

A synopsis of the Bornean Platystictinae, with Descriptions of three new species (Odon.).

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(With four text-figures).

A one years' collecting in the swampy forests and hill-country near Singkawang, in the western residency of Borneo, resulted in many interesting captures of *Odonata*, a result entirely due to the keen and energetic investigations of Mr. L. Coomans de Ruiter. It may well be pointed out that the intimate knowledge of this unexplored region possessed by this gentleman has been of inestimable value in discovering also those very inconspicuous and rare insects as the tropical *Platystictinae* really are. It is not proposed here to enumerate all the Dragonflies he captured, but this short paper has been written chiefly to place on record the discovery and differentiation of two new species of *Drepanosticta*, the hitherto unknown female of *D. rufostigma* (Selys), and to describe a very distinct species of *Protosticta*.

I am now able to record 6 species referable to the *Platystictinae* for the island of Borneo, and we may confidently look for more.

All specimens have been deposited in the collection of the Buitenzorg Museum.

Genus *Protosticta* Selys = Genus *Pterosticta* Selys.

Protosticta feronia sp. n. (fig. 1).

Material examined: One male, one female (in cop.), W. Borneo, Singkawang, G. Poteng, 325 m alt., forest-brook, 1. XI. 1931; one male, one female (ad.), same locality, 31. I. and 13. III. 1932, respectively; all L. Coomans de Ruiter leg.

Type male and allotype female G. Poteng, 1. XI. 1932.

Male. — Labium pale yellow. Mandibles glossy reddish black, with a large, clear blue marking at base. Labrum and anteclypeus vivid blue, the former with sharply pronounced, crescent-shaped, black margin anteriorly. Postclypeus, genae, and the upper surface of head entirely black, with a feeble bronze reflex and a shining metallic blue area along each of the compound eyes. First two joints of antennae livid yellow, the remainder dark brown. Middle piece of occipital margin ridge-shaped, acute, and provided on each side with a minute denticle (dorsal view). Occiput glossy black. Eyes dark sepia-brown.

Prothorax blue above, yellow along sides, except the posterior lobe which is black in colour, and of simple structure.

Synthorax, as far down as the first lateral suture, bronzed black with slight reddish and coppery reflections especially vivid on mesepisternum. Straight, rather broad, incomplete, clear blue antehumeral bands, reaching about as far up as two-thirds of the length of each mesepisternite, below almost touching the lower margin of same and well rounded on both ends, the upper end being very little narrower than the lower. Antealar triangles likewise clear blue in colour. A complete, broad, clear greenish yellow fascia over the anterior two-thirds of metepisternum, including the metastigma, bordered behind by a narrow, blackish brown stripe, widest above, running along the second lateral suture; this stripe gradually broadens from below upwards to form a rather triangular black marking, filling up the posterior edge of each metepisternite. Metepimerum and metinfraepisternum greenish yellow to ochreous, as are also the under surfaces of thorax.

Legs yellow; exterior ridge of femora, a large band at tibio-femoral articulation, the apices of tibiae, and the first tarsal joint, jet-black. There are, besides, traces of greyish brown rings on the middle of all femora. Spines dark brown; tarsi reddish.

Wings clear and but faintly suffused with yellowish. Accessory basal postcostal nervure situated at two-thirds of the distance between base of wings and first antenodal cross-vein. The nervure *Ac* is placed in the transverse plane, and lies much nearer to Ax_2 than to Ax_1 . Cu_1 reaches the hinder

margin at about three cells distad of subnodus in both pairs of wings. Postnodal index 11—12:10—11. M_3 arises slightly distad of nodus, M_s between nodus and first postnodal cross-vein. M_2 originates at the sixth postnodal in front wing, at the fifth in hind wing; M_{1a} one or two cells distad of M_2 in both wings. Pterostigma very dark brown, surrounded by a fine whitish line. Short and broad, almost square; costal side shorter than anal side, proximal side slightly oblique, distal side straight and slightly convex. The veins surrounding it much thickened, black.

