

stances) in an Alternating Electric Field; Chapter XIV. Relations between Cohesion and Constitution; Chapter XV. Ordered States of Organic Substances; Chapter XVI. Colloid Chemical Problems in Organic Chemistry; Chapter XVII. The Chemical Bond; Chapter XVIII. Theory of Reaction Velocity; Chapter XIX. Reaction Velocity Constant and Constitution; Chapter XX. Reaction Velocity and Equilibrium.

As can be seen from the foregoing list, the present translation of the 7th German edition of "Theoretische Grundlagen der organischen Chemie" covers essentially the same ground as did its predecessors. In the course of the nearly thirty years that have elapsed since the first edition was published, the book has been considerably extended and expanded, but the result is still not entirely successful. The discussions of the various physical properties of organic compounds seem unnecessarily wordy, and they are frequently not clear. This difficulty may be partly, but is probably not entirely, due to the clumsy translation, which is little if any better than that in the preceding volume. The coverage is also not ideal. For example, there is a rather detailed discussion of the Kerr constant, which has never been found of great use in organic chemistry, but other more important, and equally relevant, topics such as conformational analysis and nuclear magnetic resonance are either slighted or entirely ignored. Both the molecular-orbital and the mesomerism (resonance) approximations to the quantum-mechanical treatment of valence are mentioned, but neither is described in sufficient detail to give the reader a firm idea of either its usefulness or its limitations. The author leaves the impression that he regards the molecular-orbital viewpoint the better of the two but, as frequently happens in the current literature, he usually invokes the language of mesomerism when he wishes to make a difficult point especially clear. The simple and easily understandable free-electron molecular-orbital approach is not mentioned.

In summary, this reviewer feels that the second volume of "Theoretical Principles of Organic Chemistry" cannot be highly recommended. It contains an enormous amount of excellent material, but there are other presentations that are clearer, better balanced, and more up to date. These other presentations are to be preferred.

DEPARTMENT OF CHEMISTRY  
UNIVERSITY OF CHICAGO  
CHICAGO 37, ILLINOIS

G. W. WHELAND

**Constitution of Binary Alloys.** Second Edition. By Dr. phil. MAX HANSEN, Managing Director, Metallgesellschaft, A.G., Frankfurt-Main, Germany; Formerly Manager, Metals Research Department, Armour Research Foundation, Chicago, Illinois. Prepared with the cooperation of Dr. rer. nat. KURT ANDERKO, Research Metallurgist, Metallgesellschaft, A.G., Frankfurt-Main, Germany; Formerly Research Metallurgist, Metals Research Department, Armour Research Foundation, Chicago, Illinois. McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York 36, N. Y. 1958. xix + 1305 pp. 16 × 23.5 cm. Price, \$32.50.

The study of phase equilibria is not fashionable research. More frequently than not constitutional investigations are carried out for use in engineering programs rather than to elicit principles of alloying. However, whether or not they conduct research in this area, metallurgical laboratories are concerned with phase diagrams as background information or as some point of departure for other investigations. Thus a compilation of the "Constitution of Binary Systems" has general metallurgical interest.

This book represents a complete revision of "Der Aufbau der Zweistofflegierungen" published in 1936. The authors point out that "Whereas 'Der Aufbau der Zweistofflegierungen' covered 828 systems and contained 456 diagrams, the present work includes 1334 systems and 717 diagrams. . . The number of references has increased from 5,500 to about 9,800." When the endeavor usually required in making a literature survey for one investigation is considered, the magnitude of the effort involved in this undertaking can be appreciated.

Including information published up to 1955-1957, the book has been organized along general lines similar to those of the first edition. The systems are presented in alphabetical order according to chemical symbol, but are indexed separately under both elements of a given combination.

The chronological literature survey for each system is presented in condensed form and detailed discussion leading to a particular conclusion has been omitted to save space. Significant data, techniques by which obtained, purities of materials and other pertinent information are given so that the reader, whether he agrees or not, may have some appreciation for the basis on which interpretations are made. Where areas of uncertainty exist, these are clearly indicated. The discussions are well referenced and annotated, and the authors have been scrupulous in giving proper recognition to significant contributions by various investigators.

A departure from the earlier edition has been the presentation of data on an atomic rather than weight percentage scale, a decision based on consultation with sixty metallurgists in various organizations. This is a welcome change for those interested in principles of alloying. Procedures, tables and helpful hints for conversion from atomic to weight per cent. and vice versa are given and quite frequently tick marks, in addition to those at 10 wt. % intervals, are included at the top of the diagrams to facilitate construction on a weight per cent. basis, if desired.

Also presented are Fahrenheit-Centigrade temperature conversion tables, structural data of the elements and crystallographic data on intermediate phases, including symmetry, type of structure according to "Strukturbericht" designations and lattice spacings. Whenever possible the authors have used ångström units rather than the smaller Kx. units, which are converted to ångströms when multiplied by 1.00202. Although lattice parameter changes of solid solutions are not specifically given, references containing the information are recorded. Of necessity, the type is small, but not uncomfortably so and the paper quality and weight are substantial.

In summary, it is possible to say that the quality and scope of this book should make it a requirement for every metallurgical laboratory and library.

DEPARTMENT OF METALLURGICAL ENGINEERING  
NEW YORK UNIVERSITY  
NEW YORK 53, N. Y.

HAROLD MARGOLIN

**Methoden der Organischen Chemie (Houben-Weyl).** Vierte, Vollig Neu Gestaltete Auflage. Band XI, Teil 2. Stickstoffverbindungen II and III. Edited by EUGEN MÜLLER, Tübingen. With O. BAYER Leverkusen, H. MEERWEIN, Marburg, and K. ZIEGLER, Mülheim. Georg Thieme Verlag, Herdweg 63, Stuttgart, Germany. 1958. xlviii + 840 pp. 18 × 26 cm. Price, \$36.80 (subscription price, \$33.20).

This volume in the classic series concerns some of the organic nitrogen compounds, others having been treated earlier. The first chapter of 222 pages discusses conversion of amines. Other chapters treat 1,2- and 1,3-alkyleneimines (46 pages), amino acids and their derivatives (242 pages), lactams (76 pages), quaternary ammonium salts (54 pages) and nitrogen-sulfur compounds (112 pages).

The literature of the chemistry in each of the sections is not exhaustively treated but is, rather, selected. Detailed methods of synthesis and isolation are liberally placed throughout the text and have evidently been carefully chosen. The book contains also many tables, and some of these should be highly useful to chemists active in these fields. The many tables of physical properties (mostly melting points) of the derivatives of the amino acids may be of special interest.

The book is handsomely printed on a good quality paper. The contents of this volume suggest that it may be a valued possession by many chemical specialists who will not purchase the entire series.

CHEMISTRY DEPARTMENT AND  
OCEANOGRAPHIC INSTITUTE  
FLORIDA STATE UNIVERSITY  
TALLAHASSEE, FLORIDA

SIDNEY W. FOX