

MALAYAN SPECIES OF BUTTERFLIES
FOUND ON KHAO SABAP. PROV. OF CHANTABURI. S. E. SIAM.

By J. J. MACBETH.

In the course of my butterfly collecting on the Sabap Range in the Province of Chantaburi during the past 5 years I obtained some specimens which seemed strangely out of place there. They were of purely Malayan species, and had not been met with in that happy hunting-ground of the butterfly collector—Sriracha, which lies only some 80 miles to the N. W. of the town of Chantaburi.

The first specimen I obtained was *Papilio helena cerberus*. I had observed a female fluttering among the flowers of a tree some 20 feet in height, and as it seemed different in marking from its near relation, the common black and gold "Birdwing" (*Papilio aeacus praecox*) which is so noticeable on account of its size—7 inches in span—I waited patiently until it glided within reach. The following day I was fortunate in getting the male. This species had not been recorded previously outside Nakorn Sritamarat in Peninsular Siam; but it was not until I had obtained other Malayan species that it occurred to me that there must be some reason for their isolation in a district separated from their usual habitat by some 300 miles of open sea. That they had been blown over during the S. W. monsoon was clearly impossible.

Then came to mind the deductions of Alfred Russel Wallace so clearly set forth in his work, "The Malay Archipelago," first published in 1869, after 8 years of wandering and collecting in this huge area, and his conclusions have never been disputed. It is now accepted by all scientists that the continent of Asia at one time extended eastward to points stopping short of Celebes and Lombok; but a vast and gradual subsidence had converted this land formation into an archipelago of islands, great and small. It did not, therefore, seem improbable that similar changes had taken place nearer home.

Let us try to envisage a Siam without its Gulf: as it may have existed at a period so remote that no historical records are extant, not even traditions. Here might have been seen a fertile valley through which ran a confluent of the Petchaburi, Maa Klong, Supan, Chao Phya and Bangpakong rivers, increased in volume on its way

south by the addition of streams from the east and west, until it found its way into some southern ocean.

Then came the gradual subsidence. The sea encroached, and a glance at the hydrographic map of the Gulf will show submarine spurs today extending from Koh Samui on the west coast, and from the south end of the Province of Chantaburi on the east, which at one period of the subsidence probably formed a narrow entrance to an inland sea. In due course these remnants of a low hill-range through which the river flowed were submerged and the Gulf was in being.

In Corbet & Pendlebury's "Butterflies of the Malay Peninsula," and Chasen's "List of Malaysian Birds," it is remarked by the authors that there is reason to suppose that the Peninsula was cut through by the sea in one or more places, and reunited at a date late enough to have affected the faunal distribution.

In Gerini's "Researches on Ptolemy's Geography of Eastern Asia" he speaks (pp. 78 & 79) of "geological evidence of *no doubtful nature* indicating that the land between Singora and Kedah - lat. 6° to 7° N - is an old sea-bed, there being many gaps in the mountain range through which sea-going boats must have found passage from one side of the peninsula to the other. There are, indeed, old traditions of ships from India and Ceylon having come across this way to the Gulf of Siam The rising movement is still continuing, as shown in the case of both Ligor (Nakorn Sritamarat) and Patalung, which, situated formerly on the sea-beach, are now miles from it."

One does not find geological evidence of changes that have taken place once the land is under the sea unless there is subsequent upheaval, and it is here that the geographical distribution of fauna must supply evidence which is otherwise lacking, and be of assistance in determining what conditions existed at an early epoch. It is, therefore, most interesting to note that Corbet & Pendlebury should, from a study of the butterflies, also have independently placed the severance at 6°N., and that the faunal evidence should agree so exactly with the geological.

The aerodrome at Don Muang is on a sandy elevation, and a mere scratching of the surface reveals sea-shells, evidence that Don

Muang is probably an old sand-bar. There are also many other records from different parts of the country of extensive penetration by the sea; but these need not be quoted here. It may, however, be remarked that Talé Sap in Cambodia was at one time an inland sea, but owing to the land having risen it is now a fresh-water lake.

