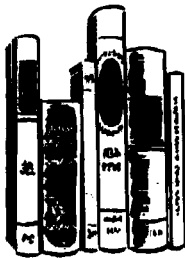


books reviewed



Electronic Drafting Handbook

By Nicholas M. Raskhodoff. Published (1961) by The MacMillan Co., 60 Fifth Ave., New York 11, 402 pp. incl. Preface, Table of Contents, Index, Diagrams and Illus., 6 by 9 in. Price \$14.75.

The scope of this book is much broader than the title indicates. In addition to the techniques and background needed to prepare drawings for electronic equipment, the design aspects of this type of equipment are covered. There is also some treatment of the technique of checking drawings for this type of equipment. For the benefit of those who understand the term "mechanical drafting" to mean producing drawings by mechanical means, such as straight edges, compasses, etc., it might be mentioned that this book has nothing to do with producing drawings by electronic means,

as is now being done on an experimental basis by a well-known San Diego company. Hence, a more descriptive title might be "Design and Documentation Handbook for Electronic Equipment."

The intended use of the book is threefold: One "A reference guide for persons doing electronic drafting in private industry or for the government," secondly "a textbook for students taking a course in that specialty" and thirdly "a means of assisting individuals interested in furthering their careers in engineering drawing through specialization."

To accomplish these three objectives, the author has accumulated material under four general headings: Part I, *Basic Electronic Information*; Part II, *General Electronic Drafting Techniques*; Part III, *Special Electronic Drafting Techniques*; and Part IV, *Reference Information*.

Chapter 1 "The New Profession of Electronic Drafting" is a general introduction to the subject and precedes the major divisions. Its objective is to glamorize this phase of design and drafting by stressing the infinite varieties of electronic equipment, the enthusiastic teamwork of those involved in this branch of engineering, and the phenomenal expansion of the electronic industry in recent years. Unfortunately, the author tries to build up this picture by disparaging references to the "dull, repetitious" drawings required in other branches of drafting. In all fairness to the prospective draftsman and designer, it should be stated that in many companies, including some in the Electronic Industry, the elec-

tronic layout man, skilled though he may be, is not considered to be on quite the same level as the mechanical designer.

Except for a brief chapter on material used in electronic equipment, Part I, *Basic Electronic Information*, consists exclusively of descriptions and illustrations of electronic and mechanical components. Most of those illustrated have been in use for many years. A few recent developments appear, such as the ceramic tube, and the semiconductor, but no mention is made of micro-miniaturization or wafer-type components. As implied above, there is no treatment of electrical or electronic principles and very little data on the function of the components illustrated. In view of the objective of assisting individuals interested in furthering their career in this field, some suggestion to acquire the basic principles of electronics with a list of reference material would seem to be in order.

Part II, *General Electronic Drafting Techniques*, has very little to do with drafting techniques unless one assumes a very broad definition of the term. More than half of this section is devoted to general mechanical design of electronic equipment. The rest is divided between drafting room procedures and a brief treatment of some of the equipment such as drafting machines, templates and lettering devices, now available to the draftsman.

Part III, *Special Electronic Drafting Techniques*, is the heart of the book. These chapters contain a detailed treatment of certain drawing types as they are utilized in the electronic industry, the schematic

