

ment (the inclusion of these subjects is praiseworthy indeed—their treatment in this text unfortunately is not); and the concise brevity of almost every chapter.

Among the book's liabilities are: use of units—omission of some from the nomenclature table, the unusual emphasis on the distinction between temperature difference and temperature, the inclusion of specific weight and the slug and the omission of the gravitational conversion factor (the former may puzzle chemists and both former and latter will offend many chemical engineers); the discussions of free and forced convection and boundary layer, which are shallow; the superficial treatment of heat transfer and fluid flow analogy; and the chapter on mass transfer, which seems a questionable addendum to such a highly condensed volume even if it were well presented (this reader found it fuzzy and unauthoritative).

There are two extraordinary features of the Jakob-Hawkins approach. In the first place, *all* of heat transfer is surveyed in the brief span of some 270 pages. The result is something like experiencing a full-course dinner by sampling one bite of each item served. Yet the book does not quite resemble a handbook section, because in the second place most of the topics are presented generally rather than specifically and not many design data are included. It is one thing to recognize these two characteristics and to admit that they are unusual. It is distinctly another to decide whether they are good, bad, or neither, and this reviewer was quite unable to do so. As a result of them, however, one can say that the reader will learn all about heat transfer without being taught much heat transfer, and that he will be given little instruction about the design of heat exchange equipment. Perhaps this means that the book can serve as a useful adjunct to a handbook on one hand and as a high-spot review of a comprehensive treatise on the other.

The book is good in physical structure and appearance, has easy-to-read typeface and illustrations, and contains many fine problems (278 in all). It has only a few typographical or mechanical errors.

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**La Conducibilità Elettrolitica.** By RAYMOND M. FUOSS and FILIPPO ACCASCINA. Edizioni dell'Ateneo, Rome, 1959. xi + 295 pp. 15 × 22.5 cm. Price, 3600 lire.

This excellent monograph, which is also about to appear in an English translation, Electrolytic Conductance, Interscience Publishers, Inc., New York, is the result of a collaborative effort by two former students of Professor Charles A. Kraus at Brown University. It was he who encouraged them to work in the field of electrolytic conductance and the book is gratefully dedicated to him. As the authors state in their preface, the monograph deals with the development of the theory of the electrical conductance of dilute solutions of symmetrical electrolytes. It is intended as a source book for part of a course in electrochemistry for graduate students.

The first third of the book is devoted to historical background and to those considerations in electrostatics, hydrodynamics, statistical mechanics and thermodynamics which are particularly pertinent to the subject. This is followed by a clearly presented, detailed development of the recent electrolytic conductance theory of Fuoss and Onsager. It is a successful extension of the limiting Onsager equation and is valid for finite concentrations of strong symmetrical electrolytes, covering a respectable range in the dilute region. Moreover, the theory is also developed to include coulombic ion pair and ion cluster formation and here its validity is demonstrated by an analysis of data in pure and in mixed

solvents over a wide range of dielectric constants. Of the three empirical constants in the equations the equivalent conductances at infinite dilution, the association constants for weak or intermediate electrolytes, and the "distances of closest ionic approach," the latter, gratifyingly enough, are in close agreement with the corresponding crystallographic values. This fact presumably indicates that ionic solvation sheaths are squeezed out when anions and cations meet.

A student who studies this book seriously will develop not only a sound knowledge of an important part of electrochemistry, but he will also acquire a useful background for exploring fruitfully other theoretical vistas in the broader fields of physical chemistry.

THE ROCKEFELLER INSTITUTE  
NEW YORK, NEW YORK

THEODORE SHEDLOVSKY

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## BOOKS RECEIVED

August 10, 1959—September 10, 1959

N. N. BOGOLIUBOV AND D. V. SHIRKOV. Edited by R. E. MARSHAK. "Interscience Monographs in Physics and Astronomy." Volume III. "Introduction to the Theory of Quantized Fields." Authorized English Edition. Revised and Enlarged by the Authors. Translated from the Russian by G. M. VOLKOFF. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1959. 720 pp. \$17.00.

P. B. D. DE LA MARE AND J. H. RIDD. "Aromatic Substitution. Nitration and Halogenation." Academic Press, Inc., 111 Fifth Avenue, New York 3, N. Y. 1959. 252 pp. \$9.00.

L. R. B. ELTON. "Introductory Nuclear Theory." Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1959. 286 pp. \$6.40.

RAYMOND M. FUOSS AND FILIPPO ACCASCINA. "Electrolytic Conductance." English Edition. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1959. 279 pp. \$8.00.

I. PRIGOGINE, Edited by. "Advances in Chemical Physics." Volume II. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1959. 412 pp. \$11.50.

J. S. ROWLINSON. "Liquids and Liquid Mixtures." Academic Press, Inc., 111 Fifth Avenue, New York 3, N. Y. 1959. 360 pp. \$12.50.

KONRAD SAGEL. "Anleitungen für die Chemische Laboratoriumspraxis." Band IX. "Tabellen zur Röntgen-Emissions- und Absorptions-Analyse." Springer-Verlag, Heidelberger Platz 3, Berlin-Wilmersdorf, Germany. 1959. 135 pp. DM. 27,-.

GIOVANNI SEMERANO, Edited by. "Contributi Teorici e Sperimentali di Polarografia." Volume IV. Centro di Polarografia, Via Loredan 4, Padova, Italy. 1959. 361 pp. 2500 Lire.

W. THEILHEIMER. "Synthetic Methods of Organic Chemistry. Yearbook." Volume 13. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1959. 600 pp. \$27.50.