STUDIES ON THE FAUNA OF SURINAME
AND OTHER GUYANAS: No. 9.

THE AESCHNINE GENUS STAUROPHLEBIA

Notes on Odonata of Suriname VII [1])

by

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The genus *Staurophlebia* was established by BRAUER (1865, 1866) from his species *magnifica* from Brazil, a name which later proved to be a synonym of *reticulata* (Burmeister 1839), (see under this species). In his notes on *St. magnifica*, HAGEN (1867) said that SELYS (MS) has proposed the genus name *Megalaeschna* for *Aeschna reticulata* Burm., *Ae. gigas* Rbr. (= *reticulata*), and *Ae. gigantula* Selys, a closely related new species which was subsequently described by MARTIN. However, *Megalaeschna* is a synonym of the earlier name *Staurophlebia*, as already pointed out by COWLEY (1935). In his classification of the aeschnines, SELYS (1883) includes the two subgenera *Neuraeschna* and *Staurophlebia* in his genus *Staurophlebia* s.l., while KIRBY (1890), CALVERT (1905), and MARTIN (1909) give *Staurophlebia* s.str. generic rank, with *St. reticulata* Burm. as the genotype.

[1]) I. Rimanella arcana Needham and its nymph. *Rev. ent. Brasil 2*, June 1940, p. 173–179, 8 figs.

II. Six mostly new Zygopterous nymphs from the coastland waters. *Ann. Ent. Soc. Am. 34*, Dec. 1941, p. 719–734, 6 figs.

III. The genus Coryphaeschna, with descriptions of a new species and of the nymph of C. virens. *Ent. news 54*, March 1943, p. 61–72, 2 figs.

IV. Nine new or little known Zygopterous nymphs from the inland waters. *Ann. Ent. Soc. Am. 36*, June 1943, p. 165–184, 7 figs.

V. A new species of Misagria with a redescription of the genus. *Ent. news 62*, Feb. 1951, p. 70–76, fig.

VI. The nymph of Neonura joana Will. *Ent. news 65*, June 1954, p. 141–144, fig.

The characters of this genus are as follows:
Wing venation: subcosta prolonged beyond the nodus to the first or second postnodal cross vein. Median space free. Triangle long, with 6–8 cells. M2 curved upward proximal to stigma. Rs forked proximal to stigma, enclosing in its fork 3–4 rows of cells; Rspl curved, between Rs and Rspl 5–6 rows of cells at maximum. Anal loop with 12–18 cells. Anal triangle in male 3-celled. Pterostigma small, longer in fore wing than in hind wing.
Large (75 mm) to very large (96 mm), stoutly built species, green, brown and blue-coloured. In general, head and thorax light-green, abdomen (except the first two segments) red-brown, bluish green, or dull blue.
Frons prominent, marked with T-spot. Eyes connected for a long distance, occipital triangle small. Abdomen long-cylindrical, male with auriculae on segm. 2 and moderately narrowed at segm. 3.
Male appendices superiores long, leaf-like, with a hooked middle process on upper side half-way down their length, and an erect denticulate crest at the distal end, along the inner margin. Inferior appendage long-triangular, reaching to $\frac{1}{3}$, mostly to $\frac{2}{3}$, the length of the superiores. There is a basal prominence of the inferior appendage just between the bases of the app. sup. in the male. App. sup. of the female lanceolate, entire. Abd. segm. 10 of female with a long, two-pronged, ventral process.

For a long time the genus was based only on the species *reticulata* Burm. MARTIN (l.c.) describes a second species, *S. gigantula*, and NAVAS gives two more, *S. platyura* (1920) and *S. bosqi* (1927). KENNEDY (1937) mentions a fifth species, *S. auca*. The new species presented here under the name *S. wayana* is the sixth member of this genus. Of these species both sexes are described in respect of three of them, the females of *platyura*, *bosqi* and *auca* being still unknown. However the description of the male of *St. bosqi* by NAVAS is, admittedly, illustrated by a photograph of a female specimen; but no peculiarities of this specimen are mentioned.

In their distribution the species of *Staurophlebia* are confined to the Neotropics. *S. reticulata* is the most common representative,

ranging from Guatemala in the north to Argentina in the south. *S. gigantula* is known from the Amazon, *S. platyura* from Peru, *S. bosqi* from Argentina, *S. auca* from Ecuador and Suriname, while the new *S. wayana* is found in Suriname.

The nymphal stage of. *S. reticulata* has been described by NEEDHAM (1904) from a female specimen collected in Nicaragua. Some exuviae of the same species (hanging on plants one foot above the water's edge on the banks of rivers and bush creeks) have been found in Suriname. The nymphs of the other species are still unknown.

Biological data concerning the species of *Staurophlebia* are scanty. E. B. WILLIAMSON made some field notes on *S. reticulata*, which were published by WALKER (1915) when describing the subspecies *reticulata*, *obscura* and *guatemalteca*.

From these the following observations are taken (p. 393–395):

"The first *Staurophlebia* I ever saw came sailing along the railroad track below Los Amates, Guatemala, one sunshiny morning (June 21, 1909) after a heavy night's rain. As he came towards me, I saw him at some distance, a gigantic fellow flying now within a few feet of the ground and now high up in the air, but following the lane or slash made by the railroad through the jungle ... This was the only specimen I saw in Guatemala during two collecting trips".

In January 1912, when WILLIAMSON was collecting at Rockstone, in British Guiana, following a log-filled stream, he saw on two occasions "for an instant a large brilliant green and golden-brown aeschnine, which cut across the stream, with only a moment's hesitation above the water". The following day he again found *Staurophlebia* flying over a "little muddy wet – weather creek, in some places with the jungle crowding it to a scant 2-foot width, with its obscure leaf-filtered sunlight on dry or damp mud banks and isolated pools of dirty water, and back and forth in this narrow avenue, from shade into sunlight and back into shade again". His conclusion was: "*Staurophlebia*'s were seen only rarely elsewhere in British Guiana, and then only along smaller streams".

In Trinidad a dark-bluish or greenish (*Staurophlebia*) dragon fly was seen along a dried-up stream bed in the woods of Baracon Chaquanas (March 1912). "On several occasions I saw the male seize an ovipositing female as she thrust her ovipositor in the damp but hard soil. So occupied, the male would find her as he came swiftly along the creek bed".

In these notes, WILLIAMSON has characterized the life of *S. reticulata* quite well. Our experience in Suriname has shown that this species is common there throughout the year, except in the rainy season in May and June (see under this species). Very little is known of the other species of *Staurophlebia*. Specimens of *S. wayana* have been found in the late afternoon, flying some feet above the ground

in a swamp forest, beside a small river, and at a second locality hawking at dusk over the bushes by the riverside. The single male of *S. auca* found in Suriname was collected when flying over a bush path near a small bush creek at 5 o'clock in the afternoon.

Summarizing present knowledge we may say that *S. reticulata* is a day flier. The same probably applies to its near relatives *S. platyura* and *S. bosqi*, and perhaps to *S. gigantula*, while the scanty data available on the two other species *S. auca* and *S. wayana* suggest that they lead a more crepuscular mode of life.

Ovipositing females are observed in temporarily dry stream-beds, and nymphs (of *S. reticulata*) are found dwelling in slowly running water in creeks and rivers.

In the following key I have tried to characterize the species. It must be borne in mind that three of the six species, viz. *gigantula*, *platyura* and *bosqi*, are only known to me from the descriptions. The key may be of some help to the student, not only in itself but also because it shows him the weaker points in our knowledge.

Key to the species of Staurophlebia

1. Occipital triangle pale (green, yellow or reddish), rear of head black but the sides along the eye margin pale (at least in *reticulata*, and *platyura*). Wing membrane white or greyish . 2
– Occipital triangle and rear of head black. Wing membrane dark-grey 5

2. Male appendix inferior reaching to $\frac{2}{3}$ the length of app. superiores 3
– Male appendix inferior reaching to $\frac{1}{3}$ the length of app. superiores 4

3. Large species (total length 85–96 mm), hind wing 58–64 mm. Rear of head black, but the sides green. Apical crest of app. sup. of male, as seen in profile view, low; the apical edge vertical. End of app. sup. very broad. (Central America to Argentina) . . . . . *reticulata* (Burmeister)
(Peru) . . . . . ?*platyura* Navas

– Large species (total length 80 mm), hind wing 59 mm. App. sup. with apical elevated crest high, the apical edge vertical. End of app. sup. triangular pointed (Argentina) . *bosqi* Navas

4. Smaller species (total length 75–76 mm), hind wing 53 mm. Wing membrane white. App. sup. in male with apical crest low, semicircular. (Amazon) . . . . . *gigantula* (Martin)

5. Large species (total length 82–96 mm), hind wing 55–63 mm. Face with a black line at base of labrum and between clypeus and frons. Horns of vertex low and blunt; 2nd joint of antenna not extra long. Male app. inf. $\frac{2}{3}$ the length of superiores; apical crest of app. sup., seen in profile view, very high; anterior edge vertical. (Ecuador, Suriname) . . . . . *auca* Kennedy

– Large species (total length 83–85 mm), hind wing 57–60 mm. Face with a black spot at base of labrum and a fine brown line between clypeus and frons. Horns of vertex prominent, sharp-pointed; 2nd joint of antenna extra long. Male app. inf. $\frac{1}{2}$ the length of superiores; apical crest of app. sup., seen in profile view, lower, semi-circular. (Suriname) . . . . . *wayana* n.sp.

