BOOK REVIEWS

Damage Control. A Manual for Naval Personnel. By Captain THOMAS J. KELLY, U.S.N., Chapman and Hall, Ltd., London. 248 pp., 61 figures. 13s. 6d. net.

In this book, written for the U.S. Navy and published (to quote its sub-title) as " a manual for naval personnel," the details of the forethought and planning required prior to action, are revealed with a candour which could well be emulated with advantage by the Royal Navy. The book covers a vast field and contains a considerable amount of detail of the work of specialised departments ; in addition, there is the basic damage control information regarding stability and buoyancy.

In dealing with the specialised departments, Captain Kelly has had the assistance of a team of departmental specialists, and it is a tribute to his editorship that the work of so many authors presents such a smooth uniformity of style.

Fully half the book is devoted to the primary function of keeping a ship afloat in adverse circumstances, and the principles and details of stability and buoyancy are dealt with very thoroughly. For a book of this nature, however, this aspect of Damage Control is dealt with in too much detail, resulting in a welter of formulae, etc., which is guaranteed to confuse the most ardent mathematician, and discourage the average reader. There still remains a pressing requirement for simplification of the calculations concerning stability and buoyancy, to bring them within the scope of the average engineer officer performing the duties of Damage Control officer. The author would appear to forget the all-important element of time in applying his elaborate calculations.

The chapter dealing with engineering damage control is extremely sketchy, and amounts to little more than a list of the requirements for training the Engine Room Department. Some criticism is levelled against the practice of quartering the engineering personnel together, and they are quoted as a " clannish lot " who prefer this arrangement. It is recommended that " considerable dispersion " should be effected, a principle recognised by the Admiralty as essential in war-time.

Repair of action damage is described in a very practical manner, and the information given is extremely helpful in pointing the way to the improvisations necessary by damage control personnel on the spot. More thought could well be given to this aspect, to prevent improvisation from becoming too haphazard.

H.C.B.

" Electrical Engineer " Reference Book—2nd Edition. Edited by E. MOLLOY, M. G. SAY, R. C. WALKER, and G. WINDRED, with 55 specialist contributors. George Newnes, London, W.C.2, 1,669 pp. 42s. net.

This is a comprehensive work which provides up-to-date information on a wide range of electrical subjects. It is divided into thirty-two sections and has some interesting features not often found in books of this kind.

The book starts with a section on Theory and Calculations, which is probably the most disappointing of all. It crams a mass of formulae into too small a space with too little explanation. The expert may find it useful as a refresher, but the novice will find it difficult " to see the wood for the trees."

There follow a number of sections on Power Station Practice, Electrical Materials, Welding, Electricity in Agriculture, and so forth. These deal with the subjects very fully, and embody much specialised theory as well as adequate diagrams and illustrations. Advertisements, of which there are a fair number, are distributed among their appropriate sections.

At the end appears a section on Progress which supplies details of latest practice in all fields of electrical industry, and sections on Education and

Training, Electrical Literature—this is an admirable feature—and finally, a section on Electricity Rules and Regulations.

This is not a book for the beginner ; neither is it one for the specialist. But anyone who is interested in electricity in its many applications, and who has been well grounded in theory, will find it a work which will tell him most of the answers.—**P.A.T.**

Machinery's Handbook. Edited by E. OBERY and F. D. JONES. Thirteenth edition. The Machinery Publishing Co., Ltd., Brighton, 1,911 pp. Illustrated. 38*s*. 0*d*.

This book is essentially a comprehensive reference book of handy size on machine design and shop practice for the mechanical engineer, draughtsman, machinist and toolmaker. The book commences with some useful mathematical tables, including logarithms, areas and volumes, and trigonometrical tables. Included also are notes on dimensioning and checking of drawings and fundamental formulas in mechanics. This section of the book is completed with a chapter on strengths of materials.

Some space is then devoted to riveting and riveted joints, and rules for rivet spacing. A detailed description on springs with load and deflection tables follows.

The book then deals with shafting (torsional strength, etc.), and a chapter on bearings in some detail, dealing with bearing metals, temperatures, etc., followed by a detailed description of ball and roller bearings giving standard dimension tables and a useful section on bearing lubricants. This section is finally completed with notes on the design of keys and keyways, splines, clutches and couplings, with further notes on cam and cam designs.

There is then a section dealing with gearing, including a series of tables dealing with the diametrical pitch and root diameters with explanation of all terms in general use. Gear materials, bevel, worm and helical gearing is dealt with at some length. The descriptions include notes on planetary gearing, belts and pulleys and chain transmission.

