free from the scrappy disjointedness that so often characterizes the results of publishers' overeagerness to rush into print *any* collection of papers presented at *any* meeting. No doubt this coherence is a reflection of the care used in selecting those who were invited to participate, but there is no doubt that much of the coherence also springs from the clear outline of the problems which is given in the rather long preface and from the skill with which the editor has arranged the papers.

The book is well printed and reasonably, though not completely, free of typographical errors. The photographs are particularly well reproduced. The book can be warmly recommended to a wide audience of physical chemists and biologists as a good summary of the considerable progress that has been made in this important interdisciplinary subject.

ERIC HUTCHINSON
Department of Chemistry,
Stanford University

Comprehensive and Balanced

International Symposium on Mining Research. vols. 1 and 2. George B. Clark, Ed. Pergamon, New York, 1962. 871 pp. Illus. $30 per set.

These volumes, which reflect the proceedings at an international symposium on mining research, held at Rolla, Missouri, in February 1961, consist of 50 papers. The symposium was the most comprehensive ever attempted in its field and included participants from Austria, Czechoslovakia, France, Germany, India, Japan, Sweden, the United Kingdom, the United States, and the U.S.S.R. Subjects treated include the fields of blasting (23 papers), drilling (2), rock mechanics (9), ground support (3), safety and health (2), mineral identification (3), sampling (3), drill-steel behavior (3), gyrosurveying (1), and pipeline transportation of solids (1). The subjects reflect a judicious balance of theory, laboratory tests, and field determinations. Although some of the articles have appeared (in whole or in part) elsewhere, there is enough new material of merit to make the book valuable to persons interested in the fields mentioned above, if they are willing to pay a rather high price.

EVAN JUST
Mineral Engineering Department,
Stanford University

Initial Instruction

An Introduction to Physical Oceanography. William S. Von Arx. Addison-Wesley, Reading, Mass., 1962. x + 422 pp. Illus. $15.

William Von Arx quotes a statement made in 1725 by Count Marsigli, saying that many scientists were dissuaded from a study of the sea by the complexity of its problems. These are still difficult, but fortunately there have been many who see in them a fascination and a challenge and who are prepared to accept the difficult and uncontrolled nature of the environment with which they work. This is established in the introductory chapter and an appendix which take the student from Greek beginnings through to the last decade in a useful survey of the more notable contributions to geophysics. These appear to increase exponentially with time, in common with other sciences.

In these days it appears that oceanographers must needs be specialists in one of the basic disciplines, but it is of some importance that they have an understanding of other fields than their own. A theoretical hydrodynamicist is not in general likely to regard biology as a useful element in his theories, whilst it is quite conceivable that the physical oceanographer would be aided by a study of biological factors.

The author has for many years been on the staff of Woods Hole Oceanographic Institution and is also professor of oceanography at Massachusetts Institute of Technology. He should be in a strong position to assess the needs of students. The result is a book in which the fluid mechanics of the oceans—advective and convective processes, tides, and the dynamics of the Gulf Stream—are interspersed in roughly equal proportions with a discussion of the environment—the properties of seawater, the stratification of the oceans, the earth's rotation, and its geology. Physical argument is used in the main, and mathematical formulas are at a minimum (this is not always an advantage).

Many of the topics treated are left tantalizingly "in the air." This may well leave some readers with only a hazy idea of the principles and methods of oceanography, but it should stimulate the serious and intelligent student to further enquiry, aided by the study questions and many references at the end of each chapter. The author's own interests are to the fore in a perhaps over-detailed discussion of electromagnetic methods of measuring currents and in an excellent chapter on laboratory models of ocean circulation (of which the author was a pioneer). Comments on such practical problems as how to find out where one is, with reasonable accuracy, in the middle of an ocean are a welcome feature.

I believe that Von Arx has been successful in producing not a textbook but a true *introduction* to oceanography. It only remains to say that unfortunately the price of the book makes it quite possible that it will not reach a well-deserved place on the shelves of many of the students for whom it is intended.

JAMES CREASE
National Institute of Oceanography,
Wormley, Godalming, Surrey, England

Not Recommended

Russian-English Chemical Dictionary. Eugene A. Carpovich and Vera A. Carpovich. Technical Dictionaries, New York 31, 1961. 352 pp. $14.

To do justice to a dictionary, it should be evaluated only after it has been used for some time. This procedure, however, is not practical if the appearance of the book is to be announced promptly. The best that can be done under such circumstances is to look for randomly selected words. In such a search of this book, I found that the following words are missing: газопоглотитель, золотник, капуста (as used in coking), каптаж, каракатица, люфт, нуль, прядево, рухляк, смерзаемость, and сноп. The words: величина, держатель, пилюля, роданистый, сернокислый, сернова-тистый, соприкосновение, and others appear only in phrases, not separately. The Russian нутч-фильтр is preferably translated *suction filter*. The English *vehicle-motor gasoline* (page 10) and *food flank* (page 35) are obviously erroneous. However, no dictionary is perfect, and each one has its advantages. Whatever the advantages of this dictionary, they are not to be found in its typography and makeup. The makeup of the English text is sloppy. Nothing is gained by omitting periods in abbreviations, and much clarity is lost thereby. Abbreviations are best put in italics. In this dictionary they are so indicated on page 5, but nowhere else in the body of the dictionary. When a word or phrase is continued on another line otherwise oc-