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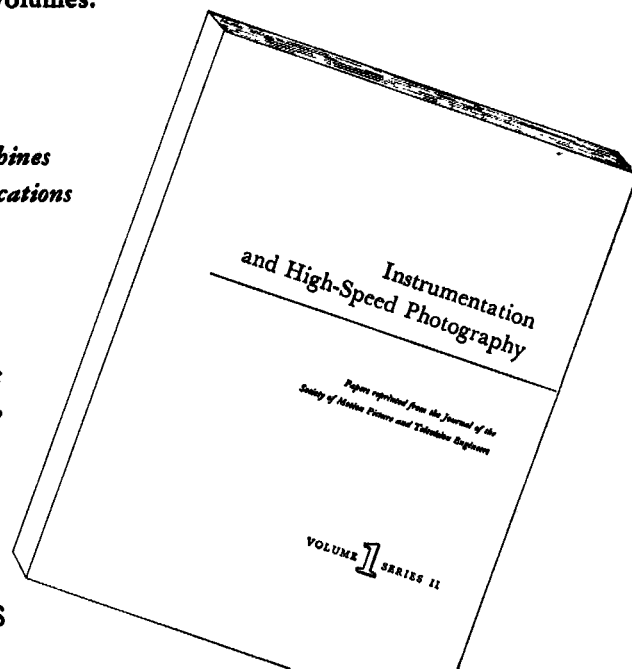
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diagram, the wiring diagram, the wiring harness drawing and printed circuit drawings. Form and content of each are fully discussed. Many helpful suggestions for producing clear, readable drawings through proper arrangement of material are given in the sections on drawing preparation. Of special interest are the references to the various military and industry standards which govern the symbols, abbreviations and other conventions associated with this branch of drafting.

About 160 pages of reference data make up the fourth part. It consists mostly of reprints or abstracts of current drafting and design specifications and standards both military and commercial. It is highly

questionable whether material of this type should be included in a durably bound reference book. These specifications, especially the military, are in a continuous process of change. Any draftsman who is making a drawing to military standards should refer to the actual text of the current revision or run the risk of incorporating obsolete data in his drawing.

Although this book is one of the very few textbooks devoted exclusively to the electronic drafting field and, to this reviewer's knowledge, the most comprehensive, the decision to combine a reference book and a textbook on this subject is open to question. The inclusion of the reference material has put the book in a price bracket

which will discourage its use as a text by the teacher who must cover basic drafting principles and other phases of drafting besides the electronic. On the other hand, its usefulness as a reference book is limited in that it contains considerable material which is in a continual process of change. The desire to be comprehensive has forced a superficial treatment of some subjects, especially in the design area. Some compensation for this could have been made through a selected bibliography. Surprisingly enough this feature has been omitted.

In spite of its limitations, the book would certainly be useful to the teacher and student of drafting as supplementary reading. It would also be useful, as a starting point, for a drafting supervisor who, with no prior experience in this field, was suddenly faced with a requirement to make drawings for electronic equipment.—*John C. Duffy*, Head, Design Dept., GPL Div., General Precision, Inc., Pleasantville, N.Y.

Industrial Transistor and Semiconductor Handbook

By Robert B. Tomer. Published (1961) Howard W. Sams & Co., Inc., 2201 E. 46th St., Indianapolis 6, Ind. 256 pp. incl. Preface, Table of Contents, Tables and Charts, Paperbound. 5½ by 8½ in. Price \$4.95.

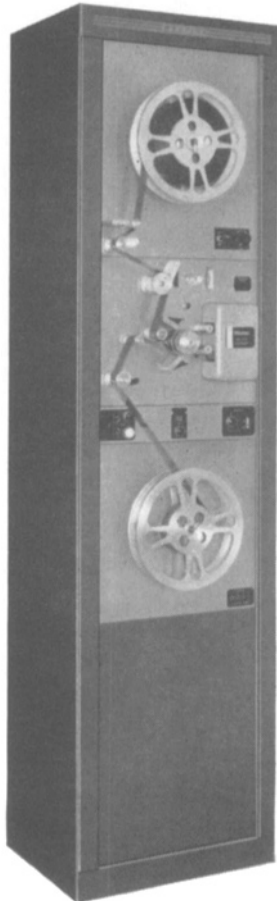
This clearly written summary of semiconductor information includes basic theory, circuit design procedures, applications, and manufacturing technique.

The first four chapters cover physics, general characteristics, circuit fundamentals, and ratings and measurements. The next six chapters discuss semiconductor applications; diode applications, industrial control, power converters, communications, unusual devices, and thermoelectricity in solar-energy conversion. Chapter 11 covers advanced manufacturing techniques of semiconductors, including grown-junction, alloyed-junction, drift, MADT, mesa, planar, and epitaxial mesa transistors. The last chapter, on the future of semiconductors, covers high-density packaging, microminiaturization, thin-film and integrated circuits, standard microelements, etc. A two-part Appendix includes transistor parameter symbols and definitions, and methods used to determine thermal stability of transistor circuits.—*Bernard D. Plakun*, GPL Division — General Precision, Inc., Pleasantville, N.Y.

