

every isolated observation made by every naturalist who has preceded him in a particular field of work ; but I do hold that the deliberate abstention on the part of one occupying a leading position among zoologists from giving any recognition whatever to the writings of a predecessor who has anticipated him (1) in the formulation of such views as those advocated by me and subsequently by Claus as to the classification of Arthropoda, and (2) in the publication of a variety of facts and hypotheses which lead up to this prominent result, is greatly to be deplored—and not only to be deplored, but to be exposed and condemned.

XX.—*On a Collection of Lepidoptera made by Commander Alfred Carpenter, R.N., in Upper Burma, in the Winter of 1885–86.* By ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

THE collection of which this is an account consists of 128 specimens, some of them indeed (especially Nymphalidæ) in poor condition, owing to the length of time they had been on the wing when caught, but many of them in a good state of preservation. The number of species obtained was sixty-five, five of which I have been obliged to describe as new ; several other possibly new species are not in sufficiently good condition to be fit for description.

Nymphalidæ.

1. *Tirumala leopardus*, Butler.

The typical form was obtained on the 10th January on the Irrawaddy river, opposite Mandalay, and a female of a form approaching *T. conjuncta* at Kabwett (lat. 22° 44' N.) on the 5th of the same month.

2. *Limnas chrysippus*, Linn.

The female was obtained on the Irrawaddy, thirty miles above Mandalay (lat. 22° 27' N.), on the 14th December, and two males on the 10th January following.

3. *Salatura genutia*, Cramer.

Both sexes at Myadoung, on the Irrawaddy (lat. 23° 43' N.), on the 4th January.

4. *Calysisme tabitha*, Fabr.

One male taken at Sheemagar (lat. $22^{\circ} 19' N.$) on the 12th December; one female without special locality.

5. *Calysisme ostrea*, Westw.

A single small male, without special locality.

6. *Calysisme perseus*, Fabr.

A female obtained on the Irrawaddy, thirty miles above Mandalay (lat. $22^{\circ} 27' N.$), on the 14th December, 1885.

7. *Calysisme Carpenteri*, sp. n.

Nearest to *C. visala*, but formed like *C. perseus*, pattern and coloration of the upper surface as in the former; under surface more nearly as in the latter, but redder, and crossed by two well-defined black lines, the outer one much less straight than the outer edge of the central belt of *C. perseus* and *C. visala*; the primaries also with an abbreviated dusky line near the base; ocelli, excepting the fifth on the secondaries (which is black), reduced to white points; veins blackish. Expanse of wings 61 millim.

A female taken at Kabwett, on the Irrawaddy (lat. $22^{\circ} 44' N.$), 5th January, 1886.

The black lines across the wings and the blackish veins on the under surface readily distinguish this species from all the allied forms.

8. *Orsotriæna runeka*, Moore.

A male specimen was obtained in December on the Irrawaddy, thirty miles above Mandalay (lat. $22^{\circ} 27' N.$).

9. *Ypthima*, sp. n.

One broken male, somewhat rubbed and without exact locality. It appears to come nearest to *Y. ordinata*, but the anal angle of the secondaries is broken away on both sides.

10. *Ypthima Marshalli*, Butler.

Two specimens obtained thirty miles above Mandalay (lat. $22^{\circ} 27' N.$), on the 14th December.

11. *Ypthima catharina*, sp. n.

Nearly allied to *Y. mahratta* (of which I have twelve specimens before me), but differing in the greyer, less rufous tint of the upper surface, and in the distinctly yellowish

instead of greyish-white ground-colour of the under surface, upon which also are traces of one or two additional ocelli; the form of the indistinct stripe across the secondaries agrees with that of *Y. alemola*. Expanse of wings 28–35 millim.

Katha, Irrawaddy (lat. $24^{\circ} 9' N.$, long. $96^{\circ} 17' E.$), 3rd January; Myadoung (lat. $23^{\circ} 43' N.$), 4th January.

12. *Neptis mamaja*, Butler.

Two shattered specimens obtained at Katha and Myadoung on the Irrawaddy, 3rd and 4th January.

13. *Hypolimnas avia*, Fabr.

A rather damaged female at the entrance to the second defile above Shoay Koojee, on the Irrawaddy (lat. $24^{\circ} 16' N.$), 28th December, 1885.

