CRITICAL NOTES ON THE MALAYSIAN SPECIES OF *IDIONYX*, HAGEN (Odon.).

By

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Through the kindness of Monsieur A. BALL, of the Brussels Museum, I have been able to examine the type of *I. yolanda,* described by SELYS from Singapore. Besides this typical specimen, Dr. H. WEIDNER, of the Hamburg Museum, has forwarded to me a single male of an *Idionyx* from W. Borneo, which I had identified as early as 1929 as *dohrni,* with some misgivings. Among the Odonata collected for me in 1932 and 1933 by Mr. KENZO KUWASIMA on Basilan I. (Southern Philippines), is a single female of an *Idionyx* which I left unnamed so far, but by more intense analysis of old material it could be definitely classified. Now that I have also seen two females from the Malay Peninsula (including the type of *yolanda,* SELYS), a male from the island of Billiton, and lastly, a fine couple of apparently quite the same species, captured in E. Borneo, I propose to deal with all these specimens more thoughtfully.

Before proceeding to a discussion of these insects, I wish to thank Dr. A. KÄSTNER, of the Stettin Museum, for the loan of KRÜGER's type specimens of *I. dohrni,* from N.E. Sumatra.

Idionyx yolanda SELYS (fig. 1 - 2).

1871. SELYS, Bull. Acad. Belg. (2) 31, p. 520 - 521. — ♀ Singapore.
1899. KRÜGER, Stett. Ent. Zeitg. 60, p. 326 - 330. — ♂♀ N.E. Sumatra (*dohrni*).
1902. LAIDLAW, P. Z. S. London, p. 78 pl. 5 fig. 4 (♀ insect). — ♀ Kwala Aring (*dohrni*).
1907. MARTIN, Cat. Coll. Selys, Cordul. p. 80: "Sumba, Java" (error), "Birmanie" (error), "Singapoure" (*yolanda*); ibid. p. 81 - 82: "Sumatra, Peninsule malaise" (*dohrni*).
1912. RIS, Supplem. Entom. 1, p. 81. — Remarks (*dohrni* + *yolanda*).
1913. LAIDLAW, P. Z. S. London, p. 67 - 68 (key with *dohrni*), pl. 4 fig. 4 (♀ apex abd.). — ♂ Sarawak (*dohrni borneensis*).
1914. MARTIN, Gen. Ins. Cordul., p. 9 pl. 3 fig. 24 (♀ insect, type): „Indo-Chine, Java, Sumba" (error) (*yolanda*); ibid. p. 9: "Sumatra, Singapoure" (*dohrni*).
1926. FRASER, Rec. Ind. Mus. 28, p. 197 - 198 (key ♀), 201 (discussion, not seen) (*yolanda*); ibid., pl. 9 fig. 3 (♂ apps.), pl. 10 fig. 3 (♂ genit.) (*dohrni*).
1927. RIS, Zoöl. Meded. Leiden, 10, p. 36 (remarks: *dohrni borneensis* = *montana*?).
?1931. LAIDLAW, J. Fed. Mal. States Mus. 16, p. 218 - 219. — Peninsular examples of doubtful identity (*yolanda*).
?1934. SCHMIDT, Arch. Hydrob. Suppl. 13, p. 377. — ♂ S. Sumatra (*dohrni,* doubtful).
1935. LIEFTINCK, Misc. Zool. Sum. 92 - 93, p. 18. — Sumatra, notes (*dohrni*).

Material examined: — 1 ♀ ad., labelled: "SING. 33" (round white label), "Mal. W." (square yellow label, SELYS's hand), "*Idionyx yolanda* Type", Revision Martin 1906, "Fig. Gén. Ins." (printed). Holotype in the Brussels Museum. — 1 ♀ ad., labelled: "C. J." (Camp Jor, Alb. GRUBAUER leg.), "*Idionyx dohrni?*" (FÖRSTER's hand), no. 1893 of the FÖRSTER collection, Michigan Museum, Ann Arbor. — 1 ♂, 1 ♀ ad., bearing the printed labels: "Dohrn/Sumatra/Soekaranda", and: "*Idionyx dohrni* Krüger, L. Krüger determ. 1927 in KRÜGER's handwriting). Holo- and allotype *dohrni,* in the Stettin Museum (♂ head and prothorax wanting). — 1 ♂ semiad., N.W. Billiton, Ajer Gelarak, 27.XII.1936, F. J. KUIPER leg., in the Buitenzorg Museum. — 1 ♂ ad., Central W. Borneo, Lebang Hara, 25.XI-5.XII.1924, Sammelreise Prof. Dr. H. WINKLER ded. 1924 - 1925, in the Hamburg Museum. — 1 ♂, 1 ♀ ad., E. Borneo, Sangkoelirang, Palawan Besar, V.1937, and Palawan Ketjil, VI.1937, Mrs. M. E. WALSH leg., in the Buitenzorg Museum. — 1 ♀ ad., labelled: "Bukau, N. Borneo" (yellow label, SELYS's hand), identified as *dohrni* by MARTIN 1906, in the Brussels Museum. — 1 ♀ ad., Philippine Is., Basilan I., Maloong, 15.V.1933, K. KUWASIMA leg., in the author's collection.

