

on page 187, in connexion with the calculation of the flux linkage of a coaxial cable, is the statement: "The component contributed by the current flowing in the outer conductor is difficult to derive, but it is usually so small that we may neglect it without serious error".

Although simple transient conditions in resistance-capacity circuits are treated in the chapter on the electric field, no reference is made to the effects of finite condenser leakage with series-connected condensers on D.C., and, in the reviewer's opinion, some qualitative consideration should have been given to changing electric displacement and the concept of displacement current. The chapter on electro-dynamic principles deliberately avoids all technological detail; but it might have been profitable to demonstrate qualitatively the effect of teeth and slots on flux configuration.

The final chapter gives a useful introduction to the elements of electron ballistics.

It is interesting to note that M.K.S. units are introduced in parallel with C.G.S. electromagnetic units.

The book contains an excellent set of problems to be worked by the student and is altogether a useful introductory text-book with many unusual features.

J. GREIG

HIGH-POWER PULSE GENERATORS

Pulse Generators

Edited by Prof. G. N. Glasoe and Asst. Prof. J. V. Løbacqz. (Massachusetts Institute of Technology: Radiation Laboratory Series, Vol. 5.) Pp. xiv+741. (New York and London: McGraw-Hill Book Co., Inc., 1948.) 54s.

THIS volume of the well-known Radiation Laboratory Series is primarily concerned with *high-power* pulse generators, or modulators as they are generally termed in Britain. The general policy with regard to this series has led inevitably to a concentration on American practice. This is not a defect, so long as the book is not taken to be a balanced, representative and historical account of the work of the Allies in the modulator field. Typical instances are: (a) A dismissal of mercury thyatrons in a few lines. No hint is given that the British were more successful in developing a 1.5-megawatt valve (C.V.12), and others which were standard in naval and other sets throughout the War. These valves will doubtless be replaced by hydrogen tubes—but they worked at the time. (b) The Americans during the War carried out a great deal of work on rotary spark-gaps, and the space devoted to these and to two-electrode enclosed gaps is again characteristic of their design practice rather than that in Britain. Air-blown three-electrode gaps, for example, are not mentioned, though the British naval 274/5 (1.5 MW.) main gunnery sets used a three-electrode air-blown gap.

Certain expressions used in the volume may be obscure to British readers; while 'bootstrap circuit' is now familiar, it is doubtful whether 'tailbiting circuit' is also clear, though it is certainly picturesque. There is also in this volume a certain amount of duplication and of omission which is perhaps a characteristic disadvantage of the symposium type

of format. For example, one is surprised to find in the section on measuring techniques no reference to current-viewing transformers. For a brief treatment of them one has to consult the section on pulse-transformers, where no assessment is made of their merits compared with those of viewing-resistances.

On the credit side of the book is a comprehensive collation of those reports which showered on us during the War from the United States, and the information in it will be indispensable, or at least invaluable, to anyone interested in generating or transmitting discontinuities in voltage. For example, lengthy sections on the design procedure for pulse transformers, and the effect of pulse-transformer parameters on all kinds of circuits in which they are employed, are the fruits of war-time research and will now be useful in many different fields. The inclusion of worked examples once again makes one grateful for one feature of the editorial policy in this series, which recognizes the importance of orders of magnitude to a correct understanding of the subject. The name of Guillemin will always be associated with the theory of line-type pulsers, and it is satisfactory to find here a full account of his systematic treatment and classification of pulse-forming networks, which is now the basis of a standard nomenclature in the United States.

The photographs reproduced in this volume are perhaps less good than in certain others of the series, but numerous oscillograms are reproduced and are very helpful. The general impression created is one of comprehensiveness and competence, and the book is likely to be of a usefulness long outlasting its topical interest.

J. T. RANDALL

MECHANICS MINUS MATHEMATICS

Applied Engineering Mechanics

By Asst. Prof. Alfred Jensen. Pp. xi+316. (New York and London: McGraw-Hill Book Co., Inc., 1947.) 3 dollars.

THIS book is intended for senior school students, and Dr. A. Jensen's aim has been to make it suitable for those with little knowledge of mathematics. The few integrals and differentials that appear are relegated to appendixes, where they reinforce the arguments in the text. The book teaches largely by examples, of which there are a great many, some solved in ample detail and most having answers given. In addition, there are review questions and problems at intervals. The illustrations are particularly clear, and there is good insistence throughout on the use of sketches and diagrams. The student, too, is advised to check his work, and alternative methods of doing so are given. The examples are quite practical, so that the student can relate them to problems within his own experience.

The first part of the book is devoted to statics, and the thoughtful student may not entirely be convinced of the truth of the triangle of forces theorem by the statement that forces, like velocities, are vectors and so can be added vectorially. The terms 'force' and 'stress' are used for the same thing, though 'stresses' are usually inferred to be the internal forces in a framework. Forces are classified into