

author because many of the important foreign scientific journals have not been available since 1939. The utility of the book is further enhanced by good author and subject indexes.

The volume should be interesting to any pharmaceutical chemist, and indispensable to any investigator whose work involves the isolation of organic plant principles.—JUSTIN L. POWERS.

*Minerals in Nutrition*, by ZOLTON T. WIRTSCHAFTER, M.D. Reinhold Publishing Corporation, 330 West Forty-second Street, New York, 1942. 175 pp., 8 illus., 12.5 x 18.5 cm. Price, \$1.75.

*Minerals in Nutrition* is intended to be a popular treatise comparable to similar books on the vitamins. While many interesting facts are told, often the language is too technical for the layman. Admittedly, the minerals are not so dramatic as the vitamins, yet it is believed that the story of the important function of these elements in human physiology could be told in a more vivid manner. Certainly the discovery of the role of iodine in endemic goiter is on a par with that of nicotinic acid in pellagra.

The more serious-minded student of nutrition will be interested in the many tables and the references to more extended discussions.—M. W. GREEN.

*Chemistry and Physiology of the Vitamins*, by H. R. ROSENBERG, Sc.D. Interscience Publishers, Inc., 215 Fourth Avenue, New York, 1942. xix + 674 pp., 15 x 23 cm. Price, \$12.00.

There are several books available on special topics relating to vitamins, and monographs on single vitamins, but in this volume there is presented a comprehensive treatment of the chemistry and physiology of all the known vitamins. According to the preface, an attempt has been made to cover all topics of vitamin research and especially the chemistry and physiology of the vitamins. This volume is presented with the hope that it may guide the student and scholar through our present-day knowledge of the field, and inspire further development. Both of these aims of the author should be more than realized by this excellent treatise on the vitamins.

The text of the volume is divided into sixteen chapters and an appendix. For the want of a better classification, the vitamins are presented in alphabetical order of nomenclature. The book begins with a chapter devoted to a general discussion of the vitamins in which this class of compounds is defined and sharply differentiated from the hormones and from other essential and nonessential food constituents.

In general, the same arrangement of subject matter relating to individual vitamins is followed in each succeeding chapter. The arrangement of the chapter on vitamin B<sub>1</sub>—thiamin—may be used as an example of the general arrangement of the chapters. The first section, devoted to nomenclature and survey, lists the names which have been applied to thiamin and includes the chemical name, the struc-

ture, the empirical formula and the number of international units of vitamin B<sub>1</sub> per gram. The succeeding sections discuss in order the chronology, occurrence, isolation, properties, chemical constitution and synthesis, industrial methods of preparation, biogenesis, thiochrome, vitamin B<sub>1</sub>-pyrophosphate, specificity of vitamin B<sub>1</sub> action, methods of determination, standards, physiology of plants and microorganisms, animal physiology, avitaminosis and hypovitaminosis, hypervitaminosis, and requirements for thiamin. This chapter includes 339 literature citations and is representative of the completeness of documentation throughout the book.

The appendix includes a brief chapter on the "vitagens," in which the essential fatty acids, amino acids, carbohydrates and organic sulfur-containing compounds are discussed briefly. Another valuable feature of the appendix is a list and abstracts of vitamin patents which have been issued in the United States, Great Britain, France and Germany.

From a glance at the physiological sections of this book, it is evident that the author is a chemist and not a physiologist. These sections do not suffer from a lack of completeness, but rather from a failure to evaluate the information. This may be seen, for example, in the case of ascorbic acid, where the alleged carrier role of the ascorbate is overly emphasized and the obscure actions of this vitamin on many enzyme systems are catalogued with no coordinated viewpoint. However, since there are many other monographs available which present the vitamins from the physiological and medical viewpoint, this is not a particularly grievous fault and the quality of the other portions of the book well compensate for it.

While this volume represents a scholarly presentation of all information relating to the vitamins which will appeal most strongly to teachers and investigators in the vitamin field and related fields, it should also prove of inestimable value to the pharmacist. It should appeal to the pharmacist because the vitamins constitute a class of products more widely distributed by pharmacists than any other single group of substances. As the final distributor, the pharmacist must be informed upon all phases of the chemistry and physiology of vitamins so that he may advise the ultimate consumer intelligently. In this book will be found the answer to practically any conceivable question relating to vitamins for which an answer exists.—JUSTIN L. POWERS.

