

1929, Aug. 9.—I hope to have families C and D of *bolina* ready to send before I leave for Trinidad.

1929, Aug. 29.—The family of D is pupating. Some of these should emerge before I leave, but most will not. I will post what I can myself and get the chief clerk to kill, pack and send you the balance after I leave. The important point will be to ascertain whether the family of D is all-♀, as if so it will support the suggestion that the eggs which change colour and fail to hatch are normal ♂ eggs and that there is a sex-limited lethal character which is producing the all-♀ families.

1929, Sept. 3.—The family give every indication of being, as expected, all-♀.* If this is so, the eggs consisted of three groups, A, B, and C as classified on p. 76. My suggestion is that those which changed colour are the ♂ eggs, and that there is a sex-limited lethal factor which inhibits their development. Further experiments are necessary in order to test this thoroughly.

* NOTES ON A SATYRINE BUTTERFLY (*SATYRUS AZORINUS*, STRECKER) FROM THE AZORES (Pl. VII).—Commander WALKER said:—The presence of a close ally or insular race of *Satyrus semele*, L., in the Azores is a matter of great interest from the point of view of geographical distribution, when the great distance of these typically oceanic islands from the nearest continents, and the sedentary habits of the Satyrine butterflies in general, are taken into consideration. Our congratulations are therefore due to the Entomological members of the Cambridge University Expedition to the Azores in the summer of last year, on their success in tracing the mysterious "*Satyrus azorinus*" of Strecker to its head-quarters in the Islands, and in furnishing material which will probably serve to determine the true affinities and specific validity of this little-known butterfly.

A. Morelet (*Notice Hist. Nat. Azores*: Paris, 1860), and H. Drouet (*Éléments faune Açorienne*: Paris, 1861) record the occurrence of seven species of butterflies in the Azores, all without exception common European forms; of these the only Satyrine is *Euphydryas jania*, whose habitat is stated as the "Mountains of S. Miguel and Santa Maria." Mr. F. Ducane Godman, who visited the islands in the spring and early summer of 1865, in company with an expert insect collector, Mr. J. A. Brewer, did not meet with this species, though he spent some time on S. Miguel; and it is included among the nine Azorean butterflies enumerated in Mr. Godman's interesting little work *Natural History of the Azores*, 1870 (pp. 101-3) on the sole authority of M. Drouet. Even under the most favourable conditions, *E. jania* is a most unlikely insect to be able to cross a thousand miles of the open Atlantic to these small and remote islands; and it was surmised that the butterfly seen by M. Drouet on the two most easterly members of the Azorean group may be identical with the *semele*-like species recently taken on the central islands, Fayal and Pico, by the Cambridge expedition.

In the autumn of 1880 H.M.S. "Kingfisher" to which the speaker was at the time attached, made a short stay at Fayal on her outward voyage to the Pacific Station. An excursion was made to the Caldeira, the great extinct central crater of the island, and quoting from the speaker's journal of October 10th—"A single

* Three off-spring of 2 D (captured at Suva, died 22 July, 1929) have reached me. They are females and emerged respectively on 31 August, 2 Sept., and 4 Sept. I am hoping that other members of this family may be sent when Mr. Simmonds arrives in Fiji.—E. B. P.

WALKER
1931

badly rubbed example of a *Satyrus*, related to *S. semele*, had been brought to me (by Staff-Surgeon Fleetwood Buckle, M.D.) on the previous day from the crater, where it was reported to be not rare, flying in the sunshine; but the mist effectually prevented me from seeing a specimen to-day, although I kept a special look-out for it." The spot on the edge of the crater, 3200 feet above the sea, where the butterfly was observed by Dr. Buckle, is almost certainly the exact situation where it was met with "in myriads" by Messrs. Michelmores and Kitching nearly half-a-century later.

