

Advances in Radiation Chemistry is a new series which will be devoted to "developments in the various specialized areas fundamental to theory and experiment in radiation chemistry". This publication follows some 2 years after *Radiation Reviews*, which covers a somewhat similar field, although the latter publication's terms of reference are rather broader than "radiation chemistry". In practice, both publications have published reviews on identical topics already, although only four contributions are included in this first volume of *Advances*. Indeed, one author, Dr J. K. Thomas, has written about the related subjects, solvated electrons and the radiolysis of water, for both review publications. Moreover, one member of the advisory board of *Advances* is himself an editor of yet another review series *Current Topics in Radiation Research*, which also allows reviews in radiation chemistry, although during its development has tended to concentrate on radiation developments more allied to biology.

It would be unrealistic, therefore, not to pose the question whether this subject, barely 30 years old as a discipline, can sustain such a barrage of reviews. Only time, of course, will truly answer this question, but my own view is that provided subjects are critically reviewed and that the frequency of publication is controlled by the developments in any one area, no conflict need arise. This latter point, I note, is also stressed by the editors of *Advances* in their introduction to the series, and as pioneers in the field, they are in an excellent position to view developments with perspective. Even the most obvious duplication, as has occurred with Dr J. K. Thomas's contributions, need present no waste of effort. For example, the author has in the first contribution dealt with a limited aspect of the subject of more current interest, and now given a comprehensive panoramic view of the radiation chemistry of water, which is incidentally of the highest quality. In their own way both reviews can serve a useful function.

Other subjects reviewed in *Advances* are "Charged Particle Tracks and their Structure", by A. Mozumder; "Theory of Transient Negative Ions of Simple Molecules", by Joseph C. Y. Chen and "Chemical Synthesis by Ionizing Radiations", by C. W. Wagner. The first volume, therefore, is disproportionately weighted towards theory, but no doubt future volumes will seek to correct the balance.

Ignoring, therefore, the groans of the librarians and the strains on departmental funds, it is possible to welcome the new venture and wish it well.

GLYN O. PHILLIPS

KINETICS OF CHANGE

Mass Transfer in Heterogeneous Catalysis

By Charles N. Satterfield. Pp. xvi+267. (MIT Press: Cambridge, Massachusetts, and London, February 1970.) 133s.

In presenting a complete revision and extension of his earlier book¹, Professor Satterfield has managed to repeat his tradition of writing a standard text in the field of catalysis. For all those interested in different aspects of the kinetics of catalytic reactions, the book must be required reading.

The general approach is, first, to present the concepts qualitatively, and then to build a quantitative picture on this basis, treating both the simple case and the more complex situations. Theoretical treatments are given, but emphasis remains on their quantitative application to various practical problems of reaction engineering. Several illustrative examples are used throughout the text, and many available experimental data are summarized in tables and graphs.

Molecular diffusion, diffusion in pores and the estimation of diffusion coefficients are considered in the first chapter,

together with a brief description of the properties and methods of characterization of solid catalysts. Mass transfer in fixed beds, fluid beds, and various gas-solid-liquid systems is reviewed, and the concept and measurement of effectiveness factors are described. The arguments are applied to simple systems and to more complex cases, particular attention being paid to the influence of temperature gradients in a pellet and to problems introduced by complex kinetics. The final chapter is concerned with the poisoning and regeneration of catalysts and with a short section on the influence of diffusion on selectivity. This book is longer than the earlier volume, the section on mass transfer with chemical reaction having particularly increased in length. It was somewhat disappointing that the discussion of selectivity is still limited to a short section, rather than being treated as a basic concept, and that no discussion of the merits of stirred tank reactors is presented, but these are minor faults.

The book is expensive, but it should interest final year undergraduates, research workers and design and development engineers.

D. L. TRIMM

¹ Satterfield, C. N., and Sherwood, T. K., *The Role of Diffusion in Catalysis* (Addison Wesley, New York, 1963).

BASIC OPTICS

Handbook of Gas Laser Experiments

By G. L. Rogers. Pp. 67. (Iliffe: London, March 1970.) 30s.

This little book is a most timely and useful work which is recommended to all concerned with introducing students to the fascinating world of modern optics. Moreover, those who have entered this field from the disciplines of microwave engineering will especially welcome the pieces of experimental "know-how" which are not part of their training.

It consists of a concise collection of some eleven basic experiments in coherent wave optics.

Brief but sufficient background (with references) is given as an introduction to each experiment and some specimen results are also given. As expected, simple experiments in holography are included; in particular, it is also pleasing to see experiments on the zone plate, Fourier images and Fraunhofer diffraction by single and repeated apertures, thus providing examples of wave phenomena spanning microwave antennas to X-ray crystallography.

ALAN P. ANDERSON

FRINGE PATTERNS

Multiple-Beam Interference Microscopy of Metals

By S. Tolansky. Pp. ix+147. (Academic Press: New York and London, March 1970.) 45s.

This book is concerned with principles, experimental techniques and applications of multiple beam reflexion fringes of equal thickness. There are thirteen chapters, together with a collection of references to the work of the author's school, a brief appendix on fringes of equal chromatic order and a useful index.

The principles are treated largely in a descriptive way with a minimum of theory, but there is much useful detail about experimental techniques. The chief value of this book, however, is undoubtedly in the wealth of examples of the use of the beautiful technique of multiple beam surface topography. Professor Tolansky can justly claim to be the sole originator of this simple and elegant method, and in this book we can see some of the great variety of applications which he has pioneered in the past three decades. The following are some of the lesser known applications: electropolished single crystals, loaded ball-bearings, growth spirals on silicon carbide, surface roughness caused by etching on cleaved surfaces, micro-