

analyst and by the individual researcher," requires thoughtful consideration.

No radiochemical analyst and, shortly, no analytical chemist, can afford to disregard the material included in these volumes, and the incalculable impact that radiochemical analysis will undoubtedly have on the future of analytical chemistry.

*Paul L. Kirk*

University of California  
School of Criminology  
Berkeley, California  
Received November 16, 1965

*About the Reviewer: Dr. Paul Kirk is presently at the University of California at Berkeley, School of Criminology. He took his AB at Ohio State in 1924, his MS at Pittsburgh, 1925, and his PhD in Biochemistry in 1927 at the University of California. He has been a professor at the University since 1945. His interests include micrometallurgy of plutonium, protein chemistry, analytical toxicology, quantitative and criminological analysis.*

**Energetics in Metallurgical Phenomena—Volume 1.** Edited by William M. Mueller. Published by Gordon and Breach Publishers, New York (1965). 440 pp., \$19.50.

The articles in this book are based on part of the proceedings of the extended 1962 Seminar on Energetics in Metallurgical Phenomena, held at the University of Denver. There are eight separate articles contained in the book, each covering a different phase of energetics in metallurgical processes of current interest. A list of the topics and authors are: Intermetallic Diffusion by David Lazarus, Solid Solutions by Rudolf Speiser, Nucleation Processes by Michael Bever, Transformations by Earl Roberts, Metastable Phases Obtained by Rapid Solidification by Pol Duwez, Annealing Mechanisms in Deformed Metals by Paul Gordon, Energetics in Dislocation Mechanics by John Dorn, and Oxidation of Metals by Kenneth Lawless. A more complete list of vital current subjects could scarcely be compiled. Each article is preceded by a detailed table of contents and the volume itself contains a complete subject and author index.

In almost every case the authors have presented a comprehensive review of basic theory and current developments in their particular field. In fact, one has the impression that the articles themselves represent a compilation of lecture notes for a course of the same title. The general level of these articles is that of a graduate course in metallurgy or physics. The material is presented first in basic terms and is then developed up to the present state of knowledge, or at least as of 1962. Thus, the general reader is bound to learn something from each article and can progress in his reading according to the level of his interest and background.

While the quality of writing is uniformly good throughout, the sections of Diffusion, Nucleation, Annealing, and Dislocation Mechanics are particularly instructive and complete. For example, Dorn's treatment of dislocation theory runs over 100 pages. It is comprehensive and quantitative where necessary.

Unfortunately, it must be realized that in some of the more rapidly developing topics covered, such as transformations, dislocation theory, and metastable phases, the

articles are four years behind the most current developments. This delay seems to be one of the attendant evils in publishing the proceedings of seminars and meetings.

In conclusion, this book is recommended for students and researchers in physical metallurgy and related disciplines. The reader will find under one cover not only a detailed review of his own field of endeavor complete with detailed references, but also a comprehensive treatment of virtually all the most vital topics in the fast-moving field of energetics. To quote from Editor Mueller, "It would be unfortunate if only those who were able to attend the seminar were to derive benefit from this material."

*S. Bradford McRickard*

Brookhaven National Laboratory  
Upton, L. I., New York 11973  
Received December 16, 1965

*About the Reviewer: S. Bradford McRickard has been associated with the Metallurgy Division of Brookhaven National Laboratory since 1959. Prior to that he was a metallurgist at Westinghouse's Bettis Atomic Power Division where he was concerned with radiation damage studies of fuel alloys.*

*At Brookhaven he has been studying the mechanical properties of body-centered cubic metals and the effects of irradiation on these properties. He has published a number of papers on the effects of temperature, composition, and irradiation on the properties of pure iron and steel.*

*He obtained his BS in Metallurgical Engineering from New York University and MS from the Polytechnic Institute of Brooklyn.*

**Refractory Transition Metal Compounds; High-Temperature Cermets.** G. V. Samsonov, editor. Translation by Scripta-Technica, Inc. Translation Editors: G. E. Gurr and D. J. Parker. Academic Press, New York (1964). 220 pages, \$9.00.

This book consists of a collection of papers edited by the eminent G. V. Samsonov. In this volume he has assembled a series of papers presented at a Seminar on Physical Properties and Electron Structure of Compounds of Transition Metals, held at the Institute of Cermets and Special Alloys of the Academy of Sciences of the Ukrainian SSR. He has included, in addition, papers summarizing extensive investigations carried out in recent years (generally to 1962) at various technical institutes and universities throughout the USSR. This collection is a broad review of theoretical and experimental studies indicating the "state-of-the-art" of Soviet research into the nature and properties of the refractory transition-metal compounds.

The nature of the physical properties of refractory compounds and the basic laws relating the variations of these properties with changes in crystal and electron structure are of vital importance to the physicist and materials scientist. Knowledge of the fundamental properties of these compounds, in turn, facilitates solution of the problem of producing new refractory materials with specific, well-defined properties. These papers represent significant contributions to our knowledge of transition-metal compounds by a number of Soviet researchers.

Four of the papers are primarily theoretical. These include a paper by Samsonov reviewing his approach to