the sort of material usually found in textbooks on historical geology: the development of Paleozoic and Mesozoic life, with emphasis on the vertebrates; the development of Cenozoic life; geologic history during the later Mesozoic, Tertiary, and Quaternary; a rather chary review of continental drift; and summaries of the origin and evolution of the continent, fossil organisms, and stratigraphic principles and methods. The next to the last chapter, by Dean B. McLaughlin, is a beautifully written, lucid, and well-illustrated discussion of the origin of the earth.

The explosive proliferation of geologic knowledge during the past decade places a heavy burden on those who write textbooks on historical geology. One wonders if it is possible for an individual to keep abreast of developments throughout the continent and to present a broad synthesis that is modern, meaningful, and reasonably accurate. Although the authors of this book make no claim to all-inclusiveness, some geologists, particularly those along the Pacific Coast, will find that their part of the world has been given a rather inadequate and out-of-date presentation.

The text is relatively free of typographical errors. Most of the photographs and line drawings are well done, but they are not well integrated with the text. Some lack sufficient explanatory matter—for example (p. 87), no geographic features of the land are identified on the geologic map of the British Isles. The following are among the numerous minor errors noted: fig. 17-4, *Oistoceras* and *Amaltheus* are interchanged; fig. 18-4, two out of the three ammonite genera illustrated as Cretaceous forms are from the Lower Jurassic; fig. 18-20, the Queen Elizabeth Islands are incorrectly identified as the Queen Charlotte Islands; and fig. 18-21, Colville, Ninuluk, and Topagoruk Formations are misspelled.

The lack of bibliographic references or lists of suggested reading following each chapter or major section is a serious omission, one that diminishes the utility of the book. The editorial standards are not what one expects from this publisher: much of the writing and many definitions are marked by imprecision and a somewhat murky style. This book is perhaps more suited for selected reading assignments than for use as a general textbook in beginning classes on historical geology or stratigraphy.

DAVID L. JONES
Menlo Park, California

Neutron Fields: Production, Transport Character, and Detection

Neutron Physics. K. H. Beckurts and K. Wirtz. Translated from the second German edition (1964) by L. Dresner. Springer-Verlag, New York, 1964. x + 444 pp. Illus. $17.

This text on neutron physics considers in depth only those aspects of the subject that are concerned with the production, transport character, and detection of neutron fields. It does not consider, for example, those aspects that are related to the application of neutron radiation to the analysis of nuclear, molecular, or crystalline structures. It is an excellent text for any neutron physics laboratory, particularly so for a laboratory in which the research is oriented around the use of reactor-produced neutrons. It is also worth noting that, although the book could well serve those interested in the design and engineering of reactor systems, it does not deal directly with the subject of reactor physics. For example, the theory of multigroup computations is touched on in the text, but not in sufficient detail to permit coding and analysis.

The heart of the text is contained in the two central parts entitled "The Theory of Neutron Fields" and "The Determination of Flux and Spectrum in a Neutron Field." The theoretical treatment of these subjects is excellent and in all instances is accompanied by a good qualitative discussion that should provide real insight for the reader. The particular techniques employed in measuring flux and spectrum are also analyzed in detail, so that the text becomes a real working document for those interested in making such measurements. This involvement with foils, choppers, colimators, and other apparatus is useful to experimenters interested in the application of neutron radiation to research generally, but is principally directed toward those interested in precision radiation standards.

Discussion and analysis of additional techniques for the generation and extraction of neutron radiation would also have been of great value to experimentalists, and still within the scope of the text. In particular, the generation of cold or long wavelength neutrons and the methods of piping beams of these neutrons using optical properties is not included in the text, but would have been a welcome addition.

C. O. MUEHLHAUSE
Reactor Radiations Division,
Institute for Materials Research,
National Bureau of Standards

A History of Chemistry in the 19th Century

The Development of Modern Chemistry. Aaron J. Ihde. Harper and Row, New York, 1964. xii + 851 pp. Illus. $13.50.

Several relatively short histories of chemistry and Partington's recently published, monumental, four-volume work are available, but a treatment that lies between the two extremes and gives more details without serving merely as a reference work is needed. The present volume partially fills that need. However, one qualification must be made. As the title states, this is essentially a history of modern chemistry. Events prior to the 19th century are covered in about 90 pages, and in the remaining 650 pages the modern period is treated, in increasing detail as the most recent times are approached. Thus, what is essentially supplied is a detailed account of the newest developments in all branches of chemistry. No other work gives so much information about this period, and so the volume will serve the unique function of giving the student of chemistry today something he greatly needs: a view of the theories he studies in his current courses, not as isolated items dogmatically presented as revealed science, but as the outgrowth of ideas and experiments that had a logical reason for existence. The many excellent illustrations will also help to bring alive the otherwise meaningless names that are often attached to new developments. It is even to be hoped that some students may be spurred to trace chemical ideas even further back and thereby to find that our modern problems are merely more detailed considerations of fundamental ideas that have concerned the thinking man since ancient times.

This is not to say that the book will be of value only to students. The mature chemist and the historian of chemistry will find much of value here.