

## BOOK REVIEWS

SELECTED READINGS IN PHYSICS : THE CONTRIBUTIONS OF FARADAY AND MAXWELL TO ELECTRICAL SCIENCE, by R. A. R. Tricker, pp. 289, price 25 sh. net. Pergamon Press.

As will be evident from the title of the book, its scope is limited only to collateral contributions of Faraday and Maxwell towards the development of the theory of electro-magnetism. Naturally, we get only a one-sided view of the great experimental genius of Faraday and finish somewhat discontented. The treatment, with the introductory comments by the author explaining where Faraday ended by laying the foundations and Maxwell took up completing the grand mathematical superstructure, of the electromagnetic theory, is, however so refreshing that one may soon forgive the author for not writing more extensively on Faraday alone. Since the original works of Faraday and Maxwell are available to so few of us, the present book will be invaluable in getting first hand information on these; while the critical estimates by the author of the limitations of the theory involving the concept of an electro-magnetic ether, is no less valuable to the students.

A.B.

WAVES AND OSCILLATIONS—by R. A. Waldron. D. Van Nostrand Co., Inc., 1964. pp. vii + 135.

The book is an interesting introduction to the phenomena of waves and oscillations. The author touches upon the elementary concepts at the outset and moves on to discuss the following topics : reflection and refraction, resonance, interference and diffraction, guided waves and topics in network theory.

The book presents, in a lucid manner, the basic properties of waves and their propagation characteristics. However, the subject of wave propagation in a magnetoactive medium has unfortunately been omitted. The book incorporates quite a few equations of wave mathematics, but Maxwell's equations are conspicuous by their absence.

Although the major emphasis is on the basic physics, some of the suitable points involved have also been well elucidated in a semi-sophisticated way; for example, the behaviour of metals to different waves (pp. 28–31), the formation of a backward wave in a periodic structure (p. 90), the principle of operation of a helix guide and the problems of microwave communication (pp. 95–96).

The most interesting feature in the book is the exposition of the underlying similarity between certain phenomena associated with different types of waves. One may point out here the analogy drawn between the Fabry-Perot interferometer and a high-Q cavity resonator (p. 71) and that between the diffraction by a slit and the response of a network via the Fourier transform (p. 117). The reference to the mammalian ear (pp. 108–109) and the human retinal cone (pp. 109–111) in connection with the matching of transmission lines and guided-wave type of propagation is worth mentioning.

Ad added attraction of the book is the information it carries on a few themes of current interest, such as 'the longest electromagnetic waves' (p. 21), 'infrared and optical masers' (p. 62), 'optical waveguides' (p. 107) and 'mechanical filters' (p. 124).

The book may be recommended to college and university students as well as new research workers in physics, who will find in it a stimulus for further study.

J.B.

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