Male. — The colouring of the head of our Bornean individuals corresponds closely with KRÜGER's description (and with the type of his species as well); I cannot detect any appreciable difference in the shape of the yellow stripes of the thoracic sides between the type of *dohrni* and our examples from Billiton and Borneo. In all of them the antehumeral bands are replaced by a very indistinct, dirty ochreous spot, just dorsal to the mesinfraepisternites, the posterior halves of which are band-like and bright yellow in colour. The specimen from the island of Billiton is slightly immature.

The coxae of the first pair of legs are entirely yellow, those of the second pair are brownish anteriorly but otherwise also yellow, while the yellow colour of the hinder pair is restricted to the distal third of the coxae. Trochanters of first pair clear yellow, of second pair yellow-brown, of third pair black. All femora brownish-black. Tibiae of first pair brownish-black, of second and third pair clear yellow, obscured basally. Tarsi blackish, exterior surfaces of first joint with a clear yellow streak. Tarsal claws reddish. Tibial lamina of first pair of legs clear yellow, extending along the distal $^5/_7$ of the length of tibia.

Wings hyaline (bases tinged with pale yellow in the immature male from Billiton). Neuration identical in our four males. There are 2 *Cux* in the hind wings (KRÜGER's "Medianadern" are cubito-anal cross-veins). Nodal indices: $\frac{5.13.13.6}{7.\ 8.\ 8.8}$ (type *dohrni*), $\frac{6.13.13.6}{7.\ 9.\ 8.7}$ (Billiton), $\frac{5.12.12.6}{8.\ 8.\ 8.7}$ (Lebang Hara), $\frac{6.13.13.6}{9.\ 9.\ 9.9}$ (Sangkoelirang). Proximal side of *t* in front wing a little shorter than, or equal in length to, the costal side. Only 1 row of discoidal cells in both pairs of wings, in the front wings to beyond level of nodus, in the hinder pair up to the nodus; marginal cells $\frac{4-6}{5-7}$. Anal loop containing 7 cells.

The yellow marks of the abdomen are much reduced. Segm. 1 carries a

small yellow spot in the postero-lateral corner, and there is a broad yellow band bordering the tergal margin of segm. 2. Lower margins of the succeeding segments also with a very fine yellow line, progressively smaller from segm. 4 backwards; along the tergal margin of 7 - 9 this line is broader and sharply defined, extending along full length and widest on 8. Segm. 10 and appendages black.

The fine bunch of downwardly projecting yellow-brown hairs on the underside of segment 7, at the junction of its middele and distal thirds [1]), is present in all specimens examined by me. A similar, though smaller, tuft of hairs occurs on the underside of segment 8.

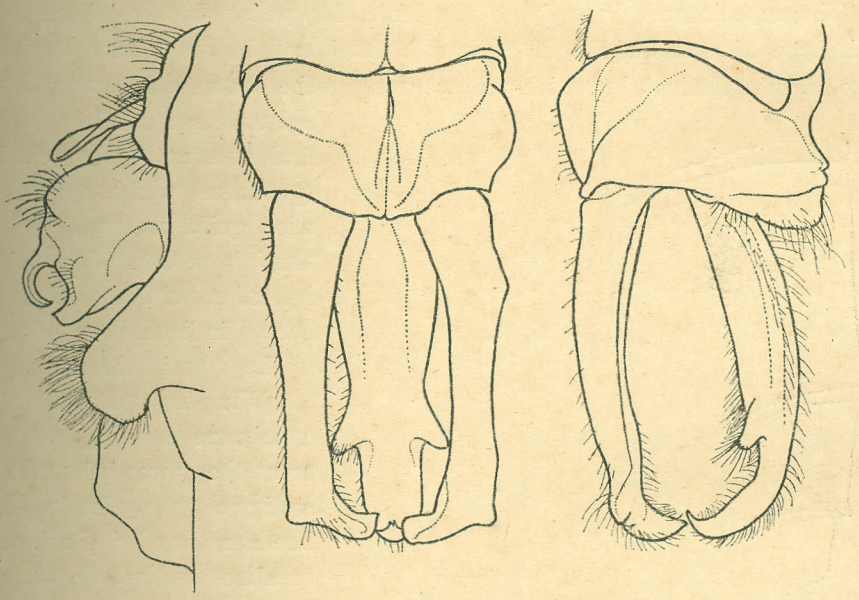

Fig. 1. *Idionyx yolanda* SELYS, E. Borneo. Male genitalia, left side, and anal appendages, dorsal view and right side.

