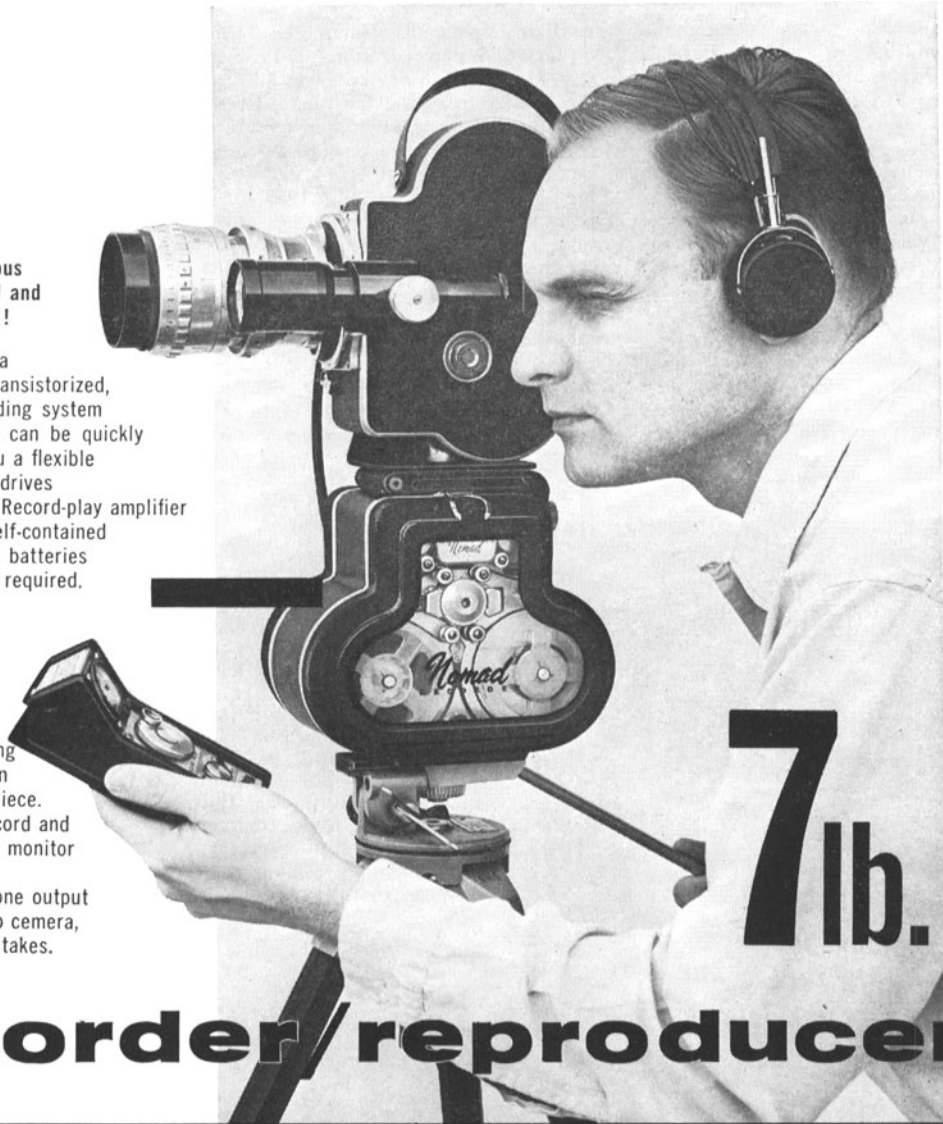


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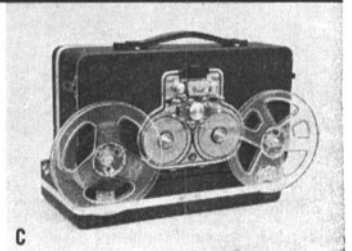
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The SPSE will extend membership registration privileges to all SMPTE members.

Plans for a Hollywood motion-picture and television museum have been discussed, off and on, for a number of years, with hearty approval for the idea expressed by all concerned, but the progress of the dream to-

ward reality has been hampered by many obstacles. A step was taken in 1953 when the Motion Picture Relief Fund, under the leadership of the late Jean Hersholt, attempted to raise \$1 million for the purchase of the Paramount Sunset Studio to be used as a museum. This attempt failed; but six years later, in June 1959, the appointment of a Commission, empowered to formulate and put in effect plans for the museum, by the Los Angeles Board of Supervisors seemed virtually to assure the eventual construction of the long-dreamed-of museum. Civic recognition of this project seems to be in accord with a growing awareness of the historic significance of the early days of motion pictures and television and the need for preserving rec-

ords of the past. An informal report from a Hollywood member of the SMPTE Historical and Museum Committee, Syd Cassyd, recounts progress on two such projects: On Establishment of Two Archives in the Los Angeles Area.

Two important steps in collecting and archiving materials and equipment of motion pictures and television were made this past year in the Los Angeles area. The first was the establishment of a Commission on Motion Pictures and Television Museum by the Board of Supervisors of Los Angeles. Appointment of many prominent persons in the industry focused attention on this problem. Sol Lesser was appointed Head of the Commission. A site has been chosen and plans for the construction of a suitable building have been formulated. The site is close to the Hollywood Bowl which is next to the Los Angeles Freeway system which means that the proposed museum will be easily accessible to everyone in Los Angeles and surrounding areas.

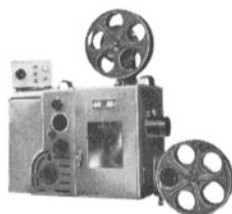
The second development in the field of collection and preservation of historic records was the appointment by the Chancellor of the University of California, Los Angeles, of an Honorary Curator of a proposed Television Archives. The appointment was made in accordance with a suggestion made by the Head of the University's Television Library Committee. It is hoped that this appointment will have the effect of speeding up the difficult job of collecting materials and programs which are slowly disappearing, particularly those of the years preceding 1946 and the 1946-1949 era. This project has been underway since 1956 when the Chancellor, in cooperation with the Academy of Television Arts and Sciences, appointed a committee to study all aspects of the project. Problems of space, and clearances for guilds, unions and finances have been the main roadblocks to collection. The networks and local stations are cooperating and it is hoped to report progress soon.

A one-week seminar in Electronic Flash and High-Speed Photography will be held at the Massachusetts Institute of Technology August 15-19. The meetings will center at the Stroboscopic Light Laboratory where the theory and application of various methods will be studied. Mornings during the program will be devoted to theory and demonstrations; laboratory practice sessions will be held



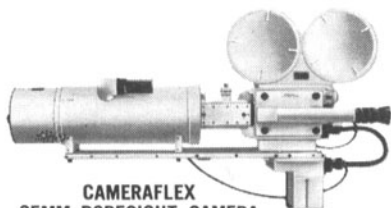
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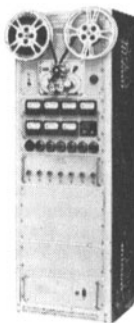
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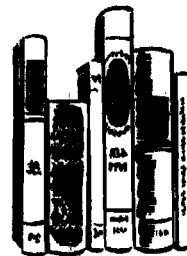
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during the afternoons. Subjects to be covered include pulsed stroboscopic lighting, optical high-speed cameras, Kerr cells, Faraday shutters, and image converters. Specialists in high-speed photography have been invited to lecture on their particular subjects. The seminar will include laboratory demonstrations of many types of equipment related to high-speed photography. The program will be under the direction of Prof. Harold E. Edgerton of the Department of Electrical Engineering, M.I.T. Tuition is \$175. Academic credit is not offered.

A trend away from the "learning more and more about less" type of specialization and toward the "Renaissance man" type of diversified learning was hinted

at by Hans H. Zinsser, M.D., Chairman of the Medical Electronics Session at the International Convention of the Institute of Radio Engineers held in New York, in March. In discussing medical engineering foreseen as a new profession, Dr. Zinsser spoke of "a new breed competent to talk in both fields, not only through acquisition of a vocabulary, but trained in ways of thought that summarize much more than medicine, or engineering, or basic biology comprises at the present time. It is by the development of such multiple-faceted minds that we can most readily progress to the full realization of the potentialities before us."

Dr. Zinsser outlined a suggested curriculum leading to a degree in medical or bio-medical engineering.



books reviewed

Principles of Optics

By Max Born and Emil Wolf. Published (1959) by Pergamon Press Inc., 122 East 55 St., New York 22. v-xxvi + 803 pp. including illus., charts, graphs, etc. 6½ by 9½-in. Price \$17.50.

It is interesting to note that much of the brilliant work done in optics in the second half of the nineteenth century is still perfectly valid and in continuing use. But the broadening scene of physics has elucidated many points that remained mysterious at the close of that period. The optical accomplishments of the twentieth century are constantly revising the point of view in this field.

The present book is a re-working of an earlier *Optik* by the senior author, Max Born. There have been many changes, and the volume is practically a new work. In several respects it is more, perhaps, to be compared with the famous *Lehrbuch der Optik* of Paul Drude. This came out at about the turn of the century (in English translation only by 1922). The comparison consequently reflects a half-century of development in optics.

The broad objectives of the *Lehrbuch* and the present work are really much alike — to present a systematic and unified theory of the major optical phenomena.

The subject matter of the two books is surprisingly similar. Simply, it covers the production of images by lenses and mirrors, interference and diffraction phenomena, the many phenomena of polarized light and its transmission through crystals, and the optics of conducting media such as metals. Some of this is treated by the use of geometrical optics, but most of it needs the more fundamental wave theory.

The first difference that one notes is in the order of presentation. Drude started with the straight geometrical optics. When he introduced waves, he managed as long as possible with an equivocal mechanistic medium. Electromagnetic waves appeared only very far along in the book.

