

BOOK REVIEW

Tritium and its Compounds.

by E. Anthony EVANS, Principal Scientific Officer, Organic Department, U. K. A. E. A., Radiochemical Center, Amersham, England. Butterworths and Co., 88 Kingsway, W. C. 2, London, England. 1966. 441 pp. 14 × 22 cm. £ 5.

Tritium and carbon-14 are without question the two most important radioactive isotopes used by chemists, biochemists and biologists as tools in helping them elucidate fundamental and applied problems in their respective fields. Many publications relating to the preparation, measurement and use of compounds labelled with these isotopes have originated from the U. K. A. E. A. labs at Amersham. An elegant and concise book by Dr. J. Catch on carbon-14 compounds appeared from these labs in 1961. The appearance of this book was followed by the appearance of «The Radiochemical Manual», editor Dr. B. J. Wilson, now in its second edition, which serves as a primer on practical work with isotopes. Now a book on tritium and its compounds has made its appearance from these laboratories.

Dr. Evans has made a thorough and exhaustive search of the literature on tritium through March 1966 in text and appendix and has included 2129 literature references. He has compiled and unified this material, often in review form, and has presented much of it in narrative style in this book. It will be of use not only to those interested in tritium but also to anyone working in the general area of isotope applications involving organic systems. The material is divided into six chapters : 1. Physical Properties and Production; 2. The Uses of Tritium and its Compounds; 3. Precautions in Tritium Handling; 4. The Preparation of Tritium-Labelled Compounds; 5. Measurement and Analysis of Tritium Compounds; 6. Properties Peculiar to Tritium Compounds. In general this book is excellent. Completeness of coverage is evident wherever one turns.

Dr. Evans' long experience has allowed him to provide much in the way of critical comment and penetrating insight into what is important and what is trivial in working with this isotope. Although this is apparent in all sections of the book, it is used to special advantage in the chapters on precautions in tritium handling and the measurement and analysis of tritium compounds. The discussion of decomposition by self-irradiation in chapter six presented from a practical standpoint is the best this reader has seen anywhere. The delineation of advantages and disadvantages of each synthetic

and nonsynthetic method in chapter four provides a valuable guide for the user intending to choose a labelling method. Much of the material is presented in extensive tabular form. The uses of tritium and its compounds is covered in detail in chapter two.

The organization of the book is a bit choppy. The uses of tritium and its compounds might be appreciated more by the reader new to the field had he first learned about preparative methods and applicable precautions. Much of what is in chapter six could have been incorporated to advantage in other chapters. For example, the section on stability of tritium atoms in molecules in chapter six complements and in some instances overlaps the material on specificity of label in chapter 5 and thus the reader might have benefited from a more unified treatment. The section on isotope effects is the only subject in the book receiving somewhat superficial treatment. It might best have been placed in the chapter on uses of tritium since this book is of greatest value to those using tritium as a tool. Some of the photographs leave something to be desired e.g. 3.2b and 3.3 showing experimental hood facilities. The captions are of little help because of the poor quality of photographic reproduction.

There is one deficiency that I feel is major and that is the index. It does not do justice to the content of this fine book and it is of questionable help in finding important information. For example «decay constant» is not listed in the index as such. It is listed under Tritium, subheading β -particles, decay constant. «Hydrogen tritide» (or any equivalent indexing term) is not in the index, yet it is discussed on page 319. (Parenthetically one might note that in spite of the exhaustive coverage of tritium compounds, there seems to be no reference to the preparation of HT.) This is a pity because the book abounds with useful information but the index does regrettably little to help one find it.

Dr. Evans' book will be I feel the standard comprehensive work on tritium for some time to come. He has made a real contribution to the scientific literature. Anyone working with tritium will find this book an invaluable addition to their library. It is definitely recommended reading.

Alfred P. WOLF, Brookhaven National Laboratory.

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NOTE

The review about Dr. M. Bubner and Dr. L. Schmidt's book : « *Die Synthese Kohlenstoff — 14 markierter. Organischer Verbindungen* » which was published in Vol. III, No. 1 of the *Journal of Labelled Compounds* unfortunately appeared unsigned.

Please note that this title was reviewed by Mr. L. Pichat of the Centre d'études nucléaires de Saclay.