

about the components of the fauna, not to mention numerous aspects of ecology, history and biogeography. This handbook represents an attempt to bring together up-to-date information on all major groups of marine invertebrates in the Gulf. It is a very large undertaking, and I believe the author has done well.

This is a weighty volume, hardly one to be slipped into a jacket pocket and carried to the seashore. However, if one can wait until arrival at home base to use the handbook for identification of treasures from the sea, one's patience will probably be rewarded. The text was written chiefly by Richard Brusca, although chapters are contributed by 10 other specialists. The handbook is comprehensive; apparently all phyla recorded from the Gulf of California are included. Approximately 1,300 species are discussed, and around 720 are illustrated. The standard treatment for each phylum includes notes on preservation, taxonomy, representation in the Gulf, short discussions of individual species, with information on taxonomic characters, habitat, distribution, and so forth. Keys to families and (usually) to species are provided for most groups, and sometimes a glossary of specialized terms is included. There are useful introductory essays on geological history, physical features and aspects of marine ecology in the Gulf of California.

The handbook is copiously illustrated with excellent to fair color photographs (a group of 14 plates in the middle of the book), good black and white photographs, and line drawings, these last ranging from quite beautiful to crude but adequate. Also included are an excellent bibliography, a glossary, an index to scientific names and a general index.

Treatments of the various major groups are somewhat uneven, reflecting not only the number of authors involved, but also the extent to which the groups are known to science. Some of the obvious textual errors include reversed captions on color plate 6, and the misspelling of "Cirripedia" in the heading of Chapter 10. There are several avoidable spelling errors throughout, but generally the book seems to be reasonably well produced and edited. This is a useful and authoritative work. While the price might seem to be somewhat inflated for a paperback volume, the reader, be he scientist or interested amateur, will certainly be getting his money's worth.—*David L. Pawson, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.*

BULLETIN OF MARINE SCIENCE, 31(2): 474-475, 1981

LIVING AND FOSSIL SPONGES (Notes for a Short Course). *W. D. Hartman, J. W. Wendt, and F. Wiedenmayer. Sedimenta VIII, Comparative Sedimentology Laboratory, University of Miami, Fisher Island Station, Miami Beach, Florida 33139; 1980, 274 pp. \$11.00.*

The past decade was an unusually productive period for research on sponges. Since the first international symposium on Porifera in London in 1968, eight books on sponges have been published—not to mention numerous reports and review papers—demonstrating the importance of summary and synthesis for the advancement of a research discipline. Whereas most work focused on living sponges, recent discoveries and interpretations of "living fossil" poriferans are stimulating new interest in the paleontology of this large and old group. *Notes for a Short Course* is designed to satisfy the need for an up-to-date text that will bring our knowledge about living and fossil sponges into proper perspective.

The combination of faculty is ideal for integrating the zoological and paleontological views of the sponges, and each aspect of the course is given equal weight, as is appropriate. W. D. Hartman, Yale University, is a biologist renowned for his work on sclerosponges and their fossil relatives; F. Wiedenmayer, Natural History Museum of Basel, is an invertebrate paleontologist well acquainted with the systematics and ecology of recent sponges; and J. W. Wendt, who organized the course, is also a paleontologist, and a specialist in Paleozoic and Mesozoic sponges and reefs.

The text of *Living and Fossil Sponges* is presented in three sections consisting of an introduction and separate treatments of siliceous and calcareous sponges. The introduction is covered mainly by Hartman, who uses well studied freshwater sponges to remind us of how a sponge is structured, how it forms its skeleton, how it pumps water, feeds, and reproduces. This chapter is followed by the latest classification of living Porifera, including the Sclerospongiae, with diagnoses down to order and figures of characteristic examples. The introduction concludes with Wendt's explanation of fossilization processes.

The section on siliceous sponges opens with Wiedenmayer's review of phylogenetic concepts, fossil records, and ecologic history of hexactinellids and demosponges. The following chapters discuss the anatomy of these sponges, including aquiferous system, cell and larval types, mineralogy and morphology of spicules (Hartman), and the diagenesis of spicules (Wiedenmayer). Subsequently, the authors examine the ecology of siliceous sponges in relation to the Permian (Paleozoic) reef complex of Texas and New Mexico (Wiedenmayer), the Upper Jurassic (Mesozoic) sponge reefs of southern Germany (Wendt), the Lower Jurassic sponge fossils of the western Tethys (Wiedenmayer), and the Recent shallow-water sponge communities off the Bahamas (Wiedenmayer).

The section on calcareous sponges follows a similar pattern, with discussions of the development of major groups through time (Wendt), of soft tissue anatomy, embryology, and spicule morphology (Hartman), and of the mineralogy, microstructure, and diagenesis of the nonspicular skeleton (Wendt). One chapter reviews the affinities of calcareous sponges to the extinct Stromatoporoidea, Tabulata, and Archaeocyatha (Wendt). Finally, the ecology of calcareous sponges is elucidated through a discussion of Devonian (Paleozoic) stromatoporoid reefs of northwestern Europe and Permian sponge reefs of Southern Tunisia, Upper Triassic (Mesozoic) coral-sponge reefs of the southern Alps (all by Wendt), and recent sclerosponge distribution in the Caribbean and tropical Indo-West Pacific regions (Hartman).

*Living and Fossil Sponges* is the product of an advanced course at the Comparative Sedimentology Laboratory, University of Miami. The volume presents the latest expert review of the subject and will be indispensable to anyone who teaches or studies invertebrate zoology or paleontology.

It has one notable drawback, however. Although *Notes for a Short Course* has a pleasant general appearance, the volume fails to meet the standards of a book, for it contains awkward sentences, typographical errors, faulty citations, and structural imperfections, which could have been eliminated through rigorous editing. On the other hand, offset printing of the typed pages, including reproduction of the numerous illustrations, is of good quality. R. N. Ginsburg and P. Reid undoubtedly put considerable effort into compiling these notes. Ginsburg, editor of the Sedimenta series, should be commended for making this work generally available at a very reasonable price.—Klaus Rützler, Department of Invertebrate Zoology, Smithsonian Institution, Washington, D.C. 20560.