

An Automatic Shutter Control for D & J Printer HANS-CHRISTOPH WOHLRAB, *Bell & Howell Co., Chicago*

At the present increased printing speeds, hand setting of light changes is difficult and unreliable. The automatic shutter control kit which is described can easily be mounted on any D&J printer, and utilizes tape code and perforator presently available for the additive color printer. The control operates on 22 light steps incorporating fade release and automatic printer start and stop, including a dynamic braking device to avoid coasting of the printer. Good accessibility of all components facilitates servicing.

The Effect of Developing Time Upon Distortion in Variable-Area Recording GEORGE LEWIN, *Army Pictorial Center, Long Island City, N.Y.*

Variable-area sound recording on film was originally thought to be immune from processing variations. While the effect of exposure and density upon cross-modulation distortion has long since been recognized and is well documented over the years, the significance of developing time is generally overlooked. It is shown that the common practice of adjusting developing time to compensate for exposure errors is not satisfactory. Large errors can never be fully compensated, and small errors are shown to require overcompensation if the optimum print density is to remain unchanged. The need for further study of the effect of changes in the developer itself upon cross-modulation is indicated.

Laboratory Problems and Procedures in Processing Color Negative in the Cinemiracle Process and Preparation of Theater Prints Therefrom

PAUL A. KAUFMAN, *Tri-Art Color Corp., New York*; and COLEMAN T. CONROY, JR., *National Theatres, Inc., Los Angeles*

Louis de Rochemont's first Cinemiracle Adventure film *Windjammer*, produced for National Theatres, Inc., was photographed on 35mm Eastman Color Negative, Type 5248. Laboratory procedures in processing the negative, timing, color balancing, printing and vignetting Cinemiracle release prints are discussed.

A Technique for Reducing Contrast for Special Purposes in Printing From Negatives of Normal or Excessive Contrast

PAUL A. KAUFMAN, FERDINAND INDIA and ROBERT M. SMITH, *Du-Art Film Laboratories, Inc., New York*

Owing to special requirements of the TV industry problems of severe contrast reduction have been imposed upon film processing laboratories printing from negatives which were photographed and processed for theater presentation. A technique has been developed whereby contrast reduction is effected with release positive stock under normal developing conditions. Other applications of this technique are also discussed.

12:15 Get-Together Luncheon

MONDAY AFTERNOON

2:30 SYMPOSIUM on 16mm Color Intermediate Negative/Positive Release Printing

A Symposium on the 16mm Internegative/Positive Process

ROBERT A. COLBURN, *Chairman, Geo. W. Colburn Laboratory, Inc., Chicago*

Three 16mm motion-picture laboratories in the Midwest using the 16mm internegative/positive system of producing release prints describe the various methods used in their respective laboratories to obtain satisfactory prints. Each laboratory also describes special printing equipment that was designed and built by it for its exclusive use to meet the requirements of this system.

Awards at the Convention

Presentation of Awards will take place Tuesday evening, October 21. The Awards ceremony represents one of the gravest responsibilities of the Society, that of designating the men whose achievements are of present importance and hold promise for the future. Following are the names of recipients, the Awards to be bestowed, and the names of the Chairmen of the Award Committees: to George Lewin, the Samuel L. Warner Memorial Award, Gordon E. Sawyer, Chairman; to Albert Rose, the David Sarnoff Award, William B. Lodge, Chairman; to Merle L. Dundon, the Herbert T. Kalmus Award, Herman H. Duerr, Chairman; to George Lewin, the Journal Award, S. P. Solow, Chairman. This award is for the paper on "The Infrared Transparency of Magnetic Tracks." Honorable Mention for papers published in the *Journal* will be awarded to Willy Borberg for "Effect of Gate and Shutter Characteristics on Screen Image Quality," Armin J. Hill for "Analysis of Background Process Screens," Donald Kirk, Jr., for "Economic Considerations in Closed-Circuit Television System Design" and R. G. Neuhauser for "Black Level — The Lost Ingredient in Television-Picture Fidelity."

The rank of Honorary Member will be bestowed upon Herbert T. Kalmus. Deane R. White is Chairman of the Committee on Honorary Membership.

Preparation of Originals for 16mm Internegative/Positive Printing

ROBERT A. COLBURN, *Geo. W. Colburn Laboratory, Inc., Chicago*

The Geo. W. Colburn Laboratory sets up originals in A & B rolls to incorporate fades, lap dissolves and invisible splices; timing is both for color balance and exposure balance; originals are cued for automatic printer operation; and originals are treated to minimize Newton ring formation.

16mm Color Intermediate Negative-Positive Printing Procedures and Controls

JOHN R. STILLINGS, *Lakeside Laboratory, Gary, Ind.*

Printing procedures and control techniques using an additive printer in the production of 16mm color positive prints from 16mm reversal color film are described. Matrix algebra is used in determining a basic exposure for each emulsion type and number used. These matrices can be used for initial printer calibration as well as for routine printer control.

16mm Internegative and Positive Processing Controls

WILLIAM D. HEDDEN, *The Calvin Company, Kansas City, Mo.*

Processing control of 16mm color internegative and color positive is necessary to produce a high-quality product. This paper deals with methods of photographic and chemical processing production controls and their coordination with motion-picture printing controls.

Two New 16mm Printers Designed Especially for the Internegative and Color Positive Process

GEO. W. COLBURN, *Geo. W. Colburn Laboratory, Inc., Chicago*

The internegative printer is a contact step printer for daylight operation. A mechanical dissolve shutter will operate at two speeds. Light changes are accomplished by use of glass neutral density filters. Color filters are introduced automatically to make individual scene color-balance changes.

Tentative Schedule of Committee Meetings

Monday, October 20

- 2:00 P.M. Film Dimensions
- 5:30 P.M. Association of Cinema Laboratories (including dinner)

Tuesday, October 21

- 10:00 A.M. Screen Brightness
- 10:00 A.M. Papers
- 11:15 A.M. Board of Editors
- 12:30 P.M. Editorial Luncheon
- 2:00 P.M. Film Projection Practice
- 2:00 P.M. Publications Advisory
- 3:00 P.M. Section and Student Chapter Officers

Wednesday, October 22

- 10:00 A.M. Public Relations Advisory
- 2:00 P.M. Education

Thursday, October 23

- 10:00 A.M. Sound
- 2:00 P.M. 16 & 8mm

Friday, October 24

- 10:00 A.M. High-Speed Photography
- 2:00 P.M. Television

Final schedule will be listed in the Convention Program and meeting notices will be mailed to Committee members.

The color positive printer operates at 300 ft/min and handles both color internegative and negative sound rolls in one pass.

Equipment for Printing 16mm Color Internegative and Color Positive Film

R. PAUL IRELAND, *EDL Company, Gary, Ind.* Equipment for printing 16mm color internegative film differs from other 16mm printing equipment in only one essential way: considerably more exposure must be provided for color negative than for other films. There are several other differences which are desirable although not necessary.

The Colormatic Printer

LLOYD THOMPSON and KENNETH B. CURTIS, *The Calvin Co., Kansas City, Mo.*

The making of 16mm color prints from color original reversal by the internegative system is more difficult and exacting than making reversal prints. Black-and-white equipment demands extensive modification or new color equipment must be built. This paper outlines some of the problems and the details of a new high-speed production printer for making positive prints from the internegative.