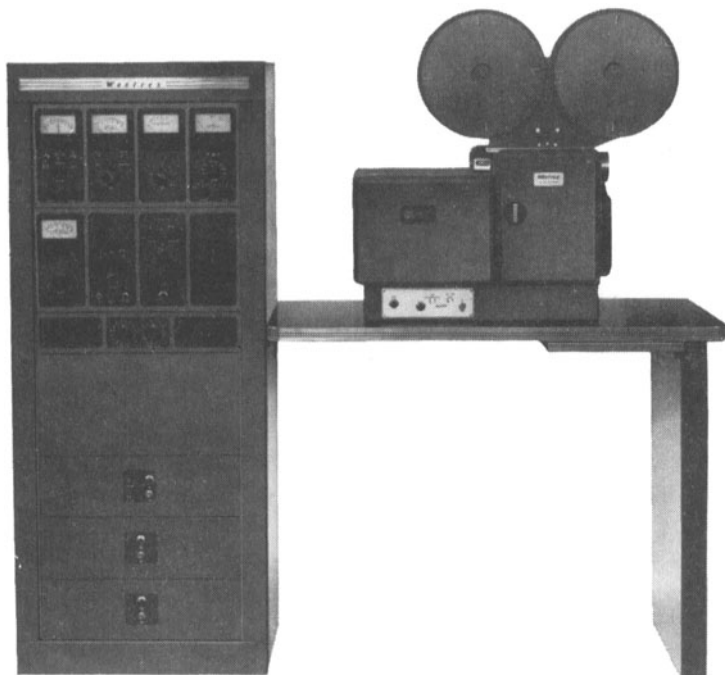
Born and Wolf start right out in the very first chapter with Maxwell's equations. It is only after a hundred pages that they show how the equations lead to the rectilinear light rays of geometrical optics, and they then proceed to go into image formation.

The authors gather together all the material dealing with partially coherent light into a single chapter. Drude treated bits of this here and there as he dealt with Young's fringes, breadth of spectral lines,

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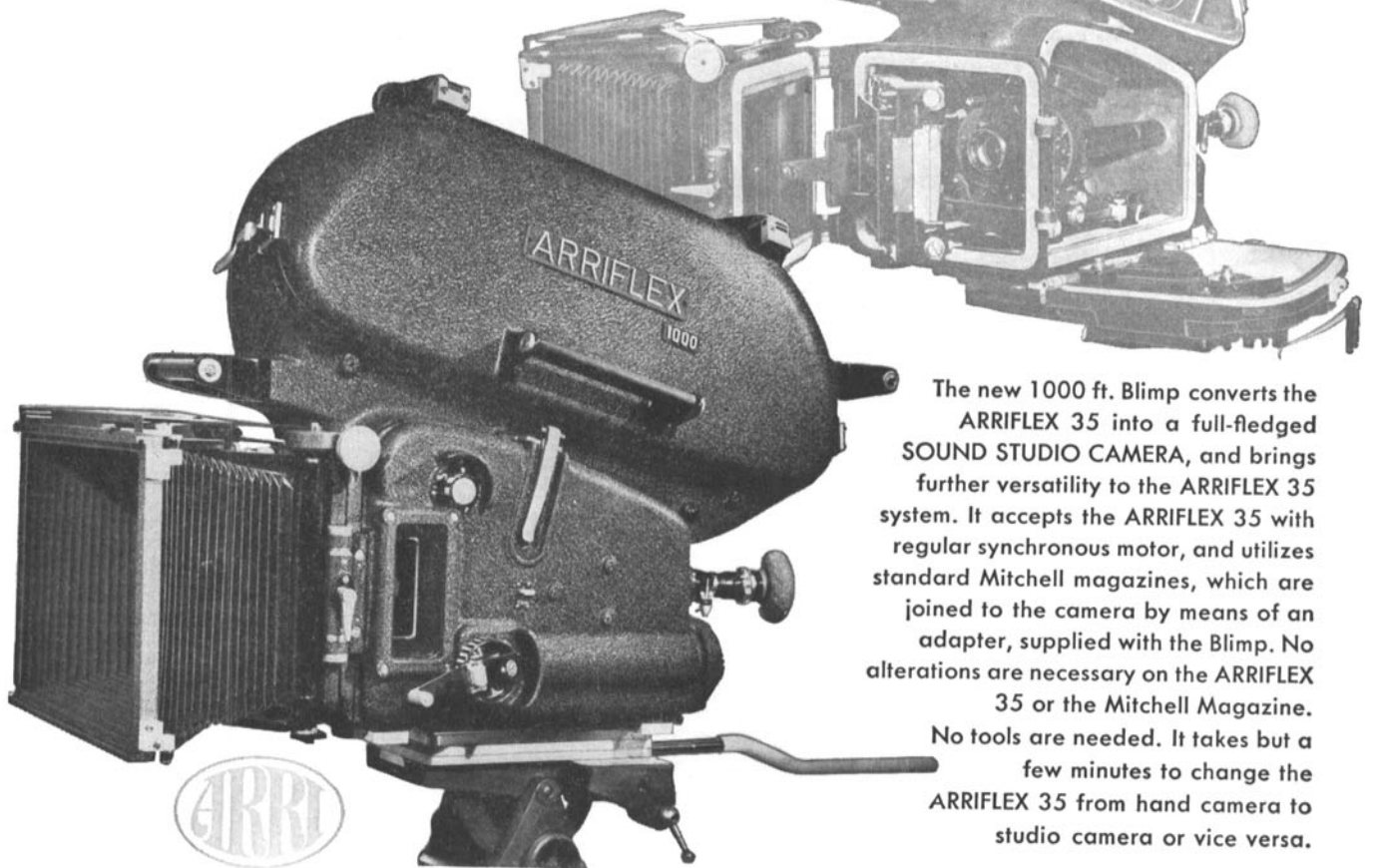
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One notices a difference in the general plan of attack on explanations and derivations. Where the older book was heuristic and tentative, Born and Wolf are sophisticatedly analytic, as befits the accumulation of knowledge which has occurred in the interim. One must admit that the reader can pay a certain price for sophistication, in that comprehension does not always come so easily.

In dealing with the design of imaging systems, a major element is the theory of aberrations. If one is to evaluate the preference of one design over another it is necessary to have such a quantitative criterion of performance as indicated by the

aberration. The fundamentals of geometrical aberrations run back as far as Seidel in the 1850's, and of wave or diffraction aberrations to Lord Rayleigh around 1880. Born and Wolf present the material in two chapters, in a particularly comprehensive discussion. Its modernity is indicated by the references, running to 1957.

A number of chapters in the book have been written by other than the titular authors. Among these is a detailed discussion by Professor A. B. Bhatia on the diffraction of light by ultrasonic waves. Similarly a chapter on rigorous diffraction theory (as distinguished from the earlier use of Huyghens' principle) and a mathematical appendix were contributed by Dr. P. C. Clemmow. Other material was

prepared by Drs. Wayman, Wilcock, Stokes, and Professors Taylor and Gabor.

There are some very detailed appendices to cover certain mathematical tools used in the text, such as the calculus of variations (adapted from Hilbert's 1903 Göttingen lectures), the Dirac delta function, the circle polynomials of Zernike, etc.

The book is fairly strictly limited to the theoretical reader. There is a chapter on image-forming instruments, but this material is fairly sketchy and illustrative, and not really meant to guide the practical individual.

The book will presumably become a standard reference work in the field of theoretical optics. It is suitable as a text for advanced students.—*Pierre Mertz*, 66 Leamington St., Lido, Long Beach, N.Y.

Professional Association in the Mass Media: Handbook of Press, Film, Radio, Television Organizations

Published (1959) by the United Nations Educational, Scientific and Cultural Organization, Place de Fontenoy, Paris 7, France (U.S. Agent: UNESCO Publications Center, 801 Third Ave., New York 22). 206 pp. 8 by 10½-in. Price \$5.00.

This useful and informative handbook lists alphabetically, country by country throughout the world, organizations for the press, film, radio and television. Each organization is listed with its address, scope and purpose, membership, qualifications for membership, publications, history, and names of officers. Part I of the handbook lists international organizations. Of the total of 64 international organizations, one is concerned mainly with the entire field of mass communication. There are 31 international press organizations, 22 film, nine broadcasting, and one television. Part II lists 1049 national organizations. Of this number, 561 are press organizations, 341 film, 134 radio, and 13 television.

From Tin Foil to Stereo

By Oliver Read and Walter L. Welch. Published (1960) by Howard W. Sams & Co., 1720 E. 38 St., Indianapolis 6. 524 + xvi pp. Illus. Appendix. Index. 6 by 9-in. Price \$9.95.

Beginning with the statue of Memnon at Thebes and ending with a discussion of stereo discs, *From Tin Foil to Stereo* spans more than 3000 years of human endeavor to imitate or reproduce natural sounds by mechanical means. The book is, as the title suggests, mainly concerned with the evolution of the phonograph since its invention in 1877 by Thomas A. Edison. The book is also about America, American business practices in the late 19th and early 20th centuries, and some of the legal mazes and bypaths stemming from the invention and development of the phonograph.