Abdomen very slim and slender. First two segments only little inflated, terminal ones markedly widened: 8—10 broader than high and rather flattened above. Ground-colour of basal segments lemon- or greenish yellow. Distal half of first segment, a large triangular marking, rather pointed to in front and not reaching the base, on dorsum of second segment, and segm. 3—7 dark brown. Distinct, though very narrow, greenish blue rings at the bases of 3—7, and large, almost square, vivid blue marks on the back of 8 and 9 occupying most of the dorsum; the spot on 8 is isolated, the upper half of the sides and a thick stripe along base and end of segment being black; that on 9 is smaller, somewhat narrowed to behind, leaving a ter-

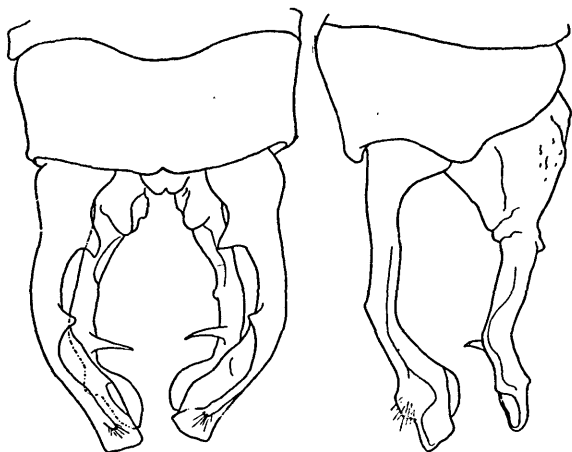


Fig. 1. *Protosticta feronia* sp. n. Anal apps., dorsal view and side.

minal stripe and all of the sides deep black. Tenth segment wholly black.

Anal appendages black, longer than segm. 9. Superior pair widely distant, at first rather swollen and provided along dorsal margin, at the end of their basal third, with a blunt tooth-like projection, which is directed inwards; thence the appendages are narrowed and have about at their middle a second, but smaller, protuberance along upper margin, each appendage ending in a flattened leaf-shaped lobe, directed inwards and slightly downwards, the end being obliquely truncated. Inferior appendages sub-equal in length to superior pair; at first thick and swollen, then rapidly narrowing, evenly curved and very slender, and finally flattened and hollowed out from above down with apices scale-like and rounded. From their inner margin, well beyond the middle of each, projects an extremely slender, acutely pointed hook, curved almost horizontally inwards (fig. 1).

Female. — Coloration and arrangement of pale markings on head, thorax and legs exactly as in the male, but the blue antehumeral bands are perhaps a little wider below. Posterior lobe of prothorax as in the male. Wings hyaline. Pterostigma dark sepia-brown, surrounded by pale yellow. Postnodal index 13:12. The basal postcostal nervure lies half-way between base of wing and Ax_1 . Cu_1 terminates $3\frac{1}{2}$ to 4 cells distad of the niveau of nodus.

Abdomen shaped as in the opposite sex, but stouter, and from base of segm. 6 to end of 9 gradually and rather much widened in both dimensions; these segments stout and stiff. The brown marking on dorsum of segm. 2 not narrowed anteriorly, almost touching basal articulation; the sides greenish. Narrow pale blue rings at the bases of all segments, except 9 and 10 which are wholly black in colour. Segm. 8 entirely blue, faintly and diffusely brownish along its posterior margin only. Tenth segment vestigial, annular.

Anal appendages of equal length or a trace shorter than segm. 10, conical, black. Tuberculum anale still shorter. Valves long and narrow, lower margin perfectly straight, reddish brown in colour, apices a little higher, obliquely truncated, tips acute, projecting well beyond the appendages for a distance equal to the length of them.

Length: ♂ abd. + apps. 37.5, hind wing 21; ♀ 34, 22 mm.

This magnificent species is the third of its genus reported from Borneo.

It is characterized by the broad blue antehumeral bands, and by the long and slender abdominal appendages, showing in this respect a more than superficial resemblance to *Drep. dupophila*, described in the next pages. Indeed, I am inclined to think that *feronia*, although immediately distinguished from *dupophila* by the generic character found in the anal wing veins, is closely related to that species, for I can hardly imagine that so striking a similarity can be brought forward by convergence only.

The Bornean representatives of *Protosticta* are still very imperfectly known, but are to be arranged in the following

Key to the species.

