

1, 1954. The volume includes the following topics: steric effects in dyes, the structure of glyotoxin, the structure of nepetalic acid, the chemistry of flavilium salts, and some chemical studies on viruses. All the papers, as well as the opening remarks reviewing Dr. Adams's career, are presented by persons who took their Ph.D. degrees under Dr. Adams. The variety in the topics chosen for the symposium reflects the varied research activity in which Dr. Adams himself has been engaged throughout his long scientific career.

The chapters all give a good, well-written coverage of their special topics. Dr. Brode's paper gives an excellent review of current theory on dyes; his writing has a personal flavor and makes very enjoyable reading. Dr. Johnson's discussion of the structure of glyotoxin communicates some of the excitement involved in determining the structure of a very complicated natural product, and both the glyotoxin and the nepetalic acid chapter nicely illustrate the importance of infrared spectroscopy in modern structural work.

The book is a fitting tribute to an outstanding chemist and a great teacher; in addition, it should prove enjoyable reading to those interested in the application of ultraviolet absorption spectroscopy to problems in organic chemistry, in the chemistry

of "ylium" salts and related colored products, and in a concise review of Stanley's classical chemical studies on viruses.

HARRY H. WASSERMAN

Production of Heavy Water. National Nuclear Energy Series. Edited by George M. Murphy. McGraw-Hill Book Company, Inc., New York (1955). -394 pages. \$5.25.

The production of heavy water in tonnage quantities was one of the serious problems with which the Manhattan Project was confronted. The effort expended on the solution of this problem brought into existence a considerable amount of basic data and engineering information. The present volume of the National Nuclear Energy Series (III-4F) makes this information available to those interested in separation processes in a comprehensive and convenient form.

It would seem that Part II of this volume is the more logical as a beginning of the volume and of this review because it deals with the fundamental laboratory data, techniques for obtaining these data, and the underlying theoretical considerations of the various separation processes envisaged for the industrial production of heavy water. The six chapters of this part consider the water-distillation process, the catalytic-exchange process (with a detailed account of the development and

characteristics of the various catalysts) and the dual-temperature processes (mercaptan-water, ammonia-water-hydrogen, and cyclohexane-benzene-hydrogen systems). In this part the short Chapter 8 ("Catalytic Exchange: General" by H. S. Taylor) is an outstanding example of a concise and clear presentation. The discussion of the dual-temperature processes (Chapter 12) is, in the opinion of this reviewer, somewhat lacking in an adequate treatment of the fundamental theory involved in this group of processes.

Part I of the volume is devoted almost entirely to a summary of actual engineering experience as obtained in the Trail, B.C., catalytic-exchange-electrolytic plant and the water-distillation plant at Morgantown, W. Va. The information given, though somewhat sketchy in parts, is definitely useful as a general guide for design and operational variables. Chapter 4 summarizes design considerations for the untried but promising hydrogen-distillation process.

An excellent bibliography following each chapter is a very valuable feature and, together with the subject matter treated, makes this volume a most valuable contribution to the literature of separation processes in general and isotope separation in particular.

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