Staurophlebia reticulata (Burmeister 1839) Fig. 69

Pl. VI, VIIa

Aeschna reticulata BURMEISTER 1839, Handb. Ent. *2*, p. 837 (Suriname).
Aeschna gigas RAMBUR 1842, Hist. nat. Ins. Névr., p. 193.
Staurophlebia magnifica BRAUER 1865, Verh. zool. bot. Ges. Wien *15*, p. 907 (Brazil).
— BRAUER 1866, Novara Exp. Neur., p. 74, fig. 1–1b (Brazil).
— HAGEN 1867, Verh. zool. bot. Ges. Wien *18*, p. 23 (Venezuela, Guyana).
Staurophlebia reticulata, SELYS 1883, Bull. Acad. Belg. (3) *5*, *6*, p. 40.
— CALVERT 1898, Trans. Am. Ent. Soc. *25*, p. 53.
— NEEDHAM 1904, Proc. U.S. Nat. Mus. *27*, p. 693, pl. 39 fig. 1–2 (nymph).
— BUTLER 1904, Trans. Am. Ent. Soc. *30*, p. 125, pl. 6 fig. 2 b–c (nymphal labium).
— CALVERT 1905, Biol. Centr. Am. Neur., p. 179 (Suriname).
— MARTIN 1909, Coll. zool. Selys *20* Aeschn., p. 210–211, fig. 216.
— RIS 1918, Arch. Naturgesch. *82 A*, p. 156 (Surinam, Oberer Para, 1901, 1 ♂ leg. Michaelis in Mus. Hamburg).

Staurophlebia reticulata reticulata, WALKER 1915, Canad. Ent. *47*, p. 387–394 (Br. Guiana).
— CALVERT 1938, Zoologica N.Y. *33*, p. 68–69.

Staurophlebia reticulata was originally described from Suriname by BURMEISTER (1839) under the name *Aeschna reticulata*. RAMBUR (1842) mentions the species as *Aeschna gigas*, while BRAUER (1865) erected the genus *Staurophlebia* for it under the species name *magnifica*. Although HAGEN (1867) records the species under *Staur. magnifica* he remarks: "Ich halte diese Art für *Aeschna reticulata* Burm., von der ich die Type aus Surinam in Sommer's Sammlung verglichen habe" (see also CALVERT 1898). DE SELYS (1883) gives it the right name, *Staurophlebia reticulata*, for the first time.

The nymph has been described by NEEDHAM (1904) from Nicaragua, and BUTLER (1904) gives details of the labium (mask).

MARTIN (1909), in a description probably based on three males and two females from "Amérique du Sud" in the Selys collection, says of the male appendices: "l'inférieur triangulair conique du quart environ des supérieurs, plus long chez certains sujets", and illustrates the short form in his Fig. 216. The numerous males from Suriname which I have seen, all have the long app. inferior reaching to 0.6 the length of the superiores. The short ones, if not broken, are not typical of the species, the type locality of which is Suriname. The same question is discussed by CALVERT (1948).

When WILLIAMSON was collecting in Guatemala (1909) and in Trinidad and British Guiana (1912), he found differences in the colours of the living specimens from these localities. Later on, WALKER (1915) has described these varieties under the subspecific names of *guatemalteca*, *obscura* and *reticulata*, while CALVERT (1948) discussed male specimens from Central America from this point of view. The varieties may be distinguished as follows:

S. reticulata reticulata (Burm.), Walker
Head and thorax bright grass-green. T-spot on frons with distinct but black narrow stem. A dark-brown line on fronto-nasal suture and base of labrum. Thorax grass-green, a chocolate streak in front of antealar sinus, extending along base of mid-dorsal carina. Abdomen golden brown, green colour of thorax extending on sides of segm. 1, shading into ochre yellow on segm. 2 and base of segm. 3, posterior to which the abdomen is orange-brown, darker on each segment behind transverse carina. (British Guiana, Suriname)

S. reticulata obscura Walker
Colours as in Br. Guiana specimens but abdomen distinctly

bluish-green. Face grey-bluish green. T-spot on frons with distinct narrow stem. A dark-brown line on frontonasal suture (sometimes faint) and base of labrum. Thorax bluish-green. Abdomen with the green colour of thorax extending to transverse carina on segm. 2; distal part of 2 and base of segm. 3 to transverse carina reddish-brown, shading into dark greenish-brown on the remaining segments (bluish green in life). (Trinidad B.W.I. and Panama?) [1])

S. reticulata guatemalteca Walker

Face greenish-blue eyes bright-green (in dried specimen face greyish-olivaceous). T-spot on frons reduced to a narrow streak along frontal margin, no stem or a reddish-brown linear stem. Labrum and frontonasal suture with no dark lines. Thorax dull-green, slightly darkened in front of antealar sinus and base of median carina. Abdomen segm. 1 and 2 concolorous with thorax; segm. 3 anterior to transverse carina clear reddish-brown, posterior transverse carina dull-blue in life, dark greenish-brown in dried specimen. (Guatemala, Honduras, Costa Rica)

The material of Suriname belongs to the subspecies *reticulata*. As there seems to be no detailed description of the typical *reticulata*, I present one here at length:

Head and thorax green, abdomen light-brown. Face green with a fine black line at base of labrum and on frontonasal suture. T-spot on frons well marked, the stem connected with a black base line which runs down along the eye margin to base of genae. Vertex half-moonshaped, green on top. Occipital triangle green. In younger specimens, labium, apical margin of labrum, genae and vertex yellow. Rear of head black in the middle part, sides green.

Prothorax yellowish-green, the middle lobe on dorsum darker. Hind margin fringed with long yellow-brown hairs.

Synthorax yellow or grass-green, marked with only a few black stripes as follows: one along the middorsal carina and antealar

[1]) CALVERT (1948) remarks: "The Chiriqui-males living colors may have been such as to place it here [*guatemalteca*] also, although its present dried condition might seem to refer it to *St. reticulata obscura*".

sinus, extending backwards to the base of hind wings; a black spot at the upper end of first humeral suture and another one just above the mesepisternal stigma.

Underside between the legs darker and in adult specimens pruinose.

Legs at the outer side green, at the inner side black, tarsus black.

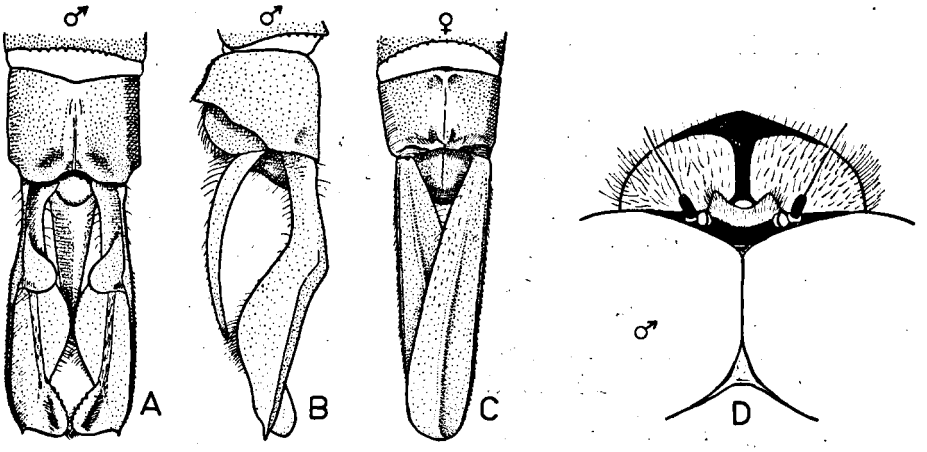


Fig. 69. *Staurophlebia reticulata* (Burmeister). — A, male appendices, dorsal; B, male appendices, lateral from left; C, female appendices, dorsal; D, frons and vertex of male, dorsal. — SURINAME, Republiek (March and April 1942).

