matrix groups in earlier parts of the book. The little more than two pages on ring and ideal theory, vector spaces, and linear algebras, however, can hardly be helpful to a beginner. The appendix "Sur les déterminants de Hurwitz ... " contains some original results concerning the location of the roots of certain algebraic equations ocurring in the theory of networks and servomechanisms.

Apart from a great number of worked numerical examples in connection with almost every theorem which lends itself for this purpose, there is plenty of exercise material without answers.

In teaching and in research much stress is given at present to numerical methods and explicit constructions; therefore the book will be welcomed by many teachers and students who will find in it valuable information on a great number of special questions.

H. Schwerdtfeger, McGill University

Sound Pulses, by F.G. Friedlander. Cambridge University Press, The Macmillan Company of Canada, 1958. 199 pages. Canadian List Price $6.75.

The method of studying wave motion most familiar to applied mathematicians is that of harmonic wave trains, and resolution into Fourier components. The volume under review is a well-considered study of a quite opposite viewpoint, more familiar to pure, or existentialist, mathematicians. This is the method of characteristics, or wave fronts, which is here applied to acoustic problems of a wide variety.

After an introductory chapter in which the wave equation is derived, and the approximations under which it is valid are discussed, the author turns to wave fronts and characteristics. Dependence and influence domains, the reflection and diffraction of wave fronts, and caustics are discussed. In the third chapter, entitled geometrical acoustics, the theory of distributions is introduced, together with the concept of weak solution of a differential equation. This leads to a discussion of the transport of singularities of various orders.

Particular reflection problems are worked out in the fourth chapter, with special attention being given to the reflection of spherical pulses by a paraboloid.

The last two chapters concern diffraction, a topic which is approached mathematically by the construction of appropriate Green's functions, and the asymptotic development of the integ-

rals in the solution formulae. There are interesting sections on geometrical optics and pulses in a stratified medium.

The book is notable for its success in applying certain aspects of the modern general theory of hyperbolic differential equations to specific problems. There is also a nice balance of analytical and geometrical methods throughout. This work should interest both pure and applied mathematicians.

G.F.D. Duff, University of Toronto

Engineering Mathematics, by Robert E. Gaskell. The Macmillan Company of Canada Ltd., (Dryden Press), 1958. $7.25.

Most of the branches of mathematics applied by engineers are treated in this text of 450 pages and 14 chapters. The style is clear, the exercises well chosen, and answers given throughout. One should not expect an exhaustive treatment in each chapter and many instructors may feel the need of supplementary texts in certain fields. The text is written mainly for electrical engineers but applications cover other departments quite thoroughly.

Linear differential equations and use of operators is followed by a chapter on elementary matrix theory and determinants, then one on applications to oscillations, stability and resonance. Complex numbers and variables, including conformal mapping and line integrals are next, followed by simple nonlinear equations. Now a chapter on Fourier Series, and one on numerical methods (curve fitting, solution of algebraic and transcendental equations, Picards method and interpolation formulae for differential equations).

In the last third of the book, we have Elliptic integrals, Gamma functions, Bessel functions, Vector Algebra and Calculus, and second order partial differential equations. These last are treated by Fourier Series, and the Laplace transform, for which a fairly thorough development is given for real s only.

The writer feels that this may be a good text for a general course in mathematics for engineering students, subsequent to the elementary calculus.

F.M. Wood, Queen's University