MONDAY EVENING

7:30 DOCUMENTARY AND EDUCATIONAL FILM PRODUCTION

Milking the Oddball Camera

WILLIAM R. WITHERELL, JR., *Video Films, Detroit*

Without demeaning the importance of standard motion-picture equipment, it can be claimed that such gear, by virtue of its inflexibility, can be a limiting factor in approaching a production. The value of substandard, "oddball" equipment is stressed, with film examples. There is good reason to put emphasis on the creative freedom

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inherent in the use of some nonprofessional cameras and recorders. Such thinking is recommended as an adjunct to, and not a substitute for, the generally accepted practices of our industry.

Documentary Film Productions of Conventions, Assemblies and/or Special Events
HENRY USHIJIMA, *John Colburn Assoc., Inc., Wilmette, Ill.*

Film Production in Central Africa
GEOFFREY T. C. MANGIN, *Central African Film Unit, Salisbury, S. Rhodesia, W. Africa*
Film activities in Central Africa include production of informational, advertising and educational films for theaters, for specialized audiences and especially for screening by mobile cinemas to the primitive indigenous African population. Technical facilities are limited but there are seven months of continuous sunshine. The hazards of dust, extreme changes of heat and humidity, and poor communications are special problems in making films of, and for, the African, and filming wild animals in the natural habitat.

Catching Bank Robbers With Cameras
ALFRED JENKINS, *Photoguard Corp., New York*
On April 12, 1957, three robbers held up a bank in Cleveland, and made a getaway, but their every action during the robbery has been photographed by a Photoguard Camera. The development of this camera and the problems of manufacturing equipment that is 100% reliable—even though it may not be used for years at a time—are described. Motion pictures of the robbery are shown and how they helped solve this crime will be discussed briefly.

The Unusual Films Motion-Picture Production and Training Unit at Bob Jones University
MRS. GILBERT STENHOLM, *Unusual Films, Bob Jones University, Greenville, S.C.*
The Unit produces and distributes in 16mm feature-length dramatic motion pictures on re-

ligious and educational themes, and travelogues, documentaries, and promotional short subjects. Comprehensive courses leading to the bachelor's and master's degrees in Cinema are offered. The physical studio and equipment facilities are on a scale unique among institutions of higher education. Unusual Films provides the "laboratory" for practical experience in all phases of motion pictures for students in the Division of Cinema of the Bob Jones University School of Fine Arts.

TUESDAY—OCTOBER 21

9:00 A NEW LOOK AT FILM TECHNIQUES FOR EDUCATION

New Perspectives for the Use of Film in Teaching
SOL ROSHAL, *Los Angeles*

Operations Research on Instructional Films
LORAN C. TWYFORD, *Michigan State University, Audio Visual Center, East Lansing, Mich.*
The needs for instructional films and how these needs are being met can be thought of as one operation. The factors in this operation include sound, picture, motion, color, cost, ease of preparation, use and maintenance, as well as other less important considerations. Instructional film research provides the guidance for evaluating the relative importance of these factors and points to films and equipment design considerations.

An Experimental Evaluation of Sound Filmstrips vs. Classroom Lectures
S. DWORKIN and A. N. HOLDEN, *Bell Telephone Laboratories, Murray Hill, N.J.*
Four, 45-min sound filmstrips on atomic bonding, produced by the authors, were tested with 120 graduate engineering students. Half were taught

by the regular lecture and half by the filmstrips. An examination and a questionnaire indicated that there was no significant difference in learning between the two groups. Most of the students were willing to accept the sound filmstrips as a teacher substitute.

Films Help Break Teacher Education Bottleneck
ELLSWORTH C. DENT, *Coronet Instructional Films, Chicago*

Traditionally, teachers teach as they were taught. Hundreds of thousands of teachers in our schools today have been given little or no experience with educational films while receiving their training. Despite the more than sixty years since the development of motion pictures, less than 20% of America's 1,100,000 teachers are using films effectively in their classrooms. A broad program for teacher training to accelerate the teaching of future scientists and engineers is proposed.

Responsibilities of Classroom Film Producers
ALAN KELLOCK, *McGraw-Hill Text-Films, McGraw-Hill Book Co., New York*

In today's competitive world, with nations going all-out to strengthen their educational systems, the responsibilities of the classroom film producer take on a new and vital importance. He must choose subjects carefully to fit the curriculum, use competent subject matter advisers, and create scripts that will provide genuine learning experiences. He must be sure of technical production quality, and if desirable and practical, he should pretest his product before final release.

Brigham Young University's New Film Studio
ROBERT W. STUM and R. IRWIN GOODMAN, *Brigham Young University, Provo, Utah*

After five years of research and planning, the new motion-picture studio for the Department of Motion Picture Production of the Brigham Young University is nearing completion. Designed to carry an idea through from script to screen, the

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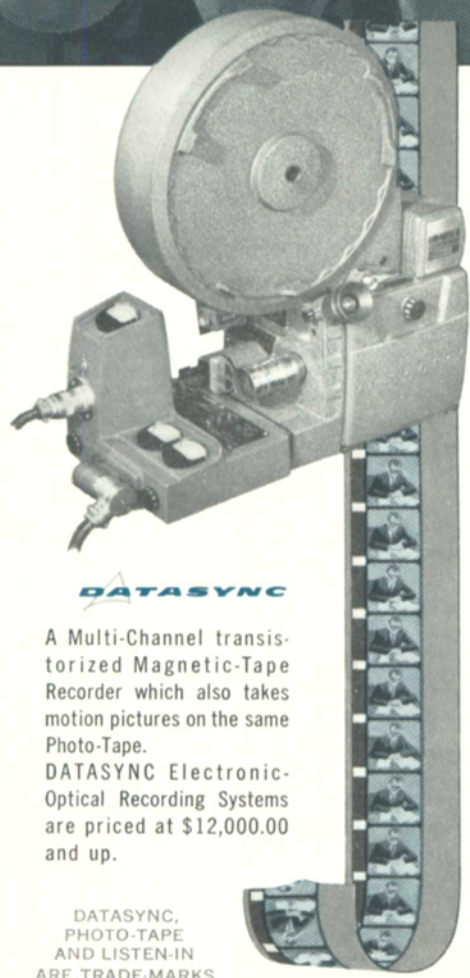
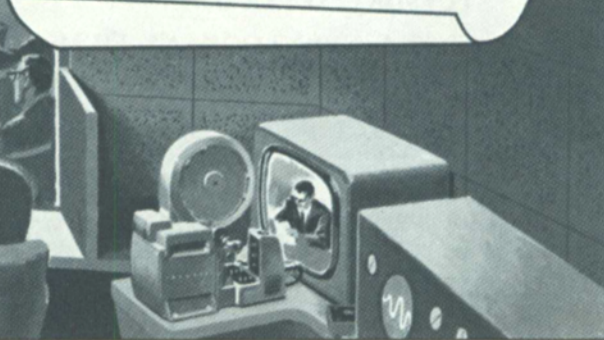
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These multi-language films also find wide cultural and practical use at International World Fairs, Expositions, Political Meetings, International Business Conferences or Conventions, and for International Educational purposes. Thus Datasync bridges the language barrier and encourages understanding among men and peace among nations.

new facilities include an 80 by 100-ft soundstage; a two-story scenedock; integrated sound, projection and viewing setup; echo chamber; art and animation room; animation camera room; make-up and dressing rooms; camera and sound equipment repair shop; two editing rooms; and offices for writers and production personnel.

