guage is simple, often colloquial, and the asides and humor are not forced. The examples and exercises are illustrative and realistic extensions of the subject matter; there is nothing of the physical cook book or mathematical game book about this text. The fact that a great many of these extensions transcend the boundaries of the subject and range over modern physics, electromagnetics, thermodynamics, and acoustics is a significant aid to the student in acquiring perspective and maturity; but not only in this regard does the author take cognizance of the learning problem. The choice of material and its presentation throughout is characterized by sympathetic insight of the needs of student and teacher. Although we choose to emphasize the pedagogical merits of the work, it is more than the introductory text it purports to be—the treatment of various topics is distinctly original. Particularly outstanding are the sections on kinematics of rigid bodies, on geometrical optics and wave mechanics, and on the variational formulation of systems and fields. The book will be welcomed by all physicists as a valuable contribution to the theoretical literature.

There is perhaps one thing in the book that might puzzle the reader—the symbols appended to the preface. This abbreviation, employed since antiquity by Hebrew scholars to indicate humility and gratitude at the completion of a task, may be translated somewhat freely as "it is finished and completed; praise be to the Lord, the Author of all works."

While the book has been enthusiastically received, it is possible that some would have preferred amplification of certain topics and the explicit inclusion of other topics in the text rather than in the exercises. One reader may ask for the treatment of impulse problems; another, for a detailed discussion of the multiple roots of the secular equation; or, following the preface, for the inclusion of the stress-energy tensor, microscopic equations of continuity, momentum space representations, etc. Mature differences of opinion in this regard are, of course, no reflection on the book as it stands; but Goldstein's treatment of additional topics, which he implies will appear in a future edition, would be welcomed. As long as we're digressing, we would also welcome the completion of his companion texts on electromagnetics and quantum mechanics.

A textbook greatly increases its utility by indicating supplementary reading for the various topics. The best of these employ footnotes, or cite references and their appropriate sections at the end of each chapter—occasionally with a line of comment; the more usual practice is to include a bibliography at the end of the book; but it is not at all uncommon to find a textbook which presumably sprang full grown from the author's head (rather more like Sin than Athena). Goldstein's method is very effective and worthy of emulation; the references at the end of each chapter receive rather detailed evaluation. Consider a few sample lines from his candid reviews and try to guess the texts:

". . . . A formidable treatise which often manages somehow to make the elegant simplicity of vector and tensor methods appear quite complicated and repellant. . . ."

". . . . This monumental work on the theory of the top, in four volumes, has all the external appearances of the typical stolid and turgid German 'Handbuch'. Appearances are deceiving, however, for it is remarkably readable. . . ."

". . . . The development is marked, regrettably, by an apparent dislike of diagrams (of which there are only four in the entire book) and of vector notation, and by a fondness for the type of pedantic mechanics problems made famous by the Cambridge Tripos examinations. . . ." (This one is too easy.)

". . . . The style is pleasantly discursive and the writing is less formal and more physical than in Whittaker, and consequently more intelligible. . . ." (This one is too hard.)

The reader may have gathered that Whittaker's *Analytical Dynamics* was the reviewer's base text as a student. Fortunately, this classic treatise, which is still the best reference for many topics and whose concise treatment makes it singularly appropriate for a mathematician, need no longer be foisted on the tyro as an introductory or general text.

We recommend Goldstein's work to all physicists.

Vic Twersky
Mathematics Research Group
New York University

Laplace Transformation. By William T. Thomson. 230 pp. Prentice-Hall, New York, 1950. $5.00.

This is a good introductory text on the application of the Laplace transformation to mechanical engineering problems. The illustrations and exercises are well chosen for those interested in learning to use this tool, but the text is somewhat detracting. The engineer will be grateful for the absence of mathematical rigor and will not be particularly concerned with the looseness of the discussion or the failure to properly define the mathematical labels and concepts involved; the physicist will be stimulated to seek a supplement in the more rigorous literature (e.g., Doetsch, Dover Publications, New York. $1.90).

