

NOTES ON A COLLECTION OF DRAGONFLIES (ORDER ODONATA)  
FROM THE DUTCH EAST INDIES AND DESCRIPTIONS  
OF FOUR NEW SPECIES FROM THE NEIGH-  
BOURING CONTINENT.

By

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The following notes have been made from three sources, but mainly from a large collection in the Buitenzorg Museum, Java. At the time this collection was received I was engaged in examining another from Tonkin, collected by Mr. H. STEVENS for the Sladen Godman Trust Expedition, and as the Odonate fauna of this region is closely allied to that of Java, Sumatra and Borneo, from which places the bulk of the Buitenzorg collection came, I have found it convenient to write a combined paper on the two. In the course of comparing specimens in these two collections with those in the British Museum, I have come across a number of new species in the latter collection which have been long awaiting description. Some of these are described in the present paper, I hope to publish the remainder in a second paper on the fauna of this area.

The Odonate fauna of New Guinea has been dealt with largely by SELYS, FÖRSTER and RIS, that of Borneo by LAIDLAW, that of Sumatra by ALBARDA, SELYS, KARSCH and KRÜGER, whilst that of Java has been neglected since the time of BURMEISTER and RAMBUR. It is thus from the latter place that we must expect many new discoveries to be made. LAIDLAW has listed 175 species from Borneo, KARSCH 89 (not including the *Libellulidae*) from Sumatra, RIS 177 from New Guinea, whilst there are 89 species known from the small island of Ceylon. By comparison with these figures, it is safe to say that not more than sixty percent of the Java Odonate fauna has yet been discovered. Including several new species described in this paper, I have been able to list only 79 species from the main island of Java. These are as follows:

Family *Libellulidae*.

1. *Nesoxenia lineata* SELYS.
2. *Lathrecista asiatica pectoralis* BR.
3. *Agrionoptera insignis* (RAMB.).
4. *Potamarcha obscura* (RAMB.).
5. *Orthetrum sabina* (DRURY).

6. *Orthetrum pruinosum* (RAMB.).
7. *Orthetrum testaceum* (BURM.).
8. *Orthetrum ? leptura* (BURM.).
9. *Diplacodes trivialis* (RAMB.).
10. *Crocothemis servilia* (DRURY).
11. *Neurothemis terminata* RIS.
12. *Neurothemis tullia feralis* (BURM.).
13. *Brachythemis contaminata* (FABR.).
14. *Rhodothemis rufa* (RAMB.).
15. *Parathemis metallica* sp. nov.
16. *Zygonyx ida* SELYS.
17. *Orchithemis pulcherrima* (BR.).
18. *Onychothemis culminicola* FÖRST.
19. *Tholymis tillarga* (FABR.).
20. *Pantala flavescens* (FABR.).
21. *Rhyothemis phyllis phyllis* SULZ.
22. *Rhyothemis resplendens* SELYS.
23. *Tramea limbata* (DESJARD.).
24. *Tramea euryale* SELYS.
25. *Azuma vittigera* (BURM.).
26. *Macromia westwoodi* SELYS.
27. *Macromia cincta* RAMB.
28. *Procordulia karnyi* sp. nov.
29. *Idionyx montana* KARSCH.
30. *Idionyx dohrni* KRÜG.

Family **Cordulegasteridae.**

31. *Chlorogomphus magnificus* SELYS.

Family **Gomphidae.**

32. *Ictinus decoratus* SELYS.
33. *Gomphidia javanica* FÖRST.
34. *Macrogomphus parallelogramma* (BURM.).
35. *Leptogomphus lansbergei* SELYS.
36. *Onychogomphus geometricus* SELYS.
37. *Onychogomphus reinwardtii* SELYS.
38. *Onychogomphus inscriptus* SELYS.

Family **Aeschnidae.**

39. *Anax guttatus* (BURM.).
40. *Anax papuensis* (BURM.).
41. *Anaciaeschna jaspidae* (BURM.).

42. *Amphiaeschna ampla* (RAMB.).
43. *Indaeschna grubaueri* (FÖRST.).
44. *Gynacantha subinterrupta* RAMB.
45. *Gynacantha millardi* FRAS.
46. *Gynacantha javica* sp. nov.
47. *Gynacantha limbalis* KARSCH.
48. *Gynacantha musa* KARSCH.
49. *Gynacantha basiguttata* SELYS.
50. *Gynacantha bayadera* SELYS.
51. *Gynacantha dohrni* KRÜG.

Family *Agrionidae.*

52. *Neurobasis chinensis* L.
53. *Vestalis luctuosa* (BURM.).
54. *Pseudophaea variegata* (RAMB.).
55. *Dysphaea dimidiata* SELYS.
56. *Rhinocypha fenestrata* BURM.
57. *Rhinocypha heterostigma* RAMB.
58. *Rhinocypha tinctoria* RAMB.
59. *Micromerus lineatus* BURM.
60. *Micromerus signatus* (KRÜG.).

Family *Coenagrionidae.*

61. *Coeliccia membranipes* (RAMB.).
62. *Copera marginipes* (RAMB.).
63. *Caconeura fruhstorferi* KRÜG.
64. *Pericnemis stictica* SELYS.
65. *Platysticta sundana* KRÜG.
66. *Drepanosticta siebersi* sp. nov.
67. *Teinobasis gracillima* sp. nov.
68. *Onychargia atrocyana* SELYS.
69. *Ischnura senegalensis* RAMB.
70. *Enallagma malayanum* SELYS.
71. *Pseudagrion pruinatum* SELYS.
72. *Pseudagrion rubriceps* SELYS.
73. *Aciagrion occidentale* LAID.
74. *Argiocnemis rubescens* SELYS.  
and vars. — *lunulata*, *nigricans*, *rubeola*.
75. *Argiocnemis femina* (BR.).
76. *Argiocnemis minima* SELYS.
77. *Amphilestes tricolor* KRÜG.
78. *Argiolestes karnyi* sp. nov.
79. *Lestes concinna* SELYS.

In preparing this short work I have been materially assisted by Dr. F. F. LAIDLAW who has given me his opinion on doubtful specimens and helped in identifying others. My thanks are also due to Dr. K. W. DAMMERMAN and Dr. H. KARNY of the Buitenzorg Museum, Java, for the loan of the collections from that Museum, and also to Mr. H. STEVENS for referring me to the collections he made in Tonkin, by which I was enabled, by the courtesy of the British Museum authorities, to examine them.

The species described below are from Tonkin, Java, Sumatra, New Guinea, Celebes and Borneo, and are arranged systematically rather than in groups, in order to save frequent repetitions of head-lines. Notes have only been made on those specimens of sufficient interest or to call attention to new localities for individual species.

#### Subfamily Libellulinae.

#### Parathemis gen. nov.

Wings long and rather narrow, reticulation close, trigone in forewing traversed once, narrow, its costal side much shorter than the outer or basal, subtrigone in forewing 3-celled, trigone in hindwing with its base very slightly proximal to the arc, sectors of arc fused for a short distance in forewing, for a much longer distance in the hind, discoidal field of forewing begins with 3 rows of cells for a distance of 3 to 4 cells, then continued as rows of 2 cells for a distance of 5 to 6 cells, dilated at the termen, loop long and narrow without split cells at outer angle but an included cell at angle near trigone, *Mii*, *Rs* and *Rspl* parallel; *Mii* slightly convex forward, *Rspl* a little convex behind, only a single row of cells between *Rs* and *Rspl*; 1 cubital nervure in all wings, no supplementary nervures to the bridge, are between the 1st and 2nd antenodal nervures.

Frons rather prominent, rounded, rather deeply but narrowly cleft above. Legs long, the hind femora extending to apical border of the 2nd abdominal segment and furnished with a row of very small, very closely-set, evenly-sized spines, with a single longer one at the distal end.

Abdomen enormously swollen at the base, this involving the 1st, 2nd and 3rd segments, the latter very short, not longer than the 2nd, remaining segments very fine, thin and cylindrical as far as anal end.

Genitalia on 2nd segment prominent, lamina projecting markedly as a long narrow compressed tongue, hamules robust ending in a strongly hooked spine, lobe tapered, narrow, very slightly bulbous at the end.

Anal appendages not markedly differentiated, the superiors with the basal two thirds narrow and cylindrical, strongly arched upward, the basal third thickened, triangular as seen in profile, pointed at the apex which is directed straight back. The lower outer border furnished with a number of tiny spines. Inferior triangular, almost straight, its apex markedly bifid.