- 1a. Dorsum and sides of synthorax chocolate-coloured with metallic lustre; venter pitch-black. Posterior margin of prothorax provided with a strong median spine, projecting upwards and slightly forwards. Length of abd. 27, of hind wing 19 mm. Male unknown. *versicolor*.
(Laidlaw, Proc. Zool. Soc. Lond. 1913, pt. 1, pp. 78—79. — ♀ N. Borneo).
- 1b. Dorsum and sides of synthorax bronzed green, sides with a primrose-yellow fascia covering part of the metepisternum; metepimerum and venter also primrose-yellow. Distal half of sup. anal apps. considerably widened and leaf-shaped, curved strongly downwards with well developed spines on its margin. App. inf. with a slender projection apically, curving downwards and backwards. Length: abd. 34, hw. 22 mm. Female unknown. *kinabaluensis*.
(Laidlaw, Proc. Zool. Soc. Lond. 1915, pp. 37—38, fig. 5 B (♂ apps.) — ♂ Kina Balu.
- 1c. Dorsum of synthorax bronzed black with clear blue antehumeral bands. Venter ochreous yellow. Posterior margin of prothorax of female without median projection. Distal half of sup. anal apps. not so widened and only slightly downbent, without spines on its margin. App. inf. with an inwardly directed spine-like sub-apical tooth and without downwardly curved apical projection. Length: ♂ abd. 37.5, hw. 21; ♀ 34, 22 mm. *feronia*.

Genus *Drepanosticta* Laidlaw.*Drepanosticta dupophila* sp. n.

Material examined: — One male (ad.), W. Borneo, Singkawang, swampy forest near Pandjoa, 3. IV. 1932, L. Coomans de Ruiter leg. The specimen is the holotype.

Much resembling *Protosticta feronia* m., and possibly nearly related to it.

Male. — Labium pale yellow. Anterior surface of head coloured similarly to *P. feronia*: labrum, anteclypeus and a large marking on the base of mandibles vivid sky-blue, the labrum with well pronounced, broad, crescent-shaped black stripe along anterior margin. Genae brownish black. Postclypeus and the entire upper surface of head black with steely green reflections and a brilliantly shining blue line along each of the compound eyes. First two joints of antennae pale yellow, second joint brownish apically, the remaining joints dark brown. Middle piece of occipital margin in dorsal view ridge-shaped, acute, but without the small denticle on both ends, as is found in *P. feronia*. Occiput black, mirrory smooth, with bronzed green reflections. Eyes dark blackish brown.

Prothorax blue above, yellow along sides, except the posterior lobe which is entirely black in colour, not elevated and completely rounded behind (identical in shape to *P. feronia*).

Synthorax, as far down as about the first lateral suture, bronzed black, with distinct steely blue and green reflections on mesepisternum. Each mesepisternite bears, upon its lower fourth, a short, elongate, pale blue spot, covering on either side the outer halves only of the space between median carina and humeral suture, running along mesinfraepisternum and the lower portion of humeral suture. Dorsally these spots are abruptly and rather obliquely truncated and only a trace wider than below. Antealar triangles bronzed black. The metallic blue colouring on dorsum of mesothorax is effaced a little along dorsal third of the humeral suture, and replaced by a diffuse brownish whisk along both of its ends. Mesepimerum dark bronzed brown. Sides with a complete, parallel-sided fascia covering most of the metepisternum and including the metastigma as well: similar in shape to *P. feronia*, but light blue instead of clear ochreous. Posteriorly, this fascia is not bordered

with black, as in that species, but immediately followed by a very pale, rusty brown fascia covering the postero-dorsal half of each metepisternite, the infraepisternum and the upper (anterior) third of metepimerum, which soon acquires a light greenish yellow tint; hence there is no dark line running along the second lateral suture. Venter of thorax pale ochreous.

Legs dirty yellow; exterior ridge of femora, interior surfaces of anterior pair of tibiae, an indistinct ring at tibio-femoral articulation, and faint sub-apical rings on posterior two pairs of femora, brownish. Spines, tarsal joints and claws pale.

Wings hyaline. Accessory basal postcostal nervure situated at middle of the distance between base and Ax_1 in front wings, a little beyond in hind wing. Ac very oblique, much

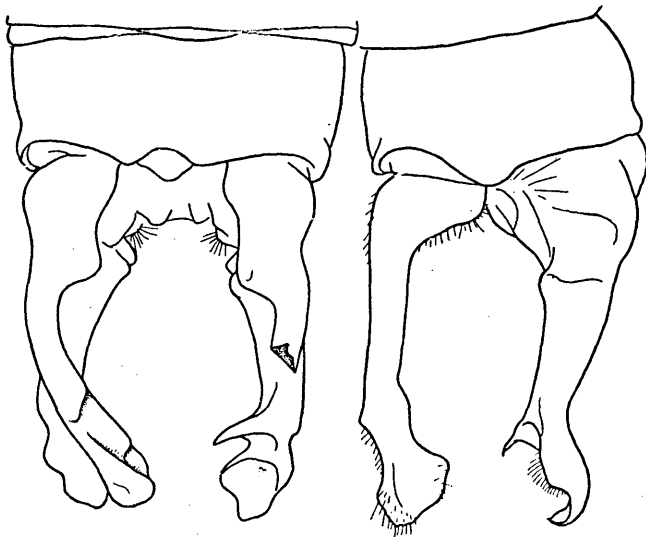


Fig. 2. *Drepanosticta dupophila* sp. n.
Anal apps., dorsal view and right side.

