

Comprehensive Inorganic Chemistry: Vol. III, The Halogens. Robert C. Brasted. D. Van Nostrand Company, Inc., New York (1954). 250 pages, \$5.

It is the avowed purpose of this eleven-volume work to serve as a ready reference for those engaged in chemical manufacture as well as in advanced studies. The volumes, according to the preface, are intended to be comprehensive in the extensiveness of the field covered rather than in the fullness of their treatment.

In this third volume, which deals with the halogens, the author has been successful in accomplishing the desired end. The early chapters deal with the free halogens and then the compounds in the following order: hydrohalic acids, oxyhalogens, positive halogens, interhalogens, and polyhalide anionic complexes. The last chapter deals with pseudohalogens and related compounds. Much data are given in the form of tables, the illustrations are adequate, and the inclusion of numerous references to the literature makes it possible for the student readily to extend his investigation of the various topics.

DEWITT T. KEACH

High-temperature Technology. Edited by I. E. Campbell. John Wiley and Sons, Inc., New York (1956). 526 pages, \$15.

This volume is concerned with the problems of producing and measuring temperatures above 1,500°C. It is divided into three main sections: Materials, Methods, and Measurements, each containing articles by a number of authors.

The Materials section, some 200 pages in length, is devoted to the physical and chemical properties of refractory materials at high temperatures.

The Methods section discusses sintering processes and the production of high temperatures. Most of the latter topic is devoted to the problems of electric-resistance, -induction, and -arc furnaces. The attainment of high temperatures in solar furnaces and in the electronic torch is less

extensively considered, and the very important methods of obtaining high temperatures by chemical means have been omitted.

The Measurements section treats problems in the measurement of physical properties at high temperatures. Temperature measurement by pyrometers, thermocouples, and the absolute-noise thermometer is discussed. A section on mechanical properties concerns measurement of plastic deformation, creep, and hardness. Methods of determining melting points, vapor pressures, phase diagrams, thermal expansion, thermal and electrical conductivities, and resistance to thermal shock are discussed. Material on high-temperature microscopy and X-ray diffraction is included.

This volume makes a very substantial contribution to the literature of high-temperature technology. Its limitations are in the main the inevitable result of the breadth and vitality of the subject matter. Of particular value are the many hundreds of literature references. The work should be of special interest to engineers and others engaged both in the more conventional high-temperature processes and in the newer fields of jet reactions.

EDGAR W. SLOCUM

Catalysis, vol. II: Fundamental Principles (part 2). Edited by Paul H. Emmett. Reinhold Publishing Corporation, New York (1955). 473 pages, \$12.

This is the second volume of an outstanding series of publications providing the research chemists an integrated treatise on the physical chemistry of catalysis and catalytic processing. This volume, in continuation of the first volume, presents the fundamental catalytic principles relating to the measurement of pore distribution; the influence of pore distribution on the kinetics, temperature coefficient, and specificity of reactions on solid catalysts; the nature of the catalyst surface and of the adsorbed material on the catalyst surface; and finally the general theories of heterogeneous catalysis. It also contains an extensive and detailed presentation of the general nature of homogeneous catalysis and of the factors that influence the behavior of homogeneous catalytic systems.

The first chapter, "Classification of Heterogeneous Catalytic Vapor Phase Reactions" by W. B. Innes, summarizes a large body of literature dealing with different reaction types and the catalysts which have been studied. This is followed by a series of excellent chapters: "Reaction Rates and Selectivity in Catalyst Pores" by Ahlborn Wheeler; "The Nature of Catalytic Surfaces" and "The Nature of Complexes on Catalyst Surfaces" by Hugh M. Hurlburt; "General Theories of Heterogeneous Catalysis" by Ransom B. Parlin, Merrill B. Wallenstein, Bruno J. Zwolinski, and Henry Eyring; and "Catalysis in Homogeneous Reactions in a Liquid Phase" by Edward L. King. Every chapter makes lucid reading and an excellent review of the present state of knowledge on the subject. The entire book is a veritable mine of research problems.

S. SOURIRAJAN

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