



books reviewed

The Revolt of the Engineers

By Edwin T. Layton, Jr. Published (1971) by the Press of Case Western Reserve University, Cleveland, Ohio. 286 pp. Price \$9.95.

Dr. Layton is Associate Professor of the history of science and technology at Case Western Reserve University. This book had its origin when as a student he read Thorsten Veblen's *The Engineers and the Price System* and was surprised that engineers would be portrayed as the predestined leaders of a social revolution in America. The engineering press provides ample evidence of a reforming movement within the profession. The large-scale application of science to practical affairs brought engineers to the forefront of technology. The reformers were convinced that social problems could be solved by applying engineering methods. This ideology of engineering served to define not only the engineer, his social role and responsibili-

ties, but also his professional consciousness.

Despite the widespread adoption of these ideas, engineers failed to develop the unity they were seeking. Engineers were for the most part employees of large corporations, and professional development often conflicted with the interests of employers. This was not simply a conflict between engineers and businessmen—engineers are tied to business by many bonds, and many of the most successful have gone into managerial work.

Engineers developed two versions of professionalism—one that directed the engineer to independent action and another that linked him to the business world. The story of the professional development of American engineering for the first 40 years of this century is in large part the story of the clash between these two traditions.

Engineers have not succeeded in preventing the abuse of technology nor in directing this force to social purposes. They failed to reform either themselves or society. Dr. Layton attributes this to divided loyalties and ideological problems of identity. It is not uncommon for engineers who have risen to managerial positions to think of themselves as businessmen, but they may retain professional society membership for business reasons. Engineers who have risen into top management confront engineering societies with a dilemma. It is generally conceded that engineers engaged in technical management still qualify, but the case is far from clear when it comes to those who have gone up into positions of general management.

Modern business needs highly specialized technical knowledge and only professionals can supply it. Engineers need organizations to apply this knowledge. A basic problem is that the balance has shifted too far in the direction of business and the terms are laid down by employers. This has drastically interfered with the independence of engineers. The losers are not only the engineers—the public would benefit greatly from the independent evaluation of technical affairs that the profession could provide.

In an epilogue, Dr. Layton reviews recent developments, particularly the shift towards scientific professionalism. This transformation was especially marked in radio engineering, and had a profound influence on the Institute of Radio Engineers (IRE). When IRE merged with AIEE in 1963 to form a new organization, the Institute of Electrical and Electronics Engineers (IEEE) IRE had more than 100,000 members. The IEEE was the largest American engineering society and it inherited from IRE a tradition of professional independence. When the Engineers Joint Council in 1967 changed its constitution to allow corporations as members, IEEE withdrew.

The decline in the ideology of engineering may provide opportunities for the development of a new interest in the social consequences of technology. The ideology of engineering stressed the superior qualities of the engineer, and fostered prestige and status seeking. This ideology diverted the real concern of some engineers with the misuse of technology into unproductive channels. Whether engineers will gain a renewed social awareness after being freed from this encumbrance is still a question, Dr. Layton concludes. If they do, a new engineering professionalism is not beyond the realm of possibility. — *Rodger J. Ross*, Consultant, P.O. Box 5291, Terminal A, Toronto, Ont.

Photoelectronic Imaging Devices

Vol. I, Physical Processes and Methods of Analysis; Vol. II, Devices and Their Evaluation

Eds. Lucien M. Biberman and Sol Nudelman. Published (1971) by Plenum Publishing Corp., 227 W. 17 St., New York, NY 10011. Vol. I, 430+xxiv pp. Illus. Diagrams. 6 by 9 in. Price \$25. Vol. II, 584+xxiv pp. Illus. Diagrams. 6 by 9 in. Price \$25.

The student of photoelectronic imaging devices has had little choice in the past but to turn to the scientific journals and to the specialized symposia and their reports for information and for training. During 1968 and 1969, summer courses were given at the University of Rhode Island in an effort to improve this situation. The lectures given during these summer courses were collected by Biberman and Nudelman in *Photoelectronic Imaging Devices* and the book has been used since as a text for a graduate-level two-semester course in the Department of Electrical Engineering.

The editorial arrangement of the material in these two volumes has been planned for the orderly presentation of the

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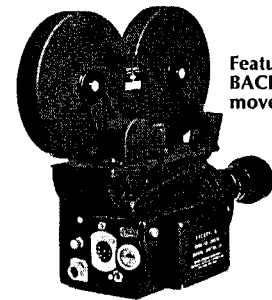
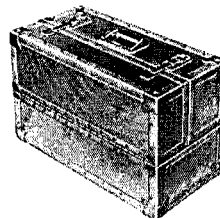
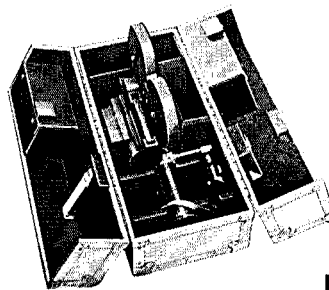
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material to the student. In a broad sense, the first volume includes papers on the theory of photoelectronic imaging devices; and the second volume, papers on practical or commercially available devices. As a further subdivision, the first volume contains four parts: Radiometry, Radiance and Vision; Basic Functions; Analysis; and Introduction to Systems. The second volume is divided into five parts: Principal Sensor Parameters and Their Measurement; Image Intensifiers, Converters and Direct-Viewing Devices; Signal-Generating Image Tubes; Special Sensors; and Evaluation.

The first part of the first volume contains papers on the natural levels of illu-

mination and of irradiation, which determine the magnitudes of inputs to the devices, and also papers on the properties of vision, which determine the useful output magnitudes from the devices discussed in the remainder of the text. Also, there is a paper on the units of photometry and of radiometry, in which it is pointed out that the expression of the sensitivity of infrared or of ultraviolet sensors in visual terminology is objectionable. However, in this text book, to which there were 39 contributors, it turned out to be impossible to impress every one of them with this point of view.

