of the additional parameters (if needed) could be included on the same graph.

One may note that for each of the two values of preload we have the region in which the relationship between the total axial load and the hydrostatic pressure is linear. The corresponding straight lines are, practically speaking, parallel. If so, one set can be made to overlap the other if a shift is made by the dimensionless presentation with some appropriate reference quantities. Furthermore, this resulting set may be in turn replaced by a single curve indicating associated tangents.

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book reviews

Elastodynamics, Vol. II, Linear Theory. By A. Cemal Eringen and Erdogan S. Suhubi. Academic Press, New York. 1975.

REVIEWED BY C. C. CHAO[1]

An excellently well written book devoted entirely to the linear theory of isotropic elastodynamics. The scope of this book, as the authors have outlined in their preface, includes a thorough discussion of fundamental theorems concerning elastodynamics and various mathematical methods of solutions and their application to one, two, and three-dimensional problems. Solutions by means of potentials, singular solutions, complex function technique, method of integral equations, and integral transforms are explored. Free and forced vibrations of, and diffraction of elastic waves by, bodies with plane, cylindrical (circular, elliptic) and spherical boundaries are discussed. Aside from the very theoretical treatment of the subjects presented in the text, numerous problems are solved in detail, together with tables and graphs displaying frequencies, displacement, and stress fields. The bibliography of this treatise covers more than 400 references.

In the writing of a book on a subject so extensively investigated over 150 years, decisions on emphasis, that are readily explained in terms of the author's interest but may otherwise appear arbitrary, cannot be avoided. Thus, for example, the subject of approximate theories and numerical techniques in elastodynamics have been completely omitted in the text while various mathematical methods to obtain exact solutions of a variety of problems are explored in great length.

For those subjects discussed in this treatise, the authors did a magnificent job and deserve a well-justified commendation.

The reviewer recommends this valuable book to all who are interested in elastodynamics.

Theory and Practice of Solid Mechanics. By Thomas H. Dawson. Plenum Press, New York and London. 1976. Pages 281. Price $24.50

REVIEWED BY SHUN CHENG[2]

The book, containing 11 chapters and 2 appendices, in about 290 pages, is written clearly and concisely. Each chapter is followed by a list of references for collateral reading and by a number of exercises. It is well organized for teaching mechanics of continua at the advanced undergraduate or beginning graduate levels. The author has successfully presented many essential ideas, but without an overabundance of detail. In this reviewer's opinion, the strong point of the book, besides its clarity of presentation, lies in its use of the principle of material indifference wherever it is needed in the derivation of basic equations. The reviewer feels that more illustrative problems following the derivations in each of the subjects, and thus providing better working knowledge of the subject, would make this well-written book ever more valuable.

The contents of the book are arranged as follows. In Chapter 1, "Vectors and Cartesian Tensors," the author introduces vector analysis as expressed in the tensor notation and subsequently uses these ideas to introduce the more general concept of Cartesian tensors. In Chapter 2, "Kinematics of Continuum Motion," the geometry or kinematics of the motion of a continuous medium is treated. Such analyses lead to the known concepts of deformation, strain, and rotation in the neighborhood of a material point. In Chapter 3, "Governing Equations of Motion," the author presents the fundamental principles of conservation of mass, balance of linear momentum, and balance of angular momentum. The governing equations representing these laws are developed in their general nonlinear form for the case of large-deformations and then linear approximations are introduced for the case of small deformations. In Chapter 4, "Theory of Elasticity," constitutive relations are introduced and the classical theory of elasticity is developed. A number of illustrative problems and their solutions are presented in Chapter 5, "Problems in Elasticity." In Chapter 6, "Theory of Thermal Elasticity," and Chapter 7, "Problems in Thermal Elasticity," the author treats the subject of thermal elasticity, presents general formulations of the first and second laws of thermodynamics as applied to continuous media, and discusses several illustrative problems. Chapter 8, "Theory of Viscous Elasticity," considers the theory of viscous elasticity in the same spirit as the earlier chapters. In Chapter 9, "Problems in Viscous Elasticity," the theory presented in the previous chapter is illustrated by the consideration of several basic problems involving either the standard linear viscoelastic solid or the Kelvin-Voight viscoelastic solid. In Chapter 10, "Theory of Plasticity," the author presents general equations describing combined elastic and plastic behavior. Finally, in Chapter 11, "Problems in Plasticity," a few selected problems, requiring plasticity considerations for their solution, are discussed.

This reviewer believes that the book by Professor Dawson could well serve as a text for advanced students and should prove useful to practicing professionals as well.

Parametererregte Schwingungen. By G. Schmidt. VEB Deutscher Verlag der Wissenschaften, Germany. Price DM 72.

REVIEWED BY R. M. EVAN-IWANOWSKI[3]

This excellent book addresses itself to a broad aspect of vibrations of parametrically excited mechanical systems; that is the systems whose motion is governed by differential equations with periodic or

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