books reviewed

Television Newsfilm Standards Manual

By various authors with a Preface by Edward Ryan, President, RTNDA. Published (1964) by Time-Life Broadcast and Time Inc., New York, N.Y. 10020. 92 pp. Illustrated. 11 by 8½ in. Price $10.00 (hardcover), $2.50 (standard).

Subtitled "A Guidebook and Working Manual for Students and Professionals," this survey and codification of procedures in the gathering and dissemination of television news contains the papers presented at the 1964 Newsfilm Standards Conference, jointly called by The Radio Television News Directors Association and Time-Life Broadcast Inc.

Following a concise and documented "History of Newsfilm" by NBC's Robert Shafer, the book is divided in sections dealing with specific areas of activity. "Tools of the Trade" covers a report on cameras generally in use, the recording of sound, lighting equipment, raw stock and processing, while CBS News' Robert Rubin describes the general evolution of equipment and techniques for documentaries and newsfilms.

In the "Picture Making" section, cameramen discuss problems of working with a full crew, with a reporter, or working alone. Jack Bush, of ABC News, opens this section with pertinent thoughts on quality standards and individual aptitudes.

"The Editorial Influence" is viewed in terms of the appropriate approach to a given assignment, and the extent of control the news team exercises over the event it covers.

The concluding section deals with "Film Editing" and goes from the fundamentals and techniques of the craft to the writer's role in providing the verbal counterpoint to the visual element.

The 22 contributors to this volume are all professionals, actively engaged in their respective fields. Their style of writing generally reflects the immediacy of their news gathering milieu and their own ability to tell a story accurately and fast.

The book is handsomely presented in its elongated format, with an imaginative typographical layout, well selected illustrations, and pertinent tables and charts in the film processing chapter.—*George L. George*, Administrator, Trust Fund of the Screen Directors International Guild, 250 W. 57 St., New York, N.Y. 10019.

Spectral Studies of the Photographic Process

By Y. N. Gorokhovskii. Published (1965) by Focal Press, 20 E. 46 St., New York, N.Y. 10017. Translated from the Russian and printed and produced in Hungary. 7 by 9½ in. (in proofs). 352 pp. (plus index). Price $27.50.

The scientific study of photography is over a century old, but it is really only in comparatively recent times that reliable spectral studies have been made of photographic processes. As the processes tend to vary significantly over the visible spectrum, these studies have been richly rewarding in giving a better insight into the basic nature of the phenomena. The studies have of course been accelerated by the advent of color film. In the author's words, "If a knowledge of the spectral properties of photographic materials and methods of controlling them is of very great importance in obtaining black-and-white photographic images, then this aspect of the process may be said to be of *decisive* importance in obtaining multi-colored photographic images."

The author's objective has been "to generalize the information contained in the literature and then to give an account of the results of studies made in the *S. I. Vavilov State Optical Institute* and the *Leningrad Institute of Motion Picture Engineers* ....Until recently no completely satisfactory study had been made of the spectral properties of photographic materials.... The reservation must be made that the present book by no means exhausts all the problems of the spectral aspect of photography."

The book starts with black-and-white photography. It first describes modern sensitometric apparatus and methods, and then the general spectral properties of black-and-white materials. It then goes with more detail into the natural sensitivity of photographic layers, taking up the properties of solid silver halides, of emulsion layers, of the influence of the surrounding gelatin, the effects of "ripening," and the Herschel phenomenon. From there it goes on into the effects of dyes in inducing photosensitivity in the longer wavelength region.

The author then takes up multilayer color films, starting with the general spectral properties of these materials. He continues with the densitometry of color images made up of dye layers used subtractively. He closes with discussion of the photographic properties of the multilayer color material as a single unit, ending with a quantitative evaluation of the qualities of the entire color photographic process.

The review was made from page proof, with the index not as yet provided. The table of contents lists only a subject index. Considering the extensive use of names, it seems almost certain that an author index will also be needed.

The treatment throughout is given in rather extensive detail. After summarizing everybody else's work, the author frequently goes on, "The question has been studied in much greater detail in our laboratories...." As is to be expected, a very large number of Russian references are

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given, but there is also a fair share of western references, including a significant number from the *Journal of the SMPTE*.