Handbook of Electronic Charts and Nomographs

By Allan Lytel. Published (1961) by Howard W. Sams & Co., Inc., 2201 E. 46th St., Indianapolis 6, Ind., 256 pp. incl. Preface, Charts, Table of Contents, Illus. paperbound. 8½ by 11 in. Price \$4.95.

This book contains 58 full-page charts and nomographs, 14 of which present trivial subject matter, such as conversion of feet to miles. Charts showing resistance, capacitance and inductance relations use a simplified approach which is not as informative, and perhaps more difficult to use, than the conventional charts. For maximum usefulness, and particularly



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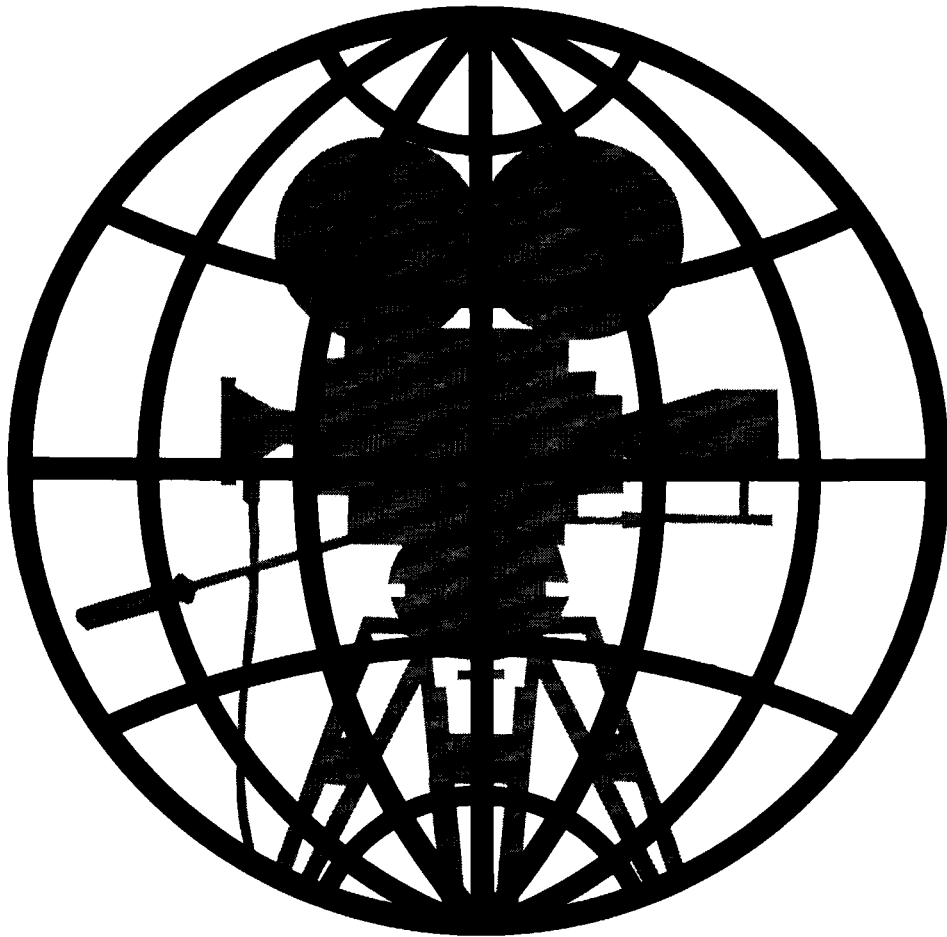
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Modern Mathematics for the Engineer: Second Series

Ed. by Edwin F. Beckenbach; Introduction by Magnus R. Hestenes. Published (1961) by McGraw-Hill Book Co., 330 W.

