Book Reviews

IES Lighting Handbook (Second Edition)

Published (1952) by The Illuminating Engineering Society, 1860 Broadway, New York 23. i-xiii + 740 pp. + 37 pp. appendix + 24 pp. index + 172 pp. advt. 482 illus. + numerous tables. 6 × 9 in. Price $8.00.

This volume fills a long-standing need for a compendium which presents essential lighting theory and data in condensed and readable form. The new edition represents an extensive revision of the original 1947 publication, more than 75% of the material, according to the editors, being new or completely rewritten. Some 200 pp. of text have been added, and data have been revised in line with the best current values. Bibliographies at the ends of the sections have been extended to include material published as recently as September 1951.

The first part of the Handbook includes sections dealing with physics of light, light and vision, standards and nomenclature, measurement of light, color, light control, daylighting, light sources and lighting calculations. The second part is devoted to applications, with discussions of interior and exterior lighting, sports lighting, street and highway illumination, aviation and transportation lighting, miniature lamps, and photographic, reproduction, projection, television and radar screen lighting. A section on miscellaneous applications covers uses of ultraviolet and infrared energy. Illumination requirements of the various lighting fields and methods for fulfilling them are well covered.

The *Handbook* is, of course, designed primarily to serve the needs of the illuminating engineer. SMPTE members will find it a handy compilation of "time-tested" methods and techniques, although, as is natural in a volume covering the entire lighting field, material of direct interest to the SMPTE member receives rather brief treatment. The section on light sources includes two pages on the carbon arc, as well as tables giving performance characteristics of d-c and flame-type carbons. The discussion on lighting for motion picture photography includes descriptions and illustrations of incandescent and carbon-arc lamps commonly used for set lighting, tables showing beam characteristics, and figures giving spectral energy distributions. Some eight pages are devoted to picture projection lighting with paragraphs on brightness levels, screen surfaces, viewing conditions, projection booth design, and light output of typical carbon-arc systems. There are short discussions of television studio lighting and lighting of drive-in and motion picture theaters.

The concise summaries contained in the *Handbook* are supplemented through bibliographies appended to each section. An appendix contains conversion factors and equations, I.C.I. tristimulus computation data, and tables of selected ordinates. A detailed subject index, index tabs, and a complete table of contents for each section facilitate access to specific information. The paper used is of high quality, the print is larger and more legible than that usually found in handbooks, and illustrations and photographs have been provided with unusual generosity.

As an authoritative and convenient summary well provided with guides for further reading, the *IES Lighting Handbook* should find a place on the desk of every engineer required to deal with broad problems of lighting. The sections on light sources, measurements and calculations will be especially useful to the SMPTE member, though for detailed information on problems of motion picture studio, theater and projection lighting, it will still be necessary to consult the publications of the SMPTE.—*M. S. Wright*, National Carbon Research Laboratories, Cleveland, Ohio.

Basic Electron Tubes

By Donovan V. Geppert. Published (1951) by McGraw-Hill, 330 W. 42 St., New York 36. 332 pp. 257 illus. 6 × 9 in. Price $5.00.

As the title implies, this book deals with the principles of operation of well-known vacuum tubes.

Written as a text for undergraduates, it fulfills the requirement for lucidity by an understandable style and a novel arrangement of subject matter. Undoubtedly founded on the axiom that an interested student learns rapidly and well, the author has reversed the conventional order of presenting his subjects.

Instead of starting with a few abstract statements and a welter of mathematics, he presents first the physical nature of the easily recognized practical tube, giving qualitative theory in explanation. From this he goes to the electrical nature of the tube, presenting the characteristic curves and an illustrative circuit. The theory is often explained with the assistance of the rubber-membrane rolling-marble model, which is shown in a well-executed three-dimensional illustration.

By this time even the interested tyro has a good conception of the device and then the author launches into the mathematical analysis that must be a part of any mature treatment. This is given meaning by sample calculations of problems likely to be faced in practice. Both cgs and mks units are used and the relation between the two systems explained.

