Vibrations Non Linéaires et Théorie de la Stabilité, by M. Roseau. Springer-Verlag, Berlin, 6 Heidelberg, 1966. xi + 254 pages.

At first glance it might appear from the title that this is another study of stability theory for nonlinear differential equations, a subject already fairly well covered by a number of recent books. However, a closer examination shows that three fourths of the book deals with topics such as perturbation methods, orbital stability, synchronization, and periodic and almost periodic systems. These topics have received relatively little attention in most recent books, although those by Bogoliubov and Mitropolski, Hale, and Minorsky should be mentioned as exceptions.

The first seven chapters develop the basic theory of linear systems of differential equations, existence theory for nonlinear systems, and Lyapunov's second method. The treatment is quite concise, but readable, and forms a satisfactory introduction. There are, however, some places where a neater formulation could be given (example: the proof of uniqueness of solutions in section 2.2).

The remainder of the book is, as already indicated, devoted to less standard material. A recurring theme is the question of existence and stability of periodic solutions. The presentation given here is useful, particularly in view of the relative scarcity of books dealing with this problem.

Although this book may lack the inspiration and elegance of a classic, it is good enough to be a valuable addition to the literature. As one of the small number of books dealing with periodic solutions it belongs in the library of workers in this field.

Fred Brauer, University of Wisconsin
and Massachusetts Institute of Technology

Mathematical Methods in Physics, by J.S.R. Chisholm and Rosa M. Morris. McAinsh Co., Ltd., Toronto, 1966. xviii + 719 pages. $10.80.

According to the preface 'the book is primarily designed as a Mathematics text book which should serve students of Physics, Chemistry and Engineering. It should also be of use to the students specializing in Mathematics'.

The book is written from a classical point of view in a pleasant unhurried style.

It consists of the following twenty chapters.

I. Functions. Limits, continuity, differentiation. II. Integration. Simple methods. III. The convergence of infinite series. IV. The logarithmic and exponential functions. V. Integration, Further results. VI. Further theorems concerning functions of one variable. Expansions

in series. VII. Complex numbers. VIII. Functions of more than one variable. IX. Vector algebra. X. Applications of vector algebra to analytical geometry of straight lines and planes. XI. Vector functions. Differential geometry of curves. Line integrals. XII. Matrices, determinants and Linear dependence. XIII. Linear equations, Eigenvectors and Eigenvalues. XIV. Curvilinear coordinates and multiple integrals. XV. Vector analysis. XVI. Ordinary differential equations. The Laplace transform. XVII. Functions of a complex variable. XVIII. The Dirac δ-Function; Fourier series and integrals. XIX. Factorial, Legendre and Bessel functions. XX. Statistics and Probability.

R.K. Saxena, McGill University

Matrix Mechanics, by H.S. Green. (P. Noordhoff Ltd., Gronigan, 1965, The Netherlands). 118 pages. $5.50.

This is a refreshing little text which presents in a clear, compact form the basic ideas of quantum mechanics. It is quite novel in that it uses only the algebraic techniques of matrix mechanics. The text is supplemented by short exercises throughout and at the end of each chapter.

The book opens with a historical sketch followed by an introduction to the mathematics of Hilbert spaces. The postulates of quantum mechanics are introduced and applied to the harmonic oscillator. The eigenvalue problem is then discussed more generally and applied to several interesting examples, notably angular momentum and spin. The final chapter is a brief introduction to relativistic quantum mechanics.

D. Masson, University of Toronto

Thermal Stresses in a Composite Cylinder with an Arbitrary Temperature Distribution along its Length, by V.S. Nikishin. New York, Plenum Press Data Division, 1966. 119 pages. $22.50.

This book is a monograph, translated from the Russian by a Subsidiary of Consultants Bureau Enterprises Inc. of New York. It was originally published in 1964, as one of the Transactions (Trudy) of the Computing Center of the Academy of Sciences in Moscow.

The subject matter of the book is well stated in the title, but it should perhaps be added that a "composite" cylinder is one where the "core" is different from the "shell" (the author has particularly shells of various materials filled with concrete in mind). The mathematical formulation of the problem is based on linear elasticity theory and the usual law of thermal expansion. On this basis, the problem treated becomes one of solving a set of differential equations with appropriate boundary conditions. The method used is one of expansion in orthogonal functions; it is carried through to its numerical conclusion; the latter is