Genitalia of 2nd abdominal segment and anal appendages shaped as is shown in fig. 1.

F e m a l e. — The Malayan specimen, the single ♀ from Sangkoelirang, the specimen in the Brussels Museum from Bukau, N. Borneo, and the solitary ♀ from Basilan I., in the Philippines, are clearly examples of the same form as the one described by KRÜGER as *dohrni*. Having now confronted this small series with the type of *yolanda*, described by SELYS in the 'Synopsis', I cannot find any characters by which to distinguish the Singapore specimen of *yolanda* from the others, and I have no doubt but that all our specimens are correctly referred to the present species.

The ♀ of *I. yolanda* differs but slightly from that of *montana*, KARSCH. Both species agree very closely in details of colouring; but *yolanda* is distinctly

[1]) First mentioned by LAIDLAW (loc. cit. 1913). It is also present in *montana*.

a smaller insect, and a slight difference is to be noted in the shape of the posterior metallic-green band which covers part of the thoracic sides. In *montana* this band broadens considerably — though evenly — from near the lower anterior corner of the metepimerum upwards, and the posterior limit of the band appears evenly concave. In *yolanda,* however, this band, although being of about the same width ventrally, broadens rather abruptly so as to become distinctly angulated at a point slightly dorsal to the middle of its length.

The vertical tubercle of the head is unarmed, flatly rounded in frontal view, and identical in shape in the two species. The occipital triangle is black, simply rounded, polished above.

Thorax coloured similarly to the male. No yellow humeral line. (In the adult type of *yolanda,* the allotype of *dohrni,* and in the ♀ from Basilan I., there is an indistinct brownish-yellow area on the lower fourth of each mesepisternite, bordering the humeral suture; in the remaining specimens, which appear likewise quite matured, including the ♀ from Camp Jor, this spot is either entirely absent or barely indicated).

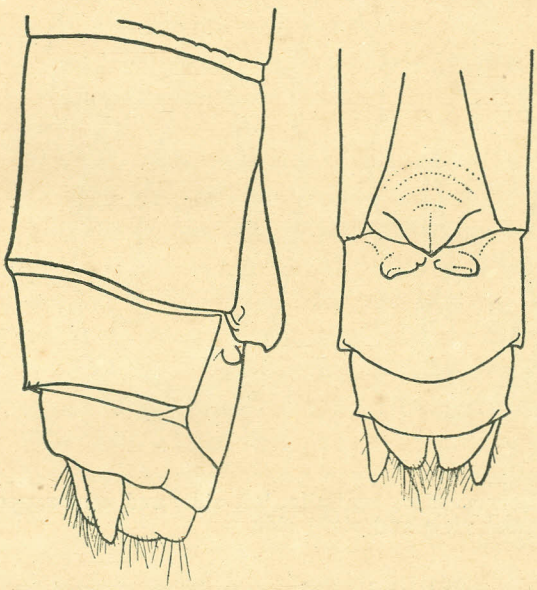

Fig. 2. *Idionyx yolanda* SELYS, Type *dohrni* KRÜGER, N.E.Sumatra. Apex of female abdomen, right side and ventral view.

Legs as in the male.

Wing-bases saffronated and membrane enfumed, especially so at the apices below the pterostigma (type *yolanda,* ♀ Sangkoelirang, and ♀ Basilan I.); or almost entirely hyaline, the bases saffronated to a variable extent (♀ Camp Jor and allotype *dohrni*). Neuration much as in the opposite sex. Discoidal field with a single row of cells to beyond level of nodus in front wings, up to the nodus in the hinder pair of wings. Nodal indices: $\frac{5.13.13.5}{7.\ 8.\ 8.7}$ (type), $\frac{6\ 13.12.6}{8.\ 8.\ 9\ 8}$ (Camp Jor), $\frac{6\ 13.13.6}{9.\ 8.\ 8\ 8}$ (Sangkoelirang), $\frac{6.14.13.7}{9.\ 9.\ 9.8}$ (allotype *dohrni*), $\frac{7\ 12\ 13.6}{8\ \ 8.\ 9\ 7}$ (Basilan I.). Anal loop consisting of 8 - 10 cells (8.7 in the type of *yolanda*). Three basal cells between the anal loop and the margin of the wing, and only two cell-rows between them from a level half-way the length of the anal loop outwards.

In both front wings of the ♀ from Camp Jor there are two cross-veins in the supratriangle. Pterostigma black, or brownish-black.

Legs coloured as in the opposite sex.

