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## WHAT IS *OLIGOCLADA ABBREVIATA* (RAMBUR, 1842) ? (ODONATA: LIBELLULIDAE)

by

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A re-examination of the female holotype of *Libellula (Oligoclada) abbreviata* Rambur (1842) from Cayenne, deposited in the collection of de Selys Longchamps at the Brussels Museum, has brought to light that this is a female of *Oligoclada raineyi* Ris (1919), described after a single male from British Guiana. It could be compared with a pair captured in copulation of *Oligoclada raineyi* Ris (1919), from the interior of Surinam. The misidentified male of *O. abbreviata* discussed by Ris (1911), is now named *O. risi* spec. nov. A copulating pair of this insect was also found in Surinam and has been used for the redescription of that species.

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In his "Histoire Naturelle des Insectes Névroptères", Rambur (1842: 119) described *Libellula abbreviata*, based on a female from Cayenne, French Guyana. This was transferred to *Mesothemis* (with a question-mark) by Hagen (1861) and to *Erythrodiplax* (also with a question-mark) by the same author in 1875. In Kirby's (1890: 20) catalogue *abbreviata* is placed in *Trithemis*. Finally, Ris (1911) recognized it as a species of *Oligoclada* Karsch (1890), based on the monotypic species *O. pachystigma*, a female from Angostura, Venezuela. Ris (l.c.) associated the female from Cayenne with two males from Pará (Brazil) under the name *O. abbreviata*, together with two females, respectively from Coarý and Peba Teffé, both on the Amazon River. Ris found these specimens in coll. Selys and at the same time mentioned a male and female of *Oligoclada* from Surinam in coll. R. Martin. In addition two *Oligoclada* males from Pará were represented in Ris's own collection and in that of Calvert, all of these being referred to *abbreviata*. Years later Ris (1919: 1132, 1134) described *Oligoclada raineyi* (♂) from British Guiana, while another new species, *O. walkeri* (♂) was described by Geijskes (1931) from Trinidad.

An excellent monograph of the genus *Oligoclada* was published by Borror (1931), in which six new species are described from the Williamson's explorations carried out in northern South America during the period 1912-1922, and from some other sources. With reference to *O. abbreviata*, Borror followed Ris by remarking: "The nomenclature of the species in groups V and VI (*walkeri*, *umbricola* and *abbreviata*) is somewhat uncertain, because of the inadequacy of the earlier descriptions of *abbreviata*". According to Borror (in a letter?) Dr. Ris says this of the situation: "The original of Libellulinen Fasc. XII, Fig. 253 (♂ genitalia of his *abbreviata*), which is good, drawn by Menger, I should propose to accept as a neotype of *abbreviata*. The original type-specimen of Rambur, a single female at Brussels, is not in good state, the abdomen deformed and stuffed, and may or may not belong to this species". Further on Borror (l.c.) says: "If the male figured by Ris be taken as the neotype, the nomenclature is quite certain; but it should be possible, by examining the occiput and the mesal side of the fore femur of the female type at Brussels, to determine to which of the two species (*walkeri* and *abbreviata* as herein described) it really belongs. Until this examination is made, the status of these two species must remain to this extent uncertain".

Thanks to the kindness of Dr. G. Demoulin, at that time head of the entomological section at the Brussels Museum, I was permitted to re-examine the type series of *O. abbreviata*, for which I am very grateful, because it enabled me to reach at the following successful conclusions:

1. The female holotype of *Oligoclada abbreviata* (Rambur, 1842) proved to be identical with the female of *Oligoclada raineyi* Ris (1919: 1134).

2. The male of *O. raineyi* described and figured by Ris (1919: 1134, figs. 650-651), is *O. abbreviata* (Rambur) and not the male thought by Ris (1911) to be this species.

3. The supposed male of *O. abbreviata* from Pará (Brazil) figured by Menger in the monograph (Ris, 1911: 405, fig. 253) is not that species but requires a new name, for which I propose *Oligoclada risi* spec. nov., discussed hereafter.

4. The female from Coarý (Amazonas), considered by Ris as a specimen of *O. abbreviata* of which the underside of the last two abdominal segments was figured by Menger (Ris, 1911: 405, fig. 254) turned out to be a female of *O. walkeri*, whereas the female from Peba-Teffé (Amazonas) proved to be that of *O. pachystigma*, both having been mistaken by Ris for *abbreviata*.

