

BOOK REVIEWS

STANLEY, STEVEN M. 1970. *Relation of Shell Form to Life Habits of the Bivalvia (Mollusca)*. Geological Society of America, Colorado Building, P. O. Box 1719, Boulder, Colorado 80302, Memoir 125, 276 pp., 40 pls., 48 text-figs. \$10.00.

Among the Mollusca, members of the class Bivalvia reflect in their shells alone many adaptive features which can allow the malacologist to infer something about the natural history of the species. The shape of the shell, its external sculpture, its texture, the numerous internal scars imprinted by muscles are some of the characteristics which may indicate that the species lived in a certain fashion and most probably obtained its food in a certain way. That the structural features of the shell are usually preserved in fossils makes the study of bivalves particularly attractive to the paleontologist.

In this book Dr. Steven Stanley provides an in-depth examination of relationships between shell form and life habits. As a paleontologist he is particularly interested in the implications of this study for extinct species but has used many living species from the western Atlantic Ocean as models upon which to base conjectures about fossil forms.

The text is divisible into four main sections: a discussion of the life habitats of bivalves and their adaptations, the field and laboratory observations on 95 species of western Atlantic bivalves representing 29 families and 17 superfamilies, a series of excellent photographs and radiographs, and the indices which separately deal with authors, subjects and taxa. That portion of the text devoted to discussing adaptations is well illustrated with text-figures.

Excepting larval stages and some exotic symbiotic forms, bivalves are essentially epifaunal or infaunal—that is living either on or in the substrate. Exactly how they relate to the substrate is related to their mode of locomotion or mode of attachment. Stanley recognizes 7 such life habitat groups: bysally attached (mussels), cemented

(oysters), reclining (some fossil oysters), swimming (scallops), burrowing (surf clams), boring (teredos), or nestling (*Hiatella*). Another principal factor in the animal's mode of existence is its feeding mechanism, and bivalves are usually either suspension feeders (most species), taking food from the water column, or deposit feeders (e.g. *Nucula* and *Tellina*) obtaining sustenance from the substrate itself.

Each mode of locomotion or attachment is discussed in considerable detail. The remarkable relationships between form and function are deeply explored. Special studies concerning the shape and size of the shell and the speed of burrowing are presented graphically. Anyone who has scrambled on a beach in an attempt to catch a razor clam will recognize the adaptive features of an elongate, highly compressed shell. Dr. Stanley offers cogent explanations for the diversity in shell shape and form for many other kinds of bivalves.

Of extreme importance — especially to the paleontologist — is the convergence in shape and habit preference of distinctly different taxonomic groups. An example is made of the Macracea which has genera morphologically quite similar to genera of several other distinct superfamilies such as the Veneracea, Tellinacea and Myacea. Features of the hinge line and anatomical characters offer taxonomic distinctions between the species with similar shells.

Ninety-five species are dealt with individually with most illustrated in the plates. Dr. Stanley worked principally at Woods Hole, Miami and Puerto Rico and most of the species are those with which marine biologists and collectors have some acquaintance. For each species, a description of the shell is provided along with comments about the habitat where the species was obtained. Considerable details are accorded the life habits of each species and for infaunal animals the novel use of x-rays records the animal in its normal position within the substrate. An excellent bibliography to the pertinent literature is provided.



Boss, Kenneth J. 1972. "Review of Stanley, Steven M. 1970. Relation of Shell Form to Life Habits of the Bivalvia (Mollusca)." *Occasional papers on mollusks* 3(41), 174–176.

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