of which the editor is a member, and under the sponsorship of the Office of Ordnance Research of the US Army. It contains fifteen papers reviewing recent theoretical and experimental work on liquids and solids subject to high and in many cases impulsive stresses. Such stresses are propagated through materials in various ways, depending on the stress intensity and on the elastic properties of the substance in question. The classical theory of elastic radiation is adequate in some cases, but in general one faces extra complexity in the guise of viscoelastic and anelastic behavior in various combinations. Fortunately the necessary mathematical techniques are pretty well understood and numerical solutions can be obtained in many interesting and practically significant cases by the use of computers.

The symposium reported here covered considerable scope and included references to stress waves producing fracture in solids, seismic pulses in layered media, photoelastic methods for studying stress propagation, the dispersion of surface waves in solids, measurement of dynamic elastic properties, and other related matters.

The treatment throughout concentrates on the macroscopic behavior of the material under stress and there is little or no attention to the connection between this and the internal constitution. Thus there is no discussion of relaxation behavior in terms of lattice properties and the like. Nevertheless the solid- and liquid-state physicist will find here much background material of value to him in his fundamental investigations.

The survey of recent research results in a broad field through the publication of symposium papers as in the volume under review obviously has both advantages and disadvantages. On the good side can be reckoned the usefulness of having under one pair of covers a collection of very readable, up-to-date articles which otherwise might be scattered through a number of periodicals. On the other side, it must be admitted that the scheme does not lend itself to a completely coherent and well-organized presentation such as one can get in an account prepared by a single well-qualified authority. There appears to be no solution to this problem, though the authorities on communication and information theory are doubtless giving it some attention.

Physics Calculations. By George I. Sackheim. 267 pp. The Macmillan Co., New York, 1960. Paperbound $3.50. *Reviewed by Jacques Romain, University of Elisabethville, Katanga.*

THE purpose of this book is to help the student solve problems by showing him how to conquer the two main difficulties usually encountered: how to link the theoretical principles with the different types of problems, and how to handle the units so that the answer appears with the proper unit. The points where difficulties might arise are duly stressed.

Each of the many short sections into which the book is divided deals with a definite topic. In each section the basic principles are recalled in a few precise words, the mks and English units of each quantity are defined

Wiley BOOKS

Transmission of Information

By ROBERT M. FANO, *Massachusetts Institute of Technology.* Offers an excellent introduction to coding theory or information theory, and approaches the subject from an engineering point of view. (An M.I.T. Press Book.) *1961. Approx. 350 pages. Prob. $7.50.*

Elements of Nuclear Engineering

By GLENN MURPHY, *Iowa State University of Science and Technology.* Presents a general survey of radiation, fission, fusion, and other nuclear transformations, with indications of how these transformations may be exploited in industrial and engineering applications. *1961. Approx. 224 pages. Prob. $7.50.**

The Fermi Surface

Proceedings of an International Conference Held in Cooperstown, New York, August 22–24, 1960

Edited by W. A. HARRISON *and* M. B. WEBB, *General Electric Research Laboratory, Schenectady, N. Y.* Includes general discussions and detailed information on the size and shape of Fermi surfaces. *1961. 356 pages. $10.00.*

The Physical Principles of Astronautics

Fundamentals of Dynamical Astronomy and Space Flight

By ARTHUR I. BERMAN, *Rensselaer Polytechnic Institute.* A concise, thorough exposition of the basic principles of astronautics. A large number of practical examples are included. *1961. Approx. 360 pages. Prob. $9.25.**

Quantum Mechanics

By EUGEN MERZBACHER, *University of North Carolina.* Presents as complete as possible a treatment of modern quantum mechanics and its application to simple physical systems. *1961. Approx. 580 pages. Prob. $11.00.**

Introduction to Geometry

By H. S. M. COXETER, *University of Toronto.* A lively, rigorous presentation of the subject. *1961. Approx. 384 pages. Prob. $9.75.*

Fundamentals of Modern Physics

By ROBERT MARTIN EISBERG, *University of Minnesota.* Contains an integrated presentation of the historical development of quantum mechanics and its applications, and uses the theory to evolve a much more mature discussion of atoms and nuclei than is usual in modern physics texts. *1961. 729 pages. Prob. $10.50.*

Boundary and Eigenvalue Problems in Mathematical Physics

By HANS SAGAN, *University of Idaho.* Develops the theory of orthogonal functions, Fourier Series and Eigenvalues from boundary value problems in mathematical physics. *1961. Approx. 416 pages. Prob. $9.50.**

Plasmas and Controlled Fusion

By DAVID J. ROSE *and* MELVILLE CLARK, JR., *both of Massachusetts Institute of Technology.* Stresses principles rather than applications and experiments of a limited interest, and presents the material as a unified, detailed whole. *1961. In press.*

Radioactive Wastes: Their Treatment and Disposal

Edited by J. C. COLLINS, *University of Manchester.* Covers in detail the implications of radioactivity for water supply and waste water disposal as well as the problems of disposing of radioactive solid wastes and radioactive gases. *In Press.*

Viscoelastic Properties of Polymers

By JOHN D. FERRY, *University of Wisconsin.* Carefully expands a discussion of the phenomenological theory of viscoelasticity followed by the presentation of a wide variety of experimental methods and a critical appraisal of their applicability to polymeric materials of different characteristics. *1961. 482 pages. $15.00.*

Progress in Dielectrics—Volume III

Edited by J. B. BIRKS, *Manchester University; American Editor:* JOHN HART. Co-ordinates current knowledge of dielectric phenomena, materials, and techniques, and reviews recent progress. *In Press.*

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(a table of conversion from mks to cgs units is available in an appendix), and the author provides detailed solutions of some simple problems. The section is then concluded with numerous problems, both in metric and English units, with the answer to every other problem given (why not to all of them? The habit of giving answers for only odd-numbered problems seems less justified here than anywhere else).

