

PROGRESS IN CHEMISTRY

Modern Aspects of Inorganic Chemistry

By Prof. H. J. Emeléus and Dr. J. S. Anderson. Third edition, revised and reset. Pp. xi+611. (London: Routledge and Kegan Paul, Ltd., 1960.) 35s. net.

Radioactive Tracers in Chemistry and Industry

By Pascaline Daudel. Text augmented and revised by the author. Translated by Dr. Ulli Eisner. Pp. xi+210. (London: Charles Griffin and Co., Ltd., 1960.) 36s. net.

Annual Reports on the Progress of Chemistry for 1959

Vol. 61. Edited by Dr. R. S. Cahn. Pp. 476. (London: The Chemical Society, 1960.) 40s.

THE book by Emeléus and Anderson is now so well known that any detailed description of its contents is superfluous. The new edition has been carefully revised, new sections have been added, and some of the text in earlier editions which is now less important has been omitted, so that the size of the book has not been substantially increased. This is important for two reasons. First, the very reasonable price of a book of this character has been maintained. Secondly, the amount of material which can be dealt with in lecture courses and read by students is limited, and while a book of this size provides something which an average student may be expected to master, a larger book would be less acceptable.

Among the many new topics dealt with, mention may be made of a short but instructive account of ligand field theory, the chemistry of ferrocene and related compounds, sulphur nitride and its derivatives, and much new material in the chapters on co-ordination compounds. The last subject, with the main emphasis on chemistry, has always been a notable part of the book, and I know of no other account which can match it for clarity and completeness. In most of the other sections which were dealt with in previous editions, such as the boron and sulphur hydrides, significant new material has been added. The whole book is worthy of the highest praise from the point of view of the selection of material and also for its treatment.

One or two minor matters which were noticed are mentioned here not for criticism but in the hope that the authors may see their way to consider them in a future edition. I think the rather short section on molecular orbitals, which is quite largely drawn on in later parts of the book, will prove difficult to many students. The symbols for hybrid states on pages 61 and 69 are not clearly defined. If another four or so pages were added to this section it could be made clearer. The short table of dissociation energies on page 101 seems to be based on a quoted source of 1947, and it might have been pointed out that some of the values are still doubtful. I did not notice any reference to 5-valent manganese, and the section on metal hydrides on page 416 should be brought up to date by inclusion of the new preparation of cuprous hydride; the rather sceptical treatment seems now scarcely justified. The higher oxide of sulphur described on page 473 has been shown not to exist. In some cases the statement that "the structure is unknown" is misleading; there is little doubt, for example, that iodine dioxide is I_2O_4 , since it is diamagnetic. The new formula for graphitic oxide does not seem to be mentioned. On page 52 bivalent americium is

mentioned but on page 597 it is said not to exist. It now seems that N_2O_3 is $ON \cdot NO_2$ rather than a compound with an oxygen linkage as shown on page 466, and it is scarcely correct to say on page 468 of hypnitrous acid that "the structure has not been determined", since the dipole moment of its esters clearly indicates a trans-configuration. These are all small matters which little affect the accuracy of the book as a whole and the obvious care with which the information has been sifted.

The subject of radioactive tracers is now so important both in chemical laboratories and in industry that the short account of it by Daudel is welcome. The biological applications are not included. The text is clear and easy to read and outlines of laboratory methods are given which could enable a reader to judge whether a method is likely to be of interest in his field or not. This applies particularly to the industrial applications, since there is obviously a large field here which may not be very well known to those engaged in technical processes. The sections are followed by detailed references to the literature which seem to be brought up to the year 1955. The series of reports now being issued by the National Academy of Sciences, Washington, under the auspices of the National Research Council, will provide further information. It seems to me that this modest book should find a place in every works laboratory.

The *Annual Reports* issued by the Chemical Society continue to provide, in a commendably small volume, a survey of progress in chemistry which for compactness and completeness is unrivalled. All chemists have cause to be grateful to those who participate in the difficult task of surveying the fields of knowledge which they are so well fitted to traverse. The more recent policy of attempting to cover, however briefly, all the important work of the year, rather than to provide reviews of selected parts of it, which is possible in the case of inorganic and organic chemistry, seems on the whole to be a good one. In physical chemistry it is scarcely possible, and selected topics are treated from year to year, the material which has accumulated in the interval being brought together. The book is one which every chemist and every advanced student should have, and its relatively low price puts it well within his reach.

J. R. PARTINGTON

MEGALITHIC TOMBS OF FRANCE

The Prehistoric Chamber Tombs of France

A Geographical, Morphological and Chronological Survey. By Glyn Daniel. Pp. xx+282+32 plates. (London: Thames and Hudson, Ltd., 1960.) 70s. net.

TO win appreciation for some phase of antiquity on the strength of modern excavations is far easier than what has been undertaken here—where the antiquities concerned have been known for centuries, until only yesterday often excavated badly, and celebrated in a literature in which perverse and obsolete terminologies have run riot. Dr. Daniel, supported by his wife, and with backing from many quarters as well as friendly French co-operation, has for long been working towards a systematic account of the megalithic and related stone tombs of France, their form and contents, and their placing in the frame of European prehistory in the third and second millennia B.C., to which in general they belong. This book, by no means his first study of megalithic