

to the completeness with which it covers the literature. For the new edition of the thorium volume, coverage is stated to be complete to the end of 1949, and to cover the important literature to 1954. Caution must therefore be used in depending on the volume past 1949, and it should be kept in mind that the material released at the time of the Geneva Conference on the Peaceful Uses of Atomic Energy, August, 1955, was not available for this volume. It must also be pointed out, that material appearing in the volume is often based on abstracts, not the full original publication, and therefore introduces other limitations. This is true, for example, of a considerable portion of the work cited from U. S. Atomic Energy Commission sources. If only because of these considerations, the occasional critical judgment on conflicting data or interpretations which creeps into the work should be disregarded, without influencing the value of the volume for its main purpose, that of providing leads to relevant literature.

Like the other volumes of the series, System No. 44 will occupy a valued place on the shelves of every general chemical library, and an especially treasured one in many special-purpose laboratories. The price would seem to place it out of the reach of the ordinary chemist.

CHEMISTRY DIVISION
ARGONNE NATIONAL LABORATORY LEONARD I. KATZIN
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Review of Photosynthesis and Related Processes. Volume II, Part 2. **Kinetics of Photosynthesis** (continued), Addenda to Vol. I and Vol. II, Part 1. By EUGENE I. RABINOWITCH, Research Professor, University of Illinois, Formerly Research Associate, Solar Energy Research Project, Massachusetts Institute of Technology. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1956. xvi + pp. 1211-2088. 16.5 × 23.5 cm. Price, \$18.50.

One always experiences a little regret in finishing the reading of any good book, whether it be fiction or a well written scientific monograph. After coming to the end of two thousand fascinating pages which have appeared over a ten year period, it comes as something of a shock to realize that Rabinowitch is not currently preparing another volume of Photosynthesis. Let us hope that he can be persuaded to bring us up to date in a few years with a general addendum to the present work.

About the first third of the present book consists of a critical discussion of induction phenomena and of the effects of temperature, intermittent illumination and the pigment factor upon the kinetics of photosynthesis *in vivo*. The remaining five hundred pages are devoted to material which has appeared since the publication of the first two volumes. The principal topics considered are, as follows: the Hill reaction and the photochemistry of chlorophyll *in vitro*—142 pages, the "path of carbon"—83 pages, and the structure of chloroplasts, the chemistry and spectroscopy of the plant pigments and the kinetics of photosynthesis—totaling 264 pages. The text concludes with an Epilogue in which the author admirably sums up the present status of our knowledge of photosynthesis: indicating, alike, major achievements and points of weakness. No reader of this book should omit the preface.

In orderliness of presentation, style of writing, editorial details and printing, the present volume is comparable to its two excellent predecessors. While the price of this book is regrettably high, no student of photosynthesis can afford to be without it.

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF MINNESOTA ROBERT LIVINGSTON
MINNEAPOLIS 14, MINN.

Synthetic Methods of Organic Chemistry. An Annual Survey. Volume 10. By W. THEILHEIMER. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1956. xvi + 746 pp. 17 × 23.5 cm. Price, \$25.25.

The tenth annual survey by Theilheimer includes abstracts of procedures selected from papers published from 1953 through 1955. The abstracts concern new methods and improvements in known methods for synthesis of

organic compounds. They contain enough information for an appraisal of the applicability of a type of synthesis or sequence of reactions: conditions, reagents and yields. The author's purpose is to furnish selected references as a guide to the literature, but although he specifically disclaims such intent, his descriptions are usually sufficiently detailed to enable a skilled experimenter to proceed with laboratory work. The book, like its predecessors, is very useful in suggesting methods to the practical organic chemist.

The alphabetical index is cumulative, covering volumes VI through X. Cross references in the body of the work are plentiful, and like the index include not only the present volume but also four preceding it.

For more extensive reviews of recent volumes in the series, see THIS JOURNAL, 76, 317(1954); 77, 3425, 5453 (1955).

