

# BOOK REVIEWS

Selection of books for review is based on the editors' opinions regarding possible reader interest and on the availability of the book to the editors. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.



## PATIENCE REWARDED

**Title** Strength and Structure of Engineering Materials

**Authors** N. H. Polakowski and E. J. Ripling

**Publisher** Prentice-Hall, Inc., 1964

**Pages** xviii + 535

**Price** \$17.35

**Reviewer** P. H. McDonald

This book is a rather complete anthology of the general field of mechanical behavior of solid materials. Perhaps its greatest value will be its service to engineers who do not specialize in the subject, but who have need of a source of ready reference to the essential features of the field.

Its value is enhanced by the inclusion of many of the most up-to-date aspects of the relevant literature. It closely follows the contemporary trends in research.

The book should be read by engineering educators also, primarily because it epitomizes the struggle of teachers who seek a new synthesis of the engineering science areas in the curriculum. It brings to a sharp focus the essential difficulties of an effective integration of the principles of mechanics with the properties of solids.

A central and massive weakness of the text is its limitation to the nondynamical realm of behavior. This stems from the fact that inertial effects cannot be provided for unless equations of motion are written. The authors have apparently

rejected the basic principles of mechanics as outside the scope of their writing, while at the same time they have drawn heavily upon the results of force balance, momentum balance, and energy balance laws. The general boundary value problem of solid objects is nowhere raised. This stands in sharp contrast to the treatment of the fundamentals of materials structure (cf the sections on "Elements of Crystallography," pp. 72-82, et seq.), which is very basic and deals with primitive concepts.

In one sense, the volume seems quite laminated. That is, a particular subject will, without any apparent connectivity, be interleaved between other topics which form a contiguous grouping. A good example of this is Chapter 12, *Hardness*, which is immediately preceded by chapters on *Tensile* and *Compressive Properties*, and is followed by chapters on *Bending* and *Torsion* and *Shear*.

In another fashion, the text oscillates between the macro- and micro-realms. This is particularly the case during the first seven chapters, but, as the authors correctly point out in the Preface, the gap between these two domains has yet to be satisfactorily bridged.

However, the reader who wishes to acquire a first-level acquaintance with the broad realm of solid materials properties will, with some patience, find a reference to most topics somewhere in this book. He will also find suitable references to more extensive work in the various areas of the subject.

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## SOME ASPECTS OF CARBON IN DEPTH

**Title** Chemistry and Physics of Carbon, Volume I

**Editor** Philip L. Walker, Jr.

**Publisher** Marcel Dekker, Inc., 1966

**Pages** xv + 382

**Price** \$13.75

**Reviewer** William E. Parker

This is the first volume of a series of somewhat all-inclusive "recent advances" in the subject. Its format comprises a series of papers, written by experts, each concerned with a rather narrow aspect of carbon technology. Judging by the contents of Vols. I and II (titles listed in Vol. I), these monographs will not constitute a general text on carbon but may well serve as a conven-