, which is surmounted by a prominent tuft of hairs, is blunt and rounded at the tip; the clasp of *dara* is much more slender than in *mæsoides*, and its terminal crook much more produced and bent."

Our figures of the larva and pupa are from Davidson's original drawings not previously published; Davidson, Bell and Aitken recorded it as *dara*, but Mr. Davidson has kindly sent me a pair of their bred specimens, remarking that it seems to be different from his specimens of *dara* from Kashmir.

#### PADRAONA CONCINNA.

Plate 815, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Telicota concinna*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 253, pl. 21, fig. 20, ♂, and pl. 25, fig. 67, a, b (genitalia). Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 389.

IMAGO.—Male. Upperside very dark brown as in *P. gola*, with the dark orange-ochreous discal band and sub-apical spots much as in that species, but it is a distinctly larger species. *Forewing* comparatively broader, the spots at the end of the cell absent, though in one example the lower spot is present. *Hindwing* as in *P. gola*. Cilia as in *gola*, the yellow parts orange-ochreous, much darker than in *gola*. Underside with the ground colour similar, but the discal band of the hindwing is somewhat obscure and indistinct. Antennæ, palpi, head and body similar.

Female like the male.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{3}{10}$  inches.

HABITAT.—South India.

DISTRIBUTION.—The type male in Coll. Elwes came from the Nilgiris; Evans records it from the Palni Hills; we have both sexes from Ootacamund. Elwes and Edwards say, "The tegumen in the lateral aspect regularly decurved. In *gola* the tegumen in the lateral aspect is sinuate." It is undoubtedly a good and distinct species, we have had it in our collection for some years, set aside as distinct from *gola*; our figures are from our Ootacamund examples.

#### PADRAONA GOLA.

Plate 816, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, ♀, 1d, larva and pupa.

*Pamphila gola*, Moore, Proc. Zool. Soc. 1877, p. 596, pl. 58, fig. 9, ♂.

*Padraona gola*, Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Wood-Mason and de Nicéville,

Journ. As. Soc. Bengal, 1886, p. 384. Hampson, id. 1888, p. 366. Watson, Hesp. Ind. p. 59



- (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 57. Elwes, Proc. Zool. Soc. 1892, p. 652. Watson, id. 1893, p. 102. de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894). Leech, Butt. of China, etc. ii. p. 598, pl. 40, fig. 12, ♂ (1893). de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 547. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 681. Davidson, Bell and Aitken, id. xi. 1897, p. 56, pl. 7, fig. 5 (larva and pupa). Swinhoe, Trans. Ent. Soc. 1908, p. 17.
- Telicota gola*, Elwes, Trans. Ent. Soc. 1888, p. 453. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 253, pl. 25, figs. 66, a, b (genitalia). Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 389. Frühstorfer, Iris, 1911, p. 35.
- Padraona goloides*, Moore, Lep. Ceylon, i. p. 171, pl. 71, figs. 3, 3a (1881). Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27; id. Hesp. Ind. p. 60 (1891).
- Telicota goloides*, Distant, Rhop. Malayana, p. 382, pl. 35, fig. 13, ♂ (1886).
- Pamphila taxilus*, Mabille, Ann. Soc. Ent. Belg. xxi. p. 58 (1878).
- Pamphila akar*, Mabille, Comptes Rendus, Soc. Ent. Belg. iii. p. lxxi. (1883).
- Pamphila goloides*, var. *akar*, Staudinger, Iris, 1889, p. 146.
- Padraona akar*, Semper, Rhop. Philipp. p. 303, pl. 49, fig. 16, ♂ (1892).
- Thymelicus fabriolata*, Plötz, Stett. ent. Zeit. xlv. p. 289 (1884), unpublished plate No. 784.
- Apaustus alfurus*, Plötz, l.c. xxix. p. 229, ♂ (1885), unpublished plate No. 1496.
- Apaustus locus*, Plötz, l.c. xlvii. p. 107 (1886), unpublished plate No. 1497.

IMAGO.—Male. Upperside very dark brown, with a slight purplish tint in certain lights; markings dark orange-ochreous, much darker than any of the *dara* group. *Forewing* with a streak on the basal half close to the costal line, a short streak on the median vein at the lower end of the cell, with a shorter streak inside the cell, above it; a streak below the sub-median vein from near the base to a little beyond the middle from whence there is a nearly straight band, which passes close to the cell end streaks and very nearly joins three sub-apical spots, this band is divided by the veins into four spots, somewhat excavated on their outer sides, the first irregular, the second the largest, narrow and somewhat elongated. *Hindwing* with the usual discal band with the veins running through it. Cilia of forewing brown, yellow at the hinder angle; cilia of hindwing yellow. Underside nearly as dark as the upperside, richly saturated with orange-ochreous, the forewing having the basal half of the costa and the outer margin somewhat more ochreous than the rest of the wing; markings on both wings as on the upperside. Antennæ black, the underside of the shaft spotted with white, the club whitish below; palpi above brown, with some ochreous hairs, ochreous-grey on the underside, pectus similarly coloured; head and body above and below and the legs concolorous with the wings, abdomen whitish beneath.

Female like the male, the bands a little narrower.

Expanse of wings, ♂ ♀ 1 to  $1\frac{1}{10}$  inches.

LARVA, cylindrical, somewhat depressed, thickest at segment 5, sloping at the last segment, with the extremity of the anal segment rounded broadly; head of a semi-elliptical shape, somewhat narrowed at the top, truncated at the base and slightly

bi-lobed; head light yellow, bordered narrowly with black, and having a thin black central line splitting along the edges of the clypeus down the face, segment 2 swollen, narrow, shiny green; surface of body very minutely hairy, the hairs being longer on the margin; colour grass-green spotted all over with dark green, a dark, dorsal green line, and a lateral and sub-marginal indistinct white line. Length, 25 mm.

PUPA, cylindrical, very slightly constricted dorsally only behind the thorax, produced into a sharp, conical snout in front, slightly turned up; the eyes being prominent; the abdomen is tapering and ends in a thin, long, more or less broadly triangular, curved cremaster; the proboscis is not produced beyond the wings; the surface is quite glabrous and shiny; there are no spiracular expansions to segment 2; colour watery-green, with the markings of the larva. Length, 17 mm.

HABITS.—The pupa is fastened by both the tail and a band, the larva sometimes makes a lax cell, the pupa always forms on the underside of the leaf, with the edges of the leaf just drawn towards each other by a few threads of silk; the larva feeds on soft grasses. The imago rests with its wings closed over the back, it basks in the sun with its wings half open; its flight is not very rapid and it rests often. This butterfly is found in similar places to *A. maro*, Fabricius (round rice fields), unlike *maro*, however, it is found also in the jungles among bushes; it is common throughout the district, at all seasons of the year; the larva is one of the commonest found on grass in the monsoon months in Karwar. We have reared many. (Davidson, Bell and Aitken.)

HABITAT.—Sikkim, Assam, South India, Ceylon, Burma, Andamans, Malay Peninsula and Archipelago.

DISTRIBUTION.—We have examples from many localities in South India, Ceylon, Burma, Andamans, the Khasia Hills, and the Malay Archipelago; it is a local species, but widely spread over South India, Ceylon, Burma and the Andamans, and is usually in great plenty where it occurs. Elwes records it from Sikkim, Moore from Perak, Distant from the Malay Peninsula, and de Nicéville and others from Sumatra, Nias and many parts of the Malay Peninsula and Archipelago. Frühstorfer has given names to some local forms of *gola* and *dara*, which we have entered in our list of allied species; our figures of the larva and pupa are from Davidson's original drawings.

#### PADRAONA OTTALA, nov.

Plate 816, figs. 2, ♂, 2a, ♀, 2b, ♀.

IMAGO.—Male. Upperside rich, dark chocolate-brown, markings orange-ochreous. *Forewing* with a streak along the lower side of the cell from about its middle to its end, thickening outwards, a short streak above it, and attached to it, at the upper end

of the cell, and two very narrow streaks between it and the costa; three small, sub-apical, somewhat elongated spots, the uppermost one the smallest, the middle one shifted somewhat inwards, two small round spots outwardly below them, and four spots in the discal series, two in the median interspaces with excavated outer sides, and two minute spots, one above the other in the interno-median interspace; a streak on the hinder margin from the base to a little beyond the middle. *Hindwing* with a discal band of five spots, divided by the veins, the second and third from the top the largest, the lowest two small and somewhat obscure, and an obscure streak from them to the base of the wing along the inner side of the abdominal fold. Cilia of both wings ochreous-brown at the base, the outer part bright ochreous. Underside. *Forewing* with the costa and apex suffused with orange-ochreous, the lower portion of the wing black, the spots and cell streaks as on the upperside, the streak on the hinder margin not present. *Hindwing* ochreous-brown, the ground colour being brown, and the entire surface of the wing covered with minute ochreous scales, the discal band as on the upperside, but somewhat obscure, an obscure ochreous spot at the end of the cell, and another above it, near the apex. Antennæ black, with ochreous-white bands, the underside of the club ochreous-white; palpi above orange-ochreous, with some black hairs; head and body brown, the abdomen with ochreous hairs; on the underside the palpi and pectus are white, the thorax brown, with some white hairs, the abdomen dark ochreous, the legs brown above, ochreous beneath, the tarsi ochreous.

Female similar to the male, the two lowest spots of the discal series in the forewing larger.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  inches.

HABITAT.—Burma.

Described and figured from a pair in the B. M. from the Karen Hills.

#### PADRAONA NALA.

Plate 816, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, ♀.

*Hesperia nala*, Plötz, Stett. ent. Zeit. xliv. p. 231 (1883), unpublished plate No. 1464.

*Padraona dara*, Swinhoe (part), Trans. Ent. Soc. 1908, p. 19.

IMAGO.—Male. Upperside blackish-brown, markings orange-ochreous. *Forewing* with a stripe along the lower outer half of the cell, and a stripe about half its length attached to it above at the cell end, and two very thin short stripes obliquely placed, between the end of the cell and the costa. Three sub-apical somewhat elongated small spots of fairly equal size in an almost straight line, two round spots outwardly below them and a discal band of four spots, two in the median interspaces, the lower the larger and a twin spot of smaller size in continuation, in the interno-median interspace

extending down to near the hinder margin, with a streak from thence to the base on that margin. *Hindwing* with a spot at the end of the cell, one above it, and a discal series of six spots, five forming a nearly straight band, the innermost two smaller than the others, the outside spot a twin spot with a smaller detached spot inwardly above it. Cilia of both wings with the inner half brown, the outer half white. Underside. *Forewing* with the upper half greyish, the lower half black, the spots as on the upperside, but paler, the streak on the hinder margin wanting. *Hindwing* pale greyish, of the same colour as the upper portion of the forewing, the spots as on the upperside, all edged with black, marginal line of both wings black. Cilia white. Antennæ black, ringed with ochreous-white, the club ochreous-white on the underside; palpi, head and body above blackish-brown, with some ochreous and whitish hairs, white below, the legs brown above, white beneath, tarsi ochreous.

Female like the male, but on the underside the grey portions of both wings are strongly tinged with ochreous.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  inches.

HABITAT.—N.W. Himalayas.

Described and figured from a male from Kulu and a female from Masuri, both in the B. M., which agree well with Plötz's figure.

#### INDO-MALAYAN AND CHINESE ALLIED SPECIES.

- Padraona sunias*, Pamphila sunias, Felder, Sitzb. Ak. Wiss. Math.-nat. Cl. xl. p. 462, sep. p. 15 (1860). *Padraona sunias*, de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 546. Swinhoe, Trans. Ent. Soc. 1908, p. 18, pl. 1, fig. 22. Synonym, *Hesperia ahrendti*, Plötz, Stett. ent. Zeit. xlv. p. 230 (1883), unpublished plate No. 695. Habitat, Amboina, Sumatra.
- Padraona confucius*, Pamphila confucius, Felder, Wien Ent. Mon. vi. p. 29 (1862). *Padraona confucius*, Leech, Butt. of China, etc. ii. p. 596, pl. 40, fig. 13, ♀ (1893). Habitat, China.
- Padraona flava*, Pamphila flava, Murray, Ent. Mo. Mag. xii. p. 4 (1875). Synonym, *Pamphila japonica*, Mabille, Ann. Soc. Ent. Belg. xxvii. p. lxxiii. (1883). Habitat, Japan.
- Padraona nitida*, Pamphila nitida, Mabille, Pet. Nouv. ii. p. 114 (1877). Plötz, unpublished plate No. 1465. Habitat, Philippines.
- Padraona trachala*, Pamphila trachala, Mabille, l.c. p. 237. Habitat, Philippines.
- Padraona philænus*, Pamphila philænus, Mabille, Compt. Rend. Ent. Belg. xxvii. p. lxxiii. (1883). Habitat, Malay Peninsula.
- Padraona euria*, *Hesperia euria*, Plötz, Stett. ent. Zeit. xlv. p. 229 (1883), unpublished plate No. 1461. *Padraona euria*, Swinhoe, Trans. Ent. Soc. 1908, p. 18. Synonyms, *Pamphila orphitus*, Mabille, Compt. Rend. Ent. Belg. xxvii. p. lxxiv. (1883). *Padraona pavor*, de Nicéville, Journ. As. Soc. Bengal, 1894, p. 53, pl. 4, fig. 8. Habitat, Sumatra.
- Padraona tropica*, *Hesperia tropica*, Plötz, l.c. p. 230 (1883), unpublished plate No. 698. *Padraona tropica*, Swinhoe, Trans. Ent. Soc. 1908, p. 18, pl. 2, fig. 7. Habitat, Java.
- Padraona heterus*, Pamphila heterus, Mabille, Compt. Rend. Soc. Ent. Belg. iii. p. lxxii. (1883).

- Padraona heterus*, Semper, Rhop. Philipp. p. 303, pl. 49, fig. 15, ♀ (1892). Habitat, Philippines.
- Padraona paragola*, de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 546. Habitat, Sumatra.
- Padraona dilutior*, Telicota dilutior, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 255, pl. 21, fig. 21, ♂. Habitat, Borneo.
- Padraona angustata*, Pamphila angustata, Matsumura Ent. Zeit. 1910, p. 181. Telicota angustata, Frühstorfer, Iris, 1911, p. 37. Habitat, Formosa.
- Padraona chariyawa*, Telicota chariyawa, Frühstorfer, l.c. p. 33. Habitat, E. Java.
- Padraona sravasta*, Telicota sravasta, Frühstorfer, l.c. p. 34. Habitat, Nias.
- Padraona cakka*, Telicota rectifascia cakka, Frühstorfer, l.c. Habitat, W. Java.
- Padraona rajagriha*, Telicota gola rajagriha, Frühstorfer, l.c. p. 35. Habitat, Perak, Sumatra Borneo.
- Padraona trishna*, Telicota gola trishna, Frühstorfer, l.c. Habitat, Nias.
- Padraona ahastina*, Telicota dara ahastina, Frühstorfer, l.c. p. 37. Habitat, Pulo Laut, N. Borneo.
- Padraona ganda*, Telicota dara ganda, Frühstorfer, l.c. p. 38. Habitat, Nias.
- Padraona tanya*, Telicota dara tanya, Frühstorfer, l.c. Habitat, E. Java.
- Padraona dushta*, Telicota tropica dushta, Frühstorfer, l.c. p. 39. Habitat, S. Annam.
- Padraona nikaja*, Telicota sunias nikaja, Frühstorfer, l.c. Habitat, Celebes.
- Padraona yojana*, Telicota yojana, Frühstorfer, l.c. p. 40. Habitat, E. Java, Lombok.
- Padraona pava*, Telicota yojana pava, Frühstorfer, l.c. Habitat, Formosa.

## Genus HALPE.

- Halpe*, Moore, Proc. Zool. Soc. 1878, p. 689. Moore, Lep. Ceylon, i. p. 173 (1881). Watson, Hesp. Ind. p. 70 (1891); id. Proc. Zool. Soc. 1893, p. 108. Leech, Butt. of China, etc. ii. p. 621 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 433. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 257.

*Forewing*, vein 12 reaches costa before upper end of cell; cell about two-thirds the length of costa; vein 6 from upper end of cell, so close to it as to leave no upper discocellular; middle and lower discocellulars in an inwardly oblique straight line, the middle nearly twice as long as the lower; the base of vein 5 from their junction; 3 emitted about one-sixth before lower end of cell in the male, in the female its base is a little nearer the end, 2 from a little beyond the middle, costa arched, apex sub-acute, outer margin evenly convex, shorter than the hinder margin. *Hindwing* with the cell very short, less than half across the wing; vein 7 from well before the upper end of cell, strongly bent upwards at its base in the male, with the upper margin of the cell curved inwards and downwards to the cell end; in the female vein 7 and the upper end of the cell are both nearly in a straight line; discocellulars faint, vein 5 absent; 3 from quite close to lower end of cell, its base almost touching it, 2 from about one-eighth before the end; costa and outer margin evenly rounded. Antennæ a little more than half the length of costa of forewing, club moderate, long, with a sharp crook, its tip short,

pointed; palpi porrect, second joint laxly scaled, third joint minute, obtusely conical; hind tibiæ slightly fringed, with two pairs of spurs. The male with a linear discal stigma in the forewing running obliquely from the lower end of the cell to below the sub-median vein before its middle, and a tuft of hair on the upperside of hindwing attached along the costal vein.

Type, *Halpe moorei*, Watson (*Hesperia beturia*, Hewitson, *ex errore*).

#### HALPE MOOREI.

Plate 817, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, larva and pupa.

*Halpe moorei*, Watson, Proc. Zool. Soc. 1893, p. 109. Swinhoe, Trans. Ent. Soc. 1893, p. 324. de Nicéville, Gazetteer of Sikkim, Butt. p. 184 (1894). J. J. Walker, Trans. Ent. Soc. 1895, p. 475. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 681. Davidson, Bell and Aitken, id. xi. 1897, p. 47 (larva and pupa). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 263. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 600. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 145. Frühstorfer, Iris, 1911, p. 45.

*Halpe beturia*, Moore (nec Hewitson), Proc. Zool. Soc. 1878, p. 690. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 54. Elwes and de Nicéville, id. 1886, p. 441. Hampson, id. 1888, p. 366. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 28; id. idem, 1891, p. 57; id. Hesp. Ind. p. 70 (1891).

*Halpe teliga*, ab. Swinhoe, Trans. Ent. Soc. 1893, p. 326.

IMAGO.—Male. Upperside blackish-brown. *Forewing* with seven semi-hyaline spots; two within the cell towards its end, one above the other, one a little larger close to the base of the first median interspace, and a similar spot obliquely above it, near the base of the second median interspace, three small sub-apical spots in an outwardly oblique curve. *Hindwing* with a small, slightly suffused space, slightly yellow-tinted in the upper middle of the wing, otherwise without markings. Cilia of forewing chequered brown and greyish-white, of hindwing greyish-white, with a few brown marks on it. Underside with the ground colour slightly paler, the spots as on the upperside and a series of small white sub-marginal spots in the interspaces, the series generally complete, but in some examples one or two of them are obsolescent. *Hindwing* with a conspicuous discal white outwardly curved band, divided by the veins into six elongated spots, commencing from near the costa before the apex, increasing in size hindwards, largest in the middle, and extending to near the sub-median vein; a small whitish spot at the end of the cell, sometimes absent, and an incomplete series of sub-marginal whitish spots, the two nearest the anal angle larger than the others which are minute; the wing sparsely covered with minute yellowish scales. Antennæ black, the shaft minutely spotted with white on the underside, the club pale orange-yellow on the underside and at the tip; palpi, head

and body blackish-brown, palpi and pectus beneath with white and grey hairs; abdomen whitish beneath.

Female like the male, but with an extra white spot on the forewing at the middle of the sub-median vein, and all the spots larger, the pale space in the middle of the hindwing somewhat paler.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{4}{10}$  inches.

LARVA, cylindrical, with a flattened anal segment somewhat rounded at the extremity; the head is more or less round when looked at from in front and slightly bilobed; colour of head yellow-brown, with black mandibles; eyes black, a red-brown central band down the face, and a red-brown, crescent-shaped mark in centre of each lobe; the colour may vary from yellow-brown to brown-black, but is always somewhat lighter on the vertex of each lobe. The dark head is characteristic of the wet months, the light of the dry season; body covered with short, darkish, erect hairs; longish hairs round the margin; colour of the body is a watery, dirty, dark green. Length, 31.25 mm.

PUPA, circular in transverse section, having large expansions to the spiracles of segment 2, unmarked by spots; slight boss between the eyes, surmounted by four fan-shaped tufts of dense bristles; eyes prominent, with short, erect hairs; head bowed slightly; segments 11 to 13 with tufts of hairs directed backwards on their lateral margins; cremaster short and square, with a short tooth at each hinder corner, clothed along the margin and extensor ridges with longish, dense, red-brown hairs which are not hooked; body covered with more or less erect, short, yellow hairs, a lateral row of oval, flat, raised, dark brown, smooth tubercles; also a ventral row; on segment 11 there are three tubercles arranged in a triangle; colour of thorax and wings green; of abdomen green-yellow; a green dorsal line; hinder edge of cremaster and teeth dark brown. Length, 16 mm.

HABITS.—The larva builds a cylindrical cell tightly closed, by folding a leaf lengthways, until the last moult, when it forms a cell by doubling the leaf transversely across the middle, bringing the point up to the stalk and joining the edges loosely with silk; when about to pupate it eats the leaf free at the stalk end, and the cell falls to the ground, where the pupation takes place. The pupa is in no way fixed inside the cell. The larva feeds on bamboo.

This insect is very common all over the district at all times of the year. It is fond of water, and basks in the sun on leaves; it may be easily caught when drinking or basking, but is of extremely rapid flight and difficult to capture on the wing. We have reared many, both in the monsoon and in the dry weather. (Davidson, Bell and Aitken.)

HABITAT.—India, Burma, Andamans, Ceylon, Hong Kong.

DISTRIBUTION.—Watson records it from the Chin Hills, Rangoon, Berhampur and

the Andamans; de Rhé-Philipe from Masuri, J. J. Walker from Hong Kong, de Nicéville from Sikkim, Elwes from Trichinopoli in Ceylon, and Tavoy in Burma, Moore from Calcutta; we have received many examples from the Khasia Hills, and have it from Port Blair, Calcutta, Ranikhet, and Karwar; Davidson, Bell and Aitken bred it at Karwar; our figures of the larva and pupa are from Davidson's original drawings not previously published. Adamson says it is a common species in Burma.

#### HALPE CEYLONICA.

Plate 817, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Halpe ceylonica*, Moore, Proc. Zool. Soc. 1878, p. 690, pl. 45, fig. 9; id. Lep. Ceylon, i. p. 173 (1881); id. Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Hampson, Journ. As. Soc. Bengal, 1888, p. 366. Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 447. Watson, Hesp. Ind. p. 75 (1891); id. Proc. Zool. Soc. 1893, p. 109; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Davidson, Bell and Aitken, id. xi. 1897, p. 48. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 263. Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 389. Frühstorfer, Iris, 1911, p. 46.

IMAGO.—Male. Upperside dark brown. *Forewing* with two small sub-apical spots, a small spot in the upper part of the cell beyond its middle, and two larger discal spots in the median interspaces near their bases, all the spots semi-hyaline and white. *Hindwing* without markings. Cilia alternated brown and whitish. Underside paler, more or less ochreous-tinted. *Forewing* with the spots as above and a series of sub-marginal small whitish spots, one in each interspace, from the apex to the first median interspace. *Hindwing* with a broad transverse band before the middle, composed of whitish streaks, somewhat suffused, and a post-discal series of white spots, the lowest one in the first interspace large, with a large spot above it, and some whitish hairs inside the abdominal fold. Antennæ black, ferruginous beneath, the club with a ferruginous tip; palpi, head and body brown, palpi beneath grey, pectus and the underside of the abdomen whitish; legs ochreous.

Female like the male, but there is an extra white spot in the interno-median interspace in continuation of the discal series in the forewing, and on the underside of the hindwing the middle band is usually much more suffused and the spots in the post-discal series are larger and more complete.

Expanse of wings, ♂ ♀  $1\frac{1}{16}$  to  $1\frac{4}{16}$  inches.

HABITAT.—South India, Ceylon, Mergui.

DISTRIBUTION.—The types are from Ceylon; Hampson records it from the Nilgiris, Davidson, Bell and Aitken from Karwar, Evans from the Palni Hills, Fergusson from Travancore, and Moore from Mergui (a doubtful locality). We have both sexes from Ceylon taken by Mackwood, and from Kolar in Southern India.



## HALPE HOMOLEA.

Plate 817, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Hesperia homolea*, Hewitson, Descr. Hesp. p. 29 (1868). Watson, Hesp. Ind. p. 71 (footnote) (1891).

*Halpe homolea*, Watson (part), Proc. Zool. Soc. 1893, p. 109. Swinhoe, Trans. Ent. Soc. 1893, p. 324. de Nicéville, Gazetteer of Sikkim, Butt. p. 184 (1894). de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 547. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 265, pl. 25, fig. 71 (genitalia). Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 145. Frühstorfer, Iris, 1911, p. 46.

*Halpe sikkima*, Wood-Mason and de Nicéville (nec Moore), Journ. As. Soc. Bengal, 1886, p. 385, pl. 17, fig. 8, ♂.

*Halpe aucma* (ab.), Swinhoe, Trans. Ent. Soc. 1893, p. 325.

*Halpe perara* (ab.), Swinhoe, l.c.

*Halpe marta* (ab.), Swinhoe, l.c.

*Halpe wontona*, (ab.), Swinhoe, l.c.

*Halpe homolea veluvana*, Frühstorfer, l.c.

IMAGO.—Male. Upperside blackish-brown. *Forewing* with five or six semi-hyaline spots, one or the other of them often absent, one inside the upper end of the cell, two obliquely, in the disc, near the bases of the median interspaces, these spots are sometimes quadrate, sometimes oblong, and sometimes quite round and small, and two small sub-apical spots, sometimes a third minute spot close to the costa; in some examples (*perara*) all the spots are absent, except the two discal spots which are small and round, but the genitalia of all of them are said to be alike,\* showing them to be of one variable species. *Hindwing* without markings. Cilia chequered brown and ochreous-grey on the forewing, whitish on the hindwing, with some small brown marks at the vein ends. Underside a little paler and ochreous-tinted. *Forewing* with a dull ochreous-white streak below the basal half of the costa, the spots as above, but all tinted with ochreous, and a series of sub-marginal, more densely ochreous-tinted spots, one in each interspace, which become obsolete hindwards. *Hindwing* with the basal half of the wing smeared with dull greyish-ochreous, caused by minute scaling of that colour; a discal, outwardly curved series of more or less obscure, ochreous-white spots from the costa to above the sub-median vein. Cilia of both wings whitish, with brown spots opposite the vein ends; all these markings very variable, in some examples the basal greyish-ochreous suffusion is very dull and indistinct, in some it is entirely absent, and in some examples all the spots on both wings are almost entirely absent. Antennæ black, the shaft spotted with ochreous-white on the under-

\* Elwes and Edwards, Trans. Zool. Soc. 1897 p. 265.

side, club with an orange tip; palpi, head and body blackish-brown, palpi beneath grey, pectus and abdomen whitish; legs dull pale red.

Female like the male, usually somewhat paler in colour, the spots on the forewing a little larger.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma, Malay Peninsula, Java, Sumatra.

DISTRIBUTION.—The type is from Singapore, Frühstorfer records it from Java, de Nicéville and Martin from Sumatra, Adamson from Upper Burma, de Nicéville from Sikkim; we have received many examples of this very variable species from the Khasia Hills, including many that are perfectly typical. Wood-Mason and de Nicéville's figure represents one of the varieties of *homolea*, and is unlike typical *sikkima*.

#### HALPE SIKKIMA.

Plate 818, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Halpe sikkima*, Moore, Proc. Zool. Soc. 1882, p. 407. Elwes, Trans. Ent. Soc. 1888, p. 453, pl. 11, fig. 3, ♂, 4, ♂, var. Watson, Hesp. Ind. p. 70 (1891). Elwes, Proc. Zool. Soc. 1892, p. 653. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 264, pl. 25, fig. 70 (genitalia). Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 145. Frühstorfer, Iris, 1911, p. 46.

IMAGO.—Male and Female very like *H. homolea*, Hewitson, but it is a smaller insect. Upperside usually paler and not so brightly blackish-brown; the discal spots in the forewing are elongated quadrate spots filling up the median interspaces near their bases and are consequently much closer together than in *homolea*, being merely divided from each other by the second median nervule, and there are only the lower two of the sub-apical spots, and they are more erectly placed; on the underside the spots are as on the upperside, otherwise the undersides of both wings are marked suffusedly as in many of the varietal examples of *homolea*, the costal space of the forewing and the entire hindwing being covered with minute ochreous-grey scaling. Moore likens it to *H. beturia*, Hewitson (meaning *H. moorei*, Watson), from which it greatly differs in many respects, but the spots on the forewing are somewhat similarly shaped, as in all the species of this group; the discal spots, however, are closer together as Moore says.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{3}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma.

DISTRIBUTION.—The types are from Sikkim; Adamson records it from Burma; it is in our collection from Sikkim, the Khasia Hills and Thoungyin, Burma.

## HALPE GUPTA.

Plate 818, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Halpe gupta*, de Nicéville, Journ. As. Soc. Bengal, 1886, p. 254, pl. 11, fig. 1, ♂. Elwes, Trans. Ent. Soc. 1888, p. 454. Watson, Hesp. Ind. p. 73 (1891); id. Proc. Zool. Soc. 1893, p. 109. Swinhoe, Trans. Ent. Soc. 1893, p. 327. de Nicéville, Gazetteer of Sikkim, Butt. p. 184 (1894). Leech, Butt. of China, etc. ii. p. 617, pl. 42, fig. 20, ♂ (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 266. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 600. Hannynghton, id. xx. 1910, p. 371.

IMAGO.—Male. Upperside dark brown. *Forewing* with the spots small, ochreous-white and semi-diaphanous; two minute ones inside the cell near its end, one above the other well separated, being placed against the margins of the cell, one or both of these spots sometimes absent; two, sometimes three, minute sub-apical spots in a straight line, and two somewhat larger, more or less oval spots in an inwardly oblique line at the bases of the median interspaces and close together, being only separated from each other by the second median nervule; the sex mark somewhat prominent. *Hindwing* without markings, but with some long, ochreous hairs in the middle of the disc. Cilia cinereous on forewing, whitish on hindwing, with cinereous tips. Underside. *Forewing* with the centre space between the median and sub-median veins blackish, the rest of the wing greenish-ochreous, being covered with minute scales of that colour, the spots as on the upperside. *Hindwing* entirely suffused with greenish-ochreous scales; with two or three pale, dull ochreous spots in the discal series. Antennæ black, the shaft dotted with white; palpi, head and body concolorous with the wings, palpi beneath and the pectus grey, and some grey bands on the lower half of the abdomen.

Female like the male, but there are two additional spots on the forewing, in the interno-median interspace one above the other in a line with the two cell spots.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{6}{10}$  inches.

HABITAT.—Sikkim, Assam, N.W. Himalayas, China.

DISTRIBUTION.—The type male came from Sikkim; we have several males from the Khasia Hills, de Rhé-Philipe records it from Masuri, Hannynghton from Kumaon, and Leech from W. China.

## HALPE BURMANA, nov.

Plate 818, figs. 3, ♂, 3a, ♂.

IMAGO.—Male. Upperside olive-brown. *Forewing* with seven sordid white spots, two somewhat elongated near the end of the cell, placed obliquely and well separated, one above the other, the upper one very slightly the smaller; three sub-apical small spots, the uppermost one the smallest, the middle spot well inwards, and two spots, twice as

large as the cell spots, sub-quadrate in shape placed obliquely in the median interspaces near their bases, the discal stigma white with black edges, in two pieces, in an angular form. *Hindwing* without spots, the centre portion of the wing somewhat greyish and consequently paler than the rest of the wing. Cilia of both wings white, with brown patches on the forewing. Underside pale greyish-brown, with an ochreous tinge. *Forewing* with a long narrow space below the median vein darker brown, the spots as on the upperside, a series of indistinct, pale, sub-marginal spots from the costa to the first median interspace. *Hindwing* covered with minute greyish-white scales, and with indications of a series of pale, discal spots. Antennæ brown, the club with an orange-red tip, the shaft and basal half of the club smeared with white on the underside, the shaft dotted with white on its sides; palpi with white hairs; head and body above concolorous with the wings; on the underside the palpi, pectus, thorax and abdomen are whitish; the legs ochreous.

Expanse of wings, ♂  $1\frac{1}{2}$  inches.

HABITAT.—Burma.

DISTRIBUTION.—The type is in the B. M., taken by Bingham in the Ataran Valley in February, 1893; we have a male from the Meplay Valley in our collection.

#### HALPE KNYVETTL.

Plate 818, figs. 4, ♂, 4a, ♂.

*Halpe knyveti*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 261, pl. 21, fig. 2, ♂.

IMAGO.—Male. Upperside dark brown with a slight yellowish tint. *Forewing* with some yellowish setæ at the base, the spots yellowish-white, nearly pure white; a spot at end of cell, and a pale point next its lower end, two sub-apical spots, and two in the disc, in the median interspaces, rather large and somewhat elongated, placed in an inwardly oblique position, a small dot (in the right wing only) immediately below them; the discal stigma black and shaped as in *H. homolea*. *Hindwing* covered with yellowish hairs, but without markings, its middle portion somewhat paler and more yellow-tinted than the rest of the wing. Cilia of both wings white with brown base. Underside. *Forewing* brown, the costa and outer margin suffused with yellow, the spots as on the upperside, a sub-marginal row of pale dull yellowish spots from the apex to the end of vein 2. *Hindwing* with all but the hinder space covered with yellowish setæ, a discal series of pale dull yellowish marks, ending in a large, somewhat obscure, whitish spot in interspace 1b. Antennæ black, with a whitish band on the upperside of the club, below the shaft is dotted with white and the club smeared with white; on the upperside the palpi with black and yellow hairs, head and body brown with a yellowish tint; on the underside the palpi and pectus and

abdomen are grey, the legs brown above, ochreous beneath, the tarsi ochreous; the thorax and base of legs with white hairs.

Expanse of wings, ♂  $1\frac{6}{10}$  inches.

HABITAT.—Sikkim.

Described and figured from a male in our collection from Sikkim, which agrees well with Elwes' description and figure; his type is also from Sikkim; the markings are much as in some of the varietal forms of *H. homolea*, but it is a larger insect, much more yellowish in colour than *homolea*, the hindwing is somewhat longer, and it seems to be distinct from any other of the described species. Our example has been in our collection for some years unnamed; it is not in the B. M., and we have not been able to procure a female.

#### HALPE ZEMA.

Plate 819, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Hesperia zema*, Hewitson, Ann. Mag. Nat. Hist. 1877, p. 77.

*Halpe zema*, Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 53. Elwes, Trans. Ent. Soc. 1888, p. 455, pl. 11, fig. 7, ♂. Manders, id. 1890, p. 538. Watson, Hesp. Ind. p. 74 (1891). Elwes, Proc. Zool. Soc. 1892, p. 653. Watson, id. 1893, p. 109. Swinhoe, Trans. Ent. Soc. 1893, p. 327. de Nicéville, Gazetteer of Sikkim, Butt. p. 184 (1894). de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 547. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 260. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 145. Frühstorfer, Iris, 1911, p. 45.

IMAGO.—Male. Upperside dark brown. *Forewing* with six white semi-diaphanous spots, three small spots, sub-apical, in a deep curve, the upper one minute, a small spot inside the upper margin of the cell towards its end, two spots, much larger, more or less quadrate and elongate, one in each of the median interspaces near their bases. *Hindwing* with a pale suffused patch in the middle of the wing, varying much in extent in different examples, otherwise without markings. Cilia of forewing brown, becoming whitish towards the hinder angle; of hindwing whitish touched with brown opposite the vein ends. Underside paler, somewhat ochreous-tinted. *Forewing* slightly suffused with ochreous along the costa, the white spots as above, a sub-marginal series of ochreous-white spots from the apex to the middle of the wing. *Hindwing* with a whitish discal band from the apex to interspace 1, where it is sometimes produced somewhat hindwards, the inner margin of the band fairly regular, its outer margin very irregular, the band varying very greatly in width in different examples. Antennæ black, the shaft minutely spotted with white on the underside, the club whitish beneath, tip ferruginous; palpi grey; head, thorax and abdomen brown, thorax beneath with grey hairs, abdomen beneath white, legs ferruginous.

