mental effects; predators, prey, and population dynamics; spatial paleoecology; and analysis of fossil populations. As well as covering a wide variety of commonly occurring problems, the examples embrace a good selection of the simpler statistical techniques that are in current use. The fact that the examples rely heavily on mollusks and ostracods from the upper part of the geological column is of little consequence. Each example is broken down into logical steps; the problem is discussed, a model is proposed, and a statistical method and accompanying calculations are given, followed by a discussion of the results and, in some cases, suggestions of further possible investigations. A fuller discussion of why a particular method is proposed would, however, have been a welcome addition in many instances. The reader searching for details of a particular technique may be slightly irritated by the fact that differing versions of some techniques are spread throughout the book. This is not a serious drawback, however, and it is largely overcome by the accurate and comprehensive index.

The techniques and worked examples are supplemented by a selection of useful statistical tables and simple Fortran IV programs, which, together with the index and list of references, occupy the last 40 pages of the book. The choice of tables for inclusion is a little curious, some tables referred to in the examples being included while for others the reader is referred to various other texts.

C. P. HUGHES
Department of Geology,
University of Cambridge,
Cambridge, England

Early Vertebrates

Palaeozoic Fishes. J. A. MOY-THOMAS. Second edition, revised by R. S. Miles. Saunders, Philadelphia, 1971. xii, 260 pp., illus. $12.75.

It happens all too rarely that someone puts into a very small book such a feeling for the subject and such a concise synthesis of information that the book becomes a classic, having influence far out of proportion to its size. Such a gem was Moy-Thomas's *Palaeozoic Fishes* (1939), as indeed were many of its sister Methuen Monographs on Biological Subjects. But the book ceased to fulfill its function, being overwhelmed by the mass of material described or redescribed since 1950. A new overview has been needed. Specifically, at a time when it is clear that many important questions of general vertebrate morphology and phylogeny can be answered only through consideration of early fishes, and when new information has been accumulating at a high rate, the need is not so much for an encyclopedia (an excellent *Traité* exists, in any case) but for a critical analysis. Even Moy-Thomas, had he lived, might have had a little trouble in trying to revise his monograph to deal with the present state of affairs, but now R. S. Miles of the British Museum (Natural History) has attempted the seemingly impossible revision and has succeeded. By following Moy-Thomas's basic formula, by prolific use of excellent illustrations, and by showing a fine sense for what is important and what can be left out, he presents us with a valuable, unified approach to an all too diverse subject.

Miles has made a few improvements in the organization, putting the appropriate classification at the start of each of the sections and a brief but select bibliography at the end of each. (One wonders why the lists of genera in the classification are not more complete. Presumably they include only those genera mentioned in the text, but a complete listing would have been even more useful.) An excellent feature of the illustrations is a clear scale, notably lacking in other such works. The illustrations have all been drawn (usually redrawn from recent research works) to a common style, and what they occasionally lack in detail they make up in clarity and number. The book has grown in size, but it is not in the slightest unwieldy.

Not surprisingly, Miles has had to produce new classifications in order to bring order where there has been confusion. Whether these particular systems will prevail is not something to discuss here, but they allow a very reasonable organization of the material and cause us to think about it differently. Thus a classification of the Acanthodii with the Osteichthyes has been hinted at for several years, but Miles sets it out and we must now face it on his terms. (But why did he resurrect that unfortunate and confusing term Teleostomi for this new group? Surely a completely new name is needed.) Another idea that Miles outlines to the general reader for the first time is a revised theory of the segmentation of the head that this reader found most convincing.

An excellent feature of the book is the detailed treatment of fine structure of hard tissues. Perhaps the only disappointment is that Miles has not been able to develop more thoroughly the sections of each chapter dealing with "tendencies in evolution." In the cases of the lobe-finned fishes and the actinopterygians, more discussion of the origin of tetrapods and of higher rayfins, respectively, would have been welcome. The treatment of evolution within the Placodermi, however, on which Miles has done a lot of his own research, is excellent and guides us around most of the pitfalls that await him who would do battle with the voluminous works on these fishes.

In short, this is an excellent book and a worthy successor to Moy-Thomas's original.

KEITH STEWART THOMSON
Department of Biology,
Yale University,
New Haven, Connecticut

Books Received

Adaptation-Level Theory. A symposium, Amherst, Mass., May 1970. M. H. Appley, Ed. Academic Press, New York, 1971. xx, 346 pp., illus. $13.

Adjustment by Least Squares in Geodesy and Photogrammetry. R. A. Hirvonen. Translated from the Finnish edition (1965) by the author. Ungar, New York, 1971. x, 262 pp., illus. $9.50.

Adsorptive Bubble Separation Techniques. Robert Lemlich, Ed. Academic Press, New York, 1972. xvi, 332 pp., illus. $17.50.

Advances in Applied Mechanics. Vol. 11. Chia-Shun Yih, Ed. Academic Press, New York, 1971. xii, 370 pp., illus. $18.50.

Biochemistry and Methodology of Lipids. A. R. Johnson and J. B. Davenport, Eds. Wiley-Interscience, New York, 1971. xii, 578 pp., illus. $29.50.

The Biochemistry of Fruits and Their Products. Vol. 2. A. C. Hulme, Ed. Academic Press, New York, 1971. xx, 788 pp., illus. $35. Food Science and Technology.

Biofeedback and Self-Control. An Aldine Reader on the Regulation of Bodily Processes and Consciousness. Joe Kamiya, Theodore X. Barber, Leo V. DiCara, Neal E. Miller, David Shapiro, and Johann Stoyva, Eds. Aldine-Atherton, Chicago, 1971. xxiv, 806 pp., illus. $17.50.

Biological Aspects of Alcohol. Mary K. Roach, William M. McIsaac, and Patrick J. Creaven, Eds. Published for the Faculty for Advanced Studies of the Texas Research Institute of Mental Sciences by the University of Texas Press, Austin, 1971. xii, 477 pp., illus. $12.50.

Biological Rhythms and Human Performance. W. P. Colquhoun, Ed. Aca-

(Continued on page 1168)