The following notes may confirm these conclusions.

The female holotype of *O. abbreviata* has now lost its head and prothorax with fore legs, but the vulvar lamina of the stuffed abdomen is still visible. Its structure agrees perfectly with that of a female from Surinam taken in copula

with a male undoubtedly belonging to *O. raineyi* as described and figured by Ris (1919) and Borror (1931). In Surinam it is a common species, inhabiting rocky places in and along the rivers in the interior. This species is known to occur in the Guyanas and northern Brazil as well.

The female *Oligoclada* described by Santos (1946) under the misspelled name *O. raynei* (instead of *raineyi*), can hardly be that species, since it came from the Federal District (Rio de Janeiro) Estafao de Paciência, from where it has never been reported. Calvert (1948) has described in full the female of *O. raineyi* from Kartabo in British Guiana and his description as well as his simple figure of the vulvar lamina agree with my females from Surinam.

The female of *O. abbreviata* sensu Ris and Borror (now named *O. risi* spec. nov.) was described (but not figured) by Borror in his monograph of 1931. He remarks: "The males herein described as *abbreviata* agree with Menger's figure (in Ris, 1911, fig. 253 genitalia ♂) and to them must belong the females described since one pair was taken in tandem (Brazil, Porto Velho, 1922 one male, one female, caught in tandem)". But in his description Borror says: "Abdomen colored as in *walkeri*. Vulvar lamina similar to that in *walkeri*, except lobes usually not pressed dorsad, and less rounded on posterior margin". From these notes the characterization is too incomplete to warrant specific recognition. The main trouble in this affair is concentrated on lack of sufficient material of females within the related species *abbreviata*, *risi* and *walkeri*. Both Ris and Borror were unable to identify the few females available at that time, not to speak of those of *risi*, which was not known at all. Thanks to the circumstances that more complete material could be collected in the field, including some pairs in copula, this puzzle could now be solved. In the following key the females of the species involved can be separated thus:

- a. Occiput front margin in dorsal view rounded, sides with a sharply pointed protuberance. Labium white-grey, median lobe and outer margins of labial palps black, the last ones when closed together forming a black stripe tapering to a point at the front line. Vulvar lamina with endmargin thickened, broadest at the rounded side-corners, in the middle part a narrow concave area ..... *abbreviata*
- b. Occiput in dorsal view divided in two flat lobes, slightly incised in the median line, sides with a stronger incision without protuberance. Black stripe on external margins of labial palps as in *abbreviata*. Vulvar lamina with a simple uniform thickened concave end margin, followed distally by a triangular field showing irregular raised lines ..... *risi*
- c. Posterior margin of occiput with a broad, truncate lateral projection extending caudad lacking a notch, in the midst of the front margin a small furrow. Black stripe on labial palps widened towards the frontline. Vulvar lamina

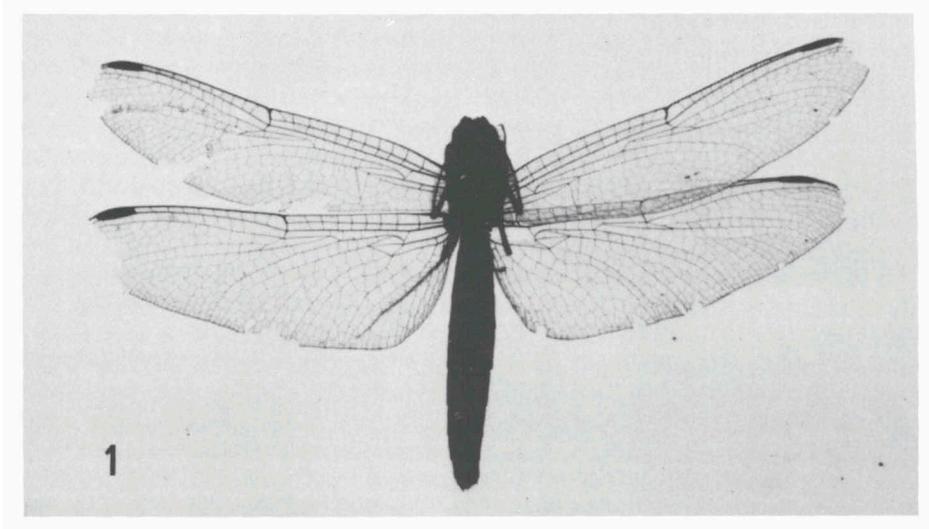
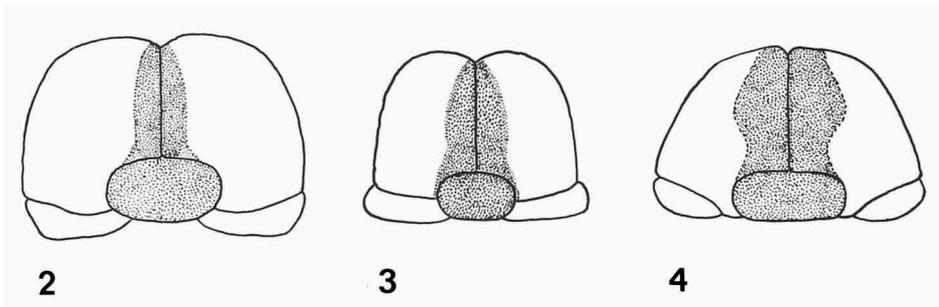


