

THE WING VEIN HOMOLOGIES AND PHYLOGENY OF THE ODONATA: A CONTINUING DEBATE. By Frank Louis CARLE. IV+66 pp., 15 textfigs. (Soc. int. odonatol. rapid Comm. No. 4). Utrecht, 1983. — Price: Hfl. 35.- net. — [A COMMENT].

In a thorough and comprehensive study, the author reviews the theories about wing venation proposed by earlier workers. Based upon his own investigations and the literature, he proposes new homologies for the longitudinal veins and, as a consequence, also a new phylogeny of the odonatoids (fig. 9).

To construct this, he has apparently not considered other structural and behavioural features of the Odonata, notably the structure of the penile organ and the ovipositor, and the mode of oviposition. An excellent study of the anatomy of the penile organ was published by H.K. PFAU (1971, *Z. Morph. Tiere* 70: 281-371). From Pfau's paper it is evident that the penile organ of the Aeshnidae, probably also that of the closely related Neopetaliidae, represents a quite different and more primitive type than that of other anisopteran families. From this point of view, the two families form a well separated phylogenetic branch. This is confirmed by the mode of oviposition in the Anisoptera. Aeshnidae and probably also

Neopetaliidae are the only anisopterans with a regular endophytic oviposition. The primitive Petaluridae, which also have a well developed ovipositor, do not introduce their eggs into plant tissue, but oviposit between mosses, or attach the eggs to roots and subterranean stems (cf. L.S. WOLFE, 1953, *Trans. R. Soc. N.Z.* 80: 245-275, pls 53-57). This mode of oviposition was named "primär exophytisch" by D.ST. QUENTIN (1962, *Z. Morph. Ökol. Tiere* 51: 165-189), another important paper written in German. All other Anisoptera show reduced ovipositors and, therefore, some kind of "secondary exophytic oviposition".

Considering these facts, Aeshnidae and Neopetaliidae must be distinctly separated from the other Anisoptera in a phylogenetic tree. I would, therefore, propose to modify the sequence of Anisoptera in Carle's fig. 9 as follows: Neopetaliidae, Aeshnidae — Petaluridae, Gomphidae, Cordulegastridae, Chlorogomphidae, Macromiidae, Corduliidae, Synthemistidae, Libellulidae.

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