The remainder of the first volume contains discussions of photoconductivity and photoemissivity and of devices which

make use of these phenomena. Such devices range from television camera tubes to light amplifiers or image intensifiers. Methods for the evaluation of the performance of these electron tubes and systems are discussed in closing the first volume.

Details of the measurement of the performance of these electron tubes are treated in the first part of the second volume of *Photoelectronic Imaging Devices*. Detailed discussions of all known types of image intensifiers are followed by similarly detailed discussions of camera tubes. The various television camera tubes are compared on a numerical basis in the last part of the text.

A copy of *Photoelectronic Imaging Devices* should be on the bookshelf of anyone concerned with the observation of radiation in the wavelength range from the far ultraviolet (and even x-rays) through the visible to the far infrared. As a matter of fact, this text can almost be considered as a reference handbook on its subject.

While *Photoelectronic Imaging Devices* is a useful collection of information that is not so readily available elsewhere, it does have its shortcomings. I have mentioned earlier that despite the senior author's thesis that photometric concepts should not be used where radiometric concepts are appropriate, several of the authors violate this rule.

It is unfortunate that in his discussion of this point, Mr. Biberman made use of several nonstandard or unconventional concepts. The most serious of his departures from the usual practice is the definition of the *candela* as a unit of luminous flux instead of as a unit of luminous intensity, where, of course, intensity is flux per unit solid angle. In so doing, he has introduced the necessity for a blackbody radiator that appears equally bright from all directions over a hemisphere. Typically blackbody radiators, including those used internationally as photometric standards, do not have this property.

There is one mechanical difficulty with *Photoelectronic Imaging Devices* that must be laid at the door of the publishers. All too many of the illustrations have been reduced to such size that a reading glass is a useful, if not necessary, aid to their study.

It is interesting that Chapters XV, XVI and XVII are corrected reprints of papers published in the *Bell System Technical Journal*, the *RCA Review* and the *Journal of the SMPTE*, respectively. Despite this fact, wherever reference is made to these papers by other authors in *Photoelectronic Imaging Devices*, the references are made to the original publications and not to these Chapters. This appears to be a common weakness of editing to which compendia of information from several sources are prone. And, of course, this text is such a compendium.—*W. T. Wintringham*, 56 Elmwood Ave., Chatham, NJ 07928.

Coherent Optical Computers

By Kendall Preston, Jr. Published (1972) by McGraw-Hill Book Co., 330 W. 42 St., New York, NY 10036. 316 pp. Illus., Diagrams. 6 by 9 in. Price \$16.50.

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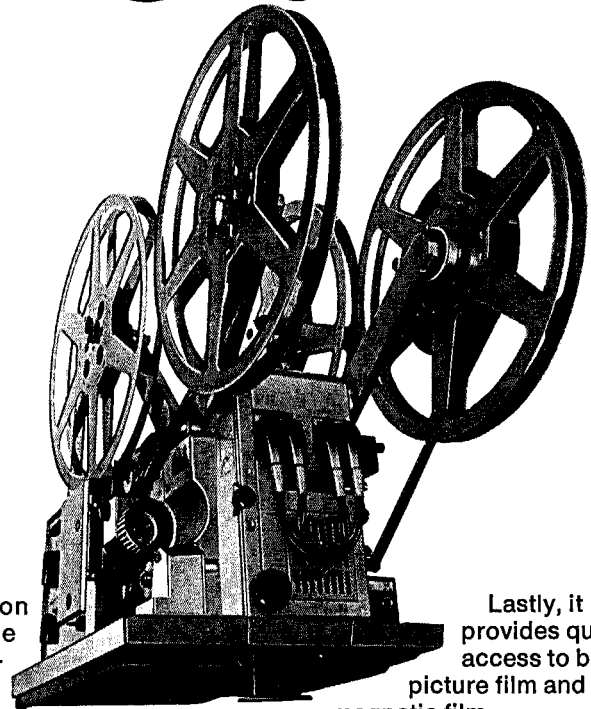
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Stanley F. Quinn, *Chairman*

From the Foreword: It was the purpose in organizing the Symposium to examine the new technology of videoplayer systems and to consider the likely impact on education, industry and the home. It was hoped to attract not only engineers but also educators and other professionals interested in this new medium of communication. There were four sessions: Perspective Session, in which particular emphasis was placed on the social and economic aspect of the new technology; Utilization Session, in which plans and experience of prospective users were outlined; and two Technical Sessions, which provided a review of the technology of storing audio-video information and new information about videoplayer systems. The matter of the multiplicity of systems standards received particular attention in several of the papers on both days.