nearer to Ax_2 than to Ax_1 ; it meets the wing margin in the production of the proximal side of the quadrangle, joining Ab under an obtuse and somewhat rounded angle in front wings; in hind wings Ab and Ac form an Y-shaped vein, the stem of which is very short. Cu_1 reaching the hinder margin at three cells distad of subnodus in front wing, three and a half cells in hind wing. Postnodal index 12.12 : 12.11. M_3 arises slightly

distad of subnodus, M_s between nodus and Px_1 . M_2 arises at the fifth postnodal in front wing, at the fourth in hind wing; M_{1a} two cells distad of M_2 in front wing, three in hind wing. Pterostigma sepia-brown, surrounded by a fine whitish line, shaped as in *P. feronia* but a little longer: proximal and distal sides more oblique and costal side decidedly longer than distal side.

Abdomen very long and slender, almost identical in shape to *P. feronia*. Coloration much as in that species but first segment entirely light blue, excepted a dark brown apical ring. The triangular brown marking on the back of segm. 2 is broadly attached to the base of segment, descending on both sides along margin to form a diffuse brownish ring; the sides are bluish green. Segm. 3—7 dark brown with the exception of very narrow, greenish blue rings along the bases of each. Segm. 8—9 wholly blue, save for a transverse, black stripe along the base of 8, confined to the dorsum, and produced a little behind in the middle. Segm. 10 black.

Anal appendages brownish black, about as long as segm. 9, subequal in length. Both pairs are so strikingly similar in build to those of *P. feronia*, that a mere comparison of the two figures, added to the separate descriptions, would appear to be more effective. From these figures the sub-basal, interior projection of the superiors appears slightly less prominent than is the case in *P. feronia*, the dorsal protuberance at middle of their length being also greatly reduced. The spine arising from the distal end of the inferiors is placed somewhat more apicad, and the tips of them are more hollowed out, decidedly broader than in *feronia* (fig. 2).

Length: abd. + apps. 37.5, hind wing 21.5 mm.

Female unknown.

Drepanosticta crenitis spn. n.

Material examined: — One female (ad.), W. Borneo, Singkawang, G. Poteng, 325 m alt., forest brook, 31. I. 1932; one male, one female (ad.), same locality, 28. II. 1932, L. Coomans de Ruiter leg.

Type male and allotype female G. Poteng, 28. II. 1932.

Male. — Labium and lower mouth-parts dull brownish. Labrum, anteclypeus and a large spot on the base of man-

dibles, vivid creamy-white, in frontal view the upper lip being a little ferruginous along its anterior border. Head otherwise entirely black above, with bronzed green reflections and a smoother, shining metallic green strip along each of the compound eyes. First antennal joint dark brown, second joint dirty yellowish, flagellum dark brown. Occipital crest ridge-shaped and rather acute in the middle, unarmed. Occiput mirrory smooth, black with slight metallic glaze. Eyes dark chestnut-brown. Ocelli white.

Prothorax uniform dark bronzed brown, without pale markings, except a yellowish stripe along the lower margin. Posterior lobe but little projecting, depressed, its free margin completely rounded.

Synthorax unicolorous, moderately shining, finely striate above and on mesepimerum, almost smooth laterally; throughout dark reddish brown (Vandyke Brown in Ridgway' 1912), with very slight bronzed reflections upon the dorsum only. Venter similar in colour. Antealar triangles bronzed black.

Legs unicolorous pale yellow (Maize Yellow in Ridgway), this colour especially vivid on coxae and trochanters. All femora with the slightest indication of a greyish ring on their middle; knees and tarsal articulations also a little darkened. Spines and claws pale.