The films and other materials considered are naturally enough largely of Russian make, although some western materials are also referred to. Considering the very large amount of detailed work which is here described, one finds it disappointing to read in the paper by Komar and Chernov in the March 1965 *SMPTE Journal* that for black-and-white, "in reproducibility and uniformity of the photo properties, cleanness of the layers and physico-mechanical properties the domestic ciné films yield first place to the material produced by the leading capitalist firms"; and "While the color transfer quality of our new films is no worse than that of films produced by Kodak (USA), they still have not attained the level of Eastman Color film as regards image sharpness and light sensitivity."

The book should be of especial interest and use to those who use film, particularly color film, scientifically, as it gathers together an extensive amount of material on this subject, published in a wide diversity of media.—*Pierre Mertz*, Consultant, 66 Leamington St., Lido, Long Beach, L.I., N.Y. 11561.

Data Transmission

By William R. Bennett and James R. Davey. Published (1965) by McGraw-Hill Book Company, 330 W. 42 St., New York, N.Y. 10036. 356 + xii pp., 207 illus., tables. 9¼ by 6¼ in. Price $14.50.

In recent years the arts of optics and communication and information theory have each considerably gained from interborrowing of concepts and techniques. The present volume is a study of a new and important emphasis in the art of communications, namely data transmission, and it is especially apt for consideration in this connection because it leans toward the philosophical and mathematical in its treatment.

The book, after a brief historical section, starts with the wave and digital representation of information, and the restrictive effects of a finite frequency bandwidth, and also of defects, in the transmission medium. It goes on to consider baseband signal waves, and modulated signal waves of various types, with comparisons between them. The treatment continues with studies of carrier wave synchronization, symbol synchronization, and equalization of the transmission medium in both amplitude and phase response. The authors then proceed to a study of the performance of the systems in terms of wave distortion and errors, then to a study of optimization theory and finally of the statistics of digital signals.

One can be disappointed that some important modern developments are only barely mentioned or are even missing. A specific case is the fine work of Chaffee and Enloe on the frequency feedback demodulator. On the whole, however, the volume gives a generally comprehensive survey of the theory of the transmission of information in the form of data.—*Pierre Mertz*, Consultant, 66 Leamington St., Lido Beach, L.I., N.Y. 11561.

Microwave Filters, Impedance-Matching Networks, and Coupling Structures

By George L. Matthaei, Leo Young and E.M.T. Jones. Published (1964) by McGraw-Hill Book Co., 330 W. 42 St., New York, N.Y. 1096 pp. incl. index. 539 illus. + tables. 7½ by 9⅞ in. Price $22.50.

The physical shape of microwave filters is a far cry from that of the lower frequency electrical filters that communications engineers have been familiar with for many years. Nevertheless, their basic electrical properties are, in general, the same.

This volume presents a summary of work carried out over a number of years for the Signal Corps, at the Stanford Research Institute. It provides for the reader a very thorough groundwork of fundamental principles common to all electrical transmission systems, via the complex frequency analysis, with the poles and zeros of the characteristics, and the theory of the various image parameters. It then goes into the design of filters with lumped elements, much the same as for lower frequency structures. From these it goes on to the properties of common microwave filter elements, and the effects of the distributed nature of their structures.

With all this background the authors then tackle the design of filters using semi-lumped elements and corrugated waveguides. Finally they get to filters and other networks with fully distributed elements. The result of this systematic progressive approach is that the book can be useful to many besides the engineers whose specific problem is the design of microwave filters; and it prepares the way for designers confronted with new and unusual situations, and those doing research in the field. An extensive bibliography cites many books and papers originating in the academic, governmental, and common carrier fields. One comment might be that, of the many company and other reports cited a number are difficult of access.

The book is primarily aimed at engineers actively designing in the microwave field, but, as noted, because of its careful planning it will be of interest to a wide range of others.—*Pierre Mertz*, Consultant, 66 Leamington St., Lido Beach, L.I., N.Y. 11561.

Man, Education and Work:

Postsecondary Vocational and Technical Education. By Grant Venn assisted by Theodore J. Marchese, Jr. Published (1964) by American Council on Education, 1785 Massachusetts Ave, N.W., Washington, D.C. 10036. 184 + xiii pp. 6 by 9 in. Paperbound. Price $1.50.

This book reports on a study, sponsored by the American Council on Education, of the place of occupational education within the framework of education as a whole and within a new technological economy. The study was decided upon during a conference called by the American Vocational Association in Washington, D.C., in September 1962, Dr. Venn states in the Foreword.