14. *Junonia lemonias*, Linn.

Six examples, mostly more or less injured, were collected at Sheemagar (lat. $22^{\circ} 19' N.$) in December, and one male at Katha on the 3rd January.

15. *Junonia laomedia*, Linn.

A female taken at Kabwett, on the 5th January.

16. *Junonia almana*, Linn.

A male obtained thirty miles above Mandalay, on the 14th December.

17. *Junonia ænone*, Linn. (var. *Hierta*?).

One female at Myadoung, on the Irrawaddy (lat. $23^{\circ} 43' N.$), on the 4th January, and one opposite Mandalay on the 10th of the same month.

18. *Ergolis ariadne*, Linn.

A shattered male was captured at Myadoung.

19. *Atella phalantha*, Drury.

Two much-worn females: one taken at Modah (lat. $24^{\circ} 18' N.$, long. $96^{\circ} 26' E.$) on the 3rd January, and the other at Myadoung on the 4th.

Erycinidæ.

20. *Zemeros flegyas*, Cramer.

A much-worn male at Katha, on the 3rd January.

Lycænidae.

21. *Catochrysops cnejus*, Fabr.

A female at Myadoung, on the 4th January.

22. *Catochrysops strabo*, Fabr.

Two males at Sheemagar (lat. $22^{\circ} 19' N.$), on the 12th December.

23. *Tarucus plinius*, Fabr.

A much broken male was obtained at Kyouk Myoung (lat. $22^{\circ} 34' N.$), on the Irrawaddy, 21st December.

24. *Tarucus callinara*, sp. n.

Near to *T. nara*, with which both sexes agree on the upper surface; on the under surface, however, they agree with *T. venosus*, the black markings being all much enlarged; the submarginal lunules separate, instead of in a continuous dentate-sinuate line; the series of spots beyond the cell of secondaries quite distinctly arranged, commencing with three spots in a regular oblique series, the third of these forming the first of three spots arranged in a triangle, and beyond these two spots placed angle to angle, the lower one contiguous with the subbasal series. Expanse of wings 24 millim.

Five specimens, of both sexes, taken at Sheemagar in December.

The preceding appears to be a widely distributed species, occurring in various parts of India and flying in May, July, August, September, and December. We have received it in all Col. Swinhoe's collections under the name of *T. theophrastus*, an African species differing considerably from it in the arrangement of the markings on the under surface of the secondaries.

25. *Lampides conferenda*, sp. n.

Hitherto confounded with *L. alexis*, but readily to be distinguished from the fact that it is of a sandy instead of greyish-brown colour on the under surface, and that the whole of the bands are shifted backwards towards the base, leaving a wide pale band between the discal bands and the external border; the submarginal series of spots ill defined; none of the markings distinctly white-edged, and the subanal ocellus of secondaries very small. Expanse of wings 31 millim.

A pair obtained at Sheemagar on the 12th December, and a male thirty miles above Mandalay on the 14th.

This is the commonest form of the *L. alexis* group, and we have specimens from Assam, Silhet, Deyra Doon, Poona, and Calcutta. Though hitherto regarded as a variety of *L. alexis*, it has as much claim to specific rank as any of the species of the *L. elpis* group, the differences being precisely of the same character as in the variously named forms of that group.

26. *Castalius rosimon*, Fabr.

Five examples (of both sexes) were obtained on the 12th, 14th, and 21st December at Sheemagar, thirty miles above Mandalay, and at Kyouk Myoung (lat. $22^{\circ} 34' N.$).

27. *Castalius approximatus*, sp. n.

Nearest to *C. chota*, but running larger; it differs chiefly from *C. rosimon* in the narrower borders to the wings and in the absence of the last of the discal black spots towards external angle of primaries, the other five spots being well separated; also in the absence of the black spot close to the border of the secondaries towards apex, and in the indistinct and minute character of the marginal spots on the under surface. Expanse of wings 31–32 millim.

A pair taken at Katha, on the Irrawaddy (lat. $24^{\circ} 9' N.$, long. $96^{\circ} 17' E.$), January 3, 1886.

We have a pair of this form taken in Bombay by Colonel Swinhoe. Whether it is a species or only a well-marked variety nobody can definitely decide without breeding it; at any rate it is as distinct as the other named forms of the group.