Wings hyaline, shaped as for genus. Basal postcostal nerve situated a spur distad of the middle between base of wing and Ax_1 . Ac very oblique, much nearer to Ax_2 than to Ax_1 ; it joins Ab under an obtuse and somewhat rounded angle at the hinder margin in both pairs of wings. Cu_1 reaching the hinder margin at two cells distad of subnodus in front wing, three or three and a half cells in hind wing. Postnodal index 12 : 12.11. M_3 originates slightly distad from subnodus, or at the subnodus (right fore wing and left hind wing), M_s at or a little beyond the middle between nodus and Px_1 . M_2 arises at the sixth postnodal in front wings, at the fifth in hind wings; M_{1a} only one cell distad of M_2 in front wings, two in hind wings. Pterostigma jet-black, surrounded by a very fine whitish line, not or scarcely widened apically, squarish; proximal side oblique and only a trace shorter than costal side; outer edges rectangular, and the distal side rather convex.

Abdomen very thin and slender, terminal segments only little widened. Segm. 1 blackish brown, unmarked; 2 brown with diffuse latero-basal spot of yellow, 3—7 blackish brown, excepted narrow, dull yellowish rings, interrupted on mid-dorsum along the bases of each. Segm. 8 entirely black; 9 wholly deep blue, and 10 black with the dorsum likewise rich blue, the apical margin of this segment being edged with black.

Anal appendages black, the apical blades of the superiors rather more brownish. Superior pair decidedly shorter than segm. 9, thick and hollowed out interiorly, apical halves strongly downwardly bent; inferior appendages thick and much inflated

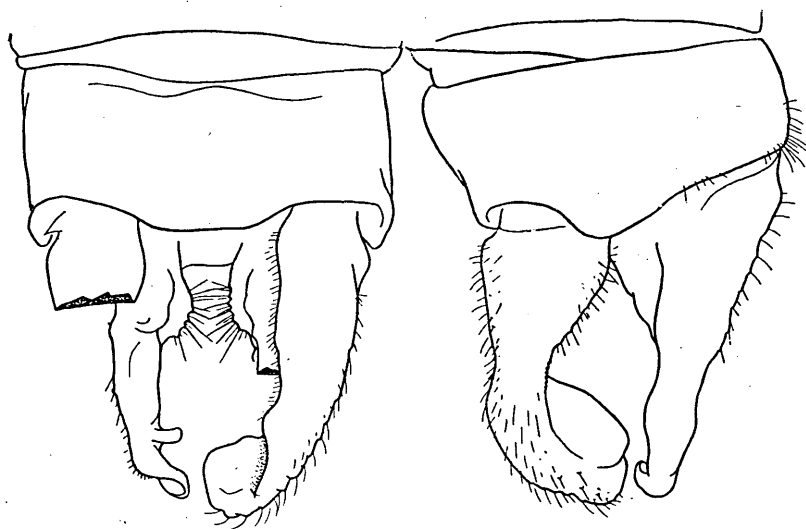


Fig. 3.

Drepanosticta crenitis sp. n. — Anal apps., dorsal view and right side.

at base, equal in length to the upper pair but much slenderer, almost straight, each provided interiorly with a short, inwardly directed finger-shaped process, placed well before the apex, which is twisted and strongly incurved (fig. 3).

Female (allotype). — Similar to the male in almost every respect.

Labrum and anteclypeus light greenish yellow instead of creamy-white. Frons with an ill-defined transverse brownish fascia in front of the median ocellus, a paired mid-dorsal spot of the same colour on prothorax, and an isolated point upon

the sides of same. Posterior lobe of prothorax not different in shape from the male. The metathoracic pleurae and the under surfaces are almost black in colour.

Wings hyaline, rather iridescent apically. Neuration similar to the male. M_3 arises at the subnodus in all four wings, M_s a trace before the middle between nodus and Px_1 . Postnodal index 13 : 12.

First four segments of abdomen similar in size and colouring, but the yellow marking along base of segm. 2 is reduced to a narrow ring. Terminal segments, from base of 5 up to the end of 6, very evenly widened, and from base of 7 until the end again a little narrowed; these segments stiff and stout, paler in colouring than the foregoing segments, especially along the sides of each. Segm. 8—10 dark russet-brown, unmarked. Tenth segment vestigial, annular.

Anal appendages about one and a half times longer than segm. 10, triangular, rather flattened from above down, rapidly tapering and pointed. Tuberculum shorter than segm. 10. Valves short, lower margin slightly convex, dark brown in colour, apices obliquely truncated, not projecting beyond the appendages.

