The Labile Molecule

(Discussions of the Faraday Society, No. 2, 1947.) Pp. ii+409. (London and Edinburgh: Gurney and Jackson, 1948.) 30*s*.

AT the present time there is a great deal of activity in the field of chemical kinetics in unravelling the complexity of those reactions which are believed to proceed by the intervention of free radicals both in the liquid and in the gas phase. Once more the Faraday Society has, at an opportune time, held a full-dress discussion of a subject that is not merely fashionable, but is also in full flight of the vigour of its development. Just as many of the Faraday Society discussions tend to become works of reference and inspiration for further work, so too does the present volume fall into this category. It is to be seen, well thumbed, in most laboratories having an interest in chemical kinetics.

It is not possible in a limited space to deal with any of the individual papers, but perhaps the dominant role is the emphasis on the more quantitative aspects of the subject. This is illustrated in a number of papers dealing with a variety of reactions where the energies of activation and temperature-independent factors for a number of radical-molecule processes have been determined with considerable precision. The discussion is first devoted to a theoretical treatment of the structure and behaviour of free radicals. Then follows gas-phase free radical reactions developed to a much more complete stage in the last ten years. Now, however, interest is perhaps greater in the liquid phase, and, in spite of much complexity, the papers reveal the very substantial progress made in analysing both oxidation reactions and polymerization. It is perhaps a pity that the publication of this important discussion has been so long delayed—it was held in September 1947.

Précis des découvertes somiologiques ou zoologiques et botaniques

Par C. S. Rafinesque. (Palerme 1814.) Reprint. Foreword by Prof. E. D. Merrill. Pp. iv+58. (New York: Peter Smith, 1948.) 4 dollars.

CONSTANTINE SAMUEL RAFINESQUE was born at Constantinople in 1783, and died in great poverty at Philadelphia in 1840. His father was French and his mother German. In 1802 he settled in America, where he studied biology in fifteen States of the Union. He was a keen explorer and an inspired collector, and, as a person, the history of biology can scarcely produce a more picturesque and eccentric figure. There was an unmistakable dash of genius in his composition, although he could be an unreliable and erratic worker. His death was a relief to his more matter-of-fact and orthodox contemporaries, and for a long time his works were allowed to drop out of the literature of biology. Later, however, a resumed study of his writings, which had in the meantime become very scarce and difficult to consult, validated many of his taxonomic discoveries, and some of his works were reproduced in facsimile.

The present volume is a photographic reprint of a publication of 1814, now regarded as indispensable to taxonomic students of both animals and plants. As many as 189 new species are described in it, and several new genera are instituted. Since only six copies are known to exist in American libraries, the reprint now reviewed became necessary, other works of Rafinesque having already been issued in a similar form. In 1942 the Transylvania College, where Rafinesque had been professor of biology for six years, produced a volume of unpublished and other Rafinesque material in commemoration of the centenary of his death. The re-issue of such notable and rare published memoirs is a benevolent undertaking, and the enterprise of the publishers of the 1814 volume is therefore gratefully commended.

F. J. COLE

Fundamentals of Photographic Theory

By Dr. T. H. James and Dr. George C. Higgins Pp. vii+286. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1948.) 21*s*. net.

THIS book is a condensed version of "The Theory of the Photographic Process", by Dr. C. E. K. Mees, and it should prove a valuable text-book for those possessing the requisite knowledge of physics and chemistry and the necessary photographic experience to apply this knowledge. The chapter on the photographic emulsion is somewhat meagre, but succeeding chapters on the formation of the latent image and on reciprocity-law failure and other exposure effects are good. As one would expect, the chapters on development (mechanism of development, composition and reactions of developers, and general kinetics of development) reflect the fact that Dr. T. H. James has for many years made valuable contributions to this subject. After a discussion of fixing and washing, the authors devote three excellent chapters to a study of sensitometry, and a further chapter to the theory of tone reproduction. New material published since the date of Dr. Mees's work is included, and the discussion in chapter 11 on the new speed constants adapted by the American Standards Association is of particular interest. Finally, the authors deal with the structure of the developed image and with sensitizing and desensitizing. The book is very free from errors for a first edition; the only one worth noting is that the formulæ on p. 103 are not quite correct. The index is adequate, and the printing, lay-out and paper are first-class.

Organic Reactions

Edited by Roger Adams. Vol. 4. Pp. viii+428. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1948.) 36*s*. net.

THE series issued under the title of "Organic Reactions", with Prof. Roger Adams, of the University of Illinois, as editor-in-chief, quickly established itself as a standard source of reliable and comprehensive accounts of the more important type reactions of organic chemistry. These accounts are both critical and capable of rapid application in the laboratory, and as such are great time-savers in organic chemical research work. The fourth volume follows the general plan of its predecessors. The articles, written by experts with first-hand knowledge of the reactions in question, deal with the Diels–Alder reaction, the preparation of amines by reductive alkylation, the acyloins, the synthesis of benzoins, the synthesis of benzoquinones by oxidation, the Rosenmund reduction of acid chlorides to aldehydes, and the Wolff–Kishner reduction. There are accompanying tables of specific compounds which are shown in the literature as having been prepared by or subjected to the reactions concerned. As usual, the volume has been produced in first-class style. It can be commended unreservedly to research workers in organic chemistry and to advanced students of the subject.

JOHN READ