

BOOK REVIEWS

N. G. GAYLORD, Editor

Ion Exchange: A Laboratory Manual. J. E. SALMON and D. K. HALE. Academic Press, New York; Butterworths, London, 1959. vii + 136 pp. \$5.00.

During the past decade, several books on the subject of ion exchange have been published in the U. S., England, France, Germany, Sweden, and Japan. These publications have covered both the theory and technology of ion exchange. Since ion exchange is an accepted member of the family of unit operations in the realm of chemical engineering and since ion exchange techniques are now a necessary tool of the chemists in the laboratories of industry and academic institutions, a manual that can serve as a guide to the chemist, chemical engineer, or student embarking for the first time upon laboratory studies involving ion exchange techniques serves a worthy purpose.

This book by two British research chemists experienced in ion exchange techniques fills this need. Salmon of Battersea College (London) and Hale of the National Chemical Laboratory (London) have prepared this laboratory manual in a very clear style and have incorporated all the essential details that the uninitiated requires.

The manual includes an introduction to the chemistry of ion exchange resins as well as the equilibria and kinetics of ion exchange. Details are given for conducting various typical experiments involving the use of ion exchange techniques in analytical and preparative chemistry and in purification and recovery processes. The illustrative sketches of laboratory apparatus should prove quite helpful to the unexperienced technician.

Although some of the material contained in the manual is available in other books, the inclusion of such information will be worthwhile to the technician. One might quarrel with the authors as to the manner in which several exchange reactions are expressed and as to some details of procedure; however, these points are minor. Since the book is a laboratory manual and will probably be used very close to the laboratory bench, the reviewer regrets that the paper used was not of a better grade.

All in all, the reviewer feels that *Ion Exchange: A Laboratory Manual* will become a valuable addition to the existing literature on ion exchange.

Robert Kunin

Research Division
Rohm & Haas Company
Philadelphia, Pennsylvania

Techniques of Polymer Characterization. P. W. ALLEN. Academic Press, New York; Butterworths, London, 1959. xiv + 256 pp. \$9.50.

"Polymer characterization" has different meanings for different people—the editor has chosen to focus on characterization in dilute solution, and hence on molecular weights. In contrast with a number of recent books on polymers, the subject matter is experiment rather than theory or application. The book is the work of the editor and seven contributors, each a specialist in his field. The subjects covered are (1) solubility and handling polymer solutions (18 pages), (2) fractionation (48 pages), (3) osmometry (44 pages), (4) other methods of number-average molecular weights (18 pages), (5) light scattering (40 pages), (6) viscometry (36 pages), (7) endgroups (24 pages), and (8) block and graft copolymers (21 pages).

Each contributor has handled his assignment well. Only enough theory to give understanding and to add interest is presented. Drawings and examples are well-chosen. The procedures are clearly written with numerous operating tips and precautions. References are extensive and up-to-date.

It is unfortunate that modern methods of endgroup analysis as practiced in industrial laboratories in this country have not been published so that they could have been incorporated. The last chapter on block and graft copolymer characterization seems out of place; its inclusion is understandable in view of the editor's personal interest in the subject.

This reviewer found no typographical errors other than the omission of a line or lines on the dust jacket and a division line in equation 4.2, page 116. The cryoscopic constant for diphenylamine (Table 4.3, page 126) should read 8.6 rather than the 86.0 given.

For whom is this book written? The editor states, "The typical reader, it is envisaged, will be the graduate chemist who has studied one or more of the major works on the subject but who has had no practical experience in handling and performing measurements on polymeric substances. It is hoped that the more experienced worker will also learn something from the detailed, up-to-date, and selected descriptions of the various techniques."

A readable, enjoyable, practical book, but of limited appeal.

Ralph G. Beaman

Pioneering Research Division
Textile Fibers Department
E. I. du Pont de Nemours & Co., Inc.
Wilmington, Delaware