Upon returning to England in 1834 the butterfly was given to Mr. Godman, who was unable to identify it to his satisfaction, but he, as well as Mr. O. Salvin, suggested that it might possibly be related to the genus *Oeneis*, and if such were the case, it was of great interest from a distributional point of view. Being, however, but a single specimen not in sufficiently good condition to be described, it remained unnamed until the transfer of the Godman-Salvin collections to the British Museum (Natural History), when it was subsequently placed at the head of the series of *Satyrus semele* as a dwarf insular form of that species, but now stands by itself under the name *azorinus* of Strecker.

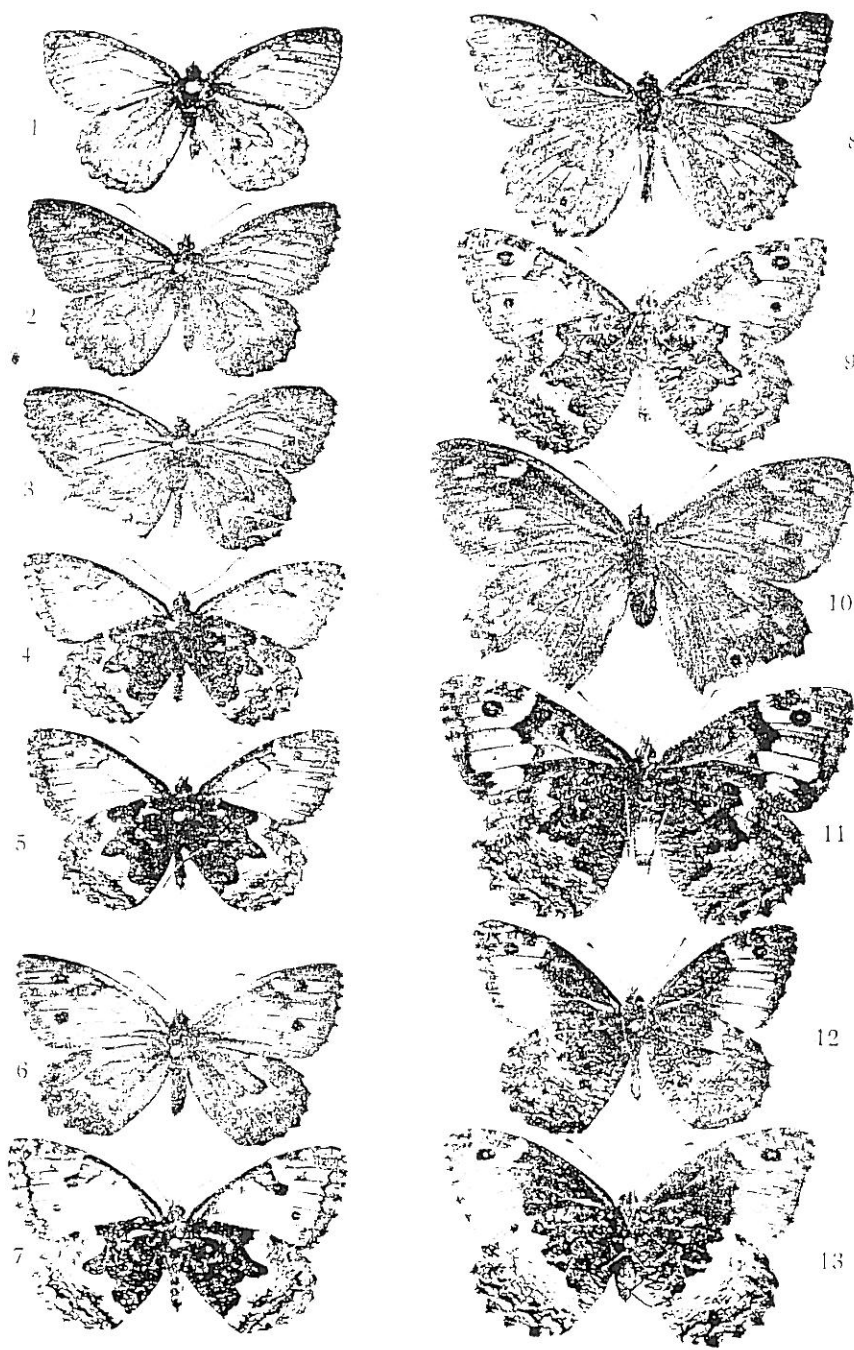
This author (*Lepidoptera, Rhopaloceræ and Heteroceræ*, Supp. II, p. 3, 1899) has described a butterfly from "the Azores" as new under the name *Satyrus azorinus* as follows:—

