one cannot help but feel that a more fundamental viewpoint could have been adopted in some cases.

Any such criticism should however be accompained by the statement that there does not exist any other recent work on rheology which even attempts to cover as wide a field as does Eirich's. Many of the phenomena discussed are outside the linear range of behavior, and the proper mathematical formulation of such phenomena has been attacked vigorously only in recent years and is far from developed to the point where it can be generally applied. It will no doubt be many years before these general mathematical formulations will be applied widely by those who must test and compare materials showing complicated rheological properties. This volume does give the reader at least some hint of the wide variety of phenomena which must be accommodated in a fully general mathematical formulation. The three volumes as a whole achieve to a remarkable degree the objective of bringing together a widely diversified field encompassing the range from pure mathematics to empirical testing.

Properties and Structure of Polymers. By Arthur V. Tobolsky. 331 pp. John Wiley & Sons, Inc., New York, 1960. $14.50. *Reviewed by Stuart A. Rice, Institute for the Study of Metals, The University of Chicago.*

THIS book deals with material largely omitted from courses dealing with the physical chemistry of polymers. As the subject matter is of considerable interest it is pertinent to examine the suitability of the book as a text and reference.

The six chapters deal respectively with: (1) a simple discussion of the equation of state, viscosity, and viscoelasticity for systems of small molecules; (2) chain conformation, crystallization, the glass temperature, viscosity, and elasticity of linear polymers; (3) mathematical treatment of linear viscoelasticity; (4) viscoelastic behavior of polymers; (5) chemical stress relaxation; and (6) polymerization equilibria. In addition, ten appendixes deal with details omitted in the body of the text.

In general I find the level of the text suitable for seniors or first-year graduate students. Despite the title there is very little material dealing with the structure of polymers. The work of Keller is mentioned only briefly, the nuclear resonance investigations of Slichter and Powles are given less than one page, the word polypeptide does not even appear in the index, etc. Moreover, there is insufficient detail with respect to the various molecular theories proposed. For instance, the theory of rubber elasticity as developed by James and Guth and Flory is sketchily treated; the very important theory developed by Zimm is mentioned only in name; Pao rates only one reference in the entire book; the treatment of the properties of small molecules is superficial, etc. On the positive side, the book contains a wealth of data along with extensive interpretation in terms of dashpots and springs.

With the understanding that the text must be supplemented by outside reading, it can be used as a supplement to Flory's *Principles of Polymer Chemistry* in the usual polymer physics curriculum. As such, it is a useful addition to the literature. However, the lack of theoretical detail mentioned above places severe limitations on the utility of the text as a general reference work.

The Nature of Science. By David Greenwood. 95 pp. Philosophical Library, Inc., New York, 1959. $3.75. *Reviewed by R. Bruce Lindsay, Brown University.*

IT is fair to say that professional philosophers are taking an increasing interest in the logical foundations of science, and the amount of material now available in this field is not only very large but is steadily growing. This is illustrated by the volume under review which is a collection of five essays by a well-known philosopher on various aspects of the philosophy of science. Since the essays were written at various times during the past ten years, the book is not a well organized treatise. It takes its title from the first chapter, which presents the author's version of the nature of a scientific theory and the relation between induction and deduction in science. This appears to contain little that is essentially novel. Somewhat more meaty are the remaining four chapters with the following titles: Concept Formation and Operational Definition, Quantitative Inductive Procedures, Causality and the Counterfactual Conditional, and The Problem of Real Numbers. There is a valuable critique of Bridgman's operational idea in the second chapter, though it is by no means exhaustive and scarcely does justice to the problem of the constitutive character of definitions in physical theory.

The physicist will find in Chapter 4 a good discussion of the difference between causality and determinism, a matter of some current confusion in accounts of the philosophy of modern physics. To read the book with thorough understanding the reader must be familiar with the terminology of symbolic logic, which the author uses freely. The final chapter is of purely mathematical interest. A short bibliography is appended. The type is small and unfortunately does not lend itself to easy reading.

Applications of Thermoelectricity. By H. J. Goldsmid. 118 pp. (Methuen, London) John Wiley & Sons, Inc., New York, 1960. $2.25. *Reviewed by Peter L. Balise, University of Washington.*

FROM the title of this little book, one might expect a description of the practical applications that have been made of thermoelectricity, but less than one fifth of its pages are devoted to this. Rather it is primarily a good introduction to thermoelectric behavior, its writing prompted by the recent research in thermoelectric applications. Both refrigeration and power