forts, stored energy buildup and release are now well enough understood that stored energy is not considered a problem in modern high-temperature graphite reactors.

The book is almost free of typographical errors, is sturdily and attractively bound, and contains many figures and references to supplement the text. Although the book naturally emphasizes the interests and work in England, the subject coverage is truly worldwide. It will be a very useful book for all engineers and scientists concerned with radiation effects in graphite.

R. E. Nightingale

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May 18, 1966

About the Reviewer: R. E. Nightingale is manager of the Ceramics and Graphite Research Section at the Pacific Northwest Laboratory (formerly Hanford Laboratories) now operated by Battelle Memorial Institute. For the past 12 years, he has been interested in nuclear materials. Most of his research has been on graphite, and he has published extensively in this field. Editor of a recent book, Nuclear Graphite, *(Academic Press, 1962), he was a delegate to the 1958 and 1964 Geneva Conferences and has served as an advisor to the AEC on graphite problems on a number of occasions. Prior to his present position, he was a research associate at the University of Minnesota. He received a PhD degree (physical chemistry) from Washington State University in 1953 and a BA from Whitman College in 1949.*

Strength and Structures of Engineering Materials. By N. H. Polakowski and E. J. Ripling. Prentice Hall, Inc., New York (1966). 535 pages. $17.35.

This book is a long needed and valuable link in technical literature connecting the disciplines of strength of materials and structure of materials. Written in easily understandable language, it is an introduction to the mechanics of deformation and fracture of solids through presentation of the atomic model and interatomic forces, while exposing materials to exterior forces. It has many figures and photographs, and there are problems at the end of each chapter.

The reader who expects to find detailed information on calculational methods quickly realizes that the authors did not intend to improve his calculational skill, but rather intended to help him understand the basic phenomena. Therefore, the book does not give enough information regarding derived equations, beam deflection formulas, or Tables for properties of materials which are available to the structural engineer from standard sources. For the practical engineer, the references at the end of each chapter could have covered a more extensive list of related textbooks in some areas.

The authors use the latest available research results to describe dislocations, elastic and plastic deformation, and static and dynamic effects in metals and nonmetals. The book consists of four main parts: Part I is a short introduction describing deformation and rupture; Part II contains basic definitions related to stress and strain; Parts III and IV comprise the real body of the book.

Part III is a rheology which classifies and describes the structure of materials and contains a well-condensed description of elasticity and plasticity, time-independent and time-dependent deformation and fracturing.

Part IV describes mechanical behavior and properties of materials under tensile and compressive loads, bending, torsion, and shear. It contains a short chapter on hardness and on properties that measure fracture resistance, and chapters on creep and stress rupture, fatigue, and residual stresses.

For teachers and students who intend to achieve depth in knowledge of engineering materials, this book fills the gap between highly specialized aspects of stress analysis and properties of materials. It is a good introduction for the engineering student to the mechanism and calculational models which describe deformation, including the mathematical formulation of time dependency of deformation.

Judging its usefulness for practical engineers, this is a valuable book for those who are not recent graduates and who have not had a chance to update themselves on the new developments of research in the fields of behavior of materials relating to their atomic structures, and who want to understand how different kinds of materials behave under stress and strain.

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May 31, 1966

About the Reviewer: George G. Biro is on the staff of Gibbs & Hill, Inc., Consulting Engineers, New York City. He is the author of Modern Methods in Stress Analysis of Continuous Structures *(1949) and, at present is in charge of shielding on nuclear power plants. He obtained an MS in Civil Engineering in Brunn, Czechoslovakia, and an MS in Nuclear Engineering at Columbia University, where he is presently a doctoral researcher.*