V. T.

Briefly Noted

Science and Nonscientists

The difficulties of communication between scientists and laymen, and even between specialists in different sciences, are discussed in *General Education in Science* (edited by I. Bernard Cohen and Fletcher G. Watson; Harvard University Press, Cambridge, Mass., 1952; 217 pp.; $4.00), a collection of papers originally presented at Harvard's workshop in Science in General Education two summers ago. Science teachers from colleges and secondary schools throughout the country attended the workshop and took part in a series of discussions relating to the as yet unsolved problems of

teaching science to students whose primary academic interests lie in other directions. The views expressed represent a good cross section of opinion among scientists who wish to find means for improving popular attitudes toward science. In addition to the editors, the contributors include: S. A. Goudsmit (Brookhaven); Philipp Frank, Edwin C. Kemble, Leonard K. Nash, Philippe Le Corbeiller, Edward S. Castle, George E. Erikson, and Henry S. Dyer (all of Harvard); René J. Dubos (Rockefeller Institute for Medical Research); Sidney J. French (Colgate University); Edward C. Fuller (Champlain College); and Paul B. Sears and Frederick G. Kilgour (both of Yale).

Dover's Paper-Bound Reprints

With the prices of scientific and technical books steadily increasing, it is encouraging to find that at least one publishing house is preparing inexpensive paper-bound reprints of its standard titles. Dover Publications, Inc., New York 19, N. Y., following the example of a number of trade publishers, has started with an initial list of over twenty-five titles in mathematics, physics, chemistry, and engineering. These volumes are printed from the same plates as the original cloth-bound books, which are also available in the event a more durable binding is desired, and sell for less than half the price of the regular editions. A listing of the English-language books in this series of interest to physicists follows, with the prices of both the paper and cloth bindings given.

Analysis and Design of Experiments. By H. B. Mann. 198 pp. Cloth, $2.95. Paper, $1.25.

Elements of Mathematical Logic. By Paul Rosenbloom. 214 pp. Cloth, $2.95. Paper, $1.25.

Mathematical Foundations of Statistical Mechanics. By A. I. Khinchin. Translated by G. Gamov. 179 pp. Cloth, $2.95. Paper, $1.25.

Practical Analysis. By F. A. Willers. Translated by R. Beyer. 422 pp. Cloth, $6.00. Paper, $1.90.

Introduction to the Theory of Fourier's Series and Integrals (Third Revised Edition). By H. S. Carslaw. 368 pp. Cloth, $4.50. Paper, $1.90.

Theory of Functions. Volumes I and II. By K. Knopp. Translated by Bagemihl. 146 and 150 pp. Cloth, $1.75 per volume. Paper, $1.25 per volume.

Concise History of Mathematics (Second Revised Edition). Volumes I and II. By Dirk J. Struik. 298 pp. Cloth, $3.00. Paper, $1.60.

Tables of Functions with Formulae and Curves (Fourth Revised Edition). By E. Jahnke and F. Emde. 382 pp. Cloth, $3.95. Paper, $1.90.

Bessel Functions. By E. Cambi. 160 pp. Cloth, $3.95. Paper, $1.50.

Foundations of Nuclear Physics. Compiled by R. T. Beyer. 272 pp. Cloth, $3.50. Paper, $1.50.

Micro-Waves and Wave Guides. By H. M. Barlow. 122 pp. Cloth, $1.95. Paper, $1.25.

Introduction to the Differential Equations of Physics. By L. Hopf. Translated by Walter Nef. 154 pp. Cloth, $1.95. Paper, $1.25.

Introduction to the Mechanics of Viscous Flow. By H. F. P. Purday. 185 pp. Cloth, $2.95. Paper, $1.25.

Theory of Vibrations. By N. W. McLachlan. 154 pp. Cloth, $2.45. Paper, $1.25.

The Physical Principles of the Quantum Theory. By W. Heisenberg. Translated by Eckart and Hoyt. 184 pp. Cloth, $2.75. Paper, $1.25.

Cosmic Radiation. Edited by W. Heisenberg. Translated by T. H. Johnson. 192 pp. Cloth, $3.95. Paper, $1.50.