It is most evident that at this period the Sabap range must have been completely isolated; and retained on it were flora and fauna in common with Malaya. Of the former Dr. A. F. G. Kerr has collected pure Malayan species on the Sabap and Pachin Hills; and as there is a close relationship between plant life and insect life it is reasonable to suppose that certain species of Malayan butterflies would find their particular food-plants and continue their existence.

Then came the period of re-elevation. The Peninsula was united again and Khao Sabap ceased to be an island. Even at the present day the base of the Sabap range is only 10 metres above sea-level, although about 20 kilometres from the coast; and the small hills to be seen on the way from the wharf to the town of Chantaburi are still called "islands" by the local people, so that the retirement of the sea at this particular part of the coast is of comparatively recent date. The salt marshes are gradually being reclaimed and turned into paddy land, but it is not quite certain that this is due to upheaval alone. It is very possible that the torrential rains on the Sabap Range (from 160 to 170 inches a year) which bring down a yearly contribution of decomposed stone (hornblende-biotite granite), and vegetable matter from the dense jungles on the slopes, may be a contributory factor, if not the main one. When Mouhot visited Chantaburi in 1853 he remarked the evidences of the receding of the sea, and suggested the possibility of the river ultimately being blocked to the passage of sea-going boats; but from the comparatively low elevation of the surrounding land today it is possible that the growing obstruction was due mainly to silt brought down by the river, and occasional seasons of heavy rains have done a certain amount of natural dredging. From the scanty details he gives of his trip from Chantaburi to Khao Sabap one must assume that he encountered no difficulties in the form of extensive marshes on the way, and that the

ground traversed differed in no material degree from what it is at the present day; and if little or no change has taken place in 80 years it gives support to the suggestion just made that the reclamation of the land is due mainly to matter brought down from the hills.

Some 45 kilometres to the North of the town of Chantaburi stands the prominent peak of Soidao (5741 ft.), the highest point of a comparatively low range of hills running due N. and S., and from the topography of the surrounding land it is clear that its isolation was contemporaneous with that of Sabap. It is most unfortunate that all attempts at exploration of this mountain have been frustrated by the local reports of tigers, malevolent spirits, dacoits and all the rest of the usual nonsense, which make it impossible to obtain transport to the base of the hill. Even with government support Dr. Kerr was baulked some years ago in his desire to investigate the flora of Soidao. In June last, however, these myths and superstitions were broken through by a Siamese bird collector, and he succeeded in reaching a height of 2000 ft., but owing to exceptionally early rains he was forced to retire without obtaining anything of importance. There can be no doubt, however, that many interesting things are to be found there.

I have put forward this theory as furnishing the only explanation of what would otherwise be inexplicable; and if one keeps in mind the fact that the earth's surface is in a state of continual change it does not seem an improbable one. The Gulf of Siam is quite shallow, and an elevation of its bed by less than 150 feet would be sufficient to remove its existence as an arm of the sea.

Following is a list of the Malayan species of butterflies I have found on Khao Sabap and which have not been recorded outside Peninsular Siam and Malaya proper. It may not be out of place here to mention that the elevations at which they were obtained correspond exactly with those at which they are found in Malaya.

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| 1. <i>Papilio helena cerberus</i> Feld. | Pen. Siam & Malaya. |
| 2. <i>Lethe mekara gopaka</i> Fruh. | Malaya only. |
| 3. <i>Elymnias hypermnestra</i>
<i>beatrice</i> Fruh. | Malaya only. |

4. *Zeuxidia amethystus*
 amethystus Mason. Pen. Siam & Malaya.
5. *Cirrochroa emalea martini* Fruh. Pen. Siam & Malaya.
6. *Cirrochroa emalea ravana* Moore. Malaya only.
7. *Dolleschallia bisaltide pratipa* Feld. Malaya only.