Abdomen black. Segm. 1 with a small latero-ventral, posterior, yellow spot; 2 with a yellow stripe along the lower margin, which broadens rather abruptly towards the base of the segment; 3 - 8 with a fine yellow line bordering the tergites ventrally and most conspicuous on 7 - 8; 9 - 10 and appendages black.

Valvula vulvae black, very small, shaped as is shown in fig. 2, not differing from that of *montana*.

Length: ♂ abd. + app. 28, hw. 27.5 (type *dohrni*); 28.5, 28 (Billiton); 28.5, 28 (Lebang Hara); 29, 28 (Sangkoelirang). ♀ 27.5, 29 (type); 26, 27.5 (allotype *dohrni*); 29, 30.5 (Camp Jor); 26.5, 29 (Sangkoelirang); 26.7, 28 mm Basilan I.).

So far as my knowledge goes, the genus *Idionyx* now includes 19 species, of which no less than 9 are restricted to India, 5 are peculiar to Assam and Burma (viz. *imbricata,* FRAS., *intricata,* FRAS., *optata,* SELYS, *selysi,* FRAS., and *unguiculata,* FRAS.); 2 are apparently confined to S. and E. China (viz. *carinata,* FRAS. and *claudia,* RIS), while the remaining 3 species enter the Malaysian and Philippine Subregions (*montana,* KARSCH, *philippa,* RIS and *yolanda,* SELYS).

The known range of the three last mentioned species is as follows:—

I. montana KARSCH. — Java (*terra typica*); Sumatra; Siberoet and Sipora (Mentawei Is.); Malay Peninsula (doubtful!).

I. philippa RIS. — Philippine Is. [Mindoro (*terra typica*) and Luzon].

I. yolanda SELYS. — Malay Peninsula (*terra typica*); Sumatra; Billiton; Borneo; Philippine Is. (Basilan I.).

I have not seen authentic specimens of either of these species from the Lesser Soenda Islands (cf. MARTIN, 1907).

The three species may be briefly separated by the following

Key to the species.

1. Thorax with an incomplete, narrow, citron-yellow stripe on each side at level of the spiracle, ceasing at a point immediately dorsal to it. Metepimeron with an almost circular yellow patch in the antero-ventral corner and a smaller spot of the same colour along ventral margin in the posterior corner of the said space. Wing-bases brownish golden-yellow. Abd. 30, hw. 30 mm. Male unknown ..... *philippa.*
   (RIS, Supplem. Entom. 1, 1912, p. 80, 81 - 82, Fig. 16-wings ♀).

1'. Thorax with two continuous yellow bands on each side, one at level of the spiracle and another one on the posterior border of the metepimeron. Wings hyaline or deeply saffronated, bases at most slightly tinged with golden-yellow.

   2. Posterior metallic-green band covering part of the metapleurae evenly widened from near the lower anterior corner of the metepimeron upwards; posterior limit of this band evenly concave (♂♀) [1]. Distal portion of ♂ superior anal appendages without extero-lateral tooth-

[1]) In specimens of *montana* (♂ and ♀) from Benkoelen (S. W. Sumatra), however, the shape of the metallic-green band does not differ much from that of *yolanda.*

like projection; apices gently incurvate and provided on their outer margin with a tuft of long, golden-yellow pencil-like hairs. Appendix inferior without lateral spines. (Cf. MARTIN, l.c. 1907, Fig. 95). *montana.*

(KARSCH, Entom. Nachrichten, 17, 1891, p. 27).

2'. Posterior metallic-green band covering part of the metapleurae distinctly angulated ventrally at a point slightly dorsal to the middle of its length (♂♀). Distal portion of ♂ superior anal appendages more abruptly inwardly bent, with a distinct, blunt, extero-lateral tooth; apices beyond the nod longer and slender, no conspicuous tuft of hairs on outer margin of same. Appendix inferior with a stout marginal tooth on each side beyond the middle of its length (fig. 1). *yolanda.*

The Malaysian species of *Idionyx* are rare insects, breeding in forest-streams of the lower mountain zone. In South Sumatra we took *I. montana* over a stream at about 500 metres above sea-level. In Java this species is usually found at higher altitudes (500 - 1000 m). It has decidedly gregarious habits and the males are sometimes found flying in swarms at about five to ten metres in the air over forest-paths and in glades in deep ravines. Apparently they fly only during sunlight, indulging in swift erratic flights.

The specimens of *I. yolanda* from Billiton and Borneo were taken in low country.

The larva of *Idionyx* is quite unlike that of *Macromia* and has the legs much shorter than in species of that genus. Recently, NEEDHAM and GYGER have published a description and sketches of the supposed larva of *I. philippa* RIS (Philipp. Journ. Sci. 63, 1937, p. 59 - 60, pl. 8 fig. 93 - 95).