The tubes treated are indicated by the chapter headings: 1. High-vacuum and Gas Phototubes; 2. High-vacuum Thermionic Diodes; 3. High-vacuum Triodes; 4. Tetrodes and Pentodes; 5. Beam-power Tetrodes; 6. Cathode-ray Tubes; 7. Glow-discharge Tubes; 8. Thermionic Gas Diodes; 9. Thyratrons; 10. Mercury-pool Arc Rectifiers; and 11. Ignitrons.

A useful feature of the book is a summary of the practical consequences of altering tube parameters. For instance, in the case of the triode, nine numbered sentences give the alteration of electrical characteristics for stated alterations of the tube structure. This tends to establish fundamentals in the mind of the student or engineer and serves as a focal point for reference when memory fades.

Additional references and problems are to be found at the end of each chapter.

The book is the fourth in a series of fourteen on electrical and electronic engineering, for which the well-known and esteemed Dr. Frederick Emmons Terman is Consulting Editor. This fact accounts for the title and the absence of discussion of the microwave tube. This device is more often a part of the circuit than a separate entity and so is treated in another book of the series.

The book would appear to be useful to nearly all motion picture and television engineers as a convenient reference.—*Harry R. Lubcke*, Consulting Engineer, 2443 Creston Way, Hollywood 28, Calif.

Bases Techniques de la Television

By H. Delaby. *In French.* Published (1951) by Editions Eyrolles, 61, Blvd. Saint-Germain, Paris (V°). 340 pp. 273 illus. 6½ × 9¾ in. Paper bound. Price 2,200 fr. (approx. $6.30).

The principal interest of a reader of this *Journal* in a technical book in a foreign language lies in whether, having surmounted the difficulties of translation, the reader will obtain information on other methods and devices that cannot be obtained in his native language. This reviewer's interest was largely in the practical details of the controversial 819-line French television system and its operation in the same studio plant with a 625- or 455-line system. Unfortunately, this book, although excellent in its way, is not informative about such details.

With its companion volume by the same author *Principes Fondamentaux de Television*, to which frequent reference is made, this book serves as an adequate text for a course in television at what would be in the United States, college senior level. The general principles of video amplifiers, synchronizing generators, studio cameras, film cameras, transmitters, receivers and antennas are covered in varying degrees of detail. Studio control equipment rates 8 pp.; the receiver, 24 pp.; and the transmitting antenna, 54 pp.; to cite a few

examples of the somewhat strange balance between topics. This is perhaps an unfair criticism, since much material of importance, such as the whole subject of scanning generators, is apparently covered in the companion volume.

There are several general texts on television published in the United States which cover in more detail essentially everything included in this book. Actually, over half the references are to technical magazines and books in English.

The one section which contains information not available in *American* (as distinguished from English-language) texts is that on the television transmission of film. The use of flying-spot scanners with continuously-moving film, and the peculiar problems of 50-cycle power supplies are discussed in reasonable detail. From the references given, however, this reviewer had the impression that, if he had obtained a copy of the proceedings of the "Congres de Television" which was held at Paris in 1948, he would be in a better position to learn about French television methods than by a study of H. Delaby's book.—*S. W. Athey*, General Precision Laboratory, Inc., Pleasantville, N.Y.

Television Principles

By Robert B. Dome. Published (1951) by McGraw-Hill, 330 W. 42 St., New York 36. i-xii + 281 pp. + 9 pp. index. 170 illus. 6 × 9 in. Price $5.50.

The material for this book was taken from a series of lectures which formed one of the radio training courses for engineers of the General Electric Co.

The book covers all stages of television transmission and reception. There are chapters on scanning and reproduction, transmitting apparatus, antennas for transmission and reception, propagation and relays, RF input circuits and noise factors, IF amplifiers, picture second detector and the scanning system. The author has followed the television signal from the camera through the receiver.

Mathematical development of many principles is shown and practical problems using these principles are given. The design problems make use of many of the latest types of tubes.

Schematic circuits and diagrams are used and there are no pictures or diagrams of commercial installations or equipment. The book is about engineering rather than operations and is concise and to the point.

