

add, who failed to understand Newton's conception of mass as involving the equivalence of inertial and gravitational measurement of the "quantity of matter", and who in doing so obscured the profoundest of Newton's discoveries, his unification of terrestrial and celestial mechanics.

The moral is that the unity of science is not only, or primarily, methodological. It is a matter of content. If science can work toward the unified understanding of nature and man's place in it, the unity achieved will be the material unity of nature, not the semantic unity of scientific language. This latter is an important and sometimes crucial aspect of scientific progress, but by its nature subordinate. Whether the positivist program is an adequate account of methodology must be judged, in the end, by the actual progress of scientific knowledge and control. In this sense, certainly, we can agree with Frank: "There are no boundaries between science and philosophy".

David Hawkins
University of Colorado

Applied Mathematics

NON-LINEAR PROBLEMS IN MECHANICS OF CONTINUA. (PROCEEDINGS OF SYMPOSIA IN APPLIED MATHEMATICS, VOLUME I.) 219 pp. American Mathematical Society, New York, 1949. \$5.25.

This book is a collection of the papers which were given in a symposium held at Brown University in the summer of 1947. In a few cases the papers are given in abbreviated forms, the complete papers having been published elsewhere. There are sixteen papers on hydrodynamics, and eight on elasticity and plasticity. The names of twenty-seven different authors appear.

With the exception of a paper by F. D. Murnaghan on the foundations of the theory of elasticity, the papers are all intended for specialists, and they are so highly technical that they cannot be described in any detail in a review such as this. Consequently, it will be necessary to limit the present discussion to some general remarks on the nature of the problems under consideration, and on certain broad tendencies which the papers seem to suggest.

As indicated by their titles, five of the sixteen papers devoted to hydrodynamics deal with various aspects of the motion of compressible fluids, two deal with problems concerning motions with free boundaries. The remaining five papers are concerned with various problems which are less easy to classify. In the second group, we find that five of the papers are concerned with the non-linear theory of elasticity, in which the strains and deflections are not assumed to be infinitesimal. The remaining papers are on dynamic structural stability, stress-strain relations for strain hardening materials, and discontinuous solutions in the theory of plasticity, respectively.

Physicists, when they examine this book, will be impressed by the extent to which the classical subjects of hydrodynamics and elasticity have progressed from their traditional and rather academic forms, and have come to adopt very realistic attitudes toward their subject matters. Modern methods of computation, which are discussed in several of the papers, have had much to do with this change of attitude.

For mathematicians, one of the most interesting features of the book consists of the references, in a paper by A. Weinstein, to work in which modern mathematical subjects, such as topology and the theory of Banach spaces, are used to establish the existence of certain discontinuous motions of a fluid in the presence of obstacles. It has long been recognized that these subjects are potentially usable for such purposes, but the number of actual applications has remained small. Hence the novel applications which are alluded to here are very welcome, and no doubt they will form the incentive for much further work.

L. A. MacColl
Bell Telephone Laboratories

Books Received

MEASUREMENTS OF RADIOACTIVITY. 84 pp. National Bureau of Standards Circular 476. Government Printing Office, Washington 25, D. C., 1949. \$0.35.

SAFE HANDLING OF RADIOACTIVE ISOTOPES. 30 pp. National Bureau of Standards Handbook 42. Government Printing Office, Washington 25, D. C., 1949. \$0.15.

HANDLING RADIOACTIVE WASTES IN THE ATOMIC ENERGY PROGRAM. 30 pp. U. S. Atomic Energy Commission. Government Printing Office, Washington 25, D. C., 1949. \$0.15.

ISOTOPES . . . A THREE-YEAR SUMMARY OF U. S. DISTRIBUTION. 201 pp. U. S. Atomic Energy Commission. Government Printing Office, Washington 25, D. C. \$0.45.

TABLES DE CONSTANTES ET DONNÉES NUMÉRIQUES. 1. LONGUEURS D'ONDE DES ÉMISSIONS X ET DES DISCONTINUITÉS D'ABSORPTION X. By Y. Cauchois and H. Hulubei. 199 pp. Hermann and Company, Paris, France, 1947.

TABLES DE CONSTANTES ET DONNÉES NUMÉRIQUES. 2. PHYSIQUE NUCLÉAIRE. By R. Gregoire, under the direction of Frederic Joliot and Irene Curie. Hermann and Company, Paris, France, 1948.

ELEMENTS OF INTERNAL COMBUSTION TURBINE THEORY. By H. T. Adams. 178 pp. Cambridge University Press, New York, 1950. \$3.75.

ADVANCES IN CATALYSIS. VOLUME II. Edited by W. G. Frankenburg, V. I. Komarevsky, and E. K. Rideal. 292 pp. Academic Press, Inc., New York, 1950. \$6.80.

ADVANCES IN ELECTRONICS. VOLUME II. Edited by L. Marton. 378 pp. Academic Press, Inc., New York, 1950. \$7.60.

ELASTERS AND PLASTOMERS. VOLUME I. Edited by R. Houwink. 495 pp. Elsevier Publishing Company, Inc., New York, 1950. \$7.00.

ANALYSIS AND DESIGN OF EXPERIMENTS. By H. B. Mann. 198 pp. Dover Publications, Inc., New York, 1950. \$2.95.

NUCLEAR PHYSICS. By Enrico Fermi. (Revised Edition) 246 pp. University of Chicago Press, Chicago, Illinois. \$3.00.

BIOPHYSICAL RESEARCH METHODS. Edited by Fred M. Uber. 667 pp. Interscience Publishers, Inc., New York, 1950. \$9.50.

PHENOMENA, ATOMS, AND MOLECULES. By Irving Langmuir. 436 pp. The Philosophical Library, New York, 1950. \$10.00.

THE MEANING OF RELATIVITY. By Albert Einstein. (Third Edition) 150 pp. Princeton University Press, Princeton, New Jersey. \$2.50.

DISSOCIATION ENERGIES AND SPECTRA OF DIATOMIC MOLECULES. By A. G. Gaydon. 239 pp. Dover Publications, Inc., New York, 1950. \$3.95.