XII.—*On a Collection of Butterflies from Nikko, Central Japan.* By Arthur G. Butler, F.L.S., F.Z.S., &c.

The following is an account of a large series of Butterflies collected by Mr. Charles Maries in Nippon (or Niphon) Island, and certainly one of the richest of any collection which has hitherto come to England, since it contains no less than 118 species.

Mr. Maries also collected in the island of Yesso, where he obtained the *Satyrus Schrenckii* of Ménétriés and other rare species, and again in the province of Kiukiang, China, where he captured a good series of *Papilio alebion*, a new species allied to the latter, a pair of *Luchdorfia puziloi*, and other rarities, all of which are now in the collection of the British Museum.

List of Species obtained in Nikko.

1. Danais tytia, *Gray.*
2. Melanitis ismene, *Cram.*
3. Satyrus bipunctatus, *Motsch.*
4. Neope Gaschkevitchii, *Mén.*
5. —— niphonica, sp. n.
6. —— callipteris, *Butl.*
7. Pararge deidamia, *Eversm.*
8. —— achinoides, *Butl.*
9. Lethe diana, *Butl.*
10. —— Whitelyi, *Butl.*
11. —— consanguis, sp. n.
12. —— sicelis, *Hew.*
13. —— Maackii, *Brem.*
14. Erebia niphonica, *Jans.*
15. Mycalesis perdiccas, *Hew.*
16. —— gotama, *Moore.*
17. Ypthima evanescens, sp. n.
18. —— argus, *Butl.*
19. Apatura substituta, *Butl.*
20. Dichorragia nesimachus, *Fabr.*
21. Hestina japonica, *Feld.*
22. —— charonda, *Hew.*
23. Limenitis sibilla, *Ochs.*
24. Neptis ludmilla, *H.-Sch.*
25. —— Pryeri, *Butl.* (arboretorum, *Oberth.*).
26. —— alwina, *Brem.*
27. —— intermedia, *Pryer.*
28. Araschnia fallax, *Jans.*
29. —— burejana, *Brem.*
30. Pyrameis cardui, *Linn.*
31. —— indica, *Herbst.*
32. Vanessa angelica, *Cram.*
33. —— Pryeri, *Jans.*
34. —— hamigera, *Butl.*
35. Vanessa xanthomelas, *Denis.*
36. —— io, *Linn.*
37. —— antiopa, *Linn.*
38. —— glauconia, *Motsch.*
39. Argynnis sagana, *Dbl.*
40. —— paphioides, sp. n.
41. —— anadyomene, *Feld.*
42. —— lysippe, *Jans.*
43. —— japonica, *Mén.*
44. —— pallescens, *Butl.*
45. —— locuples, sp. n.
46. —— nerippe, *Feld.*
47. —— fortuna, *Jans.*
48. —— niphe, *Linn.*
49. Libythea lepita, *Moore.*
50. Curetis acuta, *Moore.*
51. Lampides bellotia, *Mén.*
52. Lycæna Pryeri, *Murr.*
53. —— ladonides, *De l'Orza*, (kasmira ?, *Moore*).
54. —— argia, *Mén.*
55. —— argus, *Denis.*
56. —— euphemus, *Herbst.*
57. Scolitantides hamada, *Druce.*
58. Niphanda fusca, *Brem.*
59. Chrysophanus timæus, *Cram.*
60. Thecla sæpestriata, *Hew.*
61. —— lutea, *Hew.*
62. —— japonica, *Murr.*
63. —— fasciata, *Jans.*
64. —— taxila, *Brem.*
65. —— stygiana, *Butl.*
66. —— mera, *Jans.*
67. —— attilia, *Brem.*
68. —— enthea, *Jans.*

