continuous dipole distribution, Döring avoids semi-convergent integrals by carefully not differentiating his original formula for the potential; this is hardly fair to the reader, for it makes things seem simpler and safer than they really are. He passes without adequate discussion from the total-energy integral to the concept of energy density; the reader should be told that this is an act of faith, and that furthermore it is unnecessary for the derivation of any physically meaningful result.

He gives attention, though, to some matters usually slighted. He recognizes the necessity for accepting magnetic moment as a fundamental concept, at least in the present state of knowledge of fundamental particles, and he bases his treatment of magnetostatics on it; thus he resists the lure of the electric-magnetic analogies that one can get by using poles or Amperian currents. He mentions a seldom recognized fact, that the separation of the force on part of a body into a "magnetic" and a "mechanical" part is nonunique.

In these volumes the author has not merely handed on a compilation of orthodox notions; he has subjected the old notions to a critical inspection, with attention to more recent experimental knowledge. It is unusual and refreshing to find a book this original in a field this old.

Flow, Fracture, and Fatigue

Knowledge of the mechanical behavior of metals, outside the elastic range, is still mainly empirical; some help in applying the empirical facts is afforded by formal theories of plastic flow and failure, and some help in understanding them has lately come from physical theories about dislocations, flaws, etc. *Strength and Resistance of Metals,* by John M. Lessells (450 pp.; John Wiley & Sons, Inc., New York, 1954; $10.00), is written from the point of view of a mechanical engineer; it is therefore devoted mainly to the empirical facts, though it does present the more elementary equations of the formal theories and mention some concepts of the physical theories. The topic that is discussed in greatest detail, and with greatest attention to physical processes, is fatigue; this is a field in which the author has been active. Other topics included are tensile properties, hardness, impact, fracture, strain hysteresis, and wear. A physicist will find this book useful if, in designing apparatus, he finds himself temporarily in the role of mechanical engineer; or if, in studying the physical processes involved in flow and fracture, he needs information about the complicated empirical facts that physical theory must try to explain.

Dielectrics

The Conference on Electrical Insulation is a unit of the Division of Engineering and Industrial Research of the National Academy of Sciences-National Research Council. Established in 1920, it continues the original plan of having a yearly meeting to present papers and exchange information on research activities in dielectrics and insulation. The conference publishes each year a *Digest of Literature on Dielectrics;* the recent issue, Vol. XVII, edited by A. E. Middleton and H. M. Philofsky, covers primarily the literature published in 1953. The Digest is divided into three major sections: Part I covers dielectric measuring techniques and fundamental and structural aspects of dielectrics, including ferromagnetic phenomena; Part II covers specific applications of all types of insulating materials in the electrical industry; Part III deals with structural, electrical and physical aspects of semiconductors and other fundamental subjects of interest to both the advancement of dielectric and semiconductor technology. (177 pp., National Academy of Sciences—National Research Council, Washington, D. C., 1954; paperbound.)

Electronics

Advances in Electronics and Electron Physics, edited by L. Marton, is Volume VI of the series originally titled *Advances in Electronics.* As in previous years, the contents consist of comprehensive reviews of recent advances in the field. The articles and authors are: Metallic Conduction at High Frequencies and Low Temperatures, A. B. Pippard; Relaxation Processes in Ferromagnetism, Elihu Abrahams; Physical Properties of Ferrites, J. Smit and H. P. J. Wijn; Space Charge Limited Currents, Henry F. Ivey; A Comparison of Analogous Semiconductor and Gaseous Electronics Devices, W. M. Webster; The Electron Microscope—A Review, M. E. Haine; Traveling-Wave Tubes, Rudolf G. E. Hutter; Paramagnetism, J. Van Den Handel. The titles of the articles indicate the scope of the work, as well as the basis for the new title of the series. The articles, both in coverage and readability, provide excellent introductions to the various subjects included. (538 pp.; Academic Press Inc., New York, 1954; $11.80.)

Electricity and Magnetism

Electricity and Magnetism, by Ralph P. Winch (with a chapter Oscillating Circuits and Maxwell's Theory by David A. Park), is intended for the average sophomore course in this subject. The text departs from conventional practice by introducing circuit analysis ahead of field theory in an effort to exploit the students' background of elementary physics. The author states that the recommendations of the Coulomb's Law Committee of the American Association of Physics Teachers were followed in the preparation of the text. (755 pp.; Prentice Hall, Inc., New York, 1955; $7.75.)

Textbook

The expanded and much revised *University Physics,* by F. W. Sears and M. W. Zemansky, features 157 more pages than the first edition. Most of these come from additional problems. Others come from expanded electricity and optics section. Many topics have been thoroughly reworked and illustrations are excellent. The book's usefulness as an undergraduate text has been demonstrated. (1031 pp.; Addison-Wesley Publishing Co., Inc., Cambridge, Mass., 1955; $10.00.)