

comprehensive, and the page numbers are in italics where tests concerning the compounds in question are described.

R. E. Oesper, well-known translator of Feigl's books, is to be congratulated for making "Spot Tests in Organic Analysis" available in clear and concise English. Printing and paper are good and the book has an attractive cloth binding.

This volume, together with its companion volume on "Spot Tests in Inorganic Analysis" (5th ed., 1958), is a useful and up-to-date source of information not only to analytical chemists but also to organic chemists, pharmaceutical chemists and biochemists, as well as to advanced students in chemistry as an aid to the performance of spot tests and to an understanding of the underlying chemistry. Research workers in analytical chemistry will find these two volumes stimulating and helpful.

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF VIRGINIA
CHARLOTTESVILLE, VIRGINIA

JOHN H. YOE

Comparative Effects on Radiation. Report of a Conference held in San Juan at the University of Puerto Rico, February 15-19, 1960, sponsored by National Academy of Sciences-National Research Council. Edited by MILTON BURTON, Chemistry Department and Radiation Laboratory, University of Notre Dame, J. S. KIRBY-SMITH, Biology Division, Oak Ridge National Laboratory, and JOHN L. MAGEE, Chemistry Department and Radiation Laboratory, University of Notre Dame. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1960. xx + 426 pp. 16 × 23 cm. Price, \$8.50.

This symposium, held a little less than ten years after the prototype symposium at Oberlin, again brought physicists, chemists and biologists together to consider fundamental problems of the interaction of radiation with matter at various levels of organization and complexity. However, the similarity ceases here, except for some continuity of editorship. The primary theme for this conference was energy transfer. The papers by Fano, Kasha, Magee and Forster develop ways in which the exciton theory of electronic energy levels may be pertinent to the transfer of excitation from absorbed radiant energy in condensed molecular media. Kallmann presents an invited paper commenting on Forster's views and presenting data on energy transfer in rigid media. The paper by Hochanadel provides a useful (and to this reader a more definitive than some) summary of current thoughts on the radiolysis of water. Effects in organic systems are considered by Hamill (benzene and halogen compounds) and by Charlesby (polymers). The import of these phenomena for biological systems is covert except in the discussion sessions when some speculations are made. Correlation between events occurring in microseconds after energy adsorption and structural or functional defects measured from seconds to years after exposure has not yet developed. It is possible that these papers are pointing the way, however.

Structural changes in nucleic acids and their components as described by B. and A. Pullman provide a possible bridge via large molecules. In Hutchinson's chapter on radiation effects in monolayers the presentation is aimed at cellular function and produced a lively disputation on the interpretation of membrane and permeability effects in irradiated cells. An unexpected bonus appears in the discussion for this chapter in Platt's presentation of Szilard's theoretical ideas on potential "flip-flop" systems in the cell.

Experience with living systems is represented by Swanson's discussion contrasting the initial effects of different types of radiation, the mechanism of photorecovery as presented by Rupert (substantial progress has occurred), and photoresponsiveness mediated by the plant pigment phytochrome as discussed by Hendricks.

Whereas the Oberlin symposium volume provided quite general coverage of many areas, this volume is quite specialized, and is less appropriate for the general reader. This is consistent with the purposes of these NAS-NRC sponsored symposia (note also the Highland Park conferences). However, a direct concern with and knowledge of energy transfer processes will be prerequisite to a detailed understanding of many of the papers. Some of the data seem to be almost irrelevant to the theme, but adroit comments by the editors reveal their pertinence. The recorded

discussions are carefully presented and edited and do much to give the chapters a feeling of purpose. Without these, the volume would be largely a collection of specialized, sometimes only vaguely related papers. With them, the progress of the last ten years and portents for the future in understanding the early events in irradiated systems are highlighted.

The format is pleasing and readable.

DEPARTMENT OF RADIATION BIOLOGY
UNIVERSITY OF ROCHESTER J. NEWELL STANNARD
ROCHESTER 20, NEW YORK

Infrared Methods. Principles and Applications. By G. K. T. CONN, Department of Physics, University of Exeter, Exeter, England, and D. G. AVERY, Development and Engineering Group, United Kingdom Atomic Energy Authority, Capenhurst, England. Academic Press Inc., 111 Fifth Avenue, New York 3, N. Y. 1960. viii + 203 pp. 16 × 23 cm. Price, \$6.80.

This volume gives the operating characteristics and the physical properties of the components, materials and systems used in studying or measuring absorption spectra in the portion of the infrared region between 1 and 25 microns. A brief introduction to infrared studies prefaces the volume, which is divided into two sections.

The first section deals with the individual components, materials employed and the design of units of an infrared spectrometer. There are chapters on sources of radiation, optical materials, detectors, amplifiers, and dispersive systems. The second section of the book covers practical infrared spectroscopy and there are chapters on calibration of detectors, monochromator design, non-dispersive absorption instruments, and radiation pyrometry.

The book is well written, clear, and concise, with extensive references for each chapter; however, it is not clear for whom this book is intended. The title would be misleading to the analytical spectroscopist, as the scope of the book covers infrared instrumentation and deals primarily with the spectrometer. The book does not instruct in or review methods of analysis or interpretation of spectra; however, the material presented will give the analytical spectroscopist a comprehensive survey of the components of his spectrometer and a finer appreciation of the design of commercial instruments.

The design spectroscopist may find some sections oversimplified and others of academic interest only, but the collection of references and bibliographies for review may be of sufficient value to warrant adding to his library.

The student of science will find the book most instructive because of the detailed treatment of each subject. The book will serve well as an introduction to infrared studies because the subject matter presented has not been similarly covered in any prior publication.

The Practical Applications Section appeared to have been added to broaden the scope of the book; however, it is not extensive enough to be helpful or educational. The material covered in this section has been better presented elsewhere.

In summary, the student or beginning spectroscopist will find the book most valuable; the analytical spectroscopist will find the book interesting and instructive in parts, while the design spectroscopist will probably value the book as a collection of references.

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Block and Graft Polymers. By WILLIAM J. BURLANT, Chemistry Department, Scientific Laboratory, Ford Motor Co., and ALLAN S. HOFFMAN, Assistant Professor of Chemical Engineering, Massachusetts Institute of Technology. Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y. 1960. vi + 166 pp. 16 × 23.5 cm. Price, \$7.95.

The interesting book on "Block and Graft Polymers" by Burlant and Hoffman appears to be addressed to non-specialists interested in applications. The solution properties and mechanical behavior of various polymers belonging