Wings hyaline, in older specimens dark-brown, stigma light-brown, membrane greyish.

Abdomen light-brown, the first, second and basal half of third segm. yellowish-green, other segments golden-brown, darker on each segment behind transverse carina, the tenth segment on dorsum and the latero-ventral side green; appendices light-brown. Appendix inferior long-triangular, reaching to more than halfway up the app. superiores, rising from prominent elevation at its extreme base. App. sup. long, complicated by a process from the dorsal supero-external margin just before the middle, directed horizontally inwards, and in the distal half by a prominent subapical denticulate crest, formed by the extreme elevation of the distal part of the inferior carina and the bending upwards of the margin at its

termination (see fig.), the superior carina ending in a small dent. Ventral carina of segm. 2 along genital fossa, armed at the end with about 12 black spines.

Female in general as male. Ventral process on abd. seg. 10 two-pronged. Appendices leaflike lanceolate, tips rounded, as long as segm. 9 + 10.

Wing venation: male, in fore wing 28–32 antenodals and 24–26 postnodals; in hind wing 21–22 antenodals and 27–29 postnodals. Female, in fore wing 30–34 antenodals and 24–26 postnodals; in hind wing 22–23 antenodals and 28–30 postnodals. In both sexes triangle with 6–8 (mostly 7) cells, two cells against the proximal (inner) side of triangle. Subcosta prolonged to the first or second postnodal cross vein. Stigma in male and female covering 4 cells in fore wing, 3 cells in hind wing.

♂ Total length 92–96 mm; abd. + app. 71–74 mm; hind wing 61–64 mm; pterostigma f.w. 3.5, hd.w. 2.5 mm. ♀ Total length 93–95 mm; abd. + app. 72 mm, app. sup. 6.5–7 mm; hind wing 66–69 mm; stigma f.w. 4 mm, hd.w. 3 mm. (6 ♂♂ 3 ♀♀ examined)

Staurophlebia reticulata is quite common along creeks, banks of rivers and bush paths, where it flies mostly at a level of 5–10 metres high from 8 a.m. to 6 p.m. in sunny or partly shadowed places, soaring up and down over some distance. It is a solitary species, never flying in troops, but two males are often observed to hunt together.

Males are more commonly met with than females. Males are found in every month of the year except May (beginning of rainy season); females in the months of January, April, July, August and September.

Exuviae have been picked up twice; one female skin from plants along the bank of the Litani-River on July 25, 1939, and one male skin in the Coropina creek, near Republiek on August 25, 1945. (See page 168–170.)

In Suriname the species has been collected or observed from Paramaribo in the north throughout the hinterland to the Brazilian border in the south. It does not occur in the brackish water area along the coast.

Distribution: Honduras, Nicaragua, Panama, Ecuador, Venezuela, Trinidad, Guyanas, Brazil (Pará, Amazonas, Rio de Janeiro, Sta. Catharina), Argentina (Misiones).

Staurophlebia platyura Navas 1920 Fig. 70

Staurophlebia platyura NAVAS 1920, Bol. Soc. Esp. *3*, p. 90–91, fig. 1 (app. ♂).

Described from one male from Peru, Rio Pacaya, Bajo Ucayali, Sep. 1912.

The following description is a translation of the original text of NAVAS.

Face olive-green, labrum and clypeus with a black transverse line, T-spot on frons with a fine stem, base line before vertex angular, broadest in the middle; vertex on top yellowish-red; occipital triangle small, yellow (with a groove in the median over the whole length). Genae yellowish, labium pale-green, rear of head behind the eyes yellow.

Thorax reddish-brown, darker in the frontal upper part.

Abdomen light-brown, the first two segments moderately swollen, segm. 3 narrowed and the following segments cylindrical. Segm. 10 slightly semicircularly excavated at the end. Appendices yellow, narrow in basal third, the inner process rounded, the external lateral margin well-developed with a small point at the end; inner part two-lobed, the hind crest elevated and, seen in profile, with the hind margin vertical.

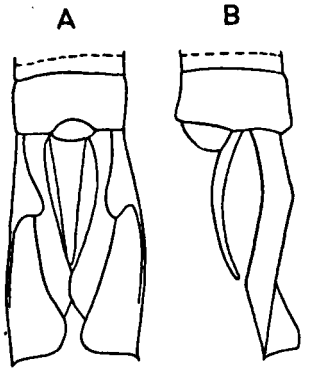


Fig. 70.

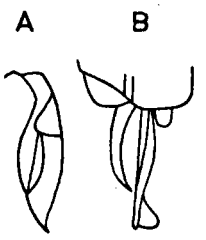


Fig. 71.

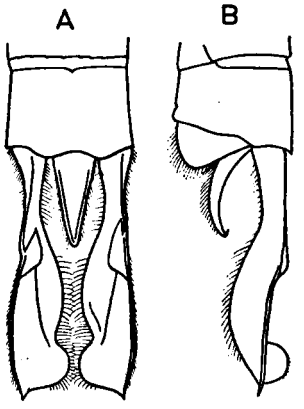


Fig. 72.

Fig. 70. *Staurophlebia platyura* Navas. — A, male appendices, dorsal; B, male appendices, lateral from left. — PERU; after Navas.

Fig. 71. *Staurophlebia bosqi* Navas. — A, male appendix, right side dorsal; B, male appendices, lateral from left. — ARGENTINA; after Navas.

Fig. 72. *Staurophlebia gigantula* (Martin). — A, male appendices, dorsal; B, male appendices, lateral from left. — BRAZIL, Amazon; after Martin, simplified.

Appendix inferior long-triangular, curved upward, the top pointed, reaching $\frac{2}{3}$ the length of the superiores.

Legs pale with black spines and hairs, tarsi black, tibiae black with a dorsal pale line.

Pterostigma in fore wing 3.5 mm, in hind wing 3 mm. Membrane pale-reddish, lighter along the veins. Triangle long with 4–5 cross veins, supratriangle with 5–7 cross veins.

Fore wing with 30 antenodals and 20 postnodals; arculus at 3rd subcostal cross vein.

Hind wing with 20 antenodals and 22 postnodals, arculus between subcostal cross vein 2–3. Anal triangle long, 3-celled.

Anal loop with 12 cells.

♂ Total length 85 mm; abdomen 63 mm, appendices 6 mm; fore wing 61 mm; hind wing 58 mm.

In general this male closely resembles *St. reticulata*. Its size and the number of antenodal and postnodal cross veins are less than those of the normal *reticulata*, but I can hardly find any other striking difference. Even the structure of the appendices is not different from that of *reticulata*, with the exception of the position of the middle process, which is shown more basally in the illustrations.

I therefore think that *platyura* of NAVAS is nothing more than the Peruvian form of *reticulata*. Additional material will be needed to confirm this conclusion. To judge by its colour pattern, the type belongs more to *reticulata reticulata* than to any other subspecies.

Staurophlebia bosqi Navas 1927 Fig. 71

Staurophlebia Bosqi NAVAS 1927, Rev. Soc. Ent. Argent. *3*, p. 27–28, fig. 1 (app. ♂ and nodus of fore wing), pl. 3 (phot. of ♀).

Described from one male from Argentina, Abra Vieja, La Resueña, isla de la desembocadura del Paraná, Feb. 15, 1926.

The following description is derived from the original text of NAVAS and from his figures.

Head reddish, face rough, beset with reddish-brown hairs, ridge of frons curved, marked with a large black T-spot with fine stem;

antennae black, vertex brownish; occipital triangle yellowish-red; eyes reddish-brown.

Thorax reddish-brown, covered with yellow-reddish hairs, the dorsomedian carina in front ending in a sharp dent.

Legs reddish-brown, tibiae dark-brown, spines of femora short, spines of tibiae long, all black.

Abdomen uniform reddish-brown-coloured, segm. 10 longer than 9, apical margin excavated. Appendices yellowish, with brown hairs, app. inferior $\frac{2}{3}$ the length of app. sup., seen in profile slightly curved upward, long triangular, pointed.

Appendix superior 6.5 mm long, cultriform, basal part narrow, outer carina slightly curved before the middle, expanded to the middle process, inner margin rounded, the end of the appendices pointed; apical elevated crest high, the apical edge vertical.

Wings large, wing venation black, dense, stigma narrow and long, yellowish. Subcosta passes the nodus to the second postnodal cross vein, enclosing 4 cells in its area. Triangle with 5 cells. Membranula brownish. Fore wing with 27 antenodal cross veins, the first and the 10th thickened, and 20 subcostal cross veins with the 8th thickened. Pterostigma covering $3\frac{1}{2}$ cells, arculus at 4th antenodal cross vein and 3rd subcostal cross vein. Supratriangle with 6 cross veins.

