unique) pure deformation followed by a solid rotation so that the components of strain are referred to axes which have been rotated with the material. This permits a clear separation of the geometry of the deformation field and the physical behavior of the material and leads to important simplifications when the incremental strains are small compared to the rotations. Stress also is defined with respect to the locally rotated axes. A dual representation is introduced by referring the stress to areas before or after deformation. This freedom of choice is particularly important in applications where substantial simplifications are achieved by direct and *ad hoc* solutions specifically tailored to the problem without the burden of invariance and excessive generality. A good deal of attention is given to variational methods and the principle of virtual work.

Hydrodynamics

Hydrodynamics in Theory and Application. By J. M. Robertson. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1965. Cloth, 6 × 9 in., xi and 652 pp. $18.

REVIEWED BY M. SIBULKIN[2]

This excellent book is a study of the flow of an incompressible and inviscid fluid. The author has grouped his material into three parts entitled "Basic Principles," "Acquisition of Potential Solutions," and "Hydrodynamic Applications." In the second section, the classical methods of obtaining potential solutions are supplemented by a chapter on numerical and analog methods of solution. The applications are directed to hydraulic flows, wave motions, and hydrofoil theory.

While the book is intended as a graduate-level text, it includes features usually reserved for a treatise. As a text, the author is to be commended for his efforts to facilitate the learning process by the use of several special symbols, by the inclusion of an ample number of diagrams illustrating both the analysis and particular results, and by the preparation of a number of useful tables. In common with a treatise, the author emphasizes the historical development of the subject and gives extensive references to original sources.

The mathematical analysis is presented in vector notation with frequency illustrations in component form. The author has occasionally given more than one derivation of a result where additional understanding can thereby be obtained. Readers may well wish that the author had extended his section on "Basic Principles" to include a viscous, compressible fluid.

Elasticity

Elasticity in Engineering Mechanics. By A. P. Boresi. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1965. Cloth, 264 pp. $12.

REVIEWED BY P. R. PASLAY[3]

This text is written at the senior undergraduate or first-year graduate level and presents a unique mixture of the theory and the application of elasticity. Over one half of the book is devoted to developing the theory from a continuum mechanics point of view. This development is followed by a rather brief, though fairly complete, theoretical coverage of plane problems, torsion, and uncoupled thermal stress analysis. The initial derivation of strain gives the exact nonlinear expressions while the subsequent presentation deals only with the linearized expressions.

The introductory chapter on preliminary mathematics and the summaries in index notation at the end of each chapter are particularly attractive features of the book. Also included in the problems at the end of each chapter are many of the classical solutions of elasticity.

In this short book, the inclusion of so much theory has been accomplished by excluding most of the discussion about the nature of the solutions that is found in other engineering texts. Consequently, the reviewer feels that the successful use of this text will require additional emphasis in the classroom on the interpretations of the solutions presented.

Radioisotopes

Radioisotopic Power Generation. By W. R. Corliss and D. G. Harvey. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1964. Cloth. $14.75.

REVIEWED BY J. LOFERSKI[4]

This book is essentially a review of the status of the United States Government-sponsored radioisotope power generator program up to the time of writing (early 1964). The type of radioisotope generator to which most of this book is devoted consists of a radioisotope heat source which produces electrical power either directly via the thermoelectric or thermionic effects or indirectly via a mechanical-electrical generator combination. Such power supplies are extremely expensive (at least a few tens of thousands of dollars per watt) and are not intended to produce more than about a kilowatt of power.

The authors are both associated with the Martin Company and, consequently, they devote considerable space to descriptions of the work performed there. Furthermore, they are enthusiastic advocates of the use of radioisotope power systems and, therefore, the reader must accept their comparisons with competing power systems (solar cells for space applications; batteries and fuel cells for terrestrial applications) *cum grano salis*.

The book provides a thorough discussion of problems associated with selection of radioisotopes for power generation and of the formidable safety problems arising from the use of kilocuries and even megacuries of very toxic radioisotopes like Strontium-90 and Cerium-144. The space devoted to energy conversion is small, but the authors correctly point out that the literature is already rich in that area. Most of the book consists of detailed descriptions of the various types of generators designed and built to date.

The number of such generators capable of producing a few watts of electrical power does not exceed 100, and they are almost all of the thermoelectric converter type. Furthermore, the only markets for these power supplies have been the space program and the defense department; no commercial applications are in sight.

The book is well organized and contains an abundance of useful and informative photographs, charts, and tables. It is good that this summary of progress in radioisotope power generation has been published, since its perusal allows one to place the matter in proper perspective.

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