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books reviewed

An Introduction to Junction Transistor Theory

By R. D. Middlebrook. Published (1957) by John Wiley & Sons, 440 Fourth Ave., New York 16. i-xxiv + 296 pp. illus. 6 by 9-in. Price \$8.50.

(Edit. Note: A paper by Dr. Middlebrook, to introduce a group of papers on the transistor in the June 1957 Journal, was drawn in part from this book, with the kind permission of the publishers.)

From the standpoint of a student or engineer first studying transistor theory, this is the most useful book published to date. Many who have taught this subject may disagree in part with the organization and emphasis. Considering the date of publication, there were a number of significant omissions.

Apparently intended primarily for undergraduate instruction, the book begins with a qualitative description of the transistor field and of transistor action. In the transistor theory, the analysis of the diode and the transistor by Shockley and his successors is reviewed and explained in detail. The two terminal pair equations derived in this section are then transformed into an equivalent circuit which Professor Middlebrook has developed. A 24-page concluding chapter discusses collector leakage, surface recombination effects, and the variation of alpha with emitter current analyzed by Webster. The book is profusely illustrated with one drawing for every two pages.

It seemed to me that the diode could be presented more effectively if the reverse bias condition were discussed prior to the forward bias. The diode might also have been used to a greater extent to clarify the basic ideas in transistor action. More emphasis could well have been put on the powerful and essential concept of electrical neutrality. Diffusion flow of carriers, an idea generally unfamiliar to electrical engineers, could be explained convincingly with a simple diagram.

It was a little surprising to find no mention of the Moll-Ebers equations or of avalanche multiplication. Very little is said of Pritchard's work on a-c current distributions in grown triodes.

Professor Middlebrook has thoughtfully included at the front of his book a list of symbols identifying the section in which each symbol is defined.—*J. M. Early*, Bell Telephone Laboratories, Murray Hill, N.J.

The Active-Networks issue of the *IRE Transactions in Circuit Theory* to be published in September 1957 will contain more than a

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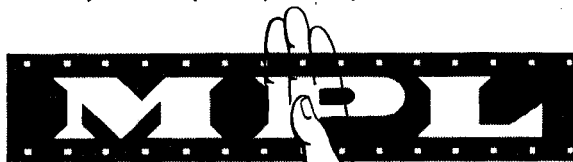
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dozen papers by authorities on various aspects of active networks. In addition, the issue will contain many of the papers given at the Conference on Transistor and Solid-State Circuits held in Philadelphia, February 1957. It is priced at \$3.75 a copy for IRE members and libraries. The price to nonmembers is \$7.50 a copy. It may be ordered from IRE headquarters, 1 E. 79 St., New York 21.

Storage and Preservation of Motion Picture Film is a new publication issued by Eastman Kodak Co., Motion Picture Film Dept., Rochester 4, N.Y. The 80-page illustrated booklet contains comprehensive storage information for all types of motion-picture film, not only for raw stock but also for processed film. Although the illustra-

tions show 35mm film, the information applies to 16mm and other widths of motion-picture film as well.

The booklet is divided into sections which take up such topics as: The Film; Storage of Raw Film; Handling Film in Laboratories and Storage Centers; Storage and Preservation of Processed Film; Commercial Storage of Processed Acetate Film; Archival Storage of Processed Acetate Film; Storage of Processed Nitrate Film.

The Appendixes include descriptions of Laboratory Tests for Identifying Acetate and Nitrate Film; Proposed American Standards for Photographic Films for Permanent Records; Tests for Unstable Nitrate Film; Method of Desiccating Film.

The booklet is priced at 50 cents.

Photographic Abstracts 2d Decennial Index - 1931-40

By The Scientific and Technical Group. Published (1956) by the Royal Photographic Society of Great Britain, 16 Princes Gate, London S.W.7. 209 pp. Hard-bound. $6\frac{1}{2} \times 9\frac{1}{4}$ in. Price £2 (\$5.60).

Very few individuals have unlimited access to the entire literature of an industry. The average person probably has access only to trade journals, semitechnical publications and books concerned with his own field. If he is a member of a technical society that publishes a journal, he receives copies of that journal.

When a survey of a field is to be made, the scientist and the technician naturally turn to indexes of this field. An organic chemist refers to *Beilstein*, a physicist to *Science Abstracts*; but the motion-picture engineer has no single index which can be examined; rather he must search through several of the well-established indexes of photography and cinematography.

One of the most important of the photographic indexes of the world that includes much cinematography is the quarterly known as "Photographic Abstracts" that has been published by the Royal Photographic Society of Great Britain since 1921. Two Decennial Indexes of these abstracts have now appeared; the first was issued in 1932 or 1933 and covered the years 1921 to 1930. The second ten-year index covers 1931-1940 and has just been published in 1956. A third, for 1941-1950, is now in progress.

This second Decennial Index is made up as follows: Author Index, 70 pp.; Patent Index, 48 pp. (including British, Canadian, French, German and United States patents and one Russian patent); and a Subject Index, 91 pp. To use the Patent Index, one must know the patent number as the index contains no information on the subject of the patent. The Subject Index, however, contains references to patents. In the Subject Index, all main headings are set in full caps and bold-face type and, therefore, are easily found.

This volume is printed clearly and bound securely. The labor involved in the preparation of any index is very great and it is to be hoped that this useful compilation will be referred to frequently.—*Glenn E. Matthews*, SMPTE Editorial Vice-President, Bldg. 59, Kodak Park, Eastman Kodak Co., Rochester 4, N.Y.

A bibliography of titles of technical books on audio-visual, telecasting and motion pictures has been compiled by S.O.S. Cinema Supply Corp., 602 W. 52 St., New York 19, and 6331 Hollywood Blvd., Hollywood 28. The bibliography includes such topics as Advertising, Industrial and Commercial Applications; Sound Recording and Reproducing; Educational and Informative; Writing, Production and Editing Techniques; Laboratory Practices and Procedures; Photography and Cinematography; Electronics Theory and Practice; Theater, Screening Rooms and Projection Methods; and TV Studio and Engineering Aspects. The bibliography is available without charge.

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