U. S. Film Production Training Overseas
DON WILLIAMS, *Syracuse University, Syracuse, N. Y.*

TUESDAY AFTERNOON

2:00 A NEW LOOK AT FILM TECHNIQUES FOR BUSINESS

Analysis of Growing Business Film Usage
JOHN FLORY and THOMAS W. HOPE,
Eastman Kodak Co., Rochester, N.Y.
The chief areas in which business and industry

are making use of motion pictures are: selling, advertising, public relations, employee training, and research and development. These applications account for two-thirds of the quarter-billion-dollar annual expenditures in the nontheatrical film field.

Motion Pictures — A Training Tool Used by Supervisors

E. H. PLANT, L. W. JENKINS and J. B. DeWITT, *Eastman Kodak Co., Rochester, N.Y.*
Supervisors at the executive offices of the Eastman Kodak Company are using low-cost "home-made" motion pictures to train their employees who, in turn, are encouraged to take pictures of operations, using the camera as a "thinking tool," just as they normally use a pencil. Conference rooms are designed for complete remote control operation by the supervisor doing the training: special lighting for different projection conditions, all 16mm film and slide projectors, plus provision for rear projection or even camera operation are

at his finger tips. The techniques developed here are being widely adopted by other business and educational organizations.

New Trends in Low-Cost In-Plant Film Production

F. A. DENZ, *Remington Rand, Division of Sperry Rand Corp., Tonawanda, N.Y.*

The advent of high-quality, light-weight 16mm cameras, and magnetic-optical projectors, coupled with the new, faster film emulsions, provides increased opportunities for business and industry to use low-cost, internally produced training films. Technical problems encountered in this expanding audio-visual frontier are analyzed, along with equipment requirements and cost limitations.

Techniques for Visual Aids Production

NORMAN E. SALMONS, *Audio-Visual Service, Eastman Kodak Co., Rochester, N.Y.*

There are techniques and methods of producing relatively low-cost visual aids for business and industry. Although emphasis is on a system of "short term" production techniques, standards of appearance and effectiveness are kept high. Preparation of artwork and all phases of still photography in the visual aids field are discussed. This is a completely "visualized" presentation, showing examples of visual techniques in both black-and-white and color.

Facilities, Equipment and a System for Visual Aids Production

NORMAN E. SALMONS, *Audio-Visual Service, Eastman Kodak Co., Rochester, N.Y.*

The facilities, equipment and staff required for producing visual aids in an in-service photographic department for industry are described as those of the department in which the visual presentations in the previous paper were produced. Also, a simplified system of planning visual-aid sequences uses the individual who will present the talk as the expert on subject matter. A portion of the system, using storyboard techniques, is a very efficient production procedure.

Loop Films With Particular Reference to Their Adaptability in Verbal Skill Training

ROBERT K. DAKER, *Seminar Films, Inc., New York*

Loop films, long used in one form or another, were best known either as a means of concentrated study of a pictured situation or as a method for teaching mechanical skills. After 1953, when Capt. W. C. Eddy perfected a simple, easy-to-interchange cartridge-type loop absorber, the loop-film technique was adapted to verbal skill teaching. A first series of lessons, produced for teaching another language, were developed cooperatively by Seminar Films and a group at Harvard led by Dr. I. Richards and Christine Gibson of Basic English fame. From this beginning evolved a participation-type system of training widely used today in industry for the improvement of employees' verbal skill in interpersonal relations.

Versatility, the Theme of PerceptoScope Design

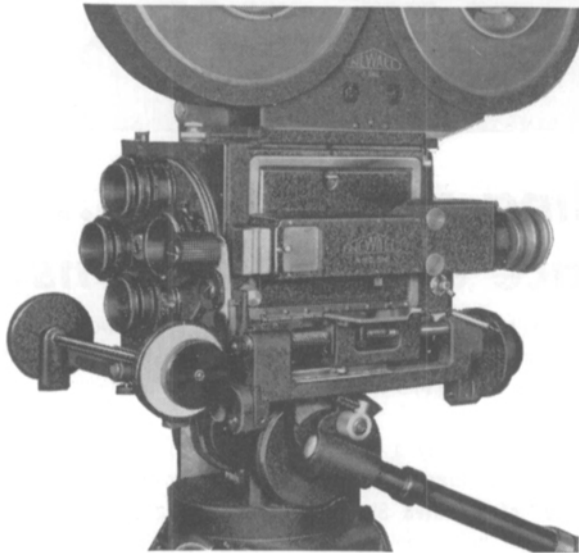
F. E. VANDERWAL, *Perceptual Development Laboratories, St. Louis, Mo.*

Excerpts from a few of the industrial and educational training courses of the Perceptual Development Laboratories are used to demonstrate the PerceptoScope and to illustrate its abilities in the projection of 16mm film. A detailed discussion of three key design features of the PerceptoScope explain its unusual operation and how these features, plus imaginative usage, will get more out of 16mm film.

The "Sun Calculator," A Method for Determining the Approximate Compass Position of the Sun During the Day

JOHN P. BREEDEN, JR., *Ford Motor Co., Dearborn, Mich.*

The "Sun Calculator" consists of a set of three wallet-sized diagrams which graphically represent the position of the sun during daylight hours in relation to a central North-East-South-West plan. By its use the cameraman can determine for any season of the year what time of day the sun



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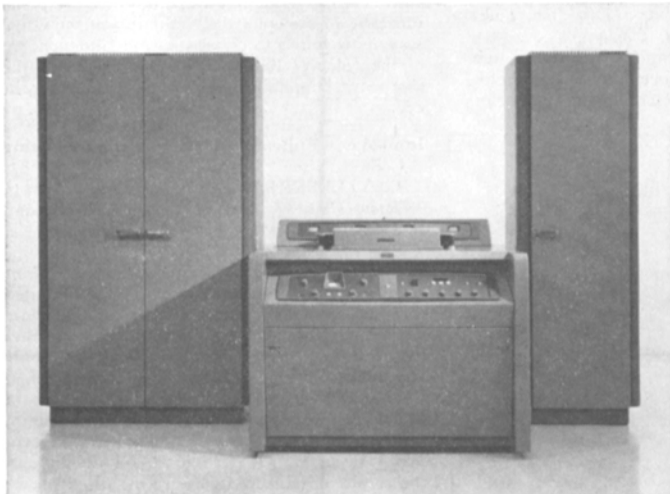
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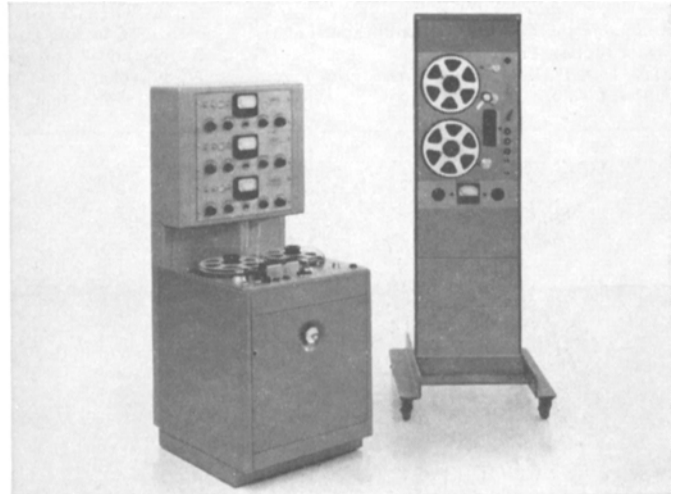
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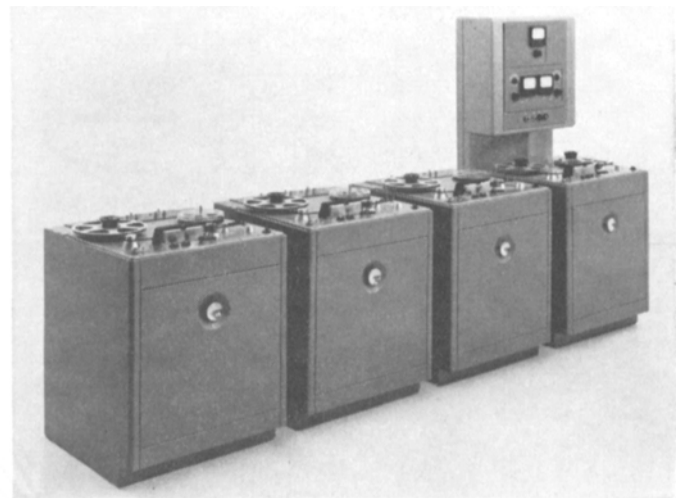
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will shine from the direction he desires, or if it will never shine from that direction. How to make and use the diagrams is explained.

