
 BOOK REVIEWS

The Hall Effect and Related Phenomena. Semi-Conductor Monographs. By E. H. PUTLEY, B.Sc., Ph.D., A.Inst.P., Royal Radar Establishment, Malvern. Butterworth Inc., 7235 Wisconsin Avenue, Washington 14, D. C. 1960. viii + 263 pp. 14 × 22 cm. Price, \$9.50.

Dr. Putley of the Royal Radar Establishment at Malvern has expanded an earlier review article on the Hall Effect into a small monograph which deals rather broadly with the behavior of semi-conductors in combined electric and magnetic fields under a variety of circumstances. The first third or so of the book treats the general theory of the semi-conductor, describing the models, the various effects which can be observed when the available parameters can be varied and provides an outline of the elements of conventional transport theory. The approach is both traditional and thorough so that the reader will obtain a completely honest account of what is known and should be known by any individual who hopes to use the information.

The mid-third of the book deals with an analysis of the observations on typical semi-conductors for which systematic work has been carried out. One will find an account of observations with silicon and germanium to which various chemical additions have been made, although a substantial part of the presentation centers about other materials such as the III-V compounds and substances such as lead telluride. The theory developed in earlier sections is applied whenever it can be with profit.

The volume ends with a broad survey of the properties of semiconducting materials and attempts to give the reader a picture of what now are the peripheral regions of the field.

As might be expected, the author focuses as much attention as possible on English and other European work so that the book has value as a complement to the surveys of American writers.

The book will have two principal merits: first, it is useful for the novice who wants a realistic and professional account of the main body of the subject; second, it is valuable for the individual who already possesses substantial experience in the field but wants a compact reference book for occasional refreshing.

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Fatty Acids. Their Chemistry, Properties, Production and Uses. Second Completely Revised and Augmented Edition. Part I. Edited by KLARE S. MARKLEY. Interscience Publishers, Inc. 250 Fifth Avenue, New York 1, N. Y. 1960. ix + 714 pp. 16 × 23.5 cm. Price, \$22.50.

The second edition of Dr. Klare S. Markley's "Fatty Acids" is a completely new work. Whereas the one-volume first edition was confined to the chemistry and physical properties of the fatty acids, the second edition has been broadened in scope to include production and uses. To cover the broader picture and to emphasize important new developments, the second edition will issue in four parts. As the subject matter is now too extensive for one author to handle, outstanding specialists are being called upon to cover their areas of interest.

The present volume is the first to issue. Besides editing the entire work, Dr. Markley, of the U. S. International Cooperation Administration, has covered the historical background, nomenclature, classifications and descriptions of fatty acids, and isomerism. Robert T. O'Connor and W. S. Singleton, of the U. S. Department of Agriculture, have handled the areas of X-ray diffraction and polymorphism, spectral properties, properties of the liquid state, and solution properties. The treatment of each subject is thorough and well-documented; more than 1500 references are cited, including those to the subsequent volumes in the series.

A systematic nomenclature that relates to the structure of the acid is stressed. The Geneva and IUPAC-Geneva systems are used, together with common trivial names, since both systems permit alternatives.

More than 250 fatty acids are discussed in some detail. Data on many others are tabulated under both systematic and common names with molecular and structural formulas.

One of the most exciting chapters is that on isomerism, for much of the work cited is of recent origin. The number of possible acids that might be obtained by isomerism or stereoisomerism offers an intriguing challenge to research workers seeking new compounds.

Much new work is given on X-ray diffraction and polymorphism. The discussion includes fatty-acid derivatives. Complete crystallographic data are given for about sixty fatty acids and derivatives. The complicated problem of the polymorphism of glycerides and multiple melting points is fairly presented by incorporating the data and arguments of the principal workers in this field.

The material on spectral properties points up the value of spectroscopy as an analytical tool for studying fatty acids and their derivatives. Mr. O'Connor handles this difficult subject clearly and covers the general types of information that can be obtained.

Data are given in a critical manner on the properties of the liquid state. Many tables and charts give such data for fatty acids, glycerides, esters and soaps.

Most of the data on solution properties have been obtained since 1940. Only recently has our knowledge of the solubilities of the fatty acids and related compounds been placed in a position comparable with that of less-important homologous series of organic compounds. Mr. Singleton has performed a real service in consolidating these important data.

This volume is undoubtedly the most comprehensive work available on the subjects covered. It will be indispensable to workers in the fatty-acid industry and related industries that use fatty acids or their derivatives as raw materials. Research workers in other fields will often find it a valuable reference work.

RESEARCH AND DEVELOPMENT DEPT.
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Technique of Organic Chemistry. Volume I. Physical Methods of Organic Chemistry. Part IV. Third Completely Revised and Augmented Edition. Edited by ARNOLD WEISSBERGER. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1960. xii + 970 pp. 16 × 23 cm. Price, \$26.00.

The previous two editions of "Physical Methods" have established a reputation for quality and comprehensiveness which will not be diminished by this new one. That reputation is current even among non-organic chemists, though they have had to run the gauntlet of an egregiously inappropriate title and subtitle in order to discover what lies inside. The fact is that these articles are written neither by nor for organic chemists specifically, but rather are about experimental chemistry in general. (That is not to say that any organic chemist worth his salt will fail to profit from them.) The emphasis ranges from the basic principles on which various experimental methods are founded to specific recipes and tricks of the trade.

Doctor Weissberger is to be congratulated on having induced such a prestigious constellation of scholars to write about their specialties. For the most part, they have done their work with thoroughness, clarity, and distinction.

About the first third of the book is devoted to the various types of spectroscopy at radio frequencies (no chapter, however, being devoted to pure quadrupole spectra). Among them, H. S. Gutowsky's long and extensively annotated chapter on nuclear magnetic resonance must be especially praised. It could (and perhaps should) have stood by itself as a book. On the other hand, the chapters on microwave spectroscopy and paramagnetic resonance are disappointing. B. P. Dailey has devoted only about half of his exposition to microwave spectroscopy in the first place, and in that half gives no references to the periodical literature