This new genus is closely related to *Pseudagrionoptera* and follows that genus in the natural order. It differs from it by the discoidal field beginning and continued for some distance as three rows of cells, by the arc situated between the 1st and 2nd antenodal nervures, by the loop without additional cells at the outer angle, longer and narrower, and by the trigone of forewing with its posterior angle directed at a greater angle towards the base of wing. Lastly the base of abdomen more markedly vesicular. This curious character is paralleled in *Orthetrum sabina*, but not to so great an extent, a more exact parallel is to be found in *Zygomma petiolatum*.

***Parathemis metallica* sp. nov. (Fig. 1).**

Head: labium bright citron yellow, the middle lobe and the borders of the lateral lobes broadly black; labium black; ante- and post-clypeus greenish yellow, the latter with the lower part of its middle black; frons in front and above, and the vesicle brilliant metallic blue; occiput small, black. Prothorax small, black.

Thorax brilliant metallic emerald green marked with sharply defined yellow spots and stripes as follows: — a narrow antehumeral stripe, the pointed end of which extends nearly up to the alar sinus, and below curves gently back and broadens as far as the middle pair of legs, a very irregular narrow humeral stripe on the humeral suture formed of a large spot above at the alar sinus and continued after a short interval as a narrow sinuous broken line, a broader stripe just in front of the spiracle tapering away below, a narrower one running along the anterior border of the postero-lateral suture, finally the upper border broadly and the hinder half of the metepimeron. Beneath a large cupola-shaped yellowish spot encircled by a horse-shoe of black.

Wings hyaline, the extreme bases slightly tinted with saffron; nodal index  $\frac{9-13}{10-10} | \frac{13-9}{10-10}$ ; pterostigma dark brown between thick black nervures, over about 2 cells.

Legs entirely black. Abdomen black, segment 1 with a subdorsal spot of yellow, 2 with a broad yellow medial stripe completely encircling it and leaving only the basal and apical borders broadly black, segment 3 with its basal half yellow, remaining segments unmarked. Anal appendages black.

Habitat. Java. Female unknown.

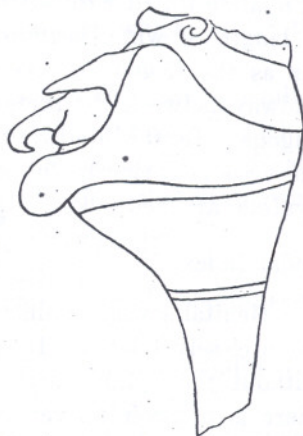


Fig. 1. Base of abdomen of *Parathemis metallica* sp. nov., seen in profile, showing the first three segments and base of fourth, and genitalia.

**Neurothemis obscura** sp. nov.

Male. Abdomen 23 mm. Hindwing 27 mm.

The whole head and thorax uniform warm reddish brown, the abdomen paler and brighter, ochreous marked on segments 5 to 10 with black as follows: — segment 5 with an obscure lateral black spot on each side not reaching either end or lower border, segments 6 to 9 with well-defined lateral elongate black spots bordering the ventrum below for the apical half of the segments, and confluent apicad with an ill-defined apical black ring. Dorsal carina of same segments darker and also confluent with the apical rings. On segment 9 the ground colour almost obliterated by the black, and entirely so on segment 10.

Anal appendages light ochreous changing to black at extreme tips, shaped as for *terminata*. Legs reddish brown, pale.

Wings dark uniform smoky brown from base to apex, somewhat irregularly marked with hyaline, but saffronated, areas. The cell middles near apices of wings clear but tinted with yellow. Each wing with a basal patch of hyaline tinted with saffron. In the forewing this area narrow and elongate in length of wing, beginning a little basad of trigone and extending out as far as the trigone or even some 8 to 10 cells beyond it, anteriorly limited midway between the sectors of arc, whilst posteriorly it extends to apex of trigone. In the hindwing, somewhat more extensive and including most of the area posterior to the anal vein and *Cu<sub>ii</sub>*. There is also a small point of hyaline at each node. Pterostigma bright yellow between black nervures,

nodal index  $\frac{13-17}{12-14} | \frac{16-12}{13-13}$

Genitalia very similar to that of *terminata* to which species this appears to be closely related. In general appearance it reminds one of a male *fulvia* without the hyaline areas, or better still, a dark, enfumed, female *fulvia*, there is however no very close relationship between these two species.

Habitat. Java only. Two males coll. H. C. DELSMAN, Oct. 1920, Karimon Djawa.

Subfamily **Corduliinae**.

This subfamily is poorly represented in the collection, three species in all, one of which however is new.

1. **Azuma vittigera** (RAMB.). A single male, not differing from type.

The type comes from Java, but the species extends to the neighbouring continent and I have seen specimens from Burma.

2. **Macromia westwoodi** SELYS. A single male from Soekaboemi.

Recorded also from Penang and Borneo. The colours have faded somewhat but, as far as can be seen, do not differ from type.

3. **Procordulia karnyi** sp. nov.

Male Abdomen 36 mm. Hindwing 36 mm.

Head: labium dark ochraceous, face dark reddish brown, frons at crest

and above, dark metallic bluish green; occiput dark reddish brown, projecting and tumid posteriorly, slightly notched at its middle; behind eyes black.

Thorax metallic bluish green, more bluish on dorsum, greenish with golden reflex laterally. Obscure pale yellowish brown fascia showing through the metallic at middorsum narrowly, at humeral and postero-lateral sutures more broadly, hinder part of metepimeron dull brown.

Wings evenly and palely saffronated throughout, the hind pair relatively broader than in *Hemicordulia*. Pterostigma blackish brown, small, over about half a cell, braced but the brace arising well distad of its inner end. Anal triangle 2-celled, a nervure traversing its lower angle obliquely. Membrane large, extending to a distinctly angled tornus, pale brown. Trigone in forewing traversed by a single horizontal nervure; subtrigone 5-sided, 3-celled;

$$\text{nodal index } \frac{6-9}{10-6} \mid \frac{9-5}{6-7}$$

Abdomen metallic green on segments 1 and 2, bronzed dull metallic from 3 to 5, dull blackish brown from 6 to 8, the borders of which, along the ventrum, yellow ochre, segments 9 and 10 black.

Anal appendages black, the superiors as long as the two last abdominal segments taken together, curving gently downwards from base, which is thickened, followed by a slight constriction, again thickening and finally tapering to a point. Inferior triangular, ending in a moderately sharp point, curved very slightly up, only slightly shorter than the superiors.

Oreillets moderately large, glossy black.

Genitalia very prominent, hamules robust, lamina depressed, lobe tapering and of great length, almost pointed.

Female exactly similar to the male. Wings rather broader and longer than in the male; abdomen cylindrical and relatively shorter.

Habitat. Java and Wai Lima, Sumatra. Two pairs from Mt. Tengger, 5000 ft, S. XII. 20. This is the first species of the genus reported from the Island. I have much pleasure in naming this beautiful species after Dr. H. KARNY, of the Buitenzorg Museum, Java, where the type has been deposited. Paratypes in British Museum and my own collection.

#### Family Aeschnidae.

##### *Anaciaeschna huonensis* sp. nov.

Male. Abdomen 54 mm. Hindwing 45 mm.

Head: labium bright ochreous; labrum brown, paler and yellow laterally, face olivaceous; frons in front turquoise blue, above glossy black, as also vertex and occiput.

Prothorax and thorax dark brown, the latter with two very broad greenish fascial stripes on each side. Legs black.

Wings evenly saffronated throughout but rather paler and clearer than in the female of *martini*. Deeper tinted at the base as far out as the trigones

and upper part of loop and in the costal spaces as far as the node. No basal dark brown mark. Pterostigma dark brown between black nervures, shortly braced, over two and a half cells. Anal triangle 3-celled.

Abdomen blackish brown, no visible markings except a pale bluish apical ring on segment 2.

Anal appendages lanceolate; the basal third narrow, then expanding somewhat and parallel-sided, apex pointed and turned abruptly out at a right angle. Inferior rather longer than half the superiors, triangular, bluntly pointed, its end curled strongly upwards.

Habitat. A single male in the British Museum with locality Genu, Huon Gulf, New Guinea, coll. W. POTTER, Gabmetzung, 20 miles up the Markham River, 29. II. 20.

