

Hammen, L. van der 1989. *An Introduction to Comparative Arachnology*. SPB Academic Publishing, The Hague. 576 pp. 302 figs. (Price \$150.00).

Progress in comparative arachnology suffers from the absence of an authoritative and accessible introductory text that outlines our current understanding of arachnid evolution, explains important controversies and suggests profitable avenues for research. Despite the promise of its title, van der Hammen's book is not an attempt to fill this vacuum. In fact, the author informs us at the outset that it is "not a handbook but a general survey of personal insights." It is primarily a review of van der Hammen's descriptive studies, and the author makes no real effort to summarize discoveries or opinions of other workers. Arachnologists familiar with van der Hammen's research will find little new information, but the book may serve as a reference for those requiring access to a summary of van der Hammen's contributions to arachnology.

The book is divided into two sections, a 70-page "general part" and a 500-page "systematic part". There is a list of references that includes most of the important work in comparative arachnology.

The general part summarizes basic aspects of arachnid biology, concentrating on areas of particular interest to systematists (external morphology, reproduction, postembryonic development and phylogeny), but there are no discussions of paleontology or biogeography. Van der Hammen gives little attention to internal

morphology or to arachnids as living organisms (i.e., behavior, functional morphology, ecology, physiology).

In his overview of arachnid morphology, van der Hammen summarizes the *Bauplan* of each order, concentrating on tagmata, mouthparts, appendages, coxal glands and genital structures. This section is not appropriate as an introduction to arachnid morphology, as van der Hammen assumes that the reader is already familiar with the higher arachnid taxa and presents his own controversial interpretations with an air of certainty generally reserved for time-tested hypotheses (e.g., "The problem of the homologization of leg segments is now definitely solved"). It is unlikely that a nonspecialist would be able to discriminate arachnological "facts" from van der Hammen's proposals. Throughout this summary the author uses an original system of terminology that he hopes will facilitate comparisons between arachnid orders, but he does a great disservice to himself and the reader by not including a glossary or index. Terms are sometimes defined parenthetically when introduced, but this is clearly inappropriate for what is basically a reference book that will not be read from cover-to-cover.

The section on postembryonic development outlines a general framework for the comparative study of arachnid life cycles. Acarologists are ahead of most other arachnologists in extracting information from development for use in systematics and for addressing general evolutionary topics, such as heterochrony. The issues van der Hammen addresses may inspire araneologists, scorpionologists, etc. to pay closer attention to preadult instars.

As van der Hammen is best known for championing the view that Acari is diphyletic and for his novel reconstructions of arachnid ordinal relationships, I had expected a more thorough treatment of these subjects within the section devoted to phylogeny. Here the author describes his latest phylogenetic hypothesis and outlines the characteristics of new superordinal taxa, but he does not provide the kind of explicit analysis that most systematists have come to expect. Although he occasionally uses the language of phylogenetic systematics, van der Hammen rejects cladistics as an "atomistic" methodology that leads to "highly artificial classifications". He favors a "structuralist" approach in which higher taxa are recognized by unexpressed potentialities ("deep structure") rather than their observable manifestations. In the absence of a more complete discussion of his methodology and its application to arachnids, van der Hammen's phylogenetic hypotheses are not convincing.

In the systematic part, van der Hammen describes the external morphology of one or two representatives from each of the generally recognized arachnid orders and major subordinal taxa, giving special attention to 'primitive' species. Each order is treated in a separate chapter, and chapter contents are organized to facilitate comparisons. In keeping with the author's specialty, over 300 pages are devoted to mites. His descriptions of several phylogenetically significant mite taxa (opilioacarines, holothyrids and a primitive actinedid) are especially thorough. Chapters dealing with the remaining arachnids and *Limulus* are either exact reproductions or slightly expanded versions of the author's four-part series "Comparative Studies in Chelicerata". These chapters contain some novel observations and insights, but it seems that their main purpose is to encompass nonacarines within the author's system of terminology rather than to make original contributions. The descriptions are accompanied by numerous well-executed line drawings.

Van der Hammen's comparative method has benefits and drawbacks. By providing intensive descriptions of primitive or "typical" representatives from each major group, he includes the basic morphology of each taxon as well as potentially significant minutiae that a more synthetic approach would omit. One has the satisfaction of being introduced to a real organism rather than a generalized cartoon. On the other hand, van der Hammen tends to get bogged down in details and leaves the task of critical synthesis largely to the reader. There is a tendency to gloss over variation within diverse groups, and little mention is made of phylogenetic relationships within orders.

In summary, the book is inappropriate as an introductory text. The author tends to ignore or trivialize research and opinions other than his own, and he frequently presents his untested proposals as accepted facts. In contrast, van der Hammen's talent for description and the phylogenetically significant taxa he includes make this a useful reference work for comparative arachnologists. The book's price will probably limit its distribution to libraries, but, as it is basically a review of van der Hammen's earlier work, most of the valuable information is available free of charge from the primary literature.

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