Examples of the latter applications are measurement of deuterium by photoneutron production, determination of moisture by neutron scattering, gas and scintillation counting of carbon-14, measurement of thickness by alpha and gamma radiation, radiography, study of carbide cutting-tool life, static elimination, measurement of water flow in sewage purification plants, and use of a high-intensity gamma radiation source.

Both the printing and the paper are of excellent quality. There are very few typographical errors.

The two volumes definitely constitute a source of many new ideas, new methods, and new results not only in the rather well documented papers themselves but also in the interesting discussions following each paper. "Radioisotope Conference, 1954" should be valuable to those who are working in the wide variety of special fields covered, and should also appeal to those who have a general interest in recent developments in the applications of radioisotopes.

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● RECENT DEVELOPMENTS IN CELL PHYSIOLOGY

Proceedings of the Seventh Symposium of the Colston Research Society held in the University of Bristol, March 29–April 1, 1954. Edited by *J. A. Kitching,* University of Bristol. Academic Press, Inc., New York, 1954. ix + 206 pp. Many figs. 19.5 × 25.5 cm. $6.50.

As is pointed out in the preface to this volume, the term "cell physiology" is a very broad one. The organizers of this symposium seem to have used the title as an umbrella under which to shelter nearly any interesting topic which occurred to them. Of the 15 papers, four deal with various aspects of diffusion and transport across membranes, three with natural or experimental control of cell division, and the remaining eight represent scattered single hits on points lying in such areas as metabolic chemistry, embryology, protozoology, and morphogenesis. Such diversity may have made for an interesting meeting, but it appears to the reviewer that it detracts seriously from the value of the resulting volume. Rather than a book of clearly defined scope, bringing the experience and varied outlooks of workers from different disciplines to bear on an area of common interest, we have a series of individual and essentially unrelated papers collected under a title so broad as to be meaningless. Since it is unlikely to be indexed under eight or ten different headings, such a book seems destined to gather dust on the library shelf. Unless he is guided by an abstract or other citation to a specific chapter, who will look under the above title for a discussion of planarian regeneration or of synchronous division in *Paramecium?* Contrast the usefulness as a reference source of another recent British symposium volume bearing the stark title "Haemoglobin."

These considerations, of course, do not reflect on the quality of the individual papers; rather they suggest that some of them may not be as widely read as they deserve to be. The papers vary somewhat in length and in scope, some being mainly reports of original research while others have more of a review character. The only common factor amidst the diversity is the high quality of the presentations. It would appear that any physiologist or biochemist would find here several papers of considerable interest.

Review of 15 papers is clearly impossible, and a selection would reflect the reviewer's interests rather than any special excellence of the selected papers. It must suffice to repeat that the book contains a collection of individually interesting papers, but hardly a symposium.

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● TECHNIQUE OF ORGANIC CHEMISTRY. VOLUME VII: ORGANIC SOLVENTS

J. A. Riddick and _E. E. Toops, Jr.,_ Commercial Solvents Corporation, Terre Haute, Indiana. Second edition. Interscience Publishers, Inc., New York, 1955. vii + 552 pp. 15.5 × 22.5 cm. $8.50.

This is a timely revision and expansion of the well known work "Organic Solvents, Physical Properties and Methods of Purification," edited by Arnold Weissberger and Eric S. Proskauer. So many new and fancy solvents have appeared in chemical industry in recent years that the first edition has become out of date almost prematurely.

The authors remind us that "a wealth of new and accurate data has become available" in the field of evaluation of physical properties. Perusal of freezing-point values in this book, for example, suggests that publishers of standard chemical handbooks need to give their figures a thorough going over.

The section devoted to data tables classified by compounds shows substantial expansion in the revision. New kinds of data are included. For example, ethyl acetate occupies a whole page, as contrasted with a single line in an ordinary chemical handbook. Even 2-bromopropane, and *n*-butyraldehyde rate a half-page each of numerical data alone, not including expository information.

In addition to the property tables, each solvent, in proportion to its importance or diversity of uses, is discussed briefly as to source, and more extensively with respect to purification and handling. In the new edition data on toxicology have been added. Although most of us will not drink many of the solvents, considerable value will be found in the paragraphs on "maximum allowable concentration" of more or less toxic vapors, and this means practically all organic solvents. Wide use has been made of the high-class data on hydrocarbons available in recent years. An extensive bibliography is given. The problem of search for a special solvent is also facilitated by separate tables arranged not only in sequence by alphabet, but also by chemical principle, boiling point, freezing point, dielectric constant, and dipole moment.

This work will be an obvious purchase requirement for research laboratories in pure and applied chemistry, and particularly for the bookshelf of the chemical engineer. Even the teacher of organic chemistry will find the tabulations in numerical order useful for new problems and examination questions.

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● ANNUAL REVIEW OF NUCLEAR SCIENCE. VOLUME 4

Edited by *James G. Beckerley,* U. S. Atomic Energy Commission, *Martin D. Kamen,* Washington University Medical School, and *Leonard I. Schiff,* Stanford University. Annual Reviews, Inc., Stanford, California, 1954. x + 483 pp. 83 figs. 43 tables. 16 × 23 cm. $7.

Although the atom was once the province of the chemist, the nucleus appears to have been sacrificed to other disciplines. At least, I find that of the 17 chapters on various topics included in this volume, only a third are probably of immediate interest to the chemist. Most of the chapters are written by physicists at a level and point of view directed toward their co-workers. Some chapters serve, however, as stimulating and informative accounts for the general scientific reader as well as for the specialist. For example, the short chapter on Recent Developments in Proton Synchotrons impressed me with its casual narrative style in describing plans for accelerating particles up to 25 b. e. v.!