The discovery of another species of this small genus is interesting. *Huonensis* resembles *martini* (SELYS) in some respects but is distinguished by the wings saffronated in the male and without a dark basal marking and by the frons wholly glossy black above, instead of the black T-shaped mark seen in *martini*. It differs more broadly still from *jaspidae*.

*Indaeschna* gen. nov. (Figs. 2 and 3).

(= *Amphiaeschna* SELYS pars.)

A study of the three species in this genus reveals the fact that two very

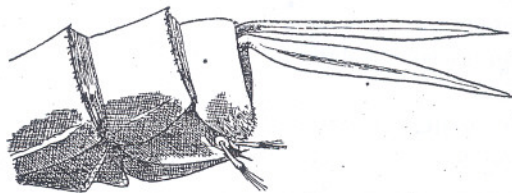


Fig. 2. Anal end of abdomen of *Indaeschna grubaueri* (FÖRST.) ♀, showing prolonged and coarsely-spined genital plate.

different groups enter into its composition. So broad are these differences that a division of the genus seems called for. In the first group, a monotypic one, is found *ampla* (RABM.), the genotype. Its characters are as follows:— Basal space traversed by 5 nervures in the forewing, 4 in the hind; 2 rows of cells between *Cu<sub>i</sub>* and *Cu<sub>ii</sub>* at their origin for a short space; *Rs* broadly forked, its two branches separated by 4 rows of cells at level of pterostigma; *Rspl* lost in the general reticulation long before the edge of wing; pterostigma not connected with its brace, which lies a short distance proximal to it; superior anal appendages of both sexes long and foliate; genital plate of female V-shaped, its surface coated with numerous minute denticles (very much the same as seen in *Anax*).

In the second group are found *perampla* MART., and *grubaueri* FÖRST., both characterized by the basal space traversed by 3—4 nervures in forewing, and 2—3 in the hind; only 1 row of cells between *Cu<sub>i</sub>* and *Cu<sub>ii</sub>* at their origin and after; *Rs* narrowly forked, only 2 rows of cells separating its branches at level of pterostigma; *Rspl* continued as a well-defined nervure right up to border of wing; pterostigma connected to its well-defined brace; superior



anal appendages long and foliate in the male only, in the female vestigial, not longer than the 10th abdominal segment; genital plate of female produced below into a rounded projecting plate bordered with large spines (very much the same as seen in *Aeschna erythromelas* MACHL.).

Group I is *Amphiaeschna* SELYS sens. str. with *A. ampla* (RAMB.) as the genotype. For Group II, I propose the name of *Indaeschna* gen. nov., with *grubaueri* as genotype.

The female of *grubaueri* FÖRST., has not been described, being unknown to its author.

Female: Abdomen 60 mm. Hindwing 64 mm.

Wings very long and broad (the hindwing at its greatest width 17.5 mm.), faintly and evenly enfumed, the bases marked with dark blackish brown as far out as the fourth antenodal nervure and limited abruptly behind by the anal nervure; nodal index  $\frac{21-26}{25-19} \left| \frac{28-21}{21-23} \right.$ , basal space traversed 3 times in forewing, twice in the hind, only 2 rows of cells between the branches of the forking of *Rs*, 6—7 rows of cells between *Rs* and *Rspl* in forewing, 7—8 in the hind, 9 cubital nervures in forewing, 6 in the hind.

Head: labium dark brownish yellow; labrum ochreous with a small cloud of brown on either side; rest of face dark olivaceous; frons brown, deep blackish brown above; occiput black.

Thorax very dark brown marked with bright green antehumeral stripes in front, triangularly dilated above near the middorsal carina, tapering rapidly and a little divaricate below, laterally a moderately narrow posthumeral stripe anterior to level of spiracle, and another much broader stripe covering the middle three fifths of metepimeron, all bright apple green.

Abdomen dark reddish brown, the hinder three segments almost black. Segments 2 to 7 marked with bright ochreous yellow apical rings, which occupy half of segment 2, one fourth of segments 5 to 6 and only the apical sixth of segment 7. Remaining segments unmarked.

Legs black, the femora dark reddish brown for their proximal three fourths; hind femora furnished with a row of numerous closely-set, minute spines; the outstretched legs extend to a little beyond the apex of segment 3.

Anal appendages very short fine stillettes, flattened, pointed at apex, dark brown. Vulvar scale projecting as a rounded flattened plate below the 10th abdominal segment, its hinder border furnished with about ten robust spines, the median four rather longer and more robust than the others.

Habitat. Java. Closely related to *perampla* MART., but distinct from it by its larger size and differently shaped male appendages. (*Indaeschna perampla* comes from Upper Malacca.)

#### ***Amphiaeschna ampla* (RAMB.) (Fig. 3).**

2 males and 1 female from Buitenzorg, Java.

Male. Abdomen 52 mm. Hindwing 55 mm. Anal apps. 6.5 mm.

The thorax in these specimens is dark reddish brown marked with a pair of bluish green antehumeral stripes which converge on the middorsal carina above, and by two paler lateral stripes, one posthumeral moderately narrow, and the other occupying the middle of the metepimeron and rather broader than the first. There are also bluish markings on the abdomen as follows: — a latero-apical spot on segment 1; a latero-basal spot on segment 2, basad to jugal suture, and a narrow apical ring; segments 3 to 7 with an obscure latero-apical spot on each side, the base, apex and carina of each segment narrowly black.

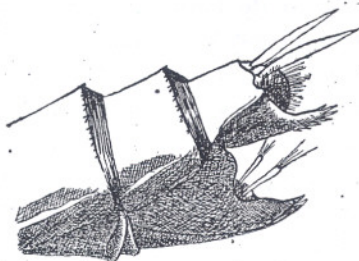


Fig. 3. Anal end of abdomen of *Amphiaeschna ampla* (RAMB.) ♀, showing rounded and finely-spined genital plate.

Wings, especially the hind, palely suffronated, especially along the costa. There is a basal incomplete antenodal nervure present in all wings as in *I. perampla* and *grubaueri*, and a secondary antenodal before the first primary. Nodal index  $\frac{19-25}{22-17} \mid \frac{26-20}{18-19}$ . There are slight traces of basal spots as far out as the 3rd antenodal nervure and are in the costal and subcostal spaces.

Female. Abdomen 53 mm. Anal appendages 7 mm. Hindwing 56 mm.

I am unable to detect any trace of green markings on the thorax as found in the male. The general colouring is dark reddish brown distinctly paler than in the male. The labium is especially paler.

The second segment of abdomen bears a well-defined bluish basal stripe occupying all the area basad to the jugal suture, and there is a less distinct and narrower apical ring. Segments 3 to 7 have the area basad to jugum yellowish and there is a spot of the same colour on the subdorsal apical border of segment 8. The legs are entirely bright reddish brown.

The wings are hyaline with a large diffuse patch of pale brown in the area between the node and pterostigma, broad at the costa, narrowing towards and not quite reaching the hinder border of wing. The brace of pterostigma in all wings is half a cell proximad to the pterostigma. All wings have the basal patch very dark and sharply limited, but in the hindwing, it extends posterior to the anal nervure.

#### *Heliaeschna crassa* KRÜGER.

A single male from Buitenzorg, Java.

The locality here is doubtful, and as the single specimen was mixed with a number of other species from Sumatra and New Guinea I think that it is more likely to have come from Sumatra. The species is known from very few specimens and the present one differs in a few details.

Abdomen 48 mm. Anal apps., 7 mm. Hindwing 51 mm.

Face olivaceous green changing to ferruginous towards the labrum and mandibles. Frons above and in front dark brown, not black. The thorax is dark coppery bronze, the dorsal carina dark blackish brown, this colour broadening below, and there is a narrow black line across the dorsum. Laterally the sides are mottled and streaked with brownish black.

The wings are hyaline, only palely enfumed, the pterostigma is small and narrow and its brace lies well proximad to its inner end as in *I. grubaueri*.

Nodal index  $\frac{18-26}{21-19} | \frac{27-18}{18-20}$ ; 3 rows between forking of *Rs*, which begins at from 2 to 4 postnodals proximad of the pterostigma. There are 7 cells in the trigone of forewing, and 8 in the hind. Anal triangle 3-celled; loop with 12 to 13 cells.

Abdomen with narrow yellow rings at the jugal suture and apical borders of segments 2 to 8, but the apex of segment 1 and the markings on 2 appear bluish.

Habitat. The type comes from N. Borneo, the present specimen, I think, from Sumatra.

