selves with the broad area of investigation without any pretext of minute detail in any one area. The chapter headings themselves give a good picture of the general scope of the book, e.g., Cryogenics (liquefaction), Thermometry, Specific Heats, Magnetism, Transport Phenomena (metals and dielectrics), Superconductivity, The Helium Problem, Miscellaneous (masers, bubble chambers, etc.). The chapters on the liquid helium problem and superconductivity are slightly longer than the others, but this is understandable since a great deal more work has been done in these areas and since it is so that Professor Mendelssohn's own research interests are concentrated here. The work on ions in helium II by the groups in Chicago, Pennsylvania, and Italy is not mentioned, but I am sure that this omission was dictated by the author's intention to keep details to a minimum.

Each of the sections discusses, briefly, the theory connected with the physical phenomenon together with some of the experiments which relate to the theory. Professor Mendelssohn has not attempted to be entirely complete with all of the work done in a particular area, but he cites a considerable number of source references which will certainly be an excellent beginning to satisfy any whetted appetite of an introductory student. The mathematical details are kept to a minimum, so that the student will not get bogged down in the course of the reading.

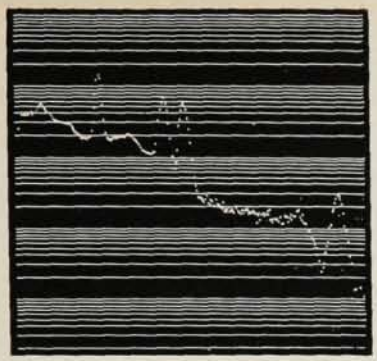
There are some excellent photographs, collected at the end of the book, which show the more startling phenomena of superfluidity and superconductivity. Useful vapor pressure tables for both helium-4 and helium-3 are also included.

The easy readability of the monograph certainly recommends it for general use as an introductory text ("last-undergraduate or first-graduate year") for the exciting field of low-temperature research.

Progress in Solid Mechanics, Volume 1. Edited by I. N. Sneddon and R. Hill. 448 pp. (North-Holland Publishing Co., Amsterdam) Interscience Publishers, Inc., New York, 1960. $15.50. *Reviewed by W. Nachbar, Lockheed Missiles and Space Division.*

AS the editors of this volume state in the preface, "the mechanics of solids is probably the most rapidly expanding branch of applied mathematics". The present volume is the first to be published of a projected series of volumes which will seek to review, summarize, and unify the most recent work in the mechanics of solids; in this work "the main emphasis will be on the basic principles and mathematical techniques of continuum mechanics, with all its aspects, together with experimental work of a fundamental kind".

There are eight chapters in the present volume, each chapter being an article by a different author. The coverage of subject matter shows that progress in solid mechanics is proceeding in at least two major directions. First, with the development of new materials and new technologies, new classes of problems in the classical



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continuum theories of elasticity, plasticity, and viscoelasticity are presently receiving vigorous attention because of their great practical importance. Several chapters are outstanding contributions of this kind. A very complete account of cavity formation in the interior of an incompressible solid is given by H. G. Hopkins, "Dynamic Expansion of Spherical Cavities in Metals" (78 pp.). In this paper, spherical symmetry and uniform and adiabatic expansion of the gas bubble (in accordance with the Jones theoretical equation of state for TNT) are assumed; an elastic-plastic material is assumed, with account taken of work-hardening and rate-of-strain effects, and of large as well as of small deformations. W. T. Koiter presents a masterful review of his subject in "General Theorems for Elastic-Plastic Solids" (51 pp.). A review of various approximation methods, and a comparison of their predictions with the exact solutions to the Pochhammer-Chree equations, are given by W. A. Green in "Dispersion Relations for Elastic Waves in Bars" (36 pp.). The mathematical treatment of problems in viscoelastic solids is reviewed by S. C. Hunter, "Viscoelastic Waves" (53 pp.).

Secondly, several chapters in this volume review the increasing attention that is being directed to improving the continuum theory of solids so as to include "real" effects on a more fundamental basis. Two contributions are outstanding in this regard: "Thermoelasticity, the Dynamical Theory" by P. Chadwick (63 pp.), an account of recent developments in the irreversible thermodynamics of an elastic solid; and "Continuous Distributions of Dislocations" by B. A. Bilby (65 pp.). Bilby's review describes most exciting and important developments, for, in the last few years, an influx of powerful mathematical methods from topology and modern geometry has entered dislocation theory with possibly far-reaching results. To quote from this author, "it now seems possible to bring the ideas of the atomic theory with discrete dislocations into closer association with those of the macroscopic theory, and it is to be expected that the two disciplines will react on each other to their mutual advantage".

Physique nucléaire. By Michel Bayet. 404 pp. Masson et Cie, Paris, France, 1960. 65 NF. *Reviewed by Fay Ajzenberg-Selove, Haverford College.*

THESE appear to be the notes worked out for a specific course by a conscientious physicist who is not professionally familiar with nuclear physics. The level is roughly that of a senior or first-year graduate course. No knowledge of quantum mechanics is assumed. One third of the book deals with introductions to various theoretical topics such as elementary quantum mechanics, statistical mechanics, and relativity. The nuclear part of the volume is closely based on Evans, Halliday, and Kaplan. There are a number of criticisms that can be made: much of the theoretical introduction is irrelevant in content and level of presentation to the remainder of the book, although it may have suited the needs of a particular course;