Female like the male, but paler in colour, the spots on the forewing larger, a small spot in a line with the discal series on the middle of the sub-median vein.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{1}{2}$  inches.

HABITAT.—Sikkim, Assam, Burma, Mergui, Borneo.

DISTRIBUTION.—Hewitson records it as from Darjiling and Sarawak; we have it from Sikkim and the Khasia Hills, where it appears to be fairly common; Manders records it from the Shan States, Watson from Rangoon, Moore from Mergui, Elwes from the Naga Hills, Ataran Valley and Tavoy.

#### HALPE CERATA.

Plate 819, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Hesperia cerata*, Hewitson, Ent. Mo. Mag. 1876, p. 152; id. Descr. Lep. Col. Atk. p. 4 (1879).

*Halpe cerata*, Elwes, Trans. Ent. Soc. 1888, p. 454, pl. 11, fig. 8, ♂. Hampson, Journ. As. Soc. Bengal, 1888, p. 367. Watson, Hesp. Ind. p. 73 (1891). Swinhoe, Trans. Ent. Soc. 1893, p. 327. Watson, Proc. Zool. Soc. 1893, p. 109. de Nicéville, Gazetteer of Sikkim, Butt. p. 184 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 681. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 260. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 145.

IMAGO.—Male. Upperside dark brown, somewhat olive-brown. *Forewing* with six white semi-diaphanous spots, two in a straight line from the costa, sub-apical, two across the cell towards its end, usually touching each other, but occasionally quite separated, two inwardly oblique, discal, one in each of the median interspaces near their bases. *Hindwing* with three more or less suffused spots in a curve in the disc, one being just outside the cell end and one near the base of each median interspace, in some examples the series is continued upwards by one or two indistinct suffused spots. Cilia white with brown spots opposite the vein ends. Underside a little paler with a bronzy tint. *Forewing* with the spots as on the upperside, but duller white, a sub-marginal series of small white spots varying in extent in different examples, usually extending from the apex to the first median interspace, sometimes the spots are clear white, often more or less obscure, the hinder marginal space broadly nearly pure white. *Hindwing* with the discal series more complete upwards, in some examples continued in a recurved form to the apex of the wing, all the spots pure white, and there is a large white spot above the upper end of cell. Antennæ black, the underside of the shaft minutely spotted with white, the club white beneath, tip ferruginous; palpi, head and body brown, palpi and abdomen whitish beneath, pectus ochreous-white, legs pale ferruginous.

Female like the male, but there is an extra spot on the forewing, in the middle of the interno-median interspace, on the sub-median vein.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{1}{2}$  inches.

HABITAT.—Sikkim, Assam, Burma.

DISTRIBUTION.—Hewitson's type is from Darjiling; it is a common species in Sikkim and the Khasia Hills; we have received many examples, the female is very scarce; Watson records it from the Chin Hills, and Elwes from Bhamo, Burma.

#### HALPE DEBILIS.

Plate 819, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Halpe debilis*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 266, pl. 21, figs. 1, ♂, 5, ♀.

IMAGO.—Male. Upperside brown. *Forewing* with six sordid white hyaline spots, two oblong, one each in cells 2 and 3, three small and oblong, one each in cells 6, 7 and 8; the cell spots narrowly confluent and appearing as one spot much constricted in the middle. Underside greenish-ochreous, the disc of the forewing blackish. *Hindwing* with an indistinct whitish spot in each of cells 2, 3 and 6, and a pale suffused sub-terminal macular band; fringe of the forewing pale grey, becoming whitish towards the tornus, of the hindwing whitish, with the short scales grey. Antennæ blackish, spotted with yellow in front; club and part of the shaft yellow beneath; apiculus pale red; body above concolorous with the wings; clothing of the second joint of palpi, breast, legs and abdomen beneath greyish-yellow.

Female similar to the male, but having on the forewing a triangular white spot in cell 1a next vein 1a just beyond the middle and the cell spots broadly confluent, and therefore forming one solid spot scarcely constricted in the middle. Expanse, 32–34 mm.

HABITAT.—Khasia Hills.

Described from one pair ex Coll. Rothschild. (Elwes and Edwards.)

We have not seen this species, and therefore give copies of Elwes' and Edwards' figures; the types are not in the Tring Museum.

#### HALPE FUSCA.

Plate 819, figs. 4, ♂, 4a, ♂.

*Halpe fusca*, Elwes, Proc. Zool. Soc. 1892, p. 653, pl. 43, fig. 1. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 266, pl. 25, fig. 72 (genitalia).

IMAGO.—Male. A single specimen was sent from Bernardmyo, which may be briefly described as like *Halpe gupta*, de Nicéville, Journ. As. Soc. Bengal, 1886, p. 255, t. xi. 1, but rather larger, with plain fringes of paler colour than the wings, and not spotted white as they are in *H. gupta*.

The double sexual brand is the same, but the spots above it are wanting, as is also sometimes the case in *H. gupta*, and the apical spot is double and not treble as in all my specimens of *H. gupta*. Below the brown is paler than above, with the same spots on the forewing, and the hindwing sprinkled with paler hairs. (Elwes.)

Expanse of wings, ♂  $1\frac{1}{2}$  inches.

HABITAT.—Upper Burma.

We have not seen this species, and therefore give copies of Elwes' figure.

#### HALPE HYRTACUS.

Plate 820, figs. 1, ♂, 1a, ♂.

*Halpe hyrtacus*, de Nicéville, Journ. As. Soc. Bengal, lxvi. p. 575, pl. 3, fig. 22 (1897). Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 49 (larva and pupa).

IMAGO.—Male. Upperside dark brown tinged with yellow, both wings being covered with minute yellowish scales. *Forewing* with six small white spots, two at the end of the cell, well separated, one above the other, the upper one somewhat elongate, with three dots joined together in a line on its inner side, two sub-apical small spots, the upper one a mere dot, and two spots placed obliquely at the bases of the median interspaces, the discal stigma dark brown, composed of two curved pieces. *Hindwing* without markings, with some dull yellowish hairs on the abdominal area. Cilia cinereous, becoming whitish towards the anal angle of the hindwing. Underside pale dull brown. *Forewing* with the costa and apex suffused with pale ferruginous, the lower half of the wing suffused with whitish, the spots as on the upperside. *Hindwing* with a broad whitish patch with very irregular sides and with a few small brown marks in it right across the wing, a blackish spot at the end of the cell. Antennæ dark brown, on the underside with white spots, the basal half of the club smeared with white, the tip rufous; palpi, head and body above concolorous with the wings; below, the palpi, pectus and abdomen are whitish, the thorax grey, the legs brown, with ferruginous tarsi.

Female like the male.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  inches.

LARVA.—Head round, slightly indented on vertex, face convex; surface rugose, finely hairy all over, the hairs being quite apparent to the naked eye; clypeus and about the jaws very dark brown, margin and hinder parts also dark brown, the rest dirty yellow, with a broad, central dark brown longitudinal band; shape of body cylindrical, with a flattened anal segment somewhat rounded at the extremity; the anal segment covered all over with reddish-brown, star-shaped spots, from each of which springs a short seta; surface of body covered with fine, erect, colourless hairs,



which are longest on the anal margin; colour of larva is a watery-greenish dirty yellow, with a brown tinge on the hinder segments; a dark green dorsal line. Length, 37.5 mm.

PUPA.—Head bowed, square in front, parallel-sided, broader transversely to length of pupa than long; nearly as broad as is the thorax at the shoulders; slightly bossed between the eyes; hairy in front and around the eyes, with erect, light, longish hairs; segment 2 narrow, parallel-sided; thorax only slightly humped, twice as high at the apex as segment 2, evenly convex, rounded at shoulders; section (transverse) of body is circular from shoulders to anal end; cremaster shortish, triangular, rounded at extremity, perfectly flat underneath, with feebly developed dorsal extensor ridges, and a tuft of hooked hairs at upperside of rounded extremity; proboscis does not extend free beyond the wings; spiracular expansion of segment 2 large and kidney-shaped, with its edges slightly raised from the surface of the thorax, with a strainer-shaped central hollow and a rugose surface, facing forwards; dark brown in colour, very conspicuous; body surface covered very densely with semi-erect, short, light hairs; irregularly and finely rugose, colour of pupa light dirty yellow tinged with brownish-red; a lateral dark smudge along the side of the thorax as well as some dark spots; each of the abdominal segments from 6 to 12 has two rows of black spots transversely to body length across it. The pupa is stout and similar to that of *Telicota bambusæ*, Moore. Length, 22 mm.

HABITS.—The larva builds a strong cylindrical cell, in which it lives like *T. bambusæ*. The pupa is fixed only by the tail and is not covered with white powder; is formed in the cell.

This insect was caught in the valley of the Kalinaddi river in the ghats, for the first time, a short time ago, in the early morning, at the flowers of *Kydia calycina*; the larva was obtained shortly afterwards in the same locality. It is a new species, named from a single specimen obtained quite lately in another district by Mr. de Nicéville, to whom we forwarded some specimens bred by us, which he kindly identified. The insect is very similar in its flight to *H. moorei*, Watson, but seems to frequent the neighbourhood of water to a greater degree than the latter. It is not a common insect in this district, and seems to be extremely local, frequenting the bamboo jungles in the evergreen portions of the district on the edge of the ghats. (Davidson, Bell and Aitken.)

HABITAT.—South India.

DISTRIBUTION.—The type in the Indian Museum, Calcutta, is marked S. India. Davidson, Bell and Aitken bred it at Karwar, but unfortunately did not figure the larva and pupa; our figures and descriptions are from a specimen received from Davidson, identified by de Nicéville.

## HALPE DECORATA.

Plate 820, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Halpe decorata*, Moore, Lep. Ceylon, i. p. 173, pl. 71, fig. 2 (1881). Watson, Hesp. Ind. p. 76 (1891); id. Proc. Zool. Soc. 1893, p. 109; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 268.

IMAGO.—Male. Upperside blackish-brown, with a distinct yellowish tinge, the markings on both wings dark chrome-yellow. *Forewing* with two streaks in the cell near its end, the lower one on the lower side, about one-third the length of the cell, the upper one short (almost a spot) attached to its upper outer end, two sub-apical spots, the upper one minute, two sub-quadrate discal spots, obliquely placed, close together, near the bases of the median interspaces, separated from each other by the second median nervule, all these spots semi-transparent; an indistinct dull streak along the basal half of the costa, another in the basal third of the interno-median interspace, and another on the basal half of the hinder margin. *Hindwing* with a discal patch of streaks, one in each of the median interspaces, occupying more than half their length, and a long streak in interspace 4, which runs well into the cell, all three streaks merely divided from each other by the blackish-brown veins, and between this patch of streaks and the abdominal fold the wing is covered with long, dull, chrome-yellow hairs forming two obscure streaks; there is also a chrome-yellow spot above the cell end. Cilia of both wings cinereous. Underside. *Forewing* with the upper half more or less smeared with chrome-yellow, the lower half blackish, the spots as on the upperside; a sub-marginal series of pale yellowish spots from the apex to the first median interspace. *Hindwing* entirely dull, pale chrome-yellow, the outer margin with some grey spots; the costa with some grey scales, and a few indistinct grey dots in some of the interspaces. Antennæ black, club white on the underside, orange-red at the tip; palpi, head and body above concolorous with the wings; head and shoulders with some yellowish hairs, a thin yellowish collar, abdomen with whitish hairs; on the underside the palpi and pectus are yellowish-white, thorax and abdomen yellowish-grey; legs brown above, yellowish beneath.

Female. Upperside blackish-brown, with the same yellowish tinge. *Forewing* with the spots semi-hyaline and of a chrome-yellow colour, but paler than they are in the male, and similarly placed with the exception of the cell spots, there being only one near the upper end of the cell, the lower streak being absent, and there is an extra spot in a line with the discal pair, on the middle of the sub-median vein, all the yellow streaks entirely absent. *Hindwing* without markings. Underside. The chrome-yellow on both wings is replaced by a yellowish-rufous colour. *Forewing* with the spots as on the upperside. *Hindwing* with four pale sub-costal spots, a discal, nearly straight

series of pale spots with brown edges, and some brown dots in some of the interspaces all very indistinct.

Expanse of wings, ♂  $1\frac{1}{2}$ , ♀  $1\frac{7}{10}$  inches.

HABITAT.—Ceylon.

Described and figured from a pair in Coll. Rothschild from Avisawalla, taken in July, 1888, kindly lent to us for that purpose. Moore's type came from Morowaka, Galle, taken by Wade.

#### HALPE SITALA.

Plate 820, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Halpe sitala*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 121, pl. 2, fig. 5, ♂. Hampson, id. 1888, p. 366. Watson, Hesp. Ind. p. 75 (1891); id. Proc. Zool. Soc. 1893, p. 109; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 266.

IMAGO.—Male. Upperside blackish-brown. *Forewing* with two small sub-apical spots, the lower a little the larger, two small spots within the cell near its end, placed inwards obliquely, close to its upper and lower margins; and two small discal spots in the median interspaces also inwardly obliquely, and well separated from each other, all the spots ochreous-white and semi-diaphanous. *Hindwing* without markings, the middle portion of the wing with some long, ochreous hairs. Cilia of both wings ochreous, with brown patches at the vein ends in the forewing only. Underside. *Forewing* with more than the lower half of the wing blackish-brown; the apical and costal portions broadly ferruginous-ochreous; the spots as on the upperside. *Hindwing* uniformly ferruginous-ochreous, two whitish dots in the median interspaces, sometimes very obscure, two obscure ochreous spots close together between them and the anal angle, very obscure and often not traceable. Antennæ black, dotted with white on the underside, the apical half of the club ferruginous, the basal half white beneath; palpi, head and body and the legs blackish-brown; palpi beneath and the pectus grey.

Female like the male, the spots on the forewing larger, an extra spot on the middle of the sub-median vein, in a line with the two discal spots.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{1}{2}$  inches.

HABITAT.—Nilgiri Hills, Anamali Hills, Ceylon.

DISTRIBUTION.—The type male came from Ootacamund; we have two males in our collection from the same locality. Elwes and Edwards record it also from the Anamali Hills; it is in the B. M. from Kandy, taken in October, 1884, by Mackwood.

## HALPE BRUNNEA.

Plate 820, figs. 4, ♂, 4a, ♀, 4b, ♀.

*Halpe brunnea*, Moore, Lep. Ceylon, i. p. 174, pl. 70, figs. 4, 4a, ♀ (1881). Watson, Hesp. Ind. p. 76 (1891); id. Proc. Zool. Soc. 1893, p. 109; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 265.

IMAGO.—Male. Upperside dark blackish-brown, nearly pure black. *Forewing* with four sordid white, semi-hyaline small spots, two sub-apical, the upper one minute, and two discal, placed obliquely near the bases of the median interspaces. *Hindwing* unmarked. Cilia of forewing blackish-brown; of hindwing with the base brown, tips white. Underside paler, ochreous-tinted. *Forewing* with the margins a little paler than the inner portion, the spots as on the upperside, ochreous-tinted, an indistinct sub-marginal series of small ochreous spots. *Hindwing* with a discal series of similar spots and some indistinct dull ochreous-grey streaks in the cell and on the abdominal area. Antennæ black, greyish on the underside, the club with an orange-red tip; palpi, head and body concolorous with the wings, below the body and legs are brown, the palpi and pectus ochreous-grey.

Female like the male, but there is a small white spot in the cell near its upper end and another small spot on the middle of the sub-median vein in a line with the two discal spots.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  inches.

HABITAT.—Ceylon.

Described and figured from a pair in the B. M.

## HALPE KUMARA.

Plate 821, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Halpe kumara*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 121, pl. 2, fig. 10, ♂. Elwes, Trans. Ent. Soc. 1888, p. 454. Watson, Hesp. Ind. p. 72 (1891). de Nicéville, Gazetteer of Sikkim, Butt. p. 184 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 261.

IMAGO.—Male. Upperside deep bronzy-brown. *Forewing* with five equal-sized pale ochreous spots, one at the upper end of the cell, two sub-apical, divided from each other by the vein, and two in the disc, close to the bases of the second and first median interspaces. *Hindwing* without markings. Cilia of both wings pale ochreous, dusky at the ends of the veins in the forewing. Underside dark brown, the costa and apical portion of the forewing and the entire surface of the hindwing covered with

minute ochreous scales; the spots of the forewing as on the upperside, but somewhat larger. Antennæ black, ochreous-white on the underside, banded with black, the club ochreous-white above and beneath; palpi with grey hairs; head and body above and below and the legs concolorous with the wings, pectus with some grey hairs.

Female like the male, the spots larger.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  inches.

HABITAT.—Sikkim, Bhutan.

DISTRIBUTION.—We possess a male from Sikkim identified by de Nicéville, it is apparently a very rare species. Our description and figures are from our Sikkim male and from a female from Bhutan in the B. M.

#### HALPE AINA.

Plate 821, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Halpe aina*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 176, pl. B, fig. 8. Watson, Hesp. Ind. p. 72 (1891). Swinhoe, Trans. Ent. Soc. 1893, p. 327. de Nicéville, Gazetteer of Sikkim, Butt. p. 184 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 267. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xi. 1898, p. 600. Hannington, id. xx. 1910, p. 371.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* more or less covered with ochreous-grey scales, the spots yellowish-white; two conjoined at the end of the cell, the upper one small, three sub-apical spots, the upper one sometimes absent, the lowest the largest, and two discal spots in an inwardly oblique line, close to the bases of the median interspaces, all the spots small and of about equal size except the spot in the first median interspace, which is about twice the size of any of the others. *Hindwing* almost entirely covered with long, yellowish-grey hairs, no markings. Cilia of both wings grey, with brown patches at the vein ends. Underside paler, the costa and apex broadly and the entire surface of the hindwing strongly tinged with ochreous, the markings as on the upperside. Antennæ black, the tip of the club whitish; palpi and pectus grey; head and body concolorous with the wings, legs rufous.

Female like the male, the spots of the forewing larger.

Expanse of wings, ♂ ♀  $1\frac{3}{10}$  to  $1\frac{4}{10}$  inches.

HABITAT.—N.W. Himalayas, Sikkim, Assam.

DISTRIBUTION.—The type, a male from Sikkim, is in the Indian Museum, Calcutta; we have a male from the Khasia Hills identified by de Nicéville; de Rhé-Philipe records it from Masuri, Hannington from Kumaon; it is a rare species.

The sex mark on the forewing in fresh specimens is black and of the usual form, interrupted by the interno-median fold, if rubbed it is yellow.

## HALPE HYRIE.

Plate 821, figs. 3, ♂, 3a, ♂.

*Halpe hyrie*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 388, pl. G, fig. 34, ♂. Elwes, Proc. Zool. Soc. 1892, p. 653. Swinhoe, Trans. Ent. Soc. 1893, p. 327. de Nicéville, Gazetteer of Sikkim, Butt. p. 184 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 261.

*Halpe debilis*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 266, pl. 21, figs. 1, ♂, 5, ♀.

IMAGO.—Male. Upperside blackish-brown. *Forewing* with six ochreous-white spots, two inside the end of the cell, one above the other, touching each other, two small sub-apical spots of equal size, and two in the disc in the median interspaces, the lower one sub-quadrate and three times as large as the upper spot; the base of the wing with some dull ochreous-coloured hairs. Cilia grey, whitish at the tips, with brown patches. *Hindwing* unmarked, all but the outer marginal space covered with dull ochreous hairs. Cilia grey, with its base brown. Antennæ black, the shaft dotted with yellowish-white on the underside, the club below smeared with yellowish-white. Underside. *Forewing* with the costal space and apex (broadly) suffused with ochreous-red, the rest of the wing blackish-brown, the spots as on the upperside. *Hindwing* entirely and uniformly ochreous-red, a discal series of pale spots and a white spot towards the base of interspace 6.

Female like the male, the spots of the forewing larger, an additional spot on the middle of the sub-median vein, in a line with the two discal spots.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  inches.

HABITAT.—Naga Hills, Sikkim, Assam.

DISTRIBUTION.—The type from the Naga Hills is in the Indian Museum, Calcutta; de Nicéville records it from Sikkim; we have it from the Khasia Hills, from whence the types of *debilis* came.

## HALPE SEPARATA.

Plate 822, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Halpe separata*, Moore, Proc. Zool. Soc. 1882, p. 407. Doherty, Journ. As. Soc. Bengal, 1886, p. 138. Elwes, Trans. Ent. Soc. 1888, p. 454, pl. 11, figs. 5, ♂, 6, ♀. Watson, Hesp. Ind. p. 71 (1891). Elwes, Proc. Zool. Soc. 1892, p. 653. de Nicéville, Gazetteer of Sikkim, Butt. p. 184 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 267. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 371.

IMAGO.—Male. Upperside blackish-brown. *Forewing* rather broader than usual, the hinder margin a good deal longer than the outer margin, spots semi-diaphanous,

ochreous-white; three nearly in a straight line, sub-apical, two conjoined rather large spots across the cell near its end, and one in each of the median interspaces, near their bases, the lower the larger, well separated from each other. *Hindwing* without markings. Cilia of both wings brown, alternated with brownish-grey. Underside. *Forewing* with the interior portion blackish-brown, the margins broadly tinged with ochreous, the hinder marginal area broadly smeared with white, with a black spot on its upper edge a little before the middle, the ochreous-white spots as on the upperside. *Hindwing* uniformly ochreous-brown, without any markings. Antennæ black, ringed with white, the underside of the club smeared with white, the tip rufous; palpi, head and body concolorous with the wings, palpi beneath and pectus dark greyish; legs somewhat ochreous; abdomen beneath whitish; the stigma on the forewing is short and somewhat inconspicuous.

Female like the male, the spots of forewing larger, and there is an extra small spot on the middle of the sub-median vein.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{4}{10}$  inches.

HABITAT.—N.W. Himalayas, Sikkim, Bhutan, Naga Hills.

DISTRIBUTION.—The type male is from Sikkim; we possess a male from Sikkim; Elwes records it from the Naga Hills, and Hannington from Kumaon; it is a rare species; our description and figures are from our Sikkim male and a female from Bhutan, in the B. M.

#### HALPE EVERSHEDI.

Plate 822, figs. 2, ♂, 2a, ♂.

*Halpe evershedii*, Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 389.

IMAGO.—Male. Upperside blackish-brown, much the same colour as in *H. sitala*. *Forewing* with the spots similarly placed, but a little smaller. Cilia grey, with brown patches. *Hindwing* without markings, uniformly coloured. Cilia grey, without the patches. Underside. *Forewing* paler brown, the costal and apical areas suffused with ochreous-red, the spots as on the upperside. *Hindwing* ochreous-red, the abdominal half of the wing and the costa (narrowly) suffused with brown, the outer margin with a brownish macular band and with indications of some brownish discal spots. Antennæ black, ringed with white, apical half of club orange-red, the lower half of the club on the underside and part of the shaft white; palpi with black and white hairs; pectus with grey hairs; head and body above and below concolorous with the wings.

Expanse of wings, ♂  $1\frac{3}{10}$  inches.

HABITAT.—South India.

DISTRIBUTION.—The type was taken by Evans in the Palni Hills; there is an example from Travancore in the B. M., from which our description and figures are taken.

## HALPE ALBIPECTUS.

Plate 822, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Halpe albipectus*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 389, pl. G, figs. 35, ♂, 36, ♀.  
 Watson, id. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 267. Adamson,  
 Trans. N. H. Soc. Northumberland, etc. 1908, p. 145.

IMAGO.—Male. Upperside brown. *Forewing* with seven sordid white, semi-transparent, small spots, two within the end of the cell, well separated, one above the other, two in the disc of about the same size as the cell spots, placed slightly inwardly oblique in the median interspaces, a little before their middle, and three smaller spots, sub-apical, divided from each other by the veins, and in a nearly outwardly oblique straight line. *Hindwing* unmarked. Cilia of forewing brown, becoming white towards the hinder angle; of hindwing cinereous, with white tips, becoming white towards the anal angle. Underside. *Forewing* brown, the costa, apex and upper three-fourths of the outer margin pinkish-grey, the spots as on the upperside, a whitish, even-sided bar in the interno-median interspace below the discal spots, a double sub-marginal series of whitish points in pairs in the interspaces, with brown spots between them. *Hindwing* with the ground colour pinkish-grey, a discal and a sub-marginal series of brown spots with small white spots on their inner sides, the brown spot in interspace 4 of the discal series large, the lowest spot of both series white and somewhat prominent, a brown spot at the end of the cell and four spots in pairs, touched with white above it. Antennæ brown, with white dots, the shaft and club whitish on the underside; palpi, head and body above concolorous with the wings, palpi and head with some white hairs, collar greyish; beneath the palpi, pectus and body are white, the legs brown above, white beneath, the tarsi pinkish-ochreous.

Female similar to the male.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{3}{10}$  inches.

HABITAT.—Burma.

DISTRIBUTION.—The type male from Thoungyin is in the Indian Museum, Calcutta, the type female in Coll. Elwes; our description and figures are from a pair in the B. M. from the Ataran Valley, taken by Bingham in February, 1893; there is an example in the Hancock Museum, Newcastle, from Kathapa, in the hills west of the Chindwin River, taken by Adamson in February, 1894; Manders got a male at Mairgyi in the Shan States, 10th March, 1888; de Nicéville also records it from the Meplay Valley.



## INDO-MALAYAN, CHINESE AND JAPANESE ALLIED SPECIES.

- Halpe sulphurifera*, *Cobalus sulphurifera*, Herrich-Schäffer, Prod. Syst. Lep. iii. p. 82 (1867). *Halpe sulphurifera*, Semper, Rhop. Philipp. p. 305 (1892). Habitat, Philippines.
- Halpe beturia*, *Hesperia beturia*, Hewitson, Deser. Hesp. p. 36 (1868). *Halpe beturia*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 263, pl. 21, fig. 13. Habitat, Celebes.
- Halpe varia*, *Pamphila varia*, Murray, Ent. Mo. Mag. xi. p. 172 (1875). *Halpe varia*, Leech, Butt. of China, etc. ii. p. 621, pl. 42, fig. 18, ♂ (1893). Habitat, Japan.
- Halpe luteisquama*, *Hesperilla luteisquama*, Mabille, Bull. Soc. Ent. Fr. 1876, p. clix. Habitat, Luzon, Philippines.
- Halpe blanchardi*, *Hesperilla blanchardi*, Mabille, l.c. p. cliii. *Halpe blanchardi*, Leech, l.c. p. 625, pl. 42, fig. 19, ♂. Habitat, Moupin, W. China.
- Halpe lucasi*, *Hesperilla lucasi*, Mabille, l.c. *Halpe lucasi*, Leech, l.c. p. 624. Habitat, Moupin.
- Halpe insignis*, *Baoris* (?) *insignis*, Distant, Rhop. Malayana, p. 391, pl. 35, fig. 22 (1886). *Halpe insignis*, Elwes and Edwards, l.c. p. 261. Habitat, Singapore.
- Halpe bivitta*, *Pamphila bivitta*, Oberthür, Étud. d'Ent. xi. p. 28 (1886). *Halpe bivitta*, Leech, l.c. p. 623. Synonym, *Pamphila albivitta*, Oberthür, l.c. p. 38, pl. 6, fig. 46 (1886). Habitat, W. China.
- Halpe ormenes*, *Hesperia ormenes*, Plötz, Stett. ent. Zeit. 1886, p. 92. *Halpe zema ormenes*, Frühstorfer, Iris, 1911, p. 45. Habitat, Nias.
- Halpe palawea*, *Pamphila homolea* var. *palawea*, Staudinger, Iris, 1889, pp. 144, 165. Habitat, Philippines.
- Halpe submacula*, Leech, Entom. xxiii. p. 48 (1890); id. Butt. of China, etc. ii. p. 622, pl. 42, fig. 13, ♂ (1894). Habitat, Chang Yang.
- Halpe nephele*, Leech, l.c. p. 623, pl. 42, fig. 15, ♂. Habitat, W. China.
- Halpe cænis*, Leech, l.c. p. 625, pl. 42, fig. 16, ♂. Habitat, W. China.
- Halpe latris*, Leech, l.c. p. 623, pl. 42, fig. 17, ♂. Habitat, Ta-chien-lou.
- Halpe subflava*, Leech, l.c. p. 625, pl. 42, fig. 21, ♂. Habitat, W. China.
- Halpe fasciata*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 262, pl. 21, fig. 7, ♀. Habitat, Kina Balu, Borneo.
- Halpe majuscula*, Elwes and Edwards, l.c. p. 264, pl. 21, fig. 6, ♂. Habitat, Minahassa, Celebes.
- Halpe hazis*, de Nicéville, Journ. As. Soc. Bengal, 1897, p. 575, pl. 4, fig. 27. Habitat, Nias.
- Halpe vilasina*, *Halpe zema vilasina*, Frühstorfer, Iris, 1911, p. 45. Habitat, W. Java.
- Halpe vistara*, *Halpe zema vistara*, Frühstorfer, l.c. Habitat, W. Java.
- Halpe mahapara*, *Halpe zema mahapara*, Frühstorfer, l.c. Habitat, Palawan.
- Halpe beturina*, *Halpe moorei beturina*, Frühstorfer, l.c. Habitat, S. Annam, Siam.
- Halpe kusala*, *Halpe sikkima kusala*, Frühstorfer, l.c. Habitat, S. Annam.
- Halpe ura*, *Halpe submacula ara*, Frühstorfer, l.c. Habitat, Formosa.
- Halpe selangora*, nov. *Male* and *Female*.—Upperside olive-brown. *Forewing* with five white spots, two small ones of equal size, sub-apical; two sub-quadrate discal spots near the bases of the median interspaces, the upper one slightly the smaller, an elongated spot on the upperside of the cell about one-fifth before its end, the base with some dull ochreous hairs. *Hindwing* unmarked, the disc with dull ochreous hairs. Cilia of forewing brown, of hindwing white, with brown base. Underside pale ochreous-brown. *Forewing* with spots as above, and a sub-marginal series

of pale spots. *Hindwing* with indications of a discal series. Antennæ brown, the club with an orange-red tip, dotted and smeared with white beneath; palpi, head and body brown above, grey beneath. Expanse of wings, ♂ ♀  $1\frac{1}{2}$  inches. Habitat, Selangor. Types in the B. M.

#### Genus THORESSA, nov.

Antennæ and palpi as in *Halpe*. *Forewing*, hinder margin longer than the outer margin; cell less than two-thirds the length of the costa; vein 12 reaching costa well before end of cell; middle discocellular considerably longer than the lower one; vein 5 nearer to 4 than to vein 6; vein 3 from close to lower end of cell; vein 2 a little farther from vein 3 than 3 is from the end of the cell. *Hindwing*, outer margin evenly rounded, vein 7 from well before end of cell, slightly curved, upper margin of cell slightly curving downwards at the bifurcation, discocellulars slightly outwardly oblique, very faint, vein 5 absent, vein 3 from near lower end of cell, 2 from about one-fifth before the end. Hind tibiæ with two pairs of spurs, the upper pair much the shorter. Male without secondary sexual characters.

Type, *Pamphila masoni*, Moore.

Besides having no sex mark in the male, the base of vein 2 of the forewing is nearer the lower end of the cell than it is in *Halpe*, and in the hindwing the base of vein 2 is farther away from the lower end of the cell; this genus differs from *Halpe* in about the same degree as Watson's genera *Actinor* and *Ouriza* differ from *Halpe*; *Ouriza* chiefly differs from *Halpe* in the nature of the secondary sexual character, *Actinor* and *Thoressa* differ in being without any secondary sexual character.

#### THORESSA ASTIGMATA.

Plate 822, figs. 4, ♂, 4a, ♀, 4b, ♂.

*Parnara astigmata*, Swinhoe, Ann. Mag. Nat. Hist. 1890, p. 363.

*Halpe astigmata*, Watson, Proc. Zool. Soc. 1893, p. 109; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Davidson, Bell and Aitken, id. xi. 1897, p. 48. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 260.

IMAGO.—Male. Upperside blackish-brown. *Forewing* with some dull ochreous hairs on the basal portion and seven semi-hyaline white spots; three small ones, sub-apical, in a curve, the uppermost spot very minute; two larger conjoined spots across the cell towards its end; two discal spots, one in each of the median interspaces, near their bases, the lower one usually double the size of the other and quadrate. *Hindwing* mostly covered with dull ochreous hairs, but without any markings. Cilia of forewing brown, becoming pale towards the anal angle of the hindwing, whitish

with grey marks opposite the vein ends. Underside as dark as it is on the upperside. *Forewing* with spots as above, and a very indistinct series of sub-marginal spots from the apex becoming quite obsolete hindwards. *Hindwing* with a rounded series of six or seven white dots in the upper disc and a double whitish mark above the anal angle. Antennæ black spotted with white on the underside, the club white beneath, tip red: palpi, head and body blackish-brown, palpi beneath and pectus greyish, legs dull ferruginous.

Female like the male.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—South India.

DISTRIBUTION.—The types in the B. M. came from the Nilgiris; we have it in our collection from the same locality; Davidson, Bell and Aitken record it from Karwar.

#### THORESSA MASONI.

Plate 823, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Pamphila masoni*, Moore, Proc. Zool. Soc. 1878, p. 842, pl. 52, fig. 5, ♀ (male *ex errore*).

*Isoteinon masoni*, Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 441, pl. 20, fig. 4, ♂  
Watson, Hesp. Ind. p. 85 (1891).

*Halpe masoni*, Watson, Journ. Bo. Nat. Hist. Soc. 1891, p. 58; id. Proc. Zool. Soc. 1893, p. 109;  
id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 681. Elwes and Edwards,  
Trans. Zool. Soc. 1897, p. 268. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 145.  
Frühstorfer, Iris, 1911, p. 47.

IMAGO.—Male. Upperside dark brown, with an ochreous tint, spots orange-ochreous. *Forewing* with two large conjoined spots across the cell near its end, three sub-apical small spots in an outwardly oblique straight line, the uppermost one minute, sometimes absent, and four spots in an inwardly oblique straight line, the two uppermost ones in the median interspaces sub-quadrate, the second the larger, the third spot smaller than the first, the fourth spot transversely elongate, its lower end touching the sub-median vein, all close together, divided from each other by the brown veins; the base of the wing with some greyish-ochreous hairs in the interspaces. *Hindwing* with a discal ochreous band, divided into elongated spots by the brown veins, extending from interspace 4 to below the sub-median vein, the breadth of the band varying much in different examples; the abdominal space with greyish-ochreous hairs. Cilia of forewing brownish, of hindwing ochreous. Underside. *Forewing* with the costal space above the cell, the apical space, the outer margin decreasingly and the hinder margin narrowly dull, dark ochreous; the interior portion of the wing black, the spots as on the upperside, the two lowest spots of the discal series white and large, and somewhat diffused, the lowest twice as large as the one above

it: two somewhat indistinct, dark, short streaks outside the two lower sub-apical spots. *Hindwing* uniformly dull, dark ochreous, with a discal series of greyish-brown spots, in some specimens pale and indistinct, in some dark and prominent (in these there is a greyish marginal band), abdominal fold somewhat whitish. Antennæ black, the shaft minutely ochreous-spotted on its underside, the club with ochreous tip and ochreous beneath; palpi, head and body above dark brown, ochreous-white beneath, legs also ochreous-white.

Female like the male, the wings more elongate, all the spots of the forewing much larger and paler in colour, the ochreous band of the hindwing broader and extending more hindwards.