Matter and Motion. By James Clerk Maxwell, with notes and appendices by Sir Joseph Larmor. 163 pp. Cloth, $2.50. Paper, $1.25.

The Principle of Relativity. By Einstein, Lorentz, Minkowski, and Weyl. Notes by Sommerfeld. Translated by Perrett and Jeffery. 216 pp. Cloth, $3.50. Paper, $1.50.

Dissociation Energies and the Spectra of Diatomic Molecules. By A. G. Gaydon. 239 pp. Cloth, $3.95. Paper, $1.60.

Polar Molecules. By P. Debye. 172 pp. Cloth, $3.50. Paper, $1.50.

Atomic Spectra and Atomic Structure (Second Revised Edition). By G. Herzberg. Translated by J. W. T. Spinks. 257 pp. Cloth, $3.95. Paper, $1.90.

Theory of Sets. By E. Kamke. 152 pp. Cloth, $2.75. Paper, $1.25.

Foundations of High Speed Aerodynamics. Facsimiles of nineteen fundamental studies as they were originally reported in scientific journals. Compiled by G. F. Carrier. 286 pp. Cloth, $3.50. Paper, $1.75.

Dialogues Concerning Two New Sciences. By G. Galilei. 300 pp. Paper, $1.50.

Physics as a Career

A seventeen-page pamphlet has recently been issued by the Institute of Physics under the above title. Designed primarily for students who might be considering physics as a profession, the publication discusses the place of physics in the modern world and describes briefly the educational requirements which should be satisfied by anyone deciding to become a physicist, as well as the possible consequences of such a decision in terms of the types of available positions, salary scales, and working conditions. *Physics as a Career* is available upon request from the American Institute of Physics, 57 East 55th Street, New York 22, N. Y.

Industrial Research Personnel

Selection, Training, and Use of Personnel in Industrial Research (edited by David B. Hertz; Columbia University Press, New York, 1952; paperbound $4.50) presents the proceedings of the second annual conference on industrial research, sponsored by the Department of Industrial Engineering, held at Columbia University in June 1951. The material, abridged and edited for this book, contains papers by well-known research administrators on the selection and training of research personnel, the coordination of research and development, and related topics.

International Index of Translations

Volume 3 of *Index Translationum*, an international index of translations produced annually by Unesco, includes a list of scientific, educational, and literary works published in 34 countries during 1950. It also lists 1948–49 translations not included in the earlier volumes. Of a total of 12,561 entries for non-English-speaking countries 1,460 U. S. books were translated into the languages of 27 countries in 1950, and of these 198 were books in the natural and applied sciences. The next edition is planned for publication in 1953. Volume 1 ($3.00), Volume 2 ($4.00), and Volume 3 ($7.50) are obtainable at the Columbia University Press, 2960 Broadway, New York City.

Hot Lab Design

The Proceedings of the Third Research Correlation Conference, entitled *Laboratory Design for Handling Radioactive Materials*, are now available from the Building Research Advisory Board (National Research Council, Washington 25, D. C.; 140 pp.; $4.50). Held last November 27 and 28, the conference was sponsored by the American Institute of Architects and the Atomic Energy Commission. Major phases of design criteria for architects and engineers were covered and the volume includes sections on laboratory layout and construction, shielding, surfaces and finishes, air supply and exhaust, and waste disposal.

Atomic Physics

In *Fundamentals of Atomic Physics* (McGraw-Hill Book Company, New York, 1951; 294 pp.; $5.50) Saul Dushman has provided a reference text for a series of lectures on various aspects of elementary and advanced atomic physics for graduate engineers. Starting with a short history of physics and a survey of algebra, trigonometry, and calculus, Dushman proceeds through kinetic theory, electron physics, quantum mechanics, nuclear phenomena, and high-energy accelerators.

Radiological Safety

Recently published by the National Bureau of Standards, NBS Handbook 48, *Control and Removal of Radioactive Contamination in Laboratories* (24 pp.), presents methods of protection for persons working with radioactive isotopes and suggestions for the maintenance of uncontaminated equipment and laboratories. Copies are available from the Government Printing Office, Washington, D. C., for 15 cents.