CONTENTS

- Foreword • *Stanley F. Quinn, Canadian Broadcasting Corp., Montreal*
Socio-Economic Aspects of Videoplayer Systems — A Perspective • *Wilton R. Holm, AMPTP Research Center, Hollywood*
Video Cassettes — The New Medium • *Daniel I. Cooper, McGraw-Hill, Inc., New York*
Video Cassettes — Boom or Bust? • *Gordon B. Thompson, Bell-Northern Research Labs, Ottawa, Ont.*
Some Reflections on Cassettes and Video Cassettes • *Claude Soulé, Secretary-General of UNIATEC, Paris*
Techniques for Storage and Reproduction of Audio-Visual and Television Programs • *Richard Theile, Instituts für Rundfunktechnik, Munich*
High-Speed Contact Duplication of Video Magnetic Tapes • *Charles E. Anderson, Ampex Corp., Redwood City, Calif.*
Videoplayer Compatibility With Television Receivers • *Rolf Spies, Norman Parker and Albert W. Massman, Motorola Inc., Franklin Park, Ill.*
Compatibility and Standardization of Various Systems of Video Cassettes • *José Bernhart, Assistant Director, Technical Services, ORTF, Paris*
Quebec 1971 and Information by Images • *Gilles Bergeron, Deputy Minister of Communications, Government of Quebec, Montreal*
Audio-Visual Methods of Self-Education in the Health Sciences or "What You Want, When You Want It, Where You Want It, and as Often as You Need It" • *Dr. J. Norrie Swanson, Faculty of Medicine, University of Toronto, Ont.*
Cable Television Prospects for Cassette Systems • *Israel Switzer, Maclean-Hunter Cable TV Ltd., Rexdale, Ont.*
Industrial Applications of Videoplayer Systems • *Thomas R. Shepherd, Shepherd Education & Communication Co., Inc., Concord, Mass.*
Another Chance for the Individual (Home Utilization of Video Cassettes) • *Paul J. Caravatt, Jr., Newtel Communications, Inc., New York*
The Design Concept of the Sony Color Video Cassette Total System • *Kazuo Iwama, Sony Corp. of America, Long Island City, N.Y.*
Super 8 Film: A Universal Input to Video Cassette and Television Systems, Part I: Application Concepts • *Eric A. Yavitz, Eastman Kodak Co., Rochester, N.Y.*
Super 8 Film: A Universal Input to Video Cassette and Television Systems, Part II: Technical Considerations • *Joseph L. Boon, Eastman Kodak Co., Rochester, N.Y.*
Color Recording on the Video Disc • *Prof. Dr. Walter Bruch, AEG-Telefunken, Hannover, Germany*
Panel Discussions: Perspective and Utilization • *Eric A. Yavitz, Wilton R. Holm, Daniel I. Cooper, Gordon B. Thompson, Yves Garneau (Bellevue-Pathé, Montreal), Yves Labonté (Radio Quebec, Montreal), Gilles Bergeron, J. Norrie Swanson, I. Switzer, Thomas S. Shepherd and Paul J. Caravatt, Jr.*

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tem in which the transmission of the image elements is modified along its path to achieve computational processes. It is particularly valuable, as the author says, "where vast numbers of parallel calculations must be performed per unit time with only moderate accuracy." For such purposes it is necessary to meet stringent fidelity requirements in the image transmission processes, and they become even more stringent where the optical computer is made coherent to extend its field of application. These qualities are not all necessarily exactly the same as those contributing to high picture excellence, but they generally favor it.

Thus there is a kinship in the design and testing stages between the optical computer art and the art of image reproduction and transmission. This is especially evident for some of the modern techniques of image reparation to restore picture quality lost in a process. Or where, as in scientific photography, certain critical elements of image quality must be maintained despite disadvantageous circumstances. Or again, where pattern recognition is an imaging objective.

Essentially, the subjects discussed are lens-system design (including fabrication and testing), optical power sources, optical computation procedures (including especially the Fourier-transform relationship), spatial light modulators (including photographic emulsions, photochromic and thermoplastic materials), output detection (with noise considerations), digital techniques, and a variety of applications.

An important application described is that of processing the data obtained in "synthetic-aperture" radar. In general, radar return signals show a high range resolution but poor azimuthal resolution unless the antenna is very large. Where the exploring is done laterally from an airplane the returns from successive positions of the plane can be combined in a coherent optical computer to simulate the use of a very wide antenna, and result in a high azimuthal resolution. This can be carried out through overcast or at night. An excellent map of Washington obtained by the process is shown in the book.

The book assumes a reader with a certain preparation in electromagnetic theory and communications, and also some mathematics, but does give some introduction to the more difficult subject matter. However, the reader will probably have some difficulty in understanding the *f*-number scale in Fig. 1.12. What does an *f*-number of 50 mean for an ordinary 35mm camera lens? The book is generally designed, according to the dust cover, for the engineer, student or technical planner "who must update himself in this important new technology." — *Pierre Mertz, Consultant, Lido, Long Beach, L.I., NY 11561.*

Picture Bandwidth Compression

Eds. Thomas S. Huang and Ohl J. Tretiak. Published (1972) by Gordon and Breach, Science Publishers, Inc., 440 Park Ave. South, New York, NY 10016. 734 pp. Illus. Diagrams. 6 by 9 in. Price \$49.00. *Edit. Note:* \$24.50 is Publisher's an-