The book is not only documented with amazing thoroughness, making it a valuable source of reference material, it is also a delight to read. Not the least of its delights is the hundreds of photographs some of which, the authors state, are reproduced for the first time. For lovers of



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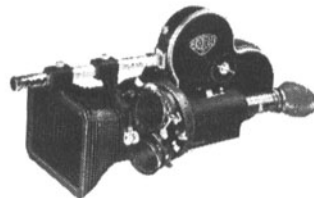
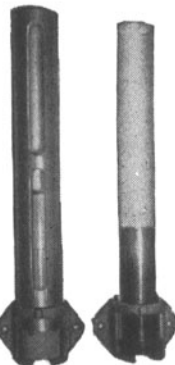
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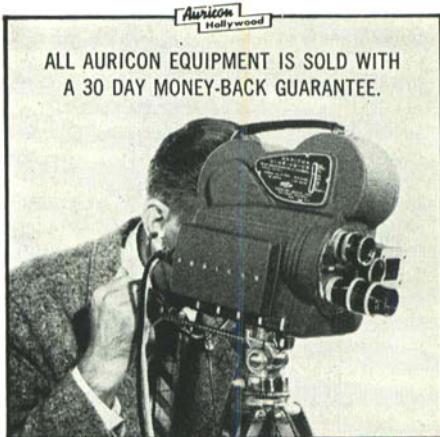


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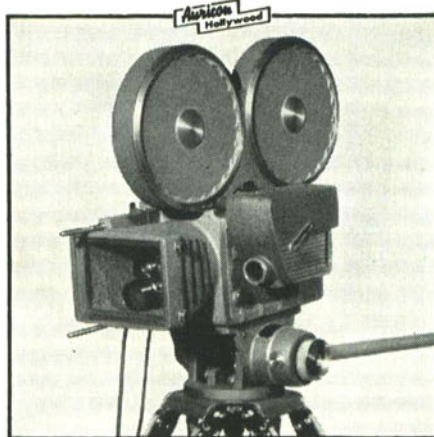
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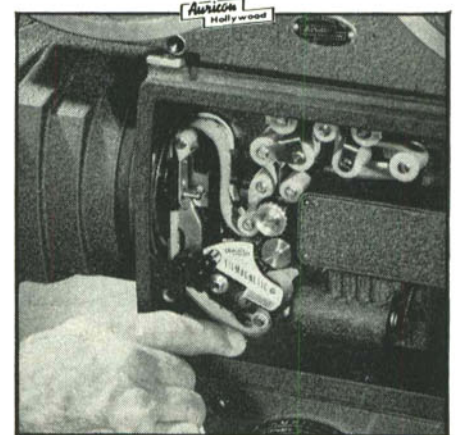
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Americana and of "the good old days" there is a wealth of historic and (to some) nostalgic material. One of the most amusing illustrations is in the Appendix (p. 479) showing the title page of "The Song of Mister Phonograph" (copyrighted 1878). A robot-like creature whose head is a cylinder capers in music-hall style.

The book is full of references and quotations, and names of inventors, attorneys, businesses, singers, musicians — some long-dead, others very much alive, and others alive in history and memory — march through the pages. Old law suits, decided long ago, are recounted in detail, throwing new light on some of the judgments of history. For example, after a detailed account of the suit of Marconi Co. vs. DeForest Co. (pp. 229-231) the authors ask, "But the question remains,

with respect to historical accuracy, to whom belongs the major credit for the initial and basic contribution of the first vacuum tube, Fleming or Edison? Edison had built the first tube, Fleming had discovered a new use for it...?"

The book is not one that can be read at one sitting, in spite of its highly readable style, but is rather a book that can be returned to again and again for entertainment as well as information. The authors have made a genuine contribution to the history of the United States by their careful and illuminating examination of the development of one invention.

Fundamentals of Photographic Theory

2d ed., completely revised, by T. H. James and George C. Higgins. Published (1960)

by Morgan & Morgan Inc., 101 Park Ave., New York 17. 345 pp. incl. index, illus. and graphs. 5½ by 8¼-in. Price \$7.50.

Fundamentals of Photographic Theory was first published in 1948. The second edition has been extensively revised and reset to include recent discoveries and developments. The book, which gives a general account of the theory of the photographic process, based on fundamental chemical and physical concepts, is used as a textbook in photographic courses in many colleges. In the second edition, extensive revisions have been made, particularly in the chapters on the photographic emulsion, formation of the latent image, mechanism of development, kinetics of development, and structure of the developed image. New information on the theory of color photography and color sensitometry is included and there is a description of the chemistry of the formation of dye images. A comprehensive list of references is given at the end of each chapter. A reader who requires more advanced or more detailed treatment of any phase of the photographic process will find an ample listing of source material from which he may select what suits his needs.

"The American Standard Requirements for Electrical Indicating Instruments: Panel, Switchboard and Portable Instruments" is published by American Standards Association, 10 E. 40 St., New York 16. This is Standard C39.1-1959, a revision of C39.1-1955. The development of this American Standard has resulted from the work of the Sectional Committee on Electrical Measuring Instruments C39. This specification is intended to assure that instruments conforming to it will be satisfactory for general industrial use.

British Broadcasting Engineering Monograph, Programme Switching, Control, and Monitoring in Sound Broadcasting, published February 1960, is No. 28 in a series which was begun in June 1955. About six monographs, each dealing with some phase of television and sound broadcasting, are published each year. Individual copies are priced at 5s; and an annual subscription is 1 £. Orders can be placed with BBC Publications, 35 Marylebone High Street, London, W.1.

Sound and Vision Broadcasting, if it maintains the high standard set by the first (Spring 1960) issue, will be a valuable addition to publications dealing with particular or overall aspects of the broadcasting field. It is published by the Broadcasting Division of Marconi's Wireless Telegraph Company, Ltd., Chelmsford, Essex, England. The aim, according to the Editor, R. L. Varney, "is to cover not only the engineering side of broadcasting but also that of programing, and to interest all those whose work may lie in either direction, whether sound or vision." The magazine will be issued three times a year. Translations in German and Spanish of the main articles are included. The first issue contains seven main articles and six brief news stories on installations throughout the world. The publication is enhanced by numerous illustrations.

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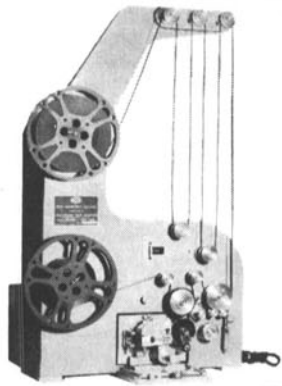
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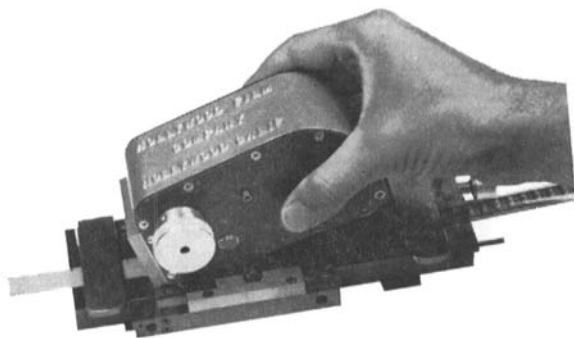
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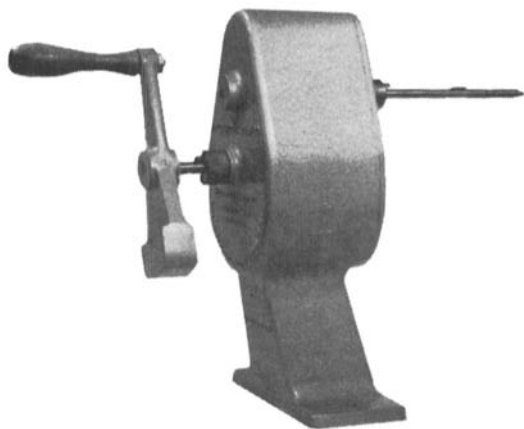
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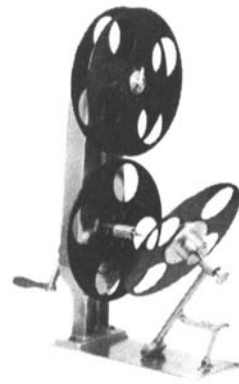
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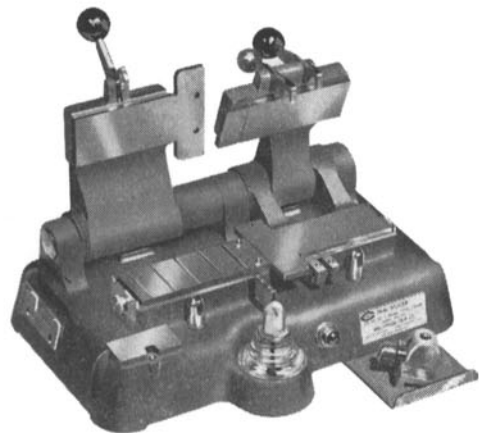
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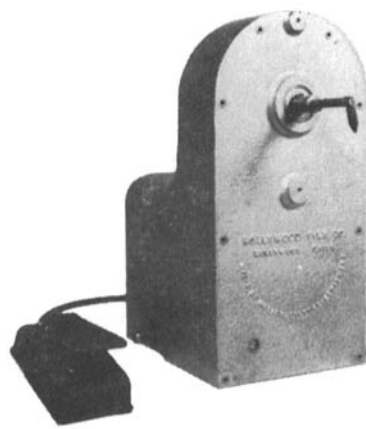
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section reports



The Atlanta Section met on March 8 at the Kodak Processing Laboratory with an attendance of 23. William Koch of the Motion Picture Film Dept., Eastman Kodak Co., New York City, was the guest speaker. His subject was "New Eastman Reversal Color Products of High

Emulsion Speed Characteristics." To describe the new Eastman Ektachrome ER films, slides were shown that illustrated the physical and sensitometric characteristics of the film, processing methods and printing systems that can be used if release prints are desired.

Demonstration films were shown of some of the typical uses expected of the new films. It was stressed that this film is a new and additional product and not a replacement product. Mr. Koch answered general questions during the meeting. After the meeting, members of the Section were able to discuss specific problems with him.

Attendance at the meeting was not very large, but those attending felt that they

had obtained some very practical information for use in their work. After the meeting, coffee and doughnuts were served and a tour of the Kodak Processing Laboratory was conducted.—Wesley R. Sandell, *Secretary-Treasurer*, c/o Kodak Processing Lab., 4729 Miller Drive, Chamblee, Ga.

The Dallas-Fort Worth Section met on March 3 at the WFAA-TV Studios in Dallas with an attendance of 40. Cyril Teed, Research Engineer of Marconi Wireless Telegraph Co., the guest speaker, discussed "The 4½-in. Image-Orthicon" and the camera channel for the same.