The Next Solar Eclipse

June 30, 1954, will be the date of the next complete solar eclipse, with the belt of totality scheduled to cross parts of Minnesota, Michigan, Canada, and southern Greenland before reaching Scandinavia and Eastern Europe. A descriptive booklet on the subject has been prepared (*Total Eclipse of the Sun, June 30, 1954*, U. S. Nautical Almanac Office, 42 pp., $0.40). It may be ordered from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Books Received

The Auger Effect and Other Radiationless Transitions. By E. H. S. Burhop. 186 pp. Cambridge at the University Press, London, England and New York, 1951. $5.50.

The Rise of the New Physics (Corrected and Enlarged Second Edition of "Decline of Mechanism"). Vols. I and II. By A. D'Abro. 982 pp. Dover Publications, Inc., New York, 1952. Vols. I and II. $8.00.

A Philosophical Essay on Probabilities. By Pierre Simon, Marquis de Laplace. 196 pp. Dover Publications, Inc., New York, 1952. Paper-bound $1.25.

Multiple Valued Harmonic Functions with Circle as Branch Curve. By Siegfried F. Neustadter. University of California Publications in Mathematics, New Series. 35 pp. University of California Press, Berkeley, California, 1952. Paper-bound $0.50.

Les Atmosphères Stellaires. By Daniel Barbier. 238 pp. Flammarion, Editeur, Paris, France, 1952.

Heating, Ventilating, Air Conditioning Guide 1952. Volume 30. 1496 pp. American Society of Heating and Ventilating Engineers, New York, 1952. $7.50.

Essay in Physics. By Herbert L. Samuel. 178 pp. Harcourt, Brace and Company, New York, 1952. $3.00.

La Physique Cosmique. By Alexandre Dauvillier. 246 pp. Flammarion, Editeur, Paris, France, 1951.

Musical Engineering. By Harry F. Olson. 369 pp. McGraw-Hill Book Company, Inc., New York, 1952. $6.50.

Refraction and Motility. By Walter B. Lancaster, 310 pp. Charles C Thomas Publisher, Springfield, Illinois, 1952. $7.75.

Industrial Magnetic Testing. By N. F. Astbury. 132 pp. The Institute of Physics, London, England, 1952. 25s.

Engineering Materials. By Joseph Marin. 491 pp. Prentice-Hall, Inc., New York, 1952. $8.70.

Mechanik. Volume III, Dynamic der Systeme. By Hans Ziegler. 396 pp. Verlag Birkhäuser, Basel, Switzerland, 1952. Fr. 46.80.

Electrolytic Manganese and its Alloys. By Reginald S. Dean. 257 pp. The Ronald Press Company, New York, 1952. $12.00.

The Science of Flames and Furnaces. By M. W. Thring. 416 pp. John Wiley and Sons, Inc., New York, 1952. $6.50.

The Creation of the Universe. By George Gamow. 147 pp. The Viking Press, Inc., New York, 1952. $3.75.

Heat. By R. C. Brown. 547 pp. Longmans, Green and Co., Inc., New York, 1952. $2.75.

Dictionary of Mind, Matter, and Morals. By Bertrand Russell. 290 pp. Philosophical Library, Inc., New York, 1952. $5.00.

Diffusion in Solids, Liquids, Gases. By W. Jost. 558 pp. Academic Press, Inc., New York, 1952. $12.00.

Principles of Geochemistry. By Brian Mason. 276 pp. John Wiley and Sons, Inc., New York, 1952. $5.00.

Structural Chemistry of Inorganic Compounds. Volume II. By Walter Hückel. 1094 pp. Elsevier Publishing Company, Houston, Texas, 1951. $13.50.

Advances in Catalysis, and Related Subjects. Volume III. Edited by W. G. Frankenburg, V. I. Komarewsky, and E. K. Rideal. 360 pp. Academic Press, Inc., New York, 1951. $7.80.