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You will, I know, be interested to learn that male *Hypolimnas bolina* L., are more numerous than I have previously observed in Suva. One male has haunted my garden-gate for seven weeks, presumably the same one. I doubt if females live so long. The giant toad *Bufo marinus* recently introduced into Fiji is interesting. Records show it to be a great eater of millepedes, but a pair I have in the laboratory, when given the common red species, eagerly took it, but then spat it out and have refused them consistently ever since. For so omnivorous a feeder this seems remarkable. I want to try them with certain other things. They simply love woodlice.

MIMETIC AND OTHER ASSOCIATIONS BETWEEN NEOTROPICAL INSECTS AND SPIDERS

By Dr. J. G. MYERS, D.Sc., F.R.E.S.

[Communicated by Sir EDWARD POULTON, who has added the determinations, notes, etc., in square brackets, to the author's records. The remarkable hind-wing development of No. 4286, *Trochophora duckei*, investigated and compared with that of other species by Dr. B. M. Hobby, is described in the following communication. In preparing these statements very kind help was rendered by the following friends:—Mr. R. B. Benson, Dr. W. S. Bristowe, Mr. G. E. Bryant, Mr. W. E. China, Mr. H. St. J. K. Donisthorpe, Dr. R. Hanitsch, Mr. N. D. Riley and Dr. Hugh Scott.]

5939. Caught 30.xii.1935, at light, King Fredk. Wm. Fall, Courontyne River, Brit. Guiana.—No other field data, but strongly resembles certain black and yellow Lycids.

[The Longicorn beetle *Carterica mucronata* Ol. (*cinctipennis* Pascoe)—LAMIINAE.]

2088. Extract from journal, 22 July, 1931, La Gonave, Haiti.—Thought I saw a red-winged *Pepsis*, such as is common on the island [La Gonave], flying in usual manner across path. Not quite sure on second glance—flight seemed a little heavy. Thought might be a Scoliid mimicking. Caught it—a moth.

(By an oversight the box in which I pinned it had not been supplied with naphthaline. Ants entered and ate clean off the pins everything—including several flies and a small stick-insect—save two small hard Vespids and this moth which was the only insect left intact.)

[The Syntomid moth *Empyreuma pugione* Linn., ♂. The group to which this Müllerian mimic belongs is well known to be distasteful, and the evidence is, in this instance, exceptionally strong.]

1655. Feb. 1931, Mabaruma, N.W. Distr., Brit. Guiana.—Lepidopterous pupa-case (empty) in open network cocoon, at end of long pedicel on under surface of leaf of *Heliconia Bihai* J. S. Mill.

[No cocoon in the British Museum (Nat. Hist.) collection resembles this remarkable specimen, but it is like, although much smaller than, a yellow network cocoon of a Syntomid moth which I remember was considered by Dr. David Sharp to be the model of the Membracid *Oeda inflata* F. He certainly said that the resemblance was undoubtedly to a cocoon, and this opinion has remained fixed in my memory as held by one whose attitude towards mimicry in general was severely critical. I accepted the comparison,

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which I still think may be valid, and with this in my mind, wrongly corrected Dr. C. M. Child's English translation of Haase's memoir Pt. II.,* in which *Oeda inflata* is figured "showing its resemblance to the empty pupal case of a butterfly"—the interpretation offered in the original work and one which may be more probable than David Sharp's. Mr. W. E. China has shown a specimen of *Oeda* to Mr. N. D. Riley, who "thinks it is suggestive of the pupa of a Lycaenid butterfly. The pair of short club-shaped processes, at the narrow anterior end of the inflation, bears some likeness to the cremaster hooks of a Lepidopterous pupa." I am glad that the sight of Dr. Myers's beautiful little cocoon has indirectly led to the discovery and withdrawal of a baseless criticism of which I was guilty forty years ago. E. B. P.]

1479. 15 Dec., 1930, Ocumare de la Costa, Venezuela.—On a large-leaved *Coccoloba* near the road, several large clusters (up to 6 inches long) of a vivid yellow and black *Membracis* sp. and their nymphs, but chiefly adults, forming a striking spectacle. A number of large *Polybia* (later determined by Dr. J. Bequaert as *Gymnopolybia pallidipes* Ol.) walking quietly over them, resting entirely on the backs of the Membracids and lapping up honey-dew from them. The Membracids stayed quiet; yet if one barely touched one of them with the finger, it and the adjacent ones burst into flight, with a loud rattling and crackling against the stiff *Coccoloba* leaves. Also milking the Membracids, was a greyish-black ant of the genus *Cryptocerus*.

[The single *Polybia* is a ♀ and the *Membracis* a species near *humilis* Fowler, ♀ (MEMBRACINAE). The evidence of mutual tolerance and of a beneficial association between the wasps and these Homoptera is very interesting, confirming Belt's account of the relationship between MEMBRACIDAE and ants in his *Naturalist in Nicaragua* (2nd Ed., Lond., 1888 : 227-8).]