Fig. 1 *Oligoclada abbreviata* (Rambur, 1842), female, holotype, Brussels Museum. Photograph by the late C. Hoorn, Leiden Museum.



Figs. 2-4. Underside labium showing black markings on median lobe and along labial palps of females of *Oligoclada*. 2, *O. abbreviata*; 3, *O. risi*; 4, *O. walkeri*.

with two short rounded thickened flaps, at base of which is a semicircular ridge ..... *walkeri*

Full descriptions of both sexes of *O. abbreviata* and *risi* are given hereby with the synonyms, reference and figures of morphological details.

**Oligoclada abbreviata** (Rambur, 1842)

*Libellula abbreviata* Rambur, 1842: 119.

*Mesothemis abbreviata*; Hagen, 1861: 318.

*Erythrodiplax abbreviata*; Hagen, 1875: 90.

*Trithemis abbreviata*; Kirby, 1890: 20.

Nec *Oligoclada abbreviata*; Ris, 1911: 405-406, fig. 253-254 [misidentification].

*Oligoclada raineyi* Ris, 1919: 1134-1135, fig. 650-651; Borror, 1931: 34-35, fig. 9, 23, 43, 58, 80;

Calvert, 1948: 76-77, pl. II fig. 37; syn. nov.

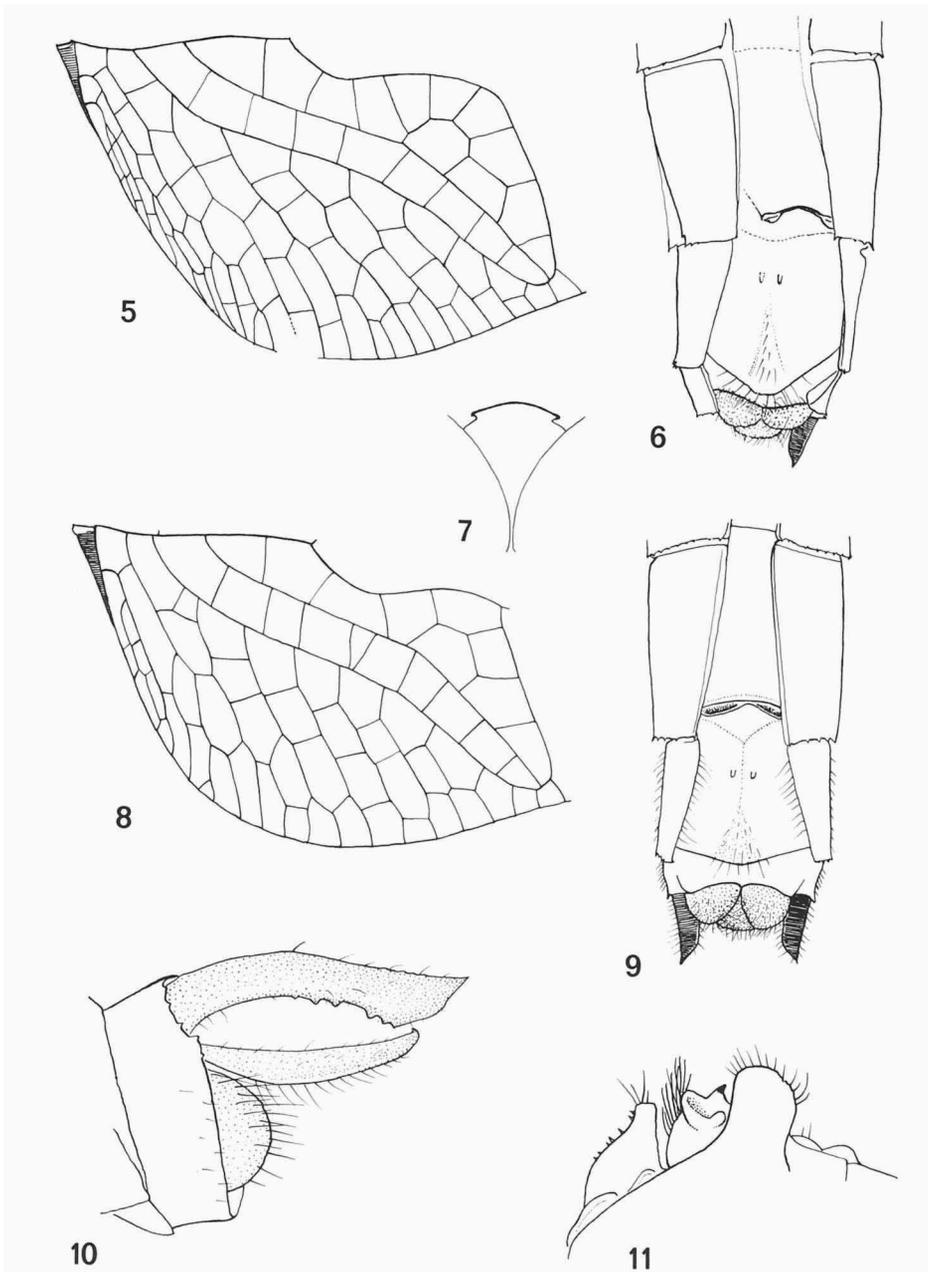
Material. — One pinned ♀ (head and prothorax missing) from Cayenne, French Guyana, in coll. Selys (Brussels Mus.). One ♂ and one ♀ (in cop.), Surinam, Coppename River at Kaaimanston village, on rocky place at noon, July 13, 1943, D. C. Geijskes leg., in coll. Museum Leiden.

Female (holotype). — Synthorax dark grey brown, partly shining metallic bluish. Legs black, long, femur and tibia beset with long spines in two rows, ten on femur, eleven to fourteen on tibia in each row, the proximal ones of equal length. Claws long, slightly curved, on underside a minute notch at about 3/4 of their length.