A useful section for the practical engineer follows on bolts, nuts, machine screws and screw thread systems and all standard sizes are tabulated. Although this book deals essentially with American Standards, the British Standards are frequently shown. This section also includes notes, at some length, on allowances and tolerances leading up to tapping and thread cutting.

A considerable space is then devoted to milling, milling cutters and reamers. This section ends with tables showing steels for tools and a chapter on grinding, polishing and lapping, with a most useful and comprehensive section on cutting speeds, feeds and tool grinding. The next section deals with steel alloys and this includes chapters on iron and steel castings, patterns, die casting, forging. A really comprehensive treatise on welding in all its aspects, including the heat treatment of steels and non-ferrous metals follows. This section is concluded with a chapter on materials, specific gravity and weights, finishing with notes on the compression of air, water pressures, pipe and pipe fittings.

The book concludes with a section dealing with electric motors, followed by useful tables of weights and measures.

In conclusion the book contains an amazing amount of information in very compact form for easy and reliable reference and in its earlier editions, has been used as a very essential reference book in many workshops and offices. Its only drawback from the British point of view is that the book is couched in American references and data with a few (but important) British Standards inserted here and there.

It is considered that this book would be a really useful and helpful reference book for any Engineer Officer.—**J.D.F.**

Capacitors. *By M. BROTHERTON, Ph.D. Messrs. Macmillan & Co., Ltd., London, W.C.2. 107 pp. 16s. 6d. net.

This book should prove of immense value to those to whom the selection and use of capacitors for electronic apparatus is of great importance.

It has in it a mine of information, and the latter part of the book forms a clear and concise guide in the choice of capacitors under every conceivable circumstance. The problems confronting the manufacturers are dealt with in some detail and by summarising these, the type of capacitor to give the required results may be selected by the user for the conditions under which they will be operated. One chapter gives " twenty keys " to the right capacitor, and by a series of question and answer the final selection may be simplified.

The early chapters are not devoid of interest ; the introduction being especially absorbing. The non-technical reader, however, is advised to turn to Chapter 4 and to read onwards. Chapters 1 and 2 set out to give a simple explanation with the very apt analogy of the stretched spring. The mathematical part assumes more knowledge of electrics than is justified by the earlier assumptions. The use of V for direct voltage and E for alternating voltage is not standard practice, while I represents direct current and the RM.S. value of alternating current with " i " for instantaneous values. It is expected that the reader is at home with the " j " operator, but the subsequent results obtained are illuminating and informative. The various heat losses and dielectric losses are examined and the effect of frequency changes shown graphically with a brief summary at the end of Chapter 2. This summary should be of great value to the non-mathematical reader, particularly in view of the fact that it may not generally be known that the suitability of a capacitor for operation at any one range frequency is dependent upon the choice of the correct dielectric.

This book has been admirably put together, and print and paper are of a very high standard. An asset to any technical library.—**F.G.R.**

Boilermaker's Assistant. By JOHN COURTNEY. Revised by Captain (E) G. C. Malden, R.N. (Retd)). The Technical Press, Ltd., London. 108 pp., 102 figures. 5s. net.

This concise publication in its revised form presents few new features. As a reference book for the guidance of apprentices, etc., commencing their training in a workshop it should prove very interesting and useful. It is excellently illustrated by sketches. The chapters on arithmetical, geometrical and mensuration problems contain information constantly needed by mechanics. The circumference table with diameters in $\frac{1}{8}$ in. multiples are exceedingly helpful.

The geometry has been confined to practical everyday requirements but the great importance of accuracy in marking off should be stressed. The methods for marking off are very aptly described for workshop practice but the difference between the oval and ellipse should be more clearly defined. This development is of utmost importance in boiler plate work.

The notes given on the joints of cylinders (page 46) are misleading as these have been superseded by more modern methods. It is suggested that a description with sketches of joints of modern design for gas and electric welding would greatly increase the usefulness of the book, also details of joints for platework, such as tinmans, etc., are also needed. These insertions would bring the book up to present-day practice.

Although the book is very good in its present form, it is suggested that with the inclusion of much more useful and modern data its value as a reference volume would be greatly increased.—**N.D.H.T.**

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* The term *capacitor* is used instead of the older word *condenser* in conformity with *American Standard Definitions of Electrical Terms* sponsored by the American Institute of Electrical Engineers.

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