42 St., New York 36. 456 pp. incl. Index, Diagrams and Tables. 6 by 9½ in. Price \$9.50.

The word "engineer" in the title of this book is somewhat of a misnomer; it is the theoretician to whom the book would be most valuable. A glance at the table of contents and list of authors indicates that the book is a survey of a number of topics in advanced mathematics. It covers a wide variety of topics, and touches but lightly on most, although the exercises and bibliography indicate many more applications than could be discussed in the text. As a textbook, supplemented with lectures and discussions in a formal graduate-level course, it is excellent; however, an understanding of most of the material requires at

least a fair understanding of the topic before reading the book.

There are three main areas in the book — mathematical methods; statistical and scheduling studies; and physical phenomena. In each of these areas, several different topics are treated. The first area — mathematical methods — would be familiar to many engineers. These sections treat transformations such as the familiar Laplace and Fourier transforms, the Heaviside operational calculus, and a variety of functions important to engineers in such fields as thermodynamics and mechanics.

The second area, statistical and scheduling studies, treats many topics of interest to communications — chance processes, information theory, linear programming, and control and inventory processes. This area is also of interest in such fields as production planning and traffic control, in which statistical processes are important.

The third area — physical phenomena — treats a wide variety of different topics including transmission lines, mathematical physics, hydrodynamics and hydromagnetics, and fluid mechanics.

In almost all cases, the limitations on size preclude the inclusion of detailed treatments; however, the book would serve admirably to pique the interest of the serious reader.

For any engineer interested in acquiring a broad knowledge of advanced mathematical methods, the book is recommended. On the other hand, for the engineer interested in a specific field (e.g., television or optics) other books can provide a much more detailed treatment, and would therefore be preferred.—*Harvey W. Mertz*, Haddonfield, N.J.

Applied Optics

Published by Optical Society of America, 1155 Sixteenth St., N.W., Washington 6, D.C. Bimonthly, beginning January 1962. Editor: John N. Howard. Yearly subscription rates: Members, \$6.00; Other AIP Society members, \$8.00; Nonmembers, \$10.00.

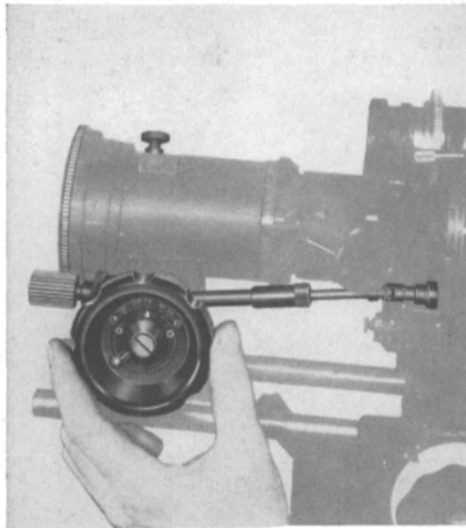
A new magazine is launched by the Optical Society of America. For far too many years the expanding field of applied optics has been without a semi-technical journal comparable to those available in the engineering, electronics, and photographic fields. The *Journal of the Optical Society of America* is world-renowned for its coverage of the research aspects of optics, but there has been little in it for the instrument designer, the optical engineer, and the user of optical equipment. It is sincerely hoped that the new *Journal*, *Applied Optics* will appeal to the growing number of those working in these practical fields.

The preliminary announcement of this magazine promised its readers six issues per year, the first eight issues covering the following major topics: optical pumping and masers; space optics; foreign optics; optical engineering; infrared; information theory; astronomy; and instrumentation. In addition to about ten invited and contributed papers related to the principal topic, there are to be book reviews, news items, shop notes, letters to the editor,

