Short Notice

Wave Propagation in Elastic Solids

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North-Holland, Amsterdam, 1973. XIV + 425 pp. $42.10

This volume, by the Professor of Mechanics at Northwestern University, continues the publisher's series in applied mathematics and mechanics, mainly written by East European authors. It is a textbook suitable for post-graduate students who require a theoretical understanding of stress wave propagation in solids, and it covers, besides the basic theories of elasticity and elastodynamics, the problems of radiation, reflection, refraction and diffraction together with some more specialized topics.

The treatment is entirely theoretical and the main interest lies in the demonstration of mathematical techniques, ranging from the familiar to the esoteric, suitable for the solution of problems of this type. They will be of interest to seismologists or to engineers concerned with high speed rotations or vibrations. New applications can be expected in the widening field of acoustic testing which ranges from ultrasonics to low frequency dynamical measurements and includes the acoustic analysis of stress wave emissions and of response to mechanical impact. It should be noted, however, that there is no attempt to relate the text to such practical problems directly. The reader should become qualified to do this for himself by working through the exercises provided at the end of each chapter. This arrangement does not help to promote the author's second objective of providing a general reference work.

There is a good treatment of acoustic waveguides, a useful section on thermoelastic effects and second sound and some discussion of waves in visco-elastic solids. Current problems of propagation in anisotropic, porous, non-homogeneous or composite materials are not dealt with, however, and a slight sense of unreality is generated in a world where scattering, attenuation, damping and dispersion play so little part. The book is produced with comparatively few errors.

W.N.R.