book, *Recent Research in Molecular Beams*. That current beam research can trace its beginnings more or less directly to Professor Stern and his students is pointed out by Estermann's brief description of Stern's work at Hamburg and its relation to the work described in the other nine papers that make up this volume. Although these papers cover only a small fraction of current molecular beam research, they are indicative of the variety and scope of the applications of beam techniques. The subjects range from chemical kinetics to the deflection of polarized neutron beams. The nature of the various articles is also diverse. The article covering rare isotope spectroscopy at Berkeley and V. Hughes' article on the measurement of the electron moment are clearly review papers, while Ramsey's article on resonance line shapes is new and specialized material. Since the volume was not intended to be a reference work, nor was it designed with any particular reader in mind, it is difficult to recommend on any specific basis. No doubt most active beamists will consider *Recent Research in Molecular Beams* to be a useful supplement to the standard references.

The Unity of the Universe. By D. W. Sciama. 228 pp. Doubleday & Co., Inc., Garden City, N. Y., 1959. $3.95. *Reviewed by E. J. Öpik, University of Maryland.*

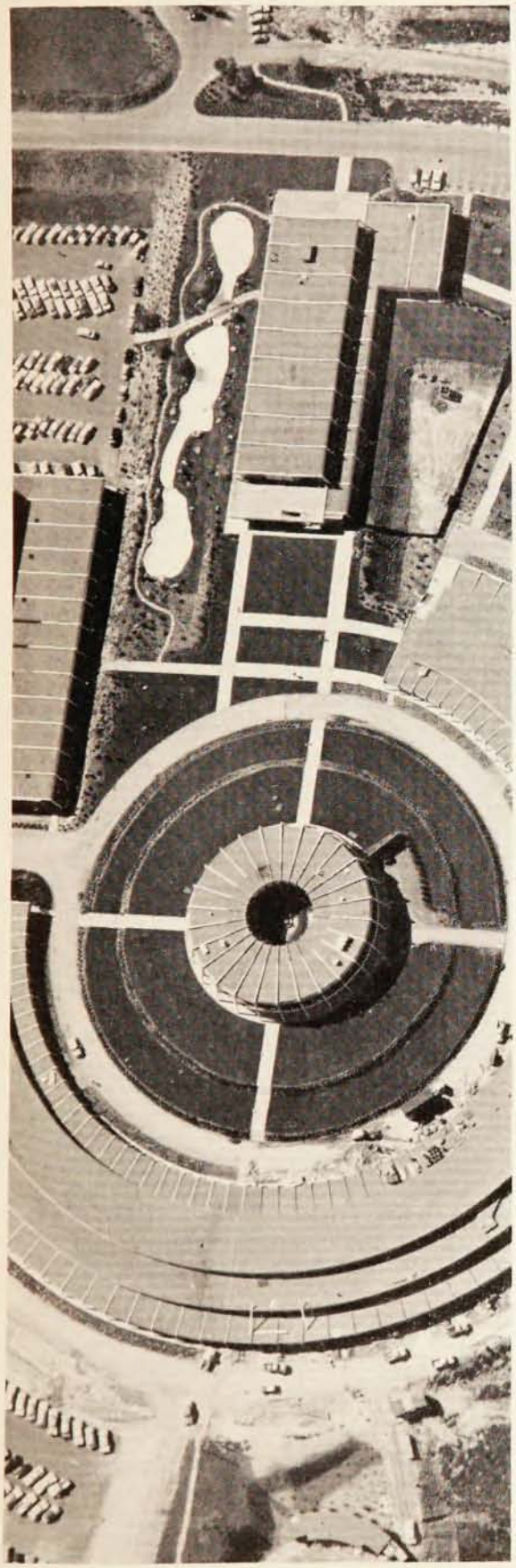
THE properties of our physical environment, such as inertia, are determined by the content of matter in the universe; inversely, the properties of the universe can be inferred from the behavior of local matter. These statements may serve as motto to this popular treatise in cosmology. The author does not pretend to have solved all the problems, but indicates what, in his opinion, is the most acceptable solution. This turns out to be the steady-state cosmology with continuous creation of matter, along the lines of Bondi, Gold, and Hoyle, to whom the book is dedicated.