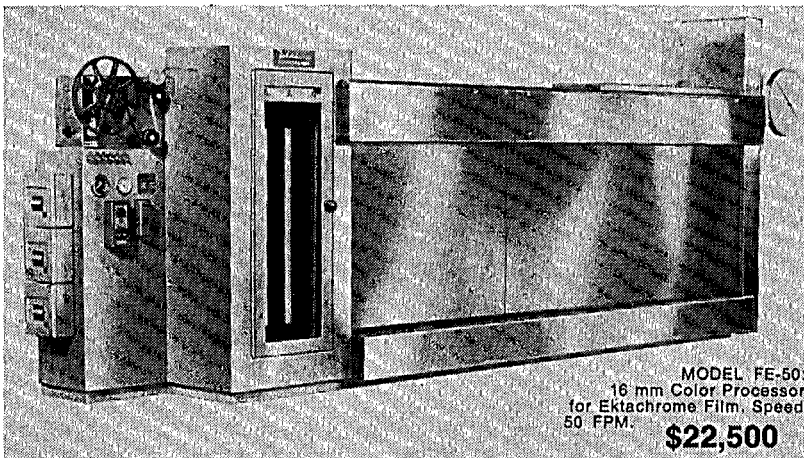
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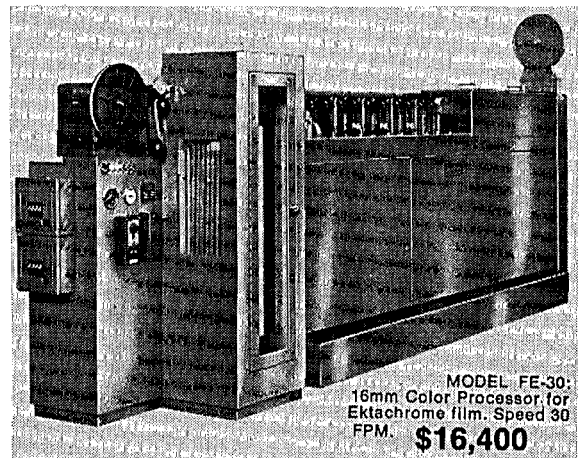
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In 1921 it began to be recognized that the straightforward transmission of a good quality television picture would require a frequency bandwidth of the order of several to 10 megahertz. The current art did not then permit this, and development started with almost ridiculously narrower bands, of the order of 15–20 kilohertz or even less. The extension of this to the 6-megahertz width in a short 10 to 20 years (with a digressive development of radar) is one of the minor miracles of 20th century technology.

The great problems encountered with the wide frequency band urged on the engineers to find a better way of transmitting this picture. In the early forties a study of the signal spectrum showed it to be of a rather refractory character, that consisted of a comb-like set of energy peaks separated by valleys of very low signal intensity. Also examination of the pictures showed a generally high, but quite variable, correlation from signal element to succeeding signal element; from scanning line to successive scanning line; and from picture to successive picture. Observations like these suggested possibilities of band compression. A number of leads have been explored in the last 30 years, and a modest success realized. The going, it must be said, has been relatively hard.

It has been considered that the time is favorable for taking stock of this effort. Thus a Symposium on Picture Bandwidth Compression was organized by groups

from the IEEE and MIT in 1969. Thirty-one invited papers were presented and this book records the proceedings of the Symposium. In order to keep down the compass of the project attention was concentrated on efforts made since the effective standardization of present television broadcast standards. Thus there is little discussion of interlacing, which was one of the earliest and most successful methods of frequency bandwidth compression, that put somewhat more energy into the valleys of the television signal; thus giving a compression ratio of 2:1 or somewhat less. Similar remarks hold for vestigial side-band transmission.

The first four papers after the introduction are tutorial in nature, and cover the characteristics of the human observer and the extent to which the picture may be modified without too much, or any, damage to the subjective satisfaction or cognition that it gives. These are followed by four papers on indications of information theory on bandwidth compression in terms of such things as coding, error entropies, and noise; with one of the papers dealing with the reactions on practical channels and modulating procedures.

Another three papers deal with binary encoding. Some very practical results have been achieved in bandwidth compression with pictures having no intermediate shades between black and white. Compression ratios have been realized running from 3:1 to almost 8:1. But these apply to facsimile still pictures rather than to television transmissions, and are

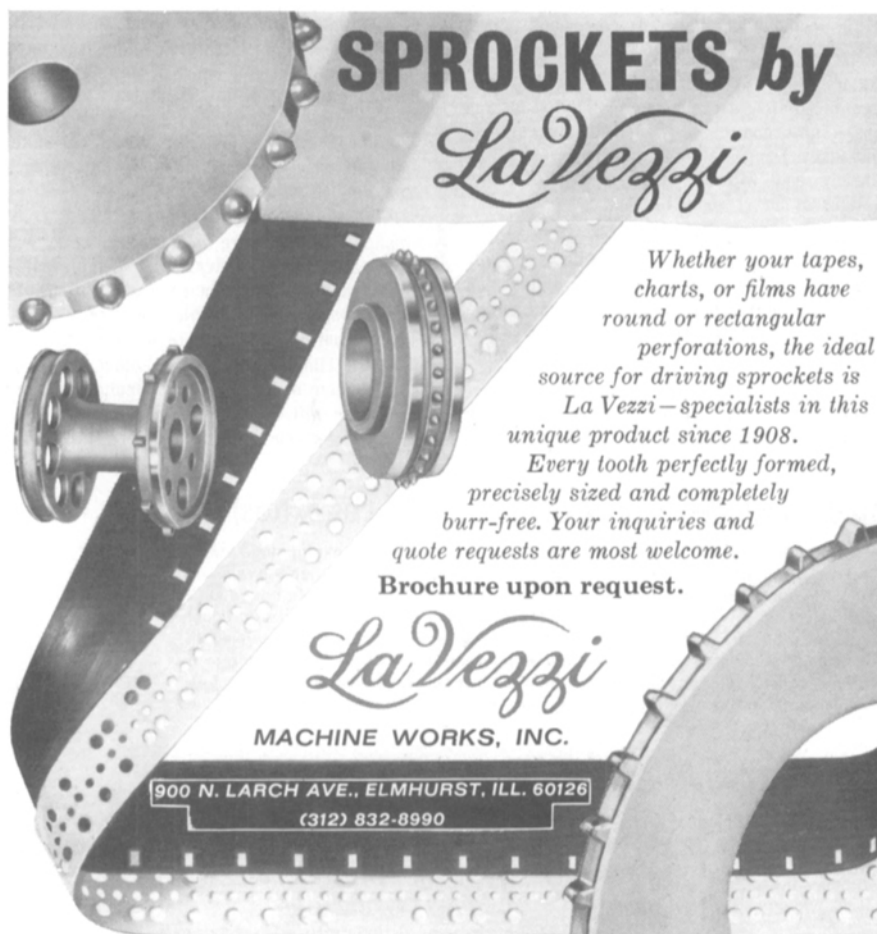
obtained by simple coding of one form or another.

