

Mechanics of Solids—The Rodney Hill 60th Anniversary Volume. Edited by H. G. Hopkins and M. J. Sewell. Pergamon Press, England, 1982. 693 Pages. Price \$100.00.

REVIEWED BY E. H. LEE¹

As stated in the Editor's Preface, this volume was planned to have "some balanced structure, in the hope that it might achieve a degree of permanence in the literature of the (title) subject." It consists of "a restricted number of substantial articles" which provide an indepth introduction to selected subject areas in solid mechanics. The topics are ones to which Rodney Hill has made contributions or "certain topics immediately adjacent thereto in either physical or mathematical or engineering terms." The book begins with a general biographical sketch which illuminates the career and achievements of this unusually talented and dedicated person. There follows a complete bibliography of Rodney Hill's publications up to 1981. The volume is elegantly produced and bound for lasting use.

The contributors and their topics are: J. F. W. Bishop, Distortions and Interactions in a Fast Reactor Core; B. Budiansky, J. W. Hutchinson, and S. Slutsky, Void Growth and Collapse in Viscous Solids; P. Chadwick and G. D. Smith, Surface Waves in Cubic Elastic Materials; D. R. J. Chillingworth, Universal Bifurcation Problems; I. F. Collins, Boundary Value Problems in Plane Strain Plasticity; J. D. Eshelby, Aspects of the Theory of Dislocations; J. H. Gittus, Superplasticity; K. S. Havner, The Theory of Finite Plastic Deformation of Crystalline Solids; W. Johnson, The Mechanics of Some Industrial Pressing, Rolling, and Forging Processes; R. J. Knops, Instability and the Ill-posed Cauchy Problem in Elasticity; P. B. Mellor, Experimental Studies of Plastic Anisotropy in Sheet Metal; F. Milstein, Crystal Elasticity; A. Needleman and V. Tvergaard, Aspects of Plastic Postbuckling Behavior; R. W. Ogden, Elastic Deformations of Rubberlike Solids; J. R. Rice, Elastic-Plastic Crack Growth; M. J. Sewell, Legendre Transformations and Extremum Principles; A. J. M. Spencer, Deformation of Ideal Granular Materials; and J. R. Willis, Elasticity Theory of Composites.

I have read a number of the articles and I have indeed found them to be thorough, up-to-date presentations of their topics. I judge that the volume does offer the promise of achieving the goal stated in the Preface of becoming a contribution of lasting value to the literature of solid mechanics. It stands as a tribute to the editors' concept of a volume of this nature and it is sad that Geoffrey Hopkins did not live to see the idea come to fruition.

¹Professor, Department of Mechanical Engineering, Aeronautical Engineering and Mechanics, Rensselaer Polytechnic Institute, Troy, N.Y. 12181. Life Fellow ASME.

Soil Mechanics – Transient and Cyclic Loads, Constitutive Relations and Numerical Treatment. Edited by G. N. Pande and O. C. Zienkiewicz. Wiley, New York, 1982. 627 Pages. Price \$78.95.

REVIEWED BY S. C. COWIN²

This volume is a collection of 22 contributions by 37 authors. It is an attractively printed hardbound volume. The collection represents the state of the art in the understanding of the behavior of soils under transient and cyclic loads at the beginning of the 1980s. The titles of the contributions and their authors are as follows:

(1) Soils and Other Saturated Media under Transient, Dynamic Conditions; General Formulation and the Validity of Various Simplifying Assumptions (O. C. Zienkiewicz and P. Bettess).

(2) Boundary Layer Theory of Waves in Poro-elastic Sea Bed (C. C. Mei and M. A. Foda).

(3) Approximations of Cyclic Pore Pressures Caused by Sea Waves in a Poro-elastic Half-Plane (A. Verruijt).

(4) On the Importance of Dissipation Effects in Evaluating Pore Pressure Changes Due to Cyclic Loading (H. B. Seed and I. M. Idriss).

(5) Liquefaction and Permanent Deformation under Dynamic Conditions – Numerical Solution and Constitutive Relations (O. C. Zienkiewicz, K. H. Leung, E. Hinton, and C. T. Chang).

(6) Dynamic Response Analyses of Saturated Sands (W. D. L. Finn).

(7) Dynamic Response Analysis of Level Ground Based on the Effective Stress Method (K. Ishihara and I. Towhata).

(8) Elastoplastic and Viscoplastic Constitutive Models for Soils With Application to Cyclic Loading (Z. Mroz and V. A. Norris).

(9) A Critical State Soil Model for Cyclic Loading (J. P. Carter, J. R. Booker, and C. P. Wroth).

(10) Bounding Surface Formulation of Soil Plasticity (Y. F. Dafalias and L. R. Herrmann).

(11) A Model for the Cyclic Loading of Overconsolidated Soil (M. J. Pender).

(12) Modelling and Analysis of Cyclic Behaviour of Sands (J. Ghaboussi and H. Momen).

(13) A Constitutive Model for Soil under Monotonic and Cyclic Loading (R. Nova).

(14) A New Endochronic Plasticity Model for Soils (K. C. Valanis and H. E. Read).

(15) Endochronic Models for Soils (Z. P. Bazant, A. M. Ansal, and R. J. Krizek).

²Professor, Department of Biomedical Engineering, Tulane University, New Orleans, La. 70118. Fellow ASME.