

**ARCHAEOGOMPHUS (ARCHAEOGOMPHUS) VANBRINKI
SPEC. NOV. FROM WESTERN CENTRAL BRAZIL
(ANISOPTERA: GOMPHIDAE)**

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The new sp. (holotype ♀: Diamantino, state of Mato Grosso, IV-1988; deposited in the author's collection) is described and illustrated. It shares with *A. furcatus* the presence of a pair of long spines on the rear of the occiput but differs from it by the color pattern, shape of the vulvar lamina and mainly by a pair of hook-like prominences on the superior margin of the occipital foramen.

INTRODUCTION

The species of the genus *Archaeogomphus* have been fascinating odonatologists since 1903 when NEEDHAM published, under *Agriogomphus*, a figure of the wings of a male *Archaeogomphus*, thus revealing, for the first time, its unusual venation. Indeed, among the genera of neotropical Gomphidae, none have been the subject of so much discussion and controversy as *Archaeogomphus*. Created by WILLIAMSON (1919), the genus has been placed successively in the subfamily Gomphinae by TILLYARD & FRASER (1940), Epigomphinae by BELLE (1979) and, more recently, in the Austrogomphinae by CARLE (1986) who erected a special tribe for it, the Archaeogomphini. The genus *Archaeogomphus* has been beautifully reviewed by BELLE (1982) and comprises five species: *A. infans* (Ris, 1913), *A. hamatus* (Williamson, 1918), *A. furcatus* Williamson, 1923, *A. nanus* Needham, 1944, and *A. densus* Belle, 1982). We describe here a sixth species based on a female collected in west-central Brazil.

The species is named after Dr J a n n y M. v a n B r i n k, whose recent death was a great loss to the world of Odonatology and to those who had the privilege of being her friends.

ARCHAEOGOMPHUS (ARCHAEOGOMPHUS) VANBRINKI SPEC. NOV.

Figures 1-4

Material. — holotype ♀: Brazil, state of Mato Grosso, Diamantino (on a stream in the middle of the Cerrado), IV-1988, E. Furtado leg.

HEAD. — Rear of the head brown, the superior margin of the occipital foramen bearing a pair of dorsolateral hook-like prominences with points directed medially (Fig. 1). Face and frons above olive yellow, genae and base of mandible yellowish. Free border of labrum brown, fringed with brownish yellow hairs. Frons rounded on edge. Vertex olive brown, the transverse ridge slightly dilated behind each lateral ocellus. Occiput olive brown, rounded on edge, without any ridge or keel, its rear provided with a pair of long posteriorly directed spines (Fig. 2).

PROTHORAX. — Anterior lobe yellowish brown; middle and posterior lobe olive brown, the latter with the margin yellowish brown.

PTEROTHORAX. — Largely olive brown with black and brown areas; its colour pattern as shown in Figure 3. Legs (anterior pair missing): femora olive brown, darker laterally; tibiae brownish yellow darker medially; tarsi yellow, darker medially, claws brown. Wings hyalin.

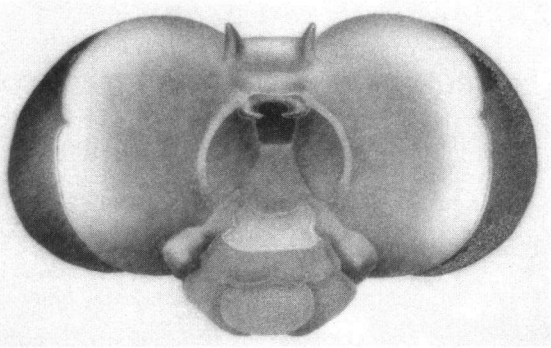
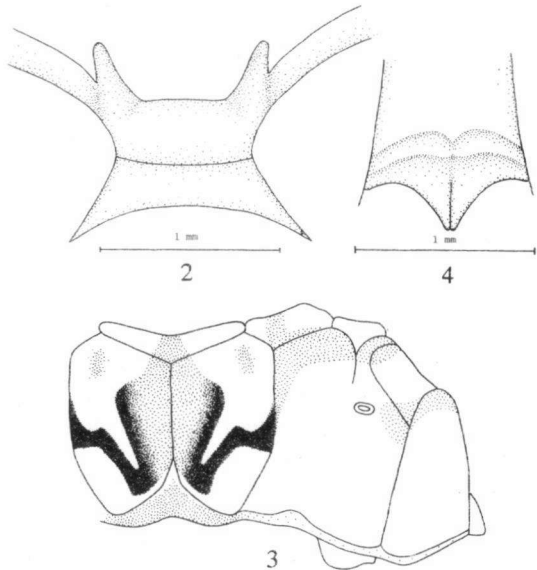


Fig. 1. *Archaeogomphus vanbrinki* sp.n., holotype female: rear of the head.