Length: ♂ abd. + apps. 27, hind wing 16; ♀ 24, 16 mm.

Female (paratype). — Wings evenly washed with pale yellowish. Nodal index 12 : 11. M_3 at subnodus; M_2 at the fifth or sixth postnodal crossvein in front wing, at the fifth in hind wing; M_{1a} 1—2 cells distad of M_2 in front wings, only one cell in hind wings. Otherwise not differing from the allotype. Length: abd. 23, hw. 16 mm.

By the gloomy body-colouring, so strongly contrasted with the paleness of its legs, this dwarfish species takes a very particular place among its congeners in Borneo.

The distinctive character and almost absolute constancy of the male anal appendages force us to attach especial taxonomic importance to them, so that an examination of these structures should give us the key to its relationship with other species. Now, the small *D. spatulifera* Lieft.¹⁾, of Java, is the only one that bears any external likeness to *crenitis*, and, at all times, is closely related to it. Both are of minute size and are

¹⁾ Tijdschr. Ent. 72, 1929, pp. 112—114, figs. 4—6. — 8 ♀ Java.

peculiar in having the sides and the under surfaces of synthorax entirely black in both sexes; they further agree in having their anal appendages reduced in length and of compact building, and finally are both linked up to the species of more remote affinity by the fine blue spots on the dorsum of the last abdominal segments.

However, the new species is easily distinguished from *spatulifera* by its black, unarmed prothorax, and by the episterna of mesothorax being dark brown instead of glossy black; the wings of *crenitis* are distinctly shorter and the pterostigma is smaller; and finally the inferior anal appendages are equal in length to the superior pair, and straighter, instead of being half so long and strongly twisted.

Drepanosticta rufostigma Selys (fig. 4).

1886. Selys, Revis. Syn. Agrion., pp. 155—156 sep. — ♂ Laboan, Borneo (*Platysticta*).
1913. Laidlaw, Proc. Zool. Soc. London, p. 79, pl. 4, fig. 9 (apps. ♂). — ♂ Lawas, N. Borneo (*Platysticta*).
1924. Laidlaw, J. Mal. Br., Roy. As. Soc., 2, 3, p. 306. — Comparative notes.
1930. Hincks, Sarawak Mus. Journ., 4, i no. 12, p. 52. — ♂ Sarawak (no description).

Material examined: — Twenty-seven males, three females from W. Borneo, environs of Singkawang, all L. Coomans de Ruiter leg. (26 males and 1 female from G. Poteng, 325 m alt., 28. VII., 1.—15.—22. XI., 20. XII. 1931, and 31. I., 7.—28. II., 13. III. 1932). One female, G. Raja, 450 m alt., 6. VIII. 1931, and one male, one female, forest brook near Andjoengan (Mampawa Rd.), 19. III. 1932, including the allotype.

Male (ad.), redescription. — Labium pale ochreous, tips of mandibles blackish brown. The upper surface of mandibles, the labrum, and the anteclypeus are vivid pale blue in fresh specimens, creamy-white in faded ones. Labrum with a black line along its anterior border. Genae, postclypeus and the entire upper surface of head black; frons with no metallic hue. Vertex metallic green with lustrous blue reflections along margin of compound eyes. Antennae dark brown, apex of second joint paler. Occipital margin with its median division acute in dorsal view, ridge-shaped, scarcely produced on both ends, forming mere traces of an angulate projection. Occiput bronzed black, mirror smooth below, with coppery reflex.

Prothorax pale greenish blue above, ochreous along sides, except a narrow black stripe along anterior lobe, a little widened mid-dorsally, and the posterior lobe which is also black. Hinder margin of this latter thin, scarcely raised about the middle, but produced on either side into small, rectangular, plate-like expansions, the side-edges thus being well pronounced though not bearing any process. Sides below the edges of posterior lobe with a brownish spot.

Synthorax brilliant metallic green above; below the humeral suture bronzed-black; on each side an uninterrupted bluish white band enclosing the metastigma and covering most of the metepisternum, running along interpleural (first lateral) suture. Posterior third of metepisternum with a well defined, metallic green band, widest above and rapidly tapering ventrally, along the second lateral suture. Metepimerum and infraepisternum ochreous or greenish with a diffuse brownish or ferruginous streak upon the middle, along second lateral suture. Venter ochreous, unmarked.

