and explanation can form an adequate basis for any who wish to study programming systematically.

Programming for both scientific and commercial problems is described. Considerable attention is given to questions of efficient storage and sequencing and the importance of program efficiency is constantly stressed. In this connection the practical balance between storage economy and time economy is discussed on a number of occasions, so that the various considerations are made quite clear.

The subject of pseudocodes, symbolic codes, assemblers, and automatic programs are dealt with rather summarily in one chapter. Moreover, very little space has been allotted to what is probably the central problem of most beginners—to recognize the most common errors and track them down in the program. It is difficult to complain on either count since the stated purpose of the book was rather to expound the general principles on which all programming is based.

**Theoretical Elasticity.** By Carl E. Pearson. 218 pp. Harvard U. Press, Cambridge, Mass., 1959. $6.00. *Reviewed by E. H. Dill, University of Washington.*

THE author presents the fundamental concepts of the mechanics of continuous elastic media in a form which reads like a novel. This book can be highly recommended to specialists in related fields who wish to comprehend the foundations of elasticity theory in a minimum of time. It is intended, however, primarily for first-year graduate students.

An introductory chapter contains all the background material on vector and tensor analysis necessary to read the remaining chapters. The fundamental concepts are then presented in a logical manner and the implications of the theory discussed. Known general solutions are developed. Variational methods for obtaining approximate solutions are indicated briefly. Chapters on thermoelasticity, time-dependent problems, and nonlinear elasticity complete the book. It should be emphasized that only general results are presented; the book is void of any application to special problems usually found in texts on elasticity. For example it does not contain a discussion of plane stress and plane strain, or of the torsion of rods, etc. It does contain material which the reviewer feels should be studied by every graduate student in physics and engineering, regardless of field of specialization.

**Elementary Matrix Algebra.** By Franz E. Hohn. 305 pp. The Macmillan Co., New York, 1958. $10.00. *Reviewed by Paul Slepian, Hughes Research Laboratories.*

FORTUNATELY, the graduate engineer or physicist today is exposed to substantially more mathematics than his counterpart of fifteen or twenty years ago. In those medieval times the terminal mathematics course for such a graduate was an elementary course in ordinary differential equations. Now, in many institutions this course has been eliminated and replaced by a two- or three-semester sequence of advanced calculus, incorporating ordinary differential equations into the sequence.

In addition, many engineering and physics undergraduates are now exposed to the fundamental ideas and concepts of modern algebra. The popularity of such courses has created a need for an elementary text on modern algebra, written by a mathematician, which states the basic ideas, axioms, and theorems precisely, without rendering them obscure to the mathematically unsophisticated clientele. The book under review meets this need admirably.

The author wisely limits his discussion to matrices, determinants, vector spaces, linear equations, and quadratic forms; these topics comprise the basic core of modern algebra to which a graduate engineer or physicist should be exposed, and the inclusion of material of greater depth and complexity would have defeated the purpose for which the book is intended. Furthermore, the author writes with remarkable clarity, but precision is seldom sacrificed at the expense of lucidity.

Occasionally the author slips. For example, although he is careful to distinguish between a matrix, which he calls an array of numbers, and the determinant of a matrix, which is a number, he later refers to the complement of a minor. This is nonsense, since a minor is the determinant of a submatrix; thus, a minor is a number, and it is meaningless to discuss the complement of a number. Such errors, however, are quite rare, and even if discovered, they are not likely to offend the average user of this excellent book.

**Mécanique quantique,** Vol. 1. By Albert Messiah. 430 pp. Dunod, Paris, France, 1959. 3900 fr. *Reviewed by Nicholas Chako, Queens College.*

THE author's plan for writing a comprehensive and modern book on quantum mechanics has been partly realized in the appearance of the first of a series of two volumes on this subject. As one would expect, the first volume, reviewed here, deals mainly with the elementary parts of the field. However, it is not what one would commonly call an elementary text, even though it covers most of the topics which are usually included in elementary courses in quantum mechanics. One of the reasons is the early introduction in the text of modern mathematical methods (linear operators in Hilbert space) by which the formalism of quantum mechanics is developed. This, as well as other features which are incorporated, makes it an excellent text for a graduate course in quantum mechanics.

The author begins with a critical and clear exposition of the shortcomings of the classical theories of dynamics and electromagnetic theory, including the old quantum theory, in explaining microscopic phenomena, and gradually leading his readers to de Broglie's ideas of material waves and to Schrödinger's time-dependent equation by means of linear operators. By introducing this powerful mathematical method, the author is able