"Body, head and antennæ black. Wings dark brown. Primaries somewhat dull ochreous on the disk. A small round subapical spot between veins 5 and 6. Secondaries with a strongly sinuate dull ochreous mesial band, this has a deep sinus between veins 2 and 3, and another at vein 6. Fringe of all wings white with black at termination of veins. The disk and mesial band are not decided or well defined, but dull and suffused, as if showing through from the underside. Under surface, primaries dull pale ochre. Costa brown. The sub-apical spot of upperside is repeated, beyond this spot to the costa brown. A brown marginal band, two small white spots interior to this band between veins 6 and 8. Secondaries dark brown, somewhat striated. A mesial band as above, but pure white and sharply defined, interior to this band are two white marks, one near the base is irregular and extends from the costa to within the discoidal cell. The other nearly square is below this in the cell. Fringe as above.

"Expands 1½ inches. Type, one ♂ received from Prof. E. T. Owen, who informs me it came from the Azores.

"The place for this most interesting species I think would be near *Satyrus* (*Chionobius*) *pumilus*, *luna*, etc. In a remote way it also reminds one of *S. neomyris*."

Strecker's suggestion of the apparent affinity of the Azorean insect with certain members of the genus *Chionobius* (*Oeneis*) is interesting in connection with the opinion of Messrs. Godman and Salvin above alluded to. Dr. Seitz (1909, *Macro-Lepidopt. World, Palæarct. Reg., Rhopalocera*, pp. 126-7) after stating under *S. azorinus*, Strecker, that "this insect, which is unknown to me in nature, is said to be from the Azores," further remarks, "This form, which STRECKER placed near *neomyris* [Pl. VI, figs. 12, 13, under surface], appears to be related to *alcione*." With these two species the Azorean insect agrees though in a more pronounced degree, in the narrow and outwardly well-defined white band on the hind-wings beneath; but in other respects its affinities with *S. semele* are much more evident, though, in the opinion of the speaker, its characters are sufficiently distinctive to allow of its being recognised as a good species under Strecker's name of *S. azorinus*.



Alfred Robinson Photo.

All figures natural size.

Figs. 1-5 males; 6, 7 females of *Satyrus azorinus*, Streck., Azores; 8, 9 males; 10, 11 females of *S. semele maderensis*, B.-B.; 12 male; 13 female of *S. neomyris*, Godt., Corsica. Under surfaces in figs. 4, 5, 7, 9, 11, 12, 13.

FIGS. 1-3, upper;
by A. P. G. Michelbacher
Hill E. Azores, taken
had become rather faint
that it is now impossible
the wings of fig. 5 are

FIG. 8, upper; 9, under. Madeiran specimens are

Fig. 10, upper; 11, by J. J. Walker in a gro. 1884; fig. 11, by G. B. The female represented where the shorn hind-w. R. fore-wing, are descri

FIG. 13, under surfa
Fountaine, July 1893.

All the figured species
and 8, 9, in Coll. Brit. M.

EXPLANATION OF PLATE 6.

All the figures are of the natural size.

