typical of the hydrogen compounds of all groups in which protic-acid character can be detected by any means. The author apparently believes that a generalization is useful if it is true half the time for he often puts half-truths forward as "generally" true, and then says one should not trust them very far. Inconsistencies of detail also appear: thus on page 103 it is stated that it is not known for sure whether electrolysis is applicable to the preparation of hydrides of silicon, germanium, or carbon, but on page 113 it is said that low yields of germane may be obtained by that method. In sum, it would seem that the subject is too large for the space assigned, and that the author has tried to extend himself beyond what he has had time to understand thoroughly.

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● GMELINS HANDBUCH DER ANORGANISCHEN CHEMIE. SYSTEM 3: SAUERSTOFF

Eighth edition. Verlag Chemie, GMBH, Weinheim, Germany, 1952. 218 (83–300) pp. 32 figs. 17.5 × 25.5 cm. $15.48.

This bulletin deals with the occurrence of oxygen, ozone, and water; the technical preparation of oxygen, ozone, and hydrogen peroxide; and the purification of water. It is a good source of material on the geochemistry of oxygen, ozone, and water, and is fairly well up to date in such matters as isotope distribution and the cosmic distribution of both oxygen and water. Little, if any, of the literature within the last five years seems to have been covered, but this may perhaps be expected in a handbook so extensive as this one. Every individual section of such an extensive handbook must be considered from the standpoint of its significance for specialists in a particular field. This section satisfies such a requirement.

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● GMELINS HANDBUCH DER ANORGANISCHEN CHEMIE. SYSTEM 17: ARSENIK

Eighth edition. Verlag Chemie, GMBH, Weinheim, Germany, 1952. xv + 475 pp. 20 figs. 17.5 × 25.5 cm. $33.33.

In keeping with other units of this work which have appeared recently, the present volume represents a marked improvement over the corresponding portion of the seventh edition of the Gmelin-Kraut Handbuch, Volume III, Section 2, edited by C. Friedheim and published in Heidelberg by C. Winter in 1908. The revision has been thorough, both in the elimination of much superfluous material, and in the inclusion of considerable more recent information. The literature coverage extends through December, 1949. The new format of the eighth edition, with its greatly improved typography, makes for increased ease of reading; and the elimination of much of the "cookbook" style in the passages dealing with the preparative aspects of the subject is also a welcome change.

The subject matter includes a brief historical introduction (9 pages), followed by an extensive treatment of the occurrence of the element and its compounds (74 pages), and of their uses (4 pages). The formation and preparation of the element in its several forms (12 pages) is followed by a thorough review of the physical and chemical properties of the element (87 pages) and of the physiological effects of both elementary arsenic and its compounds (8 pages). A detailed account of the compounds of arsenic with hydrogen, oxygen, nitrogen, and the halogens; with sulfur, selenium, and tellurium; and with boron, carbon, silicon, and phosphorus completes the volume (281 pages).

The general style and thoroughness of treatment are maintained at the high level which has come to be expected in this standard comprehensive work of reference. As a single example of this thoroughness, the section dealing with the physical properties of arsenic may be pointed out. It begins with a few general remarks, then turns to the nuclear characteristics of the various isotopes and the transformations induced therein by bombardment with different projectile particles. The outer atom is next described in detail, followed by a consideration of the arsenic molecule. In succession the crystallographic, mechanical, thermal, optical, magnetic, electrical, and electrochemical properties are covered, each of these topics being duly subdivided into their pertinent classifications.

The editorial staff of more than a score of men and women who have been engaged upon the revision of this volume have added one more block to the monumental structure that constitutes the eighth edition of the Gmelin "Handbuch," which when completed will doubtless represent the world's most reliable and authoritative survey of the entire field of inorganic chemistry.

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● GMELINS HANDBUCH DER ANORGANISCHEN CHEMIE. SYSTEM 27: MAGNESIUM

Teil A, Lieferung 4: Legierungen von Magnesium mit Zink bis Rhenium. Eighth edition. Verlag Chemie, GMBH, Weinheim, Germany, 1952. xiv + 336 (493–818) pp. 86 figs. 17.5 × 25.5 cm. $24.

The eighth edition of Gmelin's famous handbook is similar in style and arrangement to the earlier editions, and little description of it need be given. As with the earlier editions, the book is being published in small units, each of which is published as soon as it is ready. This enables the reader to get information which is fairly well up to date. For example, the book being reviewed here covers the pertinent literature up to the end of 1949. Unfortunately, the different portions of the work do not always cover logical divisions of the subject matter. This volume discusses the alloys of magnesium with the metals in periodic groups IIB, III (except aluminum), IV (except silicon), VB, VIB, VIIB, VIII, and IB, and the surface treatment of magnesium and its alloys. The alloys of magnesium with silicon, and with the metals of Groups IA, IIA, and VA were included in an earlier issue and the alloys of magnesium with aluminum will be included in the volume on aluminum. Magnesium compounds will be discussed in Part B of the magnesium section.

This book is indispensable for those who are working with the alloys of magnesium, for it contains a complete bibliography on the subject as well as brief descriptions of much of the work in the field. Many phase rule diagrams are included. While this volume of the series will have little appeal to the general reader, every chemical library should have a complete set of "Gmelin," for it is by far the most complete reference book of inorganic chemistry.

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● STATISTICAL TABLES AND FORMULAS

***A. Hald.* John Wiley & Sons, Inc., New York, 1952. 97 pp. 19 tables. 22 × 28 cm. $2.50.**

This pamphlet is composed of two parts. The first part contains fundamental formulas and examples of the uses of the various tables that follow in part two. Frequent reference is made to the author's text, "Statistical Theory with Engineering Applications."

Among the standard tables to be found in part two are tables of the normal density function, the normal distribution function, probits of the normal distribution, percentiles of the t, χ^2, χ^2/d.f., and F distributions and confidence limits for the parameter of the