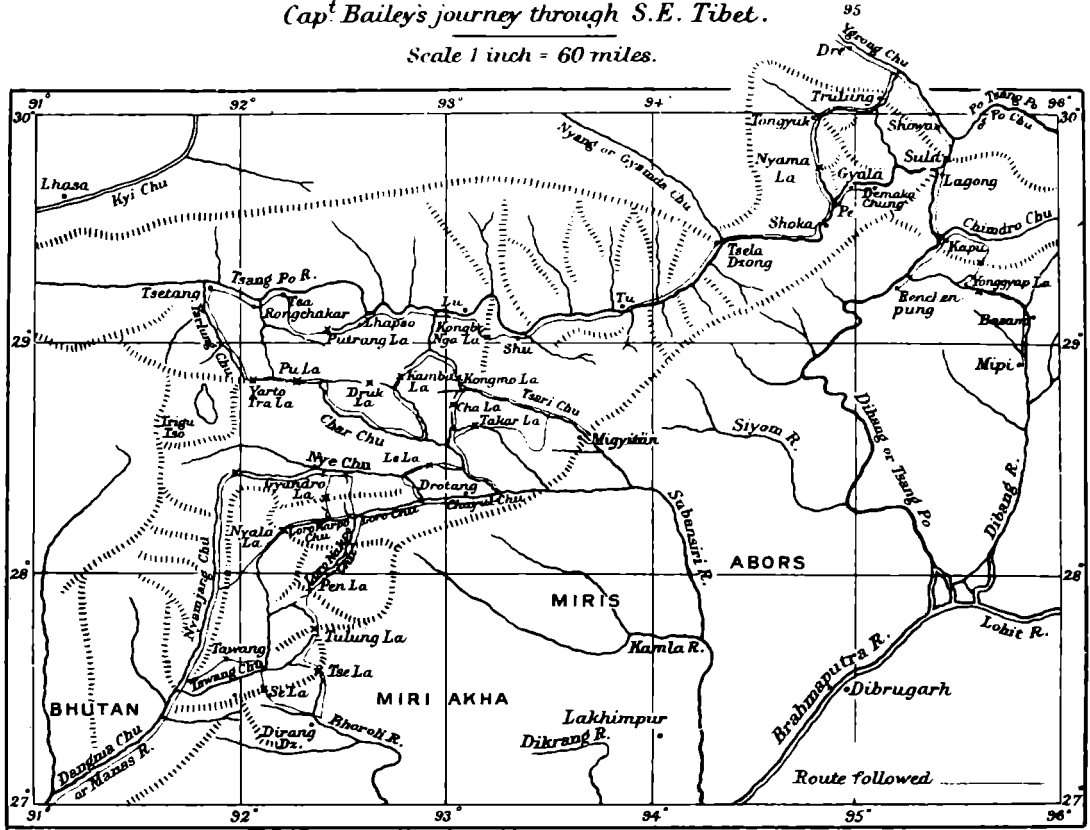

[From the JOURNAL OF THE BOMBAY NATURAL HISTORY SOCIETY,
February 2, 1915.]

**A LIST OF BUTTERFLIES CAUGHT BY CAPT. F. M.
BAILEY IN S. E. TIBET DURING 1913. (With a Plate
and a Map.) BY CAPT. W. H. EVANS, R. E.**

Sketch map of
Cap^t Bailey's journey through S.E. Tibet.

Scale 1 inch = 60 miles.



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A LIST OF BUTTERFLIES CAUGHT BY CAPT. F. M.
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CAPT. W. H. EVANS, R. E.

(With a Plate and a Map.)

In 1913 Capts. Bailey and Morshead succeeded in traversing a previously unexplored tract of country in S. E. Tibet. A full account of their journey will be found in the proceedings of the Royal Geographical Society; the following brief narrative and the map will, however, help in explaining the localities mentioned in the list of butterflies.

Leaving the Mishmi country and the valley of the Dibang river in the middle of May, they travelled through the country east of the Tsang Po (= Dihang) arriving at Kapu on that river on June 5th. Thence they travelled down the river as far as Runchenpung and then up again to Lagong (June 19th), where the Tsang Po pierces the main range, which separates India from Tibet. Above Lagong the route along the river is impassable except during the winter month and accordingly the travellers struck north over the Su La (June 23rd) into the valley of the Po Chu. They spent several weeks exploring the Po Chu and its tributaries, the Ygrong Chu and the Rong Chu, eventually crossing the Nyama La (July 13th) and reaching the Tsang Po again at Pe (July 13th). From Pe they went down the Tsang Po as far as Pemako Chung (July 21st) and then back again to Pe (Aug. 4th). The course of the Tsang Po was followed up as far as Shu (Aug. 18th) where a slight detour to the south over the Kongbo Nga La (Aug. 18) was found necessary; a second detour over the Putrang La (Aug. 28th) was made later. At Tsetang (Aug. 29th) the Tsang Po was left for good and the explorers struck south up the Yarlung Chu and over the Yartotra La (Sept. 2nd) and then over the Pu La into the valley of the Subausiri (Sept. 4th). They went down the Char Chu for four days and then up the Karpo Chu over the Kumba La into the basin of the Tsang Po; thence over the Kongmo La

(Sept. 12th) into the Tsari Chu valley, another branch of the Subansiri. The Tsari Chu was followed down as far as Migyitun (Sept. 18th), whence they re-entered the Char Chu Valley *via* the Tanga La (Sept. 21st): this valley was left at Charme (Sept. 22nd) and the Nye Chu [Sept. 26th), entered *via* the Le La. They went down the Nye and Chayul valleys as far as Drotang and then up the Chayul Chu, called the Loro in its upper reaches, into the Loro Napko Chu. On October 2nd they left the basin of the Subansiri by the Pen La and proceeded *via* the Tulung La and the Tse La down to Dhirang (Oct. 12th) on a tributary of the Bhoroli river. This tributary was followed to its source and, crossing the Se La, they reached Tawang on October 16th. After exploring the Nyamjang Valley and the upper waters of the Nye and Loro rivers they travelled through Eastern Bhutan and reached Dewangiri in Assam on November 13th. It may be noted that "Chu" means river and "La" pass in Tibetan.

Captain Bailey had previously taken a considerable interest in butterflies as may be seen from Mr. South's paper on the butterflies caught by him in 1911 in S. E. Tibet and the Mishmi Hills (J. B. N. H. S. XXII. 345 and 598). The country traversed in 1911 lies to the east of that dealt with in this paper and his two journeys have succeeded in practically linking up the fairly well-known district, Chumbi Valley, Gyangtse, with Western China (Szechuan). About 2,000 butterflies were obtained in 1913 belonging to nearly 200 species.

