

Interfacial Phenomena in Metals and Alloys. By Lawrence E. Murr. Pp. xiv+37. (Addison-Wesley: Reading, Massachusetts, and London, September 1975.) Cloth \$24.50; Paper \$14.50.

THE five chapters of this book make up a comprehensive treatment of those aspects of surface science which contribute to the properties of materials, and in particular to metals and alloys. The first is concerned with surface thermodynamics of solid surfaces, starting from Gibbs' model, but including a discussion of the distinction between surface stress and surface tension, and the effect of vacancies and other singularities of structure. In the second chapter these principles are applied to the description of conditions for the establishment of interfacial equilibria, especially the evaluation of interfacial free energy ratios. Because of the crucial importance of interfacial free energy values in determining the forms of crystals and grains, chapter 3 is concerned with their determination in different systems. The last two chapters treat the structure and properties of interfaces respectively.

A particular feature of this book is the wealth of factual information which has been gathered into tables of surface and interfacial free energies of solids, and related quantities, occupying almost 10% of the available space. Taken with over 800 references, this ensures that the book will be extremely useful as a source of critically appraised facts for research workers in addition to its primary function of instructing students of materials science in important principles, and exercising them with fifty problems, mostly numerical. Comprehensive author and subject indexes have been provided, and the book is very clearly printed and copiously illustrated. **A. Couper**

Organoborane Chemistry (Organometallic Chemistry: Series of Monographs.) By Thomas Onak. Pp. x+360. (Academic: New York, San Francisco and London, July 1975.) \$38.00; £18.25.

THIS book is one of an important series on organometallic chemistry, edited by P. M. Maitlis, F. G. A. Stone and R. West. The topic of organoborane chemistry has developed very rapidly: this is the first review for almost ten years dealing explicitly with compounds having boron-carbon bonds, although others are available

on related topics, such as hydroboration. Excluded are other organic boron compounds such as boron esters.

A brief introduction (1 page) is followed by Chapter 2 (18 pages), concerned mainly with X-ray, spectroscopic, and thermodynamic data. Chapter 3 (116 pages) deals with methods of B-C bond formation and cleavage. [For those familiar with the field it will be clear that the author has used a very similar presentation to that used in my article in Muetterties' monograph of 1967.] Chapters 4-6 (80 pages), on four-coordinate organoboranes, organodiboranes, and other polyboranes, are particularly welcome.

Books brief

There are nearly two thousand references which include papers published in 1973. Inevitably, therefore, the discussion is selective, particularly as about a quarter of the 224 pages of text is taken up by tables. Nevertheless, the monograph is informative and well-written and should be essential reading for anyone active in this field. **M. F. Lappert**

Interactions on Metal Surfaces. (Topics in Applied Physics, Volume 4.) Edited by R. Gomer. Pp. xi+310. (Springer: Berlin and New York, 1975.) DM78; \$33.60.

THIS book contains seven articles on selected aspects of the chemisorption of gases on metals. A model (chapter 1) consisting of an alternating potential within the metal and a discontinuity at the surface enables the calculation of wave functions near the surface using generalised Wannier functions. The electron work function is then calculated from a continuum model into which the effect of crystallinity is introduced as a perturbation, and adsorption as localised screening. The chemisorption bond (chapter 2) is described initially in terms of an LCAO-MO model, which is extended to include overlap between metal and adsorbate states and lateral interactions.

Four chapters then give an account of experimental aspects of chemisorption, the first summarising studies of

clean surfaces and adsorption using a variety of techniques, whereas the other three discuss thermal and electron impact desorption, photoemission and field emission spectroscopy, and low energy electron diffraction. The final chapter on heterogeneous catalysis is included to indicate, in the editor's words, "that there is more to interactions on surfaces than the adsorption of hydrogen on the (100) plane of tungsten".

There is some overlap in subject matter between the chapters, but each presents its author's individual view of recent advances. There are over 700 references, a useful index and many excellent illustrations. It is clearly not a 'first text-book' of chemisorption, but research workers will find it both stimulating and informative. **A. Couper**

Genetics and Psychopharmacology. (Modern Problems of Pharmacopsychiatry, Volume 10.) Edited by J. Mendelewicz. Pp. viii+132. (Karger: Basel, London and New York, 1975.) Sfr.58; DM55; \$24.25.

PSYCHIATRY relies on a wide range of investigational techniques ranging from the psychoanalytical to the biological. Among the latter, genetic studies have suggested that many major psychiatric illnesses have a hereditary component. The introduction of effective drugs for these illnesses has emphasised the importance of biological factors in the causation and mechanism of psychiatric illnesses. In this book, the two threads are drawn together. The points of contact, however, remain few and one or two of the contributions in this multi-author book contain little or no genetics. The chapters are of a generally high standard and range widely from the role of heredity in alcoholism to the genetic mechanisms governing the rate of acetylation of the monoamine oxidase inhibitor, phenelzine. Monoamine oxidase is the main interest of almost half the book but claims that levels of this enzyme in blood platelets are abnormal in patients with depression and schizophrenia and in relatives of the latter seem premature. Brain levels (surely more relevant) are quite normal in psychiatric patients. One is left wondering whether the greatest difficulties in biological psychiatry relate not to the biological techniques but to the unsystematic way in which diagnoses are made and symptoms assessed. **M. H. Lader**