FIGS. 1-3, upper; 4, 5, under surface of males of *Satyrus azorinus*, Streckert: collected by A. P. G. Michelmore, four on the top of Fayal, Azores, 1 Aug. 1929, and one on Pico, Hill E., Azores, taken a week or two earlier. The word "Pico," written in pencil which had become rather faint, was unfortunately unnoticed when the butterflies were set, so that it is now impossible to identify the specimen from this locality. The beak-marks on the wings of fig. 3 are very clearly represented.

FIG. 6, upper; 7, under surface of females of *S. azorinus*: collected by J. Balfour Browne, on Pico, Crater 14 (E), 22 July, 1929. The considerable resemblance between the male and female patterns is well shown when these figures are compared with 1-5.

FIG. 8, upper; 9, under surface of males of *S. semele*, L., *maderensis*, Beth.-Bak.: both Madeiran specimens and paratypes from the Wollaston Coll., in the British Museum.

FIG. 10, upper; 11, under surface of females of *S. semele maderensis*: fig. 10, collected by J. J. Walker in a grove of pine and oak above Funchal, Madeira (about 1200 ft.), 11 Aug. 1884; fig. 11, by G. B. Longstaff, in a garden, Caminho de Meio, Madeira, 26 July 1905. The female represented in fig. 10 is also recorded in 1929, *Proc. Ent. Soc. Lond.*, 4: 71, where the shorn hind-wings and the beak-mark (here faintly shown but just visible) on the R. fore-wing, are described.

FIG. 12, under surface of male of *Satyrus acomeyris*, Godt., collected by H. C. Lang at Vizzavona, Corsica, July 1903.

FIG. 13, under surface of female of *Satyrus acomeyris*, collected in Corsica by M. E. Fountaine, July 1893. From the Rowland-Brown Coll., in Oxf. Univ. Mus.

All the figured specimens are in Oxford Univ. Coll., except 7, in Coll. J. Balfour Browne, and 8, 9, in Coll. Brit. Mus.



In Madeira *Satyrus semole* occurs as the var. *madeirensis*, B. Baker (1891, *Trans. Ent. Soc. Lond.*, 1891: p. 262, Pl. XII, figs. 2, 2a). This very distinct race (Pl. VI, figs. 8-11), of which its describer remarks, "It is so uniform in coloration and so much darker than the usual type, and is so thoroughly constant, that Mr. Wollaston himself considered it to be a fixed geographical modification," recalls the Azorean insect in its almost uniformly dark-brown colour above, but is very much superior in dimensions, being equal in this respect to any of the European forms; the white band on the hind-wings beneath, though wider and more conspicuous than usual, is not sharply defined externally as in *azorius*, but resembles in this respect, the richly-marked examples from the West of Ireland. Mr. Bethune-Baker adds, "I have been unable to trace any record of this insect from the Canaries or other Atlantic Islands."

Previous to the departure of the Cambridge University Expedition for the Azores, Commander Walker urged upon one of its members, Mr. A. P. G. Michelmore, F.E.S., the importance of the rediscovery of *S. azorius*, and indicated the exact locality where his specimen was obtained in 1880. The success of the quest is evident from the following very interesting extract from a letter written to Prof. E. B. Poulton, F.R.S., shortly after the writer's return from the Islands.

" Aug. 28th, 1929.

" I am sending you five specimens [the males represented on Pl. VI, figs. 1-5] of the Azorean Grayling, which you asked for. I fear you will think it a very inadequate series, but it comprises more than half my collection of the species. Four of the specimens are from the top of Fayal, Aug. 1st, 1929, and the other, which is labelled 'Pico, Hill E,' was taken at the latter locality a week or two earlier. We first found the insect on the slope of the volcano behind our camp at Cabeço do Afonso on the Serra Gorda on the west side of Pico. This was the 'Hill E' of our notes. When the sun shone it was pretty common on the steep grassy slope, though it always needed much patience to catch them. At first it seemed confined to this hill, but later we found it occasionally on the Serra Gorda. One or two specimens were seen higher up the mountain, 'O Pico' itself, but these were obviously stragglers. On the Serra on the S. and S.E. side of the mountain we found it much commoner, though it does occur on all the Serra country. Two of our party, J. A. Kitching and T. G. Tutin, found Satyrid larvae in or under the grass turf of the Serra, and I found one drowned in a small pool. I believe their caterpillars met with the sad fate which is liable to overtake larvae in camp, which is a pity, but we have pickled specimens. On our last day Kitching and I went up to the Caldeira of Fayal. Inside the Caldeira the butterfly was only moderately common, but on the bare Serra slope outside, on the E. side, it was in myriads, much commoner than we saw it on Pico. It was most abundant on the top 200 ft. of hill, decreasing rapidly in numbers below that.

