

to the solubility of high molecular film-forming substances.

The book from start to finish is strictly chemical and the approach to all the subjects is, as the title implies, a study of the chemistry of the processes under discussion. It is replete with bibliographic references inserted at the ends of the various chapters.

The style of the translator is somewhat influenced by an occasional too literal translation of the German, and the general format reveals the influence of the modern requirements of our war economy. The book should be a valuable addition to the libraries of all those who are interested in the chemistry of polymerization and will be particularly welcome to those who have seen the German original and have wished for an English translation.

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MARINE AND AIR NAVIGATION

Marine and Air Navigation. By JOHN Q. STEWART and NEWTON L. PIERCE. 472 pages. Ginn and Company. \$4.50.

ALTHOUGH the difference between marine and air navigation is largely one of technique, this is probably the first text to treat both equally. Many students will want to read both parts, yet the reader who wishes to limit his studies to either one will find the two sufficiently well separated to permit this.

The book contains a large number of illustrations and reproductions of charts and government publications. Throughout the book emphasis is given practice rather than theory, with mathematics playing a supporting role and never a leading one. The book is unusually readable for a text and for piloting and dead reckoning navigation is thorough and well organized.

The only fault, if it is one, is the order of presentation of the various parts of celestial navigation. A step-by-step explanation of the simplest method of solution of celestial observations is all that is necessary for the navigator with modern equipment, but it may not be the best way to instill a thorough understanding of the principles which may be needed when the easiest tools are not available.

Despite this feature, which many readers will entirely approve, the book is easily the best general text on navigation that has appeared in recent years.

Basic Marine Navigation. By BART J. BOK and FRANCES W. WRIGHT. 422 pp. Houghton Mifflin Company. Book, \$4.50; kit, \$1.70.

WRITTEN for the Army Engineer Command, this book gives chief attention to navigation near land. Emphasis is given procedure, and where rules and computational forms suffice, a deeper discussion is omitted. It attempts to develop "an intuitional understanding of the procedures" rather than a theoretical understanding of the principles involved. Included is an interesting and practical chapter on "Navigation in Emergencies," a good chapter on "Marine Meteorology" and one on the principles of the maneuvering board.

Celestial navigation is fully covered, but the chapter on the sextant seems to be out of place and "Navigation by the Sun" and "Navigation by the Stars" are separated as though there were an essential difference between them. Somewhat questionable, also, is the placing of special cases before the usual method of finding a line of position.

Regardless of its weaknesses, this is one of the better recent books on navigation. It is well written and contains a number of excellent illustrations. It is particularly recommended to the person who wants to teach himself. Available separately is a "kit" which supplies the necessary materials for solving the practice problems of the text.

The Theory of the Gyroscopic Compass and Its Deviations. By A. L. RAWLINGS. 182 pp. The Macmillan Company. \$3.00.

IN this second edition the author has simplified the mathematics somewhat, but it is still too involved for the average reader.

The book naturally falls into three parts, the first dealing with the principle of the gyroscope, the second giving a description of the various gyrocompasses; the third dealing with the errors of the gyrocompass, as an instrument to indicate true north, and their solution.

Written from the viewpoint of the designer, the book contains much of interest to the non-mathematical reader with a general knowledge of the instrument. It is undoubtedly the most thorough book on the subject.

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SPECIAL ARTICLES

A METHOD OF PROLONGING THE ACTION OF PENICILLIN¹

THE clinical effectiveness of penicillin has been well established. However, from the standpoint of deter-

mining optimum dose, period of time necessary for treatment and of inconvenience both to patient and

¹ From the Penicillin Section, Laboratory Service, Walter Reed General Hospital. The technical assistance of