The Challenge Facing the American Film Producer

HENRY USHIJIMA, *John Colburn Associates, Inc., Wilmette, Ill.*

The producers of both entertainment and commercial films are considered: the former must face the challenge of the home TV set and must create significant films for the motion-picture theater; and the commercial producer must make the client's problem his own problem and give to it not only his specialized abilities but also a lively and profound interest.

Analyzing the Commercial Applications of 16-mm Motion Pictures

ELY I. BERGMANN, *Universal Film Productions, Ltd., San Antonio, Tex.*

TUESDAY EVENING

8:00 PRESENTATION OF AWARDS

WEDNESDAY—OCTOBER 22

9:00 TELEVISION EQUIPMENT AND PRACTICES

On the Quality of Color-Television Images and the Perception of Color Detail

O. H. SCHADE, SR., *Electron Tube Div., Radio Corp. of America, Harrison, N.J.*

A theoretical and experimental study of the NTSC color system supported by color photographs shows that contrast range and color

saturation obtained with commercial color kinescopes provide a larger color space than provided by color motion pictures. In fine detail more than 60% of full color information is transmitted and reproduced by the NTSC system, because the bandwidth restrictions of the electrical color signals (I,Q) do not affect definition in the vertical dimension and have a smaller effect on the reproduction of horizontal color detail than indicated by earlier evaluations which disregarded the two-dimensional nature of the image. The detail color reproduction appears adequate to the eye because the color errors remaining are small although perceptible. This fact is significant because the spatial sine-wave response functions of the color discriminators of the visual system are found to be substantially independent of the color of light and similar to the spatial sine-wave luminance response function of the eye.

Improved Vidicon Focusing and Deflecting Coils

J. CASTLEBERRY, *Industrial Electronic Products, Radio Corp. of America, Camden, N. J.*, and B. H. VINE, *Electron Tube Div., Radio Corp. of America, Lancaster, Pa.*

The effect known as "beam landing error" or "porthole" in vidicon cameras is eliminated through the use of a suitable coil configuration. The axial positions of the coils are chosen so that the beam electrons approach the target with only an axial component of velocity at all times. Exceptional signal uniformity, independent of signal electrode voltage and focus field strength, is then obtained with a vidicon having a uniform photoconductor. A particular coil design and the results obtained with it are discussed.

Design Trends in Television Lighting-Control Equipment

TOM C. NUTT, *Canadian Broadcasting Corp., Toronto, Ont., Canada*

Lighting-control systems have been designed which permit all TV lighting equipment to be readily assembled, and ultimately controlled by one technician located at a control console. The console design is such that the maximum number of lighting operations may be preset during rehearsals, and reproduced on air by simple direct switching. The education of the lighting technician to the operation of preset lighting-control systems is discussed and also the relationship of this type of control system to TV operations.

Television Zoom Lenses

GORDON HENRY COOK, *Taylor, Taylor & Hobson Ltd., Leicester, England*

The advantages to be gained in outside broadcast presentation by the use of camera lenses of variable focal length have been well established with the aid of lenses designed for that purpose. If similar advantages are to be provided under the different operating conditions encountered in the studio or in industrial TV, new types of lenses with more extreme optical characteristics are necessary. The solution of these new optical problems yields a zoom lens ideally suited for a wide variety of TV applications.

Transistorized Auricon Camera

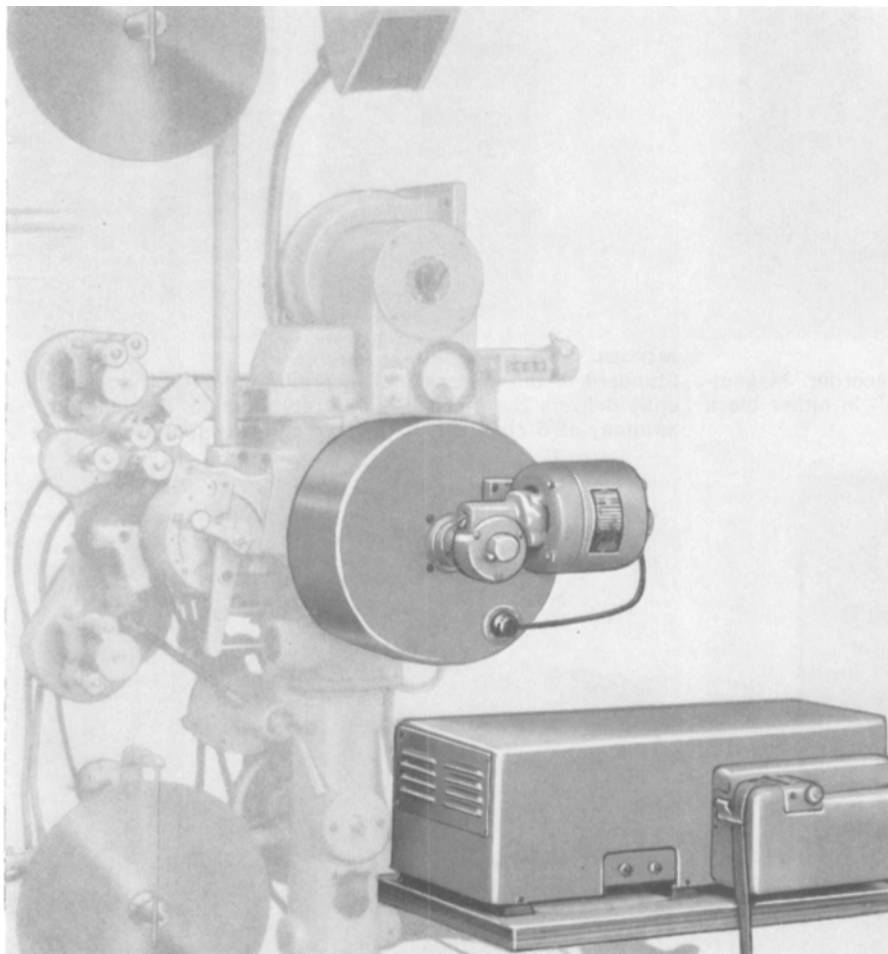
EDWARD M. TINK, *WLAC-TV, Inc., Nashville, Tenn.*

A sound-on-film recording system has been made of a portable power supply and a miniature transistor amplifier mounted directly on the side of an Auricon 16mm Camera. The power supply is housed in a standard camera gadget bag and supplies both a-c power to the camera drive motor and d-c power to the amplifier and exposure lamp. Nickel-cadmium cells and a built-in charger virtually eliminate battery replacement. The entire system weighs 36 lb.

