interesting high-school and college students in physical science. It is hoped it may prove to be the forerunner of many similar biographical volumes on famous American physicists.

Electronic Processes in Solids. Based on 1957 Lectures by Pierre R. Aigrain. Prepared by Roland J. Coelho and Gianni Ascarelli. 67 pp. The Technology Press of MIT and John Wiley & Sons, Inc., New York, 1960. $4.00. *Reviewed by George Weiss, Institute for Fluid Dynamics and Applied Mathematics, University of Maryland.*

THERE is something insidiously inviting about a small book on a technical subject. The attraction, of course, is generated by the reader who has the unvoiced hope that he is about to get something for nothing. Very few monographs of the size of this book are successful as an introduction to a subject for the completely uninitiated. This summary of Professor Aigrain's lectures delivered at MIT is a notable exception.

The book begins with an account of the Born-Oppenheimer approximation and the condition for its validity, and a discussion of the Hamiltonian for a solid in the harmonic approximation. Of some interest is Aigrain's definition of creation and annihilation operators in explicit form. Following these introductory pages, the notes discuss phonon scattering, the various approximations to electronic-wave functions, and an introduction to conduction theory using Wannier wave functions. Later sections discuss the elementary theory of transport and various mechanisms for electron and phonon scattering.

It would be too much to expect that this small book would be enough to make any physicist an expert on electronic processes in solids, but it is an interesting introduction which illuminates the principal areas of investigation and serves as a useful guide to further reading.

Solid State Physics in Electronics and Telecommunications. IUPAP Conf. Proc. (Brussels, June 1958). Edited by M. Desirant and J. L. Michiels. Vol. 1, Semiconductors, Part 1, 638 pp. Vol. 2, Semiconductors, Part 2, 645 pp. Vol. 3, Magnetic and Optical Properties, Part 1, 557 pp. Vol. 4, Magnetic and Optical Properties, Part 2, 404 pp. Academic Press Inc., New York, 1960. $18.00 each. *Reviewed by Joseph G. Hoffman, University of Buffalo.*

THERE are 235 papers in the proceedings of the conference on solid-state physics held at the 1958 World's Fair in Brussels. Of these, 142 are in English, 52 in French, and 41 in German. This four-volume compilation of highly technical material is valuable when considered solely as a compendium of concepts explored by investigators in seventeen different countries. From a bibliographic standpoint, the collection is an essential reference work because the contributors

are all specialists in their fields. In terms of semiconductor physics, it is a fine review, ranging from theory through experiment to technology. Although about 60 per cent of the papers deal with work carried out in industrial laboratories concerned with the applications of solid-state electronics, the reports themselves emphasize the results of basic research. There is also a highly readable survey by W. Shockley entitled, "Crystals, Electronics, and Man's Conquest of Nature", which, for the most part, is a nontechnical account of the fundamental findings disclosed in the symposium.

The format of the four volumes is impressive. The heavy, coated paper is excellent for halftone reproductions, and each article is generously illustrated with diagrams and graphs and is documented with adequate references. There is, however, no index, although each volume has a table of contents.

Mechanics of Solids and Fluids. By Robert R. Long. 156 pp. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1961. $9.00. *Reviewed by R. C. Alverson, Stanford Research Institute.*

INTENDED as an elementary text for the advanced undergraduate, this book is a welcome and much needed departure from the traditional exposition of the mechanics of continuous media. Throughout the book, the emphasis is on fundamental mathematical and physical concepts in continuum mechanics rather than on the solution of boundary-value problems. Further, the book is entirely free of the usual morass of numerical examples which do little more than teach students to ignore concepts and to substitute numbers in a compendium of formulae. Each of the eight chapters includes a set of problems devised to enhance the student's mastery and appreciation of the subject matter.

The author devotes the first chapter to the Cartesian tensor (and the remainder of the book, for the most part, is written in Cartesian tensor notation) and then introduces the notion of a continuum as an idealization of a solid or a fluid. He then proceeds with the definition of stress and the derivation of the equations of motion in a continuous medium. In the definition of stress and strain rates, both the Eulerian and Lagrangian viewpoints are used. Following a chapter on the properties of material, the remainder of the book is devoted to solids and fluids whose stress and deformation tensors are linearly related. The partial differential equations which govern the motion and deformation of continuous media are derived in great detail. Plane stress and plane strain, elastic-wave propagation, the barotropic fluid, and the vorticity equations of Cauchy are some of the special topics discussed.

One criticism which may be leveled is the absence of a clear discussion which would point out that, in a linearly elastic solid with small strains, there is no difference between governing differential equations