iteration or relaxation procedures now available for solving field problems in otherwise analytically unmanageable configurations.

Throughout the book the aim is to obtain quantitative results for problems of practical engineering importance. To this end only functions for which numerical tables are available are introduced. Nevertheless one has the impression that the book requires more mathematical knowledge and skill than is commonly available to those solely trained in our traditional electrical engineering courses.

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The Elements of Nuclear Reactor Theory. By Samuel Glasstone and Milton C. Edlund. 416 pp. D. Van Nostrand Co., Inc., New York, 1952. $4.80.

This excellent book has bridged an important gap in the presentation of the theory of nuclear reactors by collecting a good deal of the presently available declassified material. It was sponsored by the AEC with the avowed purpose of providing a text and reference to help train scientists and engineers in this rapidly expanding field, and is based on Edlund's lectures in the School of Reactor Technology at Oak Ridge. The authors have been able to obtain a more unified and better organized exposition than Soodak and Campbell's *Elementary Pile Theory* and MIT's *The Science and Engineering of Nuclear Power*, primarily because of the increased material made available at this time.

The first four chapters serve as a brief introduction to some of the basic nuclear physics concepts needed in the later development. The succeeding eight chapters comprise the heart of the book and give treatments of the diffusion of neutrons (assuming monoenergetic neutrons); the slowing down of neutrons; the bare homogeneous thermal reactor (with the sources determined by Fermi age theory); the homogeneous reactor with reflector (using the group diffusion method); heterogeneous reactors; the time behavior of a bare thermal reactor; and reactor control. The three concluding chapters touch briefly on several more sophisticated approaches, treating the general theory of multiplying systems, perturbations, and transport theory.

Though including much material previously classified, and also some unpublished material as well, the book is not intended to be a treatise. This may account for the absence of a formal bibliography at the end of the book or at the end of each chapter. An informal attempt is made, however, to point out which workers have made important contributions in some of the topics discussed.

On the whole the book is a well written, intelligible one and is suitable for use as an introductory text in a graduate physics course. However, the average engineer will probably find the first four chapters inadequate for his needs and that some previous preparation in nuclear physics, mathematical physics, and possibly also kinetic theory, is necessary before tackling this book.

The volume has a liberal sprinkling of clear, useful diagrams and graphs. There are a few problems given at the end of many of the chapters, though none at all for the first four. Apparently no appendices were found necessary; the index is highly adequate.

The work is certainly a welcome addition to the pitiful few integrated treatments on this subject and fulfills an important current need.

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Electrical Measuring Instruments. Part I: General Principles and Electrical Indication Instruments (Second Edition). By C. V. Drysdale and A. C. Jolley, revised by G. F. Tagg. 598 pp. John Wiley and Sons, Inc., New York, 1952. $12.00.

The original authors and the revising editor have done an excellent and thorough job of explaining the theory and actual construction of electrical meters. The book opens with a brief discussion of "General Electrical Principles" which is primarily a history of electrical measuring methods along with a short explanation of their operation. Mechanical design and construction are gone over in detail with mathematical formulae and practical helpful hints, while another chapter is devoted to deflection and damping. Many tables of the actual dynamic characteristics of existing meters are given. Though most of this information relates to European or British instruments, enough American products are mentioned to provide a useful comparison. Electrical theory and design as applied to circuit conditions and configuration encountered in meters are covered by means of formula and discussion. Though no attempt at mathematical rigor is made, adequate background material is given to make the final relations credible.

A long chapter is devoted to the properties of electrical materials, which are grouped as conductors, dielectrics, and magnetic materials; the groups being considered separately. Permanent magnet design and materials are covered in some detail.

The portion of the book devoted to those types of instruments in ordinary use begins with the sixth chapter. This chapter, on permanent magnet moving coil instruments, is followed by succeeding chapters on soft iron types, dynamometer meters, electrostatic types, and hot-wire instruments. Each of these types is discussed from the standpoint of descriptions of actual meters, their capabilities and limitations, and examples of design. There are many illustrations and sketches along with the necessary design relations.

This book should be useful to any person who has occasion to work with electrical meters. For the casual user, it has the information on which to base an intelligent choice of instrument. For the repair technician, there is a clear explanation of construction techniques, while for one who might be required to design or write specifications for meters, there are ample theory and practical material.

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