A dozen papers cover the subject of intra-frame encoding. A group considers the picking up of the signal from the image, via processes such as delta modulation, reduction of high-frequency noise by a time-analysis filtering, filtering of the logarithmic signal versus the linear, and a system called "optimum sampling" of image elements versus simple averaging of the luminance by an aperture. Another group considers quantized encoding in various forms, such as pulse code modulation, "adaptive" encoding according to the regional light level in the scanned portion of the image, encoding the picture by blocks rather than as a whole, contour coding supplemented by area filling in, and coding of regional assemblies of image points appropriately selected. Also considered are intermediate conversions of the image such as Fourier and Hadamard transforms subsequently encoded into signals. The overall compression achieved by all such systems varies particularly as the preliminary processing, such as in pulse code modulation, causes expansion rather than compression. Optimum figures such as 3:1 or 4:1 are occasionally mentioned. Sometimes the compression is obtained at the expense of fairly considerable instrumentation.

It has been noted that frame-to-frame image correlation runs much higher in general than that within a frame, so that if used as a basis it holds more promise for bandwidth compression. It has, however, given greater implementation problems, particularly on long storage needs. Some ingenious but complicated implementations are presented, which have been demonstrated with films.

Color has been introduced into broadcast television in both America and Europe, with the use of an imaginative implementation that currently gives remarkably acceptable chromatic values on essentially the same width transmission band as previously used for the monochrome signal, and with but little diminution of resolving power. This leaves a problematical hope for band compression possibilities. Some experiments are reported in the book. They do not lead to a too distinct conclusion on the achievable compression. There is no explicit reference to the type of color signal separation used in electronic video recording systems, as a possible basis for band compression. There are appended several vague abstracts in color signal compression, none developed into completed papers.

While considering the broad subject of the book, an author of one of the earlier articles remarks: "After studying the beautiful mathematics of information theory, the world of practical channels seems a hopeless morass. One group, generally identified by theoretical preoccupations, wonders why the results of information theory have not been applied more often in practice. On the other hand, many practical systems designers contend that those who work on information theory have been too long in their ivory towers. . . It is true that in the past very little information theory has been necessary, . . . and for the most part economics has dic-



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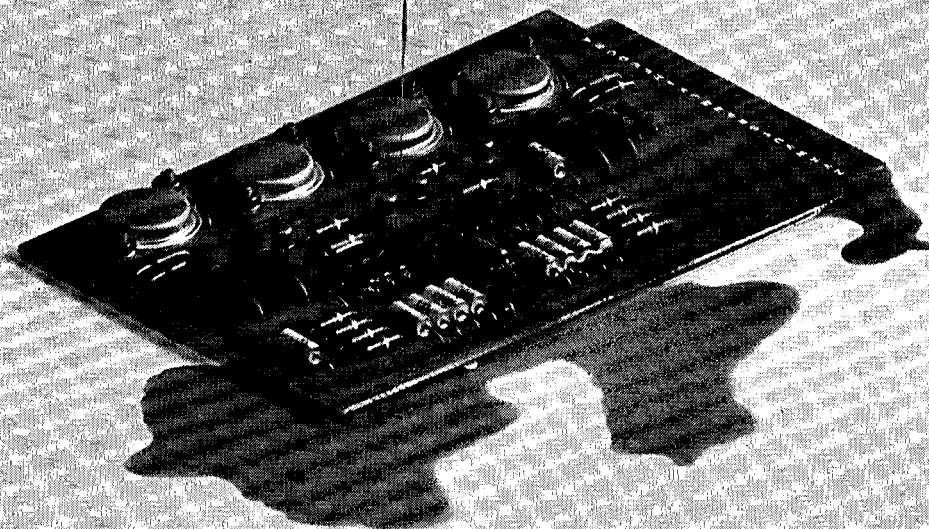
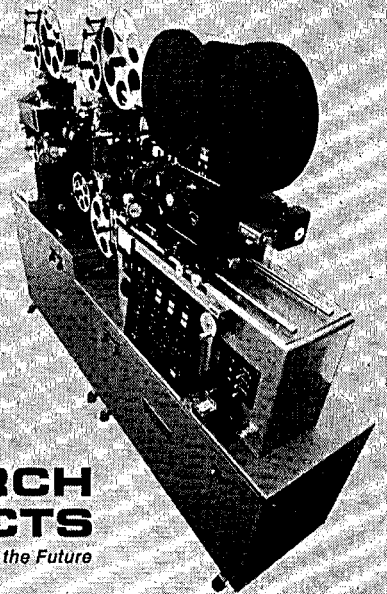
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tated the design of actual systems." It can be noted that such tendencies are not quite as strong as they once were.

The reader will however recognize the aptness of the remarks as he goes over the articles in the book. Many of these, disposed to one side or the other, will require not only close reading but also close consultation of the extensive references cited to permit a good understanding of a discussion. Nevertheless the work gives a most useful overall picture of the thought and experimentation that have currently been devoted to the subject of picture bandwidth compression and its possibilities. — *Pierre Mertz*, Consultant, Lido, Long Beach, L.I., NY 11561.

Modern Sound Reproduction

By Harry F. Olson. Published (1972) by Van Nostrand Reinhold Co., 450 W. 33 St., New York, NY 10001. 335 + xiii pp. Diagrams. 6 by 9 in. Price \$17.50.

The book is intended mainly for scientists, engineers and technicians in the field of sound reproduction, but it is written so clearly and the illustrations are so detailed that it would be of value to the interested layman as well. Elements employed in modern sound reproduction—microphones, amplifiers, loudspeakers and earphones, and the systems of magnetic tape, radio, phonograph, sound motion pictures, television and sound reinforcement—are described in considerable detail.