SCHOOL OF CHEMISTRY
UNIVERSITY OF MINNESOTA C. F. KOELSCH
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Experimental Thermochemistry. Measurement of Heats of Reaction. Prepared under the International Union of Pure and Applied Chemistry by the Subcommittee on Experimental Thermochemistry. Edited by FREDERICK D. ROSSINI, Carnegie Institute of Technology, Pittsburgh, Pennsylvania. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1956. xv + 326 pp. 16 × 23.5 cm. Price, \$7.80.

This book was undertaken in order to place before the scientific and technical world the best knowledge relative to experimental thermochemistry and the measurements of heats of chemical reactions. In the reviewer's opinion the objective has now been achieved remarkably well under the capable editorship of Dr. Frederick D. Rossini.

The book contains fourteen chapters. Four of these, written by Dr. Rossini himself, discuss: General Principles of Modern Thermochemistry, Units of Energy and Fundamental Constants, Calibration of Calorimeters for Reactions in a Flame at Constant Pressure, and Assignment of Uncertainties to Thermochemical Data. The remaining ten chapters represent the work of twelve other outstanding thermochemists, five Americans and seven Europeans. Eight of these chapters deal in careful detail with: Calibration of Calorimeters for Reactions in a Bomb at Constant Volume, Standard States and Corrections for Combustions in a Bomb at Constant Volume, Physicochemical Standards in Thermochemistry, and the specific problems involved in burning various compounds containing carbon, hydrogen, oxygen, nitrogen, sulfur, chlorine, bromine and iodine. There are also two chapters which discuss Thermochemistry of Reactions Other than Combustion and The Microcalorimetry of Slow Phenomena.

These contributions from thirteen authorities have been coordinated extremely well, and the treatments of the various topics are excellent. Consequently the book should become essential reading for all serious workers in the field of calorimetry. Its influence will greatly improve the quality of future experimental studies and thereby should facilitate the development of a large body of consistent, accurate thermochemical data, which is at present the most urgent need of chemical thermodynamics.

DEPARTMENT OF CHEMISTRY
STANFORD UNIVERSITY GEORGE S. PARKS
STANFORD, CALIFORNIA

Electromagnetically Enriched Isotopes and Mass Spectrometry. Proceedings of the Conference held in the Cockcroft Hall, Harwell, 13-16 September, 1955. Sponsored by the Atomic Energy Research Establishment, Harwell. Edited by M. L. SMITH. Academic Press, Inc., Publishers, 125 East 23rd Street, New York 10, New York. xvi + 272 pp. 14.5 × 22 cm. Price, \$8.00.

As indicated in its complete title, the volume under review consists of the papers, thirty in number, presented at a conference on the separation and utilization of isotopes. Participants at the conference represented the following countries: Belgium, Canada, Denmark, Egypt, France, Germany, Holland, Sweden, U. S. A., Yugoslavia and the United Kingdom. The specific subjects with which the papers are concerned are: Ion Sources (5 papers), Collector Problems (3 papers), Chemical Aspects and Target Prepara-

tion (4 papers), Utilization of Separated Isotopes (5 papers), Isotope Abundance Analysis (5 papers), Design of Electromagnetic Separators (6 papers), and Separation of (Radio) Active Material (2 papers). In character the papers cover the entire spectrum from the almost popular discussion by Keim and Baker (paper no. 13) on "The Distribution and Utilization of Electromagnetically Enriched Isotopes from 1946 to 1955," to the very technical and mathematical papers by Bruck (nos. 26 and 27) on "A Very General Expression for the Dispersion of a Magnetic or Electrostatic Deflecting Field Sector" and "Use of Alternating Gradient Magnet Sector for High Dispersion."

A major portion of the papers are directed at practicing experts in the field of electromagnetic isotope separation, and thus lose interest to the general reader as they gain interest to the specialist. However, the wide range of the problems encountered in constructing and operating electromagnetic isotope separators that are described and discussed results in papers that contain much of interest to physical and inorganic chemists as well as metallurgists. The volume can be recommended to all chemists for casual reading. Chemists who are practicing mass spectroscopists or involved in the use of enriched or separated isotopes will probably want this volume on their bookshelves next to "Mass Spectroscopy in Physics Research" (Proceedings of the NBS Symposium 1951) to which the new volume forms an excellent supplement.

