to improve the teaching value. This book may be considered both as a valuable text and as "one of the indispensable reference books of organic chemistry."

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Encyclopedia of chemical technology. Vol. I: ***A to Anthrimides.*** Raymond E. Kirk and Donald F. Othmer. (Eds.) New York: Interscience, 1947. Pp. xxiv + 982. (Illustrated.) $20.00.

This is the first volume of a 10-volume encyclopedia dealing with the practice and principles of modern chemical technology. When completed, it will fill a long-felt need for a comprehensive treatise to which professional chemists and chemical engineers may turn for information on the methods used in the American process industries. It is intended for those in universities and other research institutions, as well as for those who are working in industry.

The work is organized as a specialized encyclopedia and is by no means a handbook or series of monographs. The entire field of chemical technology is covered. The first volume contains nearly 100 articles on industrial chemicals and materials, on unit operations and processes of chemical engineering, and on chemical principles. Of these, 35 titles are of major length, including Absorption, Acetic Acid, Acetylene, Acid-Base Systems, Adhesives, Adsorption, Alcohol (Industrial), Alkali and Chlorine Industries, Alkali Metals and Alkali Metal Alloys, Alkaloids, Alkyd Resins, Alloys, Amination by Reduction, Amino Resins and Plastics, Ammonia, Analytical Chemistry, Anthraquinone and Related Quinonoid Dyes, and others.

The arrangement of the subject matter follows a general plan of grouping together topics that are technologically related. Important chemicals are frequently dealt with in articles under their own name, but those which have similar uses are described under a single heading—for example, Abrasives, and Anesthetics. Others may be grouped because of similarity in processing, or as products of an integrated industry (e.g. chlorine, sodium carbonate, and sodium hydroxide). At times this results in some duplication; the manufacture of aniline is described under Amination by Reduction as well as under Aniline. Numerous cross references are provided in the articles, and the individual name of each substance in alphabetical order directs the reader to the proper group title.

The articles on industrial chemicals and materials include sections on physical and chemical properties, methods of manufacture, uses and applications, specifications and standards, and health and safety factors in handling. There are articles on the chemical engineering unit operations, as well as background articles on physical and organic chemistry, metallurgy, and other subjects which serve as important references in process principles.

The format of the book is pleasing. Subject headings and subheadings are clear, and the quality of the paper and printing are excellent. The volume is strongly bound. These qualities are especially important in an encyclopedia which will have hard usage in libraries. The editors have been fortunate in selecting outstanding authorities to write the articles in this volume. The remaining volumes, which are to be published at the rate of two to three each year, will be anticipated by a host of users.

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The sulfonamides and allied compounds. Elmore H. Northey. (American Chemical Society Monograph Series.) New York: Reinhold, 1948. Pp. xxvii + 660. $15.00.

Dr. Northey's book is an outgrowth of a review prepared and presented at the Symposium on Chemotherapy held at Gibson Island, Maryland, in 1939, under the sponsorship of the Section on Chemistry of the AAAS. "The original review was enlarged and revised under the sponsorship of the Division of Medicinal Chemistry of the American Chemical Society and was published in Chemical Reviews, 27, 85–196 (1940)." Since then, the revolutionary achievements of the sulfonamides in the treatment and control of human and animal diseases have been recognized by everyone. However, the extent of the contributions of the chemists and experimental scientists in the development of this field may not be fully appreciated. Dr. Northey has revised and amplified his previous publication into the present monograph, which emphasizes the "chemical side of the new chemotherapy."

The book opens with a chapter on the "History of Bacterial Chemotherapy," which reviews the development of antibacterial agents, including the discovery of the active azo dyes by the German investigators and the establishment of the role of sulfanilamide in their therapeutic activity by the French. A chapter on "Nomenclature, Classification and Synthesis of Sulfonamide Derivatives" follows. Three chapters are devoted to the classification of the chemical structure and chemotherapeutic activities of sulfanilamide derivatives, one to sulfones and one to compounds related to the sulfones. These chapters, covering over 5,000 compounds, include a brief review of the chemistry and pharmacology of each series, while the tables provide data on structure, melting range, activities, and references to information on other important properties of the drugs. This compilation of data on the sulfonamides and related compounds is of immeasurable value as a reference source for those interested in keeping up with the developments in this field.