Among subjects covered are generic monaural, monophonic, binaural, stereophonic and quadraphonic sound reproducing systems. Methods of acoustical measurements are described. A study of sound collection in studios is presented and acoustic treatment of walls and ceilings is described and illustrated.

The last chapter in the book (Chapter 17, Subjective Acoustics) contains a description (with diagrams) of the human ear and discusses the physiological and psychological factors in sound reproduction. The first chapter in the book (Sound) describes the nature and equations of sound waves. It notes that the telephone is the oldest sound-reproducing system. Other of the most common reproducing systems are the phonograph, the magnetic tape reproducer, the radio, sound-reinforcing systems, sound motion pictures, television and television reproducers. Elsewhere in the book, the author describes the most modern sound-reproducing systems. Equipments used in acoustical measurements described in the book include the anechoic (echoless) chamber and the artificial voice (used in testing microphones). The artificial voice consists of an enclosure with the dimensions of the average human head. It houses a small loudspeaker system designed to provide uniform response over the frequency range of 80 to 12,000 Hz. In use, a recording of a live voice is carried out in an anechoic chamber. The recording is played through a magnetic tape recorder, the output of which is connected to the artificial voice which

supplies a replica of the original voice and which can operate over a long period of time without the changes that would occur in a live voice.

The author, who is presently an advisor to RCA Corp., is a well-known authority on the subject of acoustics. An earlier book, *Acoustical Engineering*, is a classic in the field. The third edition was reviewed in the September 1957 issue of the *Journal*. Other of his books include *Solutions of Engineering Problems by Dynamical Analogies* and *Musical Engineering* (reviewed in the January 1953 issue of the *Journal*). — *Edit.*

The Technique of the Sound Studio (3d ed.)

By Alec Nisbett. Published (1972) by Hastings House Publishers, Inc., 10 E. 40 St., New York, NY 10016. 560 pp. Diagrams. 5½ by 8½ in. Price \$14.50.

This book, which first appeared in 1962, has gone through seven printings. The first edition was reviewed in the April 1964 issue of the *Journal* by Clyde R. Keith. The second edition, which had been considerably expanded and revised, was reviewed in the May 1970 issue of the *Journal*. The present (third) edition has been slightly revised and brought up to date. Since comparatively little time has elapsed since publication of the second edition, the arrangement of the text has been kept as close as possible to that of the second edition. The revisions in the third edition consist mainly of bringing up to date descriptions of equipments which have been improved or redesigned since publication of the second edition. As the author states in the Introduction to the third edition, "The principles guiding the sound balancer and recordist do not change. But the equipment does—each year the range increases . . ." — *Edit.*

Standard Handbook of Engineering Calculations

Ed. Tyler G. Hicks. Published (1972) by McGraw-Hill Book Co., 1221 Ave. of the Americas, New York, NY 10020. 1170 pp. Diagrams. 6 by 9 in. Price \$18.50.

The book presents more than 2,000 step-by-step calculation procedures for solving problems in 12 different engineering disciplines: civil, architectural, mechanical, electrical, electronics, chemical, control, aeronautical and astronautical, marine, nuclear, sanitary and engineering economics.

The calculation procedures are accompanied by worked-out numerical examples, and related calculation procedures are given. A number of the calculation procedures given in the *Handbook* are equally applicable in a variety of disciplines. For example, a beam-selection procedure can be used for civil, chemical, mechanical, electrical, and nuclear engineering activities, as well as some others.

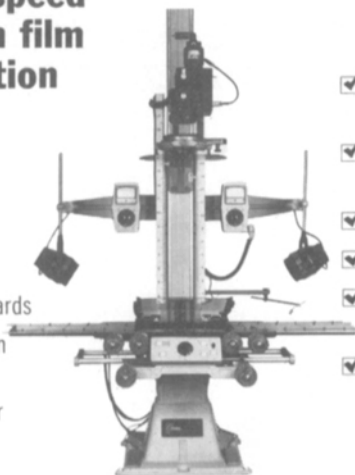
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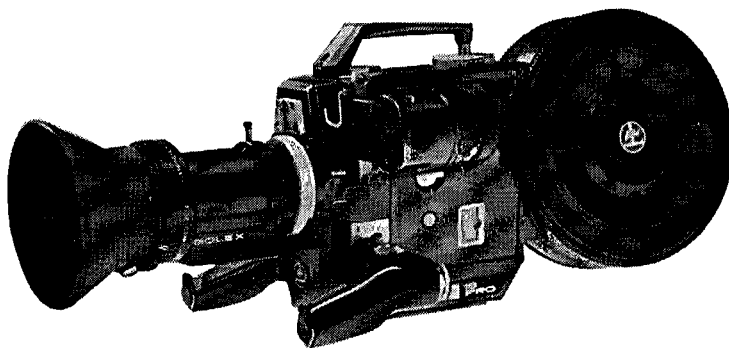
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This is a useful reference book even, or perhaps especially, in situations where computers have replaced manual calculation methods, since the *Handbook* can provide the engineer or computer programmer with the procedure to follow for the solution of a given problem. Once the procedure is known, the computer can be programmed to solve the problem. — *Edit.*

The Technique of Special Effects Cinematography (3d. ed.)

By Raymond Fielding. Published (1972) by Hastings House Publishers, Inc., 10 E. 40 St., New York, NY 10016. 426 pp. Illus. Diagrams. 5½ by 8½ in. Price \$18.50.

Robert W. Wagner, whose review of the first edition of this book appeared in the January 1966 issue of the *Journal*, described it as "a thorough, precise and scholarly work." He predicted that "it should stand for a long time as the standard work on the subject. . . ."