Hind wing with 18 antenodal cross veins (8th thickened) and 15 subcostal cross veins. Arculus just passes the second antenodal and subcostal, supratriangle with 5 cross veins. Stigma short, covering $2\frac{1}{2}$ cells. Anal triangle 3-celled. Membrane large.

♂ Total length 80 mm; abdomen 60 mm; fore wing 61.5 mm; hind wing 59 mm.

The holotype is probably a young discoloured specimen, because the whole body is reddish brown. I think there is no question of its systematic position, for both the prolonged subcosta and the structure of the male appendices are in accordance with other species of *Staurophlebia*. The female specimen photographed, very probably belonging to the same species, is undoubtedly a species of *Staurophlebia*.

The pointed app. sup. of the male are characteristic, resembling

those of *St. auca*, but in this latter species the occipital triangle is black, whereas it is yellow in *St. bosqi*. Nothing is said about the rear of head, which is spotted in the *reticulata* group and black in the *auca* group. As far as we can decide at present, *St. bosqi* seems to be a well characterized species belonging to the *reticulata* group.

The following data on the wingvenation are taken from the photograph of the female: number of antenodal cross veins 28 (the 1st and the 10th thickened) in fore wing in both sides. Number of postnodal cross veins in fore wing 19–22. Stigma covering 3½–4 cells. Arculus at the second antecostal cross vein. Triangle with 7 cells, supratriangle with 9 cells. Between Rs and Rspl 4 rows of cells at most, and between M4 and Mspl 5 rows of cells at most.

In hind wing 21 antenodal cross veins, the 1st and 9th thickened; 24 postnodal cross veins; stigma covering 3½ cells. Arculus between 2nd and 3rd antesubcostal cross vein. Triangle with 6–7 cells; supratriangle with 6–7 cells. Between Rs and Rspl 5–6 rows of cells at most and between M4 and Mspl 5 rows of cells at most. Anal loop with 13–14 cells. Between anal loop and hind margin of wing, 4 rows of cells.

Staurophlebia gigantula Martin 1909 Fig. 72

Aeschna gigantula Selys, HAGEN 1867 (nomen nudum).
Staurophlebia gigantula MARTIN 1909, Coll. Zool. Selys *2o*, p. 211, fig. 215, 217 (wings and app. ♂), pl. 6 fig. 23 (drawing of habitus ♂).

MARTIN's description from three males and two females of this species in the Selys collection, is probably based on the specimens collected by BATES along the Amazon, of which HAGEN (1867, p. 24) says: "Selys besitzt zwei nahe verwandte Arten, von Bates am Amazonenstrom gesammelt. Die eine ist *Ae. reticulata* Burm., *Ae. gigas* Rbr., die zweite *Ae. gigantula* Selys. Ich kenne davon nichts als diese briefliche Mittheilung, doch müssen beide sich sehr nahe stehen, da Bates sie unter dem Namen *Ae. Bellona* vereint hatte".

The following data are taken from the description by MARTIN, for the species has never been found again and I was not able to study the types and paratypes.

Face green, T-spot on frons with a narrow stem; occipital triangle yellowish. Thorax green-olivaceous, two short diffuse antehumerals. Legs pale, upper side of tibiae black, inner side yellow.

Abdomen filiform, light brown with black rings at the articulations.

Appendix superior long, the distal half leaf-like enlarged, with a dent at the end of the supracarina; middle process longer than wide, apical crest elevated and semicircular in profile. App. inferior about ⅓ the length of the superiores, long-triangular and pointed. Appendices not as long as the last two abdominal segments.

Wings hyaline, costa yellow, stigma very small, yellowish-brown; membranula white.

Subcosta prolonged to first postnodal cross vein in both pairs of wings. Fore wing with 27 antenodal cross veins, 2nd thickened at 10th, and 22 postnodal cross veins, hind wing with 20 antenodals, 2nd thickened at 9th and 24 postnodals. Triangle in f.w. 8 cells, in hd. w. 6 cells. Rspl in f.w. and in hd.w. 5 rows of cells at most. Mspl in f.w. 4 rows of cells, in hd.w. 5. Anal loop with 12 cells. Anal triangle 3-celled.

Total length 75–76 mm, abdomen 60–62 mm, hind wing 53 mm.

Female similar to male, the appendices lanceolate, entire. Described from three males and two females from the Amazon (in coll. Selys).

In MARTIN's description 16 postnodals are noted in the fore wing and 18 postnodals in the hind wing, but in the photograph of the wings of one of the male specimens in Fig. 215, 22 and 24 cross veins, respectively, are present. Furthermore, there are only two rows of cells between the anal loop and the hind margin of the wing. The app. inferior is described as "de moitié moins long" in relation of the appendices superiores, and in Fig. 217, showing the appendices, the appendix inferior is ⅔ the length of the superiores. Otherwise the species is characterized by its small size and slender appearance.

Staurophlebia auca Kennedy 1937 Fig. 73

Staurophlebia auca KENNEDY 1937, Ann. Ent. Soc. Am. *30*, p. 425–430, fig. 1–4.

Of this rare species only one male from Ecuador has been described, by KENNEDY (1937).

The enthousiastic dragon fly hunter Mr. J. BELLE was lucky enough to collect one male of *Staurophlebia* near the airport at

Zanderij. This after careful examination proved to be a second specimen of *St. auca*.

Although KENNEDY has described his example from Ecuador at length, I shall also give here a description of this male, which differs from the holotype in some details.

Labium and genae yellow, labrum, postclypeus and frons grass-green. A black suture line at base of labrum and genae; in the middle of the labrum a transverse impression, the end of which is dark brown. On the suture between postclypeus and frons is a distinct black stripe, connected at the sides with the black area running

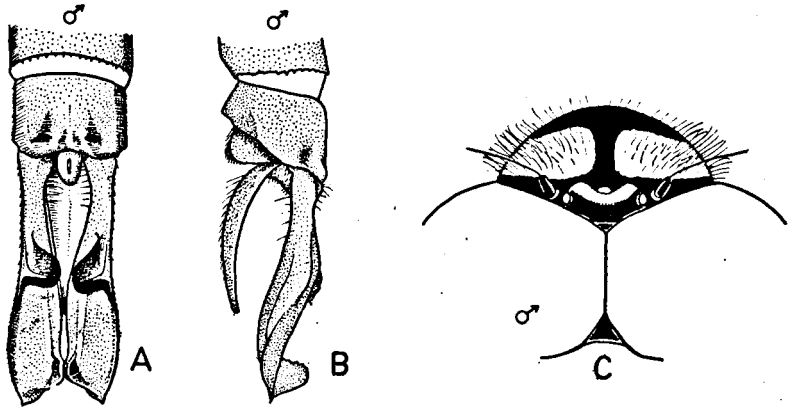


Fig. 73. *Staurophlebia auca* Kennedy. — A, male appendices, dorsal; B, male appendices, lateral from left; C, frons and vertex of male, dorsal. — SURINAME, Zanderij (Sept. 22, 1955).

down from the frons suture to the base of the genae. T-spot on frons well-marked, and the stem relatively broadly connected with the black suture area in which the antennae and the vertex with ocelli are planted. The front line of this black area is straight (not enlarged at base of stem as in *St. auca* from Ecuador). Occipital triangle black; below this triangle, on rear of head, a small grey pruinose spot; the remaining part of rear of head black.

Prothorax as far as visible, dull brownish-coloured, hind margin greenish.

Synthorax grass-green, a black stripe along the middorsal carina and the antealar sinus almost to the upper end of the first humeral

suture line. No black line along the subalar sinus, but 3 black spots at the sides, viz., one at the upper first suture line, one above the stigma and one at the upper end of the third lateral suture. Ventrum and coxae dull-brown, pruinose.

Legs green except the inner side of femora, tibiae and the whole of the tarsi, which are black. Wings hyaline, stigma dark-brown, membrane dark-grey.

Wing venation: subcosta prolonged to the first (in left fore wing to the second) postnodal cross vein. Antenodals in fore wing 24, in hind wing 18; postnodals in fore wing 20, in hind wing 20–21.

Triangle with 7 cells in fore wing and with 6–7 cells in hind wing.

Number of cross veins in triangle, 6 in f.w. and 5–6 in hd.w.; in supratriangle 7–6 and 5, respectively. Cubital cross veins 5 in f.w. and 4–3 in hd.w.

Number of marginal cells between Rs and M3, 44 in f.w. and 41–46 in hd.w.