Mr. Teed gave the history of the development of the 4½-in. image-orthicon and then went into considerable detail in describing the development of the camera chain. The information was comprehensively presented and the technical phase was well done. An informal demonstration of the camera chain followed the speaker's remarks. A commercial was video taped and played back using the camera chain.

The meeting generated a lively discussion period after which coffee and doughnuts were served.—M. D. McCarty, *Secretary-Treasurer*, c/o Magnolia Petroleum Co., P. O. Box 900, Dallas, Tex.

The Hollywood Section met on March 15 with an attendance of 275. Eliot Bliss, the guest speaker, gave an excellent demonstration of the various means by which video tape, film and tape-to-film transfers are all contributing to current television production. Comparisons of TV picture quality were made among the three media — film, tape and tape-to-film transfers — with particular emphasis on recent quality improvements that have been made in photographic recording of television.—Ralph E. Lovell, *Secretary-Treasurer*, 2554 Prosser Ave., Los Angeles 64.

The Nashville Section met on December 5 at the WLAC-TV Studios in Nashville with an attendance of 41. Guest speakers were Ralph Hucabee, WLAC-TV; Aaron Shelton, WSM-TV; and Frank McGeary, M-P Laboratories, Inc.

Session moderator, Anton Pilversack of TRAFICO, introduced the subject for discussion: "What Constitutes a Good Television Print?" The panel of speakers presented ideas and standards from the viewpoint of their own particular divisions of the 16mm industry.

Following the presentations for TV stations by Messrs. Hucabee and Shelton and for the laboratory side by Mr. McGeary, the entire group discussed the problems from the producer's point of view. As a part of the program there were two closed-circuit runs of a series of TV prints illustrating the range of contrast that can be produced from the same original, by experimentation in both the dupe negative and positive stages.

The initial run was controlled by the video engineers at WLAC with the engineer adjusting each section to what he considered his contrast norm. The second run-through went at one setting. Finally, the prints were projected on a regular projector and screen. Each time the group was asked to select the print which best

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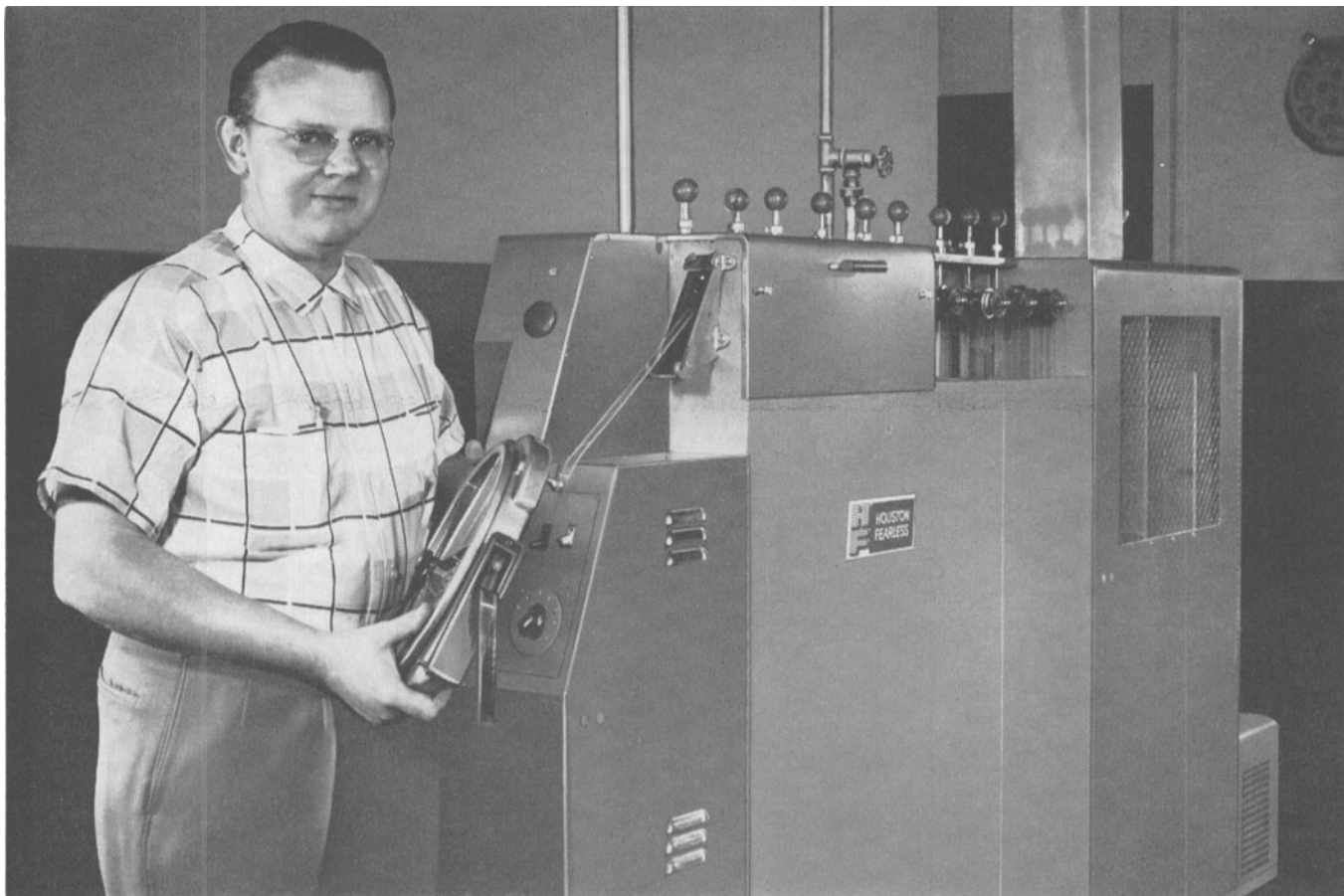
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Two New $f/1.9$ Lenses for 16mm and Vidicon Cameras

By G. H. AKLIN

WHEN Eastman Kodak Company announced the 16mm, 100-ft spool camera (the K-100), it also introduced two new $f/1.9$ Cine Ektar lenses, a 25mm lens and a 50mm lens. These give improved resolution in accordance with requirements of 16mm motion-picture production, and are exceptionally well suited for professional work. The field covered by these lenses is adequate for use with the vidicon tube.

Along with improved resolution, these lenses are matched in spectral transmission so that, in changing from one lens to another, there is no appreciable change in color balance when using color film. They can be fitted to any camera by means of suitable adapters. All air-glass surfaces are, of course, hard-coated and suitable baffling is employed to give maximum image contrast and freedom from flare.

For many years the standard lens on Kodak 16mm Cine Cameras was a 25mm $f/1.9$ objective of the modified Petzval type. In spite of some shortcomings, this lens was very successful and many thousands were manufactured. In 1948, two

This paper was presented on October 5, 1959, at the Society's Convention in New York, by the author, who is with the Apparatus and Optical Div., Hawkeye Wks., 20 Ave. E, Rochester 4, N.Y. This paper was received on March 19, 1959.

Cine Ektar lenses of improved construction were announced*; a 25 mm $f/1.4$ of the 4-component 7-element meniscus type, and a 4-element 25mm $f/1.9$ lens, offered as a lower-priced substitute. Both lenses gave much better resolution than the original Petzval type.

Since the introduction of these lenses, the quality of 16mm motion pictures has advanced to the point where a better $f/1.9$ lens is needed. To meet this requirement, a new 25mm $f/1.9$ and a new 50mm $f/1.9$ have been designed. These lenses were introduced when the Kodak K-100, 16mm, 100-ft spool camera was announced.

A sketch of this new 25mm lens (Fig. 1) shows its spherical aberration and field curves. It is of a 4 component meniscus type with 6 elements, in four of which the Kodak high-index glasses are used. The lens is described in U.S. Patent 2,682,198, June 29, 1954. It is designed to cover a 16mm motion-picture frame (13.7° half angle) and also the photosensitive surface of the vidicon tube ($16\frac{1}{2}^\circ$ half angle).

Lens bench examination shows that the star images of this lens at full aperture have a diameter of 0.006mm on the axis, and expand to within 0.012mm at the 14° point. At $16\frac{1}{2}^\circ$ this has reached 0.018mm. The results of a photographic test using a high-contrast resolution chart (1000:1 luminance ratio) at a reduction of 50:1 on three different emulsions are given in Table I. The published resolution values

* Rudolf Kingslake, "New series of lenses for 16mm Cameras," *Jour. SMPTE*, 52: 509-521, May 1949.

Table I. Resolution Figures of a Photographic Test for the 25mm $f/1.9$ Using a High Contrast Chart (1000:1 Luminance Ratio) at a Reduction of 50:1 on Three Different Emulsions.

16mm Films	f/	Vidicon				
		Axis $4\frac{1}{2}^\circ$	9°	$13\frac{1}{2}^\circ$	$16\frac{1}{2}^\circ$	
Kodachrome Movie Film	1.9	63	50	40	32	25
Daylight Type 5263	8.0	63	50	50	40	25
Eastman Background-X	1.9	63	50	50	32	25
Pan. Negative, Type 7230	8.0	80	63	63	40	25
Eastman Plus-X	1.9	100	80	63	50	32
Reversal, Type 7276	8.0	100	80	80	63	32
Relative Illumination					60%	40%

Table II. Spectral Transmission of Both the 25mm and the 50mm Lenses.

	25mm	50mm
400	78%	68%
450	86	82
500	88	88
550	86	88
600	83	87
700	80	83

Table III. Resolution Figures of a Photographic Test for the 50mm $f/1.9$ Using a High Contrast Chart (1000:1 Luminance Ratio) at a Reduction of 50:1 on Three Different Emulsions.