28. *Cyaniris*, sp.

A single worn male of a species near to *C. puspa* (and which I have been unable to identify) was taken on the 3rd January at Modah, on the Irrawaddy (lat. $24^{\circ} 18' N.$, long. $96^{\circ} 26' E.$). We have a second poor specimen of the male from Silhet, and what I suppose to be the female from Darjiling; but none of our specimens are sufficiently good to describe.

29. *Zizera otis*, Fabr.

A male taken at Sheemagar on the 12th December and a female at Modah on the 2nd January.

Z. lysizone of Snellen is identical with this species.

30. *Plebeius putli*, Kollar.

Two examples, at Sheemagar in December.

Papilionidæ.

31. *Delias indica*, Wallace.

The female was taken at Modah (lat. $24^{\circ} 18' N.$, long. $96^{\circ} 26' E.$) on the 3rd January, and the male at Kabwett (lat. $22^{\circ} 44' N.$) on the 5th of the same month.

32. *Delias pasithoë*, Linn.

The female was obtained at Mandalay on the 9th January and the male opposite Mandalay on the following day.

33. *Terias santana*, Felder.

A well-marked female at Sheemagar on the 12th December, 1885.

34. *Terias Swinhoei*, Butler.

A male at Sheemagar on the 12th December; it is a little larger and more strongly marked than the majority of the Bombay and Poona specimens, but the differences in other respects are so slight that I do not see how it is to be separated from the present species.

35. *Terias silhetana*, Wallace.

A specimen at Kyouk Myoung on the 21st December and a fragment at Modah on the 3rd January.

36. *Terias purreea*, Moore.

♀. Kyouk Myoung, on the 21st December, 1885, Modah, 3rd January, 1886; ♂. Myadoung, on the 4th of the same month.

37. *Terias excavata*, Moore.

♀. Sheemagar, on the 12th December; and ♂, 30 miles above Mandalay, on the 14th of the same month.

38. *Terias Jægeri*, Ménétr.

Three males were taken at Sheemagar on the 12th December.

39. *Ixias moulmeinensis*, Moore.

♂ ♀. Sheemagar, on the 12th December; ♂. Katha, 3rd January; ♀. Myadoung, 4th January; ♂ ♀. On the river-bank opposite Mandalay, 10th January.

Either this species is slightly variable or it exhibits slight local modifications, such as might eventually become permanent, even if they have not already done so, and thus tend to bridge over the already very slight gaps which separate the species (local forms) constituting the genus.

40. *Catopsilia gnoma*, Fabr.

♀. Irrawaddy river, opposite bank to Mandalay, 10th January.

A small and peculiarly marked specimen, which, however, I can associate with no other named form; if constant in its characters it might be separated as a distinct species.

41. *Catopsilia nephte*, Fabr.

♂. Myadoung (lat. $23^{\circ} 43'$ N.) on the 4th January.

42. *Catopsilia ilea*, Fabr.

♂. Myadoung, 4th January.

43. *Nychitona xiphia*, Fabr.

Three specimens caught at Kyouk Myoung (lat. $22^{\circ} 34'$ N.) on the 21st December.

44. *Appias vacans*, Butler.

A pair (both dwarfed) at Modah, on the Irrawaddy (lat. $24^{\circ} 18'$ N., long. $96^{\circ} 26'$ E.), on the 3rd January, 1886.

The Ceylonese species identified as *A. vacans* in Mr. Moore's work on the Lepidoptera of Ceylon is distinct, the much greater width and dentate character of the border on the under surface of the secondaries being alone sufficient to distinguish it; I therefore propose that it be called *A. aperta*. The pair now received differ from my figure of the type chiefly in size, and must I think be typical; unfortunately we do not possess Darjiling examples.

45. *Ganoris gliciria*, Cramer.

♂. Modah, 3rd January.

The specimen belongs to a somewhat rare sport, in which the black spot of primaries is represented only by a few black scales.

46. *Huphina hira*, Moore.

A single male at Sheemagar, 12th December, 1885. It differs slightly from Mr. Moore's figure, the black spot on the second median interspace of primaries being smaller and less distinctly confluent with the external borders; the under surface of this sex is not described, but in the specimen before me it most nearly resembles that of *H. pallida*, Swinhoe.