Number of cells covered by pterostigma 3 in f.w. and 1–2 in hd. w. Maximum number of cells between Rs – Rspl 4 in both wing pairs and between M4 – Mspl 4–5 in f.w. and 5 in hd.w. Position of origin of Maa in relation to first postnodal cell 24–25 in both wing pairs; position of fork of Rs in relation to first postnodal cell 15–16 in both wing pairs. Number of cells in anal loop 12. Bridge cross veins 5–6 in f.w. and 4–6 in hd.w.

Abdomen segm. 1, 2 and base of 3 greenish-brown (somewhat discoloured, probably green when alive). Other segments, 3–10 dark brown, the last segments greenish on dorsum and along the sides. There is little difference in colours before and after the transverse carina. Underside of segm. 2 along the genital fossa with the ventral carina, denticulate at the end. Auricles small, with 3–4 large dents.

Appendices light-brown, the more chitinized tips and the middle process dark-brown. App. superiores long and not as broad as those of *St. reticulata*, the middle process strongly developed; the denticulate hind crest turned upwards and much higher than in *St. reticulata*, the tips of the latero-superior carina ending in a distinct dent. App. inferior long-triangular, reaching to $\frac{3}{4}$ length of the superiores, i.e. to between the level of the middle process and the beginning of the apical crest. Basal dorsal process prominent, reaching to be-

tween the bases of the app. superiores. No tuft of fine hairs on the underside of the app. superiores.

♂ Total length 82 mm; abd. + app. 63 mm, appendices 5 mm; hind wing 35 mm.

Suriname, Zanderij (I), one male soaring over a bush path at about 5 o'clock in the afternoon on September 22, 1955; collected by Mr. J. BELLE (deposited in collection of author).

Through the kindness of Dr. EDWARD J. KORMONDY, Curator of Insects, Museum of Zoology, Ann Arbor, Michigan, U.S.A., I was able to compare the type of KENNEDY's *Staurophlebia auca* from Ecuador with the specimen from Suriname. Careful study showed the two specimens to be identical except for a few minute differences, which are as follows:

	Suriname	Ecuador
total length	82	96
abd. + app.	63	75
hind wing	55	63
appendices	5	6
stigma hd.w. along costa	2.5	2.5
stigma f.w. along costa	2.75	3.

The much smaller size of the Suriname specimen is the most striking difference between the two specimens. However, the size of individual specimens of *Staurophlebia reticulata* is very variable too, and hence such a variation in size may also be found between individuals of *St. auca*. The differences between the specimen from Suriname and the type from Ecuador are as follows:

Head: stem of T-spot at frons somewhat wider, its fusing with the black basal frontal suture not rectangular (as in the Ecuador specimen) but more gradually rounded.

The tips of the excavated vertex more rounded than in the Ecuador specimen, but otherwise the same. The black stripe along the anterior alar carina not narrowed at its junction with the black stripe along the middorsal carina. The area cephalad to the transverse keel is entirely black (not so dark in the Ecuadorian specimen); otherwise there are no differences in the smaller spots of the synthorax as described by Kennedy.

Wing venation	Suriname	Ecuador
antenodals f.w.	24.24	26.26
antenodals hd.w.	18.18	17.19
postnodals f.w.	20.20	22.22
postnodals hd.w.	21.20	26.23
cells passing nodus by Sc.f.w.	2.1	3.3
idem in hd.w.	1.1	2.2

bridge cross v.f.w.	6.5	6.6
bridge cross v.hd.w.	4.6	5.5
cubital cross v.f.w.	5.5	7.8
cubital cross v.hd.w.	4.3	6.6
t cross veins f.w.	7.7	5.6
t cross veins hd.w.	6.7	5.5
supra t cross veins f.w.	7.6	7.8
supra t cross veins hd.w.	5.5	6.7
Rs-M3 marg. cells f.w.	44.44	41.39
Rs-M3 marg. cells hd.w.	41.46	45.46
Rs-Rspl. wide f.w.	5.5	6.6
Rs-Rspl. wide hd.w.	5.5	6.6
M4-Mspl wide f.w.	5.4	5.5
M4-Mspl wide hd.w.	5.5	6.5
cross v. under pt.f.w.	3.3	3.3
cross v. under pt hd.w.	2.1	3.3
anal loop cells hd.w.	12.12	10.13

Auricles on abd. segm. 2, with 3 (right) and 4 large dents (3 dents in the Ecuadorian example); no differences are visible in the structure of the genitalia at the second abd. segm.

The apical black rings of segm. 2–7 are darker in my specimen. Careful examination of the appendices reveals no structural differences. In the Suriname specimen the appendices are a little more slender and darker-coloured along the margins; the top of app. inf. does not reach the base of the apical crest, but ends between the middle process and the apical crest. The high, erect apical crest is a remarkable feature in both specimens.

In general the Suriname specimen is darker-coloured, and the black spots and stripes are more intensively developed but not otherwise arranged. No structural differences are visible apart from those mentioned above; only the size is smaller.

For this reason I am of opinion that this specimen of *Staurophlebia* from Suriname belongs to the species *auca* Kennedy from Ecuador in spite of its geographically wide range. The species is probably Amazonian in its distribution.

Staurophlebia wayana n. sp. Fig. 74

Pl. VII 6

In August 1939 three males and two females of *Staurophlebia* which did not belong to the common species *St. reticulata* were collected in the Litani River (upper Marowijne). The specimens proved

to represent a new species, which has been named after the Indian tribe Wayana (also spelled Oajana or Oayana), living in that area.

MALE (holotype). Head green, thorax dull-green, abdomen reddish-brown. Face green, mouth parts yellowish, marked with a few darker spots and lines as follows: a small brown spot in the middle of the base line of labrum; a black line along the upper margin of genae, confluent with the brown at the denticulate median side; a fine brown line on the frontonasal suture, running down to the eye margin and further downward to the base of the genae. T-spot on frons distinct, the stem narrow, connected with the black fronto-basal stripe before the antennae. This stripe follows the eye margin to the level of the upper T-line, and narrows further on into a fine black line running to the frontonasal suture.

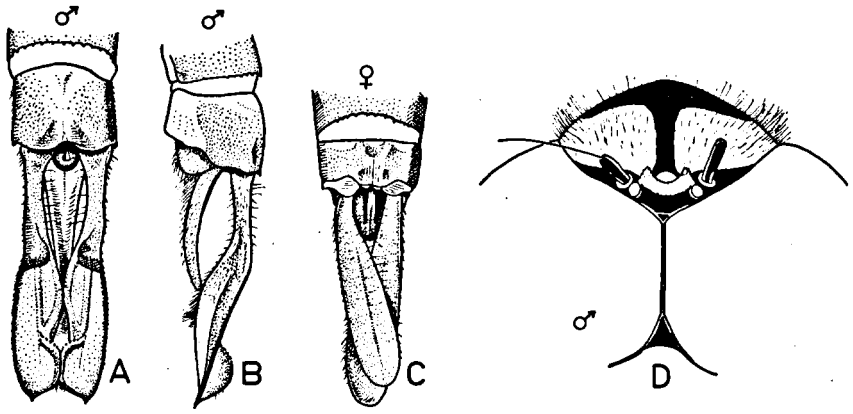


Fig. 74. *Staurophlebia wayana* n.sp. — A, male appendices, dorsal; B, male appendices, lateral from left; C, female appendices, dorsal; D, frons and vertex of male, dorsal. — SURINAME, Loë Creek, Litani River (Aug. 20, 1939); ♂ holotype and ♀ allotype.

Antennae black, the second segment longer than in *reticulata* and *auca*. Vertex two-horned, basal half black, otherwise green. Occipital triangle and rear of head pitch-black, the latter without lighter spots.

Prothorax flesh-coloured, middle part two-lobed, hind margin convex, broadest in the median, fringed with a row of long blond hairs.

Synthorax discoloured brown, but as far as is visible light green in life, at least in front and at the sides. There is a trace of a dull-brown antehumeral stripe, reaching from the side point of the transverse keel to ¾ the distance from this point to the anterior alar carina. Suture lines light-brown, otherwise no dark spots or stripes visible except for a black spot just above the metastigma and a black band at the ventrum, just at the connection with the abdomen. The underside slightly pruinose.

Legs for the most part light-coloured, the outer side of the tibiae and the inner side of the first femora green. Dark-brown to black are: inner side of femora in the distal half or entirely (first pair), inner side of tibiae, and tarsi practically on both sides. Claws with a prominent dent half way down the underside.

Abdomen red-brown, the segments black-ringed at the distal end. Dorsum of segm. 1 with two greenish spots bearing a tuft of soft, long, blond hairs. Auricles small, triangular, underside beset with 5–6 dents. Ventral carina of segm. 2 along the genital fossa, provided at the end with 6–8 minute black spines.

