

## BOOK REVIEWS

Barth, F. G. (Ed.) 1985. *Neurobiology of Arachnids*. Springer-Verlag, New York. 385 pp. 174 textfigs. (price \$69.50).

In this first monograph on the subject of arachnid neurobiology, most of the coverage (approximately 70 percent) concerns what has been the primary interest of the majority of workers in the field—sensory systems and behaviors mediated by the senses. Nevertheless, the reviews of other aspects of neurobiology sufficiently round out the book and broaden its usefulness.

The central nervous system of arachnids has attracted the attention of relatively few investigators, compared to that of insects and crustaceans. It is treated here in chapters on anatomy (Babu) and ontogeny (Weygoldt), followed by one on neurosecretion (Legendre).

In the lengthiest sections of the book, early chapters on vision in spiders—morphology and optics (Land), photoreceptor functioning (Blest), and spectral sensitivity (Yamashita)—are complemented later by a study of visual discrimination in salticids (L. Forster) and two examinations of visual and idiothetic orientation in agelenids (Görner and Claas; Mittelstaedt). Likewise, coverage of mechanoreceptors—tactile hairs and spines, and scopula hairs (Foelix); trichobothria (Reissland and Görner); and slit sensilla (Barth)—provides a basis for understanding later chapters on the diverse functions of the spider's vibration sense (Barth) and the role of proprioception in mediating locomotion (Seyfarth). An additional aspect of the sensory system, the occurrence of peripheral synapses in arachnids, is presented by its discoverer (Foelix).

Much of the relatively limited information on arachnid motor systems is summarized in a chapter that includes the author's (Sherman) special area, neural control of the heartbeat. How motor output is affected by sensory and central nervous system mechanisms to yield locomotion in scorpions is the topic of the following chapter (Root). The book's final paper (Fleissner and Fleissner) presents an analysis of the neurobiological clock underlying the circadian rhythm of visual sensitivity in scorpions.

While all of the chapters provide useful reviews of their topics, many also include especially large sections devoted to very recent research or contain heretofore unpublished findings. Noteworthy here are the reviews by Blest on the fine structure of spider photoreceptors, by Yamashita on the spectral sensitivity of spider photoreceptors, by Seyfarth on spider proprioception, by Mittelstaedt on spider navigation, and by the Fleissners on circadian clocks in scorpions. Although some of the content of a few chapters (the two by Barth and the one by L. Forster) can be found in previous contributions by their authors to recent books on spider communication and on sense organs, nowhere else can one find the wealth of information and completeness of coverage of the major topics of arachnid neurobiology as in this excellent monograph that Barth has brought together. The availability of this publication should increase the possibility that arachnids will be brought into the laboratories of some of the other neurobiologists, who so far have generally ignored this class of arthropods.

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Unlike those many monographs which suffer from publication delays, this one is as up to date as possible, with some of the contributions containing references to papers published in 1985. The book is handsomely illustrated, with clear diagrams and high-quality electron micrographs. Typographical errors are minimal and not distracting, reflecting the carefulness and language skills of the editor. Indeed, although he and about half of the contributors are German, all of the chapters are written clearly in English, reflecting Barth's desire to reach as broad an audience as possible.

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