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THE BUTTERFLIES OF TENERIFFE.

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To the naturalist, whether he be ornithologist, botanist or entomologist, no group of islands presents a more fascinating and interesting field for his particular study than the Canary Island Archipelago. The various species peculiar to the islands, or, in several cases, to one particular island, offer problems of surpassing interest, and added to the magnificent climate which one nearly always enjoys there, renders a stay on any one of the islands one of peculiar enjoyment. I spent the greater part of February and March in 1927 at Puerto Orotava on the coast of Teneriffe, and, from a natural history point of view, no better centre could be found from which to work the flora and bird-life of that beautiful island.

Puerto Orotava is situated on the West Coast of Teneriffe, the largest island of the group, and is reached by a drive, through splendid scenery, of 30 miles from Santa Cruz, the principal town and port of the island.

The island of Teneriffe covers an area of roughly over 900 square miles, and is 50 miles long by 32 miles broad. A long, unbroken range of mountains running roughly from Esperanza to Guia forms, as it were, the backbone of the island, and culminates in the well-known peak, the Pico de Teide, which reaches a height of 12,180 ft. The sides of this long ridge of mountains are deeply cut by barrancos (ravines), which run down on either side, some of them of very large size. The entire surface of the island is composed of basaltic rocks, larva, cinders and scoriae, though on the fertile Laguna plateau there is a fine rich mould. Owing to the mountains there is a considerable amount of moisture, which renders the island far less arid than some others of the group; indeed many of the barrancos are most luxuriant with brilliant, almost tropical vegetation, and it is only in the extreme south of the island, where typical African desert conditions exist, that sandy, stony tracts of country are to be found, and although this region has several remarkable birds peculiar to it, insects were conspicuous by their absence. The extremely picturesque town of Orotava is situated 1500 ft. above the sea, overshadowed by the snow-capped Peak of Teneriffe; El Puerto, where I stayed, is 3 miles distant, at sea-level. The country all round is now largely devoted to the cultivation of the banana, and a great deal of what was formerly good collecting ground has gone for ever. The banana plantations

extend for miles all round Orotava, and stretch up to some 2000 ft., where one gets into the region of the chestnut and laurel forests, but at this elevation butterflies had hardly begun to emerge when I was there, and all my collecting was done nearer the coast. There has been, in the past, considerable difference of opinion amongst scientists as to the origin of the Canarian Archipelago, and various theories have been put forward: (i) that they are merely of volcanic origin, (ii) that they were originally joined to the mainland of Africa, (iii) that they are the remaining peaks of the submerged fabled continent of Atlantis; but it is now generally agreed that they were formed by volcanic action in the late Tertiary period. The archipelago is made up of some twelve islands, forming an eastern group and a western group. The eastern islands are mainly composed of arid, stony deserts and extinct volcanoes, with a very scanty vegetation, and probably the butterfly life on them is very small. The two large islands of the western group, viz. Gran Canaria and Teneriffe, are also purely of volcanic origin, but on them water is fairly abundant, and consequently vegetation is much more luxurious.

The whole of the island of Teneriffe can be divided up into very distinct zones of vegetation, which bear a marked influence on the distribution of the butterflies. These zones may be differentiated as follows:

1. *The Maritime Zone*, which extends from sea-level to 1000 ft., and includes the desert-like plains. This zone is characterized by a semi-desert flora, where such arid-loving species as *Opuntia* and the wonderful Tree-Euphorbias flourish.

2. *The Monte Verde*, or zone of cultivation, including the remains of the chestnut and laurel forests, between 1000 and 3000 ft. Here the vegetation, whether indigenous or introduced, is of the utmost luxuriance; vines, oranges, loquats and bananas all thrive, and wild flowers of every description clothe the sides of the barrancos, while the gardens of the villas and houses are more like outdoor conservatories than anything else, with an extreme wealth of magnificent plants and shrubs; the brilliant yellow and scarlet *Bignonia venusta*, with red and purple Bougainvilleas, climb in profusion over roofs and balconies, flaunting crimson *Hibiscus* grow side by side with Daturas with their enormous white trumpet-like flowers, while the beautiful blue *Thunbergia grandiflora* climbs over the Dracaenas and Palms, all making up a picture of surpassing loveliness. This zone is much the best for most of the species of butterflies.