" Unlike the Madeiran Satyrid, a species of *Pararge*, the butterfly does not occur in the woods, but only lives on open grassy Serra. It must therefore be one of the very few natives of oceanic islands whose abundance has been increased materially by human interference. We believe that there was practically no grass turf on Pico in its natural condition, but the butterfly probably managed to find enough for it to live in the higher parts of the *Erica azorea* territory, where the scrub was not too

tall. The rim of the Caldeira of Fayal is not too high and dry for grass turf, but may have been too exposed for continuous Heath or Juniper scrub. If this was the case it would have formed a good home for the Grayling, and would account for its unusual abundance there now. It is possible that it only established itself on Pico during the last 300 or 400 years, after the Serras had been cleared by burning and cutting the scrub and woods to give grazing land.

"The flight of the butterfly probably lasts from the end of June to the middle of August."

Of the ten species of Diurnal Lepidoptera comprised in the limited Azorean insect fauna, that wanderer *par excellence*, *Danaida plexippus*, which was first noticed in the Islands in 1861 (Godman, *Loc.* pp. 101-2) is probably no more than a casual visitor from the American Continent, though it has been recorded once at least since that date (cf. *Ent. Mon. Mag.*, 50 : 225-6). *Pyrameis cardui* and *P. atalanta*, whose migratory propensities are equally well known, appear to be common throughout the group, and with *Pieris brassicae*, were the only butterflies actually observed during the speaker's brief visit to Fayal and Flores in 1880. *Colias croceus (edusa)* and *Pieris (Ganoris) brassicae* were met with by Mr. Godman: the latter insect does not here present the remarkable modifications which it assumes in Madeira and the Canaries, but is similar to the ordinary European form, though perhaps slightly larger and darker in markings; *P. (Ganoris) rapae*, *P. napi*, and *P. (Synchlora) daplidice*, were not observed by him, but are included, like *Epinephele jachra*, on the authority of MM. Morelet and Drouet. These Pierine butterflies are all more or less migratory at times, and some of them at least may have long ago reached the Islands, and have become established to a greater or less extent. But how and when the Satyrine butterfly which has given rise to the present well-defined "Azorean Grayling" succeeded in attaining and colonising this distant, ocean-girt and wind-swept Archipelago, is a problem which must long await a solution at all satisfactory; but its presence there in abundance is certainly one of the most interesting facts in butterfly distribution.

Five specimens of *Satyrus azorinus* have been presented by the captors to the Hope Department, Oxford University Museum: one of these bears the very distinct marks of the beak of a finch, almost certainly the wild Canary, *Serinus canarius*, which is by far the most abundant of the three Azorean species of Fringilline birds. The remainder of the (unfortunately few) specimens brought home have also been examined at the Natural History Museum. Some of these are a little more distinctly marked with dull ochreous on the disc of the fore-wings than is the case with the practically unicolorous specimens at Oxford: in this respect the ancient Fayal example (also a ♂) collected for Comm. Walker, allowing for its worn condition, seems to correspond more closely with Strecker's description than do any of those recently captured. It is much to be regretted that the ♀ of this most interesting butterfly remains unknown, as not a single example of that sex is included in the entire series.