The more chemical topics include Fission Radiochemistry, Stable Isotopes as an Analytical Tool, Positronium, Biochemical Effects of Radiation, and Radioactivity in Geology and Cosmology. The chapter on analysis by isotope dilution is of classic

simplicity; the examples cited are problems in physics, but the methods will undoubtedly become standards for trace-element analysis. Chemists should find the chapter on positronium worth the price of admission. Not only is positronium the lightest atom, if not the simplest, but also the studies of its formation and decomposition in relation to molecular environment offer some basic chemical problems.

My general impression of this volume is one of diversity and heterogeneity. Only five topics are included this year which were covered last, and of these, three emphasize different subtopics. So practically all of the chapters cover several years' work rather than a single year. The subjects range from nuclear physics, fast electronics, and radiofrequency spectroscopy to analytical chemistry, biology, and cosmology. Six of the chapters are concerned primarily with experimental techniques while five are theoretical in nature. There are large variations in depth and manner of coverage; chapters range in length from 12 to 61 pages with 14 to 592 references. But the general quality of the reviews is high.

The wide range of topics reflects the extremely broad nature of nuclear science and suggests the magnitude of the editorial task. Also, it is apparent that only a modest fraction of each year's reviews will be of interest to any particular scientist. But I, for one, am very grateful that I do not have to depend entirely on the original literature where the signal to noise ratio is much less favorable.

H. S. GUTOWSKY

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● FROM CLASSICAL TO MODERN CHEMISTRY

A. J. Berry, **Fellow Emeritus of Downing College, Cambridge, England. Cambridge University Press, Cambridge, England, 1954. xii + 251 pp. 14.5 × 22.5 cm. $4.75.**

The purpose of the present work is primarily that of considering the historical development of certain branches of chemical science, which were either omitted from, or only adverted to in brief outline, in an earlier book, "Modern Chemistry—Some Sketches of Its Historical Development," published in 1946. The method of treatment, namely that of selecting particular topics and allocating them to separate chapters—that is, division according to subject matter and not according to periods of time—has again been adopted. After an opening chapter, Some Remarks on Theory in Chemistry, the subjects treated are: theory of heat; classical electricity and electrolysis; physical optics; molecular magnitudes; analytical chemistry; chemical formulas; valence, radicals, and constitution; kinetic chemistry. These form a somewhat disconnected series of essays, but each is filled with immense learning, and a unifying thread may be found in the author's insistence that the history of chemistry cannot be understood without attention also to the history of physics. All who are interested in the history of chemistry will want to read this book.

ANTHONY STANDEN

Interscience Encyclopedia, Inc.
Brooklyn, New York

● MECHANISM OF POLYMER REACTIONS

G. M. Burnett, **Professor of Chemistry, University of Birmingham, England. Interscience Publishers, Inc., New York, 1954. xv + 493 pp. Many figs. and tables. 16 × 23.5 cm. $11.**

This book constitutes Volume III of a series on high polymers, and is intended to replace the earlier work by Mark and Raff on high-polymer reactions published in 1941. Burnett's book is by no means a revision of the earlier work, since the field has advanced so rapidly in the past decade that an entire re-evaluation of the subject is required.

Burnett's book is an advanced text covering the entire field of polymer kinetics, and each subject is treated in a vigorous mathematical fashion followed by a summary of experimental results. Throughout, an extensive bibliography is provided. Although the author does not explicitly state that he presupposed some familiarity of the field on the part of the reader, nevertheless the level is such that this is required. The book should be useful to the specialist who wishes to supplement his knowledge obtained from textbooks on the field of high polymers and to obtain a review of the current status of the field of high-polymer reactions. This book is warmly recommended to all chemists engaged in the synthesis or degradation of high polymers. The general reader who has had advanced training in chemical kinetics may also find a perusal of this book rewarding.

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● PATENT LAW IN THE RESEARCH LABORATORY

John K. Wise. **Reinhold Publishing Corp., New York, 1955. 145 pp. 12 × 18 cm. $2.95.**

This small book is a timely discussion of invention, patents, and patent procedure in the light of the new (1953) patent act. Intending to give the industrial research worker a practical insight into the workings of the patent system, the author presents a readable and accurate account of the procedure from the conception of the invention to the issuance of the patent. Naturally for the research worker, the need for accurate and authenticated research records is stressed. Although the "Rules of Practice" are referred to in the book, it would have been helpful to tell the reader how he could secure this and other government publications pertaining to the Patent Office.

The author's style is so easy to read that the quoting of decisions at times seems stuffy—but then, the law is what the courts say it is. For a small book much is covered—topics particularly interesting in chemical cases, like the Markush type of claim.

This is a good book for the novice in patent matters as well as the oldster who wants to see how the new law has changed some of the features of patent law and practice. The decision that the deposition of a thesis in a university library is publication means a great deal to university research workers and should be understood by them.

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● STRUCTURE OF MOLECULES AND INTERNAL ROTATION

San-Ichiro Mizushima, **Professor of Physical Chemistry, The University of Tokyo. Academic Press, Inc., New York, 1954. x + 244 pp. Figs. and tables. 16 × 23.5 cm. $6.**

The first 152 pages deal with a description of investigations on internal rotation. In the second part the theoretical aspects of such things as normal vibrations as well as experimental methods are treated. The book is written with the nonspecialist in mind. On page 58 the author quotes 0.5 kg.-cal. instead of five kg.-cal. as the resonance energy stabilizing substituted diphenyls. The very occasional quaint language complications do not detract from the interest of the book. One cannot help being impressed by the volume and significance of the studies of internal rotation. Why barriers are as high as they are still needs more detailed theoretical treatment. This is a book from one who is at home with his subject and should be read by all students in this field.

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