Appendices long and slender, light brown; app. inferior long-triangular, spoon-shaped and curved upwards, reaching to rather more than halfway along the superiores. App. superiores stalky in the basal half and broadened leaf-like in the distal half; the middle process well-developed, simply rounded; the hind crest elevated and semicircular in form as seen in profile, the proximal side carrying 5–6 small dents. The superior carina at the end of the appendage points into a small but distinct dent. Wings hyaline, stigma red-brown, small, covering 3 cells in fore wing, 2½ cells in hind wing. Membrane dark-grey, reaching to ⅔ length of the first cell in hind triangle.

Wing venation: subcosta prolonged behind nodus to the first postnodal cross vein in fore wing and to the second cross vein in hind wing. Number of antenodals in fore wing 25–26, the second thickened one at the 10th; in hind wing 17–20, the second thickened one at 8th and 10th respectively. Number of postnodals in fore wing 21–22, in hind wing 22–23.

Triangle with 7 cells in fore wing and 6 cells in hind wing, with one double cell in both. Supratriangle with 6 cross veins in fore wing, 4–5 in hind wing. Cubital cross veins in fore wing 8, in hind

wing 6. Number of marginal cells between Rs and M3 in fore wing 37, in hind wing 41. Maximum number of rows of cells between Rs-Rspl in fore wing 4, in hind wing 3. The same between M4-Mspl in both wing pairs 5. Number of cells in anal loop 12. Bridge cross veins in fore wing 5–7, in hind wing 4–5. Anal triangle 3-celled.

♂ Holotype: total length 84 mm (incl. app.); abd. 66 mm, app. 6 mm; hind wing 57 mm; pterostigma f.w. 3 mm, hd. w. 2.5 mm.

♂ Paratypes: total length 85 mm; abd. 66 mm, app. 6 mm; hind wing 56–57 mm; pterostigma f.w. 3 mm, hd.w. 2.5 mm.

FEMALE (allotype) very similar to male. Appendices short, simple lanceolate, tips rounded, as long as segm. 9 + 10, i.e. 5 mm long. Ventral process on abd. segm. 10 two-pronged, the spikes long and slightly curved downward. Genital valvae reaching to the end of segm. 10.

Wing venation: subcosta prolonged behind nodus to 2nd postnodal cross vein in fore wing and to 1st postnodal cross vein in hind wing.

Antenodal cross vein in fore wing 26–28, 2nd thickened vein at 9th; in hind wing 18 with 2nd thickened at 8th. Postnodal cross veins in fore wing 23–24 and in hind wing 22–25.

Triangle in fore wing with 7 cells, in hind wing with 6–7 cells. Number of cross veins in supratriangle in f.w. 6–7, in hd.w. 5. Rspl with 5 rows of cells in f.w. and 5–6 in hd.w. Mspl enclosing 4 rows of cells in f.w. and 5 rows in hd.w. Cubito-anal cross veins 8 in f.w., 6 in hd.w. Anal loop 13–14 cells. Pterostigma covering 3 cells in f.w., 3.5 cells in hd.w.

♀ Allotype: total length 83 mm; abd. + app. 65 mm, app. 5 mm; hind wing 60 mm; pterostigma f.w. 3 mm, hd.w. 2.7 mm.

♀ Paratype: total length 83 mm; abd. + app. 65 mm; app. 5 mm; hind wing 60 mm, pterostigma f.w. 3 mm, hd.w. 2.5 mm.

Two males (holotype and paratype) and one female (allotype) from Loë Creek, Litani River, August 20, 1939; one male and one female (paratypes) from Feti Creek, Litani River, August 12, 1939, all collected by myself.

The specimens from Loë creek were found flying in the swamp forest beside the creek in the late afternoon (about 5 o'clock); those from Feti-creek were hawking at dusk over the lower vegetation at the riverside.

The types are in my collection; of the paratypes one male and one female have

been deposited in the Museum of Natural History at Leiden, Holland, and one male is in the collection of the Museum of Zoology, Ann Arbor, Michigan, U.S.A.

Nymph of **Staurophlebia reticulata** Fig. 75

In 1904 NEEDHAM described the nymph of *St. reticulata* from a female specimen from the Escondido River, Nicaragua, which was found "on pile near water" by Dr. CHARLES W. RICHMOND on Sep. 3, 1892. Since then no other finds have been made or mentioned. In Suriname I collected two exuviae of *Staurophlebia*, one male specimen from along the Coropina Creek near the village of Republiek, Aug. 25, 1945, and one female specimen from the upper Litani River, July 25, 1939. Both examples were picked off plants about one foot above the water level. Their identity with *St. reticulata* must be supposed on account of the common appearance of imagines of this species at the localities, and from the fact that the skins answer strikingly to NEEDHAM's description. The wing venation, as far as is visible in the wing cases, is also in accordance with that species.

The nymph of *Staurophlebia reticulata* is characterized by the tuberculate upper surface of head and thorax, by the external process of the mandibles, and by the two spines in front of the median mental lobe, and by the pointed end hook of lateral lobes of labium.

The details of the exuviae studied are as follows:

Body elongate, little depressed, scantily covered with short hairs. Head widest across the prominent eyes. Front of head flat, interrupted by a pair of low obtuse elevations on clypeus and a pair of tubercles on the prominent part of vertex between the eyes. Head behind the eyes swollen, the sides irregularly dentate.

Antennae 7-jointed, scapus with a tuft of bristles at the upper end, pedicellus scantily beset with some shorter hairs, flagellum filiform, first and fourth segments long and nearly of the same size, other three segments shorter and of equal length.

Labrum prominent, trapeziform, rounder in front and slightly bent inward in the middle, with a row of short spines on the front line, the side angles rounded. Mandibulae, seen from above, show a conspicuous lateral prominence, armed with numerous short, curved spines, pointing forward. Seen from inside the mandibulae have a biramous character; a row of large teeth (four on the left mandible and five on the right mandible) terminates the outer branch, while more basally the inner branch is formed by a quadrangular denticulate rib, ending in one tooth on either side (left mandible), or in one tooth on one side and two teeth on the other (right mandible).

Maxillae two-lobed, the outer lobe (galea) simple and hairy, the inner lobe

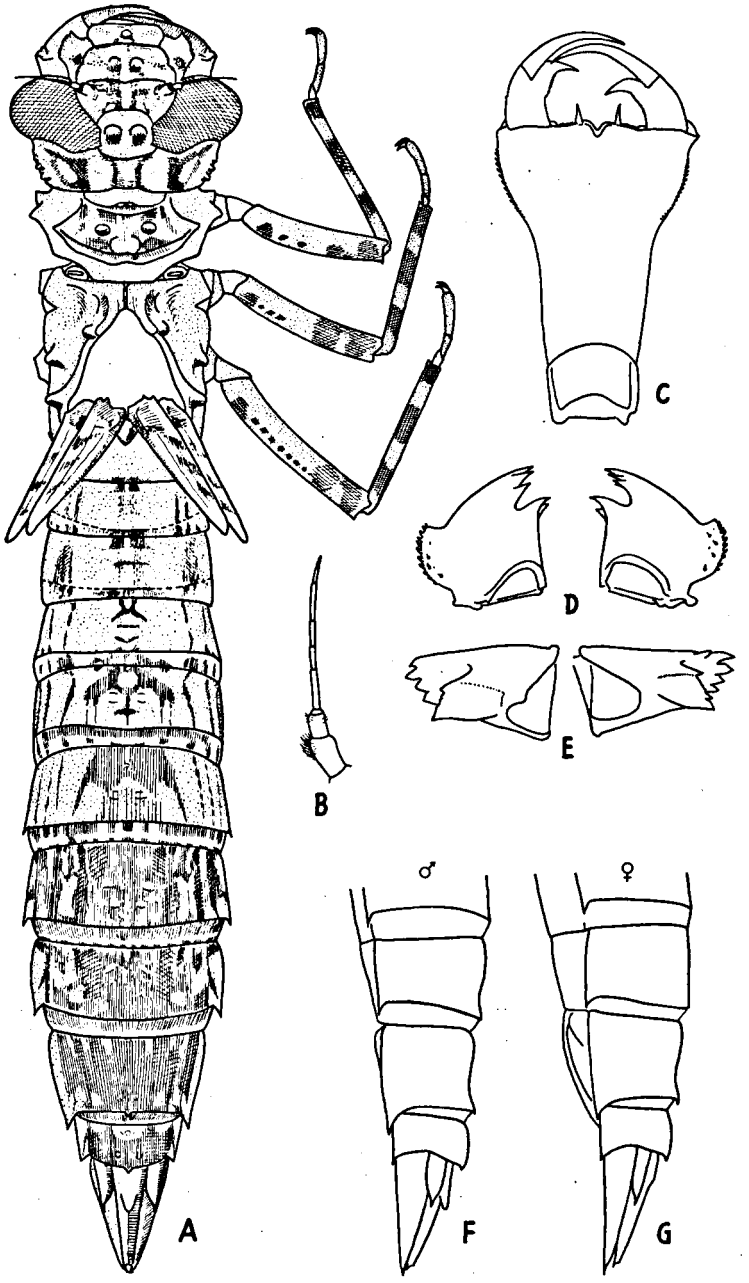


Fig. 75. *Staurophlebia reticulata* (Burmeister). — A, nymph, male exuvia dorsal; B, antenna female exuvia; C, mentum, female exuvia; D, mandibulae, dorsal female exuvia; E, mandibulae, inner side, female exuvia; F, last abdominal segments with appendices of male exuvia, lateral from left; G, last abdominal segments with appendices of female exuvia, lateral from left. — SURINAME, Republiek, Coropina Creek (♂, Aug. 25, 1945), and upper Litani River (♀, July 25, 1939).