The third edition has been revised and brought up to date. Although the chapter headings are the same as those in the first edition and no new chapters have been added, some new material has been included; for example, a section on "Construction Techniques" has been added to the chapter on Miniatures.

A helpful segment of the book is the Bibliography, which has been expanded to

include references to recently published material.

The author is Professor of Communications in the Department of Radio-Television-Film, Temple University, Philadelphia. — *Edit.*

Film Editing Handbook: Technique of 16mm Film Cutting

By Hugh B. Churchill. Published (1972) by Wadsworth Publishing Co., Inc., Belmont, CA 94002. 198 pp. Diagrams. 7 by 10 in. Ringbound. Price \$6.60 (\$4.95 on textbook orders).

This book contains practical step-by-step explanations of only the mechanical procedures of picture and sound cutting. The author has selected some 70 problems often encountered in cutting 16mm film and has provided straightforward and detailed explanations of the solutions, aided by explicit diagrams.

A Bibliography and a Glossary of more than 150 terms are included. An Appendix contains sample forms and charts, such as Camera Log, Cutting Log, Final Scene List, Laboratory Printing Instructions, etc. A second Appendix contains an illustrated survey of editing equipments and tools and includes names and addresses of manufacturers, importers and suppliers.

The *Film Editing Handbook* is designed to be used by the student while he is actually engaged in cutting film and discover-

ing the cutting problems that can be encountered. The book is divided into two parts—Picture Cutting and Sound Cutting. The arrangement is intended to give the beginning filmmaker a basic understanding of the handling of visuals; the author suggests, however, that since picture and sound are often cut simultaneously, the reader should familiarize himself with the entire book before starting to cut his film.

The book is an excellent practical "how to" guide to 16mm film cutting and it has been designed to be helpful to the novice in the art as well as to students with slightly more experience as filmmakers. — *Edit.*

Independent Filmmaking

By Lenny Lipton. Published (1972) by Straight Arrow Books, 625 Third St., San Francisco, CA 94107. 431 pp. Illus. Diagrams. Introduction by Stan Brakhage. 6 by 9 in. Paperbound. Price \$5.95.

This is an amazingly complete introduction to all phases of film production, with the exception of major studio (feature picture) practices. The orientation is that of the independent producer, and not the Hollywood tradition of large crews, immense backup and post-production resources and heavy financing. The formats discussed are 16mm and super 8. Super 16 is mentioned briefly, and 35mm is virtually ignored, except as a release print medium via optical blowup. The book is intended for the serious student, and the experienced and not-so-experienced filmmaker, and for these groups it may prove to be the best one ever written.

The book is virtually encyclopedic, and the complete Table of Contents is much too long (some 1000 words) to print in this review; one chapter as it appears in the Table of Contents is included here as an example:

Chapter 2. *Film*—Film Forms an Image; The Qualities of Film; Film Base; Halation; Film Speed: Daylight and Tungsten Speed; Pushing Film; Latitude; Grain; Perceiving Grain; Contrast and Gradation; Sharpness; Acutance; Modulation Transfer Curves; Color Sensitivity; Infrared Film; Reciprocity; Characteristic Curve; How Color Film Works.

Qualities of Color Film—Film Speed; Grain; Exposure Latitude; Saturation; Color Balance and Color Temperature; Indoor and Outdoor Film; Black-and-White Negative; Black-and-White Reversal; Color Negative; Color Reversal. *A Critique of Various Films*—8mm, super 8, 16mm. *Film Storage*—Before Exposure; Exposed Film; After Processing. *Restoration of Damaged Film*—Rejuvenation; Wet Printing.

The *abridged* contents of the other chapters are:

Chapter 1, *The Format*—Silent and Sound Formats; Sound Separations; Magnetic Sound; Costs.

Chapter 3, *The Camera*—Theory of the Camera; Shutters; Viewing Systems; Exposure Systems; Camera Controls; Professional and Semi-Pro Cameras.

Chapter 4, *The Lens*—All about optics, lenses, optical accessories, image size, perspective, distortions, zoom lenses, extension tubes, anamorphics.

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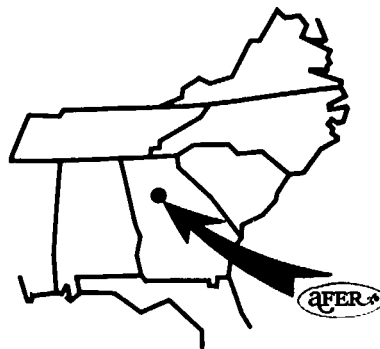
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Chapter 6, *Splicing and Editing*—A & B Rolls; Leaders; Optical Printing; Negative Matching.

Chapter 7, *Sound and Magnetic Recording*—Sound Theory; Mixing; Sound Editing; Sync Sound.

Chapter 8, *Preparing The Sound Track*—Single and Double System; Transfers; Editing Mag Film; Mag and Optical Tracks; Color Print Tracks; Positive and Negative Tracks; A & B Wind.

Chapter 9, *The Laboratories Role*—Forced Development; Answer Prints; Timing; Effects; Enlargement and Reduction.

Chapter 10, *Mixed Bag*—Rephotographing; Special Effects; Odds and Ends.

The book is a combination of basic theory, practical information and working tips. For example, in Chapter 2, we find definitions of gamma, D_{max} , reciprocity failure, modulation-transfer, and the like. These are treated on the engineering level, but they are developed in sufficient detail to provide the filmmaker with insight into what is happening in the photographic process, and why.