The position of the pterostigma varying in these species, as noted above, is strongly suggestive. The brace may be regarded as a Zygopterous relic more or less fixed in position. In those species where the brace is not in line with the inner end of the pterostigma, some lengthening or shortening of that latter organ is taking place, thus if the brace lies proximad to its inner end, the pterostigma is shortening and vice versa.

#### *Gynacantha fulvia* sp. nov.

Abdomen 50 mm. Hindwing 45 mm.

(Subjuvenile female.) Wings hyaline, the bases pale brown to nearly as far as arc, this colour somewhat darker in the subcostal and median spaces. A suffused brown clouding of brown beginning at the trigone in forewings, extending and expanding outwards to a maximum width at the level of the marginal end of *Mv*, from which point it gradually narrows again to as far as the proximal end of pterostigma, covering rather more than the anterior half of wing. Hindwings uncoloured. Pterostigma reddish brown, over 4-5 cells; 14 cells in loop; nodal index  $\frac{22-29}{21-20} | \frac{27-21}{19-23}$ .

Lips and face olivaceous yellow, unmarked; occiput yellow. Whole of thorax and abdomen pale brown, the latter marked with transverse, oblique, narrow, light yellow lines on the apical sides of the jugal suture from 2 to 8. Legs light reddish brown.

Anal appendages long, fine, equal in length to the combined length of the three terminal segments of abdomen, basal half narrow, apical half rather abruptly broadened, nearly double the width of the basal part, apex pointed.

Habitat. New Guinea, F. Hendrik Isl., March 1910. A single female. There are only two species with which this specimen may be confused, viz. — *Platyacantha dirupta* and *Gynacantha limbalis* KARSCH. From the former it

is easily distinguished by generic characters, from the latter, by its small size, — abdomen 50, hindwing 45 mm (*limbalis* with abdomen 61, hindwing 61 mm), and by the greater width of the coloured area of forewings. The nodal index in the present specimen is correspondingly lower than in *limbalis*.

Type in the Buitenzorg Museum, Java.

***Gynacantha reticulata* sp. nov.**

Abdomen 46 mm, Hindwing 50 mm. Pterostigma forewing 7 mm.

(Adult male.) Wings hyaline but the whole network of secondary veins mapped out in dark brown, leaving the cell-middles clear, giving a stippled appearance to the wings. No basal markings. Pterostigma blackish brown, short, that of hindwing much shorter than the fore. *Rs* forks at the 4th postnodal nervure from pterostigma; 3 to 4 rows of cells between *Rs* and *Rspl*; nodal index  $\frac{20-24}{18-15} | \frac{25-16}{15-18}$ ; loop with 9 to 10 cells; anal triangle 2-celled; trigones 6-celled; 6 to 7 cubital nervures; hindwing greatest breadth 14 mm.

Head: labium ochreous, its lateral lobes broadly bordered with brown; labrum darker ochreous, outwardly narrowly bordered with dark brown; face dark reddish brown. A thick black T-shaped mark above frons, which encloses at its base, two pale yellow spots.

Thorax dark uniform reddish brown, rather darker on the dorsum. Legs dark reddish brown, distal ends of femora black.

Abdomen black, marked with yellow as follows: — Segment 1 broadly reddish brown laterally, segment 2 with linear spots on basal side of jugal suture, another pair at the apical border and a larger lateral, nearly confluent with the latter spots, segment 3 with a largish baso-lateral spot, and 3 to 8 with oblique transverse spots bordering the apical side of jugal sutures, almost obsolete on segment 8; segments 9 and 10 unmarked. Abdomen only moderately tumid at base, the oreillets of medium size, pointed behind and furnished with 3 small bordering spines. Segment 3 markedly constricted but not extremely so, expanding slightly at its base and gradually so towards its apical border.

Anal appendages thin, long, parallel, equal in length to the last 3 abdominal segments, the apical fourth inclining somewhat inward, the extreme apex acute and inclining a little outwards. Of nearly even width throughout but the middle third distinctly narrower than the base or apex. Inferior appendix triangular, slightly longer than one fourth the superiors.

Habitat. Kei Island, Coll. H. C. SIEBERS, 1922, 14. IV. A single male in the Buitenzorg Museum, Java. This species belongs to Group *hyalina* as defined by KRÜGER. It differs markedly from *hyalina* in many respects, but resembles *kirbyi* Krüg., from New Guinea, so closely that I separate it as a new species with some doubt. It differs from the latter by the inferior appendage rather more than one fourth the length of superiors, instead of

Thorax dark uniform olive green. Legs blackish brown. Abdomen dark reddish brown, almost black, marked with blue and yellow as follows: — segment 1 broadly blue on the sides and with a fine blue apical annule, segment 2 with the ventral border, 2 linear spots bordering the jugal suture on its basal side and 2 subdorsal apical spots blue, segment 3 with its base laterally blue, a narrow yellow ring bordering apical side of jugum and two subdorsal apical yellow spots, segments 4 to 6 similar to 3 but basal blue absent, and the jugal ring split by the black dorsal carina, the spots lying more obliquely on 5 and 6; segment 7 with only the jugal spots, these spots on all segments confluent with a ventro-lateral bordering of yellow, segment 8 with only the latter marking, 9 and 10 unmarked.

Anal appendages broken off (from the act of ovipositing), only the basal portions remain, which are narrow, gradually widening apicad.

Habitat. Java. This species closely resembles *limbalis* KARSCH, of which only the male is known. Females of *Gynacantha* without exception, have a greater wing length and correspondingly higher nodal index than the males. Were it not so, the present female might belong to *limbalis*. In this female the length of the hindwing is actually 10 mm. less than the male of that species, and the abdomen 11 mm. less. I find it difficult to reconcile such broad differences in stature. There are again, 29—31 antenodals to the forewings compared to 37—38 in *limbalis*, and 21—24 postnodals compared to 28—29; there are only 8 cubital nervures in the forewings compared to 9—10 in *limbalis*. Finally in the latter species the whole body is yellowish brown without markings, whereas in *javica*, colour, especially green and blue, is a dominant note.

To reconcile the two, we must suppose the type *limbalis* to be subadult and the present species to be abnormally small.

It is to be noted that the pterostigma in *javica* is equal in all wings, a feature which is by no means always the case in other species of the genus. I note that it is equal in fore- and hindwings in *khasiaca*, *bainbriggei*, *o'doneli* and *bayadera*, subequal in *hyalina* and markedly unequal in *millardi*, *lyttoni* and *reticulata*.

#### Family Gomphidae.

##### *Leptogomphus lansbergei* SELYS (Fig. 4, b).

A female from Pelaboean Ratoe agrees in every particular with the SELYSIAN description. The type comes from Java and was referred to genus *Leptogomphus* by SELYS with doubt, it is however a true *Leptogomphus*.

##### *Heliogomphus gracilis* (KRÜGER).

The absence of a basal subcostal antenodal nervure coupled with the characteristic anal appendages of the male, clearly place this species in genus

*Heliogomphus* LAID. It was referred with doubt to genus *Leptogomphus* by its author.

Habitat. Sumatra only.

### *Leptogomphus parvus* KRÜG.

Of this species KRÜGER states that there are only 3 nervures between *Mi-iii* and *Miv* in the forewing, and only 1 in the hind. It is quite impossible with such a high degree of specialization of the venation as this shows, for the species to belong to genus *Leptogomphus*. It clearly belongs to series *Gomphus*, and is most likely to be a *Burmagomphus*.

### *Onychogomphus saundersi* SELYS.

I possess a single male of this species collected by Mr. BODEN KLOSS in Annam. It differs from type in its greater melanism as follows: The labrum has two small yellow spots broadly divided by a traversing medial line of black; the lateral spots near the eyes on the postclypeus are absent. The transverse stripe on the crest of frons is divided narrowly by the black at base of frons meeting that on front of frons; the humeral stripe is represented merely by an upper spot, the lateral stripe on thorax are thicker. The middorsal spots on segments 4 to 6 are entirely absent although present on segment 3. Segments 9 and 10 are unmarked. The anal appendages differ neither in shape nor colouring from the type.

### *Onychogomphus tonkinicus* sp. nov.

Abdomen with appendages 40 mm. Hindwing 31 mm.