69. Thecla arata, *Brem.*
70. Amblypodia asinarus, *Feld.* (japonica, *Murr.*).
71. —— turbata, sp. n.
72. Colias palæno, *Linn.*
73. —— poliographus, *Motsch.*
74. —— Elwesii, sp. n.
75. —— simoda, *De l'Orza.*
76. —— pallens, *Butl.*
77. —— subaurata, sp. n.
78. Terias Jægeri, *Mén.*
79. —— betheseba, *Jans.*
80. —— Mariesii, *Butl.*
81. —— anemone, *Feld.*
82. —— mandarina, *De l'Orza.*
83. Gonepteryx aspasia, *Mén.*
84. —— nipalensis, *Gray.*
85. Synchloe melete, *Mén.*
86. —— megamera, *Butl.*
87. —— crucivora, *Boisd.*
88. Euchloe scolymus, *Butl.*
89. Parnassius glacialis, *Butl.*
90. Papilio teredon, *Feld.*
91. —— asiaticus, *Mén.*
92. —— hippocrates, *Feld.*
93. —— xuthus, *Linn.*
94. Papilio nicconicolens, sp. n.
95. —— Maackii, *Brem.*
96. —— Dehaanii, *Feld.*
97. —— japonica, *Butl.*
98. —— macilentus, *Jans.* (scævola, *Oberth.*).
99. —— tractipennis, sp. n.
100. —— demetrius, *Cram.*
101. —— spathatus, sp. n.
102. —— Thunbergii, *Sieb.*
103. Hesperia japonica, *Murr.*
104. Pamphila pellucida, *Murr.*
105. —— guttata, *Brem.*
106. —— rikuchina, *Butl.*
107. —— ochracea, *Brem.*
108. —— sylvatica, *Brem.*
109. —— herculea, sp. n.
110. —— flava, *Murr.*
111. Pyrgus sinicus, *Butl.*
112. —— maculatus, *Brem.*
113. Daimio tethys, *Murr.*
114. —— Felderi, sp. n.
115. Astictopterus ornatus, *Brem.*
116. Thanaos montana, *Brem.*
117. —— rusticanus, *Butl.*
118. Antigonus vasava, *Moore.*

Descriptions of the new Species.

Neope niphonica, sp. n.

Allied to *N. Gaschkevitchii*, rather smaller and shorter in wing; above considerably darker, with orange, instead of white fringe. Primaries below yellower, all the markings thicker and darker, the discoidal markings more uniform, the third being less zigzag or **3**-shaped: secondaries with the discal ocelli smaller and far more uniform in size; the base, abdominal area, subbasal spots, central belt, and external area filled in with blackish olivaceous; the external area washed with lilac; the pale band just in front of the ocelli spotted with brown and tinted with lilacine below the angle. Expanse of wings 2 inches 7–8 lines.

The natural position for this species is between *N. Gaschkevitchii* and *N. agrestis*. We have eight males and one female, which I have compared with twelve *N. Gaschkevitchii*, and find the differences constant.

Lethe consanguis, sp. n.

Allied to *L. Whitelyi*, similar on the upper surface, but differing below in the outer edge of the broad central belt of primaries being more transverse, obliquely excised on the costa, very slightly zigzag on the second median interspace,

bordered externally with white as usual; three decreasing ocelli in a lilac nebula towards apex, as in typical *L. diana*: secondaries with the zones of the ocelli and the submarginal band silvery (or steel) blue instead of lilac, the third ocellus reduced to a mere point. Expanse of wings 2 inches 4 lines.

It is possible that this may prove to be a beautiful variety of *L. Whitelyi*; but it differs conspicuously from our examples of that species, particularly in the vivid coloration of the ocellus-zones and submarginal band below.

Ypthima evanescens, sp. n.

Above like *Y. lisandra*, below more like *Y. zodia*: wings below white, densely striated with short brown lines and crossed before the middle by two subparallel yellowish stripes, the outer one angulated on the secondaries; external border also regularly yellowish, but paler than the stripes: primaries with a large subapical yellow-zoned black ocellus with two silver pupils; secondaries with six very minute yellow-zoned black ocelli with single silver pupils; these ocelli are arranged as in *Y. stellera*. Expanse of wings 1 inch 5 lines.

One example.

Argynnis paphioides, sp. n.

Near to *A. paphia* of Europe, but considerably larger, the primaries more produced, the female always greenish above (but not so dark as the variety *A. valezina*), under surface with the silver bands and border of secondaries much more metallic. Expanse of wings, ♂ 3 inches, ♀ 3 inches 4 lines.

A long series of specimens.

Argynnis locuples, sp. n.

♂. Size of *A. vorax*, pattern and coloration of the upper surface similar, excepting that the spots of the discal series are more elongated, and the submarginal connected lunate spots of the secondaries are rather broader. Primaries below with silvery apical submarginal spots, as in *A. jainadeva*, the darker markings on the apical area cupreous brown with olivaceous margins, the discoidal markings smaller, otherwise as in *A. vorax*: secondaries below similar in pattern to *A. pallescens*, but the ground-colour more golden in tint, and the submarginal silver spots less sharply defined; the disk, between the series of ferruginous ocelloid spots and the green-bordered silver submarginal series, is clear buff-colour. Expanse of wings 2 inches 10 lines.

