ence that one might use to check on an occasional item without having to trek over to the library. Although the individual articles vary somewhat with the skill and competence of the more than 150 contributors, the articles show a regularity of editorial style that makes the encyclopedia pleasingly uniform. Anyone who wishes to have a convenient, readable, and brief reference work at hand should find this book quite satisfactory.

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Thermobiology

Molecular Mechanisms of Temperature Adaptation. A symposium, Berkeley, Calif., Dec. 1965. C. LADD PROSSER, Ed. AAAS, Washington, D.C., 1967. viii + 390 pp., illus. $12.50; to members, $10.50. AAAS Publication No. 84.

In a symposium designed to explore molecular mechanisms of temperature adaptation in the broad range of organismic responses to heat and cold, one must, as the walrus said, "speak of many things." The phyletic materials introduced by the contributors to these proceedings range from thermophilic and cold-sensitive bacteria to spermatophytes and the poikilothermic animal phyla. Lest the homoiothermists turn aside, the primary mechanisms are developed both generally and specifically in several excellent papers relating to the informational macromolecules, concerning which many of us tend to remain ignorant.

The emphasis of the symposium is mainly on the molecular and subcellular levels, but some attention is given to the intact organism. Awaiting the reader, whether generalist or specialist, are various scientific vignettes relating to new concepts of adaptive mechanisms, such as modes of induction, development, feedback control, and the roles of these in speciation. To many it may be exciting to find that, in response to seasonal cold, living things, from trees to earthworms, tend to synthesize both proteins and RNA which are variously accumulated in nuclear, mitochondrial, and microsomal components. Similarly, lipids are selectively accumulated either prehibernally or, in animals, during cold acclimation. A common property of these changes is the increased potential for respiratory exchange and the attending capacity for evolution of heat, as in cambium tissue of tree bark. Conversely, in warm environments most of these responses are reduced or even reversed.

As the order of activation and control of the adaptive responses to thermal change must be referrable to the cell and its enyzmes, the complexities of regulation increase as the structure. Whatever the overlay, however, the ultimate kinetics of stimulus to the sensorium must be at least a function of the temperature, and hence subject to representation by the Arrhenius plot. That some biological systems deviate significantly from the predictions of the Arrhenius law is emphasized in an especially interesting paper, by J. L. Ingraham and Ole Maaløe, on cold-sensitive mutants and minimum temperature of bacterial growth. The implications of their work clearly suggest the value of an exact model and the theoretical power which it may give to the interpretation of temperature adaptation and to the biological meaning of the "temperature characteristic."

Perhaps the keystone of the conference is to be found in Roger Milkman's closing statement: "To conclude, observations of a process of adaptation and observations of the behavior of a protein combine to suggest that conformational change in protein may be a molecular mechanism of temperature adaptation." The volume is well rounded off by Prosser's extended summarization, in which he draws attention to the significance of adaptive molecular events in relation to speciation.

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Mollusks

The Invertebrates. Vol. 6, Mollusca I, Aplacophora, Polyplacophora, Monoplacophora, Gastropoda: The Coelomate Bilateria. LIBBIE HENRIETTA HYMAN. McGraw-Hill, New York, 1967. viii + 792 pp., illus. $17.50.

Malacologists have long looked forward to the publication of Libbie Hyman's volume on the Mollusca, and they should not be disappointed in the fulfillment. In an exhaustive review of the phylum, Hyman has assembled information which will serve as an important reference on Mollusca for a vast audience ranging from scientist to informed layman.

Mollusca I treats four classes: Aplacophora, Polyplacophora, Monoplacophora, and Gastropoda. It will be noted that Hyman has taken the obvious but long avoided step of treating the Aplacophora (solenogasters) as a class distinct from the Polyplacophora (chitons). Although the two groups evidence characteristics in common, the former is considered to have evolved much more slowly and the latter to have diverged from it early in geological time. This change is well balanced by the conservative handling of the subclasses of Gastropoda, in which Hyman retains Prosobranchia, Opisthobranchia, and Pulmonata in spite of a recent trend to combine the last two as Euthyneura.

One wonders how the author was able to deal with the large amount of information she synthesizes in this work, but she gained much practice in the first five volumes, and the fact emerges that once again she has done a fine job. The reference-laden paragraphs flow with a remarkable readability. The characteristics of each group are discussed under as many as two dozen subject headings. The author readily admits at the outset that the book is a compilation from the literature. Nevertheless, she occasionally includes interpretations of her own. Topics such as tissue morphology, regeneration, habits and behavior, and biological relationships are seldom mentioned in textbook treatments of the phylum. One can glean such cryptic information as a report on a rotifer's attacking the egg masses of pulmonate snails and such important information as a review of literature on chemoreception in the prosobranchs. In areas of one's specialization it is to be expected that one will encounter omissions of recent research; the author notes in the preface that this is a hazard of the long-term nature of her work.

A bibliography of 120 pages forms an extremely valuable part of the book, although the user may soon question the wisdom of its arrangement. The alphabet is repeated with the references for each of the several sections, and severe difficulties were experienced in locating a number of citations. A vast amount of page turning sometimes located the reference in another section, seemingly there by error, but in a few cases the search was fruitless and the reviewer had to resort to the *Zoological*