16mm Films	f/	Vidicon				
		Axis $2\frac{1}{2}^\circ$	$4\frac{1}{2}^\circ$	$6\frac{1}{2}^\circ$	$8\frac{1}{2}^\circ$	
Kodachrome Movie Film, Daylight Type 5263	1.9	40	40	40	32	25
Eastman Background-X	1.9	40	40	40	40	32
Pan. Negative, Type 7230	8.0	63	63	63	50	40
Eastman Plus-X	1.9	80	63	63	63	40
Reversal, Type 7276	8.0	100	80	80	80	63
Relative Illumination					77%	70%

obtained on the lenses announced in 1948 were made using an emulsion that is no longer manufactured, therefore it would not be practical to make a direct comparison with the new lenses. The relative illuminations at $13\frac{1}{2}^\circ$ and $16\frac{1}{2}^\circ$ are also shown in Table I.

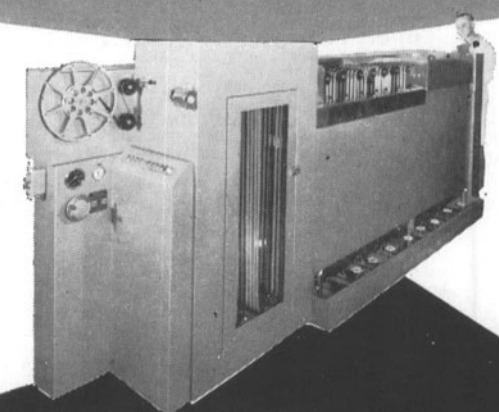
The 50mm $f/1.9$ Lens

In color photography, the transmission in the blue-violet region between interchangeable lenses on a camera must be closely matched to each lens. It can readily be seen that if this transmission should vary beyond tolerable limits, the color balance would then be noticeably disturbed when changing from one lens to another. One may justifiably assume that a lens having twice the focal length of another lens of the same type would also have twice the glass thickness, and therefore would be expected to show a loss in blue transmission. For this reason the 50mm $f/1.9$

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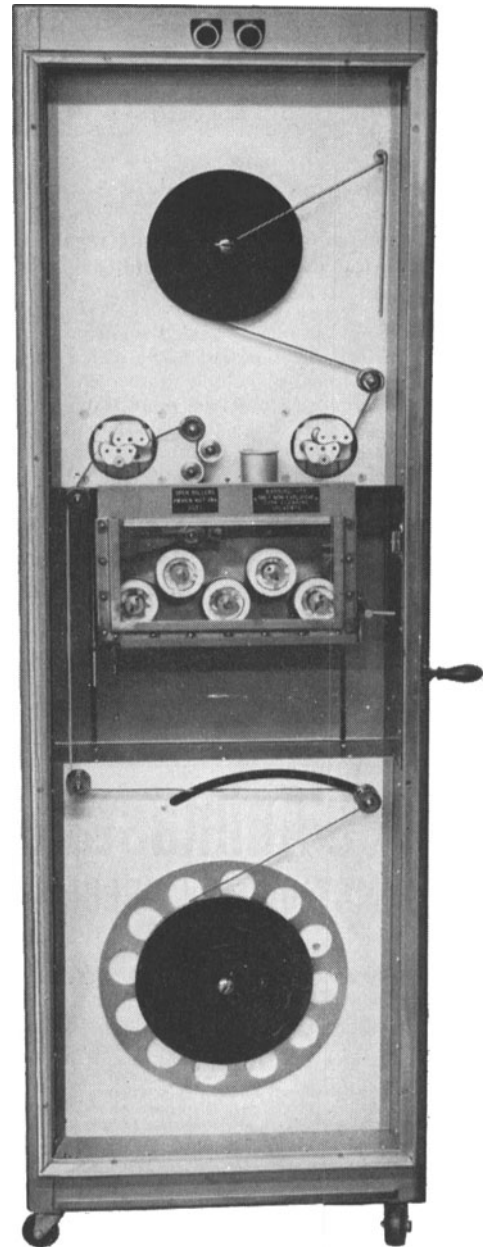
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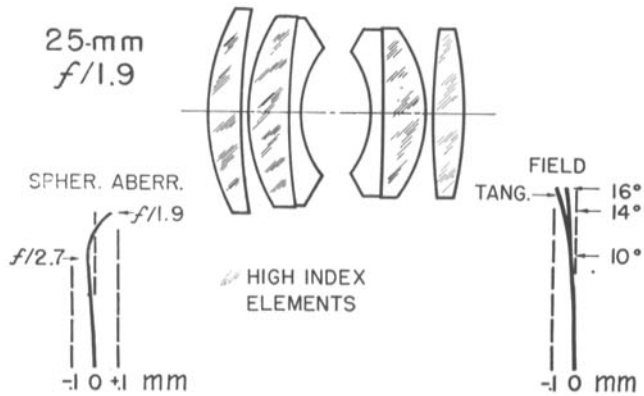


Fig. 1. A sketch of the new 25mm f/1.9 showing the character of its spherical aberration and field curves, and the location of the high index glasses used.

lens could not be merely scaled up from the 25mm formula, but had to be a new design. Requirements include thinner elements and, where permissible, more transparent glasses so that the total absorption would match that of the 25mm formula. Since this lens must cover 9° as against $16\frac{1}{2}^\circ$ for the 25mm design, certain of these changes are possible and the desired results could be obtained without sacrificing definition. Figure 2 shows this new formula along with its spherical aberration and field curves.

Figure 3 shows the comparable thickness differences between these two lenses, drawn to the same scale.

Table II gives the spectral transmission of both the 25mm and 50mm lenses.

Lens bench examination shows that the star images of this 50mm lens at full aperture have a diameter of 0.015mm on the axis, and increase to about 0.022mm at 7° , and to 0.030mm at 9° . Table III gives resolution figures in a photographic test similar to that for the 25mm f/1.9 lens.

In modern practice, all air-glass surfaces are hard coated, and suitable baffling methods are employed. The result is that a minimum of light is lost in surface reflections and images have maximum contrast free from flare.

Both the 25mm and 50mm lenses are available in S and C mounts. The 25mm lens can be focused from 12 in. to infinity and the 50mm lens from 24 in. to infinity.

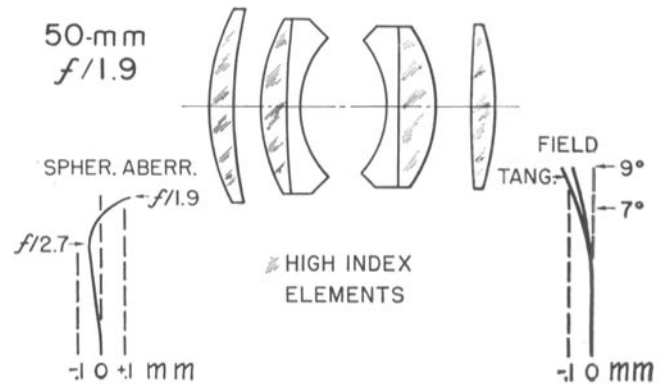


Fig. 2. A sketch of the new 50mm f/1.9 showing the character of its spherical aberration and field curves, and the location of the high index glasses used.

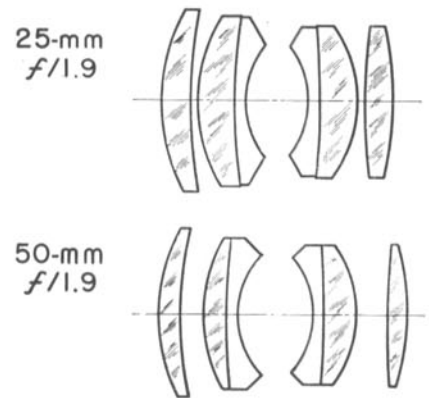


Fig. 3. The comparable glass thickness differences between the 25mm and the 50mm lenses drawn to the same scale.

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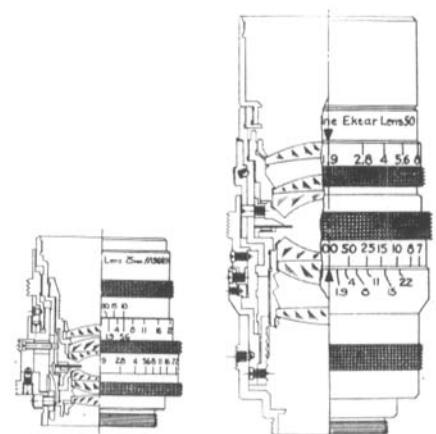
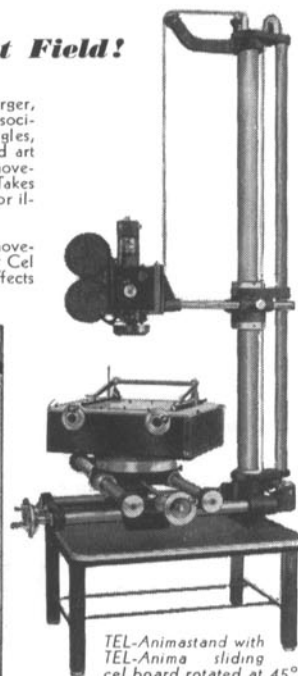
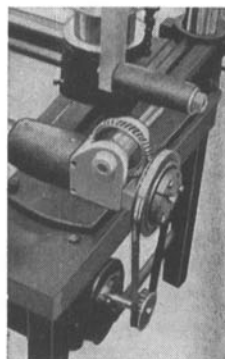


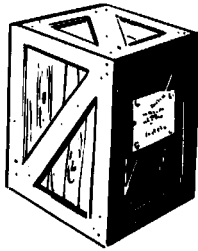
Fig. 4. Quarter section drawings of the 25mm and 50mm lenses in C mounts.

The new-type diaphragm wings are used so that an extended diaphragm scale for the small apertures is obtained, the smallest aperture in both cases being $f/22$. All mounts have click stops and depth-of-field scales. Figure 4 shows a quarter section of both the 25mm and 50mm lenses in C mounts.

The assistance of my colleagues who furnished drawings and data in the preparation of this paper is gratefully acknowledged.