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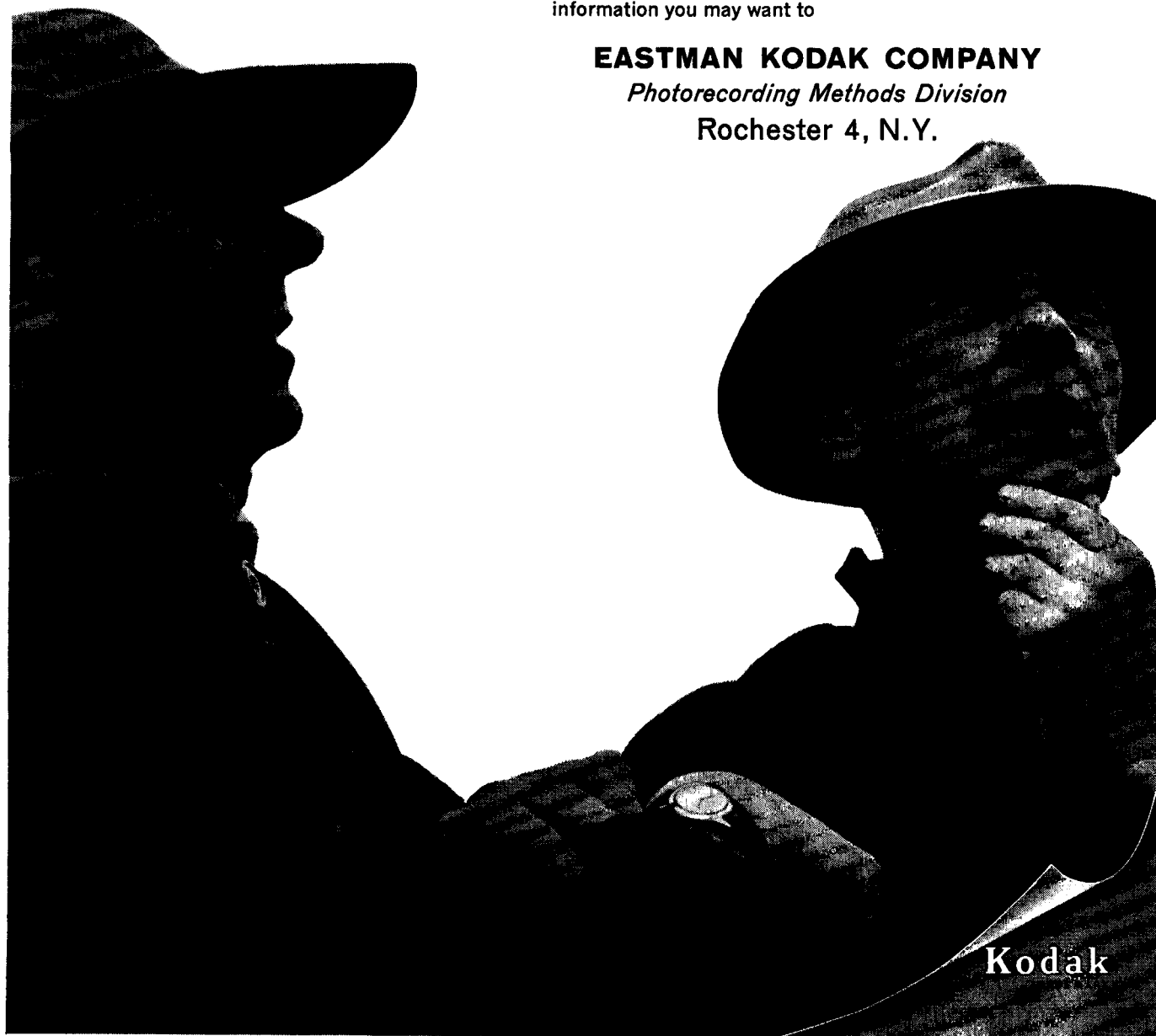
If you overexpose this film by two full stops for subjects like aircraft against blue sky, reduce first developer time from the normal 10 minutes to 5½ minutes and make a +0.15 pH change in the color developer. Graininess is thus even improved. Noticing the improvement, however, takes quite an expert, since room for improvement in normally exposed and processed Kodak Ektachrome ER Film is mighty hard to find.

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personalia, meetings calendar, etc. The coverage has also been extended beyond the confines of what may be regarded strictly as applied optics to include such related fields as electron optics, solid-state physics, ultraviolet, infrared, and microwaves.