The Victor Multicolor Televisor

ALEXANDER F. VICTOR, *Alexander F. Victor Enterprises Inc., Carmel-by-the-Sea, Calif.*

A method for producing color on existing black-and-white TV receivers, which does not require electrical or mechanical changes in the sets, is described. The system includes a projector for



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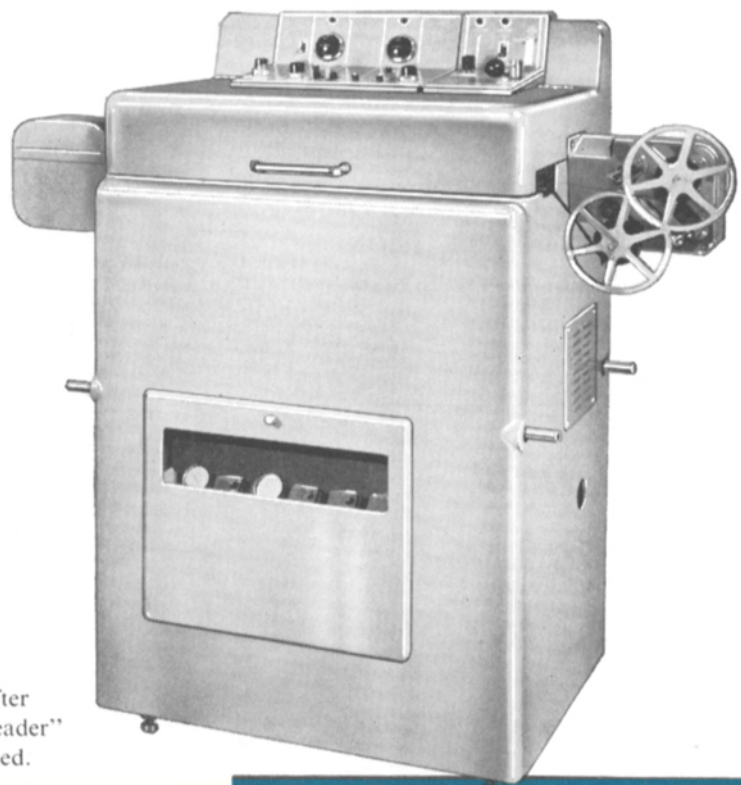


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The need for stop baths and interbath rinses, normally required in many processes, is virtually eliminated because of a positive squeegee roller design.

A high-efficiency blower system and electrical heating ensure rapid drying in the machine. The Processor is perfect for newsreels, TV news on film, motion picture "rushes" in the field,—in all cases where speed plus quality are essential.

Write for literature and quotations.

SPECIFICATIONS

AUTOMATIC TRI-FILM PROCESSOR TYPE T246 Mk3

Size: 54" long, 22" wide, 51" high
 Weight: 400 lbs.
 Power Consumption: 5 KVA maximum single-phase: 110 volts, 45 amps, or according to customer requirements
 Process Capacity: 1 to 4 rolls 16 mm | length
 1 or 2 rolls 35 mm | to
 1 roll 70 mm | 400 ft.
 Rate of Processing: 1½, 3 or 6 ft. per min.
 Temperature-controlled solutions and dryer. Daylight operation except loading of film into magazine. Processes perforated or plain film.

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(formerly PSC Applied Research Limited)

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MEMBER: A. V. ROE CANADA LIMITED & HAWKER SIDDELEY GROUP



broadcasting stations to transmit color pictures to existing black-and-white receivers and a multicolor screen for the reception of the pictures.

New Eidophor System for Large Screen Projection of TV

EDGAR GRETENER, *Gretenor A.G., Zurich, Switzerland*

The Eidophor, a system of projecting television pictures on motion-picture screens, was invented 20 years ago by the Swiss scientist, Fritz Fischer. After his death in 1947, development of the system was continued at the Dept. of Industrial Research, Swiss Federal Institute of Technology, Zurich. Simplification of the original system was achieved by the introduction of a mirror system for schlieren optics. The present compact (2 ft by 5 ft by 3 ft) Eidophor was brought to its present stage of development by Gretener A.G., which took over the system in 1951. The Gretener organization then entered into an agreement with 20th Century-Fox Film Corp. which, under terms of the agreement, is developing a wide-screen color Eidophor. The black-and-white system can project a 15 ft by 20 ft image. An important feature is its ability to operate using a relatively low-power xenon gas lamp as the light source. The system is a complete receiver-projector unit and can be connected to a TV antenna for standard broadcast reception or to closed-circuit wires.

WEDNESDAY AFTERNOON

1:30 A NEW LOOK AT FILM TECHNIQUES IN TELEVISION

Effective TV Commercials — Some Fundamentals

HORACE S. SCHWERIN, *Schwerin Research Corp., New York*

Based on audience tests of about 10,000 commer-

cial, there is summarized what has been learned through use of the Schwerin Competitive Preference technique in regard to the characteristics of effective and ineffective commercials. The paper concentrates on so-called "independent" commercials (i.e., those that are not integrated into programs), and also deals more briefly with some fundamentals in regard to personality-delivered TV advertising.

The TV Workshop: A Unique Agency Client Service

WARREN G. SMITH, *J. Waller Thompson Co., New York*

The showing of a 15-min sound film, after an introduction by the author, guides the viewer through the JWT Company TV Workshop. First the nontechnical features, then the workshop facilities and their employment are covered. Live and film television, both monochrome and color, live film, animation and kinescopes, sound recording—all are treated in the film and accompanying paper in sufficient detail to allow thorough understanding of how and why the Workshop functions.

Television Film Commercial Production in New York City

WILLIAM H. UNGER, *Elliot-Unger-Elliot Motion Pictures, New York*

The main requirement for satisfactory commercial production of TV films is flexibility of operation; the major problem in achieving this flexibility is lack of space. Some of the mechanical facilities of a small studio can be designed to expedite day-to-day production, and also production techniques have been evolved around these facilities.

Fifth U.S. Army TV Hometown Project

DAVID B. ANDRE, Chief, and PFC HOWARD CHAPMAN, Producer, *Radio-TV Branch, Information Section, Headquarters, Fifth U.S. Army, Chicago*

The Department of the Army initiated a "Home-

town TV Film Program" in late 1957. A "TV Hometown" is a 60-90 sound-on-film action sequence or interview featuring Army personnel in training and on the job at Fifth U.S. Army posts and camps in the Middle West and western Great Plains region, for distribution to hometown TV stations in all parts of the country. A TV team composed of a producer and cameraman, using Auricon pro-600 sound camera, a Zoomar lens and professional sound equipment, has completed over 500 TV interviews and features since January 1958. The film is processed and mailed to TV stations by the Army Home Town News Center in Kansas City, Mo.

