

**Activation Analysis Handbook.** By R. C. KOCH, Nuclear Science and Engineering Corporation, Pittsburgh, Pennsylvania. Academic Press Inc., 111 Fifth Avenue, New York 3, N. Y. 1960. x + 219 pp. 21 × 27 cm. Price, \$8.00.

This handbook, although it serves as a compilation of activation analysis, is somewhat limited in its usefulness to the uninitiated analyst who is making an evaluation of activation analysis and its applications. In particular, a more extensive and a more detailed presentation of the practical aspects and techniques of this rather powerful analysis method would have made the introductory portion of the handbook considerably more valuable to an analyst about to undertake his first activation analysis experiment.

The nuclear data tables that make up a large part of the book are reasonably complete. They give good information about (1) reactions (such as the (d,p), (p,n), etc., reactions) that are not usually thought about as being usable in activation analysis applications, (2) interfering reactions, and (3) sensitivity limits for a set of given analysis conditions. However, it appears that it would be necessary sometimes to have supplementary data, such as a chart of the nuclides, available for assistance in understanding some portions of the tables. The author could have eliminated this need if he had enlarged each table to give information about the half-lives and characteristic radiations of radionuclide products resulting from nuclear particle reactions other than (n, $\gamma$ ) reactions. Also, more complete details about sample matrices and more definitions on terms associated with radioactivity measurements and radioactivation analysis would have made the index and glossary more complete.

Since this compilation is basically a bibliography on applications, it would appear that the publisher should have made some provisions to take care of its future revisions. Probably its issue as a loose-leaf binder would have made it practical to issue supplemental information as single pages on sections in future revisions.

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**Technique of Organic Chemistry. Volume VIII-Part I. Investigation of Rates and Mechanisms of Reactions.** Second Completely Revised and Augmented Edition. Edited by S. L. FRIESS, E. S. LEWIS and A. WEISSBERGER. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1961. xii + 702 pp. 16 × 23 cm. Price, \$23.50.

The series "Technique of Organic Chemistry" has earned a place in most chemical libraries as a source of useful information, and is now going into its second and third edition. Volume VIII was issued in 1953 and now reappears, essentially rewritten, in two parts. This is the first, concerned with the investigation of reaction mechanism by rate measurements. Since the study of reaction mechanisms is proliferating rapidly both in volume and techniques, such an expansion might seem well justified.

In form the book consists of thirteen essays by competent authorities on such general topics as the theory of rate processes, gas, liquid and heterogeneous reactions, and the collection and interpretation of rate data, and on more special subjects including competitive reactions, kinetic isotope effects, and the use of computers in kinetic problems. All of the essays contain interesting material, and some are excellent. Particularly outstanding to me is the discussion by Bunnett in Chapter VI on the criteria for establishing reliable kinetic laws, and of the general philosophy underlying the working out of reaction mechanisms which is worth the attention of anyone concerned with this field.

Having said this, I must sadly add that the whole volume is considerably less than the sum of its parts, and I even have doubts as to its proper place in this series. In the preface the Editors state "some overlapping has been accepted so that the integrity of the respective presentations would not be disturbed and because each exposition has its intrinsic values by virtue of the particular point of view and experience of the author." This is a handsome gesture toward a group, several of whom could have written com-

petent texts covering most aspects of the present volume, but it has unfortunate results. Acid and base catalysis is discussed at some length in Chapters 5, 6, 9 and 10, the basic principles of chain reactions are developed in Chapters 5, 8, 10 and 11, and there is extensive duplication at an even more elementary level. Having paid for this diffuseness, the reader next has to spend his time skipping about to get the whole story.

In part because of this duplication, the large portion of the book devoted to the interpretation of reaction mechanism starts repeatedly at a rather elementary level, and only rises above the level of sophistication in standard introductory texts on kinetics or physical organic chemistry on a few selected topics such as the discussion of kinetic isotope effects by Saunders and the treatment of heterogeneous catalysis by Jungers and Balaceanu. On the other hand, the treatment of polymerization in Chapter 5 is not only so short as to be almost worthless but worse contains a number of errors.

