netic properties of materials from the viewpoint of solid state physics. In recent years, this study has made the most significant contribution to the development of new materials for electronic devices. In this chapter, the underlying differences between insulators and semi-conductors are also explained. Chapter 8, thermal properties, describes heat resistance and thermal conductivity of matter, and a number of applications of thermal insulating materials. Chapter 9 on corrosion introduces the reader to this subject through a description of electrochemical methods. Polarization and potential differences are described. This chapter also includes the latest information on microbiological corrosion by sulfate-reducing and sulfur-forming bacteria. Methods for the prevention of corrosion are also discussed. Chapter 10 explains the phenomena of friction, wear, and lubrication in terms of surface chemistry and mechanics. Asperites (surface high points) are considered in the study of sliding and rolling friction.

Chapter 11 is a brief survey of the principles of joining similar or dissimilar materials by welding, brazing, cementing, and other well-known methods. Half the chapter is given over to descriptions of inorganic cementing and concrete. The last chapter, closely related to the chapter on corrosion, describes protective coatings. It includes plating of various substrates and the organic and inorganic coating materials.

Because this is a working textbook, each chapter ends with suggested reading matter. A short bibliography extends in depth the subject matter of each chapter. Also included for the student's use are study questions pertaining to the text.

In the entire book, only one statement can be questioned and that one, only in the light of very recent developments. It occurs in section 1.15 Carbon: "Transformation of graphite to diamond seems to be theoretically feasible at high pressures, but so far no successful results have been obtained in practice."

Dr. Jastrzebski's book is highly recommended as a text for other educators, and is a valuable reference for the professional engineer, laboratory technician, inventor, and designer.

Lee J. Zukor

Engineering Editor, *Plastics Technology*
New York 17, New York

Engineering Design with Rubber. A. R. PAYNE and J. R. SCOTT. Maclaren, London; Interscience, New York, 1960. ix + 256 pp. $8.00.

This book deals with the properties, testing, and design of rubber as a material for engineering. The mechanical engineer will find the book applicable to his work regardless of his specific specialization. Likewise, the civil, the automotive, the electrical, and the chemical engineer will all find the book useful for reference because rubber is employed in their particular fields on account of its unique mechanical properties in addition to other advantageous characteristics.

The book is based on symposia conducted by the Research Association of British Rubber Manufacturers in 1958 for the purpose of bridging the wide gap that commonly exists between the rubber technologist and the mechanical engineer. The papers that were presented at the symposia have been rewritten and rounded out in the light of the extensive discussions at the symposia. Extensive lists of references provided at the end of most chapters greatly enhance the value of the book as a text book and reference work. Unfortunately, practically no supplementary references are given for the chapter on the rubberlike state where sources of additional information would be welcomed by readers outside the field of rubber technology. The references to journal articles are cited in the way dictated by most publishers by giving only the names of the authors and the place of publication. The reviewer would find the citations more useful if the titles also were given.

Because the book was developed for and in conjunction with practicing engineers, it deals with many everyday problems and contains, for example, helpful information about making rubber models, the use of which may afford a quicker and easier solution to many design problems than extensive calculations.

The book contains ten chapters—three are by or in collaboration with other authors—but all have been well integrated into a well rounded treatment.

An introductory chapter on the rubberlike state lays a sound foundation for the understanding of the physical properties of rubber. Two chapters deal with properties of rubber—one is on the dynamic and time related properties, and the second is on all other properties. These are followed by two chapters dealing with test methods for the two groups of properties. Then there are chapters on force-deformation relationships and resonance and transmissibility. The three concluding chapters deal with the practical design and use of rubber in engineering, including a very helpful sketch of the mode of collaboration between the engineer and the rubber technologist. Brief appendices deal with British and U. S. standard test methods, standards for natural and synthetic rubber compounds, and finally with a qualitative description of the properties of natural and synthetic rubber. If a second edition of the book should be issued, the reviewer would suggest citing pertinent ISO specifications as well.

Because of the variety of sources from which the tables, graphs, and other illustrative material have been drawn, there is no consistency in the units employed in the book, metric and English units being used indiscriminately. This, also, could be corrected in a second edition.

A. T. McPherson

National Bureau of Standards
Washington 25, D. C.

High Speed Testing, Vol. 1. A. G. H. DIETZ and F. R. EIRICH, Eds. Interscience, New York–London, 1960. vii + 112 pp. $5.00.

In this small volume is published the first in a series of symposia on high speed testing. Held at Boston on December 8, 1958, it was sponsored by the Plas-Tech Equipment Corp. of Natick, Mass. with A. G. H. Dietz and Frederick R. Eirich as Co-Chairmen. Devoted entirely to high speed testing, this interesting and informative symposium contains