Head: labium whitish; labrum greenish white very broadly bordered with black, its base finely so; the bases of mandibles, a small spot on outer side of postclypeus and the anteclypeus creamy white; frons black with a greenish white stripe on crest which overlaps the front to nearly as far as the suture between frons and postclypeus, its base above black, this colour prolonged triangularly into the sulcus forward. Vertex and occiput black, the latter simple, concave.

Prothorax black, the hinder border of posterior lobe, a very large geminate spot on the middorsum in front of lobe and an anterior collar greenish yellow.

Thorax black marked with greenish white as follows: — a pair of almost straight antehumeral stripes, which below, are confluent with a slightly broken mesothoracic collar, forming inverted „sevens” therewith, the middle part of the middorsal carina finely, a humeral stripe consisting of an upper spot separated from a lower sinuous fine line. Laterally broadly greenish yellow, the sutures finely black, the first stripe incomplete below, the second slightly incomplete below and above.

Legs black, the hind femora broadly yellow except the distal ends; femoral spines closely-set, evenly-sized and numerous.

Abdomen black, broadly marked with yellow as follows: — segment 1 with a broad triangle, its base resting on the apical border, segment 2 with a broad middorsal stripe which expands at the third quarter and then contracts very narrowly at the apical fourth, reaching from base to apex, segment 3 with a broad basal ring which is broadly confluent with a middorsal elliptical spot, which latter does not extend quite to apical end of segment, segment 4 similar but the basal ring and dorsal spot well separated, segment 5 similar, segments 6 and 7 with only the basal rings, which on the latter, covers the basal half of segment, segments 8 to 10 all black. Laterally segments 1 and 2 and the base of 3 are broadly yellow. Oreillets rounded, very large, yellow.

Genitalia prominent, the lamina arched and projecting, anterior hamule laminated, thin, twisted on itself and bent at a right angle, posterior hamule more robust, ending in a short, sharply curved, forwardly directed spine.

Anal appendages bright yellow. The superiors as long as segment 10, slightly separated at base as seen from above, then converging and curled well downward. Thick at base, tapering to a rather fine point at apex. Inferior deeply bifid, the branches closely apposed, directed downwards in their basal half and then at nearly a right angle upwards to meet the superiors where they begin to curve downward. The end somewhat triangularly dilated as seen from the side. No spine or vestiges of such on the upper surface of inferior appendage.

Wings hyaline, very palely saffronated at extreme base. Pterostigma black, braced, covers 4—5 cells, nodal index

10—15	16—11
11—13	12—11

Habitat. Tonkin. A single male in the British Museum, collected by H. STEVENS. MARTIN mentions *O. saundersi* SELYS as from Tonkin, but I think that he has mistaken this new species for it. The two closely resemble one another. The present species differs from *saundersi* by the labrum more broadly yellow and not traversed at its middle by black, by the antehumeral stripes less oblique and by the middorsal carina of thorax yellow at its middle. The black stripes on sides of thorax are narrower and incomplete; the dorsal yellow stripe on segment 2 extends the whole length of segment, and the middorsal spot on segment 3 is confluent with the basal ring, segment 6 has no dorsal spot, whilst 8 and 9 are without the lateral spots seen in *saundersi*. The superior appendage is shorter, and entirely yellow, the inferior appendix is also yellow. Lastly the nodal index is considerably higher than in *saundersi*.

***Gomphus auricolor* sp. nov., (Fig. 4, a).**

Female. Abdomen 45 mm. Hindwing 40 mm.

Head glossy black, the bases of mandibles and a broad transverse stripe on upper surface of frons bright citron yellow.

Prothorax black with an anterior collar, a geminate spot on dorsum and a large spot on each side bright citron yellow.

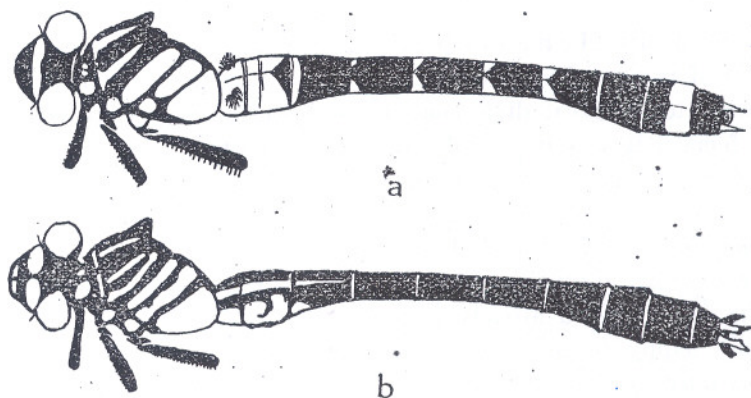


Fig. 4. a. Lateral view of *Gomphus auricolor* sp. nov., ♀.  
b. The same of *Leptogomphus lansbergei* SELYS, ♂.

Thorax black marked with bright citron yellow as follows: — a short, broadly interrupted mesothoracic collar, a broad, parallel, antehumeral stripe broadly confluent with the collar below. Laterally entirely yellow save for two narrow black lines, one traversing the spiracle, the other on the postero-lateral suture, confluent below and cutting off a spot of yellow at lower border of thorax.

Legs entirely black; hind femora with a row of gradually lengthening, closely-set, short spines. This femur extends to middle of segment 2.

Abdomen black marked with yellow as follows: — segments 1 and 2 almost entirely yellow, segment 1 has only a small subdorsal tuft of short black hairs on each side, whilst 2 has a small semilunar, middorsal apical black spot, segment 3 with only a fine linear latero-basal yellow stripe, 4 with a tiny basal point, 5 to 7 with large baso-lateral bright citron yellow spots nearly confluent over the dorsum, 8 unmarked, 9 with its apical half yellow, 10 unmarked.

Anal appendages pale, small, conical. Vulvar scale not visible.

Wings hyaline; a basal subcostal nervure in the right forewing of one specimen only; 5 rows of postanal cells; pterostigma pale brown, over 5—6 cells, braced; nodal index  $\frac{15-18}{14-11} | \frac{17-15}{12-14}$ ; remainder of venation typical for *Gomphus*.

Habitat. Tonkin, Ngai Tio, 5—12, IV, 24, 4800 ft. Coll. by H. STEVENS.

The species belongs to group *nilgiricus* by its parallel antehumeral stripes broadly confluent with the short mesothoracic collar, but is easily distinguished from that and all others of the genus, by the strikingly broad expanse of bright yellow at base of abdomen, a feature which at once meets the eye.



## Family Cordulegasteridae.

**Chlorogomphus magnificus** SELYS.

SELYS in his *Monographie des Gomphines*, p. 313, described the male of this species from a single male in the Leyden Museum, but noted that owing to the great difference in the breadth and colouring of the wings of the female, it was impossible to state for certain that they were the two sexes of one species. Later, in 1858 he proposed the name of *Chlorogomphus hyalinus* for this specimen, under the impression that it was quite distinct from *magnificus*. In the 2nd Additions to the *Synopsis des Gomphines*, 1869, he confirmed this, and definitely gave the male specific rank with the name he had already proposed.

I am happy to prove that his first conclusions were correct and that *hyalinus* must be the true male of *magnificus*. If the two, male and female, sexes be compared with those of *campioni* FRAS., it will be at once evident that analogous differences are present, and that the male of *campioni* is closely similar to that of *magnificus*, and that the females compare as favourably in shape, although not in the arrangement of colouring. (The sexes of *campioni* were taken in cop.)

## Family Agrionidae.

Genus **Rhinocypha** RAMB.

The collection contains four species, viz.: — *R. tinctoria*, *fenestrata*, *heterostigma* and *angusta*.

**Rhinocypha tinctoria** RAMB. The specimens show the usual variations, but in most specimens the black colouring of wings extends right up to the extreme base, especially in the costal area. Females have this colouring much more restricted.

Habitat. Kei Island, coll. H. SIEBERS, 1922. The type comes from Java, but the species has also been found at Ceram, Amboina, Moluccas, Sulu and Aru.

\***Rhinocypha fenestrata** BURM. Three males come from Buitenzorg, Java, and three others from Wai Lima, S. Sumatra, coll. H. KARNY and H. SIEBERS, XL, XII. 21. Buitenzorg specimens, 1. 1920; 3. 1920 and 11. IV. 21.

They do not differ from type. Sumatra is an extension of their habitat not hitherto reported, the type coming from Java.

**Rhinocypha heterostigma** RAMB. 4 males from Tjibodas, Java, VII, 21. Not differing from type. The species appears to be confined to Java.