After the basics are covered, the author gives practical step-by-step working instruction in all areas, and these go down to the basic level. His comments are specific and precise, using actual footcandle numbers and *f*-stops. He does not pussy-foot with manufacturer's trade names either, and says what he has to say about various films, citing brand names and emulsion types. In some cases he includes a company's address, when he feels that it may be a little publicized but useful resource. Many of his comments on material or equipment serve as warning of possible pitfalls, although they may not always occur.

The material that Mr. Lipton presents objectively as facts are quite correct and precise. Some of his comments on equipment or processes are stated frankly as personal preference, and with these one may quarrel, depending on one's background and temperament. His methods may not always prove to be the reader's favorite, but they will work and they are a good point of departure in the absence of personal experience.

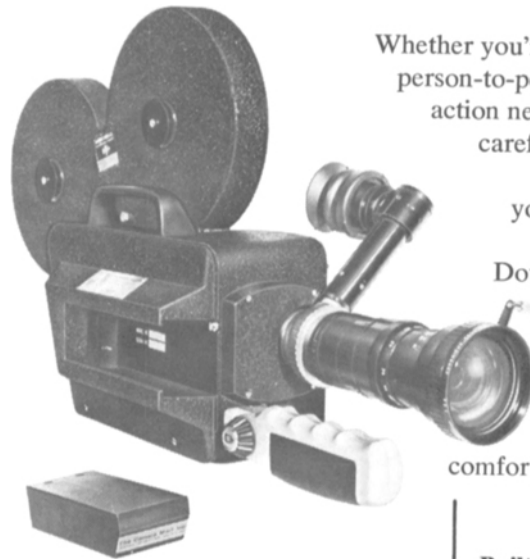
The book is well illustrated, and the style is very readable, lucid, and at times, memorable. Especially valuable is the attitude of open-mindedness and the willingness to improvise, to try new approaches as opposed to a rigidity of method that leads to stagnation or inaction. This is a book to grow with, to refer to, and to look back on after some years of experience. It is the reviewer's choice as the one book for elementary and advanced college courses in film; it also has much to offer to the working professional.—*Murray Duitz*, 1004 Barth Drive, Baldwin, NY 11510.

The Work of the Television Journalist

By Robert Tyrrell. Published (1972) by Hastings House Publishers, Inc., 10 E. 40 St., New York, NY 10016. 180 pp. Illus. Diagrams. 6 by 9 in. Price \$11.50.

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The complicated process of getting the news on the television screen is described in this book by a man who has worked as writer, reporter, director and producer. Most of the author's experience has been with Independent Television News in Great Britain, but he has also worked in television in the United States and has produced several award-winning documentaries.

Television journalism cannot be a one-man operation. A successful newscast requires a team of several members, each with special talents and skills. In this book, the various roles of each member of the team are described with the intent of informing other members of the team, as well as the public, as to what is required of each one. Before a newscast can be seen on a TV screen, the efforts of a number of people are required including the producer, the moviemaker, the film editor, the film cameraman, the reporter, the interviewer, the presenter and the newscaster.

The book provides a great deal of practical information. It is written in a highly readable style and the author has a nice, but unobtrusive, wit. For example, in the

Introduction, he notes that: "The first journalist was the man who told the tale to the rest of the tribe, perhaps by grunts and gestures of reenactment. We do the same thing on television today, perhaps with more coherence and sophistication, but the essence is unchanged."

He points out that while a newspaper reporter can condense the information gained in an hour's interview into two or three minutes of reading time, the television reporter has no such option. What he gets on film can be cut but not condensed. "He depends on the director, the cameraman, the sound recordist, the film editor whose functions are not merely technical. They too are selecting, interpreting, reporting," he said.

The book contains 11 chapters: The World of Television Journalism; Writing for Television; The Role of the Producer; The Director as a Movie Maker; The Craft of the Film Editor; The Film Cameraman; Directing for Television; New Skills for the Reporter; The Art of Interviewing; The Presenter and Newscaster; and Basic Principles of Television. The book also includes a Glossary and an Index. — *Edit.*

current literature



.....
The Editors present for convenient reference a list of articles dealing with subjects cognate to motion-picture engineering published in a number of selected journals. Photostatic or microfilm copies of articles in magazines that are available may be obtained from The Library of Congress, Washington, D.C., or from the New York Public Library, New York, N.Y., at prevailing rates.

Audio Engineering Soc.

Design of a Noise Eliminator System, *Richard S. Burwen*, Vol. 19, p. 906, Dec. 1971.

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Peculiarities of Behaviour of Multilayer Print Film in Present Conditions of Projection, *G. Burdygina, I. Fridman, Zh. Moteneva, A. Bolohovski and P. Kozlov*, Vol. 53, p. 346, Sept. 1971.

Colour Television Film Recording from a Shadow-Mask Picture Tube, *K. G. Lisk and C. H. Evans*, Vol. 53, p. 422, Dec. 1972.

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Comparison of Laser Methods for the Remote Detection of Atmospheric Pollutants, *Helge Kildal and Robert L. Byer*, Vol. 59, p. 1644, Dec. 1971.

SPIE Jour.

A Remote Airborne Photographic Mission Recorder, *J. J. Ferrer*, Vol. 9, p. 179, Aug./Sept. 1971.

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Computer Services: Converging on Cable, *Robert J. Mathews*, Vol. 9, p. 38, Jan. 1972.

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Motion Picture Projection in the Pavillions of the Countries of the World at Expo-70 (in Russian), *N. D. Bernshtein and I. M. Bolotnikov*, Vol. 14, p. 73, Oct. 1970.

A Thyristor Frequency Converter for the Power Supply of Motion-Picture Apparatus on Location (in Russian), *E. I. Usyshkin and M. G. Pasukhina*, Vol. 15, p. 9, June 1971.