For a book on *technique*, the volume contains surprisingly little on actually how to *do* kinetic experiments, and much of this is rather superficial. There are good brief accounts of the equipment used and problems encountered in studying gas-phase and heterogeneous reactions, several scattered discussions of kinetic measurements in solution, and some good short accounts of how to handle kinetic data. On the other hand, there is hardly a word in the pertinent chapter on the calculations or techniques involved in experiments on kinetic isotope effects or the pitfalls which have tripped so many investigators. This isn't much for 702 pages, and I'm afraid that the reader, planning a kinetic study in an unfamiliar field, will be back in the original literature or looking for another review after a very few minutes.

In summary, since your library probably buys this series anyway, I recommend going down and taking a look at this book. For your personal library, for about the same price I'd recommend a good modern kinetics text, plus a recent volume on physical organic chemistry. Now that I've looked at a number of recent collective volumes and even been involved in some, I'll add that if you have an urge to write, go and produce a small book yourself. Put what you want in it, give it loving care, and it will be all your very own.

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**Electrolytic Dissociation.** By C. B. MONK, University College of Wales, Aberystwyth, Wales. Academic Press Inc., (London) Ltd., 17 Old Queen Street, London, S. W. 1, England. 1961. xii + 320 pp. 16 × 23.5 cm. Price, \$10.00.

This book is designed for students preparing for examinations or those commencing research involving ionic equilibria. The first seven chapters discuss experimental methods and theoretical background. The last seven, entitled "incomplete dissociation," group dissociations according to methods of measurement. There are many absurd errors, particularly in the introductory chapters. Some are apparently attributable to carelessness, some apparently not, but all are likely to confuse and mislead a naive reader.

The treatment is so fundamentalist that dissociation and association are treated as axiomatic and are not defined. No hint is given that each experimental method, or each method of handling experimental data, involves its own definition and so, perhaps, its own value of the equilibrium constant. Activity coefficients which neglect association, usually called stoichiometric, are described as "questionable."

This reviewer's chief criticism is that there is little or no discussion of the ideas that lie behind the theories or the meanings that come out. The equations are stated, and sometimes derived. The reader is helped in their use by "examples" in which numbers are fed into one end and other numbers, usually dissociation constants, come out the other. One is reminded of Walter B. Pitkin's characterization of a Columbia colleague, "He knows all the answers, but none of the questions."

The treatment that hurts most is that of interionic attraction, which is particularly important because the ef-

fect of coulomb forces may be divided into one part which can be treated by the law of mass action and another part which cannot. The preliminary discussion says merely that the solvent has a dielectric constant  $\epsilon$  and the ion has a charge  $j$ ; and zero radius (wrong). There are three "howlers" in the derivation. Although the treatments of the "higher terms" by Gronwall and LaMer, Müller, Kirkwood, Mayer, and Guggenheim are given immediately (in Chapter III), the ion-pair treatment of Bjerrum is not given until the final Chapter XIV. Bjerrum's constant may be factored out of the association constant or left in according to the rules one wishes to make, but it should not be ignored.

In spite of its shortcomings this is a useful book to have in the laboratory or the study. It is interesting to have the equilibrium constants classified by methods of measurement instead of by ions. The references to methods, to theory and to systems studied are probably complete enough through 1958, perhaps through 1960, that all the important work can be traced without much difficulty.

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**Colorimetric Methods of Analysis, Including Photometric Methods. Volume IIIA.** By FOSTER DEE SNELL, Ph.D., President, Foster D. Snell, Inc., and CORNELIA T. SNELL, Ph.D., Research Chemist. Assisted by CHESTER ARTHUR SNELL, Ph.D., Director of Analytical Department, Foster D. Snell, Inc. D. Van Nostrand Co., Inc., 120 Alexander Street, Princeton, N. J. 1961. x + 576 pp. 16 × 23.5 cm. Price, \$12.75.