Although the primary intent of the report is to provide criteria for the accreditation of certain vocational programs, the book has

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considerable general interest as a thought-provoking analysis of the social and economic changes now resulting from the sweeping advance of technology and automation. The book is divided into eight chapters. The first chapter states the problem resulting from the new technology and sets forth the thesis that "technology has created a new relationship between man, his education, and his work, in which education is placed squarely between man and his work."

Chapter 2 presents a brief historical survey of vocational education and suggests that "the major block to technical education during the last century and first three decades of this century was the failure in this country to recognize the existence of a level of work between the skilled trades and the professions, particularly in engineering." Chapter 3 discusses vocational and technical education in secondary and higher education. Chapter 4 discusses other opportunities for vocational and technical education, such as apprenticeship programs, on-the-job training, business schools, etc., and also discusses the role of organized labor in the field of occupational education.

Chapter 5 discusses the involvement of the Federal government in vocational and technical education, beginning with the Smith-Hughes Act of 1917, through the years to the Vocational Education Act of 1963. Chapter 6 summarizes manpower needs of the present and the future. Chapter 7 defines a number of major issues —"It will be tragic if the newer technical education programs are structured outside the educational mainstream so that able and ambitious individuals cannot receive credit for knowledge acquired in occupational programs in other degree programs. Credit evaluation and transfer are, therefore, a major issue in the development of post-high-school vocational and technical education." Chapter 8 presents conclusions and offers certain recommendations.

The questions raised in this report are not easily answered. Many will find this a controversial book which calls for a re-evaluation of the educational system and an entirely new concept of a "man of education." But it is a book well worth reading, and one that will have much to say to engineers concerned with the training and education of their successors.—*Ed.*

Fourier Methods in Optical Image Evaluation

By E. H. Linfoot. Published (1965) by Focal Press, Inc., 20 E. 46 St., New York, N.Y. 10017. Translation of *Qualitätsbewertung Optischer Bilder* with revisions by the author. 96 pp. Diagrams. 7 by 9½ in. Price $10.00.

In recent times the science of optics has borrowed from that of communications the mathematical analysis of the Fourier integral for various problems. The great advantage of this technique is that it transforms a sequence of convolution integrals, which are complicated, unwieldy and laborious to process, into a sequence of simple multiplications. By the use of logarithmically scaled units, they can be even further simplified into mere additions.

The author is well known among those who have applied the Fourier techniques to the problems of optical image evaluation, and this book summarizes some of his work. The reader must be warned, in the words of the author himself, that it "is intended for students of optics with a good mathematical background."

The author studies three criteria of image quality, namely as measured by local deviations from the original in luminance, by total information content about the original, and by local correlation of image luminance with the original. These criteria, he finds, are not independent, but connected by a simple formula. With them he studies contrast transmission of the Fourier components of an original through a lens (including diffraction and aberration), the image impairment resulting from point image spreading in a photographic emulsion, and finally the image impairment from emulsion graininess (via sampling techniques).

A point which perhaps could be more distinctly stressed is that the criteria of excellence of an optical system depend essentially on the use to be made of it. For example an astronomical objective to study double stars needs high point image resolution; but one to study nebulae, or for a coronograph, needs very low flare; and motion picture camera objectives for various uses are subject to still different criteria. The various criteria are often mutually contradictory. A related point is that the weighting of a defect varies with the distance of the anomalous image from the correct image, or that the weighting of an anomalous Fourier component varies with its relative spatial line frequency. The conceptual excellence criteria which are usable for a computer will need experimental checking in cases of actual use.

Dr. Linfoot's contributions to the art of image evaluation form an important step in the mutual adaptation of the disciplines of optics, communications, and computer techniques.—*Pierre Mertz*, Consultant, 66 Leamington St., Lido Beach, L.I., N.Y. 11561.

Film Coating Theory:

The Physical Chemistry of Coating Thin Layers on a Moving Support

By B. M. Deryagin and S. M. Levi (Translated from the Russian by W. R. Eichler and E. A. Sutherns). Published (1965) by Focal Press, Inc., 20 E. 46 St., New York, N.Y. 10017. 190 pp. incl. index. Illus. 7 by 9½ in. Price $23.00.

This book discusses some of the fundamentals of photographic emulsion coating, including: skim coating theory and practice, gelatin structure and properties, and kinetic wetting and wetting agents.

Skim or dip coating theory is the first subject discussed, ending with a theory developed by the authors in an attempt to account for the curvature of the meniscus at the point of emulsion pickup. There follows an interesting application of meniscus curvature in which a dam is used to give the meniscus greater curvature to permit less fluid pickup than would be possible from an open pan. At high coating speeds the dam would probably function more as a doctor blade, and in fact the

highest coating speeds mentioned in connection with the subject are only 10 ft/min.

