

answers are not always forthcoming, but somehow the reader is never successfully involved intellectually in the discussion. But this book only fails where other books have failed before. Perhaps the task is impossible.

The organization of the text seems a bit curious. Putnam says in the preface that the plan resulted from years of teaching the subject but that the construction of each chapter allows the topics to be treated in almost any order. This seeming virtue has one unfortunate aspect, however. The very fact that the chapters stand alone indicates a partial failure to run unifying concepts through the text. Such closely related topics as structure, earthquakes, and mountains are treated in chapters 6, 9, and 15, respectively. Furthermore Putnam properly nominates the concept of the enormity of geologic time as the most important contribution to culture made by geologists, but he discusses this fundamental subject in the very last chapter.

Particularly noteworthy inclusions are a long chapter on petroleum geology and a 25-page section on the life of the past. Conventional topics treated rather lightly include ore deposits and some of the classical concepts of the development of landscapes by stream erosion. In discussing the origin of mountains, Putnam treats convection currents and phase changes but ignores the "un-American" concepts of continental drift and gravitational gliding.

This book, which can be highly recommended to geologists and nongeologists alike, should rapidly make the best-seller list of general geology textbooks and thereby firmly establish the publisher, Oxford University Press, in the field of geology.

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## Chemistry

**International Encyclopedia of Chemical Science.** Edited by A. T. Clifford *et al.* Van Nostrand, Princeton, N.J., 1964. viii + 1331 pp. Illus. \$32.50.

Approximately 100 pages at the end of this volume are devoted to four multilingual indices—German, Spanish, French, and Russian—in which scientific words from each language are listed with their English equivalents.

Glancing through these lists, one is impressed by the international character of science as indicated by the repeated identity of scientific words in the two languages under comparison. One is also impressed, however, by the fact that little advantage is gained in printing such a list of identities. If the reader, after locating the English equivalent, is supposed to have sufficient command of the language to understand the item in the text, there is little to justify the inclusion of such a list in the volume. Although this list of a limited number of foreign terms may be the reason for calling the encyclopedia an "international" encyclopedia, it does not appear to be a sufficient reason to justify the use of the word "international" in the title.

Perhaps the most useful area covered in this encyclopedia is the effort to provide reasonable definitions or descriptions of reactions, laws, tests, and theories which are named after individuals. Chemistry abounds with reactions and tests named after individuals, and there are times when one does not know where to look for a reasonable description. Some of the descriptions given here are too brief, but they at least provide a lead to the area of chemistry involved so that one can seek additional information in a more authoritative work.

Because I have published a number of papers in the area of stereoisomerism and optical resolution as well as papers on the reactions involved in the synthesis of enantiomorphic forms, I decided to look up some of these subjects in this encyclopedia. Under stereoisomerism one finds "isomerism due to stereochemical differences," which really will not help the uninformed, if they do not know the meaning of "stereo." The heading isomerism is not too clear, but it does refer to conformation. Under conformation there is a reasonable discussion of optical isomerism. The information is in the book, but it certainly is not where most chemists will look for it. Perhaps I should have looked first under optical isomerism; but under that heading there is no reference to either stereoisomerism or conformation, and the definition of optical isomers—"Two or more compounds which have the same chemical composition and the same two dimensional structural formulas"—does not provide sufficient information for the uninformed reader. Racemic mixtures and racemic com-

pounds are not clearly differentiated, and the definition of the latter is not satisfactory.

Some "discoveries" seem to be difficult to "undiscover," and such items as Alabamine and Illinium are given for the early discovery of elements 85 and 61, without any indication about whether the discovery was confirmed by others.

This volume will be useful in a reference library, especially for those who are not specialists in the area concerned, but individuals will probably not make sufficient use of the encyclopedia to justify the purchase of a personal copy.

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## Stratigraphy

**Geology of Japan.** Fuyuji Takai, Tatsuhiro Matsumoto, and Ryuzo Toriyama, Eds. University of California Press, Berkeley, 1963. x + 279 pp. Illus. \$10.

In the preface of this volume, the editors carefully point out that "As a basic foundation for various fields of geology, the stratigraphy is stressed in this book." Eighteen Japanese geologists have contributed to what is, essentially, a comprehensive survey of the stratigraphy and biostratigraphy of Japan. Nine of the 11 chapters are detailed accounts of the Silurian and Devonian, the Carboniferous, the Permian, the Triassic, the Jurassic, the Cretaceous, the Paleogene, the Neogene, and the Quaternary Systems. In most of these chapters the authors cover such topics as the history of investigation, the general distribution of rock types, the fauna and flora, facies and tectonic movements, and paleogeography. One chapter is devoted to pre-Tertiary igneous activity, metamorphism, and metallogenesis. This emphasis on stratigraphy has resulted in a book that is somewhat difficult to read for general geologic background, unless one uses it in conjunction with a more general work such as *Geology and Mineral Resources of Japan* or a geologic map of Japan. The stratigrapher and paleontologist, however, will find this a very successful effort to bring together Japanese research in their fields. Two useful appendices,