Volume IIIA brings Volume III up to date on the many colorimetric and photometric methods of analysis of organic compounds that have appeared during the past eight years. Because of the large number of new organic substances, such as insecticides, fungicides and drugs that have appeared in recent years, the authors have made an effort to condense the wording of the procedures so as to save many pages of text. This has been accomplished skillfully without sacrifice either in accuracy or in convenience as explained in the short introductory chapter. Also, the classification of such a large number and variety of compounds presents a complex problem. In general they are classified according to chemical structure unless there is a good reason to do otherwise. There are many exceptions, however, and so the simplest way to find a compound is to use the 30-page index.

The scope of the book is indicated by the titles of its nineteen chapters: Chapter 1, Introductory (3 pp.); Chapter 2, Hydrocarbons (28 pp.); Chapter 3, Alcohols and Their Esters (45 pp.); Chapter 4, Phenols (66 pp.); Chapter 5, Quinones (7 pp.); Chapter 6, Oxygen Cycles, Oxides, and Peroxides (10 pp.); Chapter 7, Tetroses and Pentoses (21 pp.); Chapter 8, Hexoses and Heptoses (30 pp.); Chapter 9, Polysaccharides (18 pp.); Chapter 10, Glucosides (16 pp.); Chapter 11, Aldehydes (30 pp.); Chapter 12, Ketones (13 pp.); Chapter 13, Unsubstituted Monobasic Aliphatic Acids and Their Anhydrides, Esters, and Lactones (26 pp.);

Chapter 14, Substituted Monobasic Aliphatic Acids and Their Esters (43 pp.); Chapter 15, Polybasic Aliphatic Acids and Their Esters (21 pp.); Chapter 16, Cyclic Acids, Their Esters, and Their Anhydrides (32 pp.); Chapter 17, Complex Acids and Derivatives (33 pp.); Chapter 18, Sulfur Derivatives (37 pp.); Chapter 19, Halogen Compounds (48 pp.).

There are 22 useful tables, and 26 figures illustrating special apparatus, chromatographic columns, nomograms, etc. Literature references number more than 1300; these are conveniently placed at the bottom of the pages. Author and subject indexes conclude the book. The printing, paper and cloth binding are of good quality.

Volume IIIA is an exhaustive and authoritative compilation of colorimetric and photometric methods of organic analysis that have appeared in the literature since the publication of Volume III almost a decade ago. Analytical and organic chemists will find this book a valuable aid.

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**Chemistry of Drug Metabolism.** By WILLIAM H. FISHMAN, Ph.D., Tufts University School of Medicine and the New England Center Hospital, Boston, Massachusetts. Charles C. Thomas, Publisher, 301-327 East Lawrence Ave., Springfield, Illinois. 1961. xvii + 235 pp. 16 × 23.5 cm. Price, \$10.50.

In this small monograph Professor Fishman presents an orderly review of an important and thriving branch of pharmacology. In the first three chapters the various modes by which drugs are degraded in the body are outlined and examples of each are discussed. Because of the shortness of this section, a number of vital issues (*e.g.*, species variation) are not touched upon. This section is summarized by discussing what is known at an enzyme level about each of the pathways of metabolism. This would appear to be a more satisfactory way to organize a discussion of this field than say to organize it according to the class of organic compound or type of drug involved.

The remainder of the book deals with the metabolic conjugations (particularly glucuronic acid conjugations) which drugs undergo. Here the author is on home grounds and is considerably more expansive. This section, which closes with a stimulating discussion of some of the authors own working hypotheses in the field, is the heart of the book and is well worth a careful reading. It seems to this reviewer that a book of this type has as its main justification the stimulation of new researches. In this spirit the book will undoubtedly be a success.

The bibliography which runs to 39 pages lists all papers by title and is of considerable value in itself. The book, which is a part of the American Lecturers in Living Chemistry Series, is well printed and legible, although several of the figures contain misprints in the chemical formulas.

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