Wing membrane hyaline, a little dusty, stigma dark brown, membranule of hind wing for the most part dark grey, white at base, reaching to half-way third anal cell on hind margin of wing. No basal spot in hind wing, veins of basal cells in anal field margined with brownish. Wing venation: in fore wings 10½ Ax, 9-10 Px, in hind wings 8 Ax and 9 Px. Triangle free, in right fore wing one crossvein, subtriangle in fore wings 3-celled; supratrangles free. Between R3 — Rspl 8 cells in fore wing and 7-6 in hind wing. Discoidal field in fore wings starting with two rows of cells four cells long, than three rows, ending with 6 small cells at the wing margin. Discoidal field in hind wings with three single cells between triangle and the remaining part. Cu I separated from anal angle of triangle. Anal loop with two rows of cells and two supplemental cells in the heel (12 cells in apical row, 8-9 cells in basal row). Anal field of hind wing broad with up to 6 rows of cells and a number of smaller cells along the basal wing margin (see figs. 1, 5).

Abdomen short and stout, dark brown to halfway segm. 7, the last three segments darkened to black at dorsum. Margins black, underside dark brown, on segm. 1-2 whitish pruinose. Appendices (cerci) black, short, tips pointed (right one broken). Vulvar lamina with end margin more inward thickened, sides irregularly enlarged, enclosing a concave area. End margin of 9th sternite bluntly triangular, at margin armed with a row of spiny hairs, on the elevated part in the median line some smaller spines (see fig. 6). Abdomen cut open ventrally and stuffed with cotton.