**Rhinocypha angusta** SELYS. Two males from Wai Lima, Lampongs, S. Sumatra, Coll. H. KARNY, XI. XII. 21. Both are very typical but in poor condition, with parts missing. This species appears to be confined solely to Sumatra.

**Rhinocypha io** subsp. nov.

Male. Abdomen 20 mm. Hindwing 27 mm.

Head: labium black with three large pyriform yellow spots; labrum and epistome glossy black, rest of head velvety matt black with spots of bright ochreous as follows: — the bases of mandibles and the cheeks against the eyes broadly, a large spot at the side of epistome and a linear spot at its base on each side above, the basal joint of antennae, a minute spot on the outer side of each outer ocellus and a similar small spot on each side of occiput.

Prothorax black with a small round spot on each side of the dorsum of anterior lobe, and a larger ochreous linear spot on the side of the middle lobe.

Thorax black marked with bright ochreous as follows: — a very fine antehumeral line on the lower half of dorsum, an equally fine line on the hinder border of the upper two thirds of the humeral suture, another fine line on the upper third of the 1st lateral suture, a broad irregular oblique stripe running from the hinder part of the metepimeron to the base of the middle pair of legs and split rather broadly by a black stripe on the 2nd lateral suture. Beneath black with four yellow spots. Legs black, hinder tibiae reddish brown, hind femora bright yellow in rather more than the basal half of their flexor surface, the other femora bright yellow at their extreme base only.

Wings long and narrow, of equal width, hyaline. The hind pair palely enfumed and tinted with yellow at base, forewings unmarked, the hind with a narrow dark brown fascia extending inwards from the level of the inner end of pterostigma as far as the 8th postnodal nervure proximal to it. This band has an irregular but well-defined outer border and a sinuous inner border, which latter is at first convex inward and then concave, finally, at the hinder border of wing, prolonged inward for about four cells. Similarly on the outer side at the hinder border, the band is prolonged outward for several cells almost to level of outer end of pterostigma. Anteriorly the band is abruptly limited by the median nervure. Above, the brown patch is brilliant iridescent dark bluish green metallic, whilst beneath, the band shows, slightly anterior to its middle, a small spot, of about 4 cells, brilliant metallic peacock blue. Forewing with 13 antenodal nervures and 23 postnodal, hindwing with 13 antenodal nervures and 22 postnodal. Petiolation begins at one antenodal space before the arc; pterostigma black, over 6 cells in forewing, 5 in the hind.

Abdomen black, segment 1 with a large angular yellow spot on each side, 2 and 3 with a fine linear lateral stripe along the ventral border, 3 to 8 with a fine baso-lateral stripe bordering the articulation and becoming less conspicuous as traced from segment 3 to 8.

Anal appendages black, as for genus, the superiors long and linear, their apices curling in towards each other.

Habitat. A single male from Sumatra. The narrow wings, extent of petiolation, and the closely similar character of the hindwing marking show a close affinity to *heterostigma*, of which species I regard this as a race or more probably, a subspecies. *R. heterostigma* is confined to Java, the present one to Sumatra. The single male is fully adult thus precluding any possibility of the wing marking not being fully developed, the marking is also very dark and sharply defined, even more so than in *heterostigma*. In extent it is about similar to that found in the hindwing of the female of *heterostigma*.

Family **Coenagrionidae.**

Legion **Podagrion SELYS.**

**Argiolestes SELYS.**

SELYS divided his large genus *Argiolestes* into two subgenera *Podopteryx* and *Argiolestes*, further subdividing the latter into two groups. These two groups differ so widely that it seems essential to give generic rank to the 2nd, reserving the name *Argiolestes* for the first. For the second I propose the new name of *Risiolestes*, with *icteromelas* SELYS as genotype. FÖRSTER'S genus *Wahnesia* is invalid, as on the face of it, it is but another name for section B of genus *Argiolestes* SELYS, for which *ornata* SELYS had already been given as type. Moreover FÖRSTER has given as genotype for his genus, a species which has never been described.

In the new species described below, an *Argiolestes* belonging to group C, the position of the subnodal is constantly after the node, so that one would be justified in creating a fourth, or D, section for *Argiolestes*, with the new species as section-type.

**Argiolestes karnyi sp. nov.**

Male. Abdomen 34 mm (without appendages). Hindwing 31 mm.

Wings hyaline, very palely enfumed, the extreme margins of wings, for a depth of one cell, pale brown along the costal margin from about ten cells proximad of the pterostigma, round the apex towards the base of wing, and along the hinder border as far as about middle of *Cvii*.

Pterostigma black, about 3 times as long as broad, slightly longer in the hindwing where it is also more finely tapered within, its brace at an obtuse angle to the inner border of pterostigma. *Ac* very slightly distad of the level of basal antenodal nervure. *Rs* arising distad of the level of subnode, *Miii* arising equally proximad of the same level. Petiolation beginning at about the middle of the quadrilateral. *Cvi* and *Cvii* ending 8 cells apart at the hinder

border of wings, 3 rows of cells posterior to *Cuii*, the cells in rows separated by supplementary sectors descending from *Cuii*. Reticulation close, intercalated sectors between most of the main nervures. Postnodals in forewing 37—38, in the hind 31—33.

Head: labium burnt brown; labrum glossy black with metallic lustre, this violaceous at base; face and frons dark ochreous; vertex and occiput blackish brown with an obscure dark yellow oblique stripe at the outer side of each outer ocellus. Behind eyes matt black.

Prothorax burnt brown, darker anteriorly, ochreous laterally.

Thorax bronzed black on dorsum as far back as near the anterior border of metepimeron. An elongate, sharply defined, tear-shaped, antehumeral spot of bright ochreous on the lower three fifths of dorsum, pointed below, rounded above. A second similarly coloured stripe just posterior to the humeral suture. Metepimeron dirty yellow with a triangular diffuse spot of dark brown in its upper part. Legs yellow, with yellow spines. All femora with a ring of blackish brown subapically, the hind femora with an additional ring of the same colour at about its middle.

Abdomen dark reddish brown, narrow apical rings on segments 3 to 6 and a diffuse stripe running laterally from these ochreous.

Appendages yellowish brown, darkened at apices. The superiors twice the length of segment 10, curving towards each other especially at apices which are blunt. At the middle of the inner side a dilatation in the form of a rounded plate. Inferior appendages very broad and tumid at base, abruptly narrowed and ending in a thin spine like appendage directed upwards and outwards.

Female; abdomen 32 mm. Hindwing 31 mm.

Similar to the male in most respects but the abdominal markings much better defined. Also a narrow oblique basal ring of yellow on segment 8 and a broad one on 9 occupying its basal half, segment 10 with its sides yellow, as is also the large vulvar scale, which projects well beyond the end of abdomen. Anal appendages blackish brown, rudimentary, very small, pointed.

Wings hyaline, the brown bordering hardly noticeable; pterostigma bright golden yellow framed in an encircling thick black nervure; 31—32 postnodals to forewing, 27—28 in the hind, venation for the rest exactly as in the male.

Habitat. Java only. Three males and one female, collected by Dr. H. KARNY. The position of *Rs* and *Miii*, as well as the clear cut, bright yellow markings of thorax will distinguish this species from any others.

***Calilestes* gen. nov., (Fig. 5, c).**

This new genus appears to be allied to genus *Rhipidolestes* RIS in some respects, but chiefly by the proximal origins of *Miii* and *Rs*, by the extent of petiolation of the wings and by the position of the nervure *ac*.

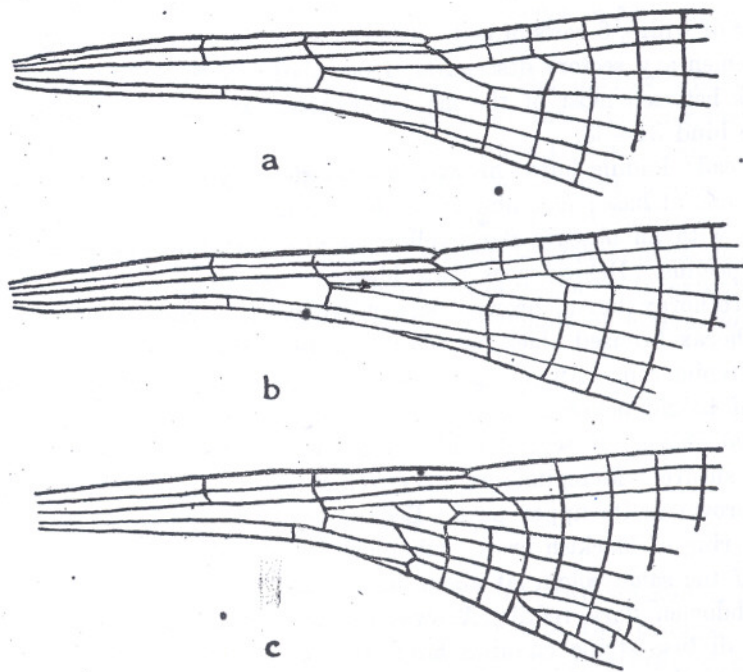


Fig. 5. *a* and *b*. Fore and hind-wings of *Podolestes* sp. showing basal venation. *c*. The same of *Calitestes pallidistigma* sp. nov., ♂.