The whole field of general introductory physics is covered in this book: mechanics, heat, electricity and magnetism, sound, light, and some atomic physics. The general level is that of a first course, but a few non-elementary topics are included (e.g., reverberation of sound in a room). Four-place logarithms and trigonometric tables make the book self-contained.

Such a book should be the proper place to accustom students to the use of standard symbols for the units, but nt is used for newton, KW for kilowatt, and the like, and even LB and FT are used for lb and ft in the drawings.

Plasma Physics. By J. G. Linhart. 278 pp. (North-Holland, Amsterdam) Interscience Publishers, Inc., New York, 1960. $7.00. *Reviewed by D. J. Rose, Massachusetts Institute of Technology.*

LINHART'S book is not wholly good, and not wholly bad. If you are planning a one-semester course in plasma theory, you should keep it in mind. It is more satisfactory for that purpose than any of the smaller monographs on the subject and gives a somewhat broader coverage. However, watch carefully for typographical errors not included in the errata and for ambiguous figures. The treatise is strictly theoretical; the last two parts (Chaps. 7 and 8), y-clept Applications, is a brief summary of principles (of controlled fusion, electromagnetic energy generation, MHD conversion, propulsion, and energy storage). Little is said about the recent developments of the $6N$-dimensional Liouville formulation, giving purported solutions for the plasma particle correlations. Lack of such intensive study might seem like fishing in a prepared bucket because it's simpler, rather than out in the ocean where the fish really come from. Such an appearance, while partly correct, omits the fact that assembly of the appropriate theoretical tackle for such an expedition would occupy a whole book this size. Thus Linhart chooses his material well enough for a short treatise, bringing the reader up to about the level of the Fokker-Planck equation. Complete plasma theory may share with its alchemical offspring—controlled fusion devices—the property that neither will come in small sizes. Particularly good are Linhart's analyses of individual particle motions. The fluid description starts off with the Liouville equation, conveniently explained, with the relativistic and non-relativistic Boltzmann equations, and velocity averages derived as consequences. Strangely enough, the Fokker-Planck equation is not built directly on this foundation, but is developed much later under the title of Collision and Relaxation Processes. One fifth of the book is given over to waves and instabilities. Under this topic, Linhart packs in considerable information, particularly about the oscillations of a plasma cylinder. A very useful bibilography of some 200 pertinent papers and 15 books is listed at the end.

Physique et Technique des Tubes électroniques. Volume 1, Eléments de Technique due Vide, 214 pp., 1958, 29 NF; Volume 2, Théorie et Fabrication des Tubes, 427 pp., 1960, 58 NF. By R. Champeix. Dunod, Paris. *Reviewed by L. Marton, National Bureau of Standards.*

IT would be misleading to the readers of this journal if I were to classify the two volumes of *Physique et Technique des Tubes électroniques* as books on physics. They are books on a technology used by physicists, and while they may be quite useful for them, they have not been written for the physicist but, as reflected by the organization of the book, for the technician. Both, the author and Professor Boutry, who wrote the preface, emphasize that the books have been written for the instruction of students at the Ecole Nationale de Radiotechnique and at the Ecole Française de Radio-Electricité. The present volumes indicate clearly that the instruction at these institutions is not at the university level. Wherever physics background is needed for the understanding of the phenomena some of the mathematical background is given without elaborate proof. Most of the treatment is at the technician's level.

Both volumes contain sets of problems (without solutions) for the student, which are probably the best feature of the book.

I believe that a person who is familiar with the subject may find some interesting information in these two volumes, but for a beginner I would not recommend the use of either of these volumes unless it is supplemented by ample other reading material.

Finite Difference Equations. By H. Levy and F. Lessman. 278 pp. Pitman Publishing Corp., New York, 1959. $9.25. *Reviewed by Herman Feshbach, Massachusetts Institute of Technology.*

THIS book forms an excellent introduction into a subject which is unfortunately often completely missing from the mathematical background of most physicists. Difference equations can be treated in a manner quite analogous to the procedures employed to solve differential equations; and once the fundamental background is developed (Chapters 1–3), linear difference equations with constant coefficients, with variable coefficients, eigenvalue problems as well as partial difference equations can be discussed (Chapters 4 and 8). The solution of nonlinear first-order equations is considered in Chapter 5. Chapter 7 deals with applications which are unfortunately quite uninteresting. There seems to be no treatment of the use of continued fractions. Many problems are given, together with some of the answers.