From a natural history point of view, the country traversed may be divided into five well-marked districts:—

A.—The Lower Tsang Po Valley, known as Pemako, below the gorge where the river breaks through the main range, also the country to the east towards the Mishmi Hills, May 15th to June 23rd. A densely wooded district with a heavy rainfall, elevation 3,000 to 7,000 feet. Here the greatest number of species were obtained, as might perhaps have been expected. The fauna resembled that of Upper Assam, showing a transition more or less to that of Western China. Of the 102 species captured the following may be noted as of especial interest:—

Erebia narasingha, M.

Eulepis narcaea, Hewt.

Lethe armandii, Oberth.

Ypthima methorina medusa, Leech.

Calinaga davidis, Oberth.

Gonepteryx amintha, Blanch.

B.—The Po Chu Valley, district Pome, June 23rd to July 13th, well wooded with a moderate rainfall; elevation 7,000, passes up to 14,300 feet. This proved an interesting country, as, though the Po Chu is a tributary of the Tsang Po, the two valleys are separated

by snowy ranges. As compared with the Lower Tsang Po district, a marked change is noticeable in the fauna and all the 64 species obtained were palæarctic; of these the following were of interest:—

Pararge tibetana albicans, South.

Argynnis paphia and *gong*.

Four *Aporias*.

A large form of *Lycæna pheretes*.

Two *Pamphilus*.

Three *Erebius*.

Melitæa sindura jezabel.

Cyaniris oreas.

|| *Celenorrhinus tibetana*.

Augiades bouddha, Mab.

C.—The Upper Tsang Po Valley, July 13th to end of August; elevation 8,500 to 11,000 feet, passes considerably higher. The lower portion of this district, between Pe and Pemako Chung was similar in character to the Po Chu Valley; higher up the country was more like the dry barren mountainous region to the south, which was traversed later. 43 species were obtained, many of which had already been captured in the Po Chu Valley, while others were obtained in the next district.

The following species were not encountered elsewhere:—

A variety of one of the Po Chu *Erebius*.

Aphantopus hyperanthus.

Argynnis rubra and *jainadeva*.

Gonepteryx alvinda.

Zephyrus bieti, icana and *suroia*, Tytler.

Apatura iris bieti.

Hyporion lama.

Everes ion.

D.—The mountainous country lying around the upper waters of the Subansiri between the Tsang Po and main range, which separates India from Tibet, September; elevation 11,000 to 16,000 feet. A dry barren country, which produced only 24 species, closely resembling in character the butterflies obtained in the Chumbi Valley and round Gyangtse; those of interest were:—

Vanessa urtica chinensis.

Argynnis eugenia reha and *gemmata genia*.

Cobias cocandica.

A new species of *Lycæna*.

Melitæa didyma agar.

A new species of *Cyaniris*.

Zephyrus duma.

E.—The densely wooded country about eastern border of Bhutan within the watershed of the Bhoroli river, October; elevation 5,000 to 8,000 feet. Most of the 80 species obtained belong to forms

found commonly in Sikkim, the only butterfly of any interest being *Erebia annula polyphemus*. After October but little collecting was done.

1. *Danais melanea*, Cr. A single male at Dewangiri, 1,500 feet, Nov. 13th.

2. *Danais tytia*, Gray. 2 ♂ and 3 ♀ in the Lower Tsang Po district, the Po Chu Valley, at Dhiran and Dewangiri.

3. *Euploea mulciber*, Cr. 2 ♂ at Dhiring, 5,000 feet, October.

4. *Pararge masoni*, Elwes. 1 ♀, Migyitun, 10,000 feet, Sept. 15th.

5. *Pararge tibetana albicans*, South. 32 specimens mostly in the Po Chu Valley at 7,500 to 10,500 feet in June and a few along the Tsang Po in July between Gyala and Kongbo Nga La, 9,000 to 12,500 feet.

They agree with Mr. South's description of the single specimen obtained by Capt. Bailey on his former trip (J., B.N.H.S., xxii., 346).

6. *Rhaphicera satricus*, Doubl. 1 ♂, Po Chu valley, July 7th, 8,000 feet.

7. *Satyryus pumilus bicolor*, Stlg. 20 specimens at the end of August and in the beginning of September, 13,000 to 16,000 feet, on the Tsang Po between Kongbo Nga La and Tsetang, on the Yartotra La and in the Char Chu and Karpo valleys.

8. *Satyryus loha*, Doherty. 13 specimens mostly males at 6,000 to 8,000 feet in October and November between Tawang and Kyeri near the Bhutan border.

9. *Satyryus loha chumbica*, M. 9 males between Pemako Chung and Kongbo Nga La on the Tsang Po in August, 7,500 to 12,500 feet. 8 females in September in the Karpo Valley and at Migyitun at 10,000 to 12,500 feet. In many of the males the band was quite yellow, especially on the underside.

10. *Satyryus saraswati*, Koll. 11 worn specimens in the neighbourhood of Dhirang about the middle of October at 6,000 feet.

11. *Erebia pomena*, n. sp. (see plate). 56 specimens, including one pair in copula, mostly in the Po Chu Valley, a few at Lagong and Pemako Chung on either side of the gorge where the Tsang Po breaks through the main range; June and July, 4,500 to 9,600 feet.

Above dark velvet brown, as in *shallada*, Lang; a small apical ocellus on the forewing, single pupilled and narrowly ringed with obscure fulvous; a similar subanal ocellus on the hindwing, the fulvous ring of which is elongated outwardly and beyond there is an obscure fulvous area continued along the margin to vein 3. Below the forewing is bright fulvous except for a narrow brown area sprinkled with white scales beyond the apical ocellus; this area is continued narrowly along the outer margin and bears inwardly a dark line in addition to the terminal dark line; the inner margin somewhat broadly, the costa and base narrowly dusky; the apical ocellus as above but the fulvous ring lighter and more clearly defined. The hindwing dark brown overlaid with whitish scales; an anal ocellus in space 1 similar to the apical ocellus on the forewing and above a series of postdiscal prominent white spots in spaces 2 to 5; an ill-defined irregular-brown discal and a similar, but more obscure, subbasal line; dark subterminal and terminal lines as on the forewing. Female as male; above the apical ocellus is better defined and surrounded inwardly to the end of the cell and below to vein 3 by a fulvous area, prominent in some specimens and obscure in others; below the tone is brighter and all the markings are more clearly defined. The outer margin in both sexes is straight. In the male there is an obscure patch or modified scales on the central third of the forewing

extending from the dorsum to the costa. Expanse $2\frac{1}{2}$ inches. Types in copula, Tongto, 7,500 feet, June 30th.

The new species most nearly resembles *shallada*, Lang, and is sufficiently characterised by the straightness of the outer margin and the presence of the subanal ocellus on the hindwing.

12. *Erebia pomena shuana*, sub-sp. n. (see plate). 32 specimens along the Tsang Po between Timbe and Kongbo Nga La, 10,000 to 12,500 feet, August 5th to 18th; mostly at Shu.

Closely allied to *pomena*. The apical ocellus on the forewing is three times as large and the white pupil is very prominent; in the female there is occasionally a second minute pupil. The fulvous anal area on the hindwing is more extensive and much lighter, usually confluent with the ring of the ocellus. Below paler and all the markings wider. Expanse $2\frac{1}{2}$ inches.