3. *The Pine Forest Zone* 3000-4000 ft.

4. The Cumbres or high mountain zone, extending from 4000 to 7000 ft. Butterflies would probably not be found at this

elevation as the vegetation is very poor, though the characteristic plant Escobon (*Cytisus prolifer*), grows here freely.

We arrived at Orotavo on February 15th, and for the whole of our stay the weather was of the most beautiful description. The butterflies of Teneriffe comprise some 29 species; of these I took 20 species, the remainder not emerging till later on in the summer. Insects were a great deal more plentiful than I had expected; in some of the barrancos they were abundant—far more so than I had found them at this time of year in Morocco or Algeria. Probably Orotava is as good a centre as one could find, though I may have been lucky in taking every species I could possibly expect to get. As everywhere else, the more interesting species were extremely local, one of the best places being a large stretch of virgin ground near Santa Ursula, some 5 miles from Orotava: here all the native plants grew luxuriantly and butterflies were exceedingly abundant; some of the barrancos also provided excellent ground for certain species, notably the Barranco Martianez. Large tracts of the more rocky parts of the country (Zone 1) are given over to the prickly pear, of two species, viz. *Opuntia coccinellifera* and *O. dillenii*. The former, which in the past was largely cultivated, is the food-plant of the Cochineal bug, which previously was bred by the inhabitants for the sake of the well-known dye; this industry was killed, however, in the Canary Islands by the discovery of aniline dyes in 1878. However, I was told that recently an effort has been made to restart the cochineal industry in Gran Canaria, principally because it is an industry which requires very little heavy labour, and in consequence suits the temperament of the indolent Canarian peasant, and also because the *Opuntia* thrives on ground on which nothing else will grow. The bugs appeared to be very common everywhere on the prickly pears all around Orotava.

The following is a complete list of the butterflies found in the Canary Islands, including the 9 species I did not see.

Thymelicus actaeon.—This is the only Hesperid found in the Canary Islands. It was first seen on March 16th, and after that date became fairly common. It was always found on rather dry ground, often on the sides of the barrancos. The form is no larger than European specimens.

Hesperia phlaeas.—Widely distributed, and of frequent occurrence; specimens were brightly coloured, of average size, and showing no tendency to var. *eleus*.

Zizera lysimon.—A very abundant species, and occurring everywhere up to 700 ft.; it was often seen fluttering along the streets of the town of Puerto Orotava. A fresh brood emerged soon after I arrived on February 15th.

Aricia medon var. *astica.*—First seen on March 6th, it seemed

to be a scarce species, and not more than four or five specimens were seen, and these at widely different localities. Those I took were large examples, with wide red borders on the upper side.

Cyclyrius webbianus.—This remarkable butterfly is only found on the island of Teneriffe. It is quite unlike any other palearctic "Blue." I first took one much worn specimen on a montinetta near Orotava on March 8th, but the following day I took a dozen fresh specimens, all males, in an extremely hot and arid gorge some 10 miles beyond El Puerto; here vegetation had been already a good deal burnt up, but curiously enough this little spot proved to be a very good locality, and it was the only place where I found two large nests of the larvae of *Deilephila tithymali* on *Euphorbia canariensis*. These larvae feed gregariously, and the sight of twenty or thirty full-fed larvae, resplendent in black and green, all together on the pale green Euphorbia, was a sight to be remembered.

