PHYSICAL BASIS OF RADIOLOGY

Radiology Physics

An Introductory Course for Medical or Premedical Students and for all Radiologists. By Prof. John Kellock Robertson. (Textbooks on Physics.) Pp. xv+270. (London: Chapman and Hall, Ltd., 1941.) 18s. net.

THE applications of physics to medicine increase rapidly in number and scope, and there is great need of books which attempt to set forth the fundamental principles underlying these applications, either from the point of view of a fairly elementary student or from that of a more advanced worker in the subject. Prof. J. K. Robertson's book is addressed to the first of these possible audiences, and is a most welcome addition to the literature.

It is described as "an introductory course for medical or premedical students and for all radiologists" and represents a course of physics which is given to medical students at Queen's University (Kingston, Ontario) after their first-year preliminary training in physics. It is perhaps worth noting that the American Association of Physics Teachers is in favour of making the physics pre-requisite two years instead of one; this is a question which may well exercise those in Great Britain who are responsible for the scientific training of the medical undergraduate.

The book contains chapters on alternating currents, the production of high voltage, the "measurement and control of high tension voltage", cathode rays, positive rays and isotopes, Röntgen-ray tubes, valve rectification, general properties of X-rays, electromagnetic waves, measurement of wave-length of X-rays, secondary X-rays and absorption, Röntgen ray dosage, radioactivity, supervoltage tubes and high-speed particles, artificial radioactivity and high frequency currents.

The book is well written, though we may perhaps be allowed to protest against the title "Radiology Physics" or such phrases as "control of high-tension voltage" which sometimes occur, but such verbal infelicities are rare. Occasionally it seems that the order of certain sections might be altered with advantage, as for example the high-frequency current section, which might be brought forward into the earlier portion of the book dealing with electro-technical matters, while the discussion of X-ray quality measurement and half-value layer would perhaps be more intelligible to the student if it followed the discussion of absorption and absorption coefficients.

In further editions of the book—and there should surely be others—the discussion on electromagnetic waves might also be expanded and more detail included. Possibly the difficulty arises from the fact that the book is intended for use by those who are presumed to have had the first-year instruction, but standing alone it seems advisable to discuss the elements of infra-red and ultra-violet physics more fully and more fundamentally than is actually attempted. The section concerning the relation of focal spot to wave-length is also isolated and might advantageously be expanded.

The diagrams are generally very clear, simple and accurate, but in spite of the legend the bending of the positively and negatively charged rays towards the poles of the magnet (Fig. 141) is rather misleading. These details are, however, very small

blemishes on an excellent book which covers a large amount of ground simply, clearly and accurately, and the author has rendered a considerable service to physics in medicine by writing it. There can be no doubt that it will be very generally used in the training of both undergraduates and medical radiologists.

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RUBBER AT A TURNING POINT?

Rubber and its Use

By Harry L. Fisher. Pp. xvi+128. (London: Macmillan and Co., Ltd., 1941.) 7s. 6d. net.

DR. FISHER's small work is a model of excellent compression. Avoiding side issues and technical minutiae, the book gives a clear, accurate and balanced picture of the development and present state of rubber science and technology. All the usual topics of a popular descriptive work of this kind on rubber are present. There are chapters on early history, sources of crude rubber, the plantation industry, crude rubber itself—its nature, properties, compounding and manipulation in the various manufacturing processes. Novelties arising out of the relatively less familiar processes of latex manufacture are not omitted. There is a revealing outline of the main types of vulcanized rubber articles, and a few pages on synthetic rubbers and on the chemical derivatives of crude rubber bring the discussion into the most recent trends of development of the industry. Dr. Fisher has had seventeen years experience with the large American rubber companies and, as he states, extensive experience in lecturing to student groups; from these experiences he has compounded the correct ingredients for a popular work remarkably well. Good illustrations add interest for the lay reader.

The present crisis in rubber supplies, created by the over-running of the Far Eastern plantations by Japan, has brought rubber forcibly to every mind and makes the present book timely even if the crisis itself is no part of the text. The crisis indeed may well make this book the last summary of one particular epoch in the story of rubber. There is no question that the only way out of the impending rubber scarcity is by way of synthetic rubbers. Reclaimed rubber and vulcanized oil substitutes are emergency palliatives of the first importance, but the rubber industry cannot live indefinitely on reclaim and factice. We are thus destined in the coming decade, and perhaps for much longer, to extensive use of synthetic rubbers of several types, aggregating possibly half a million tons a year when production reaches that figure in the next three or four years. Such a transformation of the rubber industry undoubtedly marks a turning point in its history of incalculable significance.

Both manufacturers and users of rubber articles will find fundamental differences between the coming epoch and that which is now closing. Whether we shall be able, or will wish, to return to present practices in the future is a complicated technical and economic problem of which no one can foresee the ultimate outcome. Dr. Fisher's book may well live as an apt summary of an epoch not destined to return.