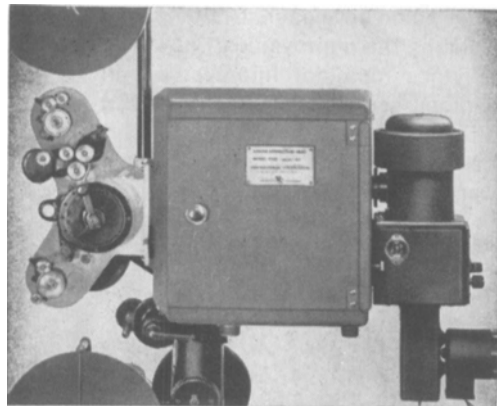
We now have before us the first issue of the new magazine, attractively produced, containing 86 pages of text and 30 pages of advertising, representing a splendid accomplishment on the part of the Editor, John N. Howard, the Feature Editor of this issue, Bruce H. Billings, and the Managing Editor, Patricia R. Wakeling. Nine of the twelve feature articles deal with masers, which are at present a branch of solid-state physics, but which promise to have

very extensive practical applications in the near future. However, most of these articles could well have been published in the J.O.S.A., and we hope that their considerable depth and technical erudition will not discourage the more practical readers from subscribing to the magazine. There is also a valuable illustrated historical article on Sir George G. Stokes; it is hoped that this feature will be continued in subsequent issues.

Although the technical articles are arranged in a very clear and orderly way, each beginning on a righthand page and continuing through to its completion, the news items and other miscellaneous notes have been peppered into the magazine in a

most bewildering fashion, some starting in a convenient empty spot and ending up much later but some starting near the end and finishing near the beginning! The most amazing instance of this right-to-left procedure is the page "Of Optics and Opticists" which begins on page 85, continues on the opposite page 84, thence it moves back to page 54, to page 36, and it finally concludes on page 16! However, another section describing the various Corporation members of the Society starts on page 16, moves normally to page 32, and then ends up among the advertisements on pages A 18, A 21 etc. This may lead to some confusion when the owner tries to decide whether to keep or reject the advertising when he binds up his magazines at the end of the year.

We hope that future issues will contain more miscellaneous material, shop notes, bibliographies, patent abstracts, and brief descriptions of new apparatus. We hope, too, that those working in applied optics will feel free to write short articles explaining new devices or procedures that they have found useful in their work. We are keenly looking forward to the March issue, and we wish the new venture many years of successful publication.—*Rudolf Kingslake*, Optical Design Dept., Hawk-Eye Works, Eastman Kodak Co., Rochester 4, N.Y.



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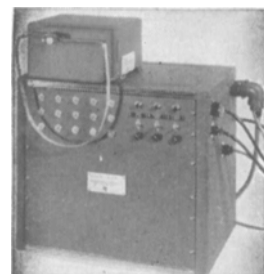
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Military Standardization Handbook: Glossary of Photographic Terms Army Technical Manual 11-411. Published 1961. 128 + iv pages (Foreword, Index of copyrighted material). Available from Superintendent of Documents, Government Printing Office, Washington 25, D.C. Price, 70 cents.

This 128-page glossary contains about 3500 definitions of photographic terms used in many types of professional and military photography, including photogrammetry, aerial photography and document reproduction as well as motion-picture photography. Definitions of terms range from brief (two or three-word) definitions; for example, "Base, chemistry — an alkali," to detailed explanations running to 200 words or more. Many terms are explained in detail, among them "Cant and Torque," "Complementary Colors," "Spectrum," "Squeegee," "Contrast," and "Edgewave or Flute," to mention but a few. This an excellent handbook and may well serve to instruct the beginner and to refresh the memories of more advanced photographers.

The Audio-Visual Equipment Directory, Eighth Edition, has been announced by the National Audio-Visual Association. Completely revised from the preceding (1961) issue, more than 1500 audio-visual products are described and illustrated. One innovation included in the 1962 *Directory* is a separate section on 8mm sound projectors which gives detailed descriptions of 16 different models presently available. Another change showing which way the wind is blowing in the audio-visual field is the big double section on language laboratory