

**Advances in Carbohydrate Chemistry. Volume 13.** MELVILLE L. WOLFROM, Editor, R. STUART TIPSON, Associate Editor. Academic Press Inc., 111 Fifth Avenue, New York 3, N. Y. 1958. xi + 387 pp. 16 X 23.5 cm. Price, \$11.00.

With the appearance of its thirteenth volume, the "Advances" is becoming one of those venerable and universally accepted institutions, which book review sections are apt to dismiss with a perfunctory recital of the table of contents of each new issue, regardless of its intrinsic excellence. Certainly this series is now, along with Pigman's monograph, the most frequently consulted source of summarized information on carbohydrates.

Rapidly increasing interest in nitrogenous sugar derivatives is reflected in the current volume, five of whose ten chapters are devoted wholly, and one partly, to such compounds. L. Mester's extensive review of the long-known but long-neglected formazan reaction is lucid and readable. This reaction, which might at first seem to have very limited utility, has opened up a world of new possibilities. One notable achievement of the formazan approach has been the long sought definitive proof for the open-chain (but chelated) structure of sugar phenylsazones—confirming once again the chemical intuition of E. Fischer (and in later years, of L. Fieser).

The urea-type derivatives of sugars are competently discussed and tabulated in I. Goodman's interesting chapter.

A favorite test of the carbohydrate student's know-how has long been the assignment: "Propose syntheses for all methyl ethers of D-glucose." The analogous problem for the 2-amino-2-deoxy sugars has now also been solved, in most cases by actual experiment. The review of this work by R. Jeanloz unfortunately is laborious reading because of failure to supply formulas and the resultant tedious use of complete systematic names. Since a small number of standard approaches (e.g., tritylation, methylation, detritylation) are repeatedly employed, some schematic presentation of the synthetic routes might have been more suitable.

The nomenclatural confusion which has attended the recent discovery of the "sialic" (or "neuraminic") acids—compounds of great current interest to biochemists—is here aggravated by use of the less familiar appellation "nonulosaminic acids." In attempted explanation, Zilliken and Whitehouse (page 238) offer the alternative ". . . amino-carboxy-deoxynonuloses." No doubt "aminocarboxydeoxyoctuloses" was meant. With this trivial exception, the chapter is a reliable and valuable contribution. One problem (page 262) which seems to demand further investigation is the apparent lack of final and rigorous proof for the mannosamine (or glucosamine?) configuration of N-acetylneuraminic acid.

Applied carbohydrate chemistry is here represented by two chapters. In one, L. Stoloff offers us a fascinating glimpse of a family of substances, the "polysaccolloids" (gums, mucilages and the like), which, despite their ubiquity in daily life, remain veiled in mystery. This reviewer was unable to work up any great enthusiasm for the other chapter, by G. Caesar, on "Starch Nitrate," which seems to be largely concerned with technological minutiae, such as optimum ratios of nitric and sulfuric acids.

The changes undergone by sugars in basic solution have long been regarded as more a nuisance than valid phenomena for chemical study. The review by J. Speck, Jr., however, reveals that such reactions of monosaccharides have become valuable tools for structural proof, as well as for synthesis. Whistler and BeMiller perform a similar service in their chapter on polysaccharides.

A related subject is the "Four-Carbon Saccharinic Acids." However, J. Crum's well-written contribution on this topic is not concerned with alkaline degradations as such, but

with the synthesis of the dihydroxybutanoic (and -methylpropionic) acids from non-carbohydrate starting materials.

The Editor of the "Advances" is known for the flawless perfection of his *own* research manuscripts. So it is no surprise to find that the "Advances" is also remarkably free of errors, typographical or otherwise. From the "Errata" we learn, however, that in the preceding volume the Editor did err in his printing of the word "Karabinose"! The reference was actually to the well-known Dr. J. V. Karabinos, and fortunately not to some new sugar whose formula must be learned.

One of the major features of Volume 13 is F. Shafizadeh's excellent chapter on the ". . . Oxygen Ring in Sugars." Here he skillfully summarizes a vast wealth of experimental data from numerous laboratories. The precise scope of this chapter is not adequately revealed by its title, and prospective readers would do well actually to scan the pages to learn which subjects are covered.

This volume of the "Advances," which includes a well-deserved tribute to Carl Neuberg by F. F. Nord, maintains the generally excellent quality of previous volumes, and is highly recommended to all who are interested in the carbohydrate and related chemical fields.

DEPARTMENT OF PHARMACOLOGY

SCHOOL OF MEDICINE

STANFORD UNIVERSITY

STANFORD, CALIF.

G. E. McCASLAND

**Chemie Organických Sloučenin Fluoru.** By MILOŠ HUDLICKÝ. Nakladatelství Československé Akademie Věd, Vodičkova 40, Praha II, Czechoslovakia. 1958. 358 pp. 18 X 24.5 cm. Price, 38,50 Kčs.

"Chemistry of Organic Fluorine Compounds" is designed to provide a bird's-eye view of synthetic methods and laboratory technique in the field of organic fluorine chemistry. The book is addressed to the research chemist who wants to become familiar with the practical aspects of this rapidly growing area of organic chemistry.

Chapters dealing with apparatus, equipment and fluorinating agents are followed by a review of synthetic methods for the preparation of various classes of organic fluorine compounds. One third of the text is devoted to a summary of the chemical reactions of organic fluorine compounds. The remainder of the text consists of chapters dealing with properties, uses, and analytical methods. The book contains 37 detailed laboratory procedures for the preparation of representative materials. The text is carefully documented (over 800 references) and thoroughly indexed (author, formula, and subject indexes).

The large scope of the book necessitated selection of material from the literature without an attempt at complete coverage of the field, but it appears that most of the important aspects of the chemistry of organic fluorine compounds are discussed or, at least, mentioned. The most recent literature data which are included date back to 1956 and, in view of the extremely rapid growth of the subject, the book already appears to be in need of revision. For example, a more thorough treatment of methods for the synthesis of highly fluorinated organic compounds containing functional groups (electrolysis in liquid hydrogen fluoride and telomerization) seems appropriate.

The presently discussed book is a useful practical manual in the field of synthetic organic fluorine chemistry. It is hoped that translation of a subsequent edition will make the book available to a larger number of readers.

JACKSON LABORATORY

ORGANIC CHEMICALS DEPARTMENT

E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON 99, DELAWARE

I. PASCAL