D 190. 9 May, 1929, Brit. Guiana.—Ant and spider mimic taken in same netful, beating bushes.

[The ant-model is *Camponotus (Myrmacladoecus) santae-fidei* Dalla Torre, ♀, or very near to that species, but the National Collection contains only a single worker. Mr. Donisthorpe, however, considers that the subgenus is certain. The spider-mimic is *Erica* sp., ♂ : ATTIDAE. Dr. Bristowe has also informed me that the spider mimicking the ant *Cryptocerus atratus* L. at Kobarima, N.W. Brit. Guiana, and exhibited 6 Nov., 1935 (*Proc. R. ent. Soc. Lond.* 10 : 70-71), is *Aphantochilus rogersi* O. P.—Cambr. (THOMISIDAE).]

5211. 20 Jun. 1935, N.W. Distr., Brit. Guiana.—Myrmecoid spider, feeding on the large, vivid red larvae of the Thrips, *Actinothrips monochaetus* Hood.

[The spider is *Myrmecium* sp., ♀ : DRASSIDAE.]

1629. Feb. 1931, Nickerie, Surinam. *Ipobracon dolens* Cam., ♂.

2330. Dec. 1931, Trinidad. The Reduviid bug mimicking the *Ipobracon*.

Though these actual specimens were taken in two separate colonies I think it is a case of mimicry, since closely similar if not identical species of *Ipobracon*

* Haase, E. (1893) : Untersuchungen über die Mimikry auf Grundlage eines natürlichen Systems der Papilioniden. I. Tl. : Entwurf eines natürlichen Systems der Papilioniden. II. Tl. : Untersuchungen über die Mimikry.—Stuttgart. English translation, *Researches on Mimicry, &c.*, Stuttgart, 1896. Review in *Nature*, 57 : 1-4, 25-6, 1897. The mistaken "correction" appears on p. 26.

occur within the range of the Reduviid. When caught, the latter, a ♀, was sucking a fly.

[The bug is *Graptocleptes sanguineiventris* Stål, ♀, a species of HARPACTORINAE.]

4286. 7 Jan., 1934, Rupununi, Brit. Guiana.—*Trochophora duckei* Kon., ♂ (Tenthredinoidea: ARGIDAE), new to British Museum, where it was identified. Feigned dead when caught. The curious black foliar lateral appendages almost amount to a third pair of wings. In the fresh specimen these are flexible, and movable back and forth like wings. I have no idea of their function.

A NOTE ON THE HIND-WINGS OF A SAWFLY, LEAF-HOPPER AND MOTH

By Dr. B. M. HOBBY, F.R.E.S.

WITH THREE TEXT-FIGURES.

In wing-flexing insects the anal region of the hind-wing bears two distinct folds dividing the wing into three regions known as the remigium, vannus and jugum. According to R. E. Snodgrass (1935, *Principles of insect morphology*, New York: 226-7) the vannal fold typically occurs between the postcubitus and the first vannal vein (= the first and second anal veins of the Comstock-Needham system), but is not always found in exactly the same situation. In the hind-wings of the TENTHREDINIDAE the vannal fold lies immediately in

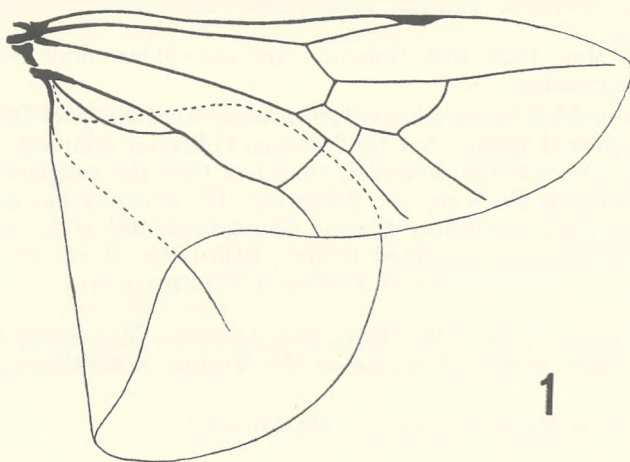


FIG. 1.—*Trochophora duckei* Konow, ♂, right hind-wing.

front of the first anal vein, and the jugal fold between the second and third anal veins. A well-developed jugum is characteristic of the TENTHREDINOIDEA (cf. A. D. MacGillivray, 1906, *Proc. U.S. nat. Mus.*, 29: 569-654), but in the very rare Argid, *Trochophora duckei* Konow (1905, *Z. syst. Hym. Dipt.*, 5: 158-9), the only known representative of the genus, this region is expanded in an extraordinary degree. As in the majority of sawflies the greater part of the hind-wing is membranous and transparent; the jugum, however, is

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