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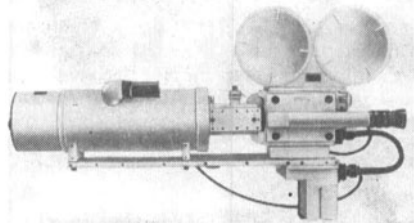
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new products

(and developments)

.....
Further information about these items can be obtained direct from the addresses given. As in the case of technical papers, the Society is not responsible for manufacturers' statements, and publication of these items does not constitute endorsement of the products or services.



The Cameraflex 35mm boresight camera designed to photograph the target being tracked by a radar set is distributed by Camera Equipment Co., 315 W. 43 St., New York 36. The camera has a register pin movement and a reflex shutter principle whereby the action may be viewed through the taking lens while the camera is in operation. A variable shutter mechanism allows a maximum of 60° and a minimum of 1 7/8° opening. The shutter mechanism is driven through a differential drive which controls a return pulse contractor, giving a return pulse at precisely midpoint, regardless of the degree of shutter opening.

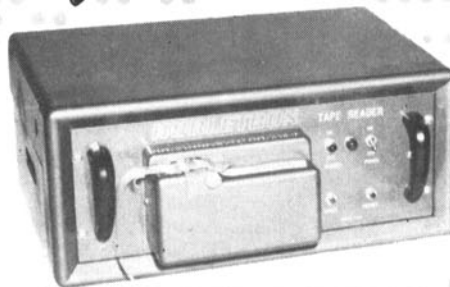
The camera is driven by a synchronous motor which operates the camera at a constant speed of 24 pictures/sec. It can also operate at a rate of 10 pictures/sec, 20 pictures/sec, or 30 pictures/sec. It can also use a pulse-driven speed up to 10 pictures/sec. A built-in data recorder allows the recording of binary coded information. Binary coded words, timing data and event marking pulses can be fed through the data recorder on separate tracks.

Other features include either 40-in. or 80-in. catadioptric lens, 200-ft or 400-ft magazines, gear driven by a separate torque motor; a radar-secondary mount with provisions for azimuth, elevation and camera-focusing adjustments.

70mm data recording motion-picture films are being studied by Technicolor Corp., 6311 Romaine St., Hollywood 38, with a view toward possible modification of one of the processing machines to accommodate 70mm data recording films in both color and black-and-white. Most of these films carry 1956 ASA Type I perforations. The firm has, for several years, been engaged, among other activities, in the production of 70mm color release prints. Fred H. Detmers is in charge of information for prospective users of the system.

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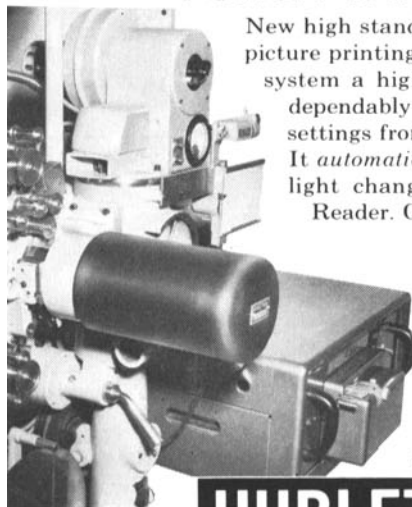


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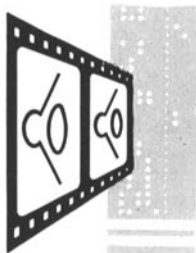
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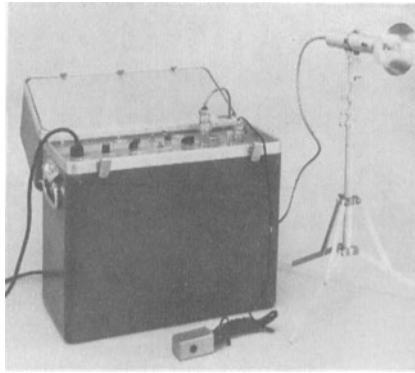
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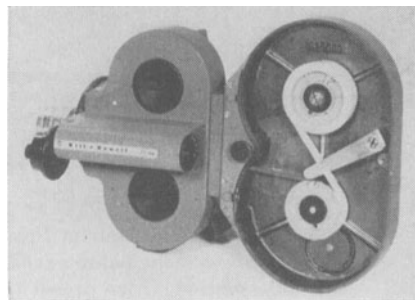


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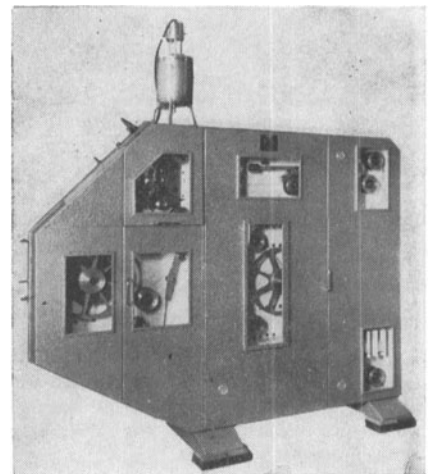
An electronic flash unit, Model 357, developed primarily for use with the Model 326 Dynafax High-Speed Camera has been announced by Beckman & Whitley, Inc., 973 San Carlos Ave., San Carlos, Calif. A compact portable unit, designed to be easily handled, it has a 1200-w/sec capacity which gives sufficient light intensity to cover an area up to 2 sq ft with 1- μ sec exposure. The duration of the flash can be controlled to correspond to the writing time of the camera. Waveform of the light pulse is square to provide even illumination on all frames. Duration settings are 8.70, 11.15, 14.75, and 22.25 msec. Rise and decay times of the pulse are in the order of 40 msec. The flash unit may be triggered from a normally open or normally closed switch, positive pulse, or photoelectric cell. An additional feature is a modeling light which operates at 60 flashes/sec for use in framing, focusing, and light arrangements. Operation is from a 115-v, 60-cps, 5-amp integral power supply. The flash unit is priced at \$1950.



A system of processing motion-picture film within the camera, based on the use of chemically presaturated paper material, has been announced by Specialties, Inc., Skunks Misery Rd., Syosset, L.I. The system, called Rapromatic processing, involves the application of a processing solution to an emulsion by sandwiching the photographic material with a paper web saturated with chemicals. This paper web is called Raproroll. The process was developed specifically to enable quick access to recorded data, instrumentation records and other industrial photographs. It is presently available on a production basis for 16mm film. In the magazine-processor, the Raproroll and exposed film or photographic paper are pressed together in intimate contact under nominal pressure. The paper releases its liquid under pressure and the liquid is accepted by the emulsion. The required quantity of solu-

tion is carefully controlled by web thickness and composition to prevent dripping. The film is immediately developed and can be projected on a screen in less than 60 sec after shooting. The process is distributed in the west by Traid Corp., 17136 Ventura Blvd., Encino, Calif.

A magnetic tape system capable of recording and reproducing both analog and pulse signals has been announced by Minicom Division of Minnesota Mining and Manufacturing Co., 2049 S. Barrington Ave., Los Angeles 25. The 7-track system, called the CM-100 Video Band Recorder/Reproducer, is packaged in a single, standard-size rack and offers selection of six speeds ranging from 7½ to 120 in./sec on single ¼-in. tape. Each of the seven video tracks covers an overall bandwidth of 400 cycles to 1.0 mc with greater frequency response. Examples given in the announcement: 1.0 mc at 120 in./sec; 500 kc at 60 in./sec. Compactness of the system is achieved by combining electronics for both recording and reproducing in a single unit for each track.



The Sonocolor SCF 2 Striping Machine for the coating of magnetic tracks on motion-picture film is a product of Sonocolor, 54 Avenue de Choisy, Paris 13, France. The machine, designed for heavy industrial service, is used to apply full coating on unprocessed films and single- or multi-tracks on processed films after development. Requiring only one operator, the machine has an interchangeable coating head assembly so that films of all widths can be coated and one or several tracks can be deposited. The machine is completely self-contained and requires less than 11 sq ft of floor space.

The Communications Idea Center located at 5137 Broadway, Chicago, is a development of Wilding Inc., 1345 W. Argyle St., Chicago, producers of industrial motion pictures, and its subsidiary, Commercial Picture Equipment, manufacturer of portable equipment for business communications. The Center is equipped

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with an 18-ft turntable for demonstrations and presentations. Recent demonstrations include a punched-tape device for automatic control of a sales presentation by opening and closing curtains, turning lights on and off and starting and stopping projectors. Called Automatic Program Control (APC), it is designed primarily for field use. Among other presentations is the two-projector motion-picture technique on a wide screen, synchronized with right and left images, each with separate sound to permit conversation to be carried on between actors in both images. Other presentations include Trigger-Strip slide-film to provide animation; Vista-Strip, a slidefilm device producing images that seem to flow across the screen, and Vista-Sell, a device for use in markets, railroad stations, airline terminals, using a moving color filmstrip.

The International Trade Fair (April 9-26) at Osaka, Japan, features a color Ampex Videotape Recorder in constant operation throughout the Fair, recording and playing back immediately the appearance of Japanese and American celebrities and representatives of other countries attending the Fair. The studio at the Osaka Fair utilizes a General Electric color camera as the program source for the recorder. Closed-circuit demonstrations are scheduled for broadcast over television stations in Osaka. In addition to recordings made within the studio, a number of prerecorded color tapes are being used for closed-circuit playback for visitors to the Fair.

A magnetic tape recorder that automatically changes tape cartridges was demonstrated by the inventor, Marvin Camras, senior engineer at the Armour Research Foundation of Illinois Institute of Technology, at the annual convention of the Institute of Radio Engineers, March 17, in New York. The cartridge, 3½ in. in diameter, contains a ¼-in. magnetic tape with leader tapering from 0.25 in. to 0.34 in. Its central opening fits present recorders. The cartridge is said to be universal in respect to speed, tape width, and single- or multi-channel operation. On the inner side of each flange of the cartridge, a bead is molded which holds a wide Mylar end-leader securely in place, sealing the inside to protect the tape from dust. The ¼-in. recording tape passes through the flanges with ample clearance after the leader has been unwound. A leader at the inner hub actuates the automatic reverse or rewind operation.

