formulas, which are accurately and attractively executed. Both the format and printing are good, with only the rather awkward system of marking references by printer's signs instead of numbers to detract from the technical perfection in make-up. Sir John Simonsen and his collaborators (L. N. Owen for the first two volumes and D. H. R. Barton for the third) have made a fine contribution to the literature of organic chemistry in their revision of this great monograph.

THOMAS L. JACOBS

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● FUNDAMENTAL PRINCIPLES OF POLYMERIZATION

G. F. D'Alelio, Vice President and Manager of Research, Koppers Co., Inc., Pittsburgh. John Wiley & Sons, Inc., New York, 1952. x + 517 pp. Illustrated. 15.5 × 23.5 cm. $10.

THE author has written an understandable book on a complex subject. In days gone by polymerized messes were dumped into the sink because they failed to crystallize. They still don't crystallize, but they are invaluable commercially, so that we are obliged to learn how to work with them. Statistical treatments are currently revealing much order where chaos once reigned. One will find here detailed information about the polymerization of many different systems under various circumstances. Molecular weight determinations from viscosity, sedimentation rate, and light scattering are all considered at length. The definition of terms and the discussion of the nature of high polymers are all good. This book is a careful effort to bring together in usable form a great deal of the information in the field and in this it is successful. The references are drawn from a wide field and provide a wealth of useful background material. One could wish the field itself was more systematic, but this is not the fault of the author.

HENRY EYRING

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● STYRENE: ITS POLYMERS, COPOLYMERS AND DERIVATIVES

(American Chemical Society, Monograph Series) Edited by *Ray H. Boundy,* Director of Research, The Dow Chemical Co.; *Raymond F. Boyer,* Director, Physical Research Laboratory, The Dow Chemical Co.; and *Sylvia M. Stoesser,* Editorial Assistant. Reinhold Publishing Corp., New York, 1952. xxii + 1304 pp. Illustrated. 16 × 23.5 cm. $20.

THIS is a joint effort by a group of chemists at Dow Chemical Company with some outside collaboration to cover completely the chemistry and physics of styrene and polystyrene. The subjects treated include the manufacture and properties of styrene, the polymerization of styrene, the molecular weight of polystyrene and the optical, electrical, mechanical properties and fabrication of polystyrene. Also included are chapters dealing with developments in Germany on the subject and a complete patent literature on styrene and polystyrene.

Practically all the literature on the subject is covered. The discussion is critical and many suggestions for further work in the field are put forth. The chapters on the molecular weight of polystyrene and on the degradation of polystyrene are very complete with regard to both theory and experimental data and much of the discussion is applicable to other polymers as well.

The editors are to be congratulated on their ability to unify such a wide variety of subjects. The book will be useful to chemists who want a complete and up-to-date treatment of the theoretical and practical aspects of the chemistry of polystyrene and styrene.

GERALD OSTER

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● INTRODUCTORY MYCOLOGY

Constantine John Alexopoulos, Professor of Botany and Plant Pathology, Michigan State College. Art work by Mrs. Sun Huang Sung. John Wiley & Sons, Inc., New York, 1952. xiii + 482 pp. 187 figs. 15.5 × 23.5 cm. $7.

AS THE title implies, this is a text for the beginning student of mycology. What makes it particularly valuable is that throughout it remains essentially on the introductory level. This can be said of no other of the several excellent mycology texts which have appeared in recent years. Furthermore, there has been maintained throughout an easy, conversational style which because it smacks strongly of the author's personality and enthusiasm for his subject makes for easy and sustained reading.

After the usual introductory material, noteworthy for the care with which the author indicates the derivation of the words making up the special vocabulary of the science, the "phyla" of fungi are successively considered. These start with the *Schizomycophyta* and *Myxomycophyta* and continue with the *Eumycophyta,* which contains the classes of true fungi, namely, the *Phycomycetes, Ascomycetes,* form-class *Deuteromycetes* and *Basidiomycetes.* Series and subclasses are recognized under these larger categories.

Each class is introduced by a chapter dealing with general morphological features and life cycles and is followed by chapters dealing with the groups at the family level. Wherever appropriate, special features are interpolated, such as importance to man and diagrams of life cycles. Analytical keys to the orders are also included. Each chapter ends with a bibliography of papers, primarily those in English, pertinent to material considered in it. The book itself terminates with a glossary of terms, a list of acknowledgments of sources of the well drawn illustrations, and an index.

Alexopoulos' text can be recommended to the novice with the assurance that, for the most part, he will be able successfully to follow the author through the intricate maze of structural terms, life cycles, etc., with which the modern science of mycology is burdened.

FREDERICK K. SPARROW

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● PROGRESS IN COSMIC RAY PHYSICS

J. G. Wilson, Lecturer, University of Manchester, Manchester, England. Interscience Publishers, Inc., New York, 1952. xvi + 557 pp. 164 figs. 85 tables. 15 × 23 cm. $12.

AUTHORITATIVE and systematic treatises rarely appear in a field of science which is rapidly developing. Only when the principal phenomena are reasonably well understood and coordinated is it possible to prepare a systematic text. The great number of workers in the many phases of cosmic radiation are amassing more and more data without developing a corresponding clarification of the whole picture. There is a real need for attempts to systematize our knowledge in the many phases of this subject. This volume and the promised succeeding volumes will be of great assistance to the workers in the field. One does not find here a systematic presentation of the phenomena, but rather, surveys of the status of progress in special fields of the subject, prepared by those who have contributed to those special fields.

The contents of this volume includes: (1) a qualitative description of the radiation and elastic interaction of high-energy cosmic ray primaries in nuclear emulsion (Camarini, Lock, and Perkins); (2) the evidence for and the properties of unstable particles (Butler); (3) a survey of the problem of nuclear forces in terms of meson fields, with an attempt to make a consistent picture through the use of *pi, mu,* and heavy mesons (Michel); (4) an analysis of the part played by the heavy nuclei as primary cosmic ray particles and their influence on cosmic ray phenomena (Peters); (5) a report on geomagnetic effects covering the details of the author's own measurements (Neher); (6) a survey of