Subsequently I found *webbianus* singly in several other places, but except in this one little gorge they were never common. They are difficult to catch, as they fly very swiftly in the hot sun. I paid a second visit to this gorge on the 19th, but the butterfly did not seem to be any more plentiful than on my previous visit. I took, however, 4 females, which are entirely brown on the upper side. Curiously enough three of these were very much worn, and gave the appearance of having been on the wing for a long while. I watched a female lay on a small yellow-flowered lotus, with a pale grey leaf, which grew rather plentifully amongst the rocks; she sat on one of the leaves, and curving her abdomen down appeared to oviposit on the underside of the leaf. Possibly she was disturbed before effecting the act, as a close examination failed to discover the egg. In the absence of pods it was impossible to name the species of Lotus with absolute certainty, but it is most probably *Lotus sessilifolius*. I was told that *webbianus* occurs in the Pine Forest Zone in June, and is even seen occasionally half way up the Peak. The males, when quite fresh, are very striking: the dark blue colour of the upperside most nearly resembles the shade of *Vaccinium optilate*, though they quickly lose their first freshness.

Lampides boeticus.—Not rare, and widely spread. Beautifully fresh on March 5th, when it was apparently just out, as none were seen before that date. On a small montinetta near Orotava a small bush, some 3 ft. high, with a white pea-like flower, grew abundantly. On these *L. boeticus* was very common, and no doubt it is its food-plant there, though I was never able to make out its correct name, as a spray I meant to send to Kew on my return home to be identified got lost, and none of the residents there were able to name the plant for me. The form was of medium size; probably the later broods would be much larger.

(To be continued).

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(Concluded from p. 4.)

Callophrys rubi.—Reported to have been taken on the island. I saw no sign of it.

Aporia crataegi.—Another species which is supposed to have occurred on Teneriffe, and there seems to be more probability that it may have done so than that *C. rubi* did.

Pieris cheiranthi.—This very distinct species is found only in the Canary Islands. It was just beginning to emerge when I left on March 24th, and two or three examples were captured. About fifteen larvae were found altogether on *Nasturtium*; they exactly resembled larvae of *P. brassicae*, and all emerged as very fine large examples some three weeks later. The underside of this species is extremely handsome with broad black markings. It is a very local species round Orotava.

P. wollastoni.—This species, which very closely resembles the last, is found in Madeira as well as the Canary Islands. I did not see it.

P. rapae.—Very abundant everywhere.

Pontia daplidice.—Not very common, and mostly rather worn, but a new brood was emerging when we left.

Euchloë charlonia.—I did not see this little butterfly, and was told that it did not emerge before June, and then was found only, very locally, on certain mountains at an elevation of some 4000 ft. This is very different from my experience of it near Biskra, in Algeria, where I have taken it early in March, on rocky hills, not much over 1000 ft. elevation.

Gonepteryx cleobule.—This beautiful species, which is peculiar to the Canary Islands, was very local; indeed I found it at all plentifully only at the Santa Ursula locality, where, like many other insects, it was attracted by the blue flowers of the giant *Statice*, which grew there in some abundance. All those I took were perfectly fresh; the pale yellow females are very large. Two species of *Rhamnus* grew in this locality, which I had not noticed elsewhere, and this would also account for its presence, though I never noticed the females going anywhere near the *Rhamnus* bushes, which grew altogether on one side of the ground, the *Statice*, which appeared to be the greater attraction, growing some way off.

Colias crocea.—Widely spread and common. Specimens netted when we arrived were all worn. A fresh brood began to emerge on March 19th.

Argynnis pandora.—This species occurs in the chestnut forest zone in July. I searched a great number of plants of the local violet, which grew plentifully in the woods at this elevation, but did not succeed in finding any larvae.

Issoria lathonia.—I was surprised not to meet with this species, which I believe is common in the barrancos. Presumably it was not yet out, when we left on March 22nd, which seems strange when it may be commonly taken in the South of France as early as March 10th.

Pyrameis cardui.—Very common; beautifully fresh examples emerged before we left Orotava.

P. huntera.—Until March 17th I had seen only one very ragged example of this species, which I caught on the very top of a small montainetta on March 5th. I knew it was a very local species and hunted in vain for a locality for it until the 17th, when I found it was plentiful in a very restricted area in a locality some miles from Orotava. In company with *P. cardui* it was greatly attracted by the flowers of the blue *Statice*. A considerable number were evidently hybernated specimens, but I got a long series of beautifully fresh examples.

