XVI.—A CURIOUS HABIT OF A DANAID BUTTERFLY.

During May and the first half of June this year there were extraordinarily large numbers of the butterfly *Danais melissa dravidarum* Fruh. on the Billigirirangan Hills (Mysore-Coimbatore). Throughout large areas of dry evergreen forest at an elevation of about 4,000 ft. swarms of many thousands of these butterflies were frequently met with. In this same area a wild species of hound's tongue, *Cynoglossum denticulatum* A. DC. var. *zeylanicun* C. B. C. is frequent, but at this season is not yet in flower. It was noticed that many plants of this species were completely covered with the above butterflies. These insects were engaged in vigorously scratching the surface of the leaves with the 'claws' of their front legs and drinking the sap thus made available. Each front leg has two slender sharp claws. As a result of this treatment the leaves become wilted and soon turn black or brown. The butterflies appeared to confine themselves strictly to this particular plant, and consequently it was difficult to find any plants of this kind that had not been thus attacked, at least to some extent; many plants had all their leaves completely shrivelled.

The Danaid butterflies were accompanied by a few of the species *Euploea coreta coreta* God. which were drinking the sap but which were not seen to take part in the scratching. The butterflies did not resort to this practice simply to get water, as there were a number of shallow streams in the district. This plant is not recorded as the food plant of the larvæ of Danais or Euploea.

The butterflies were kindly identified by the Madras Museum.

TAMBARAM, E. BARNES.
SOUTH INDIA.
July 9, 1939.

XVII.—'A CATERPILLAR PEST OF CHAMPAKA (*MICHELIA CHAMPACA*) IN SOUTH MALABAR DISTRICT.'[1]

The Champaka (*Michelia Champaca*), a well known and popular flowering tree in India is found thriving chiefly along the foot-hills and uplands of the Western Ghats. Apart from its value as a valuable timber tree, its sweet-smelling and beautiful golden flowers command a good market in all villages and towns. It is commonly cultivated round about temples and like the *Asoka*, *Malathi*, *Mandara*, etc. is one of the trees held in some veneration by Hindus in many localities. The writer has in his farm in the South Malabar District

[1] Paper read at the Indian Science Congress, Calcutta, 1938.

a few young trees; recently these were found subject to the attacks of a leaf-eating caterpillar. Since we have no records of any insects associated with this valuable tree from South India, the writer has attempted to present a short paper on the bionomics of this insect. The Caterpillar is the larva of the swallow-tailed papilionid butterfly *P. agamemnon.* L. The caterpillars feed on the foliage, and sometimes almost defoliate the branches especially is this the case with young plants. The attack is commoner during the rainy months from June to September.

The insect, its life-history and habits.—The butterfly is a fairly common species found all over the Indian region especially in tracts with a good rainfall. It is a beautiful creature with black wings with numerous green markings; there are a few brown and pinkish markings on their under side. The colour of the body is black generally, but there are a few grey or pinkish patches on the thorax and sides of abdomen.

Eggs.—The spherical smooth egg is pale yellowish green more or less the colour of the tender leaf, on the undersurface of which it is deposited.

Larva.—The egg hatches into a tiny dark caterpillar in three to four days. The newly hatched larva measures 2 mm. In colour it is blackish grey with a striking creamy white patch along the dorsal region of the posterior half of the body; the prothorax is also of a pale whitish colour above. Ventral region and legs are pale grey. The head is paler and is hidden underneath the prothorax. The dorsal and lateral regions are fringed with small branched spines, in addition there are four pairs of tubercular processes with minute spinelets on them. The first three pairs are on the thorax, one pair on each segment; these project posteriorly and laterally and become very conspicuous in the later stages. The mesothoracic and the abdominal processes are pale whitish to some extent, the other thoracic ones being dark grey. The small dorsal spines are arranged in longitudinal rows on either area of the mid-dorsal region; each of these small spines is bifid at the tip. At this stage the creature can be easily mistaken for bird's dung—evidently a protective adaptation. At the next stage the body colour changes to dark green, but the white patch still persists though paler in hue. The smaller body spines disappear leaving only the four pairs of processes and a smooth body; gradually the thoracic region gets swollen and hides the head completely from view. In the later stages the body takes a pyramidal shape with the middle of the body elevated up and sloping gradually towards the front and back. The spiny processes become reduced and shining black in colour, the mesothoracic pair becoming reduced to mere stumps with a golden yellow areola around the base of each; these processes now become spines, the spinelets on them gradually disappearing. From this stage onwards the larva often assumes the attitude of sphinx larvæ with the anterior region remaining raised up over the leaf level. When disturbed the caterpillars also thrust out the fleshy forked *osmateria* from the prothoracic region emitting a very strong odour—evidently a defensive adaptation generally found in most papilionid caterpillars.

The caterpillar during its last stage grows to a length of about 40 to 45 mm. and is stout and cylindrical though compressed a little dorsoventrally. The body surface is smooth. The general colour is bright to yellowish green according to that of the leaf surface. The ocelli, the four pairs of spines (3 thoracic and 1 abdominal) are blackish blue; the mesothoracic ones are considerably reduced to two small dark pinheads; the bases of the metathoracic ones have a crimson shade. The eight pairs of spiracles are clearly visible as grey spots over a yellowish green ground colour. Legs prolegs paler and greyish at tips, the latter very well provided with hooks and setæ.

Pupa.—The caterpillar changes into the chrysalis fixing itself by means of silk strands on the leaf stalk or branch carefully hidden from view, difficult to detect blending as it does with the colour of the pale green bark or stem. The chrysalis is about an inch in length and is more or less boat shaped with the conspicuous horn on the middle and narrowing towards each end; the tail end tapers and the head end is more or less flattish. The thoracic region is edged with a wavy brown border patch on each lateral side and these meet at the horn. The abdominal region is paler than the anterior half. The life-history roughly occupies about a month to five weeks. In the earlier caterpillar stages the creature is more or less like some limacodid caterpillars (Parasa, Contheyla, etc.).

It was not found breeding on any other food plant except *Champaca* in this region. Kershaw has recorded it from Hongkong breeding on Champaka and custard-apple and Senior White from Ceylon on *Anona*. There is however no record of its occurrence on this plant till now from South India.

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XVIII.—BIRDS EATING BUTTERFLIES.

I had very interesting experience on this trip. A Paradise Flycatcher (*Tchitrea paradisi* Linn.)—the Malay name is *Murai Rimba,* which means the robin of the big jungle—was very interested in certain butterflies which during the sunny part of the day fed on the edge of the pool where, no doubt, they found succulent juices from the large accumulations of elephants' dung. The bird I saw at first was the male; later on, another day, I saw both male and female.

The flycatcher stooped at the butterflies as they were feeding on the ground,—I am not sure whether a bird does 'stoop' at butterflies—and after many failures I saw him catch a Fritillary and take it away to a tree where he pulled or broke the wings off and then flew away with what was left.

I think the female was on a nest where there were possibly young, because later on I saw her catch a large White and take