Legs pale, marked with dark brown; coxae, trochanters and femora ochreous, each of the latter with a complete black stripe along exterior faces, knees likewise darkened; anterior tibiae dark russet-brown; the two posterior pairs lighter in colour. Tarsi, except apex of distal joint, ochreous; spines and claws reddish.

Wings in most specimens suffused with yellowish all over the membrane, distal halves often strongly iridescent. Venation reddish brown. Accessory basal postcostal nervure either situated well before, or at the middle of the distance between the base of wing and Ax_1 . Position of anal veins variable: Ab either joining Ac before the hinder margin of wing, forming a shortly stalked Y-shaped vein, or meeting Ac at the wing margin in one point. Cu_1 reaching the hinder margin at 3–4 cells distad of subnodus. Origin of M_3 and M_s variable in both pairs of wings: M_3 arises from slightly distad of subnodus to almost at middle between subnodus and Px_1 . M_s originates well beyond it but only very rarely beyond Px_1 . M_2 arises at the fifth or sixth postnodal in both pairs of wings, and M_{1a} usually one cell beyond it. Postnodal index variable, 10–13 : 10–12. Pterostigma russet brown, surrounded by an extremely fine, whitish line, in front wing only little, in hind wing

more decidedly longer than wide. Proximal side not very oblique, distal side rather convex, costal side scarcely shorter than anal side.

Abdomen slim and slender. First segment pale bluish white with a narrow and rather diffuse brown marking on mid-dorsum. Segm. 2—7 brownish black, rather shining, 3—7 with distinct, though narrow, complete basal rings, greenish to ochreous in colour. Segm. 8—9 black above, but 8 with the lower two-thirds of the sides pale blue, the black dorsal band widening to behind and usually covering also the distal fifth of the sides; 9 with large, isolated, latero-basal spot of blue. Segm. 10 about half so long as 9, unmarked.

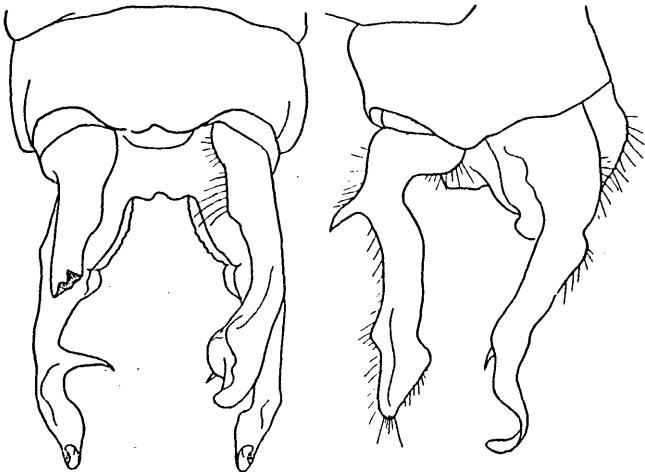


Fig. 4.

Drepanosticta rufostigma (Selys). — Anal apps., dorsal view and right side.

Anal appendages of very characteristic shape. Superior pair black at base, rather more brownish towards the apex of each, at first distinctly bent upwards and downwards, giving rise to a robust, sharply pointed tooth, projecting from the upper margin to above. Inferior appendages equal in length to, or a little longer than superior pair, much paler in colour; each provided along their interior margin with a slender, tooth-like, sub-apical projection, directed obliquely inwards, the tips being strongly upwardly curled (fig. 4).

Female (ad., undescribed). — Labrum, mandible-bases and anteclypeus purplish blue (allotype), or vivid bluish green (paratypes), the labrum with a thick black stripe along its margin. Head otherwise as in male.

Margin of posterior lobe of prothorax slightly raised, with lateral edges angular and projecting a little upwards and outwards.

Dorsum of synthorax, about as far as the humeral suture, brilliant metallic green. Mesinfraepisterna and mesepimera warm russet-brown without metallic reflections. Metepisterna with a well defined clear greenish yellow, or lemon-yellow fascia along first lateral suture; this stripe is confined to the upper (anterior) three-fifths of each metepisternite, and terminates at the metastigma, where it is broadest. Sides otherwise warm russet-brown, growing paler to beneath, lower portion of metepimerum and the under surfaces being pale ochreous in colour.

Legs as in the male, but femora indistinctly striped exteriorly, and knees dark brown. Tibiae and tarsi brownish yellow.

