

Book Reviews

Diffusion in Polymers

Edited by J. CRANK and G. S. PARK. Academic Press: London and New York, 1968.
5½ in. × 9 in. 454 pp. 105s or \$18.00

WHEN R. M. BARRER's book entitled *Diffusion in and through Solids* appeared in 1941 it included two chapters providing, between them, a comprehensive review of diffusion and solution of gases and vapours in polymers. The ever-increasing number of published papers devoted to these topics is indicative of the vigorous growth and development which has taken place in the last twenty five years and therefore a present-day review of any consequence would be expected to merit a complete monograph.

The appearance of the present volume is not only timely but welcome, forming as it does (at least to the reviewer's knowledge) the only available monograph devoted to diffusion in polymers. It has been written by a panel of authors each of whom has made important contributions to development in the subject. The chapter headings [with the author(s)] are as follows: Methods of measurement (CRANK and PARK), Simple gases (STANNETT), Organic vapours above the glass transition temperature (FUJITA), Free volume and other theories (KUMINS and KWEI), The glassy state and slow process anomalies (PARK), Diffusion and permeation in heterogeneous media (BARRER), The solution process (UEBERREITER), Water in polymers (BARRIE), Kinetics of dyeing (PETERS) and Transport in ion-exchange polymers (MEARES).

The editors state in their preface that the emphasis throughout is on basic scientific investigations rather than on technological applications and that individual chapters are largely self-contained. This is certainly the case and should commend itself to those seeking a review article on a particular aspect of the subject. In allowing each author maximum freedom some repetition has been deemed reasonable especially if it makes for easier reading. No attempt has been made to standardize nomenclature and, of rather less importance, the American counterpart of British spelling has been tolerated!

Each article has a summary of its content at the beginning and individual references to 1966. There are separate indices devoted, respectively, to authors, materials and subjects.

Although effectively two years old this volume should be a reference work for many years. It is eminently readable. Misprints are present but do not appear excessive. At five guineas it represents good value for money—always a refreshing experience in our present-day world!

R. ASH

Kinetics and Mechanisms of Polymerization, Volume I — Vinyl Polymerization (Part I)

Edited by G. E. HAM. Arnold: London; Marcel Dekker: New York, 1967.
6½ in. × 9½ in. xi + 546 pp. Illustrated. 235s

THE 'Kinetics and Mechanisms of Polymerization' series is not an addition to the recent flush of 'Progress in—' and 'Advances in—' series. Rather, it is intended to 'deal with significant recent findings as well as with important contributions from the past' over the whole field of polymerization kinetics and mechanisms in three volumes. The first volume (in two parts) is to cover vinyl polymerization, and the second and third volumes are to be devoted to ring-opening and condensation polymerizations respectively. Presumably the series is planned to be comprehensive.

This first part of Volume I contains a chapter entitled 'General aspects of free-radical polymerization' (G. E. HAM), followed by articles on special topics by other authors. Chapter 1 does not give a general background to polymerization by free radicals, but skips rather lightly over the basic features and concentrates on copolymerization kinetics and a discussion of radical reactivities, largely according to one scheme. Retardation, degrees of polymerization, etc., are hardly mentioned. Many of the general features are covered,