

biographies. As part of the larger picture, this volume should occupy a place on the shelves of all limnologists, aquatic ecologists, and historians of science. And, at \$10.00, it's a bargain for graduate students, who, we find, are often oblivious to the very roots from which they spring. In summary, the authors, the Center for Limnology, and the Wisconsin Academy are to be congratulated for this exceptional contribution to history, to science, and to the role of academia, and for a truly fine tribute to Birge, Juday, and Hasler.

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SOUTHWARD, A. J. [ED.] 1987. **Barnacle biology**. Crustacean Issues V. 5. A. A. Balkema, Rotterdam. 443 p. \$83.75.

This book has two stated purposes. The first is to honor Dennis Crisp. This is achieved in a foreword (complete with a list of publications) by Knight Jones that chronicles Crisp's remarkable career, with particular emphasis on his role in initiating and leading the marine biological laboratory at Menai Bridge, Wales. This foreword details both Crisp's direct contribution to our understanding of barnacles and his indirect contribution through his influence on students and colleagues.

The second purpose is to provide a general view of barnacle biology and thereby serve as a revision of portions of Charles Darwin's monographs on the cirripeds. *Barnacle biology* consists of 22 chapters divided into four sections: evolution and genetics; physiology and function; larval biology and settlement; and pollution and fouling. The first is the best; its authors have combined reviewed studies with new material or insight. It starts with Newman reviving a discarded hypothesis on the origin of balanomorph barnacles as part of his revision of barnacle taxonomy. He also argues that the rhizocephala and ascothoracica, groups traditionally placed in the cirripedia, are sister groups of the true barnacles. The editor apparently agreed since readers will have to turn to other sources for information on these unique parasites. The acrothoracica (burrowing barnacles) are reviewed by Tomlinson in a short chapter, while the other 21 chapters are almost completely devoted to the thoracica. Newman's chapter is nicely complemented by a chapter on barnacle paleontology (Foster and Buckeridge). In one of the most conceptual chapters in the book, Charnov discusses the factors producing the diversity of breeding systems that evolved in the cirripeds. Dando's chapter on the use of electrophoresis in studies of taxonomy,

breeding systems, and adaptation also breaks new ground.

The section on physiology and function includes less new material than the first section. It consists of standard reviews that describe circulation, excretion, neurobiology, lipid biochemistry, muscle cells, shell composition, and formation in cirripeds. Anderson and Southward's chapter on feeding activities is a strong point in this section. They document, and then discuss, patterns of intraspecific and interspecific differences in cirral activity.

The section on larval biology and settlement is timely given the current surge in interest in the role of recruitment in structuring benthic populations. Unfortunately, most of the chapters appear to have been written in 1984 and therefore do not include the wealth of information on barnacle recruitment that has appeared in the last 4 years. Reviews of the functional morphology of balanomorph (Walker et al.) and lepadomorph (Moyses) barnacles both do a fine job of integrating larval structure with ecology. The mechanisms involved in switching from a planktonic to a benthic existence are well covered in a review of adhesion (Yule and Walker).

The final section is the shortest in the book and deals with applied aspects of barnacle research. It covers fouling and its prevention (Christie and Dalley) and the detoxification of heavy metals and the use of barnacles as indicators of pollution (Rainbow).

The ecology of barnacles is given little attention. This is unfortunate given both barnacles' and Crisp's prominent roles in studies of epibenthic communities. Foster gives a short overview of factors affecting barnacle distributions, and Hui and Moyses discuss interspecific competition among cirripeds. The effects of barnacles on other organisms are completely unexplored in this volume.

Barnacle biology has a degree of unity that is unusual for a multi-authored volume. Southward has done a fine job of editing the book. Typographical errors are few and the many authors were coerced into using the same taxonomic nomenclature. Furthermore, the chapters are cross-referenced so readers know where to look for related material in another chapter. Most authors provide a historical context for their chapter by discussing how views have changed in their particular field since Darwin's time.

The greatest strength of this volume is that it fills a real need. Despite the abundance of barnacles and their prominence in marine research, they have not received a comprehensive treatment since Darwin's monographs. This book will be required reading among students of barnacles. Those wishing to learn about a particular facet of barnacle biology will turn first to this book.

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