47. *Nepheronia gæa*, Felder.

♂ ♀. Modah, 3rd January; Kabwett (pair *in copulâ*), 5th January; on river bank opposite Mandalay, 10th January; ♂. Katha, 3rd of the same month.

48. *Papilio aristolochiæ*, Fabr.

♂ ♀. Sheemagar, 12th December; ♀. Kyouk Myoung, 21st.

The females are mere fragments, both broken and rubbed.

49. *Papilio pammon*, Linn.

One broken female was obtained at Kabwett on the 5th January.

50. *Papilio erithonius*, Cramer.

At Myadoung on the 4th January and opposite Mandalay on the 10th.

Hesperiidæ.

51. *Astictopterus subfasciatus*, Moore.

Two worn specimens at Modah on the 3rd January.

52. *Chapra mathias*, Fabr.

Two males at Myadoung on the 4th January.

"Quick short flight."—A. C.

53. *Pamphila augias*, Linn.

One male at Myadoung on the 4th January.

Leucaniidæ.

54. *Leucania collecta*, Walker.

One much-worn male, 30 miles above Mandalay, on the 14th December.

55. *Leucania proscripta*, Walker.

♀. Sheemagar, 12th December, 1885.

Ophiuridæ.

56. *Achæa fasciculipes*, Walker.

♀. Sheemagar, 12th December, 1885.

A worn specimen. Our examples are from the Celebes and Vaté, but there appears to be nothing but size and slightly deeper colouring to distinguish this form from *A. mercatoria*, of which I believe it to be a variety.

Hypenidæ.

57. *Dichromia orosia*, Cramer.

Kyouk Myoung (lat. 22° 34' N.), 21st December, 1885.

Margarodidæ.

58. *Maruca aquatilis*, Boisd.

One specimen flew on board, Pagan, Irrawaddy river (lat. 21° 12' N.), 13th January, 1886.

Arctiidæ.

59. *Cretonotus interruptus*, Linn.

♀. Irrawaddy, 30 miles above Mandalay, 14th December.

Lithosiidæ.

60. *Deiopeia pulchella*, Linn.

Sheemagar, 12th December, 1885.

Nyctemeridæ.

61. *Nyctemera lacticina*, Cramer.

♀. Kabwett, 5th January.

Liparidæ.

62. *Artaxa digramma*, Boisd.

♀. Flew on board (7 P.M.) on the Irrawaddy, 30 miles above Mandalay, 14th December.

Idæidæ.63. *Hyria grataria*, Walker.

♂. Flew on board, Pagan, Irrawaddy river (lat. 21° 12' N.), on the 13th January at 9 P.M.

64. *Idæa*, sp. ?

Sheemagar (lat. 22° 19' N.), December 1885.

A worn specimen of a species which I have been unable to identify.

Microniidæ.65. *Micronia aculeata*, Guén.

♀. Flew on board, Sheemagar, above Mandalay (lat. 22° 19' N.), on the 12th December at 8 P.M.

XXI.—*Note on Orbitolites italica*, Costa, sp. (*Orbitolites tenuissima*, Carpenter). By HENRY B. BRADY, F.R.S.

IN the paragraphs relating to the distribution of *Orbitolites tenuissima*, in the "Report on the Foraminifera of the Challenger Expedition" (p. 214), attention is directed to certain figures in Costa's "Paleontologia del Regno di Napoli" ('Atti dell' Accademia Pontaniana,' 1856, vol. vii. pl. xvi. figs. 26-28), as follows:—

"*Orbitolites tenuissima* has not hitherto been recognized as a fossil species; nevertheless Costa has figured two specimens which seem to place beyond question its existence in the later Tertiaries of Southern Italy. The drawings referred to are named *Pavonina italica*, and it is impossible to compare them with those in pl. xv. of the present Report, especially with fig. 7, or with the central portion of one of the figures given by Dr. Carpenter ("Report on Orbitolites," pl. i. fig. 1), without the conviction that they are taken from specimens with almost precisely identical characters, although the former, like many of Costa's illustrations, are somewhat lacking in detail. The fossil shells are obviously only fragments, a circumstance sufficiently accounted for by the extreme tenuity of the test." To which is appended the following footnote:—"The author states that specimens are not uncommon in the Tertiary marls of Reggio; it is therefore pro-



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