Protection against accidental erasure is provided by a safety groove in the bottom of the cartridge. If this groove is present, a "feeler" enters it when the machine is switched to recording position, allowing normal erasing or recording. Unrecorded cartridges are molded with this groove; recorded cartridges are not. A removable insert is provided, so that protection may be added after a cartridge has been recorded.

A member of the Society, Mr. Camras is the author of several papers published in the *Journal*, including "Magnetic Sound for Motion Pictures" (pp. 14-28, Jan. 1947), and "Magnetic Sound for 8mm Projection" (pp. 348-356, Oct. 1947).

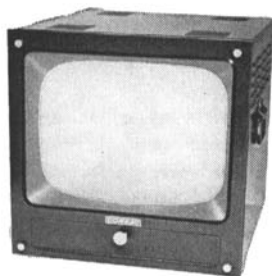
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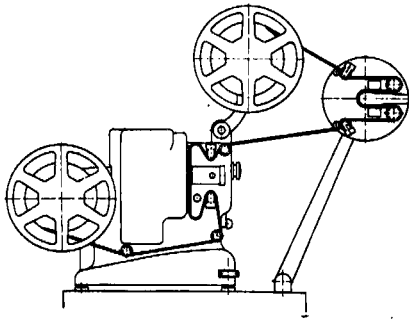
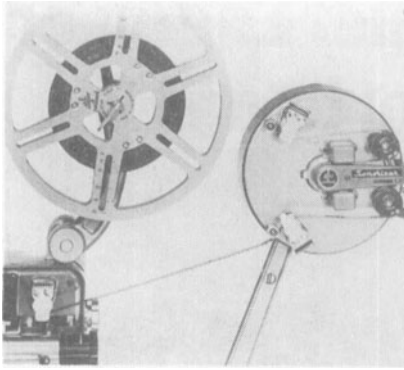
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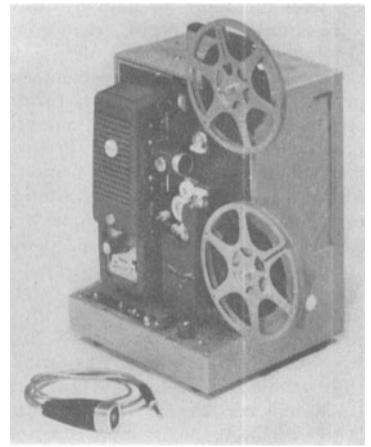
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The Bolex Sonorizer, a magnetic sound unit for recording and playing back sound directly on 8mm film has been introduced by Paillard, Inc., 100 Sixth Ave., New York 13. To be used in combination with the Bolex M-8 and many other 8mm projectors, the unit features two

separate inputs connected to a built-in mixer, and an automatic fade-out and overlay device for superimposing one sound over another on a single recording track. The unit records the sound on a 30-mil-wide magnetic stripe applied to the edge of the film outside the perforated holes after the film is processed. The point of recording and playback is at the soundhead which forms a "third reel," the film traveling through it before entering the film gate. The soundhead works on the pull-through principle. The film passes over a sound roller which maintains even pressure against it by means of a set of double pendulum rollers. The sound roller drives a dynamically balanced flywheel inside the soundhead. The unit, complete with case weighs 28½ lb and measures 10 by 12 by 14 in. It is priced at \$250.

An 8mm sound motion-picture projector incorporating a complete system for recording and playing back magnetic sound on both old and new 8mm film has been announced by Eastman Kodak Co. and is the subject of a paper scheduled for presentation at the forthcoming Convention in Los Angeles. The projector has a number of unusual features. The magnetic head used in the sound system is made of a new metal called Alfenol which has an estimated life span of thousands of hours. The magnetic head is only 20 mils wide — less than the width of the magnetic striping — to eliminate "edge tracking" and to assure better sound quality. A non-axial



500-w projection lamp is used to provide illumination for screenings five feet wide, and a lower light level of 250 w can be used when recording. The operator can erase, re-record, or playback sound at will.

There are two basic controls for the sound system, a play/record switch and a volume control knob. For projection, separate switches are supplied for motor and lamp, and a single rotary switch controls forward and reverse projection, "stills," and power rewind. The projector is priced at \$345.

A new Kodak Sonotrack Coating service for processed 8mm Kodachrome film has also been announced. The magnetic oxide coating is applied between the film edge and perforations of the processed film.

Also announced is a self-threading 8mm projector, the Brownie 8 Movie Projector (Model A15). A pulldown claw and a fixed film guide assembly lead the film through the gate and onto the 200-ft take-up reel. The projector is priced at \$54.50.

A variable-focus lens with a range of 20mm through 80mm has been announced by Traid Corp., Box 648, 17136 Ventura Blvd., Encino, Calif. The lens will fit any 16mm camera with a "C" mount. The lens is 4½ in. long with a diameter of 2 in. The iris is constant at f/2.5 for all focal lengths. The focusing scale is 48 in. to infinity. Price of the lens is \$335.00.

A line of projection lenses for 8mm and 16mm projectors is designed and manufactured by J. H. Dallmeyer, Ltd., Willesden, London, N.W. 10. Ranging in length from 20mm to 102mm, and with some two dozen different mounts, the lenses are described in a set of leaflets available upon request from the firm. The London firm is now in its one hundredth year. In 1860 the founder of the firm, John Henry Dallmeyer, was granted a patent for a Triple Achromatic lens consisting of three cemented doublets.

The Rondo 8mm Movie Editor has been announced by Service Photo Suppliers, Inc., 33 E. 17 St., New York 3, distributor for Rondo Products, Japan. The editor features winding arms, folding flat against the housing for easy storage, with a full 400-ft reel capacity. The forward crank has a 1:1 ratio and the rewind crank has a 3:1 ratio. It is priced at about \$34.95.

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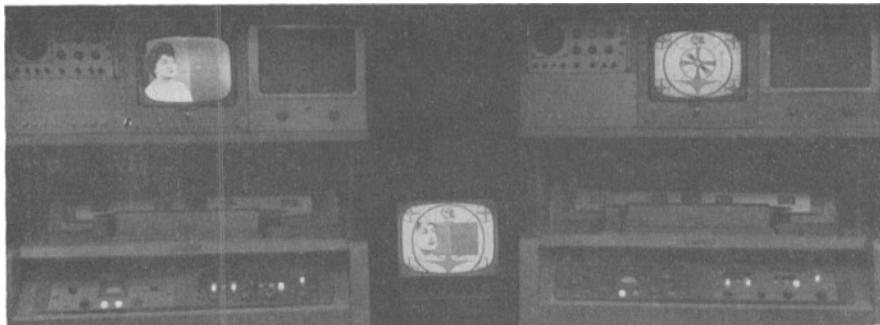
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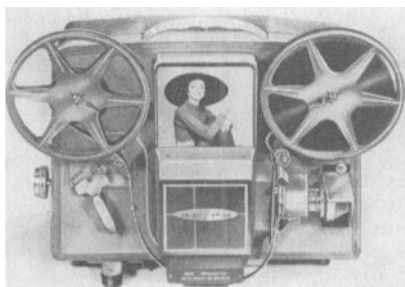
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A device called **Inter-Sync** is used to combine the output of two or more Ampex Videotape Recorders in precise synchronization. Announced by Ampex Professional Products Co., Video Products Div., Redwood City, Calif., the unit replaces the standard drum servo unit in the Ampex recorder. In addition to combining the output of the recorders, the Inter-Sync will

synchronize the playback of one or more recorders with the output of camera, film chain, network feed or other signal source. The device is said to lock the playback of a tape machine horizontally, line for line, to other TV sources as well as vertically, field for field. This permits electronic editing of TV tape and suggests numerous special effects applications.



A two-purpose 8mm projector called the Kalart VP-88 shows movies on a built-in viewer as well as on a projection screen. Introduced by Kalart Co., Plainville, Conn., the device has a control lever which is used for forward and reverse when projecting on a screen, and forward, reverse and still when projecting on the built-in viewer. The picture can be switched from screen to viewer while the projector is in operation by means of a viewer lever. It is priced at \$89.50.

A 70mm lens attachment for the Camex 8mm single-lens reflex camera has been announced by Karl Heitz, Inc., 480 Lexington Ave., New York 17. The attachment, called the Retro-Zoom is used to convert the varifocal Angenieux-Zoom lens from 17.5-70mm $f/2.2$ to 12.5-50mm for a zoom range from standard lens to a telephoto lens of 6X magnification. The attachment permits focusing from infinity down to 2½ ft. It is priced at \$99.00.

The **Weston Master IV**, an exposure meter designed to combine sensitivity with rugged construction, has been announced by Weston Instruments Division of Daystrom, Inc., 50 Church St., New York. Features include a simplified exposure dial using only numbers found on modern cameras; on-off pointer lock, and a converter for incident light readings. While the meter can be used conventionally with free pointer movement, the on-off button permits locking the pointer when taking incident light readings, for instance, in extremely low light locations.

A storage cabinet for video tape has been announced by Neumade Products Corp., 250 W. 57 St, New York 19. The units accommodate 6-, 8-, 12½- and 14-in. tape reels. Facilities for library storage, transient editing and "on the air" program filing are included.

Accessories for home or amateur use produced by Kalimar Inc., 1909 S. Kingshighway, St. Louis 10, include the Minette 8mm Viewer-Editor and the Kalimar Auto Memo Exposure Meter. The viewer-editor features a 2½ by 2-in. frame area, simplified threading and built-in marking device. It is priced at \$34.50. The exposure meter features a built-in "memory" indicator that holds the light reading as long as desired. It is priced at \$14.95.