SHELL DEVELOPMENT COMPANY
EMERYVILLE, CALIFORNIA

D. P. STEVENSON

Medicinal Chemistry. A Series of Reviews Prepared under the Auspices of the Division of Medicinal Chemistry of the American Chemical Society. Volume II. Edited by F. F. BLICKE, University of Michigan, and C. M. SUTER, Sterling-Winthrop Research Institute. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1956. vi + 311 pp. 15.5 × 23.5 cm. Price, \$10.00.

This volume appears as the second member of a series of reviews in the field of medicinal chemistry. Like its predecessor, it consists of individual chapters, each a summary of some portion of the field which has ripened enough to warrant a review. The contents comprise sections on the cardiac glycosides by A. Stoll and T. L. Johnson, synthetic estrogens by J. A. Hogg and J. Korman, arylpiperidines as analgesics by C. M. Suter, and β -haloethylamines as adrenergic blocking agents by G. E. Uflyot and J. F. Kerwin. Each chapter is definitive in containing a complete bibliography and references to all pertinent compounds. The space is by no means equally divided among the four chapters. The section on the synthetic estrogens is exhaustive and comprises more than half the book. Into this space has gone a bibliography of references to more than 1200 compounds, and also to a few miscellaneous natural sources of estrogenic activity.

A main objective of the work is the reporting of structures and pharmacologic activity in such a way as to emphasize and clarify whatever regularities may exist between them. Although the chapters differ a little in presentation, each provides three essential features of the structure-activity picture: (1) tables of structures of individual compounds aligned with a quantitative expression of their biological activities, (2) a brief summary of the methods used in evaluating the relevant activity, (3) as many generalizations about structure-activity relationships as the author feels the data support. These areas are the real heart of the work and its principal justification. The separate aspects of chemistry and biology which can be found in detail in other sources are included only in condensed survey form.

A publication of this sort will no doubt have one primary audience. It will be composed of the chemists and pharma-

cologists of industry whose responsibility it is to prepare better therapeutic agents. The volume is well designed for this group. The authors are an exceptionally well qualified group and the wealth of their experience is reflected in the volume of previously unpublished data presented throughout. The chapter on adrenergic blocking agents, for example, has well over a hundred references to unpublished laboratory data.

A shortcoming of the book for some purposes is that it is already a little out of date. Most of the references are only through 1952 with a sprinkling from early 1953. The gap in time is particularly noticeable in the analgesic field, where new and significant arylpiperidine analogs have been reported from many laboratories in the last three years.

Proofreading has been carefully done, formulas are abundant and the text is clear and simple. Scientists working in and around the field of medicinal chemistry will undoubtedly want the book and will look forward to Vol. III.

MERCK SHARP & DOHME RESEARCH LABORATORIES
DIVISION OF MERCK & CO., INC. LEWIS H. SARETT
RAHWAY, NEW JERSEY

BOOKS RECEIVED

October 10, 1956–November 10, 1956

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G. E. COATES. "Organo-Metallic Compounds." John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1956. 197 pp. \$2.50.

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K. HAUFFE. "Oxydation von Metallen und Metallegierungen." Springer-Verlag, Reichpietschufer 20, Berlin W 35 (West-Berlin), Germany. 1956. 389 pp. Ganzleinen DM 48.—

CHARLES KITTEL. "Introduction to Solid State Physics." Second Edition. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1956. 617 pp. \$12.00.

PAUL PASCAL, Editor. "Nouveau Traité de Chimie Minérale." Volume X. "Azote—Phosphore." By R. DUBRISAY AND P. PASCAL. Masson et Cie, Éditeurs, 120 Boulevard Saint-Germain, Paris 6, France. 1956. 963 pp. Broché 6.600 fr., Cartonné toile 7.500 fr.

H. N. V. TEMPERLEY. "Changes of State. A Mathematical-Physical Assessment." Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1956. 324 pp. \$7.50.

H. TOMPA. "Polymer Solutions." Academic Press, Inc., Publishers 111 Fifth Avenue New York 3, N. Y. 1956. 325 pp. \$8.50.