The quadrilateral elongate, its outer side rather oblique, its costal side about four fifths the length of hinder side, its length a little shorter than half the distance between the node and arc; petiolation begins at about the level of middle of quadrilateral, the nervure *ab* arising here from the hinder border of wing; *ac* much nearer the outer antenodal nervure than the basal; *Miii* and *Rs* arising widely proximal of the node, the origin of *Miii* nearer the arc than node, of *Rs* nearer the node than arc; *Mii* arises at the 4th postnodal in forewing, between the 4th and 5th in the hind; *Mia* four and a half cells wider in forewing, three and a half in the hind. Intercalated sectors in forewing as follows: — 2 between *Mi* and *Mia*, 4 between *Mii* and *Rs*, 2 between *Rs* and *Miii*, 3 between *Miii* and *Miv*, 2 between *Miv* and *Cui*, 2 between *Cui* and *Cuii* and 1 between *Cuii* and hinder border of wing, 10 cells between the ends of *Cui* and *Cuii* at border of wing. Hindwing similar but 2 sectors between *Cuii* and hinder border of wing, and only 8 cells between the terminations of *Cui* and *Cuii*.

The position of the origins of *Miii* and *Rs* separates it from all other genera of the Legion *Podagrion* except *Rhipidolestes*, and from this genus it is separated by the longer *Cui* and *Cuii*, and by the presence of intercalated sectors between them and between *Cuii* and hinder border of wing. Similar characters will serve to separate it from genus *Pseudolestes* KIRBY, if this be considered a member of the same Legion.

*Calilestes pallidistigma* sp. nov.

Male: Abdomen *ca* 38 mm. Hindwing 33 mm.

Head: labium pale yellow; labrum black; epistome citron yellow, the anterior part tinged with bluish green; frons and cheeks citron yellow, rest of head matt black.

Prothorax citron yellow, the middorsum with a broad blackish brown longitudinal stripe of even width, the coxae, trochanters and sides low down jett black.

Thorax coal black marked with citron yellow as follows: — On the dorsum a moderately broad antehumeral stripe which is a continuation of the yellow on prothorax. Above, this stripe falls short of the alar sinus and has its upper end indented by the black. A much broader stripe on the sides occupying all the space in front of the hinder suture and the anterior part of the metepimeron narrowly.

Legs palest reddish brown, the spines yellowish.

Wings hyaline; pterostigma primrose yellow encircled by a fine black nervure, about twice as long as broad, outer and inner sides very oblique, the inner coming to a fine point; 26 postnodal nervures in forewing, 26—27 in the hind; 2 rows of cells in the costal space beyond the pterostigma.

Abdomen black with bronzed lustre, unmarked. (The last 4 segments missing.)

Habitat. Tonkin. A single male collected at Ngai Tio, by Mr. H. STEVENS, 26. IV. 24. Type in British Museum.

*Podolestes* sp., (Fig. 5, *a* and *b*).

I place here a very remarkable specimen from Ngai Tio, Tonkin, collected by Mr. H. STEVENS on the same date as the last. It is a very teneral female with the last 4 segments of abdomen missing, for which reason I forbear to name it. It is chiefly remarkable for the enormous length of its quadrilateral which extends outwards to the level of the node in forewing and actually beyond the level of the node in the hind where it is also opposite the origin of *Miii*, although this rises distad of the subnode.

The wings hyaline; pterostigma pale citron yellow, over 2 cells; 25 postnodal nervures in forewing, 24 in the hind. The nervure *ac* lies only slightly distad of the basal antenodal nervure, quadrilaterals with costal and hinder sides almost equal so that the outer end is barely oblique, that of hindwing much longer than in fore and ending well beyond level of node, so that in neither wing is there any cell between the end of quadrilateral and subnode. Short intercalated sectors between *Mia* and *Mii*, *Rs* and *Miii*, *Miv* and *Cui*, and only one row of cells between *Cuii* and hinder margin of wing. *Miv* ramifies into 3 branches a little before its end.

The colours of this specimen have not developed fully, but seem to be

largely black as in *melanothorax*, for which I at first mistook it as a general specimen. The head is black with a broad white stripe running transversely across the epistome. The thorax uniform brownish black; the legs dirty white. Abdomen black with broad white basal rings on segments 3 to 6. (The last four segments missing.)

The venational characters of this species are an odd mixture of *Argiolestes* and *Podolestes*, whilst the quadrilateral is similar to that of *Copera* only much longer. On the whole it seems nearest to *Podolestes*, its true position can only be given with certainty when more material comes to hand. From *Argiolestes* it is separated by the single row of cells posterior to *Cu<sub>ii</sub>*, by the very prolonged quadrilateral and by the brevity of the intercalated sectors. From *Podolestes* by the position of the nervure *ac* and by the elongated quadrilateral.

***Argiolestes kirbyi* (FÖRST.)**

(= *Wahnesia kirbyi* FÖRST.)

In the British Museum, there are two specimens of *Wahnesia kirbyi* apparently determined by the late Mr. H. CAMPION. A careful examination of their venation fails to demonstrate any character sufficiently important, to justify their separation from Genus *Argiolestes*. In the forewings there are 2 rows of cells between *Cu<sub>ii</sub>* and the hinder margin of wing, in the hind 3 rows, the cells here being separated into parallel rows by sectors descending from *Cu<sub>ii</sub>* to the hinder margin of wing. *Cu<sub>i</sub>* and *Cu<sub>ii</sub>* end, as FÖRSTER states, close together at the border of wing, and this is the only character in which they differ from *Argiolestes*. The nervure *ac* lies a little more distad than is usual, but this is a very variable character in the genus. *M<sub>iii</sub>* continues the line of the subnode, whilst *R<sub>s</sub>* lies well distad of its level.

The specimens come from New Guinea.

Legion *Platysticta* LAID.

***Drepanosticta siebersi* sp. nov., (Fig. 6, a).**

Male: Abdomen 28 mm. Hindwing 20 mm.

Head: labium dirty white; labrum creamy yellow broadly bordered with black; anteclypeus creamy yellow; postclypeus and frons glossy black, rest of head matt black with dark green metallic reflex. Eyes black.

Prothorax dirty brown, the sides and middle part of posterior lobe greeny black metallic, the posterior lobe highly specialized, large, scale-like and furnished with an outwardly curled, hook-like horn at each outer angle.

Thorax matt black with dark green metallic reflex, marked laterally with an elongate narrow pale bluish spot at the anterior border of the hind suture,

and another whiter spot at the upper posterior angle of the metepimeron. Beneath black, white behind.

Legs, including coxae, dirty white, femora with fine pale brown rings subdistally and longitudinal streaks of the same colour on the outer sides. Knees darker.

Wings hyaline; 15 to 16 postnodal nervures in forewings, 14 in the hind; pterostigma pale brown heavily framed in black, nearly square, inner side a little oblique, the outer slightly wider than outer. The nervure *ac* very oblique, *ab* arising from it at the hinder border of wing and running from thence to under side of quadrangle.

Abdomen black with rather broad white dorsal rings on segment 2 to 7 at their base. Anal appendages dirty white. Superiors ribbon-like, broad at base, twisted on themselves cork-screw-like, so that they are at first flattened from side to side and then from above down, about as long as segments 9 and 10. Inferiors of the same length, conical, thick at base, tapering rapidly to a blunt point, which is turned in abruptly at a right angle, the points nearly meeting. The 10th abdominal segment very short, segment 9 three times as long as 10, and 8 twice as long as 9.

Female: Abdomen 30 mm. Hindwing 22 mm.