♀. Larger than the male, duller and greener above, with all the black spots larger. Below with eight additional sub-

apical silver spots on the primaries, five of them forming a decreasing submarginal series, the ground-colour duller and more uniform in tint: secondaries with all the silver spots considerably larger, the third series well defined and continued to the submedian vein, so that there are five complete series; the submarginal series formed of broad black-bordered arched spots; the ground-colour rather deeper, the ocelloid ferruginous spots frequently larger than in the male, but always darker. Expanse of wings 2 inches 10 lines to 3 inches 3 lines.

A long series of specimens.

The natural position of this species will be between *A. vorax* and *A. pallescens*; it appears to represent *A. chloradippe* in Japan.

Colias Elwesii, sp. n.

♂. Above lemon-yellow, the basal three sevenths and costal border of primaries densely irrorated with greenish grey; basal fourth of costal margin ferruginous; apical area (from apical two fifths of costa to external third of third median branch) and a broad external border, sinuated in second median interspace and at external angle, black; a subapical series of irregular yellow spots, a large broad lunate spot on the border in the first median interspace and a small spot below it yellow; a large black discocellular spot: secondaries irrorated with grey; a submarginal series of large subconfluent sulphur-yellow spots, bounded internally towards the costa by a few blackish scales; apical border and three large spots at the extremities of the radial and second and third median branches black; fringe varied with rose-colour; a large bright orange spot at the end of the cell: body normal. Under surface lemon-yellow, the characters of the upper surface indistinctly traceable through the texture of the wing, costal margins and fringes rose-coloured: primaries with a diamond-shaped silver-centred black discocellular spot; three squamose blackish spots parallel to the outer margin on the median and interno-median interspaces: secondaries with an ochreous-bordered purple-edged silver spot at the end of the cell; a discal arched series of purplish-red dots commencing with an angular spot of the same colour upon the costa: body whitish, legs rosy. Expanse of wings 2 inches 8 lines.

♀. Above like the male, excepting that all the submarginal lemon-yellow spots of the secondaries are bounded internally by blackish scales, which, however, get less distinct towards the abdominal area; below with rather brighter primaries, the three discal spots larger, brown, and the series continued by two smaller brown spots or dots on the radial interspaces

and two costal spots, the secondaries with a small additional silver-centred spot above the one at the end of the cell; otherwise exactly like the male. Expanse of wings 2 inches 5½ lines.

Albino ♀. Above creamy white, the basal area and costal border of primaries and the secondaries bluish grey; the spots on the border smaller than in the male, the discocellular spot larger; the marginal spots of secondaries diffused and subconfluent, the first being confluent with the apical border; the submarginal spots only slightly paler than the ground-colour, smaller than in the ordinary form, the first two bounded internally by large black lunate spots, the others by a few blackish scales; orange spot very pale. Primaries below white, with greyish basal area, the discal series of spots completed, beginning in the interno-median and median interspaces with three decreasing triangular black spots, after which they are small and red-brown; apical area greenish sulphur-yellow, brighter at outer margin; costal margin and fringe rose-red: secondaries green, washed with yellow towards the base, fringe rose-red; markings as in the ordinary female. Expanse of wings 2 inches 8 lines.

This is a tolerably common species, allied to *C. simoda*, but differing constantly from that form in the greater length of the costal margin of the primaries, the larger pale submarginal spots, with less-defined internal limiting spots on the secondaries, the maculated character of the border on these wings, the noticeably paler colour of the under surface, the increased number of the discal spots on the under surface of the females, and the greater size of the albino females.

I have come to the conclusion that this species is constant (so far as *Colias* ever is so) to the characters above laid down, after examining nearly 200 specimens of the *Hyale* group from various parts of Japan. Mr. Elwes says (Trans. Ent. Soc. 1880, p. 144) "it would be most unlikely that *in such a genus** four species of one group should exist in Japan alone, or, rather, in *that very small part of Japan* from which collections have come." Can Mr. Elwes be speaking seriously when he makes this statement? Is it a fact that the collections received were obtained from so limited an area that it is "unlikely" that distinct allied species should come to hand? Are Hakodaté, Yokohama, Nikko, and Nagasaki localities so close together and so identical in their conditions of life that it is absurd to look for allied but distinct species in collections from these localities?