A few commercial coating arrangements are next very briefly reviewed, and ±5% accuracy of prediction at speeds up to 32 ft/min claimed for the authors' coating equation. Considerable space is devoted to accounting for cooling of the emulsion by the entering film base.

Another chapter is devoted to a discussion of gelatin; its structure, measurement of solution viscosity and the effect of solution concentration and temperature, change of viscosity with time, measurement of surface tension, and the substitution of other polymers for gelatin.

Kinetic wetting is dealt with in the final and most interesting section. The authors describe the kinetic wetting tester they used to determine how rapidly coating solutions could be made to wet film base or prior coatings. They then use the maximum wetting speeds so obtained in an ambitious set of experiments to relate the molecular structure of wetting agents to wetting behavior. It is clearly shown that surface tension alone is not the major property affecting kinetic wetting.

The book is a translation from a Russian text originally published in 1959. The sometimes awkward English requires extra effort from the reader for thorough understanding. Better technical editing would have eliminated some of the errors and ambiguities in the book. For instance the signs in the coating equations in the later chapters do not agree with the derivation in the second chapter. Nevertheless, the book is of great interest to anyone actively involved in coating research and development, and can serve the newcomer to the field very well as an introduction to the fundamentals involved. —*W. R. Thomas, Jr.*, Research Engineer, Photo Products Dept., E. I. du Pont de Nemours & Co., Inc., Parlin, N.J.

Pocket Photo Data Book

Published (1964) by Morgan & Morgan, Inc., 101 Park Ave., New York, N. Y. 10017. 3¾ by 6¾ in. Looseleaf pocket binder. Price $3.95.

Every professional photographer and the more serious-minded amateur photographer knows well the popular *Photo Data Book* which has served him since 1958 when the first edition was printed. Recently, the third edition, completely revised and updated to include the latest optical, chemical and general photographic data, was published by Morgan & Morgan, Inc. This 150-page booklet is the result of some 25 years of accumulating data for the huge Photo-Lab-Index. This compact new book provides a distillation of data most used by photographers, engineers and scientists. Photographic materials and processes have multiplied enormously in recent years, consequently, a special editorial approach was developed for this book to provide the maximum amount of usable data in the fewest number of pages, in this smaller size. This book is well worth the small investment, and anyone working with photography will find it a most helpful addition to either his library shelf or gadget bag.—*Ed.*

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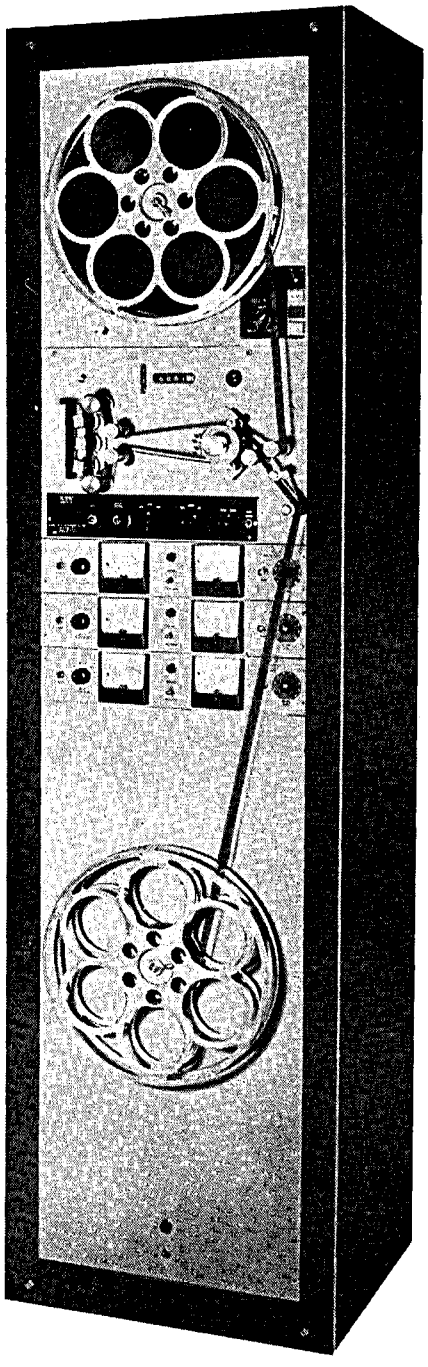

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