Expanse of wings, ♂  $1\frac{3}{10}$ , ♀  $1\frac{4}{10}$  inches.

HABITAT.—Burma, Tonkin.

DISTRIBUTION.—The type, a female, described and figured as a male by Moore in error, came from Tavoy; we possess a male from the Ataran Valley; Watson records it from Tilin Yaw, Upper Burma, and from the Chin Hills, Adamson from Tenasserim and Singoo in the Shan Hills, 4,000 feet elevation, Frühstorfer from Tonkin; it is a rare species; Elwes' and de Nicéville's figure of the male is too small and too brightly coloured on the underside.

#### THORESSA HONOREI.

Plate 823, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Halpe honorei*, de Nicéville, Proc. Zool. Soc. 1887, p. 464, pl. 40, fig. 8, ♀. Hampson, Journ. As. Soc. Bengal, 1888, p. 367. Watson, Hesp. Ind. p. 75 (1891); id. Proc. Zool. Soc. 1893, p. 109; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Davidson, Bell and Aitken, id. xi. 1897, p. 49 (larva and pupa). Evans, id. xx. 1910, p. 389. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 268.

IMAGO.—Male. Upperside brown, with an ochreous tint; spots dark orange-ochreous. *Forewing* with the basal half covered with short ochreous hairs in the interspaces; spots much as in *T. masoni*, but larger and longer, sub-quadrate, the upper two of the discal series large, larger than the cell spots, the lower about twice as large as the upper, the two spots below them small. *Hindwing* with all but the extreme margins covered with long ochreous hairs; a large ochreous patch in the disc, quite differently shaped to that in *T. masoni*, divided by the brown veins into three lengthened spots which extend almost to the outer margin, filling interspaces 2, 3 and 4, a small brown spot in each of the two lower ochreous interspaces (not always present), and a small ochreous spot attached to the outer end of the patch. Cilia of both wings ochreous, with a brown base. Underside. *Forewing* with the costa increasingly, the apex broadly, the outer margin decreasingly dull, dark ochreous, all the rest of the wing

blackish, the spots as on the upperside, the discal series having the two lowest spots whitish, somewhat diffused and large. *Hindwing* dark, dull ochreous; a black bar closing the cell, a complete discal rounded series of blackish spots, one in each interspace, commencing with one above the middle of the cell; all the veins blackish, the abdominal margin and a streak in the basal two-thirds of the sub-median interspace black. Antennæ black, the shaft with minute white dots on the underside, the club whitish beneath, its tip rufous; palpi brown above, with some whitish hairs, white beneath; head and body brown above, with ochreous-white hairs; on the underside the pectus and abdomen whitish, the thorax dark brown, with some whitish hairs, legs more or less ochreous.

Female. Upperside coloured like the male. *Forewing* with the spots similar, but there is only one spot below the two discal spots. *Hindwing* with the patch usually restricted to a conspicuous streak in interspace 4 and inconspicuous thin streaks in interspaces 3 and 2. Underside paler than in the male, all the markings similar, but indistinct.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{1}{2}$  inches.

LARVA, cylindrical, with a flattened anal segment somewhat rounded at the extremity; the head is more or less round when looked at from in front and slightly bi-lobed; head light yellow-brown, with a round black spot at the top of each lobe. The colour of the body is as follows: a dorsal green line, a sub-dorsal broad yellow band, a lateral rose-coloured band, broader than the sub-dorsal one, and with just a shade of green in it, and a marginal white band; the last segment is quite black and rough. The skin is somewhat transparent. Length, 28 mm.

PUPA, circular in transverse section; on the front of the head is a broad, heart-shaped overgrowth of the same thickness throughout, occupying the space between the eyes, rough and honeycombed on the surface; immediately behind the overgrowth are two small similar overgrowths, oblong in shape, situated along the front margin of segment 2 and separated by a triangular overgrowth; the front of the eyes is also rough and honeycombed, as well as a small spot at the anterior inferior corner of the eye and a smaller one on each side and contiguous to the maxillæ. These overgrowths are all black-brown in colour; the spiracular expansions of segment 2 are large, nearly circular, face forwards, and have a transverse depression in the centre; they are black-brown in colour. On segment 2 is a black, narrow, lateral triangular mark reaching on to the thorax; cremaster curved, provided with many irregular hooklets on its dorsal surface and around its edges; the dorsal ridges of the cremaster are strong and are provided with three teeth pointing backwards along their length; colour of pupa a waxy-looking white, with a slight yellow tinge; cremaster brown. Length, 14 mm.

HABITS.—Larva generally incorporates a few dead leaves in its cylindrical cell;

the cell is coated inside with steps of silk which are disposed irregularly; pupa fixed by the tail only; the larva feeds on bamboo, and is generally found on bamboo-clumps in which there are a lot of dead yellow leaves. The imago is found throughout the district at all times of the year. It is not common anywhere, it basks on bamboo leaves in the sun with its wings half open, when it is easily caught; it is an insect of very rapid flight. We have bred it at all seasons. (Davidson, Bell and Aitken.)

HABITAT.—South India, Ceylon.

DISTRIBUTION.—The types in the Indian Museum, Calcutta, came from the Palni Hills; Hampson records it from the Nilgiris; Elwes from Trichinopoli; Davidson, Bell and Aitken, who bred it at Karwar, unfortunately did not figure the larva and pupa.

#### INDO-MALAYAN ALLIED SPECIES.

*Thoressa hieron*, Halpe hieron, de Nicéville, Journ. As. Soc. Bengal, 1894, p. 54, pl. 4, fig. 1.  
Habitat, Sumatra.

#### Genus ONRYZA.

*Onryza*, Watson, Proc. Zool. Soc. 1893, p. 112, pl. 2, fig. 5; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 433. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 268.

*Forewing*, vein 12 reaches costa about one-fifth before the end of the cell, cell nearly two-thirds the length of the costa, vein 6 from very close to upper end of cell, upper discocellular consequently very minute, middle and lower discocellulars inwardly oblique, the lower much the shorter, vein 3 emitted about one-fifth before lower end of cell, 2 from a little beyond the middle; costa somewhat arched at the base, then nearly straight to the apex, which is sub-acute, outer margin convex below the apex, then nearly straight to the hinder angle, shorter than the hinder margin, which slightly curves downwards. *Hindwing* with the cell very short, much less than half the breadth of the wing, vein 7 from about one-third before the upper end of cell, discocellulars slightly outwardly oblique, very faint, vein 5 absent, 3 from close to lower end of cell, the base of vein 2 about as far from 3 as the base of that vein is from the end of the cell; lower margin of the cell bent upwards from vein 2 to the end; costa and apex evenly rounded, then nearly straight to the anal angle, which is also rounded and somewhat produced. Antennæ and palpi as in *Halpe*; hind tibiæ with two pairs of rather short spurs. The male with a patch of long recumbent hairs on the upperside of the hindwing, attached along vein 8 from close to the base of the wing.



*Onryza*.

Type, *Halpe meiktila*, de Nicéville.

## ONRYZA MEIKTILA.

Plate 823, figs. 3, ♂, 3a, ♂.

*Halpe meiktila*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 57.*Parnara* (?) *meiktila*, de Nicéville, l.c. p. 386, pl. G, fig. 32, ♂.*Onryza meiktila*, Watson, Proc. Zool. Soc. 1893, p. 112; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 269. Adamson, Trans. N. H. Soc. Northumberland, etc 1908, p. 146.

IMAGO.—Male. Upperside dark ochreous-brown, the spots dark ochreous; two elongated, bar-shaped spots in the cell end, one above the other, their outer ends touching each other, two small, slightly elongated sub-apical spots, two larger spots, near each other, obliquely in the disc, placed about the middle of the median interspaces, their inner sides rounded, their outer sides slightly excavated, a smaller pointed spot (its point outwards), well separated from the others, but in a line with them, on the middle of the sub-median vein; three short, dull ochreous streaks from the base, composed of setæ, costal, medial and on the hinder margin. Cilia ochreous-brown slightly tipped with white towards the hinder angle. *Hindwing* pale ochreous-brown, the margins dark ochreous-brown, the patch of recumbent hairs attached to vein 8 black. Cilia brown basally, yellowish-white outwardly. Underside pale, dull greyish-ochreous. *Forewing* with a little black suffusion at the base, the spots as on the upperside, but somewhat indistinct, the cell spots with a small blackish-brown mark against their outer sides, the two discal spots similarly marked on both sides. *Hindwing* without markings. Antennæ brown above, the tip of the club orange-red, below ochreous-white, some thin blackish bars on the basal part of the shaft; palpi, head and body above concolorous with the wings, the palpi, head and thorax with ochreous hairs, the abdomen with whitish hairs, on the underside ochreous-white, the legs ochreous.

Expanse of wings, ♂  $1\frac{4}{10}$  inches.

HABITAT.—Burma.

The description and figures are from the type in the Hancock Museum, Newcastle, taken by Adamson at Meiktilla in Central Burma on the 15th February, 1890; there is also another, much faded male in that Museum taken by Adamson on the Upper Chindwin River, in the month of February, 1892; de Nicéville also records it from the Chin Hills; the female is unknown.

## Genus ACTINOR.

*Actinor*, Watson, Proc. Zool. Soc. 1893, p. 108; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 432.

Elwes and Edwards, Trans. Zool. Soc. 1897, p. 243.

*Forewing*, vein 12 ends on the costa before the upper end of the cell, the cell about two-thirds the length of the costa, vein 6 from quite close to upper end of cell, upper discocellular very minute, hardly distinguishable, middle and lower discocellulars in an inwardly oblique line, the lower about half the size of the middle, vein 5 from their junction curving upwards at its base, vein 3 from near the lower end of cell, 2 from about one-third from the base; costa arched, apex somewhat blunt, outer margin evenly convex, shorter than the hinder margin. *Hindwing* with the cell fairly long, extending more than half across the wing; vein 7 emitted close to the upper end, arising at an acute angle; discocellulars faint, vein 5 very faint but traceable, 3 from close to lower end of cell, 2 from about one-fourth before the end; costa and outer margin evenly rounded. Antennæ about half the length of the costa of forewing, club moderate, long, with a short, sharp crook; palpi porrect, second joint laxly scaled, third minute, obtusely conical; hind tibiæ with two pairs of spurs; no secondary sexual characters.

Type, *Halpe radians*, Moore.

#### ACTINOR RADIANS.

Plate 823, fig. 4, ♂.

*Halpe radians*, Moore, Proc. Zool. Soc. 1878, p. 690, pl. 45, fig. 1. Watson, Hesp. Ind. p. 74 (1891).  
*Actinor radians*, Watson, Proc. Zool. Soc. 1893, p. 108; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 244. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. 1898, p. 599.

IMAGO.—Male. Upperside luteous-brown, basal hairy scales yellow. Cilia cinereous-white. *Forewing* with a pale yellow constricted spot at end of the cell, and an irregular transverse continuous discal band of spots with their lower angles continued outward along the veins. *Hindwing* with a yellow streak at the end of the cell, and a short discal band with outer rays. Underside paler, minutely speckled with yellowish-white. *Forewing* as above, the hind margin being also broadly yellow. *Hindwing* with a sub-basal spot, all the veins, and two (a median and a discal) transverse sinuous bands pale yellow; palpi, body beneath, and legs yellowish-white.

Expanse of wings,  $1\frac{1}{2}$  inch.

HABITAT.—Dharmasala, N.W. Himalaya. (Moore.)

The unique type is in the B. M.

#### Genus ITON.

*Iton*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 399. Watson, id. p. 433. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 269.

*Forewing*, vein 12 ends on costa a little before the end of the cell; cell rather long and narrow, but less than two-thirds the length of the costa; upper discocellular short,



stout, strongly outwardly oblique, in almost an even line with the upper margin of the cell, middle and lower discocellulars in a line, very strongly inwardly oblique; the middle one very slightly outwardly curved and about twice as long as the lower: vein 3 emitted at about one-eighth from the lower end of the cell, 2 from a little beyond the middle; costa slightly arched before its middle, then nearly straight to the apex, which is sub-acute, outer margin convex, hinder angle blunt, but well pronounced, hinder margin straight, somewhat longer than the outer margin in the male, a good deal longer in the female; the sub-median vein somewhat upwardly curved, the male with a long and thick tuft of hairs attached to the wing membrane on the underside towards the base of the wing, between the sub-median vein and the hinder margin, the tuft turned forwards. *Hindwing*, vein 8 upwardly curved, terminating at the apex of the wing, 7 emitted about one-fourth before upper end of cell, cell short, less than half the breadth of the wing, comparatively broad, discocellulars faint, vein 5 absent, the bases of veins 3 and 2 close together near the lower end of the cell, the base of vein 2 about one-half the distance from the base of vein 3 as that is from the cell end; sub-median and internal veins straight, wing longer than broad; costa highly arched at base, apex rounded, outer margin convex to the end of vein 3, emarginate between veins 3 and 2, anal angle well rounded, somewhat produced in the male. Antennæ about half the length of the costa of forewing; club moderate, with a short pointed crook; palpi with the second joint densely scaled, third joint very short; hind tibiæ with two pairs of spurs.

Type, *Hesperia semamora*, Moore.'

#### ITON SEMAMORA.

Plate 824, figs. 1, ♂, 1a, ♀, 1b, ♂.

- Hesperia semamora*, Moore, Proc. Zool. Soc. 1865, p. 791. de Nicéville, Journ. As. Soc. Bengal, 1881, p. 60.
- Parnara semamora*, Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27; id. idem, 1891, p. 56; id. Hesp. Ind. p. 46 (1891). Elwes, Proc. Zool. Soc. 1892, p. 650.
- Uncana semamora*, Watson, Proc. Zool. Soc. 1893, p. 123. Swinhoe, Trans. Ent. Soc. 1893, p. 328. de Nicéville, Gazetteer of Sikkim, Butt. p. 186 (1894).
- Iton semamora*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 399. Watson, id. p. 435. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 548. Watson, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 681. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 269. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 146. Frühstorfer, Iris, 1911, p. 48.
- Hesperia barea*, Hewitson, Trans. Ent. Soc. 1866, p. 490.

IMAGO.—Male. Upperside dark blackish-brown, nearly black. *Forewing* with a recurved series of six semi-diaphanous white spots, commencing with three sub-apical, small, the uppermost one minute, in an inwardly curved, outwardly oblique line

from near the costa, a larger spot below these, before the middle of interspace 4, a similar spot inwardly obliquely near the base of the second median interspace, and the lowest the largest in the first median interspace, immediately below the base of vein 3. *Hindwing* with a very large anal white patch, occupying quite a fourth of the wing, its inner margin very irregular. Cilia of forewing brown, of hindwing white, with a brown base becoming pure white outside the anal patch. Underside. *Forewing* with the middle portion, from vein 2 to the upper margin of the cell, blackish, the costa, apex (broadly) and the hinder margins paler and somewhat rufous-tinted; the outer marginal line blackish, spots as on the upperside. *Hindwing* with the costal space down to the upper margin of cell, and vein 6 rufous-brown, the rest of the wing pure white, a suffused blackish spot at the base of the first median interspace, sometimes obscure, sometimes absent, and a black marginal band, divided by the white veins into spear-shaped spots, one in each of the interspaces, down to interspace 1. Cilia of forewing grey, of hindwing pure white. Antennæ black, whitish beneath; palpi, head and body above blackish-brown, white beneath, the abdomen ochreous.

Female like the male, but paler in colour, more brown; on the forewing there is a small, sometimes very obscure white spot against the upper side of the sub-median vein in continuation of the discal series, and on the underside there is a whitish patch against the middle of the outer margin.

Expanse of wings, ♂  $1\frac{7}{10}$  to  $1\frac{8}{10}$ , ♀  $1\frac{9}{10}$  to 2 inches.

HABITAT.—Sikkim, Assam, Burma, Perak, Borneo, Sumatra.

DISTRIBUTION.—The type, a female, is marked Bengal; we have it from the Ataran Valley, Burma, and from the Khasia Hills; Elwes records it from the Karen Hills, Pegu and Pulo Laut; Watson from Beeling, Tilin Yaw, Upper Burma and Chin Lushai; de Nicéville from Sikkim, Perak, Borneo and Sumatra.

#### ITON ADAMSONI, nov.

Plate 824, figs. 2, ♂, 2a, ♀, 2b, ♂.

IMAGO.—Male. Upperside dark blackish-brown, nearly black as in *semamora*. *Forewing* with the spots pure white, three sub-apical and three discal much as in *semamora*, but larger, increasing in size hindwards, a small white dot a little outwards between the two upper discal spots and a small white conspicuous spot in the interno-median interspace immediately above the middle of the sub-median vein. *Hindwing* with the anal white patch much smaller than in *semamora*, there being a black marginal border round the anal angle and up the abdominal margin circling round the white patch. Cilia of forewing dark brown, of hindwing brown at the base with white tips becoming pure white hindwards. Underside. *Forewing* much paler blackish-brown,

broadly smeared with white at the apex and on the hinder marginal space, the spots as on the upperside. *Hindwing* with the costal space, limited by the entire length of the sub-costal vein, blackish-brown, the rest of the wing of a dull whitish colour, with brown suffusion in the interspaces, and a macular band of rather large brown spots on the outer margin, increasing in size hindwards. Antennæ black, with white dots on the underside; palpi, head and body blackish-brown above, whitish beneath; legs brown above, white beneath.

Female like the male, somewhat paler; on the underside the hinder marginal area is broadly suffused with a greenish-blue tint, and the whole area of the hindwing is suffused with the same colour, leaving the veins white and the white anal patch as on the upperside, the outer marginal spots divided by the white vein ends, dark black.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  inches.

HABITAT.—Burma.

Described and figured from a male in the Hancock Museum, Newcastle, taken by Adamson at Kalewa, on the Chindwin River, in October, and a female in our collection from Palone, taken in June, 1887.

The male was submitted by Adamson to Elwes and Edwards, who say\* that “the clasp-form can, without dissection, be made out sufficiently well to show that it agrees very well with *watsonii*, and is absolutely distinct from *semamora*.”

The female has been in our collection for years, waiting for a male before describing it; it is undoubtedly a good species, distinct from either *semamora* or *watsonii*.

#### ITON WATSONII.

Plate 824, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, ♀.

*Parnara watsonii*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 223; id. idem, 1891, p. 388, pl. G, fig. 29, ♂. Watson, Hesp. Ind. p. 46 (1891). Elwes, Proc. Zool. Soc. 1892, p. 649.

*Uncana watsonii*, Watson, Proc. Zool. Soc. 1893, p. 123.

*Iton watsonii*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 399. Watson, id. p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 269. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 146. Frühstorfer, Iris, 1911, p. 48.

IMAGO.—Male. Upperside dark brown. *Forewing* with the base somewhat paler than the rest of the wing and with seven white spots, three small ones, sub-apical, close together, divided by the veins, in an outward curve; a larger round spot below them, in interspace 4, being the uppermost spot of an inwardly oblique discal series, the next two near the bases of the median interspaces, their outer sides somewhat excavated, their lower outer ends produced into points, the lower of the two

\* Trans. Zool. Soc. 1897, p. 269.

twice as large as the one above it, a smaller spot not quite in a line with them on the sub-median vein a little beyond its middle. *Hindwing* unmarked. Cilia of forewing cinereous, of hindwing white. Underside paler. *Forewing* with the costal and apical portions paler than the rest of the wing, the spots as on the upperside. *Hindwing* with a broad white streak right across it, its upperside even, limited by the upper margin of the cell and vein 7, its lower margin irregular, some white streaks on the lower half of the wing varying much in extent in different examples. Antennæ black; the shaft on the underside dotted with white, the basal half of the club smeared with white; palpi, head, body and legs concolorous with the wings, palpi and abdomen beneath and the pectus white.

Female like the male, but paler, the spots of the forewing larger, the white streaks on the underside of the hindwing broader.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to 2 inches.

HABITAT.—Burma, Malay Peninsula and Archipelago.

DISTRIBUTION.—The types came from Tilin Yaw, Upper Burma, taken by Watson in March, 1890; our descriptions and figures of the male are from an example in the Hancock Museum, taken by Adamson at Pinyoung, on the Chindwin River, in the month of September, and of the female from an example from Burma in our collection; Elwes records it from the Karen Hills and the Shan States; de Nicéville from Bassein, Henzada and Maulmein, all in Burma, and from Malacca, Singapore and the Philippines.

#### INDO-MALAYAN ALLIED SPECIES.

*Iton azona*, *Hesperia azona*, Hewitson, Trans. Ent. Soc. 1866, p. 490. *Iton azona*, de Nicéville, Journ. Bo. Nat. Hist. Soc. xii. 1898, p. 158, pl. AA, fig. 35, ♂. Habitat, Celebes.

#### Genus BAORIS.

Plate 825a.

*Baoris*, Moore, Lep. Ceylon, i. p. 166 (1881). Distant (part), Rhop. Malayana, p. 379 (1886). Watson, Hesp. Ind. p. 29 (1891); id. Proc. Zool. Soc. 1893, p. 106. Leech, Butt. of China, etc. ii. p. 616 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 433. Frühstorfer, Iris, 1911, p. 48.

*Parnara*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 270.

*Forewing*, vein 12 short, reaches costa some little distance before end of cell, cell less than two-thirds the length of costa, upper discocellular minute but distinct, outwardly oblique, middle and lower discocellular slightly inwardly oblique, the lower much the shorter, vein 5 consequently arises close to lower end of cell and curves upwards to get into position between veins 4 and 6, vein 3 from near lower end of cell, curving upwards somewhat at its base, 2 from about one-third before the end; costa

slightly arched, apex somewhat blunt, outer margin evenly convex, about as long as the hinder margin in the male, somewhat less than the hinder margin in the female, hinder angle blunt. *Hindwing*, vein 7 emitted about one-sixth before upper end of cell, discocellulars outwardly oblique, faint, vein 5 absent; lower margin of the cell somewhat curved round at its end, vein 3 from close to the end, 2 close to 3, not twice as far from 3 as 3 is from the end; costa and outer margin evenly rounded to the extremity of vein 3, slightly emarginate from 3 to 1, the anal angle rounded. Antennæ short, about half the length of the costa of forewing, club moderate, with a short, pointed crook; palpi upturned, second joint densely scaled, third joint almost entirely concealed; hind tibiæ with two pairs of spurs. The male with a tuft of long hairs on the upperside of the hindwing, attached along the upper margin of the cell and directed downwards across the cell.



Type, *Hesperia oecia*, Hewitson.

NOTE.—This genus has heretofore been considered by most authors as monotypic; with this we have never agreed, and have asserted our opinion in several of our memoirs that the Indian forms were different to the Philippine type of Hewitson's *oecia*, and that Moore's *unicolor* differed from both. As Elwes' and Edwards' dissections of the genitalia of Bornean and Chinese examples (which superficially resemble typical Philippine *oecia* quite as closely as the Indian examples resemble that species) proved their distinctness from the Indian form, and as Davidson, Bell and Aitken, who bred many of the so-called *Baoris oecia*, make no mention of any variations, we thought it advisable to settle the matter by having several examples of all the forms in our possession dissected by a competent authority. We sent fourteen males from the Philippines, Borneo, China, the Andamans, Nikobars, Burma, Sikkim and Assam, to Dr. Chapman, who has done such excellent work on the genitalia of the Lepidoptera, and we hereby append his report, and beg to thank him most heartily for the trouble he has taken in the matter.

We give enlarged photographs of the genitalia of all the four species on Plate No. 825a.

Dr. Chapman says the result of his dissections is as follows:—

1. Typical *oecia* from the Philippines, very distinct.
2. Typical *simillima* from Brunei, North Borneo, }  
     typical *unicolor* from Darjiling, and one } The same as each other, i.e. one species.  
     example from Burma. }
3. Typical *leechii* from Omeishan.
4. 3 typical *sikkima* from Sikkim; 3 typical *scopulifera* from the Andaman and Nikobar Islands; 3 others from Assam, Burma, and Khasia Hills. } One species.

“ I thus make 4 species.

“ I deal only with a few of the most salient points that serve to distinguish from each other the four species examined in the following notes.

“ Of 14 specimens of *Baoris* ♂♂ sent me by Col. Swinhoe for examination, one is as regards the appendages at once separated from the others by the very different outline of the clasps. In all the others the ventral margin of the clasp is prolonged into a very sharp point or spine, much like the figure given by Elwes and Edwards as representing *oceia* (Fig. 74).\* But in Col. Swinhoe's specimen of *oceia* from the Philippines, the one that differs from the rest, the angle that is prolonged in the others is so far back as to appear merely as an angle on the inner margin. The prolonged extremity of the clasp is angular and appears to correspond with what, in the others, is the rounded meeting of the dorsal and terminal margins. The œdœagus is comparatively short, and has no marked armature; the vesica presents two sets of cornuti, which overlie one another in the preparation, and so are not easy to define, as to their mutual relations, one is of very regularly arranged angular points, the other consists of a great number of longer, narrower and less chitinised spines which lie closely packed like a brush. It may be noted that in all the species the uncus is very similar.

“ Of the thirteen with the sharp point at the end of the ventral margin of the clasp there are three specimens all obviously of one species that are labelled *unicolor* from Sikkim, *simillima* from Borneo, and one unnamed from Burma.

“ In these the œdœagus is almost the same as in *oceia*, and there being three specimens, the different positions they have assumed show that the set of cornuti that is paler and more brush-like is on the extension of the vesica, extended the furthest.

“ In this species the sharp spine of the clasp is finely rough like the rest of the surface.

“ The remaining ten consist of two species, one labelled *leechii*, China; the other 9 are labelled 3 *sikkima* from Sikkim, 3 *scopulifera* from Andamans and Nicobar, and the 3 others are from Assam, Khasia Hills and Burma.

“ Both these species differ from the two preceding (*oceia* and *unicolor*) in the œdœagus having a formidable armament apart from the vesica.

“ In *leechii* the whole appendages are smaller than in the other species, the terminal portion of the clasp is narrow from before backwards, and especially at its dorsal margin. (As the photograph shows, the uncus was unfortunately displaced in preparing the specimen, there are also some air-bubbles in the œdœagus.)

“ The œdœagus has along the dorsal (in the preparation) margin of the opening an array of short spines very like those on the vesica. The vesica possesses a very similar armature to those of the preceding species, but rather smaller and more compact.

“ In the 9 specimens of *sikkima* and those agreeing with it there is considerable

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\* Trans. Zool. Soc. 1897, p. 274, pl. 25.

resemblance to *leechii*. The appendages are larger and bolder, the terminal flap of the clasp is longer and more square, the spinous armature stronger and more chitinised. The œdœagus is proportionally much longer than in any of the other species. The actual length is, in millimetres, in *leechii* 3·1, *unicolor* 3·3, *oceia* 3·4, and in *sikkima* 4·8. The œdœagus spreads, one might say opens widely, beyond the zone, with a dorsal and ventral chitinous piece (connected by more delicate tissues), the upper margin of the dorsal piece has an armament of small spines, the ventral piece is again divided, the longer dorsal portion is armed with rather longer spines than the dorsal ones, and in my preparation looks as if in the centre of the œdœagus. The movable armature, that of the vesica, consists of a plate that looks when in normal position as if hinged to end of dorsal margin, and extends into the lumen of the œdœagus, when everted, it is no doubt also inverted (i.e. turned end to end), that is, some 8 or 9 rather large, strong, but very short spines, that now point basally, then no doubt point outwardly, there is also a matlike mass of small spicules, similar to those I have likened in the other species to a brush.

“Of these 9 specimens of *sikkima* I have in 3 cut through the œdœagus, leaving a portion behind, in removing terminal segments for examination. The œdœagus is very long, and in the retraction of the appendages extends very far backwards into the abdomen, so that though I feared I was too generous in my amputation, the reverse proved to be the case.”

#### BAORIS FARRI.

Plate 825, figs. 1, ♂, 1a, ♀, 1b, ♂ (one form), 1c, ♂, 1d, ♀ (another form), 1e, larva and pupa ;  
Plate 825a, fig. 2 (genitalia).

*Hesperia farri*, Moore, Proc. Zool. Soc. 1878, p. 688, ♀ ♀ (♂ ♀, *ex errore*). de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53, ♀. Watson, Hesp. Ind. p. 44 (1891).

*Hesperia oceia*, Moore (nec Hewitson), Proc. Zool. Soc. 1877, p. 593. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1881, p. 258. Manders, Trans. Ent. Soc. 1890, p. 539.

*Baoris oceia*, Moore, Lep. Ceylon, i. p. 165 (1881). de Nicéville, Journ. As. Soc. Bengal, 1883, p. 85, pl. 10, fig. 11, ♀; id. idem, 1885, p. 53. Elwes and de Nicéville, id. 1886, p. 440. Wood-Mason and de Nicéville, id. p. 381. Elwes, Trans. Ent. Soc. 1888, p. 443. Manders, id. 1890, p. 539. Watson, Journ. Bo. Nat. Hist. Soc. 1891, p. 55; id. Hesp. Ind. p. 29 (1891). Elwes, Proc. Zool. Soc. 1892, p. 649. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 426. Watson, Proc. Zool. Soc. 1893, p. 106. de Nicéville, Gazetteer of Sikkim, Butt. p. 183 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 681. Davidson, Bell and Aitken, id. xi. 1897, p. 57, pl. 7, fig. 6 (larva and pupa). Frühstorfer, Iris, 1911, p. 49.

*Parnara oceia*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 274, pl. 25, figs. 74, a, b, c (genitalia). Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 146.

*Baoris penicillata*, Moore, Lep. Ceylon, i. p. 166 (1881). Watson, Hesp. Ind. p. 30 (1891).

*Baoris scopulifera*, Moore, Proc. Zool. Soc. 1883, p. 532.

*Baoris sikkima*, Swinhoe, Ann. Mag. Nat. Hist. 1890, p. 362; id. Trans. Ent. Soc. 1893, p. 322.

IMAGO.—Male. Upperside dark vinous-brown, with a bronzy tint. *Forewing* with seven or eight pale ochreous-white semi-hyaline spots; two across the cell, near its end, well separated from each other, three sub-apical in an outwardly oblique curve, with a discal inwardly oblique series of spots in continuation in the 4th, 3rd and 2nd interspaces, increasing in size hindwards. *Hindwing* without markings, the tuft of hairs dark blackish-brown, with their bases pale ochreous-brown. Cilia of forewing brown, with whitish tips near the hinder angle, of the hindwing whitish, with a brown base. Underside like the upperside. *Forewing* with the spots as above, the hinder marginal area more or less broadly whitish and somewhat glazed. Antennæ black, whitish on the underside, thinly marked with black, the extreme tip of the club whitish; palpi, head and body and the legs concolorous with the wings, palpi beneath and pectus dark grey.

Female like the male, but the spots are larger, the spot in the first median interspace is usually more or less spear-shaped, with its point outwards, there is a small dot below it, and a smaller spear-shaped spot on the sub-median vein. The spots on the forewing vary in number in both sexes, there being sometimes as many as six spots in the male and seven or eight in the female, as shown in figures 1c and 1d.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{9}{10}$  inches.

LARVA.—Head of a semi-elliptical shape, somewhat narrowed at the top, truncated at the base and slightly bi-lobed; the body is cylindrical, somewhat depressed, thickest at segment 5, sloping at the last segment, with the extremity of the anal segment rounded broadly; head white, with a shiny black, broad border; a broad shiny black line down the centre of the face, splitting down the sides of the clypeus, and a curved black mark in the centre of each lobe; all these marks are broader in the rains specimens than in the dry-weather ones. Length, 47 mm.

PUPA.—Cylindrical, very slightly constricted dorsally only, behind thorax, snout long, pointed; proboscis produced to the end of the cremaster, the eyes are prominent, the abdomen tapering, and ends in a thin, long, more or less broadly triangular, curved cremaster; colour green, with a sub-dorsal and lateral white band. Length, 36 mm. over all.

HABITS.—The larva generally lives in a laxly closed cell; the larva makes the cell by joining the edges of the leaf longitudinally, loosely (never tightly); egg dome-shaped, broadest just above the base, more or less smooth; the larva feeds on bamboo. This butterfly being so like the next (*Baoris kumara*, Moore), we did not distinguish it for a long time, and consequently did not know it existed in the district until we bred it. Since breeding it, however, and thereby becoming aware of its existence, we have caught many males basking on bamboo leaves, in the beds of nullahs, in shady places, where little spots of sunshine came through, with *Baoris canaraica*, Moore, up till 9 o'clock in the morning and for a short time before sundown; it retires when the sun



is hot. We bred specimens below the ghats and above the ghats in the monsoon and in the dry weather; the larva is always much ichneumonated. The butterfly always returns to the same leaf when disturbed, can be caught between one's fingers and thumb when sitting, and has a strong flight. The females, probably on account of their not being found basking, are difficult to obtain. (Davidson, Bell and Aitken.)

HABITAT.—Sikkim, Assam, Bengal, Kanara, Ceylon, Andamans, Burma.

DISTRIBUTION.—The types (females) are from Calcutta and Cherra Punji; Elwes records it from the Naga Hills, Sikkim, 5,000 feet, and Tavoy; Watson from the Chin Hills and Tilin Yaw; Manders from the Shan States. The type of *penicillata* is from Ceylon, of *scopulifera* from the Andamans, of *sikkima* from Sikkim.

#### BAORIS UNICOLOR.

Plate 825, figs. 2, ♂, 2a, ♀, 2b, ♂; Plate 825a, fig. 3 (genitalia).

*Baoris unicolor*, Moore, Proc. Zool. Soc. 1883, p. 533. Swinhoe, Trans. Ent. Soc. 1893, p. 322.

*Hesperia oceia*, de Nicéville (part), Journ. As. Soc. Bengal, 1883, p. 85. Watson, Hesp. Ind. p. 29 (1891).

*Parnara oceia*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 274.

IMAGO.—Male and female. Coloured above and below as in *B. farri*, but without any spots whatever in either sex.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{9}{10}$  inches.

HABITAT.—Sikkim, Assam.

DISTRIBUTION.—The types are from Darjiling; our figures and genitalia are from a Darjiling male and Khasia Hills female. We have received several examples of both sexes from the Khasia Hills.

#### INDO-MALAYAN AND CHINESE ALLIED SPECIES.

*Baoris oceia*, *Hesperia oceia*, Hewitson, Descr. Hesp. 1868, p. 31. Habitat, Philippines.

*Baoris leechii*, *Parnara leechii*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 274, pl. 21, fig. 3, ♂, and pl. 25, figs. 73, a, b, c (genitalia). *Baoris oceia*, Leech (nec Hewitson), Butt. of China, etc. ii. p. 616, pl. 42, fig. 6, ♂ (1893). Habitat, China.

*Baoris simillima*, *Parnara simillima*, Elwes and Edwards, l.c. pl. 21, fig. 22, ♂, and pl. 26, figs. 75, a, b, c (genitalia). Habitat, Pulo Laut, Borneo.

*Baoris beraka*, *Hesperia beraka*, Plötz, Berl. ent. Zeit. xxix. p. 227 (1885), unpublished plate, No. 1427. *Baoris beraka*, Swinhoe, Trans. Ent. Soc. 1908, p. 21, pl. 3, fig. 1. Habitat, Celebes.

#### Genus CALTORIS.

*Caltoris*, Swinhoe, Trans. Ent. Soc. 1893, p. 323.

*Parnara*, Moore (part), Lep. Ceylon, i. p. 166 (1881). Watson, Hesp. Ind. p. 34 (1891). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 270.

- Baoris*, Distant (part), Rhop. Malayana, p. 379 (1886). Watson, Proc. Zool. Soc. 1893, p. 106; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 433.  
*Polytremis*, Mabille, Wytzman, Gen. xvii. p. 136 (1904).

Similar in venation to the genus *Baoris*. Antennæ also similar, the forewing comparatively longer and narrower, the hinder margin longer than the outer margin, which is more oblique, making the apical portion of the wing more produced than it is in *Baoris*; no secondary sexual characters, there being no trace of the tuft of long hairs on the upperside of the hindwing, so conspicuous a character in the genus *Baoris*.