On the transmitting side Mr. Dome has lightly covered the operation of the different pickup tubes and antennas. He has paid particular attention to video frequency amplifiers and picture transmitters.

On the receiving end he has emphasized radio frequency input circuits, intermediate frequency amplifiers and scanning circuits. The chapter on RF input circuits includes the cascode amplifier and has material on noise factors for each circuit.

A miscellany chapter covers such things as d-c restoration, automatic gain control, overall fidelity and the author's own intercarrier sound system.

The book is an excellent work and is a welcome addition to the McGraw-Hill Television Series.—*Otis S. Freeman*, Asst. Chief Engineer, WPIX, 220 E. 42 St., New York 17.

Application of the Electronic Valve in Radio Receivers and Amplifiers (Vol. II)

By B. G. Dammers, J. Haantjes, J. Otte, and H. Van Suchtelen. Published (1951) by N. V. Philips' Gloeilampenfabrieken, Eindhoven, Netherlands. Distributed in U.S.A. by Elsevier Press, Inc., 402 Lovett Blvd., Houston 6, Texas. i-xviii + 425 pp. + 6 pp. index. 343 illus. 6 × 9 in. Price $7.75, English ed.

This is the second volume of a trilogy being put out by the famous Philips of Eindhoven on the uses of tubes in receivers and amplifiers, principally the former. Volume I covered rf and if amplification, frequency changing, interference and distortion, and detection. The present volume is devoted to af voltage and power amplification and power supplies. That being the case, it is of considerable value to motion picture workers, even though it is primarily concerned with receivers.

The treatment is by no means superficial and is entirely applicable to amplifiers and power supplies for any purpose. Tube performance is analyzed mathe-

matically and graphically and design criteria given for standard circuits. An interesting section, not strictly within the purview of tubes is on design of af transformers.—*Richard H. Dorf*, Audio and TV Consultant, 255 W. 84 St., New York 24, N.Y.

Agfacolor Process, a Short Bibliography

Compiled by Alexis N. Vorontozoff (1951), 25 mimeographed pages, 8½ × 11 in. Available from the Author, 10 rue Mademoiselle, Paris. Price, $0.50 plus postage.

Mr. Vorontozoff has done a noteworthy job in compiling 236 references on the Agfacolor Process which he has published alphabetically according to author, with a cross-reference list according to subject. He has indicated also whether or not the reference has been consulted directly, the language of the original paper, references to abstracts of each paper published in other periodicals, availability of reprints, translations, etc. The bibliography covers all aspects of the Agfacolor Process, including numerous references applicable to the motion picture field.—*Lloyd E. Varden*, Pavelle Color, Inc., 533 W. 57 St., New York 19, N.Y.

Transmitting Valves

By J. P. Heyboer and P. Zijlstra. Published (1951) by N. V. Philips' Gloeilampenfabrieken, Eindhoven, Netherlands. Distributed in U.S.A. by Elsevier Press Inc., 402 Lovett Blvd., Houston 6, Texas. i-xii + 281 pp. + 2 pp. index. 256 illus. 6 × 9 in. Price $6.25, English ed.

This volume is Book VII of the fast-growing Philips library. It is concerned with the characteristics of transmitting tubes—pentodes, tetrodes, and triodes in which transit-time effects are negligible—and the circuits in which they are used. Chapters give thorough mathematical design treatments of tube construction, rf power amplifiers, oscillators and frequency multipliers, as well as some data on special uses such as vhf feedback circuits. One of the appendixes contains a table of technical data on Philips transmitting tubes. As with the receiver book from Philips (reviewed above), the translation is excellent, the language clear and concise.—*Richard H. Dorf*, Audio and TV Consultant, 255 W. 84 St., New York 24, N.Y.

Positions Wanted

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Motion pictures in color depend on the engineers' knowledge of the "Principles of Color Sensitometry." A 72-page article bearing that title and prepared by the Color Sensitometry Committee appeared in the *Journal* for June 1950. Attractive reprint copies may be purchased for $1.00.