Well written, it gives an intelligible, vivid, stimulating, and sometimes fascinating general account of the basic problems. This is said despite the reviewer being often unable to agree with the author's conclusions, especially when aesthetic rather than scientific judgment is involved. The presentation is somewhat incomplete and not always impartial. These qualities, however, do not lessen the aesthetic value of the book.

The historical side is carefully presented, and forerunners of modern concepts, such as Gauss, Maxwell, Tisserand, Mach, are given flashlight treatment. The first part of the book describes the historical development of the world picture over the ages, beginning with the Greeks. The second part is dedicated to modern interpretation, presented in the author's subjective coloration. The chapters are introduced by well chosen mottos; there are numerous diagrams and plates for the benefit of the lay reader.

There are a few technical shortcomings, such as the baffling scale of "absolute magnitude" in Fig. 12 on p. 48.

As an example of ideological bias, the author main-



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tains that in the steady-state model "No arbitrary initial conditions are involved" (p. 194). In the reviewer's opinion, there are at least three: (1) the cosmological constant of repulsion; (2) the rate of spontaneous creation of hydrogen (why not γ rays, mesons, neutrinos?); (3) the condition of an existing invariable universe. It is nowhere mentioned that the model leads to a perpetual increase in the total number of nucleons in the universe which, thus, is not "steady" at all. The oscillating models are given thirteen lines on p. 173 and then forgotten. The same happens to Charlier's hierarchical model which the author describes but ignores, despite its conformity with the observable part of the universe.

Although popular, for the scientist, too, the book may be a source of stimulating ideas. In fact, a few passages, and some illustrations, despite their popular guise, would require a trained mind to decipher.

Books Received

SEMICONDUCTORS. By R. A. Smith. 494 pp. Cambridge U. Press, New York, 1959. $12.50.

X-RAY ATTENUATION COEFFICIENTS FROM 10 KEV TO 100 MEV. By Rosemary T. McGinnies. 10 pp. NBS Supplement to Circular 583. US Govt. Printing Office, Washington, D. C. Paperbound $.15.

CHEMICAL PROCESS PRINCIPLES. Part 2, Thermodynamics (2nd Revised Ed.). By Olaf A. Hougen, Kenneth M. Watson, Roland A. Ragatz. 619 pp. John Wiley & Sons, Inc., New York, 1959. $9.75.

NUCLEAR TECHNOLOGY FOR ENGINEERS. By R. Hobart Ellis, Jr. 284 pp. McGraw-Hill Book Co., Inc., New York, 1959. $9.50.

THE LLOYD WILLIAM TAYLOR MANUAL OF ADVANCED UNDERGRADUATE EXPERIMENTS IN PHYSICS. Thomas B. Brown, Editor-in-Chief. 550 pp. Addison-Wesley Publishing Co., Inc., Reading, Mass., 1959. $9.50.

LES PROBLÈMES MATHÉMATIQUES DE LA THÈORIE QUANTIQUE DES CHAMPS: Colloq. Internat'l de CNRS (Lille, June 1957). 183 pp. Centre National de la Recherche Scientifique, Paris, France, 1959. 2000 fr.

QUANTITATIVE MOLECULAR SPECTROSCOPY AND GAS EMISSIVITIES. By S. S. Penner. 587 pp. Addison-Wesley Publishing Co., Inc., Reading, Mass., 1959. $15.00.

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TRENDS IN ATOMIC PHYSICS: Essays dedicated to Lise Meitner, Otto Hahn, Max von Laue on the Occasion of their 80th birthday. Edited by O. R. Frisch, F. A. Paneth, F. Laves, P. Rosbaud. 285 pp. (Vieweg & Sohn, Germany) Interscience Publishers, Inc., New York, 1959. $7.50.

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ANNUAL REVIEW OF NUCLEAR SCIENCE, Vol. 9. Edited by Emilio Segrè, Leonard I. Schiff with Gerhart Friedlander, Walter E. Meyerhof. 625 pp. Annual Reviews, Inc., Palo Alto, Calif., 1959. $7.00 in US; $7.50 elsewhere.

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