

clusion, which might have been better phrased as an apology. Nevertheless, for anyone interested in the current status of the imagery controversy, this volume offers a convenient introduction.

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Periplaneta americana

The American Cockroach. WILLIAM J. BELL and K. G. ADIYODI, Eds. Chapman and Hall, London, 1981 (U.S. distributor, Methuen, New York). xviii, 530 pp., illus. \$65.

For a small and retiring creature, the cockroach has had a large impact on the subjective quality of human life. Perhaps because it is cosmopolitan in its distribution, it, like the rat, has been transmogrified by scientists from a nasty pest into a quintessential experimental animal. An impressive amount of basic and applied research aimed at better understanding (and sometimes extermination) of the cockroach is recorded in the libraries of the world. In fact, thanks to their antiquity and adaptability, cockroaches are probably a good choice for the scientist bent on investigating any aspect of insect physiology; this book aims to be a resource for such people.

The book contains 15 chapters plus a brief introduction by L. M. Roth (which combines a clear summary of cockroach natural history with a chillingly extensive list of all the pathogenic organisms harbored by *Periplaneta americana*). A few of the chapters take a mainly cellular approach: integument (R. R. Mills); circulatory system (P. M. Fox); and fat body and metabolism (R. G. H. Downer). More of the chapters, however, are strongly organismal in their approach. Some focus on systems: nutrition (D. E. Bignell); respiration (P. L. Miller); osmoregulation (D. E. Mullins); nervous system and muscle (R. Pipa and F. Delcomyn); sense organs (G. Seelinger and T. R. Tobin); neurosecretion (S. S. Tobe and B. Stay); and reproduction (Bell and Adiyodi). Others are concerned with suprasystem functions: rhythms (D. J. Sutherland); development (R. R. Provine); pheromones and behavior (Bell); and regeneration (J. G. Kunkel). The editors seem to have put a good deal of effort into coordinating the chapters, both by cross-referencing between chapters and by copious reference to two earlier books on cockroach biology

(Guthrie and Tindall's *The Biology of the Cockroach*, 1968, and Cornwell's *The Cockroach*, vol. 1, 1968). This was probably a good way of expanding the scope of the book, although it sometimes makes the book less readable; one is continually brought up short in mid-idea by directives to pursue the point elsewhere. The breadth of the volume is impressive; it has sacrificed depth of coverage to achieve this and may prove frustrating for specialists looking for a deep view. On the other hand, it has brought together an immense and, like its subject, cosmopolitan collection of up-to-date references, and this is a valuable service.

In their preface, the editors express the hope that this volume will invite new researchers to consider the cockroach as an experimental animal. To this end, they ask their contributors to "place the cockroach in perspective with regard to its appropriateness . . . for various types of biological investigations" and, as well, to point out the unanswered questions of cockroach biology as a lure to potential investigators. Some (although perhaps not all) of the authors have risen to the challenge and have accomplished the delicate task of creating a sourcebook for both old and new ideas: a map from which readers may chart their own approaches, having before them not only the existing array of facts but also the most intriguing gaps in it.

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