13. *Erebia phyllis gyala*, sub-sp. n. (see plate). 28 specimens including one pair in copula, late June to early August, 8,000 to 11,000 feet; a few in the Po Chu Valley and the bulk at Pe on the Tsang Po. Also a single aberrant specimen a good deal higher up the river at Tsa near Rongchakar, 12,000 feet, August 28th.

Differs from *phyllis*, Leech in the following particulars. The ocellus on the forewing above is bordered with bright fulvous; on the hindwing there is a subanal ocellus set on a fulvous area, which is extended upwards along the margin; rarely this ocellus is absent and the fulvous area is restricted. On the hindwing below there is an irregular sub-basal and discal narrow brown line, often prominent and occasionally obsolete; the discal band is often bordered outwardly with dull yellow patches. There is nearly always a subanal ocellus and the white spots above may be prominent or obsolete.

This race is very near *inconstans*, South (J., B. N. H. S., xxii., 350) and only differs in the presence of the subanal ocellus on the hindwing; specimens without the ocellus cannot be separated from *inconstans*.

In the single female from Tsa the apical ocellus is inwardly bordered by the fulvous area, but this area does not extend below the ocellus; below the bands on the hindwing are very prominent and in addition there is a sub-terminal band; the white spots are clearly defined but very minute, and the anal ocellus is absent.

14. *Erebia tsirava*, sp. n. (see plate). 10 males in the Po Chu Valley and one at Pemako Chung on the Tsang Po, 7,500 to 9,000 feet, June 30th to August 7th.

Closely allied to, if not a race of, *annada*, M; smaller, about the size of *oriaa*, M. Above it is very similar to typical *annada*, but the fulvous area below the ocellus is rather more developed, while the ocellus itself is smaller and more rounded. Below the looped band is absent from round the ocellus on the forewing; the hindwing bears a single small subanal ocellus, while the dorsal and outer margins are broadly covered with closely set white scales, leaving only a broad rectangular dark-brown costal area.

15. *Erebia annada polyphemus*, Oberth. A worn male at Tawang, 8,000 feet in October.

16. *Erebia narasingha*, M. 7 ♂, Lower Tsang Po, 3,000 to 6,000 feet, June 4th to 19th.

17. *Aphantopus hyperanthus luti*, sub-sp. n. (see plate). 54 specimens at 9,000 to 10,000 feet on the Tsang Po between Pemako Chung and Tu, July 17th to August 13th.

Above dark-brown with white cilia, bearing 3 ocelli on the forewing and 2 on the hindwing with narrow but well defined dull yellow irides, as in the

form *ocellatus*. In specimens from the Amur and Corea, the ocelli are prominent in the female but tend to obsolescence in the male. Below rather pale, brown obscurely dusted over with white, especially on the hindwing where the veins are finely white; the ocelli as on the upperside but with broader brighter yellow irides; on the hindwing there is an additional ocellus in space 5, with often a small one adjoining it above, also a small ocellus in space 1. The ocelli above are usually pupilled and below always so. Very near *ocellatus*, differing conspicuously in the paleness of the colouring on the underside.

18. *Zipatis scylax*, Hewit. Two males on the Lower Tsang Po, at 3,000 feet early in June.

19. *Ypthima newara*, M. 42 specimens on the Lower Tsang Po and in the Po Chu Valley, also one at Pemako Chung, at 3,000 to 9,000 feet in June and July; a single specimen at Dhirang, 5,000 feet in October.

They agree best with the eastern race *sarcaposa*, Fruh, of which I have specimens from Manipur. They may, however, be referable to *chinensis*, Leech, which does not seem to be specifically distinct from *newara*.

20. *Ypthima baldus*, Fabr. 1 ♂, Dewangiri, 1,000 feet, November.

21. *Ypthima affectata*, Elwes and Edw. 2 ♀, Lower Tsang Po, 3,000 feet, June.

22. *Ypthima methorina medusa*, Leech. 4 specimens on the Lower Tsang Po, 3,000 to 8,000 feet in early June. Agrees as to races with the Indian *persimilis*, El and Ed, but is smaller and with the wings rounded.

23. *Ypthima sakra*, M. 69 specimens, 4,500 to 9,000 feet, mostly on the Lower Tsang Po, the Po Chu Valley and one at Pemako Chung, May to July, a few at Dhirang in October. They agree best on the whole with the Sikim form, true *sakra*, but many are inseparable from the eastern race *austeni*, M. In most of the specimens the subterminal dark areas on the underside are obsolete.

24. *Lethe dyrta*, Fd. 1 ♂, Dhirang, 5,000 feet, October.

25. *Lethe confusa*, Aurivill. 1 ♂, Dewangiri, 1,000 feet, November.

26. *Lethe verma*, Koll. 3 ♂, Lower Tsang Po, 6,000 feet, June and Dhirang, 5,000 feet, October.

27. *Lethe sidonis*, Hewit. 18 specimens, 5,500 to 10,000 feet; mostly in the Po Chu Valley, June and July; near Tawang, October; single specimens at Migyitun, September and on the Lower Tsang Po in June.

28. *Lethe visrava*, M. 1 ♂, 4,500 feet, Lower Tsang Po, June.

29. *Lethe nicetas*, Hewit. 2 ♀, near Dhirang, 6,000 feet, October.

30. *Lethe insana dinartas*, Hewit. 2 ♂, Lower Tsang Po, 5-6,000 feet, May and June.

31. *Lethe brisanda*, Den. 3 ♂, Lower Tsang Po, 5-6,000 feet, June.

32. *Lethe serbonis*, Hewit. 1 ♂ near Pe, 9,400 feet, on the Tsang Po on August 2nd and a ♀ near Dhirang, 7,000 feet, Oct. 10th.

33. *Lethe chandica*, M. 1 dry season ♂.

34. *Lethe distans*, Butl. 1 dry season ♂.

35. *Lethe scanda*, M. 2 ♂.

36. *Lethe bhairava*, M. 6 ♂.

37. *Lethe gulnihal*, de N. 1 ♂.

38. *Lethe sinoriv*, Hewit. 1 ♂.

39. *Lethe sura*, Doubl. 1 ♂.

40. *Lethe pulaha*, M. 1 ♂.

41. *Lethe arnandii*, Oberth. 2 ♂, dry season form.

42. *Lethe yama yamoides*, M. 1 ♂.

Nos. 33—42 all obtained on the Lower Tsang Po, 3—7,000 feet, in June.

43. *Neorina hilda*, Westw. 1 ♂ near Dhirang, 7,000 feet, October.

44. *Mycalesis mestra*, Westw. 1 ♂, Lower Tsang Po, 6,000 feet, June.

45. *Mycalesis suavolens*, de N. 4 ♂, Lower Tsang Po and Po Chu Valley 5—8,000 feet, June and early July.