Type, *Hesperia kumara*, Moore.

#### CALTORIS KUMARA.

Plate 826, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, larva and pupa.

- Hesperia kumara*, Moore, Cat. Lep. Mus. E.I.C. i. p. 255 (1857); id. Proc. Zool. Soc. 1878, p. 687.  
*Baoris kumara*, Moore, Lep. Ceylon, i. p. 166, pl. 69, figs. 2, 2a (1881); id. Journ. Linn. Soc. Zool. Lond. 1886, p. 52. Watson, Proc. Zool. Soc. 1893, p. 106. Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 58 (larva and pupa).  
*Parnara kumara*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Hampson, id. 1888, p. 365. Davidson and Aitken, Journ. Bo. Nat. Hist. Soc. 1890, p. 370, pl. F, f. 4 (larva). Watson, Hesp. Ind. p. 41 (1891). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 276, pl. 27, figs. 90, a, b, c (genitalia). Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 389. Frühstorfer, Iris, 1911, p. 52.  
*Caltoris kumara*, Swinhoe, Trans. Ent. Soc. 1893, p. 323.  
*Baoris (Parnara) kumara*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.  
*Hesperia seriata*, Moore, Proc. Zool. Soc. 1878, p. 688, ♀.  
*Baoris (?) seriata*, Moore, Lep. Ceylon, i. p. 166, pl. 69, figs. 4, 4a, ♀ (1881).  
*Parnara seriata*, Watson, Hesp. Ind. p. 42 (1891).  
*Baoris seriata*, Watson, Proc. Zool. Soc. 1893, p. 106.  
*Baoris (Parnara) seriata*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with six semi-diaphanous, small yellowish-white spots, in a continuous series, commencing with two sub-apical, outwardly oblique, the others inwardly oblique, one in each interspace, 4, 3 and 2, the last a little larger than the others, and an obscure, small whitish spot on the upperside of the sub-median vein not always present. *Hindwing* without markings. Cilia of both wings dark brown, becoming white at the anal angle. Underside slightly paler, somewhat ochreous-tinted. *Forewing* with the basal-central area somewhat blackish, spots as above, the spot on the sub-median vein distinct, and sometimes indications of a small whitish dot above and another below it. Antennæ black, white beneath, with black dots on the shaft; palpi, head and body concolorous with the

wings, palpi below and the pectus with grey and brown hairs, abdomen beneath with some whitish on the apical half.

Female, paler than the male, the spots on the forewing larger; three sub-apical spots, and an obscure white dot in each of the median interspaces on the underside of the hindwing.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{8}{10}$  inches.

LARVA.—Head of a semi-elliptical shape, somewhat smaller than in the larva of *Baoris conjuncta*, truncated at the base and slightly bi-lobed, the body is cylindrical, somewhat depressed, thickest at segment 5, sloping at the last segment, with the extremity of the anal segment rounded broadly; light yellow in colour, with a dark line down the centre of the face; the head is suffused with black in the monsoon months. Length, 27 mm.

PUPA, not distinguishable from that of *Baoris conjuncta*, pale green, slender and smooth, with a sharp frontal process or snout. Length, 27.5 mm.

HABITS.—The larva makes a cell of two or more leaves laxly drawn together with a few threads, when full grown; feeds on bamboos.

A very common insect at all times and places in this district; it basks like the last (*Baoris farri*), but always on leaves, and is fond of flowers in the early morning; it is easily captured when basking as, if disturbed, it returns to the same leaf; it has an extremely rapid flight. We have bred many specimens at all seasons, above and below the ghats. (Davidson, Bell and Aitken.)

HABITAT.—Southern India, Ceylon.

DISTRIBUTION.—The types are from Kanara in South India, the type of *seriata*, a female from Ceylon (it is undoubtedly a female of *kumara*); we have both sexes from Karwar and from Kandy; it is very nearly allied to *philippina*, Herrick-Schäffer, from the Philippines, but is a larger insect; we have both sexes also from the Nilgiris; Evans records it from the Palni Hills, and de Nicéville from Calcutta.

#### CALTORIS AUROCILIATA.

Plate 826, figs. 2, ♂, 2a, ♂.

*Parnara aurociliata*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 278, pl. 21, fig. 23, ♂, and pl. 26, figs. 87, a, b, c (genitalia).

IMAGO.—Male. A species at once distinguished by its bright yellow fringes. Upperside deep warm brown. *Forewing* above with seven yellowish-white hyaline spots, two in the cell, of which the upper is the smaller, one in each of cells 2, 3, 4, 6 and 7, the three last named punctiform, and a small yellowish-white spot next vein 1a near the middle. Underside clear rich brown, somewhat darker in the basal region of the forewing; pale spots as on the upperside, but the

spot in cell 1a suffused. Fringes bright chrome-yellow, brown next cell 7 of the forewing and cells 4-7 of the hindwing, the short scales brown throughout. The punctiform hyaline spots on the forewing have a tendency to disappear.

Expanse of wings, 45-48 mm.

HABITAT.—Sikkim (Möller). Type in Coll. Elwes.

We separate this species from *P. pagana* and *P. kumara* with some doubt, but the genitalia are different from those of both those species. (Elwes and Edwards.)

We have not seen this species, and therefore give copies of Elwes' and Edwards' figure.

#### CALTORIS PLEBEIA.

Plate 826, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Parnara plebeia*, de Nicéville, Proc. Zool. Soc. 1887, p. 466, pl. 40, fig. 2, ♂. Elwes, Trans. Ent. Soc. 1888, p. 447. Watson, Hesp. Ind. p. 40 (1891). Elwes, Proc. Zool. Soc. 1892, p. 650. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 426. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 274. de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xviii, 1908, p. 886. Frühstorfer, Iris, 1911, p. 55.

*Caltoris plebeia*, Swinhoe, Trans. Ent. Soc. 1893, p. 324.

*Baoris (Parnara) plebeia*, de Nicéville, Gazetteer of Sikkim, Butt. p. 183 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix, 1895, p. 435. de Rhé-Philipe, id. xi, 1898, p. 600.

*Baoris plebeia*, Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi, 1897, p. 58 (larva and pupa).

*Pamphila mormo*, Mabille, Ann. Soc. Ent. Belg. xxvii, p. 53 (1893).

IMAGO.—Male. Upperside blackish-brown. *Forewing* with six semi-diaphanous white, small spots in a continuous row from near the apex increasing in size hindwards, the first three sub-apical in an outwardly oblique straight line, the first two very minute, the uppermost one sometimes absent, the lower three in an inwardly oblique nearly straight line, near the bases of interspaces 4, 3 and 2. *Hindwing* without markings. Cilia of both wings cinereous, becoming somewhat ochreous towards the anal angle of the hindwing. Underside very little paler and slightly red-tinted; markings as on the upperside, a large diffused white patch on the forewing, in the middle of the interno-median interspace and the hinder marginal space broadly paler than the rest of the wing; a long tuft of greyish hairs on the hinder margin before the middle, curling upwards and outwards and lying flat against the wing. Antennæ black, the shaft greyish-white beneath; palpi, head, body and legs concolorous with the wings, palpi with some dull ochreous hairs on the underside.

Female like the male, with all the spots of the forewing larger, the discal series of the forewing with an additional white spot on the middle of the sub-median vein, and sometimes with a smaller spot above it a very little outwards, sometimes joined to it.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{8}{10}$  inches.

LARVA very similar to the last (*Baoris philippina*), but has a broad black band round the head, a black line down the centre of the face splitting along the sides of the clypeus, the furcations reaching halfway down the clypeus, where they are met by a brown line parallel to the central line, which brown line runs up the face, but does not reach the vertex of the head; all these markings are obsolescent in some specimens; a black line down the centre of the clypeus; segment 12 is slightly broader than segment 11, being somewhat swollen at the spiracles; colour bluish opaque white all over, with a yellow tinge at the front margins of the anterior segments. Length, 40 mm.

PUPA as in the description of the group; the beak is slightly curved downwards, has a blunt tip, and a small bit stuck on the tip; colour is a very watery darkish green, with a double, broadish, white dorsal line; proboscis reaches only to the hinder margin of segment 9. Length, 34 mm. all over.

HABITS the same as for the last. The larva feeds on bamboo; is found throughout the district at all seasons in similar localities to *B. philippina*; it is very similar to the last in appearance; indeed so similar as to be difficult of separation as concerns the males; the female of this species is, however, greyish on the underside of the hindwing, whereas the female of the last is rusty-red; the male of this is perhaps also more constantly rusty-red underneath than the male of *B. philippina*. (Davidson, Bell and Aitken.)

HABITAT.—India, Burma.

DISTRIBUTION.—The type from Sikkim is in the Indian Museum, Calcutta; we have both sexes from the Khasia Hills; Elwes records it also from the Karen Hills; de Rhé-Philipe from Masuri, and Khandalla near Bombay; Betham from the Central Provinces; Davidson, Bell and Aitken from Karwar, and Watson from Orissa.

NOTE.—de Nicéville says that Wood-Mason gives the following description of the genitalia in comparison with that of *kumara*:—"The male genital somites and appendages differ very considerably in detail, though identical in plan; in *plebeia* the terminal dorsal segment is furnished with a pair of conspicuous conical spines which curve upwards, forwards, and backwards from the disc, and is shorter, and the upper lobe of the claspers is smaller and is embraced at its lower border by the commensurately developed spine of the lower lobe, while in *kumara* the terminal dorsal segment is furnished with shorter spines, from the base of each of which a small cusp is given off backwards, and the sclerite is of greater antero-posterior extent; and the upper lobe of the claspers is more curved and longer, extending much beyond the spine of the lower lobe; and the intromittent organ ends in a bilobed spiny brush in the one, and is apparently simple in the other." The male of *plebeia*, however (as pointed out by Elwes and Edwards), "is readily distinguished by the tuft of long hairs near the middle of the dorsum of the forewing below, a feature not noted in the original description."

## CALTORIS TULSI.

Plate 827, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Parnara tulsii*, de Nicéville, Journ. As. Soc. Bengal, 1883, p. 86, pl. x. fig. 1, ♂. Elwes, Trans. Ent. Soc. 1888, p. 449. Watson, Hesp. Ind. p. 44 (1891). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 284. Frühstorfer, Iris, 1911, p. 56.

*Caltoris tulsii*, Swinhoe, Trans. Ent. Soc. 1893, p. 324.

*Baoris (Parnara) tulsii*, de Nicéville, Gazetteer of Sikkim, Butt. p. 183 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.

IMAGO.—Male. Upperside dark vinaceous-brown. *Forewing* with dull ochreous hairs at the base and on the basal half of the interspaces below the cell, six semi-diaphonous ochreous-white spots (nearly pure white) all in a continuous series; three sub-apical in an outwardly oblique curve, minute; the lower three in an inwardly oblique straight line, near the bases of interspaces 4, 3 and 2, increasing in size hindwards. *Hindwing* with the base and disc and the abdominal area covered with long, dull ochreous hairs, no markings. Cilia of both wings cinereous, with whitish tips towards the anal angle of hindwing. Underside a little paler and without the ochreous hairs. *Forewing* with the spots as above, but more ochreous-tinted, the costal space, including the upper half of the cell, smeared with violet-grey, and some slight suffusion of that colour on the outer and lower portions of the wing. *Hindwing* with a broad patch of violet-grey suffusion across the middle of the wing, the inside space also slightly suffused. Cilia of both wings much paler than on the upperside and inclining to white. Antennæ black, the upper part of the shaft and the lower part of the club whitish on the underside; palpi, head and body concolorous with the wings, thickly covered with violet-grey hairs on the underside.

Female like the male, the violet-grey suffusion on the underside more extensive and more intense; on the forewing it expands into a sort of band outside the cell end, which is continued more or less to the hinder angle; on the hindwing it is darker violet-grey, more violet than grey.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  to  $1\frac{9}{10}$  inches.

HABITAT.—Sikkim, Assam.

DISTRIBUTION.—The types from Sikkim are in the Indian Museum, Calcutta; we have both sexes from Sikkim, and have received a good many examples from the Khasia Hills, where it seems to be somewhat common.

## CALTORIS AUSTENI.

Plate 827, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Baoris austeni*, Moore, Proc. Zool. Soc. 1883, p. 533. Watson, id. 1893, p. 106.

*Baoris (Parnara) austeni*, de Nicéville, Gazetteer of Sikkim, Butt. p. 183 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 682.

*Parnara austeni*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 382. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27. Elwes, Trans. Ent. Soc. 1888, p. 448, woodcut, fig. 3. Watson, Hesp. Ind. p. 43 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 56. Leech, Butt. of China, etc. ii. p. 613, pl. 42, fig. 7, ♂ (1893). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 280, pl. 27, figs. 89, a, b, c (genitalia).

*Calloris austeni*, Swinhoe, Trans. Ent. Soc. 1893, p. 323.

*Parnara nirwana austeni*, Frühstorfer, Iris, 1911, p. 53.

IMAGO.—Male. Upperside blackish-brown. *Forewing* with five semi-hyaline white spots in a continuous series, increasing in size hindwards, the first two from near the costa, minute, in an outwardly oblique line, the other three in an inwardly oblique line, near the bases of interspaces 4, 3 and 2, the lowest much the largest, outwardly somewhat produced into a point; two moderately large spots inside the cell near its end, well separated from each other, in an inwardly oblique line. *Hindwing* without markings. Cilia of both wings cinereous, with whitish tips towards the hinder angle of each wing. Underside uniformly dark blackish-brown; the spots as above. Antennæ black, the club whitish on the underside, and the shaft spotted with white; palpi, head, body and legs concolorous with the wings, palpi and body on the underside with grey hairs.

Female like the male, the wings somewhat broader, but there is on the forewing an extra small spot in the discal series, on the sub-median vein, a little beyond its middle, and in some examples there are three sub-apical dots; and on the underside the spot on the sub-median vein is larger, with a smaller spot immediately above its outer side.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{7}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma, China.

DISTRIBUTION.—The types in the B. M. are from the Khasia Hills, where it seems to be a common species; we have received many examples; de Nicéville and Elwes both record it from Sikkim, Watson from the Chin Hills and Rangoon, Wood-Mason and de Nicéville from Cachar, and Leech from Kweichow, China.

NOTE.—This species is much like *C. cahira*, Moore, but it is smaller, and the wings in both sexes are comparatively narrower, and there are some other small differences. de Nicéville and Martin\* say they have examples from Sumatra which agree with the figures and descriptions of *cahira*, *austeni*, *moolata* and *kumara*, and that all their Sumatran specimens appear to them to represent one species; but Elwes and Edwards† found the genitalia of each different and sufficient for separation, and we give, in their proper places, their descriptions of each; with reference to *austeni* they

\* Journ. As. Soc. Bengal, 1895, p. 550.

† Trans. Zool. Soc. 1897, p. 279.

say, "Lower distal angle of the lower lobe of clasp rounded, not produced. The two lobes forming the apex of the tegumen (seen from beneath) narrow and sub-truncate, their apices in the vertical aspect triangular."

#### CALTORIS ONCHISA.

Plate 827, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, ♀.

*Caltoris onchisa*, Swinhoe, Trans. Ent. Soc. 1893, p. 323.

*Parnara moolata*, Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 278.

*Parnara austeni*, Elwes and Edwards (part), l.c. p. 280.

IMAGO.—Male. Upperside olive-brown. *Forewing* with seven ochreous-white spots, two in the cell near its end, one above the other and well separated, three sub-apical dots, in an outwardly oblique curve, two discal spots near the bases of the median interspaces, the lower the larger. *Hindwing* without markings. Cilia testaceous, its base brown, becoming whitish on the hindwing below the apex. Underside brown, with a reddish tinge, the spots as on the upperside, with a spot in the forewing on the sub-median vein in nearly a line with the discal pair, and on this wing there is an outwardly curved sub-apical pale fascia.

Female like the male, but on the upperside of the forewing there is an additional small spot a little outwards, between the sub-apical spots and the spot in the second median interspace, and a small spot on the middle of the sub-median vein, and on the underside in place of this spot there is a large suffused whitish patch.

Expanse of wings, ♂  $1\frac{6}{10}$ , ♀  $1\frac{8}{10}$  inches.

HABITAT.—Assam.

The types, from Shillong, are in the B. M. They were both received from our native collector in one envelope, no doubt taken with one sweep of the net, and to make one of them, the female of *moolata*, a species that does not occur in Assam, and the other a male of *austeni*, as Elwes and Edwards have done, is undoubtedly wrong, they both have on the underside of the forewing the same kind of sub-apical pale fascia, and to suppose that an accident could produce on each of them exactly the same result is not possible.

#### CALTORIS CAHIRA.

Plate 828, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Hesperia cahira*, Moore, Proc. Zool. Soc. 1877, p. 593 (♂ only), pl. 58, fig. 8. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1881, p. 258, ♀.

*Parnara cahira*, Watson, Hesp. Ind. p. 43 (1891). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 278, pl. 21, fig. 25, ♀, and pl. 27, figs. 91, a, b, c (genitalia). Frühstorfer, Iris, 1911, p. 52.

*Baoris (Parnara) cahira*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.

IMAGO.—Male. Very similar to *C. austeni*, but is a good deal larger, the wings



comparatively broader, the ground colour somewhat paler. *Forewing* with only six semi-hyaline white spots, the spot in interspace 4 being absent; on the underside the ground colour is much paler than in *austeni* and somewhat rufous-tinted. Antennæ, palpi, head, body and legs as in *austeni*.

Female like the male, with an extra small white spot in the discal series of the forewing on the sub-median vein.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  to 2 inches.

HABITAT.—Andaman and Nikobar Islands.

DISTRIBUTION.—The type, a male in the B. M., came from Port Blair; the female originally described by Moore as *cahira* ♀ is a female of *Baoris farri*, Moore; in so far as we have been able to ascertain, this species is confined to the Andamans and Nicobar Islands, where it appears to be common; we have both sexes from Port Blair, Aberdeen, in the Andamans, and from Nankowry in the Nikobars. Elwes and Edwards describe the genitalia as follows:—"Lower discal angle of the lower lobe of clasp rounded, not produced. The two lobes forming the apex of the tegumen (seen from beneath) rather broad, curved, and connivent at apex." Moore's figure of the male is misleading, and does not correspond with his description. Elwes' and Edwards' figure of the female is very good; our figures are from a male from Port Blair and a female from Nankowry.

#### CALTORIS MOOLATA.

Plate 828, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, ♀.

*Hesperia moolata*, Moore, Proc. Zool. Soc. 1878, p. 843.

*Parnara moolata*, Elwes and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 440. Watson, Hesp. Ind. p. 42 (1891). Elwes, Proc. Zool. Soc. 1892, p. 650. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 278, pl. 26, figs. 86, a, b, c (genitalia). Frühstorfer, Iris, 1911, p. 55.

*Baoris moolata*, Distant, Rhop. Malayana, p. 379, pl. 34, fig. 10, ♂ (1886). Watson, Proc. Zool. Soc. 1893, p. 106.

*Baoris (Parnara) moolata*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.

*Pamphila dravida*, Mabille, Pet. Nouv. ii. p. 242 (1878).

*Parnara cahira*, Semper (nec Moore), Rhop. Philipp. p. 298 (1892).

IMAGO.—Male. Upperside blackish-brown, with a vinous tint. *Forewing* with the spots white, semi-diaphanous; two sub-apical minute dots outwardly oblique, sometimes three, sometimes only one, and often none at all; two spots in the disc, the lower the larger, close to the bases of the second and first median interspaces, a small spot in the cell near its end, close to its lower margin; in some examples there is a small additional spot or dot, in a line above the two discal spots. *Hindwing* without markings. Cilia cinereous, whitish hindwards on both wings. Underside nearly as dark as the upperside, the spots of the forewing as above; an additional

spot against the sub-median vein, in continuation of the discal series; the hinder marginal space sometimes (but not always) somewhat suffused with whitish. Antennæ black, the underside entirely white, the shaft thinly marked with black; palpi, head, body and legs concolorous with the wings, with some grey hairs on the underside of the palpi and on the pectus.

Female like the male, but generally there are two spots in the cell, one above the other, a spot on the sub-median vein on both sides of the wing, larger below than it is above, and sometimes three sub-apical dots.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{1}{2}$  inches.

HABITAT.—Burma, Perak, Malay Peninsula and Archipelago, Tonkin.

DISTRIBUTION.—The types in the B. M. are from Tenasserim; we have it from the Ataran Valley, Burma, and Perak; Frühstorfer records it from Tonkin; Elwes and de Nicéville from Tavoy, in Burma; Elwes from Pulo Laut, Borneo, W. Java and Sumatra.

#### CALTORIS PAGANA.

Plate 828, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Parnara pagana*, de Nicéville, Proc. Zool. Soc. 1887, p. 465, pl. 40, fig. 7, ♂. Elwes, Trans. Ent. Soc. 1888, p. 447. Watson, Hesp. Ind. p. 40 (1891). Elwes, Proc. Zool. Soc. 1892, p. 650.

Elwes and Edwards, Trans. Zool. Soc. 1897, p. 277. Frühstorfer, Iris, 1911, p. 52.

*Caltoris pagana*, Swinhoe, Trans. Ent. Soc. 1893, p. 323.

*Baoris pagana*, Watson, Proc. Zool. Soc. 1893, p. 106.

*Baoris (Parnara) pagana*, de Nicéville, Gazetteer of Sikkim, Butt. p. 183 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.

IMAGO.—Male. Upperside dark brown, the base of both wings clothed with ochreous-ferruginous setæ. *Forewing* with nine semi-transparent yellowish-white spots, two across the cell, near its end, sometimes joined together, sometimes divided, and seven in a continuous series, the first three sub-apical, small, outwardly oblique, the remaining four in an almost straight, inwardly oblique line, near the bases of interspaces 4, 3 and 2, increasing in size hindwards, the spot in interspace 2 much the largest, and a little out of line, being somewhat close to the cell spots, and a small spot on the sub-median vein a little beyond its middle, the small spot in interspace 4 sometimes absent. Cilia of both wings ochreous-white, darker and brighter ochreous towards the anal angle of the hindwing. Underside almost as dark brown as the upperside, without the yellow setæ. *Forewing* with the middle portion black, the spots as above, the spot on the sub-median vein with some whitish suffusion attached to it. Antennæ black, without any markings; palpi and top of head dark grey, body above and below and the legs concolorous with the wings.

Female like the male.

Expanse of wings, ♂ ♀  $1\frac{9}{10}$  to  $2\frac{2}{10}$  inches.

HABITAT.—Sikkim, Assam, Burma, Borneo, Sumatra.

DISTRIBUTION.—The types are from Sikkim; we have both sexes from the Khasia Hills; Elwes records it from the Karen Hills, Tenasserim, Pegu, Borneo and Sumatra.

#### CALTORIS CONJUNCTA.

Plate 829, figs. 1, ♂, 1a, ♀, 1b, ♀, 1c, larva and pupa.

*Goniloba conjuncta*, Herrick-Schäffer, Prod. Syst. Lep. iii. p. 75 (1869).

*Baoris (Parnara) conjuncta*, de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 549. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 682. de Rhé-Philipe, id. xi. 1898, p. 600.

*Baoris conjuncta*, Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 57 (larva and pupa).

*Parnara conjuncta*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 280, pl. 27, figs. 92, a, b, c (genitalia). Frühstorfer, Iris, 1911, p. 50.

*Gegenes javana*, Mabille, Bull. Soc. Ent. Fr. 1877, p. 232.

*Hesperia narooa*, Moore, Proc. Zool. Soc. 1878, p. 687, pl. 45, fig. 4. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1881, p. 260.

*Parnara narooa*, Moore, Lep. Ceylon, i. p. 167, pl. 69, figs. 3, a, b (1881). Swinhoe, Proc. Zool. Soc. 1885, p. 147. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Wood-Mason and de Nicéville, id. 1886, p. 382. Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 42. Hampson, Journ. As. Soc. Bengal, 1888, p. 365. Watson, Hesp. Ind. p. 39 (1891). Fergusson, Journ. Bo. Nat. Hist. Soc. 1891, p. 447. de Rhé-Philipe, id. xviii. 1908, p. 886.

*Baoris narooa*, Distant, Rhop. Malayana, p. 380, pl. 34, fig. 12, ♀ (1886). Watson, Proc. Zool. Soc. 1893, p. 106. J. J. Walker, Trans. Ent. Soc. 1895, p. 474.

*Parnara conjuncta narooa*, Frühstorfer, l.c.

*Hesperia alice*, Plötz, Stett. ent. Zeit. xlv. p. 45 (1883), unpublished plate No. 543.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with nine semi-diaphanous yellowish-white spots, two in the cell towards its end, one above the other, well separated, touching the margins of the cell; three small sub-apical spots of equal size, in an outwardly oblique well-curved line, the others in an inwardly oblique discal series, one in each interspace, the spot near the base of the first median interspace the largest of the series, its lower end produced outwards, the spot above it about half its size, with its outer lower end also somewhat produced, the upper small spot about the size of the sub-apical spots, a spot at the middle of the sub-median vein. *Hindwing* with two or three small discal spots and a white spot near the upper end of the cell. Cilia of forewing cinereous, of hindwing whitish, with cinereous base. Underside paler. *Forewing* with the spots as on the upperside. *Hindwing* with a small white spot near the upper end of the cell and a discal series of small white spots. Antennæ black, the tip of the club pale red, the shaft and club on the underside whitish, the shaft

spotted with black; palpi, head and body concolorous with the wings, palpi whitish beneath, the abdomen beneath smeared with whitish, legs tinged with dull red.

Female like the male, the spots of the forewing usually larger, and consequently closer together, the largest spot of the discal series usually much larger.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{9}{10}$  inches.

LARVA.—Head of a semi-elliptical shape, somewhat narrowed at the top, truncated at the base and slightly bi-lobed; the body is cylindrical, somewhat depressed, thickest at segment 5, sloping at the last segment, with the extremity of the anal segment rounded broadly; head white, with a black line from the apex to the base of the clypeus, a large, round, black spot near the top of each lobe and another near the base; these spots may be coalescent and the face suffused with black in the lower portion in the monsoon specimens; the colour of the body is white tinged with blue and yellow, punctuated finely with dark green, and clothed with fine, erect, white, minute hairs. Length, 50 mm.

PUPA.—Cylindrical, very slightly constricted dorsally only, behind thorax, produced into a long, sharp, conical snout in front, which is pointed, the eyes prominent; the abdomen tapering, and ends in a thin, long, more or less triangular, curved cremaster; the proboscis is produced to the end of the cremaster; colour green, with a sub-dorsal and lateral white band, the surface is quite glabrous and shiny, there are no spiracular expansions to segment 2. Length, 36 mm. over all.

HABITS.—The imagines rest with their wings closed over the back; they are fast-flying insects, fond of basking in the sun on leaves, and are greedy flower-feeders; the larva generally lives in a laxly closed cell, which it makes by joining the edges of the leaf longitudinally, loosely (never tightly); the pupa is formed on the open surface of the leaf, either on the upperside or the underside, the edges of the leaf may be slightly drawn together, but they are never made to meet, the pupa is quite exposed; it is fastened by both the tail and a band; egg dome-shaped, broadest just above the base, more or less smooth; the larva feeds on long grasses, also on *Zea mais*.

Common in the early rains below the ghats; at the end of the rains, and throughout the cold season, though plentiful enough at times, it cannot be said to be common. The butterfly is fond of settling on the ground and on stones; it is a fast flyer, but generally returns to the same spot when disturbed; it makes a very audible fluttering noise with its wings when flying; it is most plentiful in the vicinity of water. This butterfly is perhaps better known in India as *Parnara narooa*, Moore. (Davidson, Bell and Aitken.)

HABITAT.—India, Ceylon, Hong Kong, Malay Peninsula and Archipelago.

DISTRIBUTION.—The type was from the Philippines, the types of *narooa* are from Bombay; it is fairly common in many parts of India and Ceylon; it has been recorded

as far north as Masuri by de Rhé-Philipe ; by Watson from the Chin Hills ; de Nicéville and Martin record it from Sumatra ; Elwes from Java, Perak, Kina Balu and the Philippines ; we took it in Bombay and Poona, and have examples from the Khasia Hills, Sikkim, Burma and Annam. The Malayan and Indian forms cannot be separated.

CALTORIS ASSAMENSIS.

Plate 829, figs. 2, ♂, 2a, ♀, 2b, ♂.

- Parnara assamensis*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1882, p. 65. Doherty, id. 1886, p. 139. Wood-Mason and de Nicéville, id. p. 382, pl. 18, fig. 5, 5a, ♂, and pl. 17, fig. 7, 7a, ♀. Elwes, Trans. Ent. Soc. 1888, p. 447. Watson, Hesp. Ind. p. 37 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 56. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 281. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 370. Frühstorfer, Iris, 1911, p. 51.
- Baoris (Parnara) assamensis*, de Nicéville, Gazetteer of Sikkim, Butt. p. 183 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.
- Baoris assamensis*, Watson, Proc. Zool. Soc. 1893, p. 106. J. J. Walker, Trans. Ent. Soc. 1895, p. 473.
- Caltoris assamensis*, Swinhoe, Trans. Ent. Soc. 1893, p. 323 ; id. idem (part), 1908, p. 22.

IMAGO.—Male. Upperside dark vandyke-brown ; spots white, large and semi-diaphanous. *Forewing* with ten spots placed almost exactly as in *C. conjuncta*, but all much larger, the tenth spot being a small spot immediately below the large, outwardly pointed spot near the base of the first median interspace, sometimes present in *conjuncta*, always present and prominent in *assamensis*, the two cell spots are somewhat linear and large, and consequently nearly touch each other ; the basal three-fourths of the wing and the hinder marginal space are covered with ochreous-brown setæ. *Hindwing* with a round prominent spot in the middle of interspace 4, the entire wing covered with ochreous-brown hairs. Cilia of both wings olive-brown. Underside as dark as the upperside. *Forewing* without the ochreous-brown setæ, the colour of the wing paling somewhat on the outer margin, the spots as on the upperside, but the lowest spot above the middle of the sub-median vein is whiter than the others and is large and outwardly suffused. *Hindwing* covered with minute ochreous-brown scales, the discal spot as on the upperside, and sometimes with one or two more spots or dots of a discal series and a spot inside the cell, near its upper end, often absent in this sex. Antennæ black, the upper part of the shaft whitish on the underside, the club with an ashy tip ; palpi, head and body concolorous with the wings, with olive-green or ochreous-green hairs, palpi above with some pale hairs, grey below, the pectus with ochreous-grey hairs, legs brown.

Female like the male, all the spots larger, a whitish, short streak from the base of the forewing on the underside ; there are indications of this also in some of the males ; the hinder angle paler than the rest of the wing.

Expanse of wings, ♂  $2\frac{2}{10}$  to  $2\frac{4}{10}$ , ♀  $2\frac{3}{10}$  to  $2\frac{6}{10}$  inches.

HABITAT.—N.W. Himalayas, Sikkim, Assam, Burma, Hong Kong, Tonkin.

DISTRIBUTION.—A common species in Assam; we have received numerous examples of both sexes from the Khasia Hills, and have it also from Sikkim. Doherty records it from Kumaon, Watson from Tilin and the Chin Hills, J. J. Walker from Hong Kong, and Frühstorfer from Tonkin.

#### CALTORIS (?) UMA.

Plate 829, figs. 3, ♀, 3a, ♀.

*Parnara uma*, de Nicéville, Journ. As. Soc. Bengal, 1888, p. 592, pl. 13, fig. 9, ♀. Watson, Hesp.

Ind. p. 38 (1891). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 285.

*Baoris uma*, Watson, Proc. Zool. Soc. 1893, p. 106.

*Baoris (Parnara) uma*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.

IMAGO.—Female. Upperside, both wings rich dark glossy brown, the base clothed with somewhat long greenish-ochreous setæ. Cilia ochreous-brown. *Forewing* with a spot in the discoidal cell divided in the middle by a fold of the wing, its upper portion lengthened, inwardly sharply pointed; three increasing conjoined sub-apical spots, the posterior one nearly twice as large as the other two taken together, a quadrate spot near the middle of the second median interspace, and a larger one in the first median interspace placed exactly midway between the spot in the second median interspace and the lower portion of the cell spot, its outer edge highly excavated, its inner edge correspondingly rounded—all these spots shining translucent ochreous. Underside, both wings brown, strongly washed with vinous. *Forewing* with the spots as above, but white instead of ochreous, the spot in the cell entire. *Hindwing* with a lengthened sub-costal broad streak posteriorly bounded by the sub-costal nervure and second sub-costal nervule; a discal recurved transverse series of six quadrate spots, of which the two below the posterior end of the sub-costal streak are the smallest, a similar but somewhat suffused spot near the base of the wing, the streak and spots all pure silvery; head and body concolorous with the wings above; palpi and sternum pale ochreous beneath, rest of body and legs concolorous with the wings beneath.

A single specimen was obtained in April, 1887, in the Karen Hills by the native collector attached to the Phayre Museum, Rangoon, and I am indebted to Mr. B. Noble for the opportunity of describing it. It is a remarkable species, with no near Indian ally, but appears to belong to the same group as the *Hesperia ornata* of Felder from Buitenzorg, Java, a species which has the spots of the forewing on the underside smaller, and a double series of spots on the hindwing as shown in the figure. (de Nicéville.)

Expanse of wings, ♀ 2 inches.

HABITAT.—Karen Hills, Burma.

The unique type is in the Phayre Museum, Rangoon. We have not seen it, and therefore give copies of de Nicéville's figure. As de Nicéville describes it as a *Parnara*, we put it here; we possess, however, a female *Pithauriopsis* from Java, which much resembles de Nicéville's figure; he himself likens it to *ornata*, Felder, and we believe, when both sexes of this species are discovered, it will be found to belong to the genus *Pithauriopsis*.

#### CALTORIS ELTOLA.

Plate 830, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Hesperia eltola*, Hewitson, Ex. Butt. iv. Hesp. pl. 4, fig. 40 (1869).

*Suastris eltola*, Moore, Proc. Zool. Soc. 1882, p. 261.

*Parnara eltola*, Elwes, Trans. Ent. Soc. 1888, p. 449. Watson, Hesp. Ind. p. 45 (1891). Elwes, Proc. Zool. Soc. 1892, p. 649. Leech, Butt. of China, etc. ii. p. 613 (1893). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 282, pl. 26, figs. 79, a, b (genitalia). Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 370.

*Baoris eltola*, Watson, Proc. Zool. Soc. 1893, p. 106.

*Caltoris eltola*, Swinhoe, Trans. Ent. Soc. 1893, p. 324.

*Baoris (Parnara) eltola*, de Nicéville, Gazetteer of Sikkim, Butt. p. 183 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1895, p. 683; de Rhé-Philippe, id. xi. 1898, p. 600.

IMAGO.—Male. Upperside dark brown. *Forewing* with the costal space, the basal half of the wing and the entire space below the sub-median vein covered with greenish-ochreous and orange-ochreous hairs, the spots semi-diaphanous and ochreous-white; two large sub-quadrate spots touching each other, filling up the end of the cell, three small sub-apical spots in a slight outwardly oblique curve, and a nearly straight discal series of four spots, the first minute, above vein 4, a little outwardly below the sub-apical spots, the second about as large as the upper cell spot, sub-quadrate, near the base of the second median interspace, the third very large, also sub-quadrate, but its lower end somewhat outwardly produced, close to the cell spots, its inner half separated from them by the median vein, the fourth also sub-quadrate, rather larger than the second placed on the sub-median vein at its middle. *Hindwing* with three more or less round spots in the disc, the upper and lower ones large, the middle one quite small, all but the apical portion of the wing covered with greenish-ochreous hairs. Cilia of forewings brown, of hindwing ochreous-cinereous. Underside paler, the middle portion of the forewing blackish, the rest of that wing and the entire surface of hindwing covered with reddish-ochreous setæ which become grey on the abdominal space, the spots as on the upperside, the lowest spot on the forewing pure white. Antennæ black, the shaft spotted with white underneath, smeared with white below the club,

which has a white tip; palpi brown above, with some grey hairs, ochreous-grey beneath; head and body brown, with some brownish-ochreous and grey hairs, pectus and abdomen beneath ochreous-grey, legs brown, with reddish tarsi.

