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Book Reviews

Intermetallic Compounds

Edited by J. H. Westbrook

Pp. 663 (Wiley, New York, 1967) 285s

This is a most valuable book. The editor, an internationally recognised authority on the subject, has assembled twenty-nine chapters written by contributors from many parts of the world. (The book is *not* a conference proceedings.) These chapters are grouped under the headings: Introduction (one chapter); Bonding and Related Properties (six); Crystal Structure (six); Microstructure and Substructure (three); Formation, Stability and Constitution (three); Kinetics and Transformations (three); Properties and Applications (seven). The term *intermetallic compound* has been elastically interpreted to include phases with a substantial homogeneity range, and those subject to an order/disorder reaction.

The result is a remarkably complete, well-organised and readable survey of a very involved

field, where much depends on systematic grouping of observations to prevent intellectual indigestion. The chapters on crystal structure, for instance, convey a very clear picture of current crystal-chemical ideas that govern the choice of crystal structure in terms of both geometrical and quantum-mechanical ideas. Again, the final group of papers ranges from mechanical behaviour to magnetic, electronic and super-conductive properties.

While publication was in 1967, references only go up to 1964, which proves that the path of an editor is a stony one! The index, an important feature in a book of this type, is excellent: in addition to the usual name and subject indexes, there is also a separate index of compounds.

In all, this expensive book is worth its price and is one of those of which one can say without hyperbole that it should be in every metallurgical library.

R. W. CAHN

Damping of Materials and Members in Structural Mechanics

B. J. Lazan

Pp. 317 (Pergamon, London, 1968) 105s

In recent years increasing attention has been paid to the importance of damping as a material property and as an engineering property. Apart from Zener's classical text of 1948 there appears

to be no book exclusively devoted to damping, and the author's coverage of his subject appears to be exhaustive. Although particular emphasis is placed upon engineering mechanics aspects, there is a comprehensive review of the atomistic or molecular mechanisms of damping. Significantly, one of the most valuable aspects of the book is a vast compilation of data and an extensive list of references, forming together one third of the book. The compilation includes data on metals,

polymers, glasses, composites, minerals and wood.

The text deals with damping micromechanisms in linear and non-linear solids, structural damping in members composed of uniform materials, and damping under uniaxial and multiaxial stress systems. The variety of notations normally used in the literature in this range of topics and the multiplicity of phenomenological results

makes for a complex subject to be covered in a single book. Nevertheless, the author copes with the material expertly, introducing a uniform system of notation and summarising much of the data in chart form which greatly assists understanding of the text. This will be a most valuable working text and source book for engineers and materials scientists.

B. HARRIS

International Journal of Engineering Fracture Mechanics, Vol 1, No 1 (June 1968)

(Pergamon Press, Oxford) hard cover, £24 per annum.

In recent years, engineering fracture mechanics has been accepted and is now in such widespread usage that the need has arisen for the creation of a journal devoted specifically to this subject.

The first volume was produced in June this year and will be subsequently published quarterly. It is especially appropriate that one of the three editors is Dr George T. Irwin, who is largely responsible for the inception of engineering fracture mechanics as we know it today; the other editors are Dr Harold Liebowitz and Dr Paul C. Paris.

This is primarily a journal for technical papers on both research and advanced application of fracture mechanics; theoretical papers are also to be included. Papers are encouraged from the fields

of both engineering mechanics and materials science. The first volume is well-balanced in this respect.

Subsequent volumes will accept the role of compendium information, including a synthesis and utilisation of research results. This information is to include book reviews, abstracts, and compilation of solutions and data from various sources. It will also serve as the official publication for the papers presented at the Annual National Fracture Mechanics Conference.

The aims and scope of this journal justify its existence, since it will serve a specific purpose. Initially there will inevitably be some overlap with the *International Journal of Fracture* in its current form but perhaps this journal will adopt a new role for their harmonic coexistence.

The editors are to be congratulated on an impressive first issue; they have set themselves a very high standard which they will do well to maintain.

T. R. WILSHAW