

## BOOK REVIEWS

MILKWEED BUTTERFLIES, by P. R. Ackery and R. I. Vane-Wright. 1984. British Museum (Natural History), Cromwell Road, London SW7 5BD, England. v-ix + 425 pp., including 261 figures, 12 colored and 73 halftone plates, quarto size. Price £ 50. Also published in U.S. with Cornell Univ. Press, Ithaca, New York.

The full title of this book, "Milkweed butterflies: their cladistics and biology, being an account of the natural history of the Danainae, a subfamily of the Lepidoptera, Nymphalidae" states the goals of Ackery and Vane-Wright's study. They succeed admirably in this difficult task. While the major thrust of the book is a taxonomic revision of the danaines, there is a wealth of well documented biological information about distribution, behavior, life history, chemical attraction and defense, genetics, ecology, mimicry and faunistics. This makes the book not only valuable to the systematist, but also to the worker in other biological disciplines.

The fact that the revisionary section is a cladistic study probably will bother pheneticians and at least some evolutionary taxonomists, but this does not concern the authors. It is reassuring to see a study that is done strictly on characters, and draws no systematic conclusions not supported by those data; the authors freely admit that certain relations are not shown by the characteristics they used, and suggest that these problems may be solved later by the addition of new characters. What is speculation by the authors is clearly so labeled, and definitive statements are not made without reference to underlying reasons. The revision is, therefore, highly scientific; and it is a pleasure to have the authors lead one through the reasoning to their conclusions without the appearance of the occult that one is so often left with in systematic revisions where conclusions are "correct" simply because authors state they are.

The cladistic section of the book involves discussions of the characters treated and the classification scheme derived from them. Each character is discussed, numbered in the text and, perhaps most importantly, is illustrated clearly in the figures, along with alternate character states. Again, one can follow the reasoning through a logical progression to the classification adopted. There are some valuable, but unconventional, thoughts on classification intertwined with the data, such as those on clades and polytypic species (pp. 20-22), including the concepts of "cladospecies" and "paraspecies", and those immediately following on larval versus adult characters. Their suggestions for further systematic research on the danaines (pp. 61-66), most of which the authors promise to tackle later are valuable and thought-provoking. The book would have been even more useful had it considered the myriad subspecies, but an attempt to analyze cladistically some 2,000 names would have been humanly impossible, and the result would not have been economically feasible to print. Nevertheless, the handling of the subject is reasonable enough to make a confirmed cladist of the reader: if only people of that taxonomic school were always so rigorously tied to logic!

The authors anticipated that the revision might be controversial because it upsets prevailing nomenclature. Ackery and Vane-Wright comment about the genus "*Danaus*" of authors. "*Danaus*" is at best a grade taxon and is probably polyphyletic, perhaps paraphyletic. A number of species are placed in genera far removed from their "conventional" placement, but the authors recognize the difficulty that others might have accepting these new assignments, stating (p. 8), "... because of the still overriding influence of 'Seitz' and the acceptance of '*Danaus*', we can be sure that a dual nomenclature, with '*Danaus sita* for *Parantica sita*, '*Danaus similis* for *Ideopsis similis*, '*Danaus hamata* for *Tirumala hamata* and so on, will unfortunately continue in existence for a considerable length of time—probably until about A.D. 2179 judging by past performances!" Such a statement might be made about any revision that accepts a different nomenclature than that in a "standard" work, but Ackery and Vane-Wright present a large and impressive body of data, and it is up to their detractors (if any) to examine such data in detail and show where they think the authors are wrong. I hope Ackery and Vane-Wright are incorrect on the period of time until their nomenclature is accepted.

Ackery and Vane-Wright have gathered an impressive array of biological data on the danaines which are summarized in Part 2: Biology (pp. 67–102). They have also generated a large body of data on co-mimicry and faunistics (pp. 103–158). Both of these sections should be of great interest to ecologists, evolutionists and other nontaxonomists, as well as to systematists in the broadest sense. Part 4 consists of identification keys, often utilizing novel characteristics not stressed in the typical key; and all data are summarized in Part 5, the specific taxonomic and biological catalogue (pp. 173–245), an impressive compendium of information that should convince even the most skeptical. There are some new synonyms, combinations and taxa, but finding them requires some searching because they are buried throughout the text. Short of a section summarizing changes, there is no other way the data could have been presented conveniently. A short addendum follows, and precedes an exhaustive bibliography of 36 pages.

The work is remarkably free of typographical errors—the one I noticed was the rendering of Japan as “Japen” on p. 21. It is an attractive book and easy to follow. The illustrations are uniformly of high quality, including line drawings, colored plates, half-tone plates, and 394 additional figures illustrating all aspects of danaines and their biology. Colored plates depict some danaine mimetic associations in the Philippine and Indonesian Islands. It is too bad that illustrations are not cross-referenced to the pages on which descriptions occur (the pages with descriptions do have references to plates), but this is a minor complaint; also each species is mentioned several times in the text, and to which page would the plate reference refer? The comprehensive Index clearly leads the reader to any place a taxon is discussed.

I must consider this work to be one of the major taxonomic revisions of this century, and it is a good book for the reader who is not taxonomically inclined. The authors have attacked a problem, solved much of it, and have honestly admitted those parts that have resisted solution so far. To say that I am impressed with this work is an understatement; it is the kind of work that one always hopes to be able to do. The book, even though expensive, is well worth the cost; I would recommend it to anyone interested in well explained and defended cladistic analyses, in systematics of Lepidoptera, or in the Danainae.

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