Female like the male, all the spots larger.

Expanse of wings, ♂ ♀  $1\frac{7}{10}$  to  $1\frac{9}{10}$  inches.

GENITALIA.—The apex of the œdœagus, as seen from below, is produced on the left side into a long sharp horn, and the right side is spinose. (Elwes and Edwards.)

HABITAT.—N.W. Himalayas, Sikkim, Assam, Chin Hills, China.

DISTRIBUTION.—The type came from Darjiling; we have it from Ranikhet, Sikkim, Cachar and the Khasia Hills, where it is common; Moore records it from Kangra, Elwes from the Naga and Karen Hills, Watson from the Chin Hills, de Rhé-Philipe from Masuri, Hannyngton from Kumaon, and Leech from China.

#### CALTORIS DISCRETA.

Plate 830, figs. 2, ♂, 2a, ♀, 2b, ♂.

*Parnara discreta*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 282, pl. 21, fig. 16, ♂, and pl. 26, figs. 80, a, b (genitalia).

*Parnara eltola*, Wood-Mason and de Nicéville (nec Hewitson), Journ. As. Soc. Bengal, 1886, p. 384, pl. 18, figs. 6, 6a, ♂.

IMAGO.—Male and Female. Upperside similar in all respects to *C. eltola* except that the spots are whiter in colour and somewhat smaller, the largest spot which fills the first median interspace near its base more square in shape; in *eltola* it is an elongated square with its lower outer side somewhat produced; the cilia also is somewhat different to that of *eltola*, being brown on the upper part of the forewing, becoming white, with a brown base hindwards and on the hindwing. Underside with the middle portion of the forewing blackish, the rest of that wing and the entire surface of the hindwing covered with setæ of a more ochreous colour than in *eltola*.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to  $1\frac{7}{10}$  inches.

HABITAT.—Assam, Sikkim, Burma.

DISTRIBUTION.—A common form in the Khasia Hills; we have received numerous examples of both sexes from our native collector; Elwes and Edwards record it also from Sikkim, Tenasserim, E. Pegu, and Bernardmyo, Burma; it was in our collection as a seasonal form of *eltola*, but Elwes and Edwards say that the difference in the genitalia affords conclusive evidence of its distinctness, the apex of the œdœagus being produced into two sub-equal spinose horns; side lobes of the tegumen narrow and simple.



## CALTORIS CONTIGUA.

Plate 830, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Pamphila contigua*, Mabille, Bull. Soc. Zool. Fr. 1877, p. 232 (note).

*Parnara contigua*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 281, pl. 26, fig. 78, 78a (genitalia).  
Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 147. Frühstorfer, Iris, 1911, p. 51.

*Hesperia toona*, Moore, Proc. Zool. Soc. 1878, p. 689, ♂.

*Parnara toona*, Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 52. Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 383, ♀. Hampson, id. 1888, p. 365. Elwes, Trans. Ent. Soc. 1888, p. 449. Manders, id. 1890, p. 537. Watson, Hesp. Ind. p. 45 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 56. Fergusson, id. p. 447. Elwes, Proc. Zool. Soc. 1892, p. 649. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 370.

*Baoris (Parnara) toona*, de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 549 (note).  
Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 682.

*Baoris toona*, Watson, Proc. Zool. Soc. 1893, p. 106.

*Caltoris toona*, Swinhoe, Trans. Ent. Soc. 1893, p. 324. Crowley, Proc. Zool. Soc. 1900, p. 511.

*Baoris chaya*, Distant (nec Moore), Rhop. Malayana, p. 380, pl. 34, fig. 9 (1886).

*Pamphila scortea*, Mabille, Ann. Soc. Ent. Belg. xxxvii. p. 53 (1893).

*Baoris (Parnara) pellucida*, de Nicéville (nec Murray), Gazetteer of Sikkim, Butt. p. 183 (1894).

IMAGO.—Male. Upperside olive-brown. *Forewing* with the costal and basal portions tinged with dull ochreous, with some dull ochreous hairs below the cell and along the hinder marginal space, the spots ochreous-white arranged as in *eltola* and *discreta*, but much smaller, the sub-apical series and the uppermost spot of the discal series mere dots, the large spot near the base of the first median interspace elongate, its innerside well separated from the cell spots, which are usually joined together, the upper much smaller than the lower; the lowest spot of the discal series quite small. *Hindwing* with the entire space below the sub-costal vein covered with rather long, dull ochreous hairs, a small spot at the upper end of the cell, sometimes absent, usually hidden by the hairs, and four in the discal series, composed of a twin spot in interspace 4, the upper one minute, and a minute spot in each of the next two lower interspaces. Cilia ochreous-cinereous, with whitish tips. Underside. *Forewing* with the lower two-thirds blackish, the costal and apical spaces broadly tinged with ochreous, formed by minute setæ of that colour, the spots as on the upperside, the lowest spot of the discal series much larger than it is on the upperside and pure white. *Hindwing* with the entire surface covered with ochreous setæ, the spots as on the upperside, generally only faintly indicated. Antennæ black, dotted with white on the underside, tip of the club dull pale red; palpi above and below with brown and whitish hairs; head and body brown, covered with dull ochreous hairs, pectus and abdomen beneath whitish; thorax beneath and legs with whitish hairs, tarsi tinged with ochreous.

Female like the male, the spots usually a little larger.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to  $1\frac{6}{10}$  inches.

HABITAT.—India, Burma, Malay Peninsula and Archipelago, Hong Kong, Tonkin.

DISTRIBUTION.—A common species; we have it from many parts of India, from Perak and from Borneo; Hannington records it as far north as Kumaon, and Hampson and Ferguson as far south as the Nilgiris and Travancore; Elwes from the Naga and Karen Hills; Watson from Tiliu Yaw and the Chin Hills; de Nicéville from Bhutan, Java, Sumatra and the Celebes; Crowley from Hainan, and Frühstorfer from Tonkin and Formosa. The species seems to be very constant throughout all these localities.

### CALTORIS COLACA.

Plate 831, figs. 1, ♂, 1a, ♀, 1b, ♀, 1c, larva and pupa.

*Hesperia colaca*, Moore, Proc. Zool. Soc. 1877, p. 594, pl. 58, fig. 7.

*Parnara colaca*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1886, p. 383. Elwes, Trans. Ent. Soc. 1888, p. 446 (woodcut, fig. 1). Watson, Hesp. Ind. p. 36 (1891); id. Journ. Bo. Nat. Hist. Soc. 1891, p. 55. Leech, Butt. of China, etc. ii. p. 609, pl. 42, fig. 5, ♂ (1893). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 283, pl. 26, fig. 81 (genitalia). Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 147. Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 389. Frühstorfer, Iris, 1911, p. 54.

*Baoris colaca*, Watson, Proc. Zool. Soc. 1893, p. 106. Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 59, pl. 7, fig. 7 (larva and pupa).

*Baoris (Parnara) colaca*, de Nicéville, Gazetteer of Sikkim, Butt. p. 183 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.

*Caltoris colaca*, Swinhoe, Trans. Ent. Soc. 1908, p. 23.

*Parnara cingala*, Moore, Lep. Ceylon, i. p. 167, pl. 70, fig. 3a, 3b (1881).

*Hesperia nondoa*, Plötz, Berl. ent. Zeit. xxix. p. 97 (1885), unpublished plate No. 1422.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* somewhat more produced than is usual in the genus, spots ochreous-white, all more or less small; three minute sub-apical spots in an outwardly oblique curve, a discal, nearly straight, inwardly oblique series of four spots, the first below the lowest of the sub-apical spots and of about the same size, the next a little larger in the second median interspace, the third the largest of all in the first median interspace, its lower outer end produced, slightly curved and somewhat pointed, the fourth against the middle of the sub-median vein, about the size of the second; in the type specimen there appear to be no spots within the end of the cell, but in most examples there is a minute dot at the upper end, and in others there are two, well separated, one above the other. *Hindwing* without markings. Cilia cinereous, brownish at its base. Underside paler and duller in colour. *Forewing* with the basal half of its middle blackish, the spots as above. *Hindwing*

somewhat produced at the anal angle, a discal series of minute white dots, varying in number in different examples. Antennæ black, the shaft dotted with white on the underside, the basal half of the club white beneath, the extreme tip tinged with red; palpi with black and white hairs above, pure white beneath, with a few black hairs; head and body concolorous with the wings; face, pectus and thorax with white hairs, abdomen beneath white, with grey bands.

Female like the male, the forewing not produced, and consequently comparatively broader, the spots as on the upperside, but larger, the discal series of white dots on the hindwing, sometimes complete on both sides.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{4}{10}$  inches.

LARVA.—Head triangular-shaped when looked at from in front; body cylindrical, somewhat depressed, thickest at segment 5, sloping at the last segment, with the extremity of the anal segment rounded broadly; head dark chocolate, nearly black, with a white marginal band and a green clypeus; for some distance round the clypeus the face is marbled with greenish; such is the rains coloration: in the dry weather, and indeed sometimes in the rains, the black is obsolescent; colour of body bluish-white, or greenish-white, with a sub-dorsal and a lateral white stripe; surface clothed with very short, erect hairs, longest at the margin of the body. Length, 30 mm.

PUPA.—Cylindrical, very slightly constricted dorsally only, behind thorax, produced into a long, sharp, conical snout in front, the eyes prominent; abdomen tapering, and ends in a thin, long, more or less broadly triangular, curved cremaster; the proboscis is produced to the posterior margin of segment 12; colour green, with white longitudinal lines.

HABITS.—The imago rests with its wings over its back; it is a fast-flying insect, fond of basking in the sun, and is a greedy flower-feeder, the larva makes a lax cell; it pupates on the underside of a leaf, drawing the edges somewhat together; it feeds on soft, small grasses; the pupa is attached by the tail and a body band. The butterfly is of rapid, short flight, and is found always settled on the ground. (Davidson, Bell and Aitken.)

HABITAT.—Sikkim, Assam, South India, Burma, Ceylon, Andamans, China, Malay Peninsula and Archipelago.

DISTRIBUTION.—The types are from the Andamans; it is a common species; we have many examples from Sikkim, Assam, the Andamans, Ceylon and many places in Southern India; our description and figures are from Andaman examples; our figures of the larva and pupa from Davidson's original drawings; Plötz's type came from Manila.

## CALTORIS BEVANI.

Plate 831, figs. 2, ♂, 2a, ♀, 2b, ♀.

- Hesperia bevani*, Moore, Proc. Zool. Soc. 1878, p. 688. Swinhoe, Journ. Bo. Nat. Hist. Soc. 1887, p. 280.
- Pamphila bevani*, Butler, Proc. Zool. Soc. 1880, p. 669. Swinhoe, id. 1884, p. 512.
- Parnara bevani*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Swinhoe, Proc. Zool. Soc. 1885, p. 147, and 1886, p. 433. Moore, Journ. Linn. Soc. Zool. Lond. 1886, p. 52. Elwes, Trans. Ent. Soc. 1888, p. 447 (woodcut, fig. 2). Hampson, Journ. As. Soc. Bengal, 1888, p. 366. Davidson and Aitken, Journ. Bo. Nat. Hist. Soc. 1890, p. 376. de Nicéville, id. p. 388. Watson, id. 1891, p. 56; id. Hesp. Ind. p. 36 (1891). Elwes, Proc. Zool. Soc. 1892, p. 650. Betham, Journ. Bo. Nat. Hist. Soc. 1893, p. 426. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 283, pl. 26, fig. 82 (genitalia). Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 147. Hannyngham, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 370. Evans, id. p. 389. Frühstorfer Iris, 1911, p. 55.
- Baoris (Parnara) bevani*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435; id. idem, x. 1896, p. 683. de Rhé-Philipe, id. xi. 1898, p. 600. Aitken and Comber, id. xv. 1903, p. 54.
- Baoris bevani*, Watson, Proc. Zool. Soc. 1893, p. 106.
- Caltoris bevani*, Swinhoe, Trans. Ent. Soc. 1893, p. 324.
- Hesperia saruna*, Plötz, Berl. ent. Zeit. xlvii. p. 90 (1886), unpublished plate No. 1429.
- Parnara thyone*, Leech, Butt. of China, etc. ii. p. 610, pl. 42, fig. 4, ♂ (1893).

IMAGO.—Male and Female, very similar in colour and markings to *C. colaca*, but it is a smaller insect, with the wings distinctly narrower, and both above and below it is somewhat paler in colour; there is usually only one cell spot in the forewing, some discal dots on the hindwing above (not always present) and generally only three below, one each in interspaces 2, 3 and 6. The genitalia, as figured by Elwes and Edwards, is distinctly different to that of *C. colaca*.

Expanse of wings, ♂ ♀  $1\frac{1}{10}$  to  $1\frac{2}{10}$  inches.

LARVA smooth (it is really clothed with sharp bristles almost invisible to the naked eye), thickest in the middle, pale green; head large, slightly bilobed, dark brown, or pale brown variously marked with darker.

PUPA like that of *Suastus gremius*, Fabricius, but of course much smaller. We found this in Canara in June, August and September on rice, and have often reared it in Bombay on grass. It forms a tube cell which it never leaves, feeding on the edges of it. When about to become a pupa it lines the cell with white silk, to which the pupa is attached by the tail only. (Davidson and Aitken.)

HABITAT.—India, Burma.

DISTRIBUTION.—The type is from Maulmein; we have it from Ranikhet, Jubbulpur, Khasia Hills, and several other parts of India; we took it commonly at Karachi, Poona, Bombay and Mhow; Elwes records it from the Naga Hills and Sikkim, Watson from the Chin Hills, Adamson from Upper Burma, de Nicéville from Chin Lushai, de Rhé-Philipe from Masuri, Hannyngham from Kumaon, Moore from Mergui.

## INDO-MALAYAN, CHINESE AND JAPANESE ALLIED SPECIES.

- Caltoris philippina*, Cobalus philippina, Herrich-Schäffer, Prod. Syst. Lep. iii. p. 81 (1869). Parnara philippina, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 276, pl. 21, figs. 4, ♂, 8, ♀. Habitat, Philippines, Amboina.
- Caltoris pellucida*, Pamphila pellucida, Murray, Ent. Mo. Mag. xi. p. 172 (1875). Pryer, Rhop. Nippon, p. 34, pl. 10, fig. 11 (1889). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 282, pl. 26, figs. 77, 77a (genitalia). Habitat, Japan, W. China.
- Caltoris cærulescens*, Pamphila cærulescens, Mabille, Ann. Soc. Ent. Fr. 1876, p. lv. Parnara cærulescens, Leech, Butt. of China, etc. ii. p. 615, pl. 42, fig. 9 (1893). Habitat, W. China.
- Caltoris connassa*, Pamphila connassa, Hewitson, Ann. Mag. Nat. Hist. 1876, p. 457. Parnara connassa, Frühstorfer, Iris, 1911, p. 52. Habitat, Borneo.
- Caltoris jansonis*, Pamphila jansonis, Butler, Cist. Ent. ii. p. 28 (1878). Pryer, l.c. p. 34, pl. 10, fig. 2 (1889). Parnara jansonis, Leech, l.c. p. 612, pl. 42, fig. 12, ♂ (1893). Habitat, Japan, Corea.
- Caltoris nirwana*, Hesperia nirwana, Plötz, Stett. ent. Zeit. xliii. p. 436 (1882), unpublished plate No. 387. Caltoris nirwana, Swinhoe, Trans. Ent. Soc. 1908, p. 22, pl. 2, fig. 20. Habitat, Java.
- Caltoris quinquepuncta*, Pamphila pellucida var. quinquepuncta, Mabille, Ann. Soc. Ent. Belg. xxvii. p. lxiv. (1883). Habitat, Japan, Corea.
- Caltoris serva*, Hesperia serva, Plötz, Stett. ent. Zeit. xxix. p. 226 (1885), unpublished plate No. 1387.
- Caltoris jolanda*, Hesperia jolanda, Plötz, Berl. ent. Zeit. xlvii. p. 95 (1886), unpublished plate No. 1404, Caltoris jolanda, Swinhoe, l.c. pl. 3, fig. 2. Habitat, Java.
- Caltoris bromus*, Parnara bromus, Leech, l.c. p. 614, pl. 42, fig. 10, ♂ (1893). Habitat, W. China.
- Caltoris mehavagga*, Parnara mehavagga, Frühstorfer, Iris, 1911, p. 51. Habitat, S. Celebes.

## Genus CHAPRA.

- Chapra*, Moore, Lep. Ceylon, i. p. 169 (1881). Watson, Hesp. Ind. p. 31 (1891); id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 433.
- Baoris*, Distant (part), Rhop. Malayana, p. 379 (1886).
- Parnara*, Watson (part), Proc. Zool. Soc. 1893, p. 105. Leech, Butt. of China, etc. ii. p. 606 (1894). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 270.

*Forewing*, upper discocellular minute but distinct and erect, middle and lower discocellulars inwardly oblique, the lower much the shorter, vein 5 arising much nearer 4 than 6; in venation similar to *Baoris*; a linear discal white stigma in the male from the basal third of vein 2, in an inwardly oblique, straight line to a little beyond the middle of the submedian vein; shape of the wing as in *Caltoris*. Antennæ with the club shorter and stouter, with a shorter pointed crook than in that genus; palpi and legs as in *Baoris*.

Type, *Hesperia mathias*, Fabricius.



*Chapra mathias*.

## CHAPRA MATHIAS.

Plate 831, figs. 3, ♂, 3a, ♀, 3b, ♀, 3c, larva and pupa.

- Hesperia mathias*, Fabricius, Ent. Syst. Suppl. p. 433 (1798). Moore, Proc. Zool. Soc. 1877, p. 596; id. idem, 1878, p. 703.
- Elyargyreus mathias*, Butler, Cat. Lep. Fabr. B. M. p. 275, pl. 3, fig. 8 (1869).
- Pamphila mathias*, Druce, Proc. Zool. Soc. 1874, p. 109. Butler, id. 1877, p. 615. Moore, id. 1878, p. 843. Butler, id. 1880, p. 669; id. idem, 1881, p. 612. Swinhoe, id. 1884, p. 512. Forsayeth, id. p. 387 (larva and pupa).
- Chapra mathias*, Moore, Lep. Ceylon, i. p. 169, pl. 70, fig. 19 (1881); id. Proc. Zool. Soc. 1882, p. 261. Butler, id. 1883, p. 154. Swinhoe, id. 1885, p. 147, and 1886, p. 443. Elwes and de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Doherty, id. 1886, p. 139. Wood-Mason and de Nicéville, id. p. 384. Hampson, id. 1888, p. 366. Elwes, Trans. Ent. Soc. 1888, p. 444. Watson, Journ. Bo. Nat. Hist. Soc. 1888, p. 27. de Nicéville, id. 1890, p. 388. Fergusson, id. 1891, p. 447. Watson, Hesp. Ind. p. 31 (1891). Elwes, Proc. Zool. Soc. 1892, p. 649. Swinhoe, Trans. Ent. Soc. 1893, p. 321. Betham, Journ. Bo. Nat. Hist. Soc. 1894, p. 423. Nurse, id. xiv. 1902, p. 513. de Rhé-Philipe, id. p. 493. Hannington, id. xx. 1910, p. 370. Frühstorfer, Iris, 1911, p. 49.
- Parnara mathias*, Leech, Butt. of China, etc. ii. p. 606 (1893). Watson, Proc. Zool. Soc. 1893, p. 105. J. J. Walker, Trans. Ent. Soc. 1895, p. 474. Leslie and Evans, Journ. Bo. Nat. Hist. Soc. xiv. 1903, p. 677. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 147.
- Baoris mathias*, Distant, Rhop. Malayana, p. 380, pl. 35, fig. 10 (1886). Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 61.
- Baoris (Chapra) mathias*, de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435, and x. 1896, p. 683. de Rhé-Philipe, id. xi. 1898, p. 601. Aitken and Comber, id. xv. 1903, p. 54.
- Hesperia julianus*, Latreille, Enc. Méth. ix. p. 763, ♂ (1823).
- Geigenes thorax*, Hübner, Samml. Exot. Schmett. ii. pl. 150, figs. 1 to 4 (1826).
- Hesperia agna*, Moore, Proc. Zool. Soc. 1865, p. 791, ♂.
- Chapra agna*, Moore, Lep. Ceylon, i. p. 169 (1881). Swinhoe, Proc. Zool. Soc. 1885, p. 147, and 1886, p. 433. Aitken, Journ. Bo. Nat. Hist. Soc. 1887, p. 42. Hampson, Journ. As. Soc. Bengal, 1888, p. 366. Swinhoe, Trans. Ent. Soc. 1908, p. 23.
- Baoris (Chapra) agna*, de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894).
- Chapra chaya*, Moore, l.c. ♀.
- Hesperia ella*, Plötz, Stett. ent. Zeit. xlv. p. 45 (1883), unpublished plate No. 549.
- Hesperia balarama*, Plötz, l.c. p. 46, unpublished plate No. 552.
- Hesperia larika*, Pagenstecher, Jahrb. Nass. Ver. Nat. 1884, p. 207 (♂ only). Plötz, unpublished plate, No. 1424.

IMAGO.—Male. Upperside dark olive-brown, somewhat glossy. *Forewing* with eight semi-diaphanous whitish spots; two small round ones at the end of the cell, one above the other and well separated from each other, three minute spots of equal size, sub-apical, in an outwardly oblique curve, and three discal, all in a continuous series, the uppermost discal spot minute like the sub-apical spots, the next somewhat large, the third the largest of all, their outer sides somewhat produced; all these spots vary

much in size in different examples, sometimes all are minute and indistinct, the sexual glandular streak white. *Hindwing* usually without markings, sometimes, but very rarely, with one or two indistinct pale discal dots. Cilia cinereous, becoming whitish hindwards. Underside paler. *Forewing* blackish on the basal half, between the median and sub-median veins, the spots as on the upperside. *Hindwing* with a white dot in the cell near its upper end, and a discal series of four white dots, one in each of the interspaces 2, 3, 4 and 5. Antennæ black, with white dots on the underside of the shaft, the club whitish beneath; palpi with grey and white hairs above, white beneath; head and body concolorous with the wings, beneath, the pectus and abdomen are white and there are some white hairs on the thorax, legs pale brownish-ochreous.

Female like the male, the spots all larger, and an extra spot on the sub-median vein in continuation of the discal series.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{6}{10}$  inches.

LARVA.—Found on long coarse green meadow grass, head triangular, on a neck; a brown line on the margin of the head. Body grass-green, with light yellow bars across back; a whitish line along either side above the origin of legs.

PUPA.—September 3rd: two larvæ have become pupæ, they lie alongside a blade of grass attached by a band across thorax, and also at tail; head generally points upwards; body of a translucent green colour, quite naked and unenclosed in a covering of any description. September 13th: both pupæ have become imagoes to-day; they are a species of Hesperidæ very common about here, flying briskly by day and settling on leaves of trees at dusk. October 9th: another imago out to-day, same history as above. (Forsayeth.)

HABITAT.—India, Ceylon, Burma, China, Japan, Malay Peninsula and Archipelago.

DISTRIBUTION.—A very common species, with a very wide range; our figures of the larva and pupa are from W. Elliot's original drawings, bred in Madras.

#### CHAPRA MIDEA.

Plate 832, figs. 1, ♂, 1a, ♀, 1b, ♀.

*Peliopidas midea*, Walker, Entom. v. p. 56 (1870).

*Chapra midea*, Swinhoe, Journ. Bo. Nat. Hist. Soc. 1887, p. 280.

IMAGO.—Male and Female. The desert form of *Chapra mathias*, only differing from that species in its larger size and very peculiar colouring, being uniformly pale sandy-brown above, and very much paler beneath, and all the spots much larger.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—Turkey, Egypt, Sind, Kutch, Western India.

DISTRIBUTION.—Walker's type came from Egypt; there are specimens in the B. M. from Turkey so named by Walker; it is a fairly common form in Sind and Kutch; we took many examples in and about Karachi and Hyderabad, a pair of which we figure.

#### CHAPRA SUBOCHRACEA.

Plate 832, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, larva and pupa.

*Parnara subochracea*, Moore, Proc. Zool. Soc. 1878, p. 691.

*Chapra subochracea*, de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Wood-Mason and de Nicéville, id. 1886, p. 384. Watson, Hesp. Ind. p. 32 (1891).

*Baoris (Chapra) subochracea*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.

*Baoris subochracea*, Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 60 (larva and pupa).

*Parnara subochracea*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 275, pl. 21, fig. 26, ♂, and pl. 26, fig. 83 (genitalia).

*Chapra mathias*, var. de Nicéville, Journ. Bo. Nat. Hist. Soc. 1889, p. 176, pl. B, fig. 7, ♂.

*Chapra mathias*, Davidson and Aitken (nec Fabricius), Journ. Bo. Nat. Hist. Soc. 1890, p. 371.

IMAGO.—Male. Upperside brown, tinted with ochreous. *Forewing* with eight semi-diaphanous, ochreous-white spots disposed as in *C. mathias*, but all larger, the two cell spots placed obliquely, the lower one shifted a little inwards, in *mathias* they are erectly placed one above the other; in *mathias* they are always small, in this species they are much larger, prominent and distinct. *Hindwing*. Upperside with three small discal spots, the upper one the largest. Cilia ochreous-brown on the upper half of forewing, becoming white hindwards, and on the hindwing with an ochreous-brown base. Underside paler and more strongly tinted with ochreous. *Forewing* with the middle space from the base to one-third before the outer margin blackish; spots as on the upperside, a somewhat diffuse additional white spot in the interno-median interspace attached to the spot in the first median interspace. *Hindwing* with a prominent round white spot in the middle of the cell near its end; the discal series prominent, the upper spot large and round. Antennæ black, spotted with white below, the club on the underside white; palpi above with grey and white hairs, greyish-white below; head and body concolorous with the wings; on the underside the pectus and abdomen are greyish-white, the thorax with grey hairs, legs ochreous-brown.

Female like the male, but on the upperside of the forewing there is an additional spot in the discal series on the submedian vein, and two additional dots, one immediately below the outer side of the spot in the second median interspace, and the other below the sub-apical spots, but a little outside them; on the underside the two lowest spots are pure white, the spots on the hindwing are larger, and there is sometimes an extra dot on the underside; but one or more of them are absent in some examples.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to  $1\frac{7}{10}$  inches.



LARVA.—Cylindrical, somewhat depressed, thickest at segment 5, sloping at the last segment, with the extremity of the anal segment rounded broadly; head triangular-shaped, when looked at from in front; head large, light green, with a red marginal band, bordered on both sides by white, and a central darkish mark splitting down both sides of the clypeus; colour of body grass-green, with a yellow tinge; a dark dorsal line, a faint yellow lateral line, and a marginal white line; stouter than the larva of *B. coluca*. Length, 34 mm.

PUPA.—Cylindrical, very slightly constricted dorsally only, behind thorax, produced into a long sharp conical snout in front; eyes prominent, abdomen tapering, and ends in a thin, long, more or less broadly triangular curved cremaster; the proboscis is produced beyond the wings; colour grass-green; a dark dorsal line, an indistinct subdorsal band, and a white lateral band. Length, 25 mm.

HABITS.—The larva lives on the open surface of a leaf, and the pupa is often formed on the top surface of the leaf; the larva feeds on rice and grasses. We have confounded this species with *B. mathias*, Fabricius, up to a few months back, when Captain E. Y. Watson drew our attention to the difference. In our former paper we called it *Chapra mathias*, in company with which *B. subochracea* is found throughout the district, around rice-fields and flowers in the more open parts, commonly; it is a fast flier, is fond of the sunlight, and may be caught at flowers. (Davidson, Bell and Aitken.)

HABITAT.—India.

DISTRIBUTION.—The types are from Calcutta; de Nicéville records it from Sikkim; Wood-Mason and de Nicéville from Cachar; Davidson, Bell and Aitken from Karwar; Elwes from Barrackpore, Nilgiris, Pirmand and Travancore. Elwes and Edwards say that the form of genitalia is different to that of *Chapra mathias*; it is probably to be found in many parts of India, and is mixed up in Indian collections with *Chapra mathias*. We have both sexes from Cachar and the Khasia Hills; our figures of the larva and pupa are from Davidson's original drawings, not previously published.

#### CHAPRA BRUNNEA.

Plate 832, figs. 3, ♂, 3a, ♀, 3b, ♂.

*Pamphila brunnea*, Snellen, Tijds. voor Ent. xix. p. 164, pl. 7, fig. 4 (1876).

*Baoris (Chapra) brunnea*, de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 549. Watson. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.

*Parnara brunnea*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 275.

*Chapra brunnea*, Frühstorfer, Iris, 1911, p. 49.

*Chapra ceræ*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1891, p. 388, pl. G, fig. 33, ♂.

*Parnara ceræ*, Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 146.

*Pamphila sodalis*, Mabille, Ann. Soc. Ent. Belg. xxxvii. p. 53 (1893).

IMAGO.—Male. Upperside dark brown. *Forewing* with eight semi-diaphanous ochreous-white small spots, two of equal size in the cell near its end, one above the other, three sub-apical dots in an outwardly oblique curve, another below them and two somewhat larger discal spots in the second and first median interspaces, all in a continuous series. *Hindwing* without markings. Cilia brown. Underside nearly as dark as the upperside, spots similar, the basal middle of the wing blackish. *Hindwing* without any markings. Antennæ black, with minute white dots on the shaft beneath, and white on the basal half of the club; palpi with black and white hairs above, white beneath; head and body concolorous with the wings, below the pectus and anal half of abdomen are whitish, legs brown.

Female like the male, but there is an extra white spot in the discal series of the forewing on the sub-median vein.

In a male example from Trevandrum and in a female example from Sikkim, which are otherwise identical, there are one or two white discal dots on the underside of the hindwing.

Expanse of wings, ♂ ♀  $1\frac{6}{10}$  to  $1\frac{8}{10}$  inches.

HABITAT.—Java, Sumatra, Borneo, Burma, Sikkim, South India.

DISTRIBUTION.—The type came from Java, the type of *ceræ* from Burma; we have a male from Thyetmyo, a male from Trevandrum, a female from Kolgaum, near Bombay, taken by us, and a female from Sikkim; in markings it is very like *mathias*, but its colour is altogether different to that of any of its allies. Adamson records it from the Chindwin Valley, de Nicéville and Martin from Sumatra, Elwes from Bali and Pulo Laut; it is a widely spread but rare species.

#### CHAPRA SINENSIS.

Plate 833, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Gegenes sinensis*, Mabille, Bull. Soc. Zool. Fr. 1877, p. 232.

*Parnara sinensis*, Leech, Butt. of China, etc. ii. p. 608, pl. 42, fig. 11, ♂ (1893). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 275. Evans, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 389.

*Baoris (Chapra) sinensis*, de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Aitken and Comber, id. xv. 1903, p. 54. de Rhé-Philipe, id. xi. 1898, p. 601.

*Chapra prominens*, Moore, Proc. Zool. Soc. 1882, p. 261. Doherty, Journ. As. Soc. Bengal, 1886, p. 139. Hampson, id. 1888, p. 366. Elwes, Trans. Ent. Soc. 1888, p. 444. de Nicéville, Journ. Bo. Nat. Hist. Soc. 1890, p. 388. Davidson and Aitken, id. p. 371 (larva and pupa). Watson, Hesp. Ind. p. 33 (1891). Swinhoe, Trans. Ent. Soc. 1893, p. 322. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 370.

*Parnara prominens*, Watson, Proc. Zool. Soc. 1893, p. 105.

*Pamphila similis*, Leech, Entom. xxiii. p. 48 (1894).

IMAGO.—Male. Upperside dark olive-brown, both wings more or less covered with dull ochreous hairs; spots ochreous-white. *Forewing* with eight spots, larger than in any other species of the genus, two inside the cell near its end, well separated, one above the other in a slightly inwardly oblique line; the others in a continuous series, the three sub-apical spots in an outwardly oblique curve, a spot of similar size below them in interspace 4, the two others in an inwardly oblique line, in the two median interspaces larger, the lowest the largest, both somewhat outwardly produced; the discal stigma dull ochreous. *Hindwing* with a line of four small discal spots of equal size, two in interspace 4, and one in each of the median interspaces. Cilia of both wings ochreous-white, with brown base. Underside paler, both wings covered with minute, dull ochreous setæ. *Forewing* with the spots as on the upperside and a white smear on the outer side of the discal stigma, the inner basal space of the wing blackish. *Hindwing* with a white spot inside the cell, near its upper end, the discal spots as on the upperside, with the addition of a spot in interspace 5. Antennæ black, the shaft minutely dotted with white on the underside, and smeared with white at its upper end and on the basal half of the club; palpi above with black and grey hairs, pale ochreous beneath, minutely speckled with black; head and body above concolorous with the wings; on the underside the pectus and thorax with grey hairs, the abdomen whitish, legs brown, ochreous-tinted.

Female like the male, all the spots larger, two additional spots in the discal series of the forewing, one minute, close below the outer part of the spot in the first median interspace, and a spot, similar in size and shape to the second discal spot, on the sub-median vein; on the underside both these extra spots are pure white.

Expanse of wings, ♂ ♀  $1\frac{8}{10}$  to  $1\frac{9}{10}$  inches.

LARVA very like that of *Udaspes folus*, but the head was whitish, the lobes bordered and separated by a brown line, with a brown spot in the centre of each. The colour of the body is pale green, with two light stripes on the back.

PUPA exactly like that of *U. folus*, and similarly attached, colour pale green, with two dorsal white lines. We got a single specimen of the larva of this on what seemed to be a leaf of some species of *Arum*. It became a pupa the same day. (Davidson and Aitken.)

HABITAT.—India, China.

DISTRIBUTION.—The type came from Shanghai, N. China, Moore's types from the N.W. Himalayas, he records it from the Tonse valley, 6000 feet elevation, Gurhwal, Kasaoli and Kangra; we took it at Poona, and have received many examples of both sexes from the Khasia Hills, and have it also from Sikkim; Elwes records it from the Naga Hills, de Rhé-Philipe from Masuri, Hannington from Kumaon, de Nicéville from Chin Lushai, Aitken and Comber from the Konkan, Evans from the Palni Hills, Hampson from the Nilgiris, Leech from China.

## INDO-MALAYAN AND CHINESE ALLIED SPECIES.

- Chapra mencia*, Pamphila mencia, Moore, Ann. Mag. Nat. Hist. 1877, p. 52. *Parnara mencia*, Leech, Butt. of China, etc. ii. p. 607, pl. 42, fig. 14, ♂ (1893). Habitat, Shanghai, Kiu-kiang, Ningpo, Japan.
- Chapra nascens*, *Parnara nascens*, Leech, l.c. p. 614, pl. 42, fig. 8, ♂ (1893). Habitat, Central China.
- Chapra niasica*, *Chapra mathias niasica*, Frühstorfer, Iris, 1911, p. 50. Habitat, Nias.

## Genus PARNARA.

- Parnara*, Moore, Lep. Ceylon, i. p. 166 (1881). Watson, Hesp. Ind. p. 34 (1891); id. (part), Proc. Zool. Soc. 1893, p. 105. Leech (part), Butt. of China, etc. ii. p. 606 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 433. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 270.
- Baoris*, Distant (part), Rhop. Malayana, p. 379 (1886).

Differs from the genus *Chapra* in having no secondary sexual character. Antennæ very short, less than half the length of the costa of forewing, shorter than it is in *Chapra*, the club is also shorter and stouter, the terminal crook minute.

Type, *Eudamus guttata*, Bremer and Grey.

## PARNARA CANARAICA.

Plate 833, figs. 2, ♂, 2a, ♀, 2b, ♂.

- Parnara canaraica*, Moore, Proc. Zool. Soc. 1883, p. 534. Watson, Hesp. Ind. p. 42 (1891). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 277.
- Baoris* (*Parnara*) *canaraica*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.
- Baoris canaraica*, Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 59.