Length abdomen 15 mm, hind wing, 22 mm, stigma 2 mm.



Figs. 5-11. *Oligoclada abbreviata*, female. 5-6, holotype; 5, anal loop and anal field of right hind wing; 6, end of abdomen, ventral side; 7-9, female from Surinam, caught in cop.; 7, occiput in dorsal view; 8, anal loop and anal field of right hind wing; 9, end of abdomen, ventral side; 10-11, male from Surinam, caught in cop.; 10, appendages in left lateral view; 11, genitalia in right lateral view.

Female (in copula with male *O. raineyi* Ris in Surinam). — Head: labium cream white, median lobe and a narrow streak along inner margins of side-lobes black. Labrum light brown, outer margin blackened; ante- and postclypeus bluish grey, frons and vertex dark brown, shining metallic blue. Occiput leather-brown, swollen, with a short projection on either side of posterior margin. Rear of head dark brown.

Thorax dull brown, sides greyish pruinose. Hind lobe of prothorax with end margin erect, in the median line slightly incised, on top with a row of long bushy hairs. Legs slender, black, innerside of fore femur from base to halfway its length pale yellow, on the innerside a row of about 7 spines, the distal one the longest. Penultimate spine on externo-anterior angle of hind femur as long as ultimate spine. Wings hyaline, Ax in fore wing  $9\frac{1}{2}$  to  $10\frac{1}{2}$ , in hind wing 7; Px in fore wings 8, in hind wings 8 and 9. Otherwise as in holotype female.

Abdomen short and stout, dark brown on dorsum, darkened to black on the last three segments. Vulvar lamina of segm. 8 with thickened end margin a little concave, more inside dilated in irregular edges (fig. 9).

Male (in copula with above described female). — Head: side lobes of labium cream white, middle lobe and inner margin of side lobes black, at the latter the black stripe narrowed toward end. Labrum white, outer margin brown, ante- and postclypeus grey blue, frons and vertex dark shining blue, occiput brown, swollen, on either side of posterior margin a short protuberance. Rear of head dark brown.

Thorax dark brown to black, greyish pruinose especially at the sides. Legs black, fore femur at innerside without a pale spot, otherwise as in female. Hind wings with small dark brown basal spot extending in subcostal area to halfway first Ax, in cubital space surpassing cubital crossvein, in anal field covering marginal cells to the end of membranula. Stigma dark brown. Wing venation as in female.

Abdomen black, first three segments enlarged, grey pruinose, other segments spindle-shaped, on segm. 4 transverse carina present. Genitalia on second segment: anterior lamina large, as seen from aside right-angled triangular, some spines on top and a number of smaller spikes on the surface in front, ventral margin V-shaped. Hamules with a rounded ear-like outer lobe and a curved toothed inner lobe, tooth projecting obliquely caudad, in front of hamule a bundle of strong bristles surpassing length of hamule. Genital lobe extending lamina and hamule, sides parallel, top rounded, beset with a row of spines (fig. 11). Appendices relatively short, superior pair slightly curved downward, distal end swollen, tip pointed, underside denticulated in distal half, with about six irregular short dents; inferior app. triangular, slightly up-curved, tip divided in two small dents directed dorsally, reaching backward to

middle of swollen distal part of superiors.

Length abdomen incl. app. 17 mm, hind wing 22 mm, stigma 2 mm.

***Oligoclada risi* spec. nov.**

*Oligoclada abbreviata* Ris, 1911: 405, fig. 253; Borror, 1931: desc. ♂ ♀, 39-41, Figs. 12, 26, 34, 46, 61, 62, 63, 66, 83; nec *O. abbreviata* (Rambur, 1842).

Male (holotype). — Surinam, Coppename River, Raleigh Falls, along bushcreek in trail to Voltzberg, in cop. with ♀ (paratype) described below, August 21, 1957, D. C. Geijskes, in coll. Leiden Museum.

Head: labium cream white, median lobe and inner margins of side lobes black, as wide as median lobe itself. Labrum also cream white, outer margin black. Ante- and postclypeus grey blue. Frons and vertex shining metallic blue, a groove at middorsum of frons. Occiput dark brown, hind margin in the median line slightly divided in two lobes. Rear of head black. Compound eyes meeting one another on top of head over a short distance.

