

BOOK REVIEW

DUDLEY R.: THE BIOMECHANICS OF INSECT FLIGHT. FORM, FUNCTION, EVOLUTION. Princeton University Press, Princeton, 2000, xii + 476 pp. ISBN 0-691-04430-9, Hardcover, Price USD 36.95.

The author reviews in depth the present knowledge of performance of insect wings and the kinematics of flight in a phylogenetic context. He starts with insect diversity and basic kinematics, and then describes morphology of thorax, wings and associated structures. The core of the book represent three chapters, "Kinematics and Aerodynamics of Flight", "Energetics and Flight Physiology" and "Stability, Maneuverability, and Maximum Flight Performance". One chapter is concerned with the origins of wings and flight, and secondary losses of both; and another one with flight relative to insect ecological diversification (and *vice versa*). Future research directions are suggested in the last chapter. The monograph includes Glossary and Index (both good), and an extensive Bibliography covering nearly 2000 references.

The treatment of the subject is synthetic and integrative. Surely, any student of systematics and morphology could complain that his favoured taxon, structure, or function is paid less attention than desirable, or a cherished hypothesis is treated as equal to other alternatives. However, every evolutionarily minded entomologist should be happy that a book concerned basically with functional morphology and biomechanics con-

tains many cladograms testing (or, at least, summarizing in genealogical context) the author's findings, and including palaeontomological considerations as well. In the former respect, the book may serve as an example of how functional data may and should be interpreted in an evolutionary context.

I shall mention only a few exceptions to my praise of the book. The morphology of the flight apparatus could have been treated in more detail, and the illustrations could have been more numerous. The recent findings on the possibility of plesiomorphy of pterygopolymorphism should have been discussed. However, my major caveat is as follows: Although most of the book could be easily read by non-specialists and beginners because of its lucid style and explanations of associated subjects, unfortunately, this does not apply to the core of the monograph dealing with kinematics and aerodynamics. These sections require previous knowledge of principles: Whenever the author writes about his own research field, he becomes much less intelligible for outsiders in that field than when writing on other matters.

The book is warmly recommended to all insect morphologists, physiologists, ecologists and systematists of any kind.

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