IMAGO.—Male. Upperside dark olive-brown. *Forewing* with ochreous-grey setæ on the basal half of the costal space, and some ochreous-grey hairs at the base of the interno-median interspace, and below the sub-median vein; eight moderate-sized, semi-diaphanous spots; two in the cell, towards its end, well separated, and placed obliquely one above the other; the others in a continuous series, three sub-apical, in an outwardly oblique curve, three in an inwardly oblique line, increasing in size hindwards, in interspaces 4, 3 and 2, the last somewhat outwardly produced. *Hindwing* without markings, all but the outer margin covered with ochreous-grey hairs. Cilia brown, the tips becoming whitish towards the hinder margin of the forewing, and throughout the hindwing. Underside slightly paler than the upperside. *Forewing* with the hinder marginal space below the first median nervule paler, caused by minute greyish-white scales, the spots as above, an additional, indistinct whitish spot on the sub-median vein

in continuation of the discal series. *Hindwing* with the costa narrowly, the abdominal fold, and a broad discal band, of minute whitish scales. Antennæ black, with white spots on the underside, the club smeared with white, the tip tinted with red; palpi, head and body concolorous with the wings, with ochreous-grey hairs; on the underside the palpi, pectus and abdomen with ochreous-white and blackish hairs and some similar hairs on the thorax, legs brown above, ochreous-grey beneath.

Female like the male, but on the upperside there is an additional white spot to the discal series of the forewing, on the sub-median vein, about the size of the spot in the second median interspace; and on the underside of the hindwing there are three minute white discal dots in interspaces 2, 3 and 6.

Expanse of wings, ♂ ♀  $1\frac{4}{10}$  to  $1\frac{7}{10}$  inches.

Davidson, Bell and Aitken say: "This insect, of which we have never reared or discovered the larva, was unknown to us until last year, when we found it plentiful in the same localities as *B. occia*, Hewitson; it has the habits of this latter species in that it is only found basking in the early morning sun and just before sundown, but it frequents the borders of the open glades in the jungle, whereas *B. occia* prefers the small spaces under high trees where the ground is covered with weeds. Single specimens have been caught near Karwar on the coast. The females are extremely rare, as only the males bask. It is a rapid flier."

HABITAT.—Kanara, South India.

DISTRIBUTION.—The type came from Karwar; we have received several examples from that locality; our description and figures are from a pair in our collection.

#### PARNARA GUTTATA.

Plate 833, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, ♀.

*Eudamus guttatus*, Bremer and Grey, Schmett. N. China's, p. 10, pl. 3, fig. 2 (1853).

*Goniloba guttatus*, Ménétériés, Cat. Mus. Petr. Lep. i. pl. 5, fig. 4 (1855).

*Parnara guttatus*, Elwes, Trans. Ent. Soc. 1888, p. 445. Watson, Proc. Zool. Soc. 1893, p. 105.

Leech, Butt. of China, etc. ii. p. 609 (1893). Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 281, pl. 26, fig. 76 (genitalia). Swinhoe, Trans. Ent. Soc. 1908, p. 24.

*Pamphila guttata*, Pryer, Rhop. Nippon, p. 34, pl. 10, fig. 10 (1889).

*Parnara guttata*, Watson (part), Hesp. Ind. p. 34 (1891). Elwes, Proc. Zool. Soc. 1892, p. 650.

Swinhoe, Trans. Ent. Soc. 1893, p. 322. Leslie and Evans, Journ. Bo. Nat. Hist. Soc. xiv. 1903, p. 677. Adamson, Trans. N. H. Soc. Northumberland, etc. 1908, p. 147. Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 370. Frühstorfer, Iris, 1911, p. 54.

*Baoris (Parnara) guttata*, de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. de Rhé-Philipe, id. xi. 1898, p. 600.

*Hesperia mangala*, Moore, Cat. Lep. Mus. E.I.C. i. p. 255 (1857).

*Pamphila mangala*, Moore, Proc. Zool. Soc. 1865, p. 792; id. idem, 1878, p. 703.

*Parnara mangala*, Moore, Proc. Zool. Soc. 1882, p. 261. Butler, id. 1886, p. 377. Watson, Journ. Bo. Nat. Hist. Soc. 1891, p. 55.

*Hesperia kolantus*, Plötz, Berl. ent. Zeit. xxix. p. 227 (1885), unpublished plate No. 1421.

*Parnara bada*, Doherty (nec Moore), Journ. As. Soc. Bengal, 1886, p. 139.

IMAGO.—Male. Upperside dark-brown, with an ochreous tint. *Forewing* with the basal half of the interspaces with dull ochreous, hair-like setæ, with eight semi-diaphanous ochreous-white spots of moderate size, two in the cell, well within its end, well separated, one above the other, the others in a continuous series, commencing with three sub-apical spots in a straight line, the uppermost one often absent; a small similar-sized spot immediately below them, a larger spot in the second median interspace and a much larger and somewhat quadrate spot in the first median interspace, the three in an inwardly oblique line. *Hindwing* with all but the outer portion of the wing covered with dull ochreous hairs, four spots in a very oblique line in the disc, two in interspace 4 and one in each of the median interspaces. Cilia of both wings rather bright ochreous-white, with a brown base. Underside paler, with an ochreous-pinkish tint, all the veins of both wings, all but the inner portion of the forewing and the entire surface of the hindwing, covered with minute dull ochreous scales, the spots as on the upperside, the spots on the hindwing somewhat larger than they are on the upperside, somewhat quadrate in shape and edged with blackish. Antennæ black, minutely dotted with white on the underside, the club smeared with white and dull red at the tip; palpi, head and body concolorous with the wings, on the underside the palpi and pectus with ochreous and white hairs, and some similar but duller-coloured hairs on the thorax and abdomen. †

Female paler than the male, on the underside usually very much paler, markings similar, all the spots much larger, somewhat suffused, a small additional spot against the sub-median vein of the forewing, the discal spots on the hindwing much larger, somewhat elongate and very prominent and on the underside there is a small spot in the cell, near its end.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  to  $1\frac{6}{10}$  inches.

HABITAT.—N.W. Himalayas, Sikkim, Assam, China, Japan, Corea.

DISTRIBUTION.—The type came from China; we have examples from China, Japan, Corea, Ranikhet, Sikkim, and the Khasia Hills; the type of *mangala* is marked Bengal, as so many of Moore's types are; nearly all of these really came from Assam and Sikkim; Moore also records it from Hainan and the Kangra Valley, Butler from Murree, Thundiani and Hassan Abdul, all in the N.W. Himalayas, de Rhé-Philippe from Masuri, Leslie and Evans from Chitral, Hannynghton from Kumaon, Watson from the Chin Hills; it does not appear to occur anywhere in Southern India or Ceylon.

## PARNARA BADA.

Plate 834, figs. 1, ♂, 1a, ♀, 1b, ♂, 1c, ♀.

*Hesperia bada*, Moore, Proc. Zool. Soc. 1878, p. 688.

*Pamphila bada*, Butler, Proc. Zool. Soc. 1880, p. 669.

*Parnara bada*, Moore, Lep. Ceylon, i. p. 167, pl. 70, figs. 2, 2a (1881). Swinhoe, Proc. Zool. Soc. 1885, p. 147. de Nicéville, Journ. As. Soc. Bengal, 1885, p. 53. Wood-Mason and de Nicéville, id. p. 383. Hampson, id. 1888, p. 365. Watson, Journ. Bo. Nat. Hist. Soc. 1891, p. 55. Swinhoe, Trans. Ent. Soc. 1893, p. 322. Watson, Proc. Zool. Soc. 1893, p. 105. Swinhoe, Trans. Ent. Soc. 1908, p. 24.

*Parnara guttata bada*, Frühstorfer, Iris, 1911, p. 54.

*Baoris (Parnara) bada*, de Nicéville, Gazetteer of Sikkim, Butt. p. 182 (1894). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. de Nicéville and Martin, Journ. As. Soc. Bengal, 1895, p. 550. Watson, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 683.

*Baoris bada*, Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 45 (larva and pupa).

*Calloris bada*, Crowley, Proc. Zool. Soc. 1900, p. 511.

*Pamphila apostata*, Snellen, Midd. Sum. iv. i. 8, p. 27 (1880).

*Hesperia intermedia*, Plötz, Stett. ent. Zeit. xlv. p. 44 (1882), unpublished plate No. 540.

*Hesperia urejus*, Plötz, Berl. ent. Zeit. xxix. p. 226, plate No. 1415.

*Hesperia haga*, Plötz, Stett. ent. Zeit. xlvii. p. 96, plate No. 1416.

*Parnara guttata*, Watson (part), Hesp. Ind. p. 34 (1891). Betham (nec Bremer and Grey), Journ. Bo. Nat. Hist. Soc. 1893, p. 426. J. J. Walker, Trans. Ent. Soc. 1895, p. 474. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 281.

*Baoris (Parnara) guttata*, Aitken and Comber (nec Bremer and Grey), Journ. Bo. Nat. Hist. Soc. xv. 1903, p. 54.

IMAGO.—Male. A smaller insect than *P. guttata*. Upperside dark brown, without the ochreous tint, the hair-like setæ on the forewing and the hairs covering the hindwing as in *guttata*, but grey in colour, not dull ochreous as in that species. Upperside with the spots white, not ochreous-white, and all very small. *Forewing* with the discal spots disposed as in *guttata*, but in all the examples before us there are only two sub-apical spots, the uppermost one being absent, the two sub-apical quite minute, being mere dots, the other three increasing in size hindwards, all three quite small, and there are no cell spots. *Hindwing* with three dots in the disc in an outward curve, one in each of interspaces 2, 3 and 4. Cilia cinereous, with a brownish base, becoming whitish hindwards. Underside paler and duller in colour, much as in *guttata*, but the colour is somewhat more ochreous, the spots as on the upperside. Antennæ, palpi, head and body similar.

Female like the male, the spots larger, increasing in size hindwards, only two sub-apical dots, sometimes one and sometimes two cell dots, the usual spot against the sub-median vein in continuation of the discal series, so prominent in *guttata*, altogether absent, or only very slightly indicated; in the hindwing the three or four discal spots are minute.

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  to  $1\frac{3}{10}$  inches.

LARVA.—Cylindrical, segment 12 slightly swollen laterally round the spiracles; anal segment somewhat narrow-looking in consequence, sloping and applied closely to the leaf, head rough, on the surface finely, and sparsely hairy, shiny, light yellow-green in colour, suffused with brown, a black-brown marginal band of varying width, a central band of the same colour splitting along the sides of the clypeus, and a line on each side of the central band parallel to it, reaching half-way up the face; segment 2 thickened in the centre, with a thin dorsal black collar from spiracle to spiracle; colour of body is greyish-green, with conspicuous brown spiracles; body shortly hairy round the margin, and covered with minute setiferous tubercles, the setæ being also minute. Length, 32·5 mm.

PUPA.—Circular in transverse section; constriction nearly nil, proboscis free beyond the wings to the centre of segment 10; spiracular expansions of segment 2 large, facing forwards, slightly raised, brown; colour of pupa very light, watery yellow-green, the abdomen being a dirty whitish-yellow, covered with white powder in the cell. It is stout. Length, 20 mm.

HABITS.—The larva makes an extremely tight cell of several blades, clothing it inside so densely with silk that it is difficult to tear open; the cell is thickly powdered inside; it is cylindrical; the final cell in which the pupa takes place is made generally low down near the stem of the plant. The larva feeds upon *Oriza sativa* (rice), and on certain grasses.

The insect is the commonest butterfly in the district, swarming together with *H. subochracea*, Moore, around and in every rice field at all seasons of the year when the rice is green, and around flowers in the rains; it is quick of flight, but is easily caught when feeding on flowers. The larva is to be had in the rains in hundreds in the rice fields. We have bred great numbers of it. (Davidson, Bell and Aitken.)

HABITAT.—India, Ceylon, Burma, Formosa, Hong Kong, Malay Peninsula and Archipelago.

DISTRIBUTION.—The types are from Ceylon, it is a common species, recorded from many parts of Southern India, Ceylon and Burma; it does not appear to occur anywhere very far north; we have it from Belgaum in South India, we took it at Bombay, and have it from Rangoon, and many other localities; Watson records it from the Chin Hills; Davidson, Bell and Aitken from Karwar, where they bred it; Elwes from Perak, Java and Borneo; Butler from Formosa, J. J. Walker from Hong Kong; de Nicéville from Calcutta, Cachar and Sumatra; de Nicéville\* says that, in his opinion, it is quite distinct from *P. guttata*, and we have come to the same conclusion; all Plotz's types came from Java.

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\* Journ. As. Soc. Bengal, 1895, p. 550.



## PARNARA VAIKA.

Plate 834, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, ♀.

*Hesperia vaika*, Plötz, Berl. ent. Zeit. xlvii. p. 96 (1886), unpublished plate No. 1414, ♂.

*Baoris (Parnara) philotas*, de Nicéville, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 402, pl. Q, fig. 60, ♂.

Davidson, Bell and Aitken, id. xi. 1897, p. 47.

*Parnara philotas*, Elwes and Edwards, Trans. Zool. Soc. 1897, p. 285.

DESCRIPTION.—Male and Female. Upperside, both wings dark brown with a vinous reflection. Cilia cinereous. *Forewing* with a quadrate dot at the base of the second median interspace; a quadrate spot, four times as large as the dot anterior to it, near the middle of the first median interspace. *Hindwing* with two hyaline white dots just beyond the discoidal cell divided by the second median nervule; the base of the wing clothed with long ochreous-green setæ. Underside, both wings dark purplish-brown, this ground-colour appearing, however, only broadly on the inner margin of the forewing, all the rest of the surface (as seen under a strong magnifying glass) being thickly covered with “old-gold” covered scales; the pair of spots on each wing as on the upperside. Antennæ, head and body above fuscous; antennæ beneath has the base of the club, palpi, legs and body beneath pale ochreous.

This distinct little species appears to be nearest to *B. bevani*, Moore, with which it agrees in size, but instead of from five to eight spots on the forewing and three to five on the hindwing, it has a pair of spots on each wing only.

Described from a single example taken in August at Trevandrum, Travancore, by Mr. Harold S. Ferguson, and another in Mr. T. R. Bell's collection taken in North Kanara, Bombay Presidency. (de Nicéville.)

Expanse of wings, ♂ ♀  $1\frac{2}{10}$  inches.

HABITAT.—South India.

DISTRIBUTION.—Davidson, Bell and Aitken bred this insect in North Kanara, their specimen being identified by de Nicéville; they say: “We know little about this skipper. We have bred two specimens of it from larvæ feeding on grass or rice, both of which larvæ we took to be *Baoris bada*, Moore; it is possible there may have been a larva slightly differing from those of the last-named species among the crowd we had, but we did not notice it if this was the case. One specimen was bred in the monsoon below the ghats, the other in the dry weather above the ghats. One specimen was sent to Mr. de Nicéville, who identified it for us. May it not be possible that *Baoris philotas* is only a starved individual of *B. bada*? The question would be worth investigating. *B. bada* is easily reared from the egg in a cage in which it is only necessary to plant some rice and, after it has sprouted, to introduce a female *P. bada*; a few larvæ can be put apart and brought up on short allowance after

the first three moults. This insect has been placed in this group, as we think it very similar to *B. bada*."

There is a male in our collection from the Khasia Hills which much resembles de Nicéville's figure; but as we have not seen any specimens identified by de Nicéville, we give copies of his figure. Plötz's type is marked "India," his figure is very good, and resembles de Nicéville's figure of *philotas*, except that on the upperside of the forewing there are indications of three sub-apical dots and a very faint dot at the upper end of the cell; it is undoubtedly a female; we give copies of de Nicéville's and Plötz's figures.

#### PARNARA FLEXILIS.

Plate 834, figs. 3, ♂, 3a, ♀, 3b, ♀.

*Isoteinon flexilis*, Swinhoe, Proc. Zool. Soc. 1885, p. 147, pl. 9, figs. 9, 10. Watson, Hesp. Ind. p. 85 (1891).

*Parnara flexilis*, Watson, Proc. Zool. Soc. 1893, p. 105. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 284.

*Baoris (Parnara) flexilis*, Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435.

IMAGO.—Male. Upperside bright olive-brown. *Forewing* with the costa, base, and hinder margin with greyish hairs, spots white, semi-transparent; two small ones at the end of the cell well separated from each other, three sub-apical spots, the uppermost one minute, sometimes absent, a larger spot near the base of the second median interspace and one double the size towards the base of the first median interspace, and a faint, small spot on the sub-median vein beyond its middle, but not in a line with the discal spots, it being rather more outwards. *Hindwing* with some basal greyish hairs, but without any markings. Underside paler, ochreous-tinted. *Forewing* with the middle portion brown, the spots as on the upperside. *Hindwing* with a pale middle space.

Female like the male, the spot on the sub-median vein of the forewing more prominent. Cilia cinereous, tipped with white on the hindwing. Antennæ black, the shaft spotted with white on the underside, the basal part of the club smeared with white; palpi, head and body above concolorous with the wings; on the underside the palpi and pectus are white, the abdomen smeared with white.

Expanse of wings, ♂ ♀  $1\frac{1}{2}$  inches.

HABITAT.—Poona.

Taken by us in the month of December; types in the B. M.

## INDO-MALAYAN AND CHINESE ALLIED SPECIES.

- Parnara fortunei*, *Hesperia fortunei*, Felder, Verh. Zool.-bot. Ges. Wien, xii. p. 489 (1862); id. Reise, Nov. Lep. pl. 72, fig. 11 (1866). Habitat, Shanghai.
- Parnara cinnara*, *Hesperia cinnara*, Wallace, Proc. Zool. Soc. 1866, p. 361. Habitat, Formosa.
- Parnara sifa*, *Hesperia sifa*, Plötz, Berl. ent. Zeit. xlvii. p. 96 (1886), unpublished plate No. 1418. Habitat, Java.
- Parnara quinigera*, *Hesperia quinigera*, Moore, Proc. Zool. Soc. 1878, p. 703. Habitat, Hainan.
- Parnara dändeli*, *Hesperia dändeli*, Plötz, Berl. ent. Zeit. xxix. p. 226 (1885), unpublished plate No. 1417. *Parnara dändeli*, Swinhoe, Trans. Ent. Soc. 1908, p. 25, pl. 2, fig. 18. Habitat, Batavia, Java.
- Parnara ogasawarensis*, Matsumura, Annot. Zool. Japonens, p. 13, pl. i. fig. 4 (1906). Habitat, Bonin Island.
- Parnara yanuca*, Frühstorfer, Iris, 1911, p. 55. Habitat, Formosa.

## Genus GEGENES.

- Gegenes*, Hübner, Verz. bek. Schmett. p. 107 (1816). Watson, Proc. Zool. Soc. 1893, p. 104; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 286
- Philoodus*, Rambur, Faun. Ent. Andal. ii. p. 308 (1840).

*Forewing*, vein 12 very short, ending on costa much before end of cell, cell long, nearly two-thirds the length of costa; upper discocellular very minute, barely distinguishable, outwardly oblique, middle and lower in an inwardly oblique straight line, the lower very short, vein 5 arising close to 4, 3 from close to lower end of cell, 2 from about one-fourth before the end, wing long and narrow, costa arched near base, then almost straight to apex, which is somewhat acute, outer margin slightly convex, oblique, shorter than the hinder margin. *Hindwing*, vein 7 emitted shortly before upper end of cell, discocellulars outwardly oblique, faint, vein 5 absent, 3 from close to lower end of cell, 2 from about twice as far from 3 as 3 is from the end; lower margin of cell slightly bent upwards at its end; costa highly arched at its base, apex rounded, but well pronounced, outer margin evenly convex, slightly emarginate between veins 2 and 1b. Antennæ short, less than half the length of costa of forewing, club robust, with a very short crook; palpi with the second joint densely scaled, third joint short, porrect, nearly hidden; hind tibiæ with two pairs of spurs; no secondary sexual characters.



Type, *Papilio nostradamus*, Fabricius.

## GEGENES NOSTRADAMUS.

Plate 835, figs. 1, ♂, 1a, ♀, 1b, ♂.

*Papilio nostradamus*, Fabricius, Ent. Syst. iii. p. 323 (1793).*Pamphila nostradamus*, Kirby, Eur. Butt. p. 65 (1882).*Gegenes nostradamus*, Butler, Proc. Zool. Soc. 1886, p. 378. Watson (part), id. 1893, p. 104; id. Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 286. Leslie and Evans, Journ. Bo. Nat. Hist. Soc. xiv. 1903, p. 677. Frühstorfer, Iris, 1911, p. 57.*Chapra nostradamus*, Watson, Hesp. Ind. p. 33 (1891).*Papilio pygmaeus*, Cyr (nec Fabricius), Ent. Neap. pl. 51, fig. 5 (1787). Hübner, Eur. Schmett. ii. figs. 458-460 (1803).*Papilio pumilio*, Hoffmann, Ill. Mag. iii. p. 202 (1804).*Hesperia pumilio*, Freyer, Neure Beitr. vi. pl. 513, figs. 2, 3 (1847).*Hesperia lefebrrii*, Rambur, Cat. Lep. And. p. 90 (note), 1858.

IMAGO.—Male. Upperside brown, with a slight pinkish tint. *Forewing* with blackish suffusion on a little more than the basal half merging into the paler ground colour of the outer portion of the wing. *Hindwing* with a paler blackish suffusion on the basal portion, no markings on either wing. Cilia of both wings brown. Underside uniformly pale greyish-brown; very obscure indications of three sub-apical pale dots on the forewing and of some discal dots on both wings. Antennæ black, its underside with white spots on the shaft and the club entirely white; palpi grey, with some brown hairs; head and body concolorous with the wings; underside whitish; legs ochreous-white.

Female. Upperside paler than the male, without any blackish suffusion. *Forewing* with three extremely minute whitish sub-apical dots in an outwardly oblique line and three discal spots in an inwardly oblique line, one in each of the median interspaces and the third on the sub-median vein, sometimes there is a very minute white dot in the discal series in interspace 4. *Hindwing* without markings. Underside coloured like the underside of the male, the spots as on the upperside.

Expanse of wings, ♂ ♀ 1 to  $1\frac{1}{10}$  inches.

HABITAT.—N.W. Himalayas, Central Asia, South Europe, North Africa.

DISTRIBUTION.—Within our limits, Butler records it from Campbellpur, Attock Bridge, Kairabad, Kala Pani and Hurripur; Leslie and Evans from Chitral; we have it from Kulu.

## GEGENES KARSANA.

Plate 835, figs. 2, ♂, 2a, ♀, 2b, ♂, 2c, ♀.

*Hesperia karsana*, Moore, Proc. Zool. Soc. 1874, p. 576, pl. 67, fig. 6.*Pamphila karsana*, Butler, Proc. Zool. Soc. 1881, p. 612. Swinhoe, id. 1884, p. 512; id. Trans. Ent. Soc. 1885, p. 345.

- Gegenes karsana*, Butler, Proc. Zool. Soc. 1886, p. 378. Swinhoe, Journ. Bo. Nat. Hist. Soc. 1887, p. 280. Watson, id. ix. 1895, p. 435. de Rhé-Philipe, id. xi. 1898, p. 601. Nurse, id. xiv. 1902, p. 513. Frühstorfer, Iris, 1911, p. 57.
- Chapra karsana*, Doherty, Journ. As. Soc. Bengal, 1886, p. 139. Watson, Hesp. Ind. p. 34 (1891).
- Chapra (Gegenes) karsana*, Hannington, Journ. Bo. Nat. Hist. Soc. xx. 1910, p. 370.
- Hesperia karsana var. saturata*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1882, p. 19.
- Gegenes nostradamus*, Watson (part), Proc. Zool. Soc. 1893, p. 104. Elwes and Edwards (part), Trans. Zool. Soc. 1897, p. 281.

IMAGO.—Male. Upperside pale olive-ochreous brown. *Forewing* with two very indistinct pale sub-apical dots, in interspaces 6 and 7, not always distinguishable. *Hindwing* without markings; both wings with the ground colour darkest at the base, gradually paling outwards, but always of quite a different description of colouring to that of *G. nostradamus*; marginal line of both wings brown. Cilia concolorous with the wings. Underside with the coloration similar but somewhat duller. *Forewing* with the sub-apical dots as on the upperside, and a series of three very indistinct pale discal spots in an inwardly oblique line in interspaces 3, 2 and 1. Antennæ black, the shaft spotted with white on the underside, the club black on both sides; in *nostradamus* it is pure white on the underside; palpi, head and body concolorous with the wings, the front of thorax with some whitish scaling, and with grey scaling on the sides; on the underside the palpi, pectus, the entire body and legs are pure white.

Female like the male, but the discal series of spots on the forewing is complete as in *nostradamus*.

Expanse of wings, ♂ ♀ 1 to  $1\frac{1}{10}$  inches.

HABITAT.—Burma, Western India, Sind, Beloochistan, Afghanistan.

DISTRIBUTION.—The types came from Rawul Pindi, Punjab; we took it plentifully at Karachi, Quetta, Kandahar and in many places in Sind and in the Pisheen Valley; Nurse records it from Kutch; Doherty records it from Kumaon, de Rhé-Philipe from Masuri, and Wood-Mason and de Nicéville record a variety from the Nicobars, these last three localities seem to be questionable, because it is undoubtedly a desert form of *nostradamus*.

#### CHINESE ALLIED SPECIES.

*Gegenes hainana*, Moore, Proc. Zool. Soc. 1878, p. 303. Habitat, Hainan.

#### Genus ERYNNIS.

*Erynnis*, Schrank, Fauna Boica, ii. p. 157 (1801). Watson, Proc. Zool. Soc. 1893, p. 99. Leech, Butt. of Ceylon, etc. ii. p. 593 (1893). Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. Elwes and Edwards, Trans. Zool. Soc. 1897, p. 287.

*Forewing*, vein 12 short, ends on costa much before end of cell, cell long and

narrow, about two-thirds the length of the costa, upper discocellular very minute, middle and lower discocellulars inwardly oblique, the lower very short, vein 5 consequently arising close to 4, 3 from close to lower end of cell, its base almost touching the end, 2 from well before the middle in the male, its base somewhat farther from the base of the cell in the female; costa somewhat recurved, apex somewhat acute, wing comparatively long, outer margin convex to vein 2, then emarginate; hinder angle well pronounced, hinder margin straight; male with a discal stigma of raised scales, on the forewing from the base of vein 3, entirely filling the angle at the bifurcation of vein 2 and extending to the sub-median vein, one-third from the base. *Hindwing*, vein 7 emitted one-third before upper end of cell, discocellulars outwardly oblique, faint, vein 5 absent, 3 from close to lower end of cell, 2 from about one-fifth before the end. Costa slightly convex, apex rounded, outer margin even, slightly excised between veins 3 and 1b. Antennæ short, less than half the length of costa of forewing, club robust, rather short, with a very minute terminal crook; palpi with the second joint densely scaled, third joint minute, sub-erect, bluntly conical; hind tibiæ with two pairs of spurs.

Type, *Papilio comma*, Linnæus.

#### ERYNNIS DIMILA.

Plate 835, figs. 3, ♂, 3a, ♀, 3b, ♂, 3c, ♀.

*Pamphila dimila*, Moore, Proc. Zool. Soc. 1874, p. 576. Watson, Hesp. Ind. p. 160 (1891). de Nicéville, Journ. Bo. Nat. Hist. Soc. 1892, p. 355, pl. J, fig. 9, ♀.

*Erynnis dimila*, de Nicéville, Journ. As. Soc. Bengal, 1894, p. 52, pl. 1, fig. 7, ♂. Watson, Journ. Bo. Nat. Hist. Soc. ix. 1895, p. 435. de Rhé-Philipe, id. xi. 1898, p. 601.

*Erynnis comma* var. *dimila*, Leech, Butt. of China, etc. ii. p. 595, pl. 41, fig. 12, ♂ (1893). Elwes and Edwards, Trans. Zool. Soc. 1897, p. 287. Leslie and Evans, Journ. Bo. Nat. Hist. Soc. xiv. 1903, p. 677.

IMAGO.—Male. Upperside orange-ochreous, veins finely brown. *Forewing* with the base narrowly suffused with blackish-brown, the interspaces here and there slightly suffused with pale brown, the outer margin fuliginous-brown, rather broadly at the apex, narrowing hindwards, containing three conjugated, pale ochreous sub-apical spots, divided by the veins, and two sub-marginal, similar spots in interspaces 4 and 5, the discal stigma black, with a silvery-white line down its middle. *Hindwing* with brownish suffusion at the base, and some paler suffusion in the interspaces, especially towards the abdominal margin, the costa and outer margin narrowly brown. Cilia brown, with white tips towards the hinder angle of forewing and on the entire cilia of the hindwing. Underside. *Forewing* paler orange-ochreous, the discal stigma showing narrowly through the wing, the lower half of the wing

much paler than the upper half, the marginal band broader and darker, the spots prominent and pure white. *Hindwing* greenish-brown; a large, thick, angular white spot, filling up the end of the cell, and a complete whorl of seven large, thick, lunular spots at equal distances apart, commencing below the costa near the base, ending in interspace 1, two in the uppermost interspace and one in each of the others. Antennæ black, the shaft and club pure white beneath; palpi white; head and body blackish-brown, with some whitish and greenish-ochreous hairs; on the underside the pectus and abdomen are white, and there are some white hairs on the thorax; legs ochreous-grey.

Female like the male, but duller in colour, the marginal bands broader, both wings on the upperside with brownish suffusion in parts, the lower discal spots on the underside of the hindwing connected into a short dentated band.

Expanse of wings, ♂  $1\frac{2}{10}$  to  $1\frac{3}{10}$ , ♀  $1\frac{3}{10}$  to  $1\frac{4}{10}$  inches.

HABITAT.—N.W. Himalayas, China.

DISTRIBUTION.—The types are from the Runag Pass, Busahir, 13,000 feet elevation; we have it from Chitral; de Nicéville records it from Khibber Nala, 16,000 feet, Spiti, Kangra District, Ganges Valley near Nilung Pass, 16,000 feet, and Leech from Ta-tsien-lu, Western China.

#### JAPANESE ALLIED SPECIES.

*Erynnis florinda*, Pamphila florinda, Butler, Cist. Ent. ii. p. 285 (1878). *Erynnis comma* var. florinda, Leech, Butt. of China, etc. ii. p. 594, pl. 41, fig. 17, ♂ (1893). Habitat, Japan, Yesso.

#### ERRATA.

- p. 7. *Celaenorhinus aspersa*, p. 660, should be p. 115.  
 p. 26. erase *C. lucifera*, ♀, Leech, it is referred to on p. 9, as a synonym of *C. pulomaya*.  
 p. 35. *Daimio formosa* should be *Daimio fumosa*.  
 p. 40. before *Tagiades khasiana ravi* insert *Tagiades khasiana*, Moore, Journ. As. Soc. Bengal, 1884, p. 51.  
 p. 51. erase *Tagiades dimidiata*.  
 p. 92. Sarangesa hampsoni, plate 280, should be 780.  
 p. 136, line 16, after *olivascens*, Leech, add (nec Moore).  
 p. 149. erase *Pedestes fuscicornis*, it is referred to on p. 216 as a synonym of *Plastingia submacula*.  
 p. 229. erase *Hidari sybirita*, it is an *Erionota*, and is referred to on p. 160.  
 p. 280. erase *Halpe debilis*.





## ADDENDA.

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### GENERA AND SPECIES DESCRIBED FROM THE INDIAN REGION SINCE THE ISSUE OF THE PARTS IN WHICH THEY WOULD HAVE BEEN INCLUDED.

#### LIMNIINÆ.

*Hestia arrakana*, *Hestia jasonia arrakana*, Frühstorfer, Seitz, ix. p. 219 (1910). Habitat, Arrakan, Upper Burma.

*Hestia diabolica*, *Hestia jasonia diabolica*, Frühstorfer, l.c. Habitat, Ceylon.

*Tirumala mutina*, *Tirumala limniace mutina*, Frühstorfer, l.c. p. 204, pl. 78a. Habitat, Ceylon.

*Tirumala dravidarum*, *Tirumala melissa dravidarum*, Frühstorfer, Berl. ent. Zeit. 1899, p. 113. Habitat, Malabar.

*Tirumala musikanos*, *Tirumala melissa musikanos*, Frühstorfer, Seitz, ix. p. 202 (1910). Habitat, Ceylon.

*Salatura grynion*, *Danais plexippus grynion*, Frühstorfer, Iris, 1906, p. 173. Habitat, Sikkim.

*Salatura indicus*, *Danais melanippus indicus*, Frühstorfer, Berl. ent. Zeit. xlv. p. 75 (1899). Habitat, Tenasserim.

*Salatura plexippus*, *Papilio plexippus*, Linnæus, Mus. Ur. p. 262 (1764); id. Syst. Nat. i. 2, p. 762 (1767).

*Danaida plexippus*, Aurivillius, Kongl. Vet. Akad. Handl. 1882, p. 69.

*Danais (Salatura) plexippus*, Mackinnon and de Nicéville, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 212 (note).

*Salatura genitia*, Moore, Lep. Ind. i. p. 45.

*Parantica phormion*, *Parantica eryx phormion*, Frühstorfer, Ent. Zeit. Stutt. 1909, p. 117. Habitat, Tenasserim.

*Parantica maghaba*, *Parantica eryx maghaba*, Frühstorfer, l.c. p. 116. Habitat, Sikkim, Assam.

*Caduga plataniston*, *Chittira melaneus plataniston*, Frühstorfer, Seitz, ix. p. 210 (1910). Habitat, Himalayas.

*Caduga neopatra*, *Chittira melaneus neopatra*, Frühstorfer, l.c. Habitat, Tenasserim.

*Caduga tira*, *Chittira tytia tira*, Frühstorfer, Berl. ent. Zeit. 1899, p. 67. Habitat, Himalayas.

*Caduga sita*, *Danais sita*, Kollar, Hugel's Kasch. p. 61 (1842).

*Danais (Caduga) sita*, Mackinnon and de Nicéville, Journ. Bo. Nat. Hist. Soc. xi. 1897, p. 213, pl. U, figs. 1a, 1b, 1c, 1d.

*Caduga tytia*, Moore, Lep. Ind. i. p. 61.

## EUPLEINÆ.

- Crastia defigurata*, *Euplea godarti defigurata*, Frühstorfer, Seitz, ix. p. 247 (1910). Habitat, Upper Burma.
- Penoa arida*, *Euplea deione arida*, Frühstorfer, l.c. p. 238. Habitat, Upper Burma.
- Penoa æsata*, *Crastia alcathoë æsata*, Frühstorfer, l.c. p. 237. Habitat, South Burma.
- Pademna kollari* (Lep. Ind. vol. i. p. 124) *Euplea kollari*, Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 241 (life history).
- Pademna hamiltoni*, Swinhoe, Trans. Ent. Soc. 1893, p. 269. Habitat, Khasia Hills.
- Euplea vitrina*, *Euplea corus vitrina*, Frühstorfer, Berl. ent. Zeit. xliii. p. 190 (1898). Habitat, Upper Burma.
- Trepischrois duarseri*, *Trepischrois mulciber duarseri*, de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xx. 1911, p. 754. Habitat, Duars, N. India.
- Stictopleva discalis*, *Stictopleva harrisi discalis*, Frühstorfer, Seitz, ix. p. 246 (1910). Habitat, Assam.
- Narmada coreta*, *Euplea coreta*, Godart, Enc. Méth. ix. p. 178 (1819) = *Narmada coreoides*, Moore, Lep. Ind. i. p. 134. Davidson, Bell and Aitken, l.c. pl. i. figs. 1, 1a (life history).