46. *Mycalesis visenus*, de N. 1 ♂; Lower Tsang Po, 3,000 feet, June.

47. *Melanitis phedima bela*, M. 1 ♂ dry season form.

48. *Anadebis himachala*, M. 5 specimens.

49. *Clerome eumeus assama*, Westw. 2 ♂.

50. *Thaumantis diores*, Westw. 1 ♂.

51. *Discophora tullia zal*, Westw. 1 ♂.

52. *Enispe euthymius*, Doubl. 1 ♂.

53. *Enispe cycnus*, Westw. 1 ♀.

54. *Eulepis dolon centralis*, Roth. Sch. 4 ♂.

55. *Eulepis eudamippus*, Doubl. 1 ♂.

Nos. 48—55 all obtained on the Lower Tsang Po, 3,000—7,000 feet in June.

56. *Eulepis narcaea*, Hewit. 25 ♂ Lower Tsang Po, 2,600—5,000 feet early in June.

57. *Apatura iris bieti*, Oberth. One pair on the Lower Tsang Po, below Pe at 9,000 feet at the end of July and early in August.

58. *Apatura parisatis*, Westw. 5 ♂ on the Lower Tsang Po, 3,000 feet in June.

59. *Euthalia franciæ*, Gray. 1 ♂, same locality as last.

60. *Euthalia phemiis*, Doubl. 1 ♂, Dewangiri, 1,000 feet, November.

61. *Euthalia telchinia*, Mènèt. 1 ♀, Lower Tsang Po, 3,000 feet, June.

I identify the specimen as *telchinia* with some doubt. It is dark-brown above, the outer areas beyond the cells being abruptly paler, but darkening slightly again towards the apex of the forewing and the outer margin of the hindwing. On the forewing the outer edge of the dark area is bent inwards at vein 2 and runs obliquely to the anal angle; there are two obscure pale bands in the cell and a discal row of similar spots near the bases of spaces 2—4. Beneath, the ground colour is pale olive-brown, the basal half of the hindwing being dusted with bluish white; there are the usual markings in the cells and a discal and subterminal band on both wings, the discal band on the forewing being much broken; the white spot in 2 is very large and prominent, those above it small and inconspicuous; the apex of the forewing is tipped with white.

62. *Liminitis austenia*, M. 3 ♂ on the Lower Tsang Po, 2,600 to 4,000 feet in June. The specimens were typical.

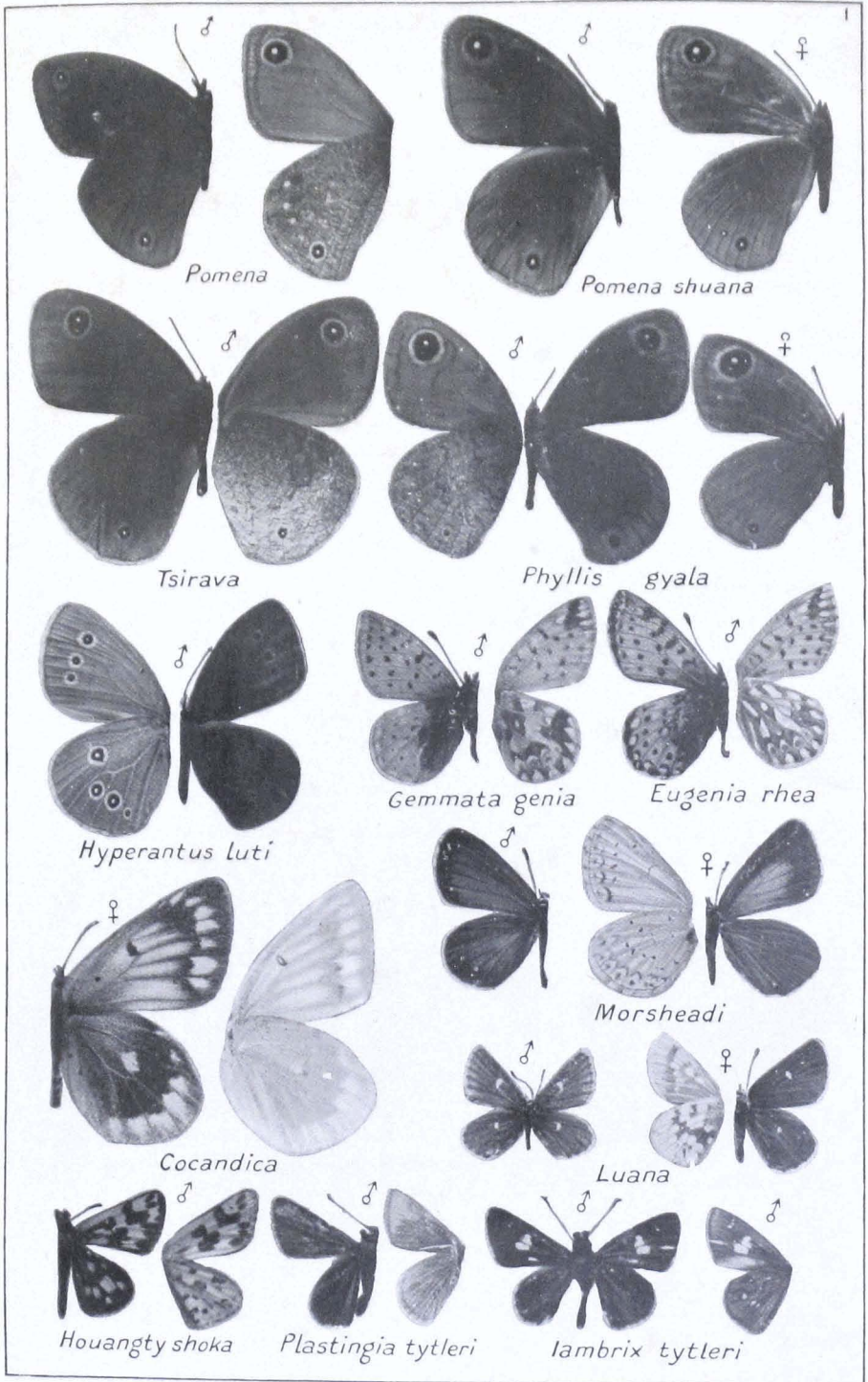
63. *Liminitis danava*, M. 1 ♂.

64. *Liminitis darava*, Doubl. 3 ♂.

65. *Liminitis dudu*, Westw. 1 ♂.

66. *Pantoporia asura*, M. 1 ♂.

