

of this hydrodynamical approximation, thorough study is made of the structure of the various types of monochromatic plane waves in plasmas and of their dispersion laws. Various conditions of density, ionization, and impressed magnetic field strength are covered, with careful consideration of important limiting cases. There is no coverage of general plasma theory, or of the experimental aspects of the subject. Likewise, nothing is said about dissipative effects, nonlinear phenomena, or the microscopic theory of the plasma state.

The subject matter, at this level of discussion, is intrinsically elementary; the authors' aim to make it minutely detailed, as well, has inevitably given a somewhat pedestrian flavor to the tract. Occasionally the reader will tend to falter amidst laborious minutiae, but the reading is easy throughout. The book is amply supplied with graphs and tables. It is well organized, and provides a convenient reference for those who wish a very full exposition of these collective motions, both formally and in physical terms. A debt of gratitude is owed the authors for the considerable labor that must have been involved in codifying this wealth of detail, in uniform notation, for ready access. The tract should be useful to students and investigators as the only available complete compilation on the subject.

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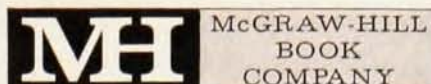
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■ SUPERFLUID PHYSICS

By CECIL T. LANE, Yale University. *International Series in Pure and Applied Physics.* Available February

This text gives an up-to-date survey of research in the field of superfluidity. Aimed at acquainting newcomers to the field with the most important advances of the last 20 years, it embraces both superfluid helium and superconductivity. The treatment is both theoretical and experimental; the level of mathematical treatment is elementary with the main emphasis on the physical principles involved.

■ ELEMENTARY QUANTUM FIELD THEORY

By ERNEST M. HENLEY, University of Washington; and WALTER THIRRING, University of Vienna. *International Series in Pure and Applied Physics.* Available May

Presents that part of quantum field theory not obscured by mathematical difficulties and not requiring a deeper understanding of special relativity. Applications to elementary particles are made. Develops the physical basis for field theory, with emphasis on conceptual aspects of the field; treats the interactions of a quantum field with various static sources; uses mathematical tools and physical insight developed in first two parts to discuss low energy pion physics in detail.

■ FUNDAMENTALS OF ELECTRICITY AND MAGNETISM

By ARTHUR F. KIP, University of California, Berkeley. Available April

This book is a compromise between the need for presentation of the phenomena of electricity and magnetism and the desire to develop and display the unity of the theory at a level consistent with the beginning student's experience of science or engineering. Basic laws and concepts are related to experimental results and help is provided for a basic understanding of Maxwell's equations. Includes some basic concepts of solid state physics and introduces some phenomena, illustrating the impact of quantum mechanics on classical electricity and magnetism.

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AN INTRODUCTION TO RELATIVISTIC QUANTUM FIELD THEORY

Silvan S. Schweber, Brandeis University; Foreword by Hans A. Bethe, Cornell University. Fully discusses renormalization theory, from general principles to quantitative results in the case of electrodynamics. About half of the book is devoted to the interaction between fields. Emphasizes general principles, such as symmetry, invariance, isotopic spin, etc., and develops the theory from these principles. Prepares students for further study in the most recent advances and research in quantum field theory. 920 pp. \$13.75

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TECH NEWS

for Scientists, Mathematicians

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"Operations research"—the term itself—has attained full status in the recently published Webster's Third International Dictionary. OEG takes particular pleasure in this recognition because of our background as the oldest military operations research organization in the country.

Now when someone asks, "But what do you *do*?" we can refer him to Webster's.

OEG advises the Chief of Naval Operations, the Commandant, U. S. Marines, and certain Fleet and Force commanders regarding operational problems susceptible to quantitative analysis. A recent example is collected under the title, "The Selection of Cargo for Air Transport." Here the objective was to determine criteria for shipping the myriad replacement parts stocked by the Navy's Yokosuka (Japan) Supply Depot.

It was found, for example, that the items which are candidates for air transport from Oakland, California, to Yokosuka

can be selected on the bases of dollar volume of annual shipments and value per pound. Under the assumptions in the study, \$7.00 per pound was the break-even point. That is, there will be transportation savings if items with a higher value per pound go to Yokosuka by air.

The more sobering content of another study can be deduced from its title: "The Effects of Radiation on Populations," a two-part work considering (1) the effects on individuals exposed to radiation today and (2) the genetic consequences for future generations. One of many conclusions: The continued detonation of nuclear weapons in the stratosphere, at a 100-megaton-yearly rate, would result in reducing individual life expectancy by approximately 20 days. Although human survival would not be endangered by this testing rate, radiation from a nuclear war—involving the detonation of 100,000 to 1,000,000 megatons—would constitute a definite hazard to the mortality of the human race.

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