* Mr. Elwes does not explain this expression; and I fail to comprehend its meaning.

It appears to me that there must be sufficient variation of conditions in 260,000 square miles of insulated land, divided into three larger islands by intervening straits, and exhibiting considerable degrees of elevation, to render the existence of different species in the same group less a probability than a certainty.

That it does "require special training to appreciate" specific differences is a truism which no entomologist who has specially studied any branch of his science will be inclined to dispute; for that very reason it is unwise for any naturalist, when taking up the study of a branch of science comparatively new to him, to plunge at once into the most difficult genus in that branch, and criticise the work of all previous labourers in the same field.

Whilst referring to the paper by Mr. Elwes, it will save further trouble to call attention now to some observations of his on p. 141. Mr. Elwes says that I have "*described* no less than four supposed species and varieties nearly allied to this," meaning *C. erate*; and, as though to confirm this surprising statement, he inserts in brackets "see P. Z. S. 1880." Although not aware that I had described any species allied to *C. erate* from Candahar, either supposed species or variety, I took the trouble to look through the 'Proceedings of the Zoological Society of London' for 1880; but I could not find any descriptions of *Colias* by myself. It is a pity that Mr. Elwes did not give a reference to the page, as it might have tended to explain his meaning. Mr. Elwes then proceeds to say that he *entirely* fails to follow my distinctions, and goes on to prove it by declaring that what I call *C. erate* is like the specimens of that species from South Russia and the Punjaub, that what I call *C. helictha* differs from *C. hyale* just as Lederer says it does *, that what I call *C. sareptensis* is identical with *the form* of *Hyale* found all over Asia, from the Himalayas to Japan (specifying, however, *three forms* which have hitherto come only from Japan), and, lastly, that what I call *C. pallida* is just what Staudinger says it is, a white variety of *C. erate* ♀.

I need say no more respecting this paper on *Colias*; it possibly may not seriously affect the study of the genus, since most Lepidopterists will probably hold the same opinions now as before its publication; the only cause for regret is that Mr. Elwes did not pause before publishing that in haste of which it is possible he may, after more profound study, repent at leisure.

* Mr. Elwes repeats the obviously erroneous suggestion that *C. helictha* is a hybrid between two species not occurring in the same country.

Colias subaurata, sp. n.

♂. Above very similar in coloration and pattern to the preceding species, but with distinct depressed marginal triangular yellow spots, and the wings less irrorated with grey; the secondaries also without paler submarginal spots, but with a zigzag black line on and between the veins towards the apex; no distinct apical border, but six large marginal black spots. Below the wings are bright golden orange or very bright ochreous yellow, with the inner border of the primaries lemon-yellow; three large black discal spots (as in the preceding species), two blackish dots on the radial interspaces, and two brownish dots on the costa; a black discocellular spot, with a yellow pupil; costal margin and fringe rose-red: secondaries with costal margin and fringe as in the primaries; a discal arched series of indistinct plum-coloured dots, beginning on the costa with a spot of this colour; a silver spot at the end of the cell with plum-coloured margin and orange zone, and above it a similar but very minute and fusiform spot; venter somewhat whitish, legs rosy. Expanse of wings 2 inches 2 lines.

♀. Larger than the male; the basal area more densely irrorated with greenish grey: secondaries densely irrorated with greenish grey, the orange spot very large and dark; marginal black spots diffused inwardly, the first two confluent; a submarginal series of irregular yellow spots bounded internally by an arched series of heavy black lunules. Under surface exactly as in the male. Expanse of wings 2 inches 8 lines.

Albino ♀. Above with the ground-colour creamy white, the primaries bluish grey towards the base; marginal spots obsolete, otherwise as in the ordinary form: secondaries densely irrorated with grey, hardly greenish, the marginal black spots united into a border, the submarginal spots fairly regular, internally bounded by blackish spots, but only very distinctly towards the costa; orange spot rather paler than in the ordinary female. Primaries below with only the apical area and a suffusion over the discoidal area of the same golden ochreous colour as in the male; the rest of the primaries creamy white, but with the usual markings; costal margin and fringe red: secondaries as in the ordinary form, excepting that the discal dots are larger. Expanse of wings 2 inches 5 lines.