- No. 63—68 on the Lower Tsang Po, 3,000 feet, June.
67. *Pantoporia jina*, M. 2 ♂, Lower Tsang Po, 5,500 feet, June and 1 ♂, Dhirang, 6,500 feet, October.
68. *Pantoporia opalina*, Koll. 4 ♂, Lower Tsang Po, 3,000 feet, June, Po Chu Valley, 7,500 feet, July and Dhirang, 6,500 feet, October.
69. *Neptis hylas evades*, M. 24 specimens at 3-4,000 feet, on the Lower Tsang Po in June, also near Dhirang, 6,500 feet, October.
70. *Neptis yerburyi*, Bntl. 4 specimens, Lower Tsang Po, 6,500 feet June, Po Chu Valley, 8,000 feet, June, and Dhirang, 6,500 feet, October.
71. *Neptis sankara*, Koll. 1 ♂, Po Chu Valley, 8,000 feet, July.
72. *Neptis zaida*, Doubl. 1 ♂ Lower Tsang Po, 3,000 feet, June. Differs from typical specimens in that on the upper side there is no trace of the discal streak extending into space 2 and that the underside is a good deal darker.
73. *Neptis vikasi harita*, M. 3 ♂ and 1 ♀, Lower Tsang Po, 3,000 feet, June, of the wet season form *pseudovikasi*, M.
74. *Cyrestis thyodamas*, Boisd. 3 ♂, Lower Tsang Po and Po Chu Valley, 3-7,000 feet, June and July.
75. *Junonia orthiya*, L. 16 specimens, Lower Tsang Po, June, and near Dhirang, October, 5-8,000 feet.
76. *Junonia hierta*, Fab. 1 ♂, Dhirang, 6,500 feet, October.
77. *Junonia atthes*, Johan. 1 ♂, Nyamjang Valley, 8,000 feet, October.
78. *Vanessa cardui*, L. 3 ♂, Po Chu Valley, 9,000 feet, June; Po, 10,000 feet, July; Nyamjang Valley, 8,000 feet, October.
79. *Vanessa indica*, Herbst. 5 specimens, Lower Tsang Po, 5,500 feet, June; Dhirang and Nyamjang Valley, 5,500-7,000 feet, October.
80. *Vanessa canace*, Johan. 1 ♂, Lower Tsang Po, 7,000 feet, June.
81. *Vanessa cashmiriensis*, Koll. 11 specimens, Dhirang, Tawang and the Nyamjang valley, 6-10,000 feet, October.
82. *Vanessa urticae chinensis*, Leech. 12 specimens; a few worn specimens in the Po Chu Valley, 8-10,000 feet, July; a few at the Po on the Tsang Po, 10,000 feet, July; the remainder in the high country, south of the Tsang Po, 12-15,000 feet, September.
83. *Vanessa ladakensis*, M. 28 specimens in the high country south of the Tsang Po, 14-16,000 feet, September.
84. *Vanessa e-album thibetana*, Elwes. 2 ♂, Po Chu Valley, 7,000 feet, July, and Karpo Valley, south of the Tsang Po, 12,500 feet, September.
85. *Araschnia prosvoides dohertyi*, M. 2 ♂, Po Chu Valley, 7,000 feet, July, and at Kongchakar on the Tsang Po, 9,000 feet, July.
86. *Symbrenthia hypselis cotanda*, M. 2 specimens, Lower Tsang Po 3-6,000 feet, June.
87. *Argynnis hyperbicus*, Johan. 9 specimens, Lower Tsang Po, 3-5,000 feet, May and June; Dhirang, 5,000 feet, October.
88. *Argynnis chidreni*, Gray. 6 specimens, Lower Tsang Po, 4-7,000 feet, June; Po Chu Valley, 7,000 feet, July; Dhirang, 7,000 feet, July.
89. *Argynnis paphia megalogoria*, Fruh. One pair Po Chu Valley, 7,000 feet, July. Very like the typical *paphia*, L., but larger and more brilliantly coloured.
90. *Argynnis laodice rudra*, M. 4 ♂, on the Tsang Po between Po and Tu, 9-10,000 feet, July and August. The specimens are intermediately



between *samana*, Fruh, from W. China and *rudra* from Assam; smaller and paler than *rudra*, though not so much so as *samana*; below no green at the apex of the forewing, therein resembling *samana*; the sub-basal brown band on the hindwing broad as in *rudra*.

91. *Argynnis adippe jainadeva*, M. 46 specimens on the Tsang Po between Gyala and Tu, 9-10,000 feet, July and August. Rather paler than typical *jainadeva*, but not so pale as the Ladak race *pallida*, Mihi.

92. *Argynnis lathonia issaa*, Doubl. 24 specimens, Lower Tsang Po and Po Chu Valley, 7-10,000 feet, June and July; Tawang, 10,000 feet, October.

93. *Argynnis clara manis*, Fruh. 8 specimens in the high country south of the Tsang Po, 10-15,000 feet, September.

94. *Argynnis gong*, Ober. One worn female, Po Chu Valley, 10,000 feet, July.

95. *Argynnis gemmata genia*, Fruh. (see plate). 24 specimens at 12-16,000 feet in the high country south of the Tsang Po in September; in several the silver colouring on the underside is replaced by yellow, and this variety may be called *fulva*, nov.

96. *Argynnis eugenia rhea*, Groum. (see plate). 42 specimens caught at 12-16,000 feet at Lu on the Tsang Po and in the high country to the south in August and September.

These two species are very similar in general appearance. In *genia* vein 10 is emitted at the end of the cell, thus it falls in true *Argynnis*, while *rhea* appertains to Moore's genus *Boloria*, as this vein is emitted well beyond the cell. I would, however, remark that this feature is of little value from a generic point of view, as in *clara*, Blanch, the vein is emitted well after the end of the cell and in the race *manis*, Fruh, just after that point. In the *gemmata* group, which includes *eugenia* and *altissima*, the pattern of the hindwing below does not vary appreciably; in *gemmata*. But, and its dwarf race *genia* the silver spot at the centre of the costa is more or less upright and square in shape, also the cinnamon red areas are broad and prominent: in *altissima* and *eugenia* the spot mentioned is sloping and the red areas are indistinct. *Genia*, if my identification is correct, is remarkable in that the marginal black band, prominent in the other allied species, is absent and the cilia are concolourous with the ground colour. *Altissima* appears to be a good species; vein 10 arises just after the end of the cell; the forewing is sharply pointed and the outer margin straight below that point; all the silver markings on the underside are narrow and elongated, while the black spot near the base of cell 2 on the forewing above is placed nearer the outer margin than in the other species of the group. *Eugenia*, Everman, is a species flying from South Siberia, through West China and Tibet to the Himalayas; vein 10 arises well beyond the end of the cell, its origin being equi-distant between that point and the origin of vein 9; in the nymotypical Northern form the large silver spot crossing the end of the cell on the hindwing below is quite short; in the Tibetan race *rhea*, described from Amdo, it is elongate as in *gemmata*. *Mackinoni*, de N., from the Himalayas, is, I am convinced, a race of *eugenia* and has nothing to do with *altissima*; it hardly differs from *rhea*, but the cinnamon red areas below are rather more prominent and the cilia above are concolourous with the ground colour instead of being whitish.