## SATYRINÆ.

- Mycalesis evansi*, Evans, Journ. Bo. Nat. Hist. Soc. 1912, p. 569. Habitat, Manipur.
- Pachama vetus*, *Mycalesis mnestra vetus*, Frühstorfer, Verh. zool.-bot. Ges. 1908, p. 148. Habitat, Tenasserim.
- Samanta watsoni*, *Mycalesis lepcha watsoni*, Evans, Journ. Bo. Nat. Hist. Soc. 1912, p. 569. Habitat, Assam.
- Samanta nudgara*, *Mycalesis nicotia nudgara*, Frühstorfer, l.c. Habitat, Tenasserim.
- Orsotrizena turbata*, *Mycalesis medus turbata*, Frühstorfer, l.c. p. 214. Habitat, Nicobars.
- Calysisme igilia*, *Mycalesis perseoides igilia*, Frühstorfer, Seitz, ix. p. 346 (1911). Habitat, Mysore.
- Calysisme khasia*, *Mycalesis perseoides khasia*, Evans, l.c. p. 568. Habitat, Khasia Hills.
- Calysisme typhlus*, *Mycalesis perseus typhlus*, Frühstorfer, Verh. zool.-bot. Ges. 1908, p. 148. Habitat, Tenasserim.
- Calysisme orcha*, *Mycalesis visala orcha*, Evans, l.c. p. 569. Habitat, Palni Hills.
- Calysisme polydecta* (Lep. Ind. i. p. 180) *Papilio polydecta*, Cramer, Pap. Exot. ii. pl. 144, figs. E, F (1779). This reference omitted, though referred to on p. 181.
- Virapa a mate*, *Mycalesis anaxias æmate*, Frühstorfer, Seitz, ix. p. 353 (1911). Habitat, Burma.
- Virapa adamsoni*, *Mycalesis (Virapa) adamsoni*, Watson, Journ. Bo. Nat. Hist. Soc. 1896, p. 640, pl. A, fig. 1. Habitat, Burma.
- Nissanga junonia* (Lep. Ind. vol. i. p. 216), *Mycalesis junonia*, Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 242, pl. i. figs. 2, 2a (larva and pupa).
- Neorina archaica*, *Nevrina crishna archaica*, Frühstorfer, l.c. p. 327. Habitat, Tenasserim.
- Neorina saka*, Frühstorfer, Ent. Nachr. xix. p. 337 (1893). Habitat, E. India.
- Debis flanova*, *Lethe chandica flanova*, Frühstorfer, Seitz, ix. p. 320 (1911). Habitat, Assam.

- Debis vaga*, *Lethe kansa vaga*, Frühstorfer, l.c. p. 318. Habitat, Tenasserim.
- Debis zeugitana*, *Lethe kansa zeugitana*, Frühstorfer, l.c. pl. 98a. Habitat, Assam.
- Debis zuchara*, *Lethe mekara zuchara*, Frühstorfer, l.c. p. 319. Habitat, N. India.
- Debis vajra*, *Lethe mekara vajra*, Frühstorfer, l.c. Habitat, Assam.
- Debis namura*, *Lethe chandica namura*, Frühstorfer, l.c. p. 314. Habitat, N.W. Himalayas.
- Lethe gambara*, *Lethe rohria gambara*, Frühstorfer, l.c. p. 315. Habitat, Assam.
- Lethe tritogeneia*, *Lethe minerva tritogeneia*, Frühstorfer, l.c. p. 318. Habitat, Burma.
- Lethe perimele*, *Lethe latiaris perimele*, Frühstorfer, l.c. p. 323, pl. 97c. Habitat, Tenasserim.
- Lethe ladesta*, *Lethe vindhya ladesta*, Frühstorfer, l.c. p. 319. Habitat, Tenasserim.
- Lethe niladana*, *Lethe europa niladana*, Frühstorfer, l.c. p. 315. Habitat, Kumaon, Burma.
- Lethe ragalva*, *Lethe europa ragalva*, Frühstorfer, l.c. p. 316. Habitat, South India.
- Lethe nudgara*, *Lethe europa nudgara*, Frühstorfer, l.c. pl. 96c. Habitat, Andamans.
- Lethe issa*, *Lethe gulnihal issa*, Frühstorfer, l.c. p. 323. Habitat, Tenasserim.
- Lethe isana*, Mackinnon and de Nicéville, l.c. p. 215, pl. U, figs. 2a, 2b, 2c (life history) = *Lethe hyrania* (Lep. Ind. vol. i. p. 266).
- Tansima sintica*, *Lethe verma sintica*, Frühstorfer, l.c. p. 324. Habitat, Sikkim, Assam.
- Tansima stenopa*, *Lethe verma stenopa*, Frühstorfer, Ent. Zeit. xxii. p. 127 (1908). Habitat Tenasserim.
- Sinchula vaivarta* (Lep. Ind. vol. i. p. 278) *Lethe* (*Sinchula*) *vaivarta*, Mackinnon and de Nicéville, l.c. figs. 3a, 3b, 3c, 3d, 3e (larva and pupa).
- Sinchula gelduba*, *Lethe sidonis gelduba*, Frühstorfer, Seitz, ix. p. 321 (1911). Habitat, Sikkim, Assam.
- Kerrata lynceus*, *Lethe* (*Kerrata*) *lynceus*, de Nicéville, Journ. As. Soc. Bengal, 1897, p. 544, pl. i. fig. 8. Habitat, Sikkim.
- Zophoessa kabruai*, *Lethe* (*Zophoessa*) *kabruai*, Evans, Journ. Bo. Nat. Hist. Soc. 1911, p. 567. Habitat, Naga Hills.
- Zophoessa narkunda*, *Lethe goalpara narkunda*, Frühstorfer, l.c. p. 314. Habitat, Simla.
- Patala yama* (Lep. Ind. i. p. 306), Mackinnon and de Nicéville, l.c. p. 216, pl. U, figs. 4a, larva, 4b, pupa (life history).
- Patala yamamoides*, Lep. Ind. i. p. 307. *Female* larger than the male, very similar, but somewhat paler; on the upperside the spots are more pronounced, especially the pale greyish-ochreous, submarginal spots and the two ochreous-white costal spots of the forewing; it is a common species in the Khasia Hills; we have received numerous examples of both sexes.
- Orinoma harmostus*, *Orinoma damaris harmostus*, Frühstorfer, l.c. p. 310. Habitat, Tenasserim.
- Lassionmata mærulea* (Lep. Ind. ii. p. 8), Felder, Reise, Nov. Lep. iii. p. 496 (1867).  
*Lassionmata laurion*, de Nicéville, Journ. Bo. Nat. Hist. Soc. x. 1895, p. 15, pl. B, fig. 5, ♂, 6, ♀. Habitat, Himalayas.
- Philareta hanifer*, *Satyrus hanifer*, Nordmann, Bull. Mosc. 1851, p. 405. Received from Chitral.
- Aulocera garuna*, *Aulocera swaha garuna*, Frühstorfer, l.c. p. 309, pl. 94c (1911). Habitat, Kulu.
- Maniola mandana*, *Satyrus mandana*, Kollar, Deutschr. Acad. Wien, Math. Nat. Cl. i. p. 52 (1850). Habitat, Quetta; one pair received from Sir Henry Macmahon.
- Epinephile monoculus*, *Minois minoculus*, Frühstorfer, Stett. ent. Zeut. 1898, p. 10. Habitat, Kashmir.
- Ypthima affectata*, Elwes, Trans. Ent. Soc. 1893, p. 30. Habitat, Khasia Hills.
- Ypthima gellia*, *Ypthima ceylonica gellia*, Frühstorfer, Seitz, ix. p. 287. Habitat, Ceylon.
- Ypthima lycoides*, Watson, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 648. Habitat, Burma.

- Ypthima megalca*, de Nicéville, Journ. As. Soc. Bengal, lxvi. p. 546, pl. i. fig. 5 (1897). Habitat, Burma.
- Ypthima sarcoposa*, *Ypthima newarra sarcoposa*, Frühstorfer, l.c. p. 291. Habitat, Tenasserim.
- Thymipa gela*, *Ypthima methora gela*, Frühstorfer, l.c. p. 292 (1911). Habitat, Sikkim.
- Thymipa persimilis*, *Ypthima persimilis*, Elwes, Trans. Ent. Soc. 1893, p. 39. Habitat, Manipur.
- Thymipa sobrina*, *Ypthima sobrina*, Elwes, l.c. p. 29. Habitat, Karen Hills.
- Thymipa similis*, *Ypthima similis*, Elwes, l.c. p. 30. Habitat, Karen Hills.
- Thimipa humei*, *Ypthima humei*, Elwes, l.c. p. 32. Habitat, Tenasserim.
- Thymipa matinia*, *Ypthima sakra matinia*, Frühstorfer, l.c. p. 292. Habitat, N.W. India.
- Lyela*, Gen. nov. Swinhoe, Ann. Mag. N. H. 1908, p. 60.
- Lyela macmahoni*, Swinhoe, l.c. Habitat, Quetta.
- Callerebia nirmala* (Lep. Ind. ii. p. 100). Mackinnon and de Nicéville, l.c. p. 220, pl. U, figs. 5a, 5b, 5c, 5d, 5e (life history).
- Callerebia walltoni*, Elwes, Proc. Zool. Soc. 1906, p. 482, pl. 36, figs. 14, 15. Habitat, Thibet.
- Callerebia delavayi*, Oberthür, Étude d'Ent. xv. p. 13, pl. 2, fig. 18 (1891). Habitat, Yunnan.
- Melanitis goalkissa*, *Melanitis phedima goalkissa*, Frühstorfer, l.c. p. 364. Habitat, Kulu.
- Melanitis ganapati*, *Melanitis phedima ganapati*, Frühstorfer, Ent. Zeit. Stutt. xxii. p. 80 (1908). Habitat, Tenasserim.
- Melanitis aswina*, *Melanitis phedima aswina*, Frühstorfer, l.c. Habitat, Tenasserim.
- Melanitis auletes*, *Melanitis zitenius auletes*, Frühstorfer, l.c. p. 83. Habitat, Tenasserim.
- Zipetis saitis* (Lep. Ind. vol. ii. p. 108), Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 244, pl. i. figs. 4, 4a (life history).
- Eriles rotundata*, de Nicéville, Journ. As. Soc. Bengal, lxii. p. 4 (1893). Habitat, Burma.

## ELYMNIINÆ.

- Elymnias paraleuca*, *Elymnias hypermnestra paraleuca*, Frühstorfer, Iris, 1907, p. 177. Habitat, Mergui.
- Elymnias cortona*, *Elymnias nesæa cortona*, Frühstorfer, Seitz, ix. p. 379 (1911). Habitat, Burma.
- Melymnias nilamba*, *Elymnias malelas nilamba*, Frühstorfer, p. 381. Habitat, Kumaon.
- Melymnias subdecorata*, *Elymnias malelas subdecorata*, Frühstorfer, l.c. Habitat, Sikkim, Assam.
- Melymnias ivena*, *Elymnias malelas ivena*, Frühstorfer, l.c. Habitat, Sikkim, Assam.

## AMATHUSIINÆ.

- Amathusia andamanensis*, *Amathusia phidippus andamanensis*, Frühstorfer, Iris, xii. p. 76 (1899). Habitat, Andamans.
- Amathusia friderici*, *Amathusia phidippus friderici*, Frühstorfer, Iris, xvii. p. 153 (1904). Habitat, Tenasserim.
- Discophora semineclis*, *Discophora continentalis semineclis*, Stichel, Iris, 1902, p. 72. Habitat, Sikkim.
- Discophora deo*, de Nicéville, Journ. Bo. Nat. Hist. Soc. 1898, p. 137, pl. Y, fig. 10. Habitat, Upper Burma.

- Discophora significans*, *Discophora lepida significans*, Stichel, Berl. ent. Zeit. 1902, p. 317. Habitat, Karwar.
- Discophora ceylonica*, *Discophora lepida ceylonica*, Frühstorfer, Seitz, ix. p. 445, pl. 106a (1911). Habitat, Ceylon.
- Discophora muscina*, Stichel, Ins. Börse, 1902, p. 125. Habitat, Karwar.
- Discophora lepida* (Lep. Ind. ii. p. 190). Davidson, Bell and Aitken, Journ. Bo. Nat. Hist. Soc. x. 1896, p. 245 (life history).

## NYMPHALINÆ.

- Eulepis schreiberi* (Lep. Ind. vol. ii. p. 261). *Charaxes schreiberi*, Davidson, Bell and Aitken, l.c. p. 257 (life history).
- Eulepis assamensis*, *Eulepis schreiberi assamensis*, Rothschild, Nov. Zool. vi. p. 223, fig. 39 (1899). Habitat, Khasia Hills.
- Eulepis batavianus*, *Eulepis athamas batavianus*, Frühstorfer, Ent. Nachr. xxiv. p. 59 (1898). Habitat, Khasia Hills.
- Eulepis andamanicus*, *Eulepis athamas andamanicus*, Frühstorfer, Soc. Ent. xxii. p. 179 (1907). Habitat, Mergui.
- Eulepis roberi*, *Charaxes arja roberi*, Frühstorfer, Ent. Nach. xxiv. p. 59 (1898). Habitat, Khasia Hills.
- Eulepis marginalis*, *Eulepis moorei sandakanus f. marginalis*, Rothschild, l.c. p. 245. Habitat, Naga Hills.
- Eulepis centralis*, *Eulepis dolon centralis*, Rothschild, l.c. v. p. 274, pl. 9, fig. 1 (1898). Habitat, Sikkim.
- Eulepis grandis*, *Eulepis dolon grandis*, Rothschild, l.c. p. 275, pl. 9, fig. 2. Habitat, Shan States.
- Eulepis magniplagus*, *Eulepis dolon magniplagus*, Frühstorfer, Insek. Borse, xxi. p. 381 (1904). Habitat, Assam.
- Charaxes sulphureus*, *Charaxes fabius sulphureus*, Rothschild, Nov. Zool. vii. p. 468 (1900). Habitat, Tenasserim, Shan States.
- Charaxes raidhaka*, de Rhé-Philipe, Rec. Mus. Ind. ii. p. 285 (1908). Habitat, Bhutan.
- Haridra naganum*, *Charaxes hierax naganum*, Tytler, Journ. Bo. Nat. Hist. Soc. 1911, p. 55. Habitat, Naga Hills.
- Sephisa florenciæ*, *Apatura florenciæ*, Tytler, l.c. p. 56, pl. A, figs. 5, 6. Habitat, Naga Hills.
- Sephisa albina*, *Sephisa chandra albina*, Evans, l.c. Habitat, Kumaon, Burma.
- Parhestina jermyni*, H. H. Druce, Trans. Ent. Soc. 1911, p. 187, pl. 29, fig. 1. Habitat, Central Himalayas.
- Parhestina eurimus*, *Parhestina consimilis eurimus*, Frühstorfer, Iris, 1903, p. 28. Habitat, Burma.
- Parhestina persimilis* (Lep. Ind. vol. iii. p. 34). Mackinnon and de Nicéville, Journ. Bo. Nat. Hist. Soc. 1898, p. 369, pl. U, figs. 8a, 8b (life history).
- Euripus torsa*, *Euripus consimilis torsa*, de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xx. 1911, p. 758. Habitat, Bhutan.
- Neurosigma nonius*, de Nicéville, Ann. Mag. Nat. Hist. 1896, p. 396. Habitat, Burma.
- Chucapa attenuata*, *Euthalia franciæ attenuata*, Tytler, l.c. p. 59. Habitat, Naga Hills.
- Saparna cibaritis*, ab. Fawcett, Proc. Zool. Soc. 1909, p. 880, pl. 82, fig. 5. Habitat, Port Blair, Andamans.

- Euthalia alpherakyi*, Oberthür, Bull. Soc. Ent. Fr. 1907, p. 260. Habitat, E. Thibet.
- Euthalia aristides*, Oberthür, l.c. Habitat, E. Thibet.
- Euthalia meridionalis*, *Euthalia garuda meridionalis*, Frühstorfer, Ins. Borse, xxiii. p. 59 (1906).  
Habitat, S. India.
- Euthalia diversa*, *Euthalia garuda diversa*, Evans, l.c. p. 576 (1912). Habitat, South India, Ceylon.
- Euthalia jamida*, *Euthalia jama jamida*, Frühstorfer, l.c. p. 19. Habitat, Sikkim, Burma.
- Euthalia psittacus*, *Euthalia lubentina psittacus*, Frühstorfer, Soc. Ent. xxi. p. 52 (1907). Habitat,  
Ceylon.
- Euphalia indica*, *Euthalia lubentina indica*, Frühstorfer, Stett. ent. Zeit. 1904, p. 350. Habitat,  
Sikkim, S. India.
- Euthalia themistocles*, Oberthür, Bull. Soc. Ent. Fr. 1907, p. 261. Habitat, E. Thibet.
- Euthalia laudabilis* (Lep. Ind. vol. iii. p. 104). Davidson, Bell and Aitken, Journ. Bo. Nat. Hist.  
Soc. x. 1896, p. 255 (life history).
- Bimbisara sitis*, *Bimbisara ananta sitis*, Frühstorfer, Stett. ent. Zeit. 1908, p. 392. Habitat,  
Bhutan.
- Moduza undifragus*, *Limenitis procris undifragus*, Frühstorfer, Ent. Zeit. Guben. xx. p. 62 (1906).  
Habitat, Karwar.
- Moduza chlæna*, *Limenitis procris chlæna*, Frühstorfer, l.c. Habitat, Sikkim.
- Moduza procris* (Lep. Ind. vol. iii. p. 146), *Limenitis procris*, Davidson, Bell and Aitken, l.c. p. 253,  
pl. 2, figs. 3, 3a (larva and pupa).
- Chendrana acutipennis*, *Athyma pravara acutipennis*, Frühstorfer, Verh. zool.-bot. Ges. lxvi. p. 401  
(1906). Habitat, Assam.
- Kironga mahesa* (Lep. Ind. vol. iii. p. 210). *Athyma mahesa*, Davidson, Bell and Aitken, l.c. p. 254,  
pl. ii. figs. 4, 4a (larva and pupa).
- Pantoporia gynea*, *Athyma gynea*, Swinhoe, Ann. Mag. Nat. Hist. 1896, p. 396. Habitat,  
Burma.
- Pantoporia inara* (Lep. Ind. vol. iii. p. 196), *Athyma inara* = *inarina*, de Nicéville, Davidson, Bell  
and Aitken, l.c. (life history).
- Pantoporia karwara*, *Pantoporia ranga karwara*, Frühstorfer, l.c. p. 410. Habitat, Karwar.
- Andropana kankæna*, *Neptis columella kankæna*, Evans, l.c. p. 577. Habitat, Nicobars.
- Andropana nalanda*, *Neptis jumba nalanda*, Frühstorfer, Stett. ent. Zeit. lxxix. p. 329 (1908).  
Habitat, Ceylon.
- Bimbisara nashona*, *Neptis nashona*, Swinhoe, Ann. Mag. Nat. Hist. 1896, p. 357. Habitat, Cherra  
Punji.
- Bimbisara quilta*, *Neptis quilta*, Swinhoe, l.c. 1897, p. 408. Habitat, Khasia Hills.
- Stabrobates viraja* (Lep. Ind. vol. v. p. 23), *Neptis viraja*, Davidson, Bell and Aitken, l.c. p. 251,  
pl. 2, figs. 2, 2a (life history).
- Stabrobates melba*, *Neptis melba*, Evans, l.c. p. 578. Habitat, Sikkim.
- Neptis solygeia*, *Neptis nandina solygeia*, Frühstorfer, l.c. p. 316. Habitat, N. Ceylon.
- Apsithra binghami*, *Cyrestis perianther binghami*, Martin, Iris, 1903, p. 147. Habitat, Tenasserim.
- Cyrestis afghana*, *Cyrestis thyodamas afghana*, Martin, l.c. p. 86. Habitat, Afghanistan.
- Cyrestis nobilior*, *Cyrestis thyodamas nobilior*, Martin, l.c. p. 87. Habitat, Burma.
- Cyrestis thyodamas* (Lep. Ind. vol. iv. p. 48). Davidson, Bell and Aitken, l.c. p. 256, pl. iii. fig. 1, 1a  
(larva and pupa). Mackinnon and de Nicéville, id. 1898, p. 376, pl. U, figs. 11a, 11b, 11c, 11d  
(life history).
- Jumonia allites* (Lep. Ind. vol. iv. p. 67). Davidson, Bell and Aitken, l.c. p. 250 (life history).

- Symbrenthia assama*, *Symbrenthia hypselis assama*, Frühstorfer, Berl. ent. Zeit. 1900, p. 21.  
Habitat, Khasia Hills.
- Potamis chitralensis*, *Apatura ambica chitralensis*, Evans, l.c. p. 573. Habitat, Chitral.
- Doleschallia malabarica*, *Doleschallia bisaltide malabarica*, Frühstorfer, Berl. ent. Zeit. 1899, p. 279,  
pl. 2, fig. 8. Habitat, Karwar.
- Doleschallia andamanensis*, *Doleschallia bisaltide andamanensis*, Frühstorfer, l.c. p. 280. Habitat,  
Port Blair, Andamans.
- Doleschallia ceylonica*, *Doleschallia bisaltide ceylonica*, Frühstorfer, Iris, 1903, p. 34. Habitat,  
Ceylon.
- Doleschallia polibete* (Lep. Ind. vol. iv. p. 154). Davidson, Bell and Aitken, l.c. p. 257, pl. 3, figs. 2,  
2a (life history).
- Kallima wardi* (Lep. Ind. vol. iv. p. 171). *Kallima horsfieldii*, Davidson, Bell and Aitken, l.c. p. 256,  
pl. 2, figs. 5, 5a (life history).
- Cethosia andamana*, *Cethosia biblis andamana*, Stichel, Gen. Ins. lxiii. p. 24 (1907). Habitat,  
Andamans.
- Cethosia nicobarica*, ab. Fawcett, Proc. Zool. Soc. 1909, p. 88, pl. 82, fig. 4. Habitat, Port Blair,  
Andamans.
- Atella andamana*, *Atella alcippe andamana*, Frühstorfer, Ent. Medell. (2) ii. p. 311 (1905). Habitat,  
Andamans.
- Atella ceylonica*, Manders, Journ. Bo. Nat. Hist. Soc. xiv. p. 716 (1903). Habitat, Ceylon.
- Atella alcippe* (Lep. Ind. vol. iv. p. 201). Davidson, Bell and Aitken, l.c. p. 248 (life history).
- Cypha placida* (Lep. Ind. vol. iv. p. 207). Davidson, Bell and Aitken, l.c. p. 247, pl. 3, figs. 3, 3a  
(life history).
- Boloria clara*, *Argynnis clara clara*, Frühstorfer, Iris, xvi. p. 42 (1903). Habitat, Amdo,  
Thibet.
- Boloria manis*, *Argynnis clara manis*, Frühstorfer, l.c. p. 41 (1903). Habitat, Sikkim.
- Acidalia hybrida*, *Argynnis hyperbius hybrida*, Evans, Journ. Bo. Nat. Hist. Soc. xxi. p. 581 (1912).  
Habitat, Nilgiris.
- Argynnis nerippina*, *Argynnis nerippe nerippina*, Frühstorfer, Soc. Ent. xxii. p. 68 (1907). Habitat,  
Thibet.
- Argynnis eupales*, *Argynnis pales eupales*, Frühstorfer, l.c. xviii. p. 124 (1903). Habitat, S. Thibet.
- Argynnis asretha*, *Argynnis aglaia asretha*, Evans, l.c. p. 582. Habitat, Chitral.
- Helcyra masinia*, *Helcyra hemina masinia*, Frühstorfer, Iris, 1903, p. 37. Habitat, Sikkim.
- Melitæa balba*, *Melitæa sindura balba*, Evans, l.c. p. 582. Habitat, Chitral.
- Melitæa mixta*, *Melitæa trivia mixta*, Evans, l.c. p. 583. Habitat, Chitral.
- Ergolis dongalæ*, *Ergolis celebensis dongalæ*, Frühstorfer, Iris, 1903, p. 39. Habitat, Ceylon.
- Pseudergolis wedah* (Lep. Ind. vol. v. p. 41). Mackinnon and de Nicéville, l.c. p. 371, pl. U, figs. 9a,  
9b, 9c, 9d, 9e, 9f (life history).

## PAPILIONIDÆ.

## PARNASSIINÆ.

- Parnassius acconus*, Frühstorfer, Iris, 1903, p. 43, pl. i. figs. 1, 2. Habitat, Sikkim.
- Parnassius gemmifer*, *Parnassius acco gemmifer*, Frühstorfer, Soc. Ent. xix. p. 25 (1904). Habitat, S. Thibet.
- Parnassius balucha*, Moore, Ann. Mag. Nat. Hist. 1906, p. 47. Habitat, Beluchistan.
- Parnassius whitei*, *Parnassius delphius whitei*, Bingham, Fauna Ind. Butt. ii. p. 125 (1907). Habitat, Sikkim.
- Parnassius lampidius*, *Parnassius delphius lampidius*, Frühstorfer, l.c. p. 44. Habitat, Sikkim.
- Parnassius viridicans*, *Parnassius hardwicki viridicans*, Jordan, Seitz, ix. p. 111 (1909). Habitat, Sikkim.
- Parnassius hardwicki*, *ab. otis*, Frühstorfer, l.c. p. 46. Habitat, Kashmir.
- Parnassius angustus*, *Parnassius imperator angustus*, Frühstorfer, Soc. Ent. xviii. p. 113 (1903). Habitat, Sikkim.
- Parnassius intermedius*, *Parnassius imperator intermedius*, Rothschild, Nov. Zool. xvi. p. 19 (1909). Habitat, Lhasa.
- Parnassius titan*, *Parnassius nonion titan*, Frühstorfer, Iris, 1903, p. 308. Habitat, Afghanistan.
- Parnassius moelleri*, *Parnassius simo moelleri*, Bingham, l.c. p. 130. Habitat, Sikkim.

## LEPTOCIRCINÆ.

- Leptocircus indistincta*, *Leptocircus meges indistincta*, Tytler, Journ. Bo. Nat. Hist. Soc. 1912, p. 588. Habitat, Naga Hills.

## PAPILIONINÆ.

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- Troides mopa*, *Troides helena mopa*, Rothschild, Entom. xl. p. 3 (1908). Habitat, Bhutan.
- Byasa letincius*, *Papilio philoxenus letincius*, Frühstorfer, Ent. Zeit. Stutt. xxii. p. 72 (1908). Habitat, N.W. India.
- Byasa barata*, *Papilio dasarada barata*, Rothschild, Nov. Zool. xv. p. 165 (1908). Habitat, Shan States, Tenasserim.
- Sarbaria schanus*, *Papilio dialis schanus*, Jordan, Seitz, ix. p. 77 (1908). Habitat, S. Shan States.
- Genus *Mimbyasa*, Evans, Journ. Bo. Nat. Hist. Soc. xxi. 1912, p. 972, type *janaka*, Moore.
- Menclaiides goniopeltis*, *Papilio aristolochiæ goniopeltis*, Rothschild, l.c. p. 167. Habitat, Tenasserim.
- Sainia protenor* (Lep. Ind. vol. v. p. 188). *Papilio* (*Sainia*) *protenor*, Mackinnon and de Nicéville, l.c. p. 592, pl. W, fig. 23 (life history).
- Sainia euprotenor*, *Papilio protenor euprotenor*, Frühstorfer, Ent. Zeit. Stutt. xxii. p. 46 (1908). Habitat, Sikkim.
- Panosmiopsis turificator*, *Papilio rhetenor turificator*, Frühstorfer, l.c. p. 175. Habitat, Assam.
- Panosmiopsis publilius*, *Papilio rhetenor publilius*, Frühstorfer, l.c. Habitat, Lower Burma.
- Panosmiopsis rhetenor ab. leucocelis*, Jordan, l.c. p. 76. Habitat, Nepal, Tenasserim.



- Iliaides memnon*, ♀ form *rhetenorina*, Jordan, l.c. p. 72. Habitat, N. India.
- Charus ducenarius*, *Papilio chaon ducenarius*, Frühstorfer, l.c. p. 73. Habitat, Tenasserim.
- Charus chaon*, ♀ form *leucacantha*, Frühstorfer, l.c. Habitat, Sikkim.
- Charus chaon*, ab. *paryphanta*, Jordan, l.c. p. 53 (1908). Habitat, N. India, China.
- Charus rhypparia*, *Papilio helenus rhypparia*, Jordan, l.c. p. 24. Habitat, Andamans.
- Charus aphnea*, *Papilio helenus aphnea*, Jordan, l.c. Habitat, Andamans.
- Charus helenus*, ♂ form *eumajos*, Jordan, l.c. Habitat, N. India, Burma.
- Charus andamanicus*, *Papilio fuscus andamanicus*, Rothschild, Nov. Zool. xv. p. 171 (1908). Habitat, Andamans.
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- Laertius polytes*, ♀ form *stichoides*, Evans, Journ. Bo. Nat. Hist. Soc. xxi. p. 972 (1912). Habitat, Andamans, Nicobars.
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- Laertius polytes*, ♀ form *rubida*, Frühstorfer, l.c. p. 179. Habitat, Malabar.
- Laertius polytes* ab. *astreans*, Jordan, l.c. p. 61. Habitat, Sikkim.
- Laertius leptopsephus*, *Papilio pitmani leptopsephus*, Frühstorfer, l.c. p. 178. Habitat, Burma, Tonkin.
- Zetides macronius*, *Papilio euryphilus macronius*, Jordan, l.c. p. 98. Habitat, Andamans.
- Zetides petina*, *Papilio euryphilus petina*, Jordan, l.c. Habitat, Sikkim, China.
- Zetides andamanica*, *Papilio andamanica*, Lathy, Trans. Ent. Soc. 1897, p. 5. Habitat, Andamans.
- Zetides eleius*, *Papilio jason eleius*, Frühstorfer, Stett. ent. Zeit. xxi. p. 209 (1907). Habitat, South India.
- Dalchina melus*, *Papilio sarpedon melus*, Frühstorfer, l.c. p. 183. Habitat, Tenasserim.
- Pazala sikkimica*, *Papilio sikkimica*, Heron, Ann. Mag. Nat. Hist. 1899, p. 120. Habitat, Sikkim.
- Pathysa antiphanus*, *Papilio antiphates antiphanus*, Frühstorfer, Berl. ent. Zeit. 1902, p. 197. Habitat, N. Ceylon.
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- Meandrusa amphis*, *Papilio payeni amphis*. Jordan, l.c. p. 91. Habitat, Tenasserim.
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- Achillides arius*, *Papilio arcturus arius*, Rothschild, Nov. Zool. xv. p. 174 (1908). Habitat, Kashmir Valley.
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- Tamera castor* ab. *mesites*, Jordan, l.c. Habitat, Assam.
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- Danaus minima*, *Pieris canidia minima*, Verity, Rhop. Pal. p. 161. Habitat, Thibet.
- Danaus montana*, *Pieris melete montana*, Verity, l.c. p. 141. Habitat, Sikkim, Assam.
- Danaus melama*, *Pieris melama*, Rober, Seitz, i. p. 48, fig. 20g. (1906). Habitat, Thibet.
- Pieris hesba*, *Aporia nabellica hesba*, Evans, l.c. p. 976. Habitat, Chitral.
- Pieris denigrata*, *Aporia soracta denigrata*, Frühstorfer, Seitz, ix. p. 138 (1910). Habitat, Punjab.
- Delias perspicua*, *Delias belladonna perspicua*, Frühstorfer, l.c. p. 130. Habitat, Upper Burma.
- Delias leucacantha*, *Delias descombesi leucacantha*, Frühstorfer, l.c. p. 131. Habitat, Sikkim.
- Piccarda descombesi*, ♀ form *aurigera*, Frühstorfer, l.c. Habitat, Sikkim.
- Piccarda descombesi*, ♀ form *leucogæa*, Frühstorfer, l.c. Habitat, Sikkim.
- Prioneris jugurtha*, *Prioneris thestylis jugurtha*, Frühstorfer, l.c. p. 136. Habitat, Burma, Tonkin.
- Appias confusa*, *Appias albina confusa*, Frühstorfer, l.c. p. 154. Habitat, N. India, Tonkin.
- Appias libythea*, form *sopara*, Frühstorfer, l.c. p. 148. Habitat, Assam, Siam.
- Appias lycida*, form *galbana*, Frühstorfer, l.c. p. 149. Habitat, Nicobars, Palawan.
- Appias melania*, form *fasciata*, Frühstorfer, l.c. p. 155, pl. 61a. Habitat, Ceylon.
- Catophaga yaksha*, *Appias wardi yaksha*, Frühstorfer, l.c. p. 157. Habitat, Poona, Bombay.
- Hyposcritia statilia*, *Appias indra statilia*, Frühstorfer, l.c. p. 153, pl. 59d. Habitat, South India.
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- Genus *Tiora*, Evans, l.c.
- Tiora shandura*, *Tiora sebrus shandura*, Evans, l.c. Habitat, Chitral.
- Genus *Bryna*, Evans, l.c. type *stoliczkana*, Felder.
- Polyommatus gracilis*, *Lycæna devanica gracilis*, Evans, l.c. Habitat, Chitral.
- Lycænopis parishii*, *Cyaniris parishii*, de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xx. 1911, p. 763. Habitat, India.

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- Nacaduba kodi*, Evershed, Journ. Bo. Nat. Hist. Soc. xx. 1911, p. 387. Habitat, India.
- Nacaduba dima*, *Nacaduba ardates* var. *dima*, de Rhé-Philipe, Journ. Bo. Nat. Hist. Soc. xx. 1911, p. 764. Habitat, Naga Hills.
- Genus *Zizeeria*, Chapman, Trans. Ent. Soc. 1910, p. 482, type *karsandra*, Moore.
- Genus *Zizina*, Chapman, l.c. type *sangra*, Moore, and *indica*, Murray.
- Genus *Zizula*, Chapman, l.c. p. 483, type *gaika*, Trimen.
- Ilerda viridis*, *Ilerda androcles viridis*, Evans, l.c. xxi. 1912, p. 989. Habitat, Upper Burma, Assam.
- Arhopala watsoni*, *Arhopala ganesa watsoni*, Evans, l.c. p. 993. Habitat, Upper Burma.