Filming for Educational Television

DAVID W. JOHNSON, *University of Southern California, Los Angeles*

The varied subject matter of educational TV programming dictates a flexible approach to filming. The techniques differ from those used in commercial TV filming in that they must meet individual situations as they arise, with no sacrifice in quality. Further, the budget for an educational program is frequently less than one-twentieth that of a commercially filmed program of the same length produced by comparable techniques. The Staff Production Unit of the University of Southern California, Department of Cinema, has produced four series, totaling 44 half-hour programs for educational TV. Each series had unique production problems which called for different solutions. These problems are discussed and short samples shown.

Aspects of Kinescope Recording Evaluation

KEITH K. KETCHAM, *WOI-TV, Iowa State College, Ames, Iowa*

The various aspects of kinescope recording practices are particularly related to the making of kinescopes for Educational Television and Radio Center by various educational suppliers. Definite methods of evaluating kinescope recordings are analyzed as a guide toward establishing a more

new
.....
horizons
.....
for
dim
light
photography
and television...

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f:0.87/76 mm

**SUPER
FARRON
F/0.87**

**76MM • 30° FIELD
40MM FOCAL PLANE**

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Engineers, Designers and Manufacturers
Precision Optics, Electronic and Scientific Instruments
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Super-Farron — an ultra high speed photographic objective having extremely fine correction over an unusually wide flat field. The advantages of its photographic speed of T/1.0 for operation under adverse light conditions are evident. It is available with standard infinity correction for direct photography, and it can be supplied corrected for 16:1 or 4:1 conjugates for special purposes. The Super-Farron is eminently suitable as an objective for Image Orthicon television cameras or for special 35mm photography.

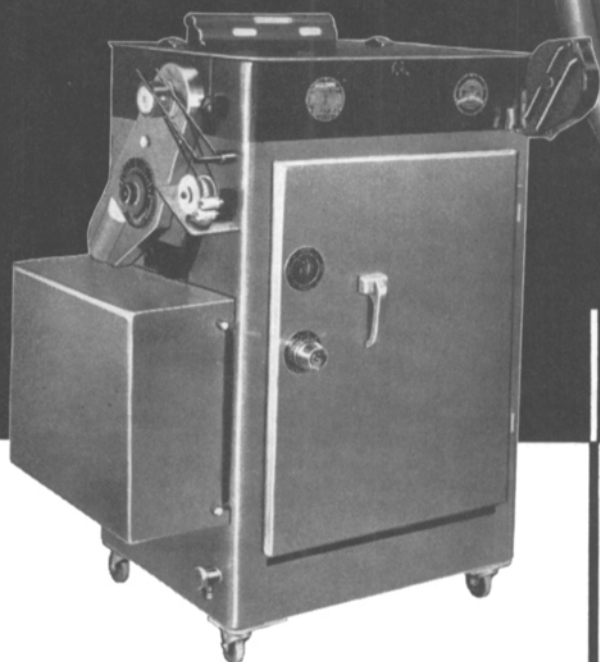
Technical data available on request
Specify Engineering Report No. 327

Pat. No. 2,846,923

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Film Processors Available for
35mm B&W Negative-Positive
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HELICAL CHANNEL SYSTEM

- **INSTANT AUTOMATIC THREADING** — need not be threaded with leader, eliminates feed-in and take-up elevators
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At last . . . *perfection* in professional film processing . . . with the fabulous Andre Debrie *Tank-less* Helical Channel Development System. Film is guided through channels unsupported by rollers, virtually eliminating breakage. Optimum quality development and consistency is achieved by a solution control system that maintains chemical strength at a rate directly proportional to the amount of film surface being processed.

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complete, workable set of standards. Present methods do not provide absolute procedures to assure optimum results.

The Role of Black-and-White Film in Color Television

WILLIAM L. HUGHES, *Electrical Engineering Dept., Iowa State College, Ames, Iowa*

In discussing the economics of black-and-white film systems for use in color TV, particular stress is placed on the advantages for program syndication and for commercial and news production. The general cost breakdown for the newly announced Iowa State College system is presented from the standpoints of the station operator and the syndicated film producer. The physical and operating characteristics of the system are outlined.

WEDNESDAY EVENING

6:45 Cocktail Party

8:00 BANQUET AND DANCE

THURSDAY—OCTOBER 23

10:15 KINESCOPE RECORDING PROBLEMS AND EQUIPMENT

The Marconi 16mm Fast Pulldown Kinescope Recorder

M. E. PEMBERTON, *Canadian Marconi Co., St. Laurent, P.Q., Canada*

The object of the recording channel is to produce a standard 16mm film. The Recording Monitor, which produces the high-quality TV picture, and the 16mm Fast Pulldown Camera, which is used to record the TV picture, are described. Performance data are given and a typical film made with this equipment is shown.

A New Low-Cost and Practical Kinescope Recorder

WILLIAM O. CRUSINBERRY, *Dage TV Div., Thompson Products, Michigan City, Ind., and LESLIE P. GREENHILL*, *The Pennsylvania State University, University Park, Pa.*

The need for a low-cost, reliable and easily operated kinescope recorder will be discussed and illustrated. The electrical and mechanical characteristics of the Dage KR11 Kinescope Recorder will be described and the problems involved in its development will be discussed. Methods of setting up operating procedures and standards, film-processing requirements and quality-control procedures will be described with reference to the use of the recorder with vidicon TV camera chains. Educational applications will be indicated and illustrated with the showing of a short sample kinescope recording.

Emulsion Sensitivity for the Photography of Cathode-Ray Tubes

R. W. TYLER and F. C. EISEN, *Kodak Research Laboratories, Eastman Kodak Co., Rochester, N.Y.*

Properties of a P11 phosphor which affect photographic exposure have been investigated. Decay rate of phosphorescence was found to increase with spot velocity. Writing rates for several emulsions were determined for an oscilloscope and were found to rank emulsions in the same order as sensitometric tests made by exposing emulsions through a density step tablet to filtered tungsten and xenon flash illuminants. The effect of forced development is described.

Synthetic Highs — An Experimental TV Bandwidth Reduction System

W. F. SCHREIBER, C. F. KNAPP and N. D. KAY, *Technicolor Corp., Burbank, Calif.*

This paper describes a complete experimental system which codes a standard video signal to match a narrow-band channel and subsequently decodes the received signal for display on a standard TV monitor. The system transmits the low frequency, or macrocontrast signal, in analog form. The location and quantized amplitude of the edges are transmitted by a digital code. Bandwidth reduction is achieved by exploiting both statistical correlations and psychophysical phenomena. Apparatus for the separation of low frequencies, detection and quantization of edges, and synthetic reconstruction of highs are described. Kinescope photographs of the resulting pictures will be shown. Factors affecting the degree of bandwidth reduction will be discussed, as will the effect of variation of system parameters such as separation frequency and quantization levels.

