

Book Reviews

Progress in Organic Chemistry, Vol. II. J. W. Cook, Ed. New York: Academic Press; London: Butterworths, 1953. 212 pp. \$7.00.

Volume 2 of *Progress in Organic Chemistry* consists of the following six chapters: Recent Developments in Theoretical Organic Chemistry, M. J. S. Dewar; Organic Fluorine Compounds, M. Stacey; Chemistry of the Triterpenoids, D. H. R. Barton; Partial Synthesis of Cortisone and Related Compounds from Accessible Steroids, F. S. Spring; Relationship of Natural Steroids to Carcinogenic Aromatic Compounds, H. H. Inhoffen; and Recent Developments in Pyridine Chemistry, J. P. Wibaut.

The chapters vary in length from 20 to 36 pages; the references cited vary in number from 17 in the first chapter to 172 in the sixth. The individual chapters serve their intended purpose of familiarizing the nonspecialist reader with current accomplishments and problems in the fields of chemistry covered, and the reviewer, as one such reader, expresses his thanks to the authors and editors.

To these thanks he would add one suggestion and one protest. The suggestion is that each chapter begin with a brief table of contents that would list the various subtopics to be discussed. The protest is against the practice of using chemical formulas instead of names in the text; for example, "IF₅ converted CBr₄ into a mixture of bromofluoromethanes and with Cl₄ there was obtained the useful substance CF₃I, in good yield."

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Les Proteines. Rapports et discussions. Neuvième Conseil de Chimie tenu à l'Université de Bruxelles du 6 au 14 avril 1953. Sous les auspices du Comité Scientifique de l'Institut International de Chimie Solvay. Bruxelles: R. Stoops, 1953. 350 pp. Illus.

The University of Brussels and the Institut International de Chimie Solvay are host every third year to a conference on some aspect of chemistry. The ninth Solvay Conference, held in April 1953, was devoted to a consideration of protein chemistry. Nine prepared papers and the ensuing discussions by the invited participants have been beautifully published in this volume.

K. O. Pedersen presents a brief, critical discussion of the problems involved in the determination of molecular weights of proteins by osmotic pressure, ultracentrifuge, light scattering, and chemical methods. This paper includes tabulated data on 165 molecular weight determinations on various proteins and an extensive bibliography.

The paper of Linus Pauling is a discussion of proposed configurations of polypeptide chains in proteins. Consideration of x-ray diffraction data and known bond lengths and angles leads to the formula-

tion of detailed helical structures for polypeptide chains, and to suggested associations of these helices into multiple strand cables and fibers in proteins.

The third paper by Lawrence Bragg is a delightfully readable account of the problems involved in the analysis of the x-ray diffraction data for hemoglobin. In the interpretation of x-ray data, the cautious conservatism of the physicist is in interesting contrast to the optimistic precision of the chemist in the preceding paper.

In his paper Chibnall considers the chemical constitution of proteins. After a brief review of amino acid analysis, the author discusses the problem of determining the number of peptide chains in the protein molecule. Methods for N-terminal residues, C-terminal residues, and terminal amide residues are considered as is the evidence of cyclic peptide chains. The separation of the component peptide chains of proteins and the determination of amino acid sequences in these chains are discussed.

The paper of Synge is a consideration of the merits of various methods for the separation in pure form of relatively large fragments of proteins as a preliminary to detailed analysis of these fragments. Electrophoresis, chromatography, and diffusion are among the methods discussed in a paper which is suggestive of possible methods awaiting exploitation in this field.

The sixth paper by Desreux and Fredericq is devoted to the fractionation and purification of proteins and criteria of purity. The separation of proteins from organized biological materials and the problem of association and dissociation of proteins are considered. Purification by solubility, electrophoresis-convection, adsorption, and distribution methods are discussed. The need for additional, more general methods is emphasized.

A discussion of protein denaturation along classical and familiar lines is given by Anson. It is remarkable how little advance has been made in this field in recent years, in contrast to the rapid progress in other aspects of protein chemistry.

The degradation of proteins by enzymes is considered by Linderstrom-Lang. The major portion of the paper is devoted to kinetic treatment of a number of hypothetical cases of proteolysis. This is followed by a discussion of experimental studies of protein-enzyme interactions including peptic and tryptic hydrolysis of various purified proteins and the transformation of ovalbumin into plakalbumin.

The last paper by Theorell is devoted to experimental evidence about the chemical relations between proteins and prosthetic groups. Included are discussions of flavoproteins, pyridine nucleotide proteins, and hemoproteins, with emphasis on the effects of specific proteins on the properties of the prosthetic groups.

This book presents a broad picture of present knowledge of the structural chemistry of proteins.