Book Review

Borax to Boranes. Advances in Chemistry Series, No. 32. American Chemical Society, 1155 Sixteenth St., N. W., Washington 5, D. C., 1961. viii + 244 pp. 15.5 × 23.5 cm. Price, $5.00.

This book is a collection of papers presented at a symposium of the same title before the Inorganic Division of the American Chemical Society in April, 1958, and also includes three papers presented in Boston a year later. It is not, despite the apparent implication of the title, a comprehensive survey of present knowledge of this subject, or even a unified treatment of this recent interesting chemical development. Rather, it consists of 26 miscellaneous papers, half from industry and half from universities, contributed by 57 authors. The papers range in length from 3 to 19 pages, and in number of references cited from 4 to 125. Nearly 80% of the 662 references are to publications since 1945.

One might classify 11 of these papers, comprising about 45% of the book, as primarily of a review nature. These deal with such topics as history of boron chemistry, preparation and chemistry of elemental boron, the structure of boron, high temperature chemistry of metal borides, the preparation of diborane, and some selected topics in boron hydride chemistry. The remaining papers of this book are in some instances also partially of review nature, but include what appear to be new research and/or development results. Among the topics dealt with are: production of ammonium pentaborate, mechanism of isotopic exchanges, kinetics and mechanisms of acid–base reactions, kinetics and equilibria in the alkylation of diborane, infrared and mass spectrometry of boron chemistry, pyrolysis and conversion of diborane, organoboron compounds, and miscellaneous boron hydride derivatives.

An introduction by D. R. Martin outlines the general nature of the "Project Zip" of the United States Defense Department, under which most if not all of the reported work evidently was done. Since the chief objective is indicated to have been high energy fuel derivable from either pentaborane or decaborane, the paucity of data on these particular compounds within this book may cause the outsider to wonder how extensive is the information still withheld from publication. The interested new researcher may wonder whether it would be worthwhile for him to risk investigating areas that might have been thoroughly explored already.

The papers are, in general, well written, reflecting the high degree of competence of their authors. At least some of this collection will be of interest to chemists in general, and others contain useful data for the specialist. However, unless the book is intended primarily as a tribute to the late George Schaeffer, to whose memory it is dedicated, the advantages of publishing these papers as a separate volume are not altogether clear. It makes them available, presumably for the first time in print, 3.5 years after the original symposium. It requires acquisition of the entire book even though one may wish to see but one paper. The collection spreads over a wide territory, but one who hopes to find a complete story here is bound to be disappointed. One cannot help wonder whether boron chemistry might not have been better served by prompter printing of the separate papers in the appropriate regular journals.

DEPARTMENT OF CHEMISTRY
STATE UNIVERSITY OF IOWA
IOWA CITY, IOWA

R. T. SANDERSON