Wings entirely hyaline, iridescent all over. Neuration similar to the male. Y-shaped anal vein not or only very shortly stalked. Cu_1 reaching the hinder margin of wing 2.5—3.5 : 3—4 cells distad of subnodus. M_3 arises from slightly after the subnodus to almost at middle between subnodus and Px_1 in front wing, at the subnodus or a little beyond in hind wing. Ms originates well beyond it, but not beyond Px_1 . (in one female Ms coalesces with Px_1 in both front wings). Postnodal indices 12 : 11, 13 : 12 and 12 : 10. Pterostigma as in the male.

Abdomen shorter and stouter than in the opposite sex, from base to the end of segm. 8 very evenly widened in both dimensions, segm. 6 and 7 stoutest. Coloration much paler than in the male. Segm. 1 greenish yellow, with a mere black point at base; 2—10 russet-brown with basal yellowish rings barely perceivable; segm. 2 yellow laterally, and tergal margins of following segments also paler. Dorsum of segm. 4—9 somewhat darker than the sides, blackish brown with a low bronzed gloom on the back of segm. 8 and 9, which are rather flattened above. Tenth segment annular, very small. Anal apps. vestigial, broadly triangular, shorter than segm. 10, brown. Valves light

brown, long and rather narrow, lower margin straight; apices compressed, much higher than before, bifid, the upper tips subacute and projecting well beyond the appendages for a distance equal to the length of segm. 10.

Length: ♂ abd. + apps. 32.5—37, hind wing 19—22.5; ♀ 28—29.5, 20.5—21 mm. (Type ♂ Selys: 30, 18; ♂ Laidlaw: 34, 22 mm).

According to De Selys, the unique type of this species, in the Brussels Museum, is of exceptional small size, but otherwise does not appear different from our present series of specimens.

I have not seen this species from other districts of Borneo, but Dr. Laidlaw has kindly confronted one of the Singkawang males with the sole specimen recorded by him, and found them well agreeing. There is no doubt that our specimens belong to *rufostigma* (Selys). It is a rare and very local insect but apparently more frequently met with than any other member of the subfamily, in Borneo.

Key to the species.

- 1a. Dorsum of synthorax with an elongate, pale blue antehumeral spot upon lower fourth of each episternite; venter pale ochreous. Sup. anal apps. long and very slender, each with a blunt sub-basal widening along interior margin, not visible in profile view. Segm. 8—9 of abdomen largely blue above. Length: ♂ abd. 37.5, hw. 21.5 mm. Female unknown. *dupophila*.
- 1b. Dorsum of synthorax without pale markings; venter ochreous. Sup. anal apps. long and very slender, each provided with a sharp sub-basal spine, arising from the upper margin and well visible in profile view. Segm. 8—9 of abdomen largely black above, sides spotted with blue. Length: ♂ abd. 30—37, hw. 18—22.5; ♀ 28—29.5, 20.5—21 mm. *rufostigma*.
- 1c. Dorsum of synthorax dark reddish brown, unmarked; sides and under surfaces jet-black. Sup. anal apps. short and thick, unarmed, distal half of each evenly curved downwards, apices leaf-like and broadly rounded. Segm. 8 of

abdomen black, 9—10 largely blue above. Length: ♂ abd.
27, hw. 16; ♀ 24, 16 mm. *crenitis*.

Literaturreferat.

Die Tierwelt Deutschlands und der angrenzenden Meeresteile nach ihren Merkmalen und nach ihrer Lebensweise. Begr. v. Prof. Dr. Fr. Dahl, weitergeführt v. Maria Dahl u. Prof. Dr. H. Bischoff, 26. Teil: **Zweiflügler oder Diptera** V. Jena 1932, 204 S. mit 223 Textabbildungen. Preis Rmk. 16.—.

Von diesem großangelegten Bestimmungswerk liegt wieder eine Lieferung vor, enthaltend den 5. Teil der „Diptera“ u. zw. Notacantha—Rhagionidae—Tabanidae—Therevidae, Omphralidae und Asilidae.

Da die Bearbeitung in die Hand bestbekanntester Spezialisten gelegt wurde (Szilady Budapest übernahm die Notacantha und Rhagioniden, Kröber Hamburg die Tabanidae, Therevidae und Engel München, die Omphralidae und Asilidae), ist die klaglose Durchführung wohl weitgehend verbürgt. Die zahlreichen in den Text eingestreuten Abbildungen charakteristischer Unterscheidungsmerkmale tragen wesentlich zu besserem Verständnis und leichter Bestimmung bei.

F. W.

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