This is a fairly common species, which may be readily distinguished by the deep coloration of the under surface.

Papilio nicconicolens, sp. n.

Very near to *P. helenus*, but constantly differing in the creamy-yellow patch of secondaries being carried below the radial vein in the form of a large squamose spot, and in the submarginal lunules on the under surface of the same wings being far more arcuate. Expanse of wings 5 inches 3 lines.

Papilio tractipennis, sp. n.

♂. Intermediate in size between *P. macilentus* and *P. demetrius*; similar to the latter, from which it differs in its greater size, its more elongated wings, longer and broader tails, also in the greyer tints of the primaries, upon which the black outer border appears more prominently; below the primaries are distinctly paler and greyer, the markings upon the secondaries are brighter in colour, redder, and there is an abbreviated additional red fasciole, bounded below by an arcuate streak of blue scales, across the first median interspace. Expanse of wings 5 inches 2 lines.

♀. This is the *P. demetrius* of Gray (nec Cramer); but when fresh this sex is nearly as dark as the male, although browner in tint, and with two ocellated and several submarginal lunate red markings on the upper surface of the secondaries: as usual, it is broader in wing than the male, and the tails are shorter. Expanse of wings 5 inches.

A tolerably common form, which may possibly prove to be a seasonal variety of *P. macilentus*; but until this species can be reared, it must necessarily be separated as a distinct species. The examples of *P. macilentus* taken by Mr. Maries are much worn.

Papilio spathatus, sp. n.

Possibly a seasonal form of *P. alcinous*; the latter species, however, was not obtained in Niphon by Mr. Maries; he obtained shattered males and a single fine female in Yesso; it is therefore more probable that this is a local representative of *P. alcinous*. It differs in its considerably greater size, much longer and more spatulate tails, in the heavier black borders and veins on the female, in the much obscured red submarginal lunules on the upper surface of the male secondaries, and the broader and dingier submarginal curved spots on the female secondaries. Expanse of wings, ♂ 4 inches 1 line, ♀ 4 inches 10 lines.

This is a commoner species than *P. alcinous*, which (owing to the fact that Klug erroneously figures its female as that sex of his species) it generally represents in collections. *P. alcinous* ♀ agrees with the male in size and form.

In Yesso Mr. Maries caught the female of a species which in 1862 we received the male of from Hakodaté. It is allied to *P. mencius* of Felder (males of which Mr. Maries obtained at Kiukiang, China); but the wings are darker, the tails on the secondaries are more slender, the submarginal lunules are absent from the upper surface of the male secondaries, and are less arcuate and smaller upon the upper surface of the female. To this species I give the name of *P. hæmatostictus*.

Pamphila herculea, sp. n.

Allied to *P. sylvanus*, considerably larger; the male of a clearer, more ochraceous colour above, and on the under surface of a more uniformly tawny colour; the secondaries not yellowish, as in *P. sylvanus*; pattern similar. Expanse of wings 1 inch 7 lines.

♀. Above bronzy brown or chocolate-brown, with cupreous reflections: primaries with a yellow dot just above the basal third of submedian vein; a cuneiform spot filling the base of the first median interspace; a bifid spot at the end of the cell; a series of five quadrate spots, excised in front, crossing the disk obliquely from submedian to upper radial vein, and a trifid spot across the subcostal branches, halfway between the cell and the apex, buff: secondaries with an angular discal series of five ochreous spots. Wings below with the markings paler than above, the spots creamy whitish or pale bone-yellow; disk of primaries round the borders of the oblique series of spots olive-brown; external angle and outer border whity brown: secondaries bronzy olive-brown, the discal series consisting of six spots; anal angle broadly ochreous; outer border tinted with ochraceous; palpi white; body below bluish grey. Expanse of wings 1 inch 7½ lines.

One pair only was obtained.

Daimio Felderi, sp. n.

Dark brown, with white markings: primaries exactly as in *D. tethys*: secondaries crossed by a white belt, which passes through a nearly complete circular series of black spots; anal three fourths of fringe and four marginal spots white: posterior margins of abdominal segments white. Base of secondaries and body below bluish grey. Expanse of wings 1 inch 6 lines.

A tolerably common species; its position is between *D. tethys* and *D. sinica* of Felder; it appears to represent the latter in Japan, and differs from it in the smaller spots on the primaries, and in the black spots being visible upon the white belt of the secondaries.