A series of 5 chapters on the evaluation of chemotherapeutic activity, relationship of structure to activity, pharmacology, mechanism of action, and evaluation cover the biological phase of the problem. Harold J. White, bacteriologist at the Stamford Research Laboratories of the American Cyanamid Company, wrote the chapter on the "Experimental Evaluation of Chemotherapeutic Activity," and in this he describes *in vitro* and *in vivo* methods for the testing of new chemotherapeutic agents and summarizes in tabular form the experimental results as reported by different investigators on 23 of the better-

known sulfa drugs. The significance and importance of absorption, excretion, distribution, alteration, and toxicity studies in animals of the chemotherapeutic agents is emphasized by J. T. Litchfield, Jr., in the chapter covering the pharmacology of these compounds. In the chapter on "Relationship of Structure to Chemotherapeutic Activity," Dr. Northey has attempted to "point out some of the generalizations or inferences which may be drawn from the mass of often-conflicting data" reported. Benjamin W. Corey, director of Lederle Laboratories Division of the American Cyanamid Company, reviewed and edited the summary on the medical use and application of these drugs, which "is not intended as a therapeutic guide but as a research tool." A critical analysis of the various theories of the mechanism of action of the sulfonamides and their contributions to the developments in this field is admirably covered in Chapter XI.

The last section of the book contains appendices covering the key to activities, organisms or diseases, and trade names for sulfanilamide, its derivatives, and related compounds.

The reference list contains 2,668 references, of which about 600 are largely chemical.

The book is well bound and printed, and only a few errors were noted by the reviewer. In the 5 chapters dealing with the classification of the compounds, grouping of all the tables at the end of each chapter presents some inconvenience in referring to these while following the text. However, Dr. Northey has presented a wealth of information in an interesting manner, and his book should be on the "must" list as a ready reference for those biologists, pharmacologists, clinicians, chemists, and others engaged in, or wishing to undertake or become informed of, research on the sulfonamides.

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The Rh factor in the clinic and the laboratory. Joseph M. Hill and William Dameshek. (Eds.) New York: Grune & Stratton, 1948. Pp. 192. (Illustrated.) $4.25.

This special issue of *Blood, The Journal of Hematology,* contains articles on the Rh factor by 15 contributors. The papers were originally read at the International Hematology and Rh Conference in Dallas and Mexico City.

Following a short introduction by Dameshek, Levine presents an over-all summary of the history and significance of the Rh factor. Papers on the history of Rh seldom agree as to details and often show a deplorable tendency to personal bias. Unfortunately, the present summary is not entirely free from such bias. It does, however, cover the essential facts of the general Rh picture and sets the stage for the subsequent presentations.

The second paper, by Race of Great Britain, contains an account of the activities of the British workers from 1943 to 1947, culminating in the formulation and testing of the Fisher scheme of allelic arrangement of the genetic factors. Multiple alleles at the C and D loci are discussed, and the entire genetic picture is reviewed.

A contribution by Dameshek on hemolytic mechanisms follows. The physiologic principles of red cell destruction are reviewed, and hemolysins, agglutinins, erythrostasis, splenic activity, and chemical and physical factors are discussed.

Guzman of Mexico presents a short summary of his researches on the nucleolar content of blood cells, involving studies on the volumetric, morphological, and structural characteristics of nucleoli.

The fifth paper is a report by Witebsky on the interrelationship between the Rh system and the A B system, centered largely around an instance of the production by the mother of an erythroblastotic baby of an anti-A antibody of the blocking type, which served as a sensitive diagnostic serum for differentiating the subgroups of group A.

Hill, Haberman, and Jones offer a provocative paper on hemolytic Rh-immune globulins in which they present evidence for a third order of antibodies. Their classification of antibodies would include classical agglutinins (specific adsorption with subsequent agglutination), blocking antibodies (specific adsorption with saturation of the antigen and no agglutination), and cryptagglutinoids (specific adsorption without evident saturation of the antigen and without agglutination).

Muirhead, Haley, Haberman, and Hill, in the seventh paper, present a long and complete discussion of the management of acute renal insufficiency due to incompatible transfusion, based on 28,630 blood transfusions over a period of 8 years.

Davidsohn discusses the study of Rh antibodies in the bloods of 73 mothers of babies with fetal erythroblastosis. Correlation of the results with clinical findings indicated that blocking antibodies are present in 85% of mothers of babies with hydrops or stillborn, but in only 9% of mothers of babies with icterus gravis. Predominance of saline agglutinins favored survial.

The next paper, by Chown, presents some anomalous results of Rh sensitization, including instances in which normal Rh-positive children succeeded diseased children and in which normal children were born to mothers with anti-Rh antibodies in their blood.

The possible role of the A and B factors in erythroblastosis is discussed by Orozco of Mexico, and evidence for the importance of these factors in the production of the disease is presented.

Wallerstein outlines the basic pathology of erythroblastosis and considers in detail the indications for, and treatment by, blood transfusion.

A report of the after-luncheon discussion, at which a number of practical problems were considered, and the banquet address by Guerola of Mexico, on the history of blood transfusion in Mexico, constitute the last two sections of the volume.

Although there are certain regrettable commissions among the contributors to the volume, it stands in general as a fairly complete, up-to-date summary of the many facets of the important problem of blood incompatibility.

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