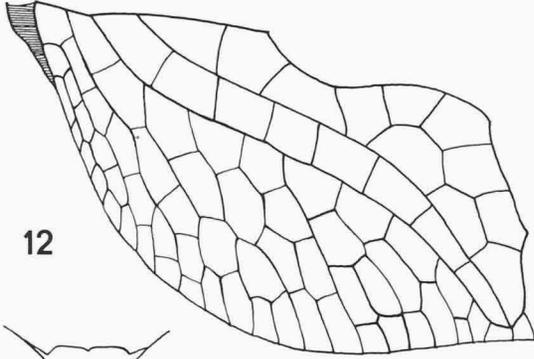
Prothorax dark brown, margin of front lobe light brown, margin of hind lobe raised, bilobed with a row of long hairs on top. Synthorax dark grey to black, shining blue in front, sides and venter grey pruinose. Legs slender, black, innerside of femora of fore legs powdery white, femora of hind legs with a row of about 15 short spines, of which the forelast one is the longest. Claws long, sharp, slightly curved, a minute notch on the underside at 2/3 length. Wings hyaline, stigma brown, hind wing with a very small dark brown basal spot, in subcostal space covering 3/4 length of first cell, in cubital space reaching cubital crossvein, in anal field covering three cells along wing margin to end of membranula, which is dark brown as well. Wing venation: Ax 10½ in fore wing, 7-8 in hind wing, Px 9 in both fore- and hind wings. Triangle in fore wing crossed, in hind wing free; subtriangle 3-celled. Discoidal field in fore wing starting at the triangle with a double row of cells four cells long, than three rows to near distal end at wing margin. Between Rs-Rspl. one row of 6 cells in fore wing, 6-7 cells in hind wing. Cul in hind wing narrowly separated from anal angle of triangle. Anal loop with two supplemental cells in the "shoe" against midrib. Anal field covering four rows of cells at a maximum.

Abdomen short, spindle-like, black, the three basal segments slightly enlarged,

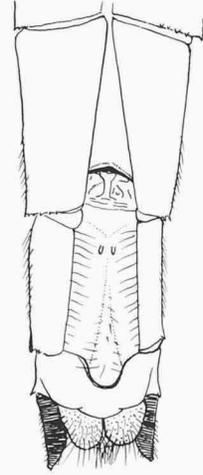
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Figs. 12-16. *Oligoclada risi* from Surinam, female (12-14) and male (15, 16) caught in cop. 12, anal loop and anal field of right hind wing; 13, end of abdomen, ventral side; 14, occiput in dorsal view; 15, appendages in left lateral view; 16, genitalia in right lateral view.

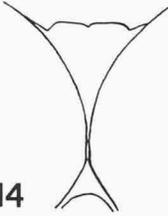
Figs. 17-19. *Oligoclada walkeri*, female from Coarý, Amazon. 17, anal loop and anal field of right hind wing; 18, end of abdomen, ventral side; 19, occiput in dorsal view.



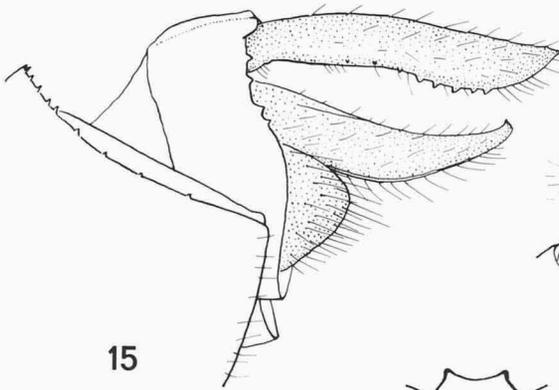
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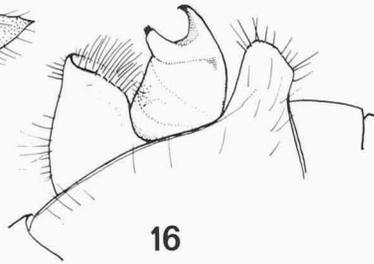
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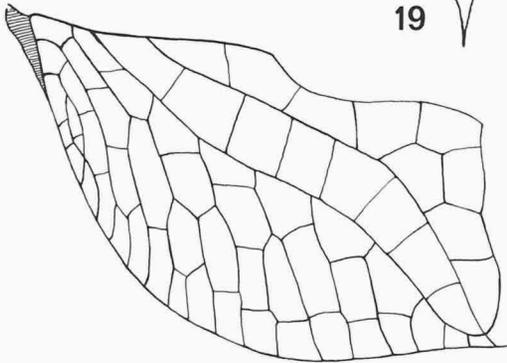
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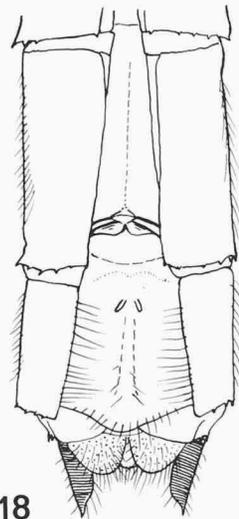
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18