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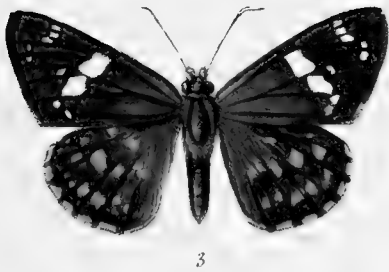
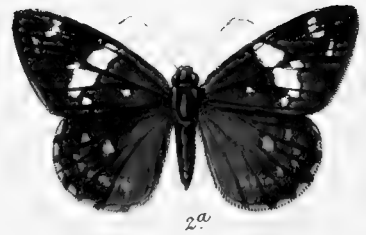
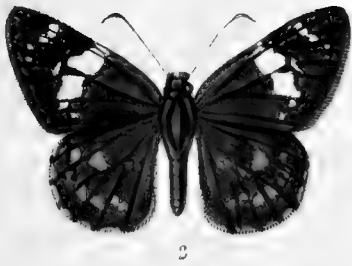
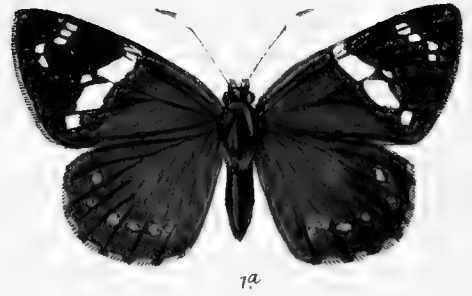
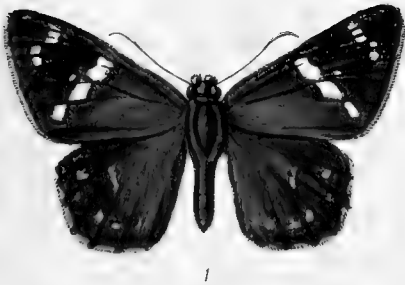
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*Spindusis*, ix. 157.  
*Stabrobates*, iii. 146; iv. 15; x. Addenda.  
*Stropes*, x. 111.  
*Sterosis*, viii. 250.  
*Stibochiona*, iii. 48, 76.  
*Stiboges*, v. 100.  
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*Stimula*, x. 138.  
*Strymon*, viii. 253.  
*Suada*, x. 142.  
*Suasa*, ix. 77, 97.  
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*Sumalia*, iii. 146, 150.  
*Suralaya*, i. 153, 217.  
*Surendra*, viii. 126, 285.  
*Symbrenthia*, iv. 110; x. Addenda.  
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*Symphadra*, iii. 49, 56.  
*Symphædra*, iii. 59, 67.  
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*Syntarucus*, viii. 49.  
*Syrictus*, x. 98.  
*Tachyris*, vii. 16.  
*Tachyris*, vi. 221; vii. 2, 15.  
*Tacola*, iii. 146, 192.  
*Tacorau*, iii. 146, 176.  
*Tadumia*, v. 116.  
*Tagatsia*, iii. 146; iv. 28.  
*Tagiades*, x. 39.  
*Tajuria*, ix. 77, 101.  
*Talicada*, vii. 275.  
*Tamela*, x. 207.  
*Tamera*, vi. 73; x. Addenda.  
*Tanæcia*, iii. 49, 83.  
*Tansima*, i. 154, 273; x. Addenda.  
*Tapena*, x. 58.  
*Taractrocera*, x. 110, 115.  
*Taraka*, vii. 236.  
*Tarattia*, iii. 146, 154.  
*Tarucus*, vii. 249.  
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*Taxila*, v. 90.  
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*Tenaris*, ii. 212.  
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*Terinos*, iv. 194.  
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*Thamala*, ix. 197.  
*Thanaos*, x. 95, 109.  
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*Thauria*, ii. 173, 185.  
*Thecla*, viii. 261.  
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*Thoressa*, x. 284.  
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*Thyca*, vii. 163, 175.  
*Thymipa*, i. 155; ii. 57, 58; x. Addenda.  
*Ticherra*, ix. 204.  
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*Tira*, x. Addenda.  
*Tirumala*, i. 29; x. Addenda.  
*Tiruna*, i. 70, 132.  
*Tongeia*, vii. 262.  
*Tothrix*, ix. 233.  
*Trepsichrois*, i. 70, 99; x. Addenda.  
*Trigonia*, vii. 16.  
*Troides*, v. 138; x. Addenda.  
*Tronga*, i. 69, 76.  
*Tros*, v. 172.  
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*Udaspes*, x. 204.  
*Una*, vii. 233, 279.  
*Unkana*, x. 156.  
*Vacciniina*, viii. 12.  
*Vadebra*, ix. 37.  
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*Ypthima*, i. 155; ii. 57, 75; x. Addenda.  
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*Zalapia*, iii. 49, 135.  
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*Zampa*, x. 224.  
*Zarona*, viii. 123.  
*Zea*, x. 220.  
*Zehala*, ix. 229.  
*Zela*, x. 224.  
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*Zemeros*, v. 95.  
*Zephyrus*, viii. 261.  
*Zesius*, ix. 154.  
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*Zetides*, vi. 1; x. Addenda.  
*Zeuxidia*, ii. 172, 173.  
*Zigeeria*, x. Addenda.  
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*Zizera*, vii. 253.  
*Zizina*, x. Addenda.  
*Zizula*, x. Addenda.  
*Zographetus*, x. 185.  
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Vincent Brooks, Day & Son, Ltd imp.

L. Reeve & Co London





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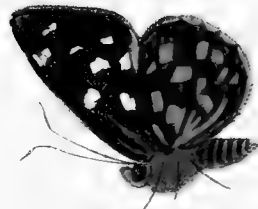
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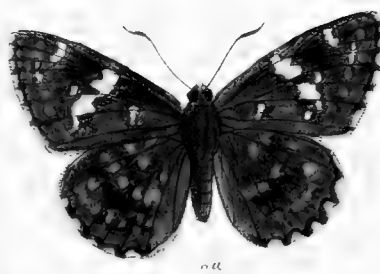


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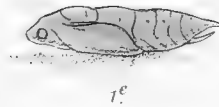
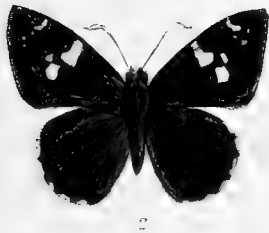
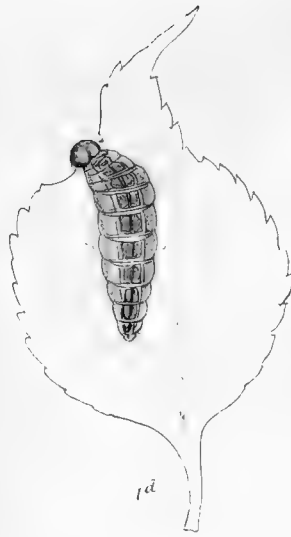


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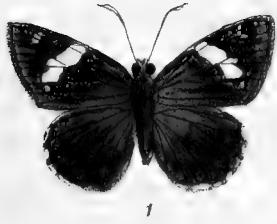


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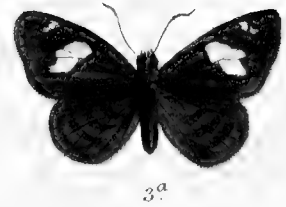


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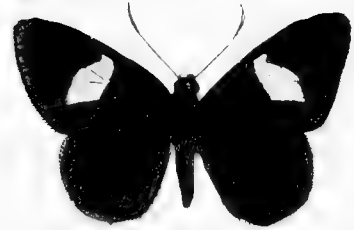








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2<sup>b</sup>



2<sup>c</sup>



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3<sup>a</sup>



3<sup>b</sup>



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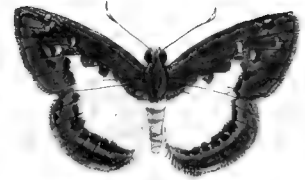


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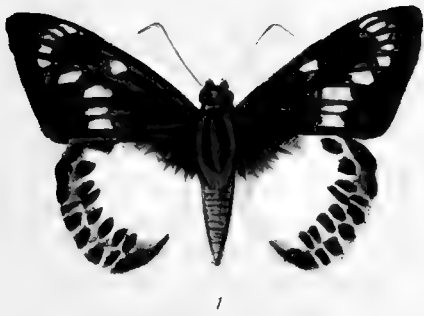


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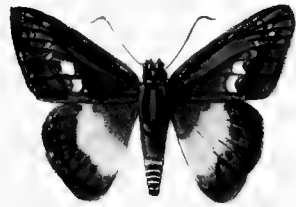
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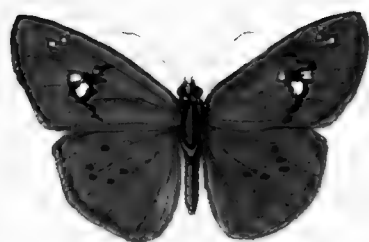


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1<sup>a</sup>



1<sup>b</sup>



1<sup>c</sup>



1<sup>d</sup>



1<sup>e</sup>



1<sup>f</sup>



1<sup>g</sup>



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2<sup>a</sup>



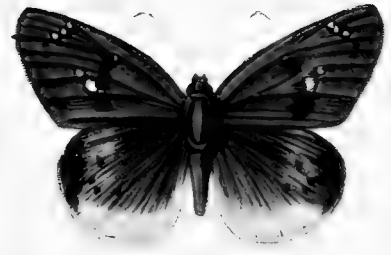




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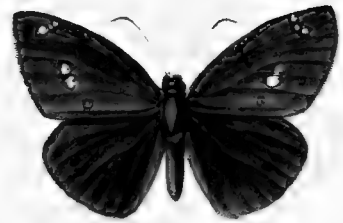
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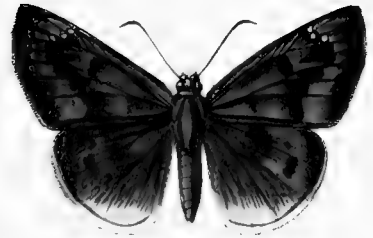


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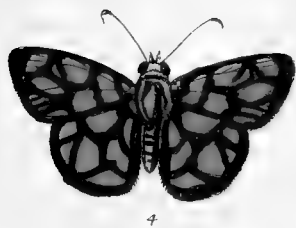
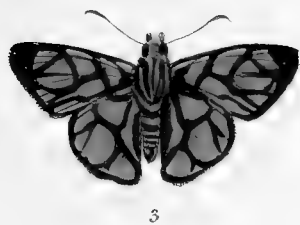


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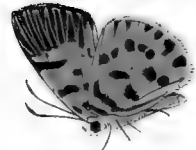
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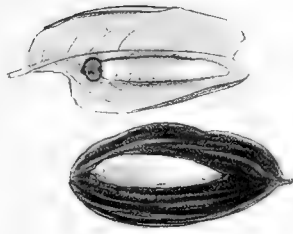
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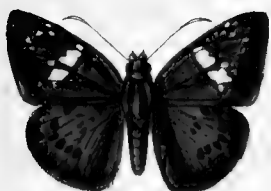
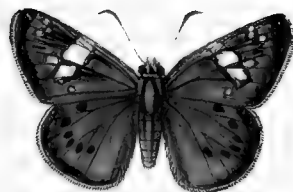


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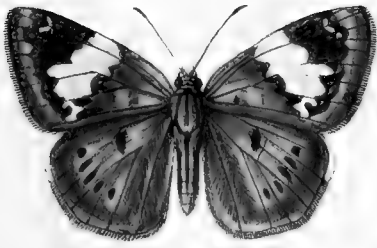


2d

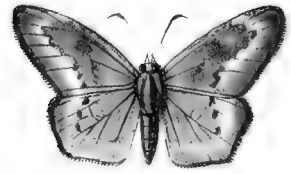




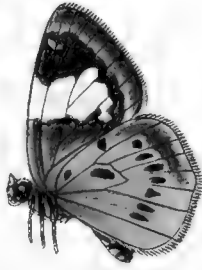




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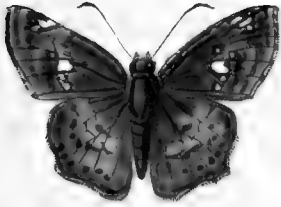
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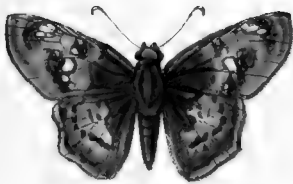
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3<sup>b</sup>



3<sup>c</sup>



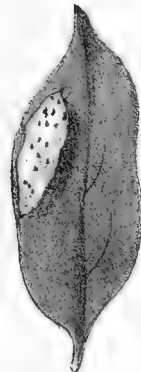
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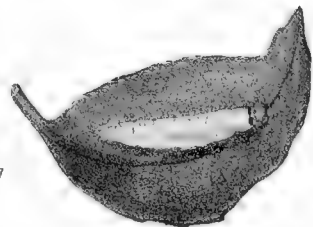
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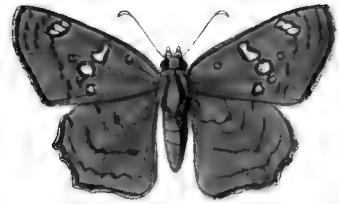
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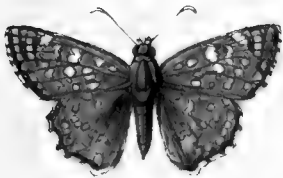
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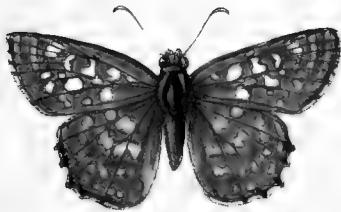
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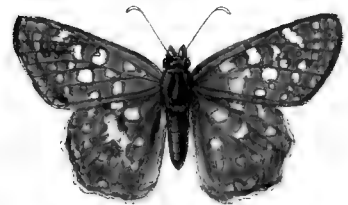
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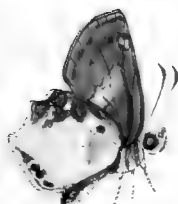
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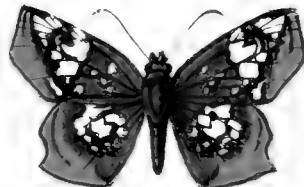
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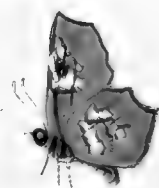
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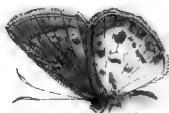
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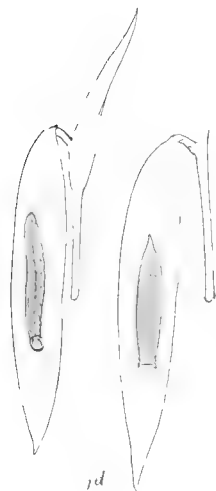




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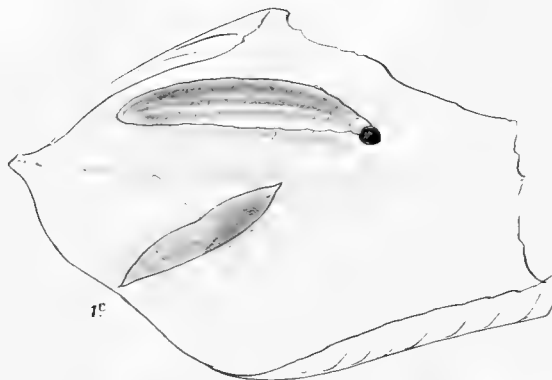
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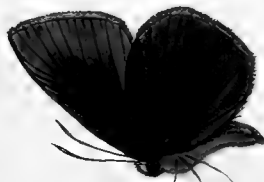
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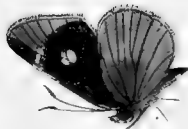
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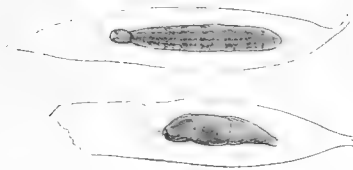
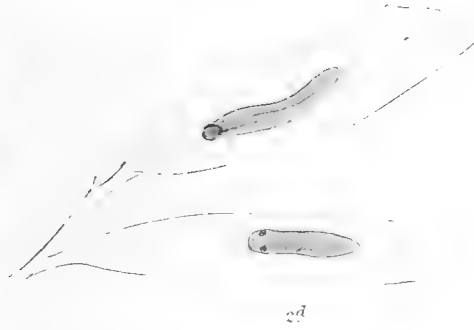
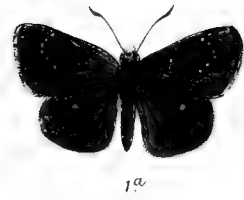


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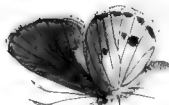
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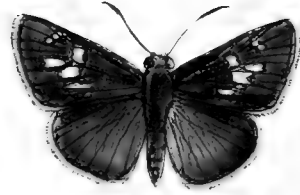


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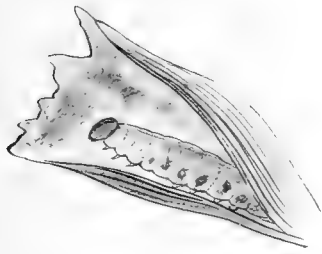
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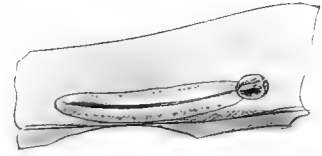
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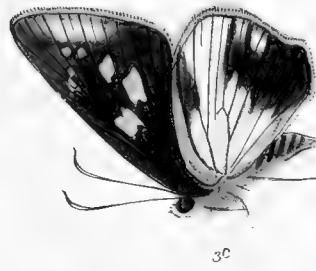
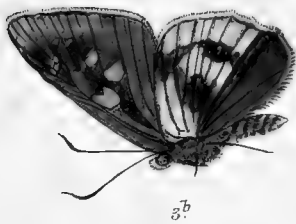
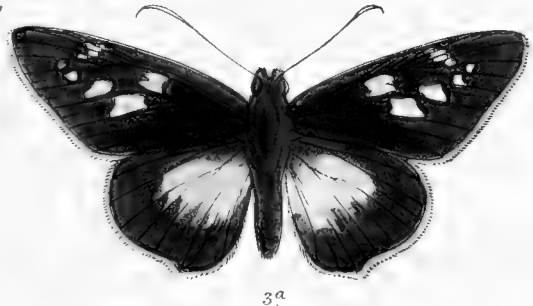
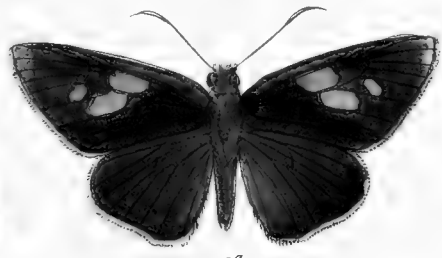
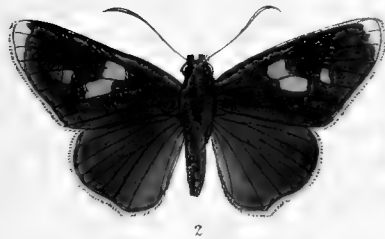
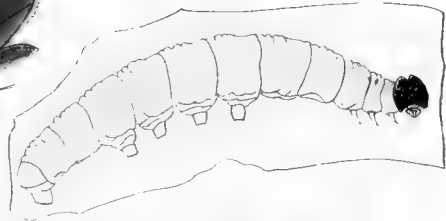
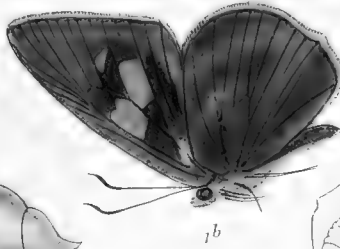
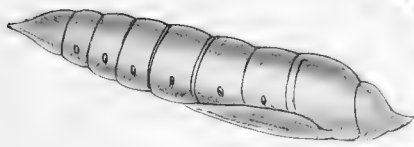
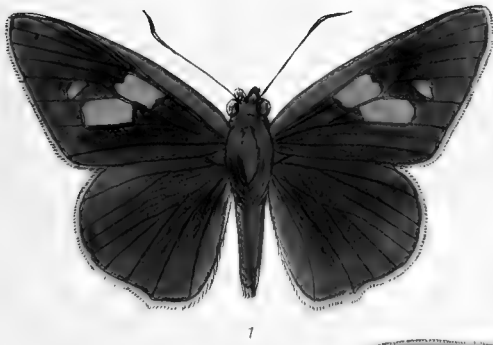


3

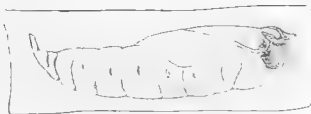
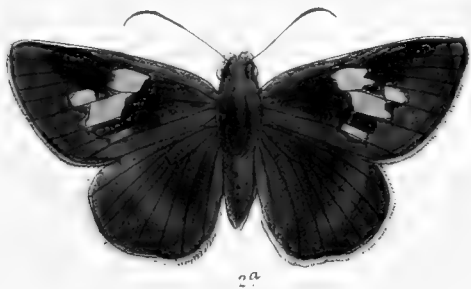
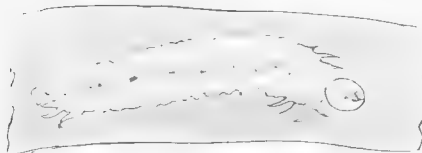
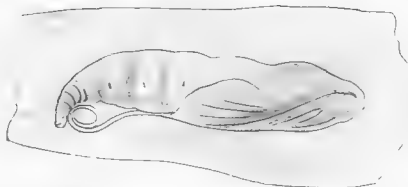
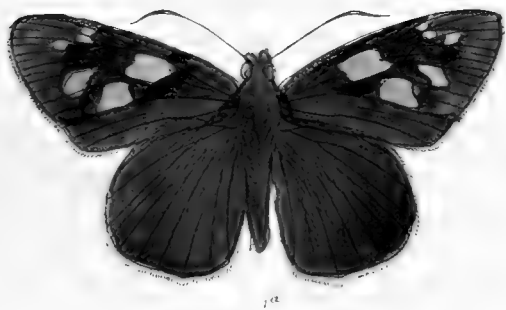


3<sup>a</sup>



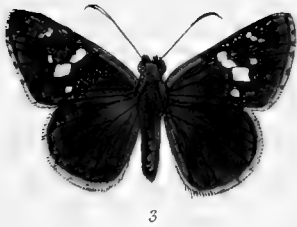
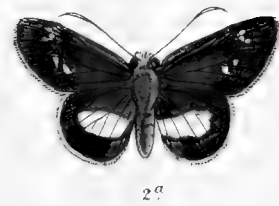




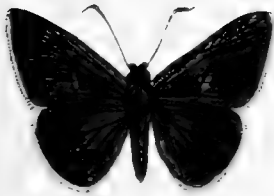








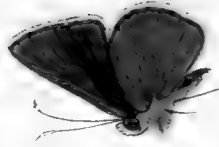




1



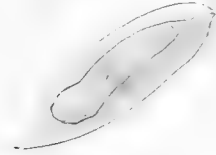
1a



1b



1c



2



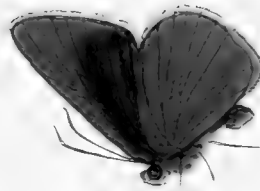
2a



3

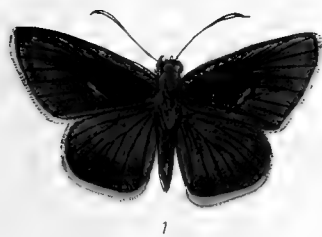


3a



3b





1



1<sup>a</sup>



1<sup>b</sup>



2



2<sup>a</sup>



2<sup>b</sup>



3

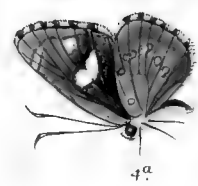
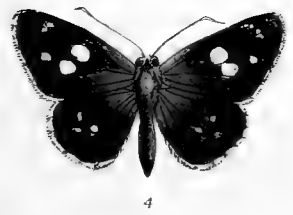
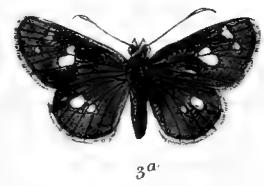
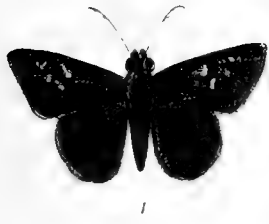


3<sup>a</sup>



3<sup>b</sup>





J.N.Fitch del et lith

Vincent Brooks, Day & Son Lith







1



1<sup>a</sup>



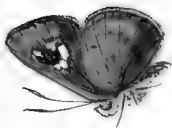
1<sup>b</sup>



2



3



2<sup>a</sup>



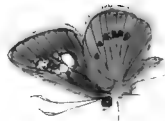
3<sup>a</sup>



4



4<sup>a</sup>



4<sup>b</sup>

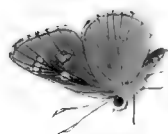




1



1<sup>a</sup>



1<sup>b</sup>



2



2<sup>a</sup>



2<sup>b</sup>



2<sup>c</sup>



2<sup>d</sup>



2<sup>e</sup>



3



3<sup>a</sup>





1



1<sup>a</sup>



2



1<sup>b</sup>



2<sup>a</sup>



3



3<sup>b</sup>



3<sup>a</sup>



4



4<sup>b</sup>



4<sup>a</sup>



5



5<sup>b</sup>



5<sup>a</sup>





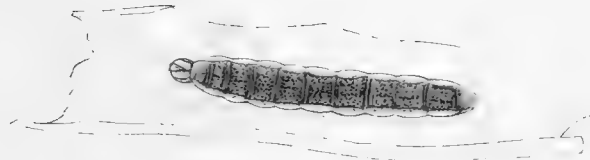
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1<sup>b</sup>



1<sup>a</sup>



1<sup>c</sup>



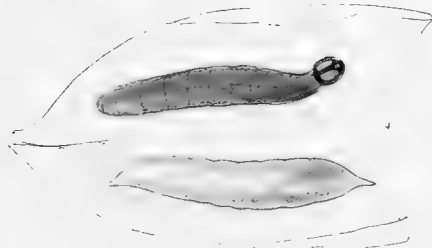
2



2<sup>b</sup>



2<sup>a</sup>



2<sup>c</sup>



3



3<sup>b</sup>



3<sup>a</sup>

J. N. Fitch del. et lith.

Vincent Brooks, N. Y. & Son. Lith. & Imp.

L. F. F. & Co. London.







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1<sup>a</sup>



1<sup>b</sup>



2



2<sup>a</sup>



2<sup>b</sup>



3

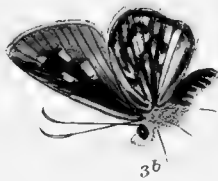
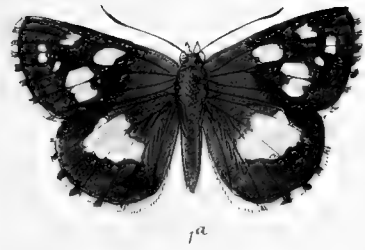


3<sup>a</sup>

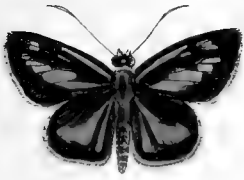


3<sup>b</sup>









1



1<sup>a</sup>



2



1<sup>b</sup>



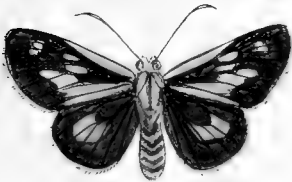
2<sup>a</sup>



3



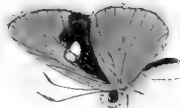
3<sup>a</sup>



4



4<sup>a</sup>



5<sup>b</sup>



5



5<sup>a</sup>

J.N.Fitch del. et lith.

Vincent Brooks, Day & Son, Lith.





1



1<sup>a</sup>



1<sup>b</sup>



2



2<sup>a</sup>



2<sup>b</sup>



3



3<sup>a</sup>



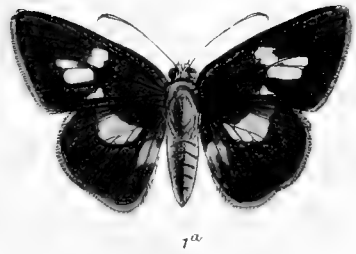
3<sup>b</sup>







1



1<sup>a</sup>



1<sup>b</sup>



2



2<sup>a</sup>



2<sup>b</sup>



3



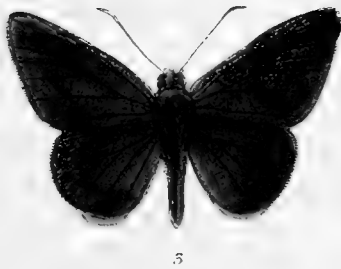
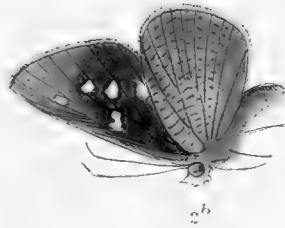
3<sup>a</sup>

J.N.Fitch del et lith

Vincent Brooks, Day & Son Lithy

L. Reeve & Co London



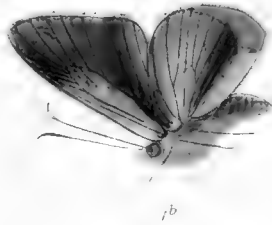


J. N. Fitch del. et lith.

Vincent Brooks, Day & Son Lith'rs

J. Reeve & Co. London.

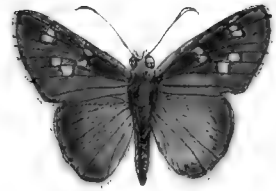




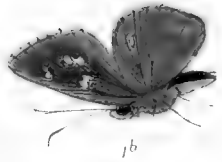




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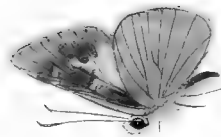
1<sup>a</sup>



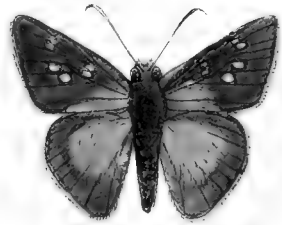
1<sup>b</sup>



2



2<sup>b</sup>



2<sup>a</sup>



3



3<sup>b</sup>



3<sup>a</sup>



3<sup>c</sup>







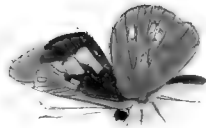
1



1<sup>a</sup>



2



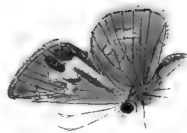
2<sup>b</sup>



2<sup>a</sup>



3



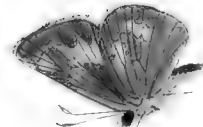
3<sup>b</sup>



3<sup>a</sup>



3<sup>b</sup>



3<sup>b</sup>





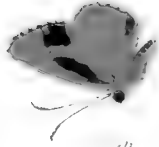
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10



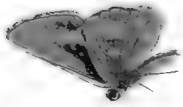
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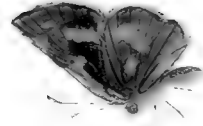
11



12



13



14



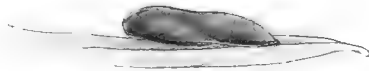
15



3



16



38



39





1



1a



1b



1a'



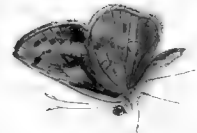
2



2a



2b



2a'



3



3b



3a





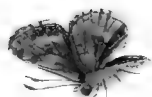
1



1a



1b



2b



1c



2



2a



2c



3



3a



3b



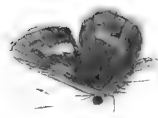




2



3



4







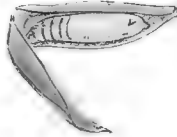
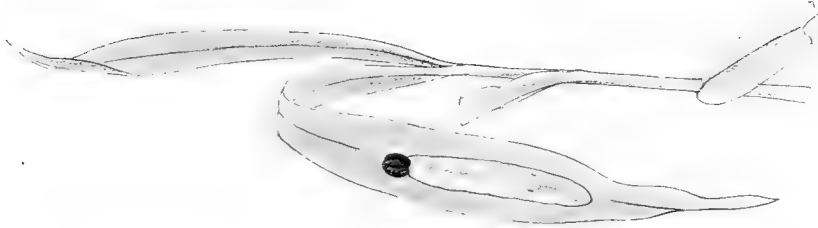
1



1b



1a



1c



2



2a



2b



3



3a



3b





1



11



1b



2



2a



3



3a



4



5



4b





1



1<sup>a</sup>



1<sup>b</sup>



2



2<sup>a</sup>



2<sup>b</sup>



3



3<sup>a</sup>



3<sup>b</sup>



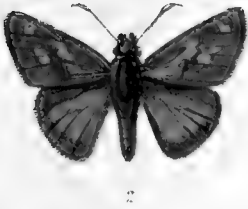
4



4<sup>a</sup>











1



1<sup>a</sup>



1<sup>b</sup>



2



2<sup>a</sup>



2<sup>b</sup>



3



3<sup>a</sup>















1



1a



1b



2



2a



2b



3b



3c



3



3a



2



*Baoris scopulifera*, Moore.

4



*Baoris leechi*, Elwes.

Hurb coll.

1



*Baoris occia*, Hew.

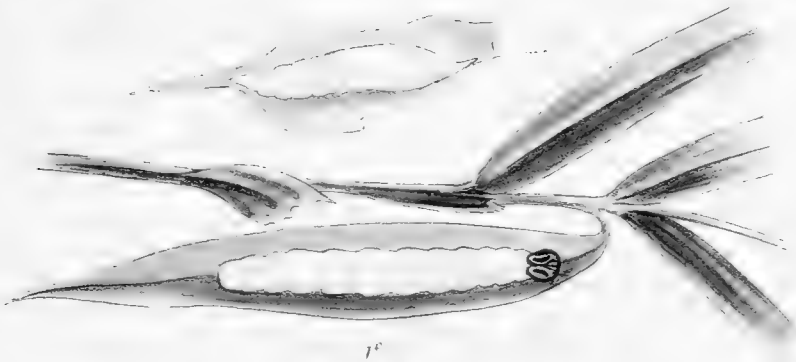
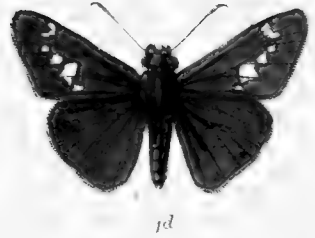
3



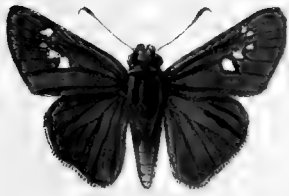
*Baoris unicolor*, Moore.

L. Reeve & Co London









1



1<sup>a</sup>



1<sup>b</sup>



2<sup>a</sup>



2<sup>b</sup>



2



3



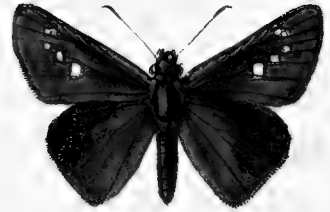
3<sup>a</sup>







1



1<sup>a</sup>



1<sup>b</sup>



2



2<sup>a</sup>



2<sup>b</sup>



2<sup>c</sup>



2<sup>d</sup>



3

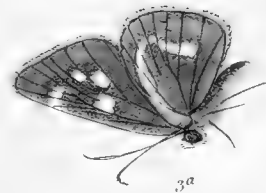
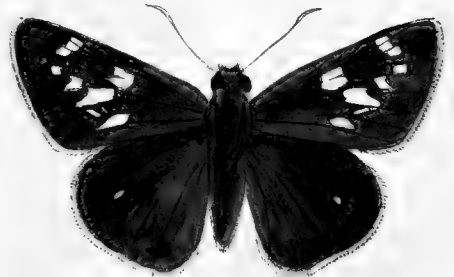
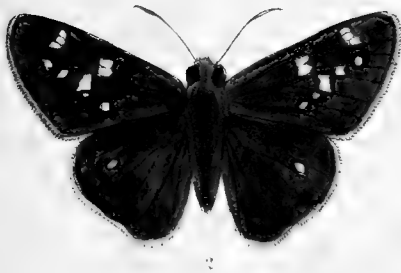


3<sup>a</sup>





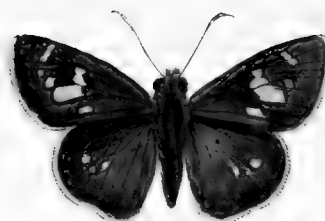








1



1<sup>a</sup>



1<sup>b</sup>



2



2<sup>a</sup>



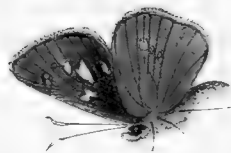
2<sup>b</sup>



3



3<sup>a</sup>



3<sup>b</sup>







1



1b



1a



1c



2



2b



2a



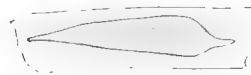
3



3b

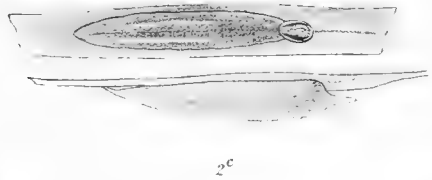
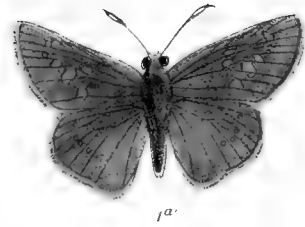


3a

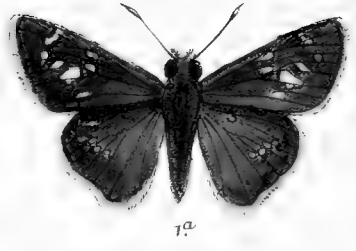


3c



















1



1a



2



m



2a



2b



2c



3



3a



3b



3c









