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Book Reviews

Biomedical Polymers

Edited by A. Rembaum and M. Shen

Published by Dekker £8·35

This book is an edited version of the papers presented to the Symposium on Biomedical Polymers at the California Institute of Technology in July 1969.

The book starts with an excellent paper on the effects of intervention on the blood-fluid itself and on blood tissue reactions. This is followed by one on artificial kidney treatment where the need is shown for a small, cheap disposable dialyzer that can be operated by persons of minimum skill and training. The first four papers in Part II deal with the more technical aspects of Medical-grade polymers followed by some work on foreign-body reactions to the implanted plastics and methods of screening for compatibility. Part III is concerned with the evaluation of polymeric substances that appear to have properties that make them suitable for implantation. Particularly impressive is the careful research for carcinogenic effects which would rule out the use of any proposed implantation substance. Future developments are covered in Part IV, the final paper setting out in a very clear way the challenge that is given to polymer chemists by the Medical

profession covering everything from artificial hearts to tissue adhesives.

There are very full references at the end of each paper so that the book should prove useful to researchers just entering the field, as well as to surgeons anxious to know what can and cannot be implanted with safety. For those already working in the subject the way ahead is clearly demonstrated.

G.C.S.

Optical Microscopy of Metals

R. C. Gifkins

Pitman. Pp. 208 £3·75

In the introduction to this book Dr Gifkins stresses the continuing importance of the technique of optical microscopy in the study of materials, and the need for the good metallurgist to be an excellent metallographer. It is certainly still true that a great deal of valuable information can be gained by this technique used on its own, or in parallel with modern metallographic aids such as the scanning electron microscope and microprobe analyser.

The book is written with two groups of readers in mind, the practising metallographer who wishes to learn about the specialised optical techniques now available, and the student who

wishes to understand the basic theory and operation of the metallurgical microscope.

Following an introduction on the physical basis of the formation of the image, the construction, adjustment and critical alignment of the microscope are dealt with in detail. Further chapters are then devoted to specific topics covering: brightfield and phase contrast microscopy, interference techniques and their application to quantitative measurements of step heights and profiles, the polarising microscope, and the use of photography.

The final chapters of the book cover a miscellany of aids to metallography and include an excellent section on quantitative metallography as applied to inclusion counting, grain size and grain boundary areas.

This is the kind of book which I am sure will be read and re-read many times for the mine of information it contains.

R. A. F.

Structural Characteristics of Materials

Edited by H. M. Finnieston

Elsevier Materials Series. Pp. 318 £8.00

This is a review book which attempts to highlight both the historical and current thinking about the structure of materials. It deals particularly with metals and ceramics, although there are some references to polymeric materials.

Although the text is written by a group of specialist authors including people such as Hull, Lipson and Nicholson the subject matter is treated at a fairly elementary level and there are extensive lists of references and bibliographies which will allow the interested reader to pursue a particular topic to a more advanced level.

The book falls into three main sections:

(i) there is an introduction by H. Lipson and S. G. Lipson which deals in very general terms with the crystallography and atomic structure of materials, followed by two chapters which are devoted to the general defect state and the defect state in the important non stoichiometric compounds; (ii) the second section of the book is devoted to a discussion of mechanical twinning, which is treated by considering the structural characteristics of the twin rather than a description of the phenomena associated with twinning, and a discussion of the martensitic reaction, in which the authors deal with both the formal crystallography and the kinetics of this reaction; (iii) in the final section of the book, the development of different types of microstructure from both liquid and solid phases are dealt with in an excellent chapter by Nicholson and Davies.

This is an extremely enjoyable book to read and will serve as an excellent introduction to the subject at the undergraduate level.

R. A. F.