THURSDAY AFTERNOON

1:30 MACHINE LANGUAGE TRANSLATION and INTERNATIONAL TELEVISION

Automatic Printed Character Reading

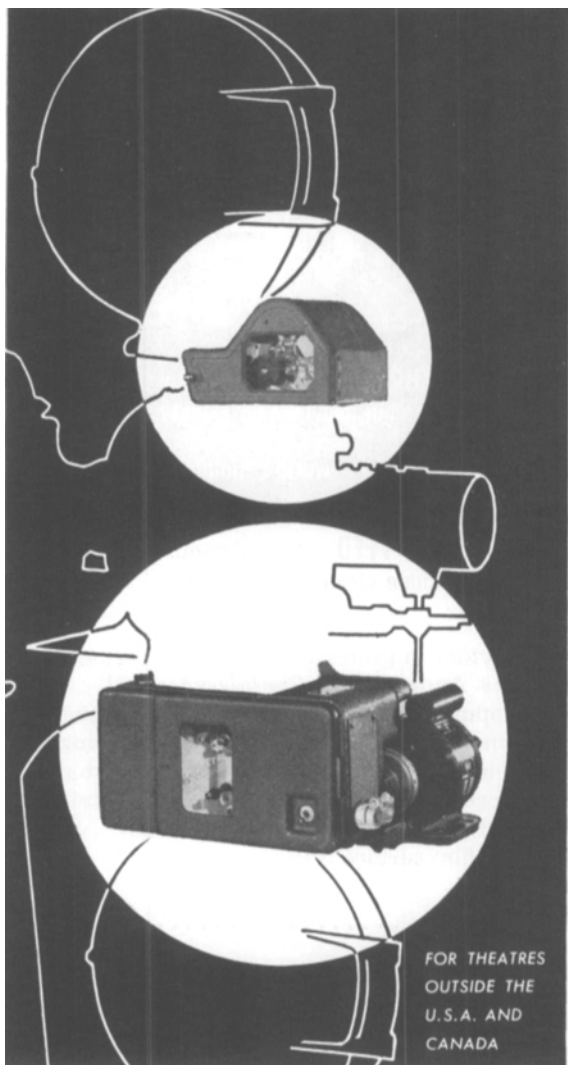
BOWMAN SCOTT and P. A. M. CURRY, *Solartron Electronic Group Ltd., Surrey, England*

There is a need for automatic character recognition in business data processing systems and a particular method of reading has been chosen. A description of the method also points out the facilities for overcoming the defects of ordinary typescript. The future program is outlined with a view to the eventual contribution toward automatic translation.

The BBC Television Standards Converter

T. WORSWICK, *British Broadcasting Corp., London, England*

After outlining the background of the standards conversion problem in European TV, the design



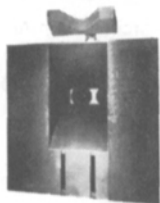
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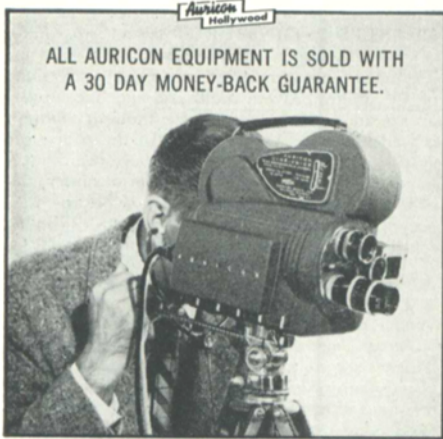


Research, Distribution and Service for the Motion Picture Industry

Westrex Corporation

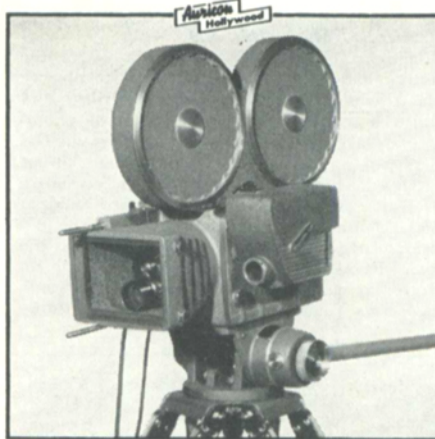
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AURICON 16mm Sound-On-Film for Professional Results!



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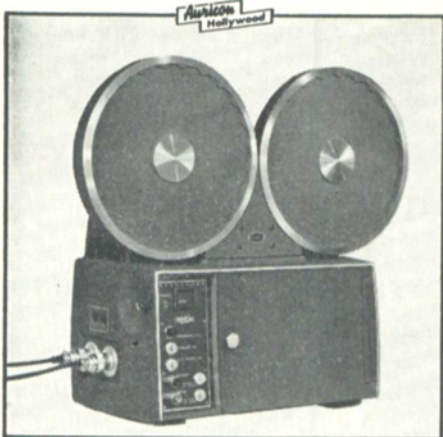
"CINE-VOICE II" 16mm Optical Sound-On-Film Camera.
 ★ 100 ft. film capacity for 2¾ minutes of recording; 6-Volt DC Converter or 115-Volt AC operation. ★ \$795.00 (and up).



"AURICON PRO-600" 16mm Optical Sound-On-Film Camera.
 ★ 600 ft. film capacity for 16½ minutes of recording. ★ \$1871.00 (and up) with 30 day money-back guarantee.



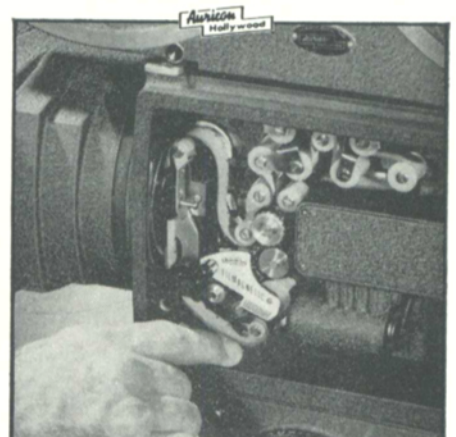
"SUPER 1200" 16mm Optical Sound-On-Film Camera.
 ★ 1200 ft. film capacity for 33 minutes of recording. ★ \$5667.00 (and up) complete for "High-Fidelity" Talking Pictures.



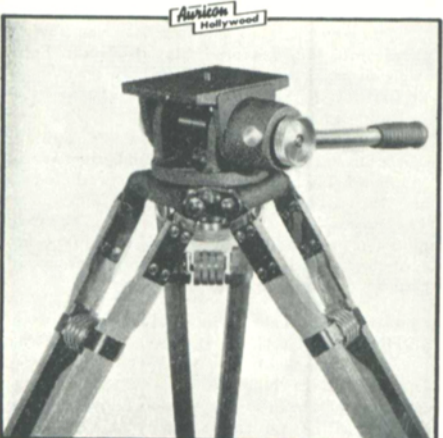
SOUND RECORDER — Model RM-30... 1200 foot film capacity, synchronous motor for "double-system" 16mm Optical Sound-On-Film operation. ★ \$3630.55 (and up)



PORTABLE POWER SUPPLY UNIT — Model PS-21... Silent in operation, furnishes 115-Volt AC power to drive "Single System" or "Double System" Auricon Equipment from 12 Volt Storage Battery, for remote "location" filming. ★ \$269.50



FILMAGNETIC — Finger points to Magnetic pre-stripe on unexposed film for recording lip-synchronized magnetic sound with your picture. Can be used with all Auricon Cameras. ★ \$870.00 (and up)



TRIPOD — Models FT-10 and FT-10S12... Pan-Tilt Head Professional Tripod for velvet-smooth action. Perfectly counter-balanced to prevent Camera "dumping." ★ \$406.25 (and up).