97. *Melitæa sindura jezabel*, Oberth. 102 specimens in the Po Chu Valley and on the Tsang Po between Gyala and Du and just beyond the Koungo Nga La at 10-13,000 feet in July and August. The specimens appear to be nearest to *jezabel* from Eastern Tibet. Above dark, the outer band strongly developed; below very brick red, the forewing often without any

discal markings. Specimens I have from Gyantse are very similar differing only in the lesser development of the outer discal band on the forewing above. Both are very different from the small dull Chumbi Valley form *sikkimensis*, M. and are nearer to *balbita*, M. from Kashmir, though smaller.

98. *Melitaea didyma agar*, Oborth. 57 specimens mostly on the Tsang Po between Gyala and Lhapto at 9-13,000 feet in July and August and a few in the Karpo Valley to the south at 12-14,000 feet in September. There seems no justification for separating *agar* from *didyma*. Capt. Bailey's specimens are practically identical with Seitz's figures of *agar*; in many of the females there is a good deal of the orange ground colour showing through.

99. *Pseudergoia wedah*, Koll. 3 specimens on the Lower Tsang Po at 5,000 feet in June and at Dhirang, 5,000 feet, October.

100. *Calinaya davidis*, Ober. 1 ♂, Lower Tsang Po, 3,000 feet, June.

101. *Libythea celtis lepita*, M. 37 specimens on the Lower Tsang Po and in the Po Chu Valley, 4-8,000 feet, June and early July.

102. *Hyporion lama*, Leech. One specimen at Gyala on the Tsang Po at 9,800 feet on July 17th. The single male obtained agrees closely with *lama*, but the two upper spots of the ferruginous sub-marginal band are white and divide discal spots on both wings which are more developed. The underside is a replica in every way of the upperside, but the ground colour is dark ferruginous; there is a pale yellow spot in the cell of both wings and the white spots of the upperside are developed into a continuous well defined sinuate band across both wings; the outer margins are paler.

103. *Dodona dipwa*, Hewit. 6 specimens, Lower Tsang Po and Po Chu Valley, 3-8,000 feet, June and early July.

104. *Dodona eugenes*, Bates. 5 specimens in the same localities and at Dewangiri, 6,000 feet, November.

105. *Dodona ouida*, M. 6 ♂, Lower Tsang Po, 7,000 feet, June.

106. *Dodona adonira*, Hewit. 7 ♂, Lower Tsang Po, 3-6,000 feet, June.

107. *Stiboges nymphidia*, Butl. 2 ♂ and 1 ♀, Lower Tsang Po, early June, 3-6,000 feet.

108. *Papilio acaeus*, Fldr. 1 ♂, Lower Tsang Po, 3,000 feet, June.

109. *Papilio varuna astorion*, Wd. 1 ♂, Dhirang, 7,000 feet, October.

110. *Papilio philoxenus polyeuctes*, Doubl. 2 ♂, same locality.

111. *Papilio machaon sikkimensis*, M. 2 ♂, Po Chu Valley, 11,000 feet, June and 1 ♂ on the Tsang Po near Tu, 10,000 feet, August.

112. *Papilio helenus*, L. 3 ♂.

113. *Papilio chaon*, Westw. 1 ♂.

114. *Papilio janaka*, M. 1 ♂.

115. *Papilio protenor euprotenor*, Fruh. 1 ♀.

116. *Papilio rhetenor*, Westw. 1 ♂.

117. *Papilio polycor triumphator*, Fruh. 2 ♂.

Nos. 112-117, Lower Tsang Po, 3-6,000 feet, June.

118. *Papilio polycor ganesa*, M. 1 ♂, Nyamjang Valley, 7,000 feet, October.

119. *Papilio krishna*, M. 1 ♂.

120. *Papilio glycerion*, Gray. 6 specimens.
 121. *Papilio eurous sikhimica*, Heron. 6 specimens.
 122. *Papilio cloanthus*, Westw. 1 ♂.
 123. *Papilio bathycles chiron*, Wallace. 1 ♂.
 124. *Papilio sarpedon*, L. 1 ♂.

Nos. 119-124, Lower Tsang Po, 3-6,000 feet, June.

125. *Parnassius epaphus sikkimensis*, Elw. 108 specimens on the Putreng La and the passes to the south of the Tsang Po, August and September, 14,500 to 16,300 feet. Amongst them several virgin females.

126. *Parnassius imperator intermedia*, Rothsch. 32 specimens on the Konghbo Nga La and the passes to the south of the Tsang Po, August and September, 14,500 to 16,300 feet. This race is quite different in appearance to the very distinct yellow race *augustus*, Fruh. from the Chumbi Valley; the ground colour is pure white and the black dusting of the nymotypical form is absent.

127. *Delias belladonna lativitta*, Leech. 11 specimens in the Po Chu Valley and at Pemako Chung on the Tsang Po, 7-9,000 feet, July.

128. *Delias belladonna ithiela*, But. 6 specimens, Lower Tsang Po, 3-6,000 feet, June.

129. *Aporia hippia*, Brem. 65 specimens, Po Chu Valley and on the Tsang Po between Gyala and Pe, 7,500-10,500 feet, June and July.

130. *Aporia bieti*, Oberth. 12 specimens, Po Chu Valley, 11,000 feet, end of June and early July.

131. *Aporia delavayi*, Oberth. 10 specimens in the Po Chu Valley and on the Tsang Po below Pe 8,000-9,500 feet, end of June to early August.

132. *Aporia agathon*, Gray. 22 specimens, Lagong on the Lower Tsang Po and the Po Chu Valley, 5-8,000 feet, end of June and early July.

133. *Aporia larraldei melania*, Oberth. 2 ♂ and 1 ♀ in the Po Chu Valley and at Pemako Chung on the Tsang Po, July, 10,000 feet.

The specimens obtained were more or less intermediate between *melania* and *paracraea*, de N. below as *paracraea*, above as *melania*: *harrietae*, de N. from the Bhutan Frontier, of which as far as I know only the type pair exists in the Calcutta Museum, is also very close. The variation in *larraldei* seems to be very similar to that in *agathon* and possibly many of the so-called races are really only varieties of the pale nymotypical form.

134. *Pieris brassicae*, L. 5 specimens between Dhirang and Tawang at 5-10,000 feet in October.

135. *Pieris canidia*, Spar. 50 specimens, in all the districts traversed at 4,800 to 13,000 feet.

136. *Pieris melete montana*, Verity. 26 specimens, Lower Tsang Po and Po Chu Valleys, 5-8,000 feet, June and July; Dhirang and the Nyamjang Valley, 6,000 feet, October. All the specimens belonged to the large Eastern race; there was nothing approaching the dark Chumbi Valley form *melania*, Rob.

137. *Pieris chumbiensis*, de N. 1 ♀ on the Nyama La, 14,500 feet, July 12th. The markings are wider than usual, but the species is very variable.

138. *Huphina nadina*, Lucas. 4 ♂ of the dry season form, Dewangiri, 1,500 feet, November.

