
 BOOK REVIEWS

Synthesen Organischer Verbindungen. Band I. By Akademiemitglied A. N. NESMEJANOW and Prof. P. A. BOBROW. Akademie der Wissenschaften der UdSSR, Institut für Organische Chemie. VEB Verlag Technik, Berlin, Germany. 1959. 160 pp. 15 × 21 cm. Price, DM 16.—.

This first volume of a projected Russian series in synthetic organic chemistry, now in a German edition, is similar in form and content to its American counterpart. The volume comprises detailed procedures for the preparation of sixty compounds, only seven of which have appeared to date in "Organic Syntheses." For these seven compounds, either different methods or improved yields are described. The individual directions have not been tested by independent workers. However, the editors have "endeavored to include only repeatedly used and consequently reliable methods."

Inclusion of preparations for more than one compound by the same chemical reaction has resulted in considerable repetition. The coupling of a Grignard reagent with an allylic chloride is illustrated by preparations of 1-heptene, 4,4-dimethyl-1-hexene and 3-butyl-1-cyclopentene. Separate preparations for cyclobutane-1,1-dicarboxylic ester and its 3-methyl homolog are described by the malonic ester synthesis. Substituted pyrroles are formed by the condensation of 2,5-hexanedione with both aniline and methylamine. 9,10-Dimethylanthracene and two methylated benzologs are prepared by the action of methyl halide on the corresponding aryllithium compounds. Five compounds including cyclopentane and two homologs are made by catalytic hydrogenation. Direct additions of antimony pentachloride, glycerol and several aliphatic alcohols to acetylene are described. The resulting vinyl ethers are converted to α -halo ethers and α,β -dihalo ethers.

Classical reactions are used for the syntheses of diacyl halides, diamides, dinitriles and related diamines from adipic and sebacic acids. Several compounds such as neoplasmin, triisobutylene and three bis-(2-dimethylamino-5-pyridyl)-methane derivatives appear to have limited applicability.

Friedel-Crafts alkylation of acetanilide and the use of alkoxymethylpyridine and quinoline salts for the syntheses of alkoxy acetals and alkoxy esters are of special interest.

The syntheses in this volume were contributed mainly by co-workers at the Institute for Organic Chemistry. Future volumes are to have broader scope.

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Synthesis and Organisation in the Bacterial Cell. CIBA Lectures in Microbial Biochemistry. By E. F. GALE. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1959. vii + 110 pp. 13 × 19 cm. Price, \$3.50.

This volume consists of three lectures given at the Rutgers Institute of Microbiology. The first lecture is a comprehensive review of current knowledge of the organization of the bacterial cell, while the remainder of the book, concerned with the synthesis of protein and the nucleic acids, is more restricted in scope than the title might suggest.

The review of bacterial organization presents a clear, succinct, and well-balanced account of an area in which recent progress has been rapid. For many years the interest of biochemists in bacteria has been based to a large extent on the identity of many pathways of intermediary metabolism in all living forms; bacteria have provided especially rewarding material for analyzing the pathways of biosynthesis of the building blocks of protein and nucleic acids. This biochemical unity, however, does not extend to the external envelopes of cells; and the recent preparation of relatively pure bacterial walls has led to the discovery of a number of previously unknown building blocks, unique to bacteria. The formation of the wall from these units has

been found to be the site of action of a number of chemotherapeutic agents, thus explaining the selective toxicity that has made these compounds useful. Dr. Gale shows clearly how such studies on chemotherapeutic action and on macromolecule synthesis in bacteria have mutually reinforced each other.

Having provided a broad background, the author devotes the remainder of the book largely to his own studies. While this procedure is most fitting for a lecture series, the present studies have not yet yielded as clear a pattern as one would like to see in a book. In mammalian cells the roles of amino acid-activating enzymes, soluble RNA, and particulate RNA-protein (ribosomes) in protein synthesis seem quite firmly established. Dr. Gale stresses apparent differences in the mechanism in bacteria, including membranes rather than ribosomes as the principal site of protein synthesis, specific incorporation factors for the various amino acids, and incorporation of amino acids into "amino acid-X." As yet these several substances have not been defined chemically, and their relation to protein synthesis is not clear. And on general principles, one may wonder whether as universal a process as protein synthesis will fail to exhibit the unity that has been demonstrated for amino acid and nucleotide synthesis.

Dr. Gale's provocative findings on protein synthesis are primarily of interest to the specialist in protein synthesis; but the discussion of bacterial organization can be recommended strongly to the more general reader.

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Ionenaustaucher. Band I. Grundlagen. Struktur. Herstellung. Theorie. By F. HELFFERICH. Verlag Chemie, G.m.b.H., Pappelallee 3, Weinheim/Bergstr., Germany. 1959. viii + 520 pp. 17 × 24.5 cm. Price, DM., 48.—.

This treatise on the theory of ion-exchange materials written in German is the most complete and concise compilation in the field. The author has organized his complex subject matter in a very straightforward manner and has managed to condense and consolidate virtually all of our present knowledge of ion-exchange phenomena in twelve chapters. The general topics treated are: (1) structure and mode of action; (2) types of ion-exchangers; (3) manufacture; (4) capacity; (5) equilibrium; (6) kinetics; (7) electrochemical properties; (8) ion-exchange membranes; (9) ion-exchanger loading; (10) behavior in non-aqueous and mixed media; (11) ion exchangers as catalysts; (12) electron-exchange and oxidation-reduction ion exchangers.

The book is completely documented and the discussions are illustrated with 153 diagrams and 14 tables of data. The mathematical treatment is entirely adequate and is easy to follow due to the author's use of a consistent logical set of symbols to represent physical entities.

Anyone interested in ion-exchange phenomena who has acquired a reading knowledge of the German language will find this book of great value.

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Methods of Experimental Physics. Volume 6. Solid State Physics. Part B. Electrical, Magnetic, and Optical Properties. Edited by K. LARK-HOROVITZ and VIVIAN A. JOHNSON, Purdue University, Lafayette, Indiana. Academic Press, Inc., 111 Fifth Avenue, New York 3, N. Y. 1959. xiv + 416 pp. 16 × 23.5 cm. Price, \$11.00.

As one of a series, this volume covers the electrical, magnetic and optical properties of solids. Like the other volumes in the series this is a collection of articles by many independent contributors. For this volume the number