Two models of a "thin-trim" inconspicuous professional microphone have been introduced by Electro-Voice, Inc., Buchanan, Mich. The E-V 652 and 652A are dynamic-type microphones with a length of semirigid tubing to bring the microphone close to the user while the stand remains out of the way. The microphone can be tilted through a 120° arc with respect to the stand coupler. Two clear plastic baffles that fit on the head of the microphones are provided to add directivity and boost brilliance at the 6000-cps range. Model 652 has an overall length of 24 in. and weighs 10 oz. The 652A is 15 in. long and weighs 8 oz. The long necks are of a nonreflecting Nicaloy finish and are 1⅜ in. in diameter. Both microphones have an output level of -60 db and are designed to match all low-impedance inputs. A UA3-12 cable connector, 20 ft of three-conductor shielded cable and Model 300 stand coupler are included. Each of the microphones is priced at \$120.00.

A monochrome television camera utilizing a 4½-in. image orthicon has been announced by Radio Corp. of America. Designed for stability and simplicity of operation, the camera employs only

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two main operating controls. Essentially all setup controls are located within the camera rather than in a separate master console. Even with the centralized controls the camera weighs only 130 lb. Nuvistor tubes (p. 358, May 1959 *Journal*) are used in the video preamplifier and elsewhere. The camera chain includes a self-contained intercom with its own power supply. This may be interconnected with the studio intercom system or operated independently. The big picture tube involved the use of a large target and a relatively small photocathode, the same size as the photocathode on the 3-in. tube, so that the lenses on the new camera need be no larger than those on preceding ones. Electronic magnification produces the

large image at the target, resulting in a corresponding increase in picture resolution for finer detail.

A new testing device, the ServiShops Motion Analyzer Mark III, used for testing all types of photographic equipment, has been announced by National Camera Repair School, Box 174DO, Englewood, Colo. Two other items, a collimator (lens-testing device) and a low-priced photoflash synchronization tester called the ServiShops Syncrotester have been announced.

A closed-circuit paging system, a development of Giantview Television Network, 901 Livernois, Ferndale 20, Mich., connects Convention Hall in Atlantic City, N. J. with all rooms in major hotels and motels in the area. Main use of the system is that of paging convention delegates. Paging requests are processed through a center in Convention Hall. Names of persons being paged are typed on cards bearing sponsor identification and placed on a drum. Rotation will allow for 7-sec exposure of each name being paged until the page is answered by a call to the center. The system is also used for special programs, announcements, and advertising.

Microphone Facts is a monthly newsletter written by Lou Burroughs, Vice-President of Broadcasting and Recording Equipment, Electro-Voice, Inc., Buchanan, Mich., containing discussions of individual

problems, new ideas and developments. The January newsletter discusses uni-directional microphones. Copies of *Microphone Facts* may be obtained by writing to Mr. Burroughs.

The 5th edition of the Mood Music Catalogue has been issued by Thomas J. Valentino, Inc., 150 W. 46 St., New York 36. The catalog is designed for easy reference and provides details and descriptions for each recording, including timing, specific purpose of each cut, a brief description of theme, mood and tempo, and rates. The catalog is available upon request to the company.

Space Data Inc., 8921 Sepulveda Blvd., Los Angeles, has been appointed sales distributor for the closed-circuit television equipment of the GPL Division, General Precision Laboratory Inc., Pleasantville, N.Y.

Four- and six-channel magnetic theater sound systems are described in a four-page illustrated brochure published by Ampex Professional Products Co., Audio Products Div., 934 Charter St., Redwood City, Calif., and available upon request. The brochure emphasizes the use of six-channel stereophonic sound for 70mm wide-screen production. Details are given on the compact station control units designed to simplify operating procedures. These simplified control units were the subject of a paper by George B. Goodall, "Modern Control of Theater-Sound Equipment," presented at the Society's 1959 Fall Convention in New York, and published in this issue of the *Journal*.

The Labmaster Film Processors are described and illustrated in a brochure issued by Houston Fearless Corp., 11801 W. Olympic Blvd., Los Angeles 64. The three basic black-and-white models, all of modular construction, are the negative-positive (16mm or 16/35mm); reversal (16mm), and microfilm (16mm or 16/35mm). The brochure is available upon request.

The Audio-Visual Equipment Catalog #297 is available from Genarco Inc., 97-04 Sutphin Blvd., Jamaica 35, N.Y. Various types of equipment are described and illustrated including 3000-w slide projectors and electric slide changers for 3½ by 4-in. slides.

A four-page price list for the company's line of TV broadcasting, repeating, microwave and communications systems is available from Adler Electronics, Inc., One Le Fevre Lane, New Rochelle, N.Y.

The Optics of Projection, No. 8 in the series of bulletins issued by National Carbon Co., Division of Union Carbide Corp., 30 E. 42 St., New York 17, discusses important points to be considered in correlating the light source with the optical system. The 8-page bulletin contains 19 illustrations. The discussion considers first the Formation of the Image on the Screen; and second, Illuminating the Wide Film Aperture and Film.





employment service

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 These notices are published for the service of the membership and the field. They are inserted three months, at no charge to the member. The Society's address cannot be used for replies.

Positions Wanted

Motion-Picture Technician, Timer. Age 35, 12 yrs experience in all phases laboratory work, processing supervision, sensitometric control, some knowledge camera work and animation. SMPTE member. Desire permanent position with laboratory or TV station. Complete resume on request. Gunter J. Hackert, c/o Oskar Ernst, 213 East 81 St., New York 28.

Cinematographer. 25 yrs experience black-and-white and color, 35 & 16mm; 5 yrs theatrical production in Europe; 20 yrs industrial, commercial, educational and documentary films; recently worked 12 yrs with General Motors Audio-Visual Photographic Dept.; further background information available. Desires connection with producer of industrial, educational or travel films. Free to travel; speak several languages. J.P.H., Box 375, College Park Station, Detroit 21, Mich.

Producer-Manager or Laboratory Production Supervisor. Independent producer in 16mm sound films and industrial and color still photography desires position with large company. No capital to expand plus limited market prompts move. Married, 28 yrs old. B.A. and part M.A. in communications. Experienced PR man. Ex-Marine. Best of references. Owns complete motion-picture and still production and lab equipment. Résumé on request. Write: DH, Box 118, Missoula, Mont.

Writer-Director-Film maker, winner of numerous national and international awards and experience in entertainment, TV, industrial, and educational fields desires challenging assignment. Write 12625 Hatteras St., North Hollywood, Calif., or phone YUcca 2-2910, Santa Fe, N.M.

Television Producer-Director. With a broad background in both educational and network level commercial television. Experience in radio production and sales, and also a knowledge of merchandising. Both B.A. and M.S. degrees. Currently employed, but willing to move to a position where hard work and ability will lead the way to opportunity. Willing to locate anywhere in the U.S. Married. Résumé and references supplied on request. Write: Richard R. Ferry, Apt. 112, 14 Buswell St., Boston, Mass.

Motion-Picture Production Associate. Univ. S. Calif., Dept. of Cinema, graduate, age 26. Experience as cameraman, editor and sound mixer with National Educational Television and Radio Center at Univ. of Illinois Math Study. One yr project ends July 1, 1960. Desire permanent position as cameraman, editor or sound mixer. Resume and references on request. John A. Werner, 317 S. Russell St., Champaign, Ill.

Positions Available

Instrument Design Engineer. To assist with the design of high-speed motion-picture cameras and related products. Degree required in mechanical or electrical engineering with four yrs minimum design experience. A challenging position with a growing company. Write: T. H. Truesdell, D. B. Milliken Co., 131 N. Fifth Ave., Arcadia, Calif.

Television Engineer. GS-855-12, \$8810 per yr. To plan, design, coordinate, test and evaluate television equipment for military applications. Position will require about 50% traveling within and possibly outside continental limits of U.S. Applicants must have either 4-yr academic engineering training with bachelor's degree, or equivalent experience or combination of college training and experience; in the latter cases a written test will be required. *Also, Sound Recording Equipment Operator Foreman* for TV Division, \$4.09 per hr; *TV Video Equipment Operator Foreman* for Television Division, \$4.25 per hr. For all positions, Standard Form 57 (Application for Federal Employment), obtainable from the U.S. Civil Service Commission or any Post Office, should be completed and sent to: Civilian Personnel Office, Army Pictorial Center, 35-11 35th Ave., Long Island City 1, N.Y. RA 6-2000, Ext. 238.

Equipment Technicians. To maintain, service, repair all types of mechanical and electronic production equipment. Excellent salary and opportunity to advance with expanding organization. Write fully, all letters kept in strict confidence: Arthur Florman, Florman & Babb, Inc., 68 West 45 St., New York 36.

Equipment Salesmen. To call on industry, government, film producers. Must be willing to travel. Excellent salary and opportunity to advance with expanding organization. Write fully, all letters kept in strict confidence: Arthur Florman, Florman & Babb, Inc., 68 West 45 St., New York 36.

Optical-Photographic Engineers. Excellent opportunities for optical and photographic engineers with or without experience in optical instrumentation, photographic optical systems and cinematography. Mechanical aptitude desired but not required for these engineering positions. Send resume to Ellis P. Faro, c/o Scientific Employment, Bausch & Lomb Optical Co., 635 St. Paul St., Rochester 2, N. Y.

Photo Chemist/Chemical Engineer. Outstanding, creative opportunity for graduate chemical engineer or photo chemist with broad basic knowledge of processing techniques and solutions including minimum of 2 yrs experience with image transfer materials. Desire ambitious engineer with 10 yrs photographic experience for attractive opening in new product development. East coast location. Our employees know of this ad. Box MPTV 1944, 125 West 41 St., New York 36.

Sound Technician. GS-9, \$5985 per yr. Duties involve operation, servicing and maintenance of complete 16mm sound recording system, including making of original magnetic tape recordings, rerecordings and optical recordings. Interested parties should apply by sending a resume or standard Government application form (Form 57) to Industrial Relations Department, Pacific Missile Range, Naval Missile Center, P.O. Box 4, Point Mugu, Calif.

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