Coloured and marked exactly the same as in the male. Pterostigma reddish brown; 15 postnodal nervures in forewings, 14 in the hind.

Prothorax with the posterior lobe smaller and the horns shorter, mere conical protuberances.

Abdominal segments 8, 9 and 10 growing progressively shorter, the 10th and anal appendages pale brown, the latter very small, conical.

Habitat. Java. Tengger 5000 ft. One pair only. Type and co-type in the Buitenzorg Museum, Java. Very similar in appearance, and with similar prothoracic organs to *Platysticta bicornuta* SELYS, but distinguished from it by the venation and much smaller size, abdomen only 28 mm long, (40 mm in *bicornuta*), and hindwing 20 mm (25 mm in *bicornuta*).

#### *Drepanosticta robusta* sp. nov.

Female. Abdomen 31 mm. Hindwing 23 mm.

Head: labium. white; labrum turquoise blue, bordered broadly with glossy black; anteclypeus pale blue, its base and postclypeus black; upper surface of head matt black with a transverse yellow stripe traversing it from side to side just in front of ocelli. Back of head yellowish; eyes black.

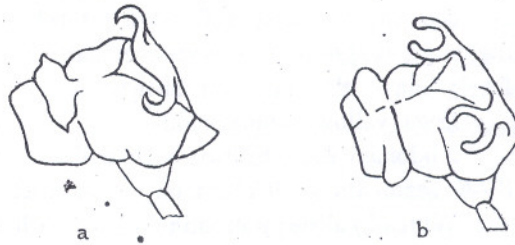


Fig. 6. a. Prothorax of *Drepanosticta siebersi* sp. nov., ♂.  
b. The same of *Caconeura salomonis geminata* subsp. nov., ♂.



Prothorax with simple posterior lobe, pale brown with a large subdorsal median bluish spot on each side.

Thorax uniform warm reddish brown as far as the humeral suture, black between the humeral and first lateral suture, this black forking above to include a wedge of the ground colour; sides bluish white, the posterior suture finely black clouded with brown.

Legs yellow, unmarked.

Abdomen dark brown, with white or pale bluish basal rings on segments 3—6, segments 7—9 black on dorsum, 10 reddish brown.

Wings hyaline; pterostigma reddish brown, subquadrate, outer side slightly longer than the inner, convex; postnodal nervures 15 in forewing, 14 in the hind.

The female is fully adult, a male is very teneral and has the last 7 segments of abdomen missing. The pterostigma is pale, the markings of body, so far as developed, are similar to those of female, but paler.

Wings similar but one forewing has 16 postnodal nervures. On the prothorax are seen two minute spines, one on each side of the posterior lobe, not nearly so well developed as in *bicornuta* SELYS or *siebersi*, from which species this is easily distinguished by the transverse pale stripe on vertex.

Habitat. Kei Island, Gn. Daab, coll. H. C. SIEBERS, 1922. Type, a female in the Buitenzorg Museum, Java.

#### *Protosticta annulata* sp. nov.

Male. Abd. ca 40 mm. Hindwing 26 mm.

Head black, labrum glossy black, broadly bluish white at base, as also cheeks and clypeus.

Prothorax whitish, posterior lobe simple, dark brown.

Thorax dark metallic black with bronzy reflex on dorsum as far as the first lateral suture. Sides white with a narrow brownish black stripe on the 2nd lateral suture.

Abdomen incomplete, the last four segments missing. Segment 1 with its apical border brownish, 2 pale brown on dorsum deepening to black at apical border, laterally white, 3 to 6 similar, a complete white annule occupying about the basal eighth of 3, one sixth of 4, and nearly one fifth of 5 and 6.

Wings hyaline, pterostigma pale brown; 16 postnodals in forewing, 15 in the hind; the bridge absent in all wings; *Cui* only 5 cells long.

Habitat. A single male from Menado, Celebes, leg. MOHARI. Type in Buitenzorg Museum, Java.

#### Legion *Protoneura* SELYS.

*Caconeura salomonis geminata* subsp. nov., (Fig. 6, b).

This subspecies agrees with *salomonis salomonis* in size and venation and

by having its wings uniformly tinted a beautiful greenish yellow, the thoracic and abdominal markings however differ rather broadly.

The antehumeral spot very broad below, pointed above where it ends at about halfway up the dorsum of thorax. Laterally it is arrested sharply by the humeral suture, not overlapping it at any point. The dorsal black extends on to the sides nearly as far as the spiracle, and posterior to the humeral suture is marked below by a large rounded spot and above by a small linear spot of azure blue. The sides are azure blue marked by a broad medial stripe of black and by another which borders the lower hinder part of metepimeron. Beneath pure white. (In *salomonis salomanis* the underneath is black.)

Abdomen black with the sides of segments 1 and 2 bluish, and on 4 to 6, narrow basal rings and lateral subapical spots of white, very poorly marked on segment 6. Remaining segments unmarked. (In *salomonis salomonis* segments 8 and 9 are marked with blue on dorsum.)

Anal appendages light brown, similar in shape to those of the type species.

Female rather smaller than the male but otherwise very similar. Wings are hyaline and untinted, the pterostigma is pale brown framed first with a narrow white border and then by a thick black nervure, over 1 cell, more than twice as long as broad.

Head, prothorax and thorax coloured as for male but the antehumeral and posthumeral spots absent. The blue on sides is mingled with yellow and pale green. The lower sides of segments 8 and 9 are striped with yellow. Legs yellow striped on the extensor and flexor surfaces with brownish black, which at the distal ends of femora is confluent.

Prothorax armed with two curious appendages, one at each outer angle of the posterior lobe, and somewhat similar to those seen in *C. eburnea* FÖRST., and *C. pseudexul* RIS, but differing very markedly from those of *salomonis salomonis*. Each appendage is stirrup-shaped, its two arms equal and curled slightly and evenly towards each other. They rise from a base which is distinctly stalked and thus project more markedly than in other species.

Habitat. Kei Island, coll. H. C. SIEBERS, 1922, two males and two females. Also closely related to *C. moluccensis*, and *flavipennis* SELYS, more especially to the latter.

#### *Caconeura fruhstorferi* KRÜG.

Two males of this species without date or locality, but probably from Java, from where the type comes. They differ only in having an extra post-nodal nervure in the forewings and by the antehumeral stripes rather longer, extending upwards for the lower two thirds of the thorax.

The markings are bright orange, except those on the 8th and 9th segments which are azure blue, rather obscured from decomposition.

*Teinobasis rufithorax* SELYS.

Two males from Kei Island, coll. H. C. SIEBERS, 1922. Not differing from type.

*Teinobasis gracillima* sp. nov., (Fig. 7).

Male. Abdomen 39 mm. Hindwing 24 mm.

Head. Labium pale yellow, as also bases of mandibles and cheeks; labrum and clypeus glossy black, rest of head matt black, unmarked.

Prothorax black with a large pale blue spot low down on each side, the posterior lobe rather large, rounded, simple.

Thorax matt black on dorsum as far out as midway between the humeral suture and level of spiracle, and above extending back as far as the anterior border of metepimeron.

Wings hyaline, very palely enfumed, *ac* much nearer the outer antenodal nervure, are slightly distad of the outer antenodal nervure. Pterostigma blackish brown framed in a thick black nervure and separated from the latter by a light encircling margin, over 1 cell.

Legs yellow with an obscure clouding of brown at the middle of the outer surface of femora.

Abdomen black on dorsum, yellowish at sides, the black extending as broad rings at the apical ends of segments, segments 7 to 10 unmarked.

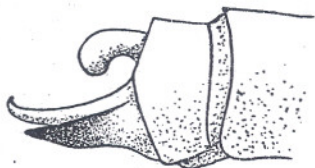


Fig. 7. Anal end of abdomen and anal appendages of *Teinobasis gracillima* sp. nov., ♂.

Anal appendages black, apices of inferiors yellow finely tipped with black. The superiors short, about half the length of segment 10, of even thickness, the apices curled down at a right angle. Inferiors slightly longer, conical, very thick at base, tapering to a fine point which curls slightly and evenly upwards, on the outer side and fused with the inner portion except at its extreme apex, is a stout black spine. Viewed from above, this appendage appears bifid, the inner yellow apex turning slightly inwards towards its fellow.

Habitat. Java, a single male without date. (Labelled T (9)). Type in the Buitenzorg Museum, Java. This species appears to be the first of its genus reported from Java.