139. *Appias indra*, M. 2 ♂, Lower Tsang Po, 3-5,000 feet, May and June.

140. *Appias lalage*, Doubl. 34 specimens, Lower Tsang Po, 5,000 feet, May and June and at Dewangiri, 1,500 feet, November.

141. *Gonepteryx amintha*, Blanch. 6 specimens, Lower Tsang Po and the Po Chu Valley, 5-7,000 feet, June and July.

142. *Gonepteryx alvinda*, Blanch. 19 specimens between Pe and Shu on the Tsang Po, 9-10,000 feet, July and August. I have identified this species from Seitz's figures and very brief description; they do not, however, differ from the specimens caught by Capt. Bailey in 1911 and identified by Mr. South as *aspasia*. Men. (J. B. N. H. S. xxii. 603). *Alvinda* appears to differ from the Indian *zaueka*, M. in that the outer margin of the hindwing is not crenulate between the tail at the end of vein 3 and the anal angle.

143. *Colias berylla*, Fawe. 10 specimens in the high country south of the Tsang Po at 14-16,000 feet, in September. All the specimens very worn. *Berylla* seems to connect *motium*, Ober. with *ladakensis*, Fd. The females obtained were pale yellow like the males.

144. *Colias cocandica*, Ersch. (see plate). 7 specimens caught with *berylla* and a few at Lu on the Tsang Po, 14,000 feet, August. I leave the correct name to a *Colias* expert.

145. *Dercas lycorias*, Doubl. 8 specimens, Lower Tsang Po, 5,000 feet, May and near Dhirang, 7,000 feet, October.

146. *Terias laeta*, Bdl. 2 ♂, Nyamjang Valley, 6,000 feet, October.

147. *Terias silhetana*, Wallace. 1 ♂, Dowangiri, 1,500 feet, November.

148. *Terias hecabe*, L. 7 specimens, Dhirang and Nyamjang Valley, 6-7,000 feet, October.

149. *Cyaniris marginata*, de N. 1 ♂, Lower Tsang Po, 4,000 feet, June.

150. *Cyaniris albocarulea*, M. 2 ♂, Lower Tsang Po, 4-7,000 feet, June.

151. *Cyaniris dilecta*, M. 1 ♂, Dhirang, 6,000 feet, October.

152. *Cyaniris argiolus jynteana*, de N. 15 specimens, Lower Tsang Po and Po Chu Valley, 4-8,000 feet, May and June; also near Dhirang and the Nyamjang Valley, 6,000 feet, October. One of the specimens obtained in the first-named locality is quite different to the remainder, it resembles *coelestina*, Koll, in having the black border on the forewing above narrow, but widening at the apex, but the cilia are prominently chequered with black at the ends of the veins and there is an indistinct pale discal patch; below the spots are arranged as in the *argiolus* group, the spots on the forewing are, however, linear, that in space 3 being oblique, while the spots on the hindwing are large, prominent and rounded, 5 that in space 3 being produced outwardly.

153. *Cyaniris oreas*, Leect. 80 specimens mostly in the Po Chu Valley, 7-8,000 feet, June and July; a few at Migyitun, 10,000 feet, September and at Tawang, 8,000 feet, October. The Migyitun specimens averaged a good deal smaller.

154. *Cyaniris morsheadi*, n. sp. (see plate). 64 specimens on the Tsang Po between Gyala and Lapsa, 9-14,000 feet, July and August; also a few between the Khamba La and the Kongma La, south of the river, 12,500 feet, September.

Male dark-blue above, a good deal darker than is usual in this genus; the black border very broad, rather broader than in *transpecta*, M., of uniform width, curved round somewhat at the apex of the forewing: costa of the forewing very narrowly black, the costa and inner margin of the hindwing dusky. Below the pattern is exactly similar to that in the *argiolus-oreas*

group; all the spots are small and rounded, everywhere complete: on the hind wing there is a greenish tinge increasing in intensity towards the base. In the female the blue colouration is very dark and restricted to a large patch in the middle, the rest of the forewing being black; there is black spot at the end of the cell; the hindwing is uniform black with an obscure deep-blue sheen towards the base. Size intermediate between *coelestina* and *Auegelt*, M. The species is evidently a member of the *argiolus* group and may be easily recognised by the broad black outer margin in the male.

155. *Lycæna younghusbandi*, Elwes. 2 ♂, Yartotra La, 16,000 feet, September.

156. *Lycæna semiargus annulata*, Elwes. 6 specimens, Yarlung Valley, 18,000 feet, early September.

157. *Lycæna lanty*, Oberth. 1 ♂, Po Chu Valley, 8,500 feet, July. The specimen is very worn and the identification is in consequence rather open to doubt.

158. *Lycæna stoliczana*, Fldr. 43 specimens. A few in the Po Chu Valley, 10,500 feet, July; the bulk on the Tsang Po between Tu and Rongchakar, August; a single female in September at 12,500 feet between the Khama La and the Kongina La. Extremely variable.

159. *Lycæna luana*, n. sp (see plate). 6 specimens at Lu, 15,000 feet, August 19th; on the Putrang La, 16,300 feet, August 25th; on the Gyemo La, 15,000 feet, Sept. 4th; on the Le La, 12,000 feet, Sept. 23rd.

Male above very dark-brown obscurely powdered with white, more especially so towards the outer margin; cilia broadly pure white, with a minute terminal black spot at the end of each vein; in the female the white dusting is obsolete. On both wings there is a prominent white spot at the end of the cell, which in some males on the forewing is extended inwards along the sub-median vein as a narrow streak to one-third distance from the base. Forewing below base to half way between the end of the cell and the margin very pale plumbeous, beyond cream white; the inner edge of the white area is parallel to the margin as far as vein 4 and then is bent inwards to the costa; on this area there is a similarly bent ferruginous line which is prominent towards the costa and nearly obsolete towards the inner margin: a prominent white spot at the end of the cell. Hindwing, extreme base pale greenish white, followed by a ferruginous area to well beyond the cell, which is again followed by a broad cream white area as on the forewing: on the ferruginous area there are a number of large white spots, viz., 4 basal, one at the end of the cell and a row of 5 on the disc, the lower ones being adjacent to the pale outer area; cilia as above. Eyes smooth. The upperside of the female has been described above. Below the hindwing resembles the male; the forewing may be described as pale silky plumbeous, with the following portion cream white, viz., a spot in and another at the end of the cell, the outer margin broadly and a discal row of contiguous spots bent inwards in the middle and increasing in size towards the costa. Size of *Lycæna iris*, Stdg.

A very distinct little species, with no near ally that I know of: above there is a general resemblance to Scitz's figure of *Lycæna astrarche* ab *artaxerxes*, Fab. but below I know of nothing at all to compare it with. The antennæ are white below and alternately black and white above; venation as in *Cyaniris*.

