

cannot identify an individual paper except by leafing back to its title page, a feature that I find rather annoying.

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The reviewer is professor of aeronautical sciences at the University of California, Berkeley and director of the rarefied gas dynamics laboratory there. He edited the proceedings of the 2nd symposium held at Berkeley in 1962.

Gruel-less concepts

THE ELEMENTS OF CONTINUUM MECHANICS. By C. Truesdell. 279 pp. Springer-Verlag, New York, 1966. Paper \$5.40

by Ellis H. Dill

The author is professor of rational mechanics at the Johns Hopkins University. This book is a collection of 30 lectures, forming a graduate course on the continuum theory of materials, that he has given as a visitor at other institutions. Most of the topics have been presented in more detail in "The Non-linear Field Theories of Mechanics" (Handbuch der Physik, Vol. III/3) by Truesdell and W. Noll. This volume is, however, the only reasonably complete presentation of the exact theory that is available at a modest price.

The pages are spiced with the criticisms for which the author is famous: "... many engineering schools are now disguising by the name 'continuum mechanics' a loose gruel of bits of classical elasticity floating at random in classical fluids wastes." Such sharp statements, perhaps appropriate for the sleepy audience of the lecture room, may cause foaming at the mouth of current practitioners of the honorable academic profession.

Truesdell is a champion of mechanics as an "expanding framework for theories and experiments on the behavior of different sorts of materials." He follows that scheme here. The emphasis is on the conceptual aspects of the subject rather than the computational. I strongly recommend this book to those who wish to understand modern developments in classical mechanics.

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The reviewer is a professor of aeronautical engineering at the University of Washington, Seattle.

Distributions throughout

MATHEMATICS FOR THE PHYSICAL SCIENCES. By Laurent Schwartz. 358 pp. Addison-Wesley, Reading, Mass. 1966. \$14.00

by Dagmar Henney

The author is a recent recipient of the Field Medal—the equivalent of the Nobel Prize in mathematics. He received the award for his outstanding accomplishments in the theory of distributions. *Mathematics for the Physical Sciences* is a revised and expanded edition of the French original, *Methodes Mathematiques pour les Sciences Physiques*, published by Hermann, the French publisher of the Bourbaki series.

The treatment and elegance of the material presented herein rivals the author's *Distribution of Functions*. Mathematical concepts are discussed with care and precision, and various applications are chosen from the physical sciences. The theory of distributions is introduced at an early stage and used throughout the text. According to the author, the reader need have only a first-year university course (European university course, that is) augmented with some ideas from linear algebra and functions of a complex variable. This requirement means that the author intended his book not only for the mathematician but also for the physicist or engineer.

Fourier series and transforms as well as the Laplace transform are discussed concisely and thoroughly. The latter part of the volume treats wave and heat-conduction equations; gamma and Bessel functions conclude this excellent text.

* * *

Dagmar Henney is an associate professor of mathematics at the George Washington University.

The new spectroscopy

SECOND QUANTIZATION AND ATOMIC SPECTROSCOPY. By Brian R. Judd. 61 pp. Johns Hopkins Press, Baltimore, 1967. \$5.95

by Harold Mendlowitz

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atomic problems, especially to atomic spectroscopy. Then, based on knowledge gained in atomic physics, problems in nuclear theory and quantum electrodynamics were investigated. New methods were afterwards developed to study nuclear problems, field theory and many-body problems of physics. These newer methods are now being applied to problems in atomic spectroscopy as revealed by the title of the book.

The material is based on the G. H. Dieke Memorial Lectures given at the Johns Hopkins University in early 1966. The reader must bear this fact in mind when approaching this book because most of the information is presented in a highly condensed form. Also, the reader should have a good grasp of the more conventional Racah methods used in atomic spectroscopy to be able to take full advantage of the information discussed in the text.

The lectures must be considered to be a *tour de force*, for which the author is to be congratulated, but unfortunately the novice in this field will not be greatly helped without a substantial amount of outside reading and filling in between the lines. However, one must take into account that this book is not a textbook for the uninitiated but a series of lectures on recent work in the forefront of the field. Although the Johns Hopkins Press has done a service to the scientific community by publishing these important lectures, thus affording a wider audience to obtain the benefit of these lectures, it is, however, unfortunate that the cost is approximately 10 cents per page.

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Harold Mendlowitz is professor of physics at Howard University and has been studying atomic transition probabilities.

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