the distal segments 6, 7 and 8 hardly dilated. Genitalia on segm. 2: anterior lamina a semicircular wall, the margins flattened, these beset with a row of bristles directed inward and backward; hamules large, extending lamina and genital lobe, inner branch with a sharp tooth at the end directed forward, outer branch on top beset with a few short spines. Genital lobe small and short, rectangular, end margin oblique, on top beset with a row of short spines. Superior pair of appendages slightly curved, tip pointed, underside with a row of 8 short dents; inferior appendix long, triangular, tip upcurved and divided in two small dents, reaching to behind dentated part of superior.

Length abdomen incl. app. 16 mm, hind wing 20.5 mm, stigma 2 mm.

Female (in copula with above described holotype ♂). — Head: labium cream-white, middle lobe and a triangular streak along innerside of side lobes black, as wide at base as middle lobe, at the upper end tapering to a point. Labrum black, the basal edges light brown. Ante- and postclypeus dull grey blue, lower part of frons light brown, on top dark brown, shining metallic blue, as is the vertex. Compound eyes just touching in the median line. Occipital triangle on top black, shining blue, hind margin chestnut brown, divided in two lobes without protuberance at the sides. Rear of head black.

Prothorax dark brown, margin of front lobe and raised margin of hind lobe red-brown, the latter incised in the median line forming two lobes, on top beset with a row of long soft hairs. Synthorax brown to black, sides and coxae powdered with greyish, in front and at the sides partly shining bronze. There are three yellow side stripes: an indication of an antehumeral stripe in front of mesepisternum, a distinct yellow stripe just before stigma separating mesepimeron from metepisternum and at the lower margin against metepimeron.

Wings hyaline, a small golden basal spot in hind wing extending in subcostal area to first Ax, in cubital field to cubital crossvein, in anal field covering two and a half cells along wing margin, reaching as far back as end of the dark membranula. Pterostigma red brown. Wing venation: Ax in fore wing 10½, in hind wing 8; Px in fore wing 10, in hind wing 9. Between Rs-Rspl one row of 6-7 cells in fore wing, 7 in hind wing. Triangle in left fore wing once traversed, in right fore wing free, subtriangle 3-celled. Discoidal field in fore wing starting from triangle with a row of double cells four cells long, in hind wing with 2 and 3 single cells behind triangle. Anal loop long, midrib slightly curved in distal part, "shoe" with two double cells, in total 19 cells in left hind wing and 20 cells in right hind wing. In anal field four irregular rows of cells.

Legs long and slender, black, whitish pruinose, innerside of fore femur pale yellow in basal half, innerside of hind femur beset with 14-15 spines, the fore-last one the longest; claws long slightly curved, sharply pointed, a minute tooth on underside at about 3/4 length of claw.

Abdomen short, stout, last four segments tapering to the end, dorsum reddish-brown, darkened along the margins, on segm. 7 a small middorsal brown spot, otherwise black, last three segments black. Vulvar lamina with a thickened concave rim, on lower distal part an area with irregular raised lines; sternite of segm. 9 a little prolonged distally, directed ventrad. Cerci short, black, bluntly pointed, a little longer than segm. 10.

Length abdomen 14 mm, hind wing 21 mm, stigma 2 mm.

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