160. *Lycæna pheretes*, Hbn. 5 ♂ and 1 ♀ mostly in the Po Chu Valley and few at Gyala on the Tsang Po, 9-10,500 feet, July and early August. This may turn out to be a new race of *pheretes*. It resembles in appearance *lehana*, M., but differs remarkably in size, being even larger than true *pheretes*,

more as *stoiczana*, Fd. Forewing pointed as in *asiatica*, El.; on the upperside of the hindwing there is a prominent row of black sub-marginal spots, which other forms of *pheretes* do not appear to possess. Below the markings are very variable, but do not differ from those prevailing in other forms. The female is dark-brown with some very dark indigo blue at the bases. If a new name is needed, I propose *major*.

161. *Lycena asiatica*, Elwes. 25 specimens at 12-16,000 feet; a few on either side of the Putrang La, late in August, and the bulk in the high country south of the Tsang Po in September.

162. *Zizera maha*, Koll. 22 specimens on the Lower Tsang Po and in the Po Chu Valley, June and July, 4-8,000 feet; also a few near Dhirang, 6,000 feet, October. Many of the specimens are referable to *opalina*, Pouj.

163. *Everes argiades dipora*, M. 1 ♂ Dhirang, 6,500 feet, October.

164. *Everes ion*, Leech. 17 specimens on the Tsang Po between Pe and Tu, 10,000 feet, early August.

165. *Orthomiella pontis*, Elwes. 1 ♂, Lower Tsang Po, 5,500 feet, June.

166. *Polyommatus boeticus*, L. 1 ♂ at Tu on the Tsang Po, 10,000 feet, August and 1 ♀, Dhirang, 6,500 feet, October.

167. *Zephyrus dumca*, Hewit. 1 ♀ in the Char Chu Valley at 12,000 feet in September. A somewhat surprising capture.

168. *Zephyrus suroia*, Tyltor. 1 ♀ in perfect condition at Pemako Chung on the Tsang Po, 9,000 feet, July 23rd. The butterfly has hitherto only been found at Suroi Fui in the Manipur district. This remarkable bright metallic blue female is not difficult to identify.

169. *Zephyrus bieti*, Oberth. 7 specimens between Gyula and Tu on the Tsang Po, 9-10,000 feet, middle of July to middle of August. Rather larger than usual; the orange spots on the disc of the forewing in the female are smaller than usual.

170. *Zephyrus icana*. M. 1 ♂, near Tu on the Tsang Po, 10,000 feet, Aug. 10th. Agreeing well as regards the upperside with typical *icana* from Kulu, but below there is no ferruginous tinge at all; the ground colour is rather pale brown and the bands dark-brown while the silver lining to the discal bands is very obscure.

171. *Ilerda viridipunctata*, de N. 1 ♂ Lower Tsang Po, 5,000 feet, June and 1 ♂ Nyamjang Valley, 6,000 feet, October.

172. *Ilerda moorei*, Hewit. 23 specimens mostly in the Po Chu Valley and on the Tsang Po between Po and Dokar, 9-10,000 feet, June and July also a few between Dhirang and the Nyamjang Valley, 6-8,000 feet, October.

173. *Chrysopanus phleas*, L. 83 specimens, a few in the Po Chu Valley at 8-10,000 feet, June; the majority on the Tsang Po between Pemako Chung and Shu, July, and in the high country to the south in August, 12-15,000 feet; a few at 7,000 feet in the Nyamjang Valley in October. Very similar to the European form.

174. *Arphnaeus lohita*, Horsf. 1 ♂, Lower Tsang Po, 3,000 feet, June.

175. *Arhopala rama*, Koll. 3 specimens, Po Chu Valley, early July, 7-8,000 feet.

176. *Rapala nissa*, Koll. A male in the Po Chu Valley, 8,000 feet, end of June and a female at Pemako Chung, 9,000 feet, July. The specimens differ somewhat from the typical form in that the orange areas above are enlarged and below the ground colour is darker than usual.

177. *Chliaria kina*, Hewit. 2 ♂, Lower Tsang, 5-7,000 feet, early June.
178. *Celænorrhinus pyrrha*, de N. 1 ♀, Lower Tsang Po, 4,000 feet, June.
179. *Celænorrhinus leucoœera*, Koll. 1 ♀, locality as last.
180. *Celænorrhinus pulomaya*, M. 2 specimens, near Dhirang, 6,500 feet, October.
181. *Celænorrhinus thibetana*, Mab. 4 specimens in the Po Chu Valley, 8,000 feet, end of June.
182. *Tagiades pralaya*, M. 2 ♂ Lower Tsang Po, 3,000 feet, June.
183. *Pamphila dieckmanni*, Græser. 3 specimens, Po Chu Valley, 8-9,000 feet, early July.
184. *Pamphila houangty shoka*, subsp. n. (See plate). 16 specimens mostly in the Po Chu Valley and a few on the Tsang Po between Pe and Tu, June and July, 8-10,500 feet.
- Above as *houangty*, Oberth, but the black markings enlarged, the lower discal spot on the forewing being extended to the inner margin. The hindwing is black bearing the following yellow spots, a medium sized one in the middle of the cell, with a small one on the costa above it nearer the outer margin, a discal row of 3 spots, of which the upper one is very large and has outwardly beyond it on either side a small spot near the margin. Below the markings are as above, but those towards the apex are obsolescent; hindwing as above, but the black ground colour is overlaid with yellow brown, only differing very slightly in shade from the yellow markings. Rather larger than *houangty*. *Houangty* is yellow with black markings, while *shoka* is black with yellow markings.
185. *Ochus subvittatus*, M. 3 specimens, Lower Tsang Po, early June, 3,000 feet.
186. *Sebastomyia dolopia*, Hewit. 1 ♂, Lower Tsang Po, 4,000 feet, June.
187. *Notocrypta feisthamelii*, Bdv. 1 ♂, Lower Tsang Po, 4,500 feet, June.
188. *Augiades bouddha*, Mab. 9 ♂, Po Chu Valley, 7-9,000 feet, end of June and early July.
189. *Halpe homolea*, Hewit. 7 ♂ and 1 ♀, Lower Tsang Po, 3-5,000 feet, June.
190. *Halpe aina*, de N. 1 ♀, Lower Tsang Po, 5,000 feet, June.
191. *Parnara aurociliata*, Elwes and Edw. 3 ♂, Lower Tsang Po, 5-6,000 feet, June. The specimens work out to *aurociliata* by Elwes and Edwards' key; the fringes are bright yellow, but otherwise the description does not altogether agree. On the forewing there is a single spot in the cell against the lower edge; a discal row of spots in spaces 2 to 4, that in 2 quadrate, that in 3 also quadrate, but half the size, that in 4 minute and rounded; the usual small apical spots in 6-8; no spot in 1 a.
192. *Parnara calaca*, M. 2 ♀, near Dhirang, 6,000 feet, October.
- Note.—I have taken the opportunity to figure two species, of which I have recently published descriptions, viz.—
Iambrix tytleri, Evans, and *Plastingia tytleri*, Evans, from Manipur.