*The Rat in Laboratory Investigation*, edited by JOHN Q. GRIFFITH, JR., and EDMOND J. FARRIS. J. B. Lippincott Company, Philadelphia, 1942. xiv + 488 pp., 178 illus., 15 x 23 cm. Price, \$7.50.

*The Rat in Laboratory Investigation* is a "must" book for every person doing animal experimentation involving the use of rats. This book is a compilation of the practical experiences of 30 different

authors and serves as a useful handbook and laboratory guide. The following major subjects are discussed: breeding of the rat, general methods for handling, gross anatomy, experimental methods and rat embryos, dietary requirements of the rat, the teeth, the digestive system, metabolism, the central nervous system, techniques for the investigation of psychological phenomena, the circulatory system, the use of the rat in the bioassay of hormones, dosage of drugs for rats, hematology of the rat, radiologic considerations, surgery of the rat, histologic methods adapted to rat tissues, the osseous system, the eye of the albino rat, protozoan parasites of the rat, metazoan parasites of the rat, and spontaneous diseases of the rat. Here is to be found the essential information for every worker in the biological sciences with many references to more extended information in each of the fields represented.

Space will permit a review of but a few of the subjects covered by this excellent book. The chapters on the breeding of the rat, general methods of handling and the spontaneous diseases of rats will be found very helpful in a general way to any animal laboratory. These chapters contain such information as the time of gestation, preparation of the nest, size of litters, methods of caging, age determination, identification of individual animals, convenient ways of keeping vital records, ways of keeping the animals free from disease, methods of producing anesthesia, and the like. Even workers of long experience will find helpful tips in these sections.

Researchers in the field of nutrition will be grateful for the chapter on dietary requirements. Methods are given for the production of mineral deficiencies, vitamin deficiencies and amino acid deficiencies. Especially useful is a summary of known requirements for the rat of each of the vitamins and minerals (p. 97). The chapter on metabolism is also helpful to anyone wishing to study the effects of variants upon metabolism.

To pharmacy researchers, the most useful chapter is that on the "Dosage of Drugs for Rats," by Harald G. O. Holck. The factors that modify dosage of drugs are discussed and in this connection it is particularly gratifying to the reviewer to note the emphasis placed upon diet. In making adequate studies of drug action and particularly assay,

the control of the diet is believed to be very important. Since the action of certain metals such as potassium and calcium is so profound and the need for some of the vitamins for proper nerve function is so well established, it is amazing how little attention is often paid to the state of nutrition of experimental animals. The most useful section of this chapter is the extensive tabulation of dosage of drugs covering 35 pages and giving references to the original literature. Information of this type is used time and time again by workers in the field, but is often found only with considerable difficulty. In usefulness this chapter alone is well worth the price of the book.

The compilation of a handbook of this sort, involving so many variable viewpoints, is extremely difficult. The relative lack of overlapping of material and the unity of style is a tribute to fine editorial craftsmanship—M. W. GREEN.

*Preparacion de Productos Quimicos y Quimico-Farmaceuticos* by C. A. ROJAHN, Director of the School of Pharmacy of the University of Halle. Trans. from the original German and amplified by FRANCISCO GIRAL, Head of the Department of Organic Synthesis in the Hormona Laboratories, Mexico. Editorial Atlante, S. A., Mexico, D. F., 1942. xxxix + 1002 pp., 17 x 23 cm.

These two volumes are intended to be used as references for the preparation of medicinal chemicals and their intermediates. Many other pertinent data, such as yields, physical properties, tests for identity and purity (largely taken from the German Pharmacopœia) and a bibliography, are also provided.

The volumes are divided into two parts. Part I is a study of inorganic substances, the elements being classified similarly to the Periodic Table. Part II, consisting of approximately 700 pages, deals with the organic compounds, classified in the traditional manner. Here may be found such modern therapeutic agents as thiamine, nicotinic acid, pentamethylenetetrazol, and others. One of the unique features of this section is a schematic diagram of the synthesis of the organic arsenicals.

To anyone for whom the language (Spanish) is no handicap, these volumes will be a valuable addition to the reference library.—M. W. GREEN.

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