P. callirhoë.—Very common; generally found in the villa gardens, and I do not think I saw any in the barrancos. They were all beautifully fresh. I am not sure what the food-plant of this species in the Canary Islands is. Certainly the nettle was practically non-existent in the region, *i. e.* Zone 1, in which the butterfly was flying; and I cannot say that I noticed it higher up in the chestnut forest region, where *callirhoë* would doubtless occur a little later in the year. A species of *Parietaria* grew abundantly on walls, in the region of the gardens where the butterfly was common, and it may be that this plant is its food-plant at Orotava.

P. atalanta.—Flying in company with *P. callirhoë*, but always much scarcer—in fact I should consider it rather rare; those I saw were always very fresh. When seen side by side, in the full sun, sitting on a flower with outstretched wings, *atalanta* is quite put into the shade by the beauty of a fresh *callirhoë*: there is no comparison between them. I kept a sharp look-out for hybrids between the two insects; one would have suspected that two butterflies so very closely similar would have frequently interbred.

Danais archippus.—Quite common, but very local, and only to be found where its food-plant the "Arbol de Seda" (*Asclepias curassavica*), grows, though such a large, strongly flying butterfly is naturally often carried far from its real habitat, and single examples were seen soaring about in various places; but where the Asclepias grew there were plenty of them, and a magnificent sight they made, perhaps six or seven of these huge butterflies in company with as many *D. chrysippus*, hovering round the bright orange flowers of their food-plant, the colour of the flower exactly matching the orange of the butterflies wings. Here they were easy to capture; if chased elsewhere it was 100 to 1 on the butterfly. The "Arbol de Seda," as the Spaniards call it, is not a particularly

common plant, and practically every bush of it I found was completely denuded of leaves by Danaid larvae, in all stages of growth, from tiny, just hatched examples to full-grown specimens ready to pupate, while hungry larvae were often seen wandering away from the plant, over the rough ground, searching for something to live on, and still the butterflies went on laying on the denuded stems of the plants, while the long orange ova could be seen on the bare twigs. One would think that larvae resulting from ova laid by a fresh brood, which emerged while I was there, must all perish from lack of food. The full-fed larvae are very conspicuous with their orange and black and green colouring; those of *D. archippus* have 3 pairs of long black filaments growing from the back, those of *D. chrysippus* only 2 pairs. I reared a large quantity of both species, and very nearly all emerged as perfect specimens; not one was stung by a parasite. The larvae I reared were all from 12 to 15 days in the pupa state. The round, bright green pupa rather resembles the pupa of *Charaxes jasius*. The examples of both species of Danaidae which were flying when we arrived were all comparatively fresh, and, as I have stated, another fresh brood emerged before we left. The imagines are very tenacious of life, and require to be left a long while in the killing-bottle. These species are distasteful to birds, but I saw a lizard eating a specimen of *D. chrysippus* one day, and several times noticed examples caught in the gigantic spiders' webs, which often stretch from bush to bush, and eaten by the enormous grey spiders, though one would have thought that such a large insect as *Danais* would be strong enough to free itself from the mesh of a web.

D. chrysippus.—As common as the last species, and found in exactly the same places, the females egg-laying on the same Milkweed plants as *D. archippus*. The larvae were indistinguishable except by the number of black filaments.

D. chrysippus var. *alcippus*.—In this variety the uppersides of the lower wings are washed with white. It was very scarce, and I took only two specimens.

Satyrus statilinus.—Is found locally on the Cumbres in July, and is not rare; I, of course, did not see anything of it.

Pararge xiphioides.—An extremely common species nearly everywhere; it is found only in the Canary Islands, though a closely allied variety inhabits Madeira. When we arrived on February 15th the females had not emerged. The second brood, for which we were too early, is considerably larger than the early spring brood.

Epinephile hispulla.—I expected to see this species before we left Orotava on March 22nd but it had not emerged; it is very common in April.