Figs 2-4. *Archaeogomphus vanbrinki* sp.n., holotype female: (2) occiput in dorsal view; — (3) diagram of the pterothorax; — (4) vulvar lamina.

Venation dark brown, including the anterior margin of costa. Pterostigma brown, margined with yellow.

VENATION. — Antenodals in forewing (FW) 10-11; in hindwing (HW) 8. Postnodals in FW and HW 6. Number of cells on the anterior side of CuP which do not reach MA, in FW 1-2; in HW 3-4. Cell-rows near the marginal row of cells, between R2 and R3 in FW and HW 2. Cells posterior to A1 and distal to postanal cells which do not reach the posterior wing margin in HW 4. Discoidal field with one row of cells for a distance of 8-9 cells in FW and 4-5 cells in HW. Basal subcostal crossveins absent. Vein R3 arising about half a cell-width beyond the subnodus in FW, and one third of a cell-width in HW. Anal area with one row of cells in FW, and two rows in HW. Second reinforced antenodal in FW 4th or 5th; in HW 4th. One cubito-anal crossvein in FW and HW. Triangles, sub-triangles and supra-triangles free. Triangles four-sided. The five veins at the posterior angle of the triangle in HW not coalesced. Pterostigma surmounting $2\frac{1}{3}$ cells in both FW and HW. Relative length of the distance between nodus and pterostigma (taking the costal edge of the pterostigma as standard for comparison) in FW and HW 3.

ABDOMEN. — Brown, ringed with black. The rings cover the joinings of segments 1-4, with an additional ring on segments 2-7 situated on the proximal third (2-4) or fourth (5-7) of each segment. Appendages brown, slightly smaller than segment 10. Vulvar lamina yellowish brown, triangular, the branches hardly distinguishable from the base (Fig. 4).

Measurements (in mm). — Total length 31.2; — abdomen 23.5; — hindwing length 19.2; — greatest width of hindwing 5.7; — costal edge of pterostigma in forewing 1.85.

DISCUSSION

Due to the absence of submedian spines at the superior margin of the occipital foramen, and by having the five veins at the posterior angle of the triangle in the hindwing not coalesced, *A. vanbrinki* belongs to the *hamatus* group of BELLE (1982), regarded by CARLE (1986) as the subgenus *Archaeogomphus*. The group comprises three species, *A. hamatus*, *A. nanus* and *A. furcatus*. By the presence of a pair of long posteriorly directed spines on the rear of the occiput, *A. vanbrinki* keys out to *A. furcatus* in BELLE (1982). It differs from it, however, by the color pattern of the pterothorax, the shape of the vulvar lamina, and mainly by the two hook-like prominences on the superior margin of the occipital foramen. These prominences seem to be homologous to those observed in *A. hamatus*, but their hook-like shape is unique in the genus. They are probably related to the mechanism by which the male grasps the female during copulation. In *Archaeogomphus*, which has a quite unusual morphology of the tenth abdominal segment of the male, this mechanism has been a matter of considerable speculation (WILLIAMSON, 1918; WALKER, 1918; NEEDHAM, 1944). However, in 1982,

BELLE, studying *A. densus* and *A. infans*, provided morphological evidence that during copulation the snout-like projection of the male's tenth segment is pushed against the superior margin of the occipital foramen, the spines of which are adjusted to grooves present at the base of the projection. It can be predicted, therefore, that a morphological counterpart of the hook-like prominence, here described on the occipital foramen of the female *A. vanbrinki*, will eventually be found on the snout-like projection of the male.

The single specimen of *A. vanbrinki* received from the collector, had a field note that the specimen had been taken "on a stream in the middle of the Cerrado". "Cerrado" refers to the savanna that covers the majority of the Central Brazilian Plateau. This indicates that *A. vanbrinki* is not a forest species, a feature it shares with *A. densus*. The possibility remains, however, that it might occur in the gallery forests of the region. We have received about 1.000 specimens of dragonflies from the region of the upper Arinos River in the municipality of Diamantino, Mato Grosso, but only a single female of *A. vanbrinki*. It would seem, therefore, that the species is rare in the area, and the male, unfortunately, remains unknown.

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