(lacinia) provided on top with seven large, curved dents. Labium very long, reaching backward to bases of hind legs; mentum narrow in its basal two-thirds, widened at distal end, margins slightly upcurved and bearing a row of short spines (18–20). Median border divided in the middle by a shallow cleft, separating two low rounded lobes, each bearing a long sharp-pointed tooth, flanked externally by a short fringe of hairs. Lateral lobes short, movable hook long, curved inward, sharp-pointed at the end; end hook smaller, top pointed, incurved, inner margin of lobe and front part finely crenulate.

Prothorax broad, dorsal disk with the lateral angles pointed; two tubercles on each side of dorso-median line; supracoxal process with two equal obtuse dents.

Synthorax as wide as prothorax but twice its length; each side with three tubercles, two along the alar carina. Wing cases reaching to the end of the third abd. segment, according to NEEDHAM, reaching the base of the fifth abd. segm. in full-grown nymph.

Legs long and simple; femora marked with ill-defined dark bands two of which are present in the apical third; tibiae 3-banded, tarsus uniformly lighter, 3-jointed, the first two segments as long as, or shorter (in hind leg) than the last segment. Apical end of tibiae and underside of tarsal joints beset with different setae and spines; divided (three-pointed) setae are present on first tibiae and on all tarsal joints except first joint of second tarsus; flattened short setae are found on apical end of all tibiae and on first segment of tarsi of fore and middle pair of legs; simple short spines beset the apical end of first tibiae, and longer spines occur as a tuft on the underside of first tarsus segment of the three leg pairs, while non-divided setae occur between divided ones on the last two segments of the second and third tarsi.

Claws simple, short and strong, tips curved inward.

Abdomen slender, widest on segm. 7, tapering to the end; segm. 1–9 of about equal length, segm. 10 one half as long as the others. Lateral spines present on segm. 6–10, prominent on 8 and 9; lateral margins of segm. 8–10 and app. inferiores finely spinulose serrate. Dorsal hooks small, present on segm. 9 and 10. Female gonapophyses long, reaching middle of ventrum of segm. 10.

Appendices nearly as long as segm. 9 and 10 together; inferiores very slightly longer than superiores, the ends sharp-pointed; superiores with a round apical notch and a dorsal carina, male triangle at base as long as lateral appendices, tip blunt; lateral appendices nearly half as long as the others, straight on the external margin, convex on the internal margin contracted to a long point at the end.

Total length male 52 mm; abdomen (incl. app.) 35 mm, appendices 5.5 mm, width of head across eyes 8.5 mm, abd. widest segm. 8 mm, mentum 12 mm, hind femur 8 mm.

Total length female 56 mm; abdomen (incl. app.) 39 mm, appendices 6 mm, width of head across eyes 8.5 mm, abd. widest segm. 8 mm, mentum 14 mm, hind femur 8 mm.

The measurements given by NEEDHAM of the female nymph from Nicaragua are: length 51 mm, abd. 35 mm; hind femur 9 mm; antenna 5 mm; width of head at frons across eyes 9, across hind angles 8 mm; width of abdomen 9 mm.

REFERENCES

BRAUER, F., 1865. Vierter Bericht über die auf der Weltfahrt des kais. Fregatte Novara gesammelten Neuropteren. *Verh. zool. bot. Ges. Wien 15.* (p. 907; *Staurophlebia* n. gen. on *magnifica* n.sp.)

BRAUER, F., 1866. Neuropteren. *Novara Exp. Zool. 2* (p. 74, pl. 2 fig. 1–1b; *St. magnifica*)

BURMEISTER, H., 1839. *Handbuch der Entomologie 2.* (p. 837; *Aeschna reticulata*)

BUTLER, H., 1904. The labium of the Odonata. *Trans. Am. Ent. Soc. 30.* (p. 125, pl. 6 fig. 2b–c; nymphal labium)

CALVERT, P. P., 1898. Burmeister's types of Odonata. *Trans. Am. Ent. Soc. 25.* (p. 53)

CALVERT, P. P., 1905. Neuroptera. *Biologia Centrali-Americana.* (p. 178–179; *St. reticulata*)

CALVERT, P. P., 1948. Odonata (Dragonflies) of Kartabo, Bartica District, British Guiana. *Zoologica*, Sci. Contr. *N.Y.* Zool. Soc. *33* (2). (p. 68–69; *St. reticulata*)

COWLEY, J., 1935. Nomenclature of Odonata; three generic names of Hagen. *Entomologist* London *68.* (p. 283; *Megalaeschna* Selys Ms a synonym of *Staurophlebia* Brauer)

HAGEN, H. A., 1867. Notizen beim Studium von Brauer's Novara-Neuropteren. *Verh. zool. bot. Ges. Wien 18.* (p. 53–54; *St. magnifica* = *Aeschna reticulata* Burm., *Megalaeschna* Selys Ms. name)

HAGEN, H. A., 1875. Synopsis of the Odonata of America. *Proc. Boston. Soc. Nat. Hist. 18 (1).* (p. 40; *St. reticulata, St. gigantula* Selys Mss.)

KENNEDY, CL. H., 1937. Staurophlebia auca, a new dragonfly from Ecuador. *Ann. Ent. Soc. Am. 30.* (p. 425–430; description of n.sp. with references of *St. bosqi* and *St. platyura*)

KIRBY, W. F., 1890. *A synonymic Catalogue of Neuroptera Odonata.* London. (p. 96; *St. reticulata, Ae. gigas, St. magnifica*)

MARTIN, R., 1909. Aeschnines. *Coll. zool. Ed. Selys Longchamps* fasc. *20.* (p. 209–211, fig. 215–217, pl. 6 fig. 23; *Staurophlebia, St. reticulata, St. gigantula* n.sp.)

NAVAS, R. P., 1920. Insectos de America. *Bol. Soc. Ent. España 3.* (p. 90–92, fig. 1; *St. platyura* n.sp.)

NAVAS, R. P., 1927. Insectos nuevos de la República Argentina. *Rev. Soc. Ent. Argentina 3.* (p. 27–28, fig. 1, pl. 3; *St. bosqi* n.sp.)

NEEDHAM, J. G., 1904. New dragon-fly nymphs in the United States National Museum. *Proc. U. S. Nat. Mus. 27.* (p. 693–694, pl. 39 fig. 1–2; nymph of *St. reticulata*)

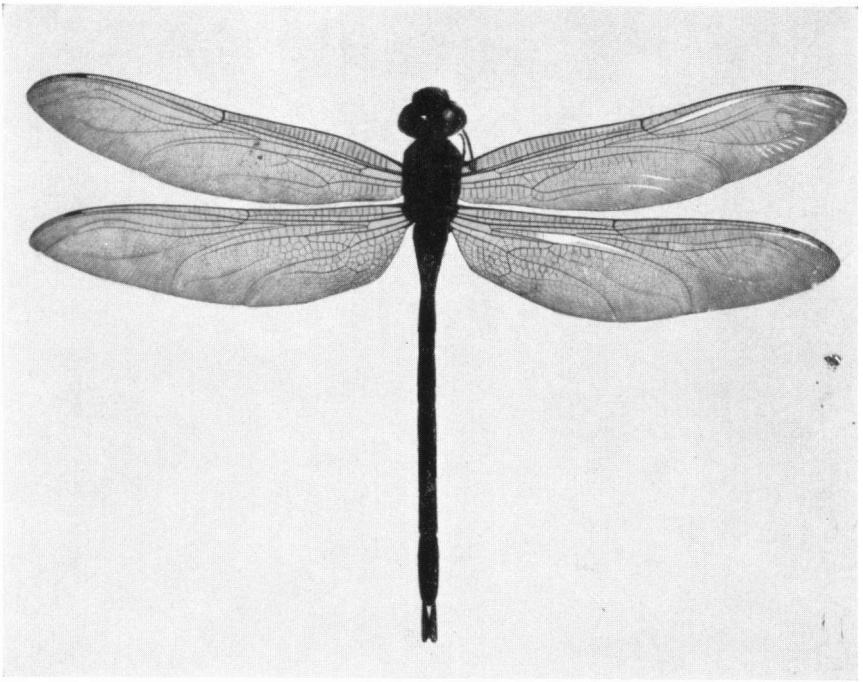
RAMBUR, M. P., 1842. *Histoire Naturelle des Insectes Névroptères*. Paris. (p. 193; *Aeschna gigas*)

