

work based both on investigation of brains of whole animals and of isolated tissue preparations is considered, particular attention being given to the turnover of nucleotide and other 'high-energy' phosphates (where there is common ground between Dr. Heald and certain participants in the symposium reviewed above). The interpretation of experiments in which electric pulses are applied to slices of brain suspended in saline is judiciously discussed, and a phosphoprotein which Dr. Heald has investigated figures in an intriguing, if speculative, scheme of reactions linking phosphate bond energy with ionic migrations in nerve cells. Other topics covered include the synthesis of phospholipids and the metabolic effects of anaesthetics; the book as a whole provides a comprehensive and timely survey of a field of study where general biochemical concepts such as that of energy-rich phosphate bonds may be related to the special features of a highly differentiated organ.

R. V. COXON

## FLUORINE CHEMISTRY

### Advances in Fluorine Chemistry

Vol. 1. Edited by Prof. M. Stacey, Prof. J. C. Tatlow and Dr. A. G. Sharp. Pp. vii+203. (London: Butterworths Scientific Publications, 1960.) 45s.

### Chemie der Organischen Fluorverbindungen

Von Milos Hudlicky. Pp. xviii+416. (Berlin: Veb Deutscher Verlag der Wissenschaften, 1960.) 51.60 D.M.

**A**DVANCES in *Fluorine Chemistry* is an excellent beginning at fulfilling a critical need in the field of fluorine chemistry, namely, a systematic presentation and appraisal of the chemistry embodied in the various major areas of this rapidly expanding field. To cover all the areas with the attention that is their due is a monumental task. The editors of this book have selected a number of prominent British research chemists and teachers to write on five areas. These are: the halogen fluorides (W. K. R. Musgrave), transition metal fluorides and their complexes (A. G. Sharpe), fluoroboric acids and their derivatives (D. W. A. Sharp), the electrochemical process for the synthesis of fluoro-organic compounds (J. Burdon and J. C. Tatlow), and exhaustive fluorinations of organic compounds with high-valency metallic fluorides (M. Stacey and J. C. Tatlow). Each chapter is written with every attempt made not to be redundant. Whenever an earlier book or review article has made a contribution to the particular area under discussion it is cited as a prime source. As a result, in general, more emphasis is placed on the reactions and fundamental nature of the chemistry of both inorganic and organic fluorides than on the general preparative procedures, for the various authors are aware that a systematic fluorine chemistry is developing, is ready for more than a casual interpretation in terms of the science of chemistry and that the time has arrived to do so in earnest. Although there is a minor tendency, in some parts of the text, to extrapolate a bit beyond what may be construed as conservative, the facts are presented thoroughly enough to allow the reader to make his own interpretations, if he chooses to do so. At the same time, some of the writers of this book are courageous enough to be mildly critical of the authors they are citing when the occasion demands

it. This is not a common practice, but appears with sufficient frequency to be stimulating.

This book is no less than its title advertises. It should prove helpful to the fluorine chemist in keeping abreast with the five areas discussed. If detailed data on a compended variety of fluorine compounds is what is being sought by the reader, he is referred to the more than adequate bibliography that follows each chapter. Typical of the better books by British authors, this book is up to date (1959), well written and discriminating. On the lighter side, the careful reader is in for a mild surprise when he reaches p. 11, and finds that gravity acts differently in England and in the United States.

In the introduction, Prof. Stacey states that this is the first volume in a series, and that further volumes written by chemists from several countries are to be anticipated.

The German edition of the book by Hudlicky is essentially a translation of the original edition in Czech reportedly brought more up to date by the addition of material that appeared in the chemical literature between the dates of publication. The author admits that the book is the result of his own attempts to enlighten himself in the area of fluorine chemistry.

The book meets rather well the purpose for which it was published, namely, to present in broad aspect the materials, conditions, yields and methods for preparing organic fluorine compounds. To this extent, the work is well done. No attempt is made to cover every appropriate compound produced or to compile the properties of those that are reported. Reaction equations, with conditions and yields, are used liberally to account for the results reported. Each such equation has a bibliographical reference and all information is cross-indexed by paper, author and compound, making it very simple to find any desired preparation. Consequently, even a student with a minimal comprehension of scientific German can use this book to good advantage.

There has been no attempt made to write this book for any purpose other than as a suitable reference text for information *apropos* laboratory practice in preparing organic fluorine compounds. There are a number of short chapters on nomenclature, materials for handling fluorine, reactions of fluorine with various substance, hydrogen fluoride and inorganic fluorides. To complete the book, sections on fluorine analysis, freons, and plastics containing fluorine are considered briefly.

The bulk of the text involves methods for putting fluorine into organic compounds, the various preparations of organic fluorine compounds, and their chemical reactions. A short chapter on the general physical properties of these compounds completes the book.

There is no serious attempt to present a critical analysis of fluorine chemistry nor is any serious distinction made between organic fluorine compounds and fluorocarbon compounds. Most conclusions as to the mechanisms and nature of the chemistry cited are left to the discretion of the reader.

To sum up, this book is in no way an erudite but rather a practical reference book, that furnishes a helping hand to both the neophyte and the practising fluorine chemist to find methods for preparing, handling and using fluorine-containing materials. It could serve as a useful adjunct to the chemist's bookshelf.

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