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If it's profit you're after in the production of 16 mm Sound-On-Film Talking Pictures, Auricon Cameras provide ideal working tools for shooting profitable Television Newsreels, film commercials, inserts, and local candid-camera programming. Now you can get Lip-Synchronized Optical or Magnetic Sound WITH your picture using Auricon 16 mm Sound-On-Film Cameras. Precision designed and built to "take it."

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MANUFACTURERS OF SOUND-ON-FILM RECORDING EQUIPMENT SINCE 1931

and performance of the British Broadcasting Corp. standards converter are described. This converter comprises a high-quality display of the incoming (625- or 819-line) picture which is presented to a TV camera using a 4½-in. image orthicon pickup tube (P812) on the British standard of 405 lines.

Status of Machine Translation Research at Georgetown University

LEON E. DOSTERT, *Georgetown University, Institute of Languages and Linguistics, Washington, D.C.*

A brief review is given of the principal aspects of the three approaches to machine translation developed at Georgetown for the translation of Russian and French into English. Approaches to the resolution of lexical, structural, and semantic ambiguity, and the research methodology followed in the three approaches are described.

The nature and results of the test of the "Code Matching Technique," Aug. 20, 1958, are discussed.

Impressions of Electronics in Russia

By AXEL G. JENSEN, *Bell Telephone Laboratories Inc., Murray Hill, N.J.*

Highlights of two trips to Russia where the author had an unusual opportunity to observe the television industry will be described and illustrated with Kodachrome slides of photographs taken in Moscow and Leningrad. The first trip was made in 1957 when the author attended a meeting of the Popov Society as an IRE delegate. At that time he visited factories and scientific institutes and discussed the development and progress of television in the U.S.S.R. with Soviet scientists. In 1958 he returned to Moscow as a U.S. delegate to a Study Group on Television of the International Radio

Consultative Committee. An especially interesting observation is in regard to the progress of color TV during the interval between his visit in 1957 and his return in 1958.

Video Time-Delay Systems

CHARLES P. GINSBURG, *Ampex Corp., Redwood City, Calif.*

The need for an improved means for conversion of TV programs from the frame and line standards of one country to those of a different country is well known in the industry. In the course of video-tape recording research, certain techniques have been developed for storing various intervals of TV information. It may be possible, by the use of some of these techniques, to devise a solution for the standards conversion problem.

A Study of Factors Influencing the Visibility of Televised Materials

WARREN F. SEIBERT, *Audio-Visual Center, Purdue University, Lafayette, Ind.*

Thirty six volunteer subjects, screened for normal visual acuity, viewed televised displays during a one-hour testing session. There were 252 displays; each consisted of four characters (letters and numbers) of a given size and contrast condition. The study design made it possible to compare visibility across: (1) six viewing distances, (2) three viewing angles, (3) three figure-background contrasts, (4) four character sizes, and (5) three time blocks within the testing session. Results indicate that no visual fatigue occurred, that black on white and white on black contrasts produced about equal visibility, and that characters subtending ten minutes of vertical visual angle could be perceived with almost complete accuracy.

THURSDAY EVENING

7:45 CLOSED-CIRCUIT TELEVISION FOR TEACHING

Educational Television Today

C. M. BRAUM, *Joint Council on Educational Television, Washington, D.C.*

Following upon the policy of reservation of channels for noncommercial educational television broadcasting, stations have been established and programming services provided. A number of organizations are involved in the planning, operation and programming of these stations. Closed-circuit TV for instruction in colleges and schools has also been developed. Present plans and indications for further growth of open- and closed-circuit educational TV are discussed.

Color and Monochrome Closed-Circuit Television at a Large University

FREDERICK M. REMLEY, JR., *University of Michigan, Ann Arbor, Mich.*

Three independent TV facilities are now in operation on the campus of the University of Michigan. Each installation meets specific needs and each is equipped and designed differently. The reasons for the establishment of the two monochrome studios and the one color studio are explained, and the proposed expansion of facilities is described.

Closed-Circuit Television in Hagerstown

JOHN R. BRUGGER, *Washington County Board of Education, Hagerstown, Md.*

Inaugurated in Hagerstown, the experimental use of closed-circuit TV in schools in Washington County, Md., is now in its third year. Organized as a five-year project, the general design of the system and equipment and the operation of the program are covered as a report of progress since earlier reports presented before the Society.

Administrative-Operational Problems of Medical Color Television

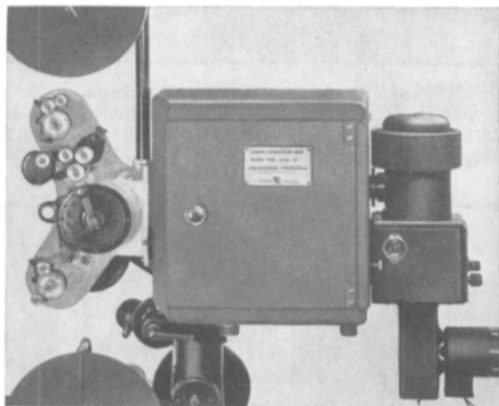
LOUIS W. CRIST, *Smith Kline & French Laboratories, Philadelphia*

The growth and development of the Smith Kline & French Medical Color Television Unit since



HIGH-SPEED HEAD

Supplied to fit existing B&H Contact Printers Model D (35mm) or J (16mm) in your own shop



Size: 15" x 15" x 12"

Continuous Black-and-White Printing at 200 ft. per minute

This compact high-speed head uses a single light source. Lamphouse is designed for a 1000-Watt T-12 bulb with blower. Bulb alignment easily made in darkness by adjusting three knobs, providing for vertical, transverse and rotational motion of the bulb.

One electro-mechanically operated light valve provides changes in 6 milli-seconds which show as a scene change flash of 1/3 of a frame. The light valve is controlled by 5 small solenoids to provide 32 printer steps of .025 or .030 Log E. Light valve opening may be adjusted to compensate for stock changes without altering the 32-step arrangement. Head can also be used for color printing with balanced inter-colored negative.

Optical system, contained in the casting, provides uniform light on the aperture of the B&H transport. Due to a cold mirror of the effective interference type, very little heat reaches the printing aperture. Heat absorbing glass is eliminated.

No skilled technician is required to operate the head. Entire programming of scene-to-scene changes, including start, stop and lap dissolves, is automatically accomplished by the use of an 8-hole punched tape reader and memory unit. This one-channel memory unit, with reader for automatic operation of the light valve, stores the introduced information, using an 8-hole punched tape reader. It permits the printing of scene changes as small as 3 inches in length and storing of 32 printer steps plus start, stop and lap dissolves. For easy servicing, commercially available 8-hole punched tape reader is used as a base.

Head with lamphouse and blower, ready for mounting to the B&H pedestal and transport Model D or J \$5,500

One-channel memory unit with reader..... \$1,650

All prices F.O.B. New Rochelle, N.Y.