RIS, F., 1918. Libellen (Odonata) aus der Region der Amerikanischen Kordilleren von Costarica bis Catamarca. *Arch. Naturgesch. 82 A*. (p. 156; *St. reticulata*)

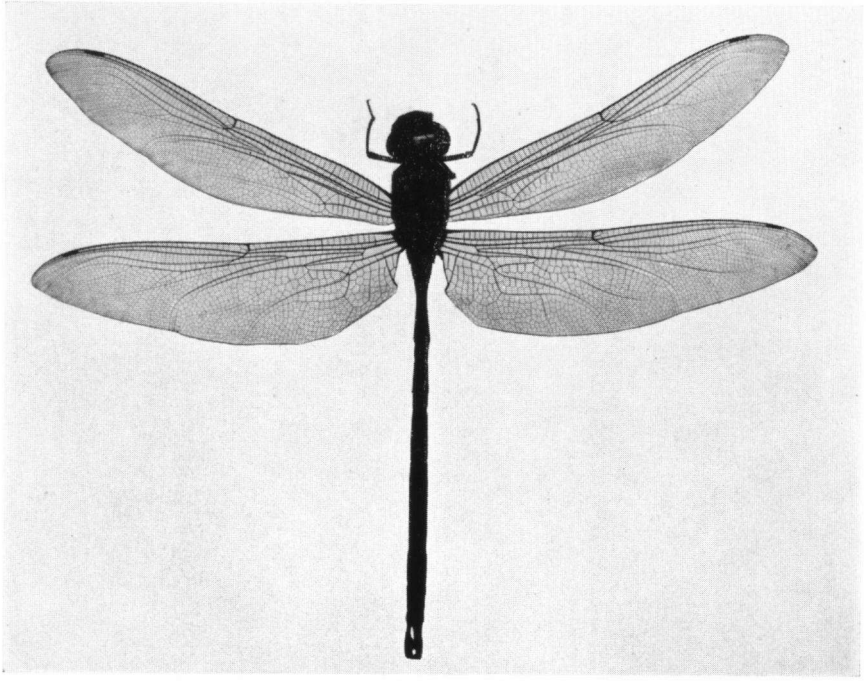
SELYS, E. DE, 1883. Synopsis des Aeschnines, 1e part. Classification. *Bull. Acad. roy. Belg.* (*3*) *5* (6). (p. 10–11, 39, 40; *Neuraeschna, Staurophlebia, reticulata*)

WALKER, E. M., 1915. Notes on Staurophlebia reticulata Burm. *Canad. Ent. 47*. (p. 387–395; pl. 17 fig. 1–2; *St. ret. reticulata, St. ret. obscura, St. ret. guatemalteca* n. subsp.)

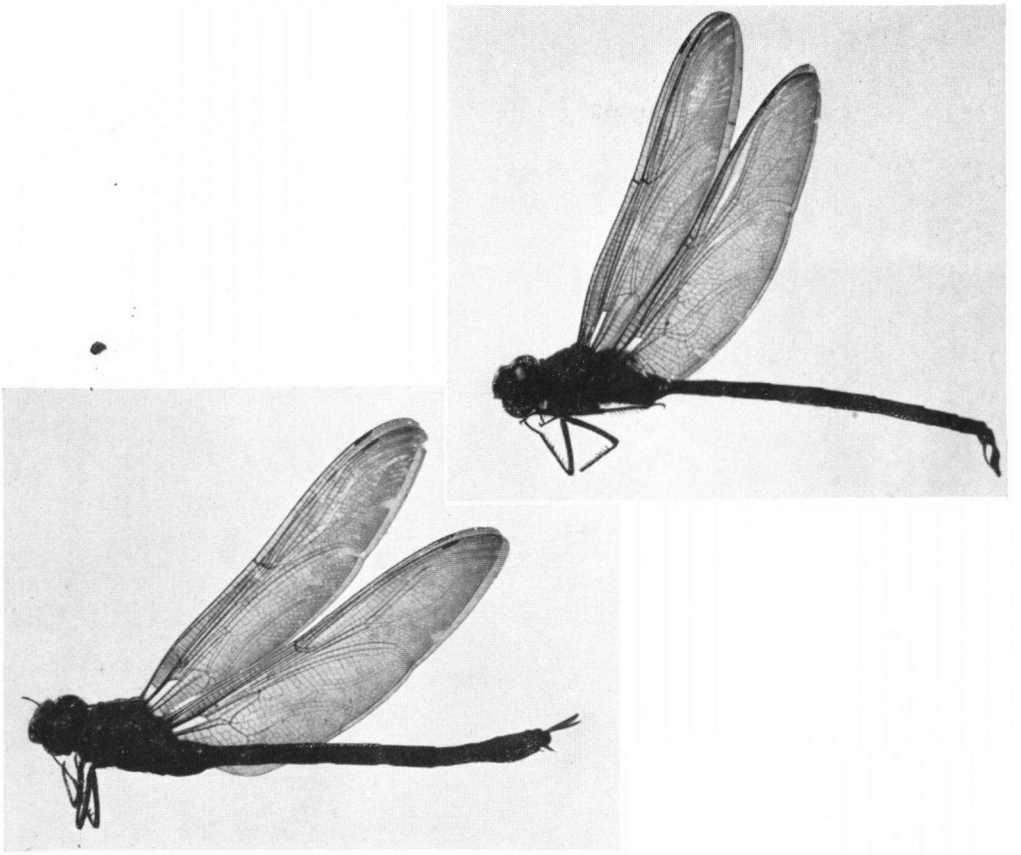
PLATE VI.



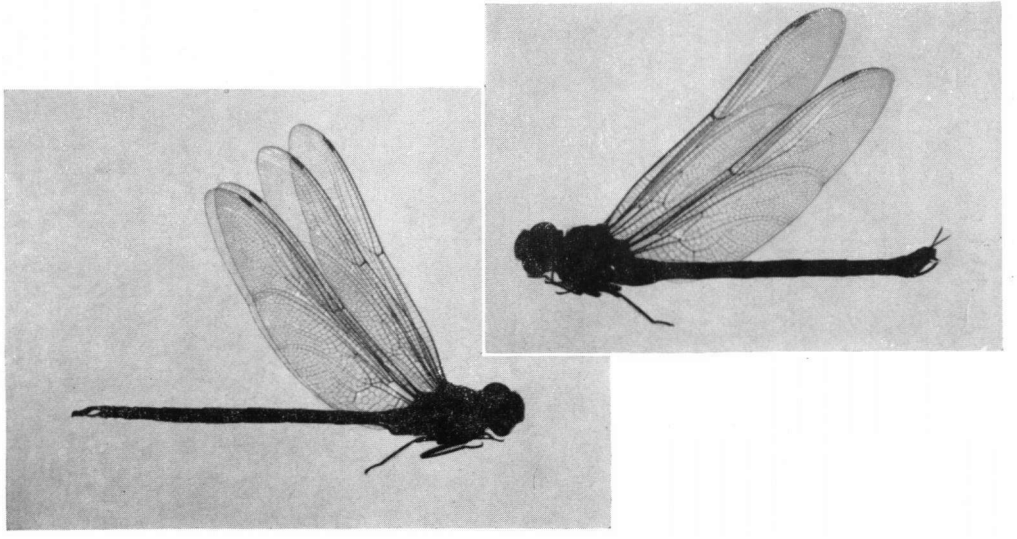
VIa. *Staurophlebia reticulata* (Burmeister), ♀, from Lelydorp, SURINAME.



VIb. *Staurophlebia reticulata* (Burmeister), ♂, from Zanderij, SURINAME.



VIIa. *Staurophlebia reticulata* (Burmeister), from Republiek, SURINAME; ♂ (upper specimen), and ♀ (lower specimen).



VIIb. *Staurophlebia wayana* n. sp., from Loë creek, SURINAME; ♀ allotype (upper specimen), and ♂ holotype (lower specimen).