

book with the wisdom of the past—to such an extent that one might compile from their unlimited fund of quotations his own Practical Cogitator for atomic energy.

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MIT RADIATION LABORATORY SERIES. Louis Ride-nour, Editor-in-chief. McGraw-Hill Book Co., Inc., New York, 1948. Vol. 4, Loran, Long Range Navigation, edited by J. A. Pierce, A. A. McKenzie, and R. H. Woodward, 476 pp., \$6.00. Vol. 7, Klystrons and Microwave Triodes, edited by D. R. Hamilton, J. K. Knipp, and J. B. H. Kuper, 533 pp., \$7.50. Vol. 14, Microwave Duplexers, edited by L. D. Smullin and C. G. Montgomery, 437 pp., \$6.50. Vol. 23, Microwave Receivers, edited by S. N. Van Voorhis, 618 pp., \$8.00.

To anyone connected with the wartime development of radar or loran, these books will bring pleasant memories of new and urgent problems and of how they were solved—and personal memories of the many authors as well. In one aspect, these books are a success story, a part of the history of the MIT Radiation Laboratory.

As for technical matters: each book is written by a group of very able men who were, for the duration, at least, practicing experts with a high degree of competence in the fields they cover. This does not mean that the books are necessarily without error, but it does make it futile for any one man, however well informed, to try to criticize them in much detail. They must be accepted for what they are, mines of information both theoretical and empirical, of a standard and completeness rarely encountered in books on similar subjects.

The organization of the books necessarily suffers somewhat from their being written by many authors with a deadline (not met) and as an assigned task. If the books can be said to suffer from anything else it is perhaps some lack of continuity with earlier work. This leads occasionally to absence of proper references and in one instance to an amusing confusion of the Kipp point with the name of one of the authors.

The book on loran is a good straightforward account giving the history, nature, and operation of the system, the geometry involved, pertinent data on propagation and on antennas, and a description of typical equipment. The level is not difficult.

The book on microwave duplexers treats in an orderly fashion a somewhat narrow field arising in

radar. However, it is surprisingly rich in material of general interest on waveguides and resonators, presented at such a level as to be thoroughly sound and useful without being abstruse. There is an instructive analysis of magic tees (hybrid junctions) in terms of matrices.

The book on klystrons and microwave triodes includes valuable material, both experimental and theoretical, which is unavailable elsewhere. There is material on microwave triodes, including Neher's close-spaced amplifier, a thorough treatment of klystrons, an excellent account of noise sidebands in reflex oscillators and, for the first time in print, the problem of multi-velocity electron streams at large transit angles is at least formulated.

The book on microwave receivers has valuable material on band width and noise in amplifiers, including the effects of feedback. It also covers a-v-c, a-f-c, converters, superregeneration, measurement and constructional technique, and describes typical receivers.

It is rather overwhelming to realize that with all the material in these books, they still cannot be complete, and that new as they are, they cannot be entirely up-to-date.

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PHYSICS OF SOLIDS: Part I. By Georg Joos. 228 pp. Office of Military Government for Germany, 1947.

This is one of the series (written in German) in the FIAT (Field Information Agencies, Technical) Review of German Science, 1939–1946, of which a very limited number of copies will be distributed by the Department of Commerce. A German edition will appear under the title "Naturforschung und Medizin in Deutschland, 1939–1946" and will be printed from the same plates insofar as possible.

Books Received

VIBRATION AND SOUND. 2nd ed. By Philip M. Morse. 468 pp. McGraw-Hill Book Co., Inc., New York, 1948. \$5.50.

HYPERFINE STRUCTURE IN LINE SPECTRA AND NUCLEAR SPIN. 2nd ed. By S. Tolansky. 120 pp. Methuen & Co., Ltd., London, 1948. \$1.20.

ERGÄNZUNGEN ZUR EXPERIMENTALPHYSIK. By H. Greinacher. 186 pp. Springer-Verlag, Vienna, 1948. \$2.80.

COLLEGE PHYSICS. By E. F. Burton, H. Grayson-Smith, and F. M. Quinlan. 724 pp. Pitman Publishing Corp., New York, 1948. \$4.50.

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