

of well logging in oil prospecting, it is not surprising to find a rather elaborate treatment of waves along cylindrical bore holes. The story here is indeed a rather old one, but the author brings it down to work done within the past five years and includes a reference to his own important contributions to this field.

The final three chapters deal with sources of elastic waves in solids, seismic model experiments and small-scale field experiments. Though most of the treatment is theoretical there is a good deal of reference to experimental methods and results. The charts and diagrams are clear, well produced and unambiguous. The bibliography, though by no means exhaustive, is fully adequate to guide the reader to the important original sources. There is a collection of illustrative problems that help to make the volume useful as a text in an advanced course.

This well written book covering relatively new developments in an important domain of science should attract considerable attention among earth scientists.

Solving is learning

PROBLEMES DE MECANIQUE GENERALE. By Henri Cabannes. 436 pp. Dunod, Paris, 1966. Paper 38 F.

by R. Bruce Lindsay

It is generally admitted that understanding of the principles of mechanics is best exemplified by the ability to solve special problems that illustrate those principles. Hence practically all textbooks in mechanics, at any rate in English speaking countries, are liberally supplied with problems, and courses based on such books lay great stress on the solution of these exercises. The volume under review handles the situation in different fashion. The author, who is a well known applied mathematician and professor in the University of Paris, published in 1962 a general text on theoretical mechanics (*Cours de Mécanique Générale*, Dunod, Paris, 1962) that contains no problems for solution by the reader. The present book remedies the deficiency by being devoted to problems illustrative of the earlier text.

The book is divided into three parts.

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The first consists of 180 "exercises," which the author categorizes as rather easy. They are classified in nine groups, according to the chapters in the author's mechanics text to which they refer. These problems cover such topics as kinematics, principles of mechanics, kinetics, particle mechanics and solid mechanics. They are accompanied by complete solutions. In the second part there are 40 somewhat more difficult problems taken mainly from university examination papers. These also have detailed solutions. The book closes with 15 problems without solutions.

Though many of the problems are of standard character and not particularly original, the average reader will find them most useful in connection with a careful study of the author's book on mechanics. The emphasis is on the mathematical rather than the physical side, and one misses the concern for more or less practical physical situations that characterizes most British and American mechanics texts. Thus there is practically no treatment of energy and its applications.

The style is graceful and clear and the typography and figures excellent. It does not appear, however, that the book will enjoy great use in the United States.

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R. Bruce Lindsay, Hazard Professor of Physics at Brown University, is now on leave and working in London.

A basic theory of real variables

INTEGRAL, MEASURE AND DERIVATIVE: A UNIFIED APPROACH. By G. E. Shilov, B. L. Gurevich. Trans. from Russian by R. A. Silverman. 233 pp. Prentice-Hall, Englewood Cliffs, New Jersey, 1966. \$11.35

by J. Gillis

It used to be the custom to begin by teaching Lebesgue measure of unidimensional sets and then move on to two or three dimensions. Subsequent extension of a large part of the theory to space of infinite dimensionality was possible, but required justification. The frequent result was to leave many mathematicians and more physicists in a fog. Some physicists in particular have been prone to blunder out of this fog by relying on geometrical intuition, handwaving, and murmuring something about Hilbert space. Really this great name deserved better!

It is almost half a century, however, since Daniell formulated a theory of measure general enough to cover everything required. And the concepts implicit in the Daniell approach made possible the development of the Wiener integral and, more recently, the Feynman integral. These lines of thought have by now come to dominate our ideas of measure and integration in physical applications. As for mathematics, there must be many respectable universities now with their distinguished elderly mathematicians

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Volume I

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namics

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1966, 268 pages, \$10.95

Diffraction Methods in Materials Science

MACMILLAN SERIES IN MATERIALS SCIENCE

By J. B. Cohen, Northwestern University

1966, 357 pages, \$10.95 (cloth); \$5.95 (paper)

THE MACMILLAN COMPANY

866 Third Avenue, New York, N. Y. 10022

who are annoyed by the fuss the youngsters are making over functional analysis.

In this book the authors base themselves on the Daniell point of view, and can thus present a unified basic theory of the real variable. It is excellently translated and beautifully produced. The translator and the authors have coöperated well, and much additional material appears that was not in the Russian original.

The first chapter gives a brief account of the Riemann integral in Euclidean space, but from then on we spend most of the time in general space. We return for a moment to consider n -dimensional Lebesgue integration (as a special case of general theory) and also for Stieltjes integration. The latter in particular is presented in an original and interesting way. The explanation is lucid and is assisted by apt and clearly worked examples. The exercises at the ends of chapters are designed to help the student understand basic ideas rather than to catch him out.

This fine text will certainly find a well merited place—even on the sagging bookshelves of our time.

• • •

J. Gillis is in the applied mathematics department at the Weizmann Institute of Science in Rehovoth, Israel.

Updating an encyclopedia

McGraw-Hill Yearbook of Science and Technology. 451 pp. McGraw-Hill, New York, 1966. \$24.00 (\$14.40 to subscribers)

by Robert L. Weber

The fifth in an annual series designed to update both the 1960 and the revised 1966 editions of the 15-volume *Encyclopedia*, this volume contains nine principal survey articles and some 150 shorter articles that emphasize recent developments. The nine feature-length articles are entitled air pollution, biosonar, computers and the mind, molecular biology, mycotoxins, origin and evolution of the atmosphere, programmed learning, terrestrial navigation and world protein needs.

The shorter articles deal with such subjects as air-traffic control, astronomy (with interesting comments on

costs), cells, deep-sea drilling, electrical utility industry, food engineering, geothermal research, hearing in insects, lasers, mass rail transportation, meteorological satellites, muscles, noise level, plant growth, power plants, protein synthesis, radioactive isotopes, upper-atmosphere composition and transplutonium-element production.

In this supplementary volume, perhaps more than in the *Encyclopedia*, a number of writers are describing their own work. The attractive styling and clear illustrations of earlier volumes are continued. The book is cased in a new-type durable vinyl binding. The books should be useful to a broad range of ages and encourage readers to look beyond fields already familiar to them.

Geophysical constants

HANDBOOK OF PHYSICAL CONSTANTS. (Revised edition). Sydney P. Clark Jr, ed. 587 pp. The Geological Society of America, New York, 1966. \$8.75

by Robert L. Weber

In this latest edition of a handbook originally published in 1942, thirty contributors have compiled in twenty-seven sections a wide variety of physical constants needed for geological and geophysical calculations. Each section is introduced with a brief comment on the significance of the data and extensive references are cited. A critical attitude is encouraged by inclusion of measurements of ostensibly the same physical property by different observers. Difficulties of measurement receive some explanation. One also finds reassuring remarks, such as: "At the Preliminary Mohole Site. . . the measured heat flow. . . agrees well with nearby measurements made with a probe." The compilers remark that one function of their work should be to draw attention to areas where more adequate data are needed.

Among the types of data included in this handbook are: composition of rocks, abundances of elements and isotopes, densities, x-ray data, thermal and elastic constants, seismic velocities, strength, viscosity, phase rela-



Non-Compact Groups in Particle Physics

Edited by Yutze Chow
University of Wisconsin

228 Pages. \$8.50/\$6.80 Prepaid*

This volume comprises the Proceedings of the 1966 Conference on "Non-Compact Groups in Particle Physics" held at the University of Wisconsin (Milwaukee), including eleven talks on their applications and possible mathematical extensions.

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