[Since the above notes were written, the Oxford University Museum has received a ♀ example of *S. azorinus* in fine condition [Pl. VI, fig. 6], presented by Mr. J. Balfour Browne and taken by him on Crater 14 (E), Pico, July 22nd, 1929. A little later Mr.

Balfour
data, on
slightly
fore-wings
on the hind
the under
in the ♂.
differ less
I am acc

Accom
BESCHNE
a photost
of Bergs
When
scarce we
I ascertain
Society.
were made
One comp
Society, at
the Societ
Linnean S
photostat.

It is ne
of these
volumes of
thus issued
So far as I
works. Th

Plates
Leaves
Vol. I.

Plate 1
" 2
" 3
" 4
" 5
" 6
" 7
" 8
" 9
" 10

Of the
Volume III
part of the
number of
published in
proc. 23

Balfour Browne kindly permitted me to examine two other females with the same data, one of which is represented (under surface) in Pl. VI, fig. 7. The ♀ is only slightly larger than the ♂, the subterminal pale band and the blind ocelli of the fore-wings somewhat more defined, and the central pale suffusion more extended; on the hind-wings the angulated pale band is more distinct and conspicuous. On the underside, the white band on the hind-wings is nearly or quite as well-defined as in the ♂. The two sexes are thus exceedingly similar in general appearance, and differ less from each other than is the case with any race of *S. semole* with which I am acquainted.—J. J. W.]

A COMPARISON OF THE *ICONES PAPILIONUM DIURNORUM* AND *NOMENCLATUR UND BESCHREIBUNG DER INSEKTEN* OF BERGSTRÄSSER.—Capt. A. F. HEMMING exhibited a photostat copy, recently added to the Library, of the *Icones Papilionum Diurnorum* of Bergsträsser and communicated the following notes:—

When desiring recently to consult Bergsträsser's *Icones*, I found that, of this scarce work, the British Museum (Natural History) possessed only the third volume. I ascertained, however, that Volumes I and II were in the library of the Linnean Society. Through the permission kindly accorded by those bodies, arrangements were made for photostats to be taken of the respective parts in their possession. One complete photostat copy has thus been added to the library of the Entomological Society, and in return, photostat copies of Volumes I–II have been presented by the Society to the British Museum (Natural History) and of Volume III to the Linnean Society, each of which institutions thus now possesses, either in original or photostat, a complete copy of this work.

It is now possible for the first time to make a critical comparison of the contents of these two works which Bergsträsser wrote concurrently. Each of the three volumes of the *Icones* contains a few pages of text and 10 plates. The 30 plates thus issued are also reproduced under different numbers as plates in the *Nomenclatur*. So far as I am aware, there exists no published comparison of the plates of these two works. This is given in the following table:—

Plates in <i>Icones</i> Vol. I.	Corresponding Plates in <i>Nomenclatur</i> .	Plates in <i>Icones</i> Vol. II.	Corresponding Plates in <i>Nomenclatur</i> .	Plates in <i>Icones</i> Vol. III.	Corresponding Plates in <i>Nomenclatur</i> .
Plate 1	58	Plate 1	59	Plate 1	69
" 2	55	" 2	60	" 2	70
" 3	52	" 3	61	" 3	71
" 4	56	" 4	63	" 4	72
" 5	50	" 5	64	" 5	73
" 6	49	" 6	65	" 6	74
" 7	51	" 7	68	" 7	75
" 8	54	" 8	67	" 8	76
" 9	53	" 9	66	" 9	77
" 10	57	" 10	62	" 10	78

Of the volumes published in 1779, Volume I of the *Icones* clearly precedes Volume III of the *Nomenclatur* as the latter volume contains references to the first part of the *Icones*. Volumes II of the *Icones*, which was issued in 1780, contains a number of references to the corresponding plates in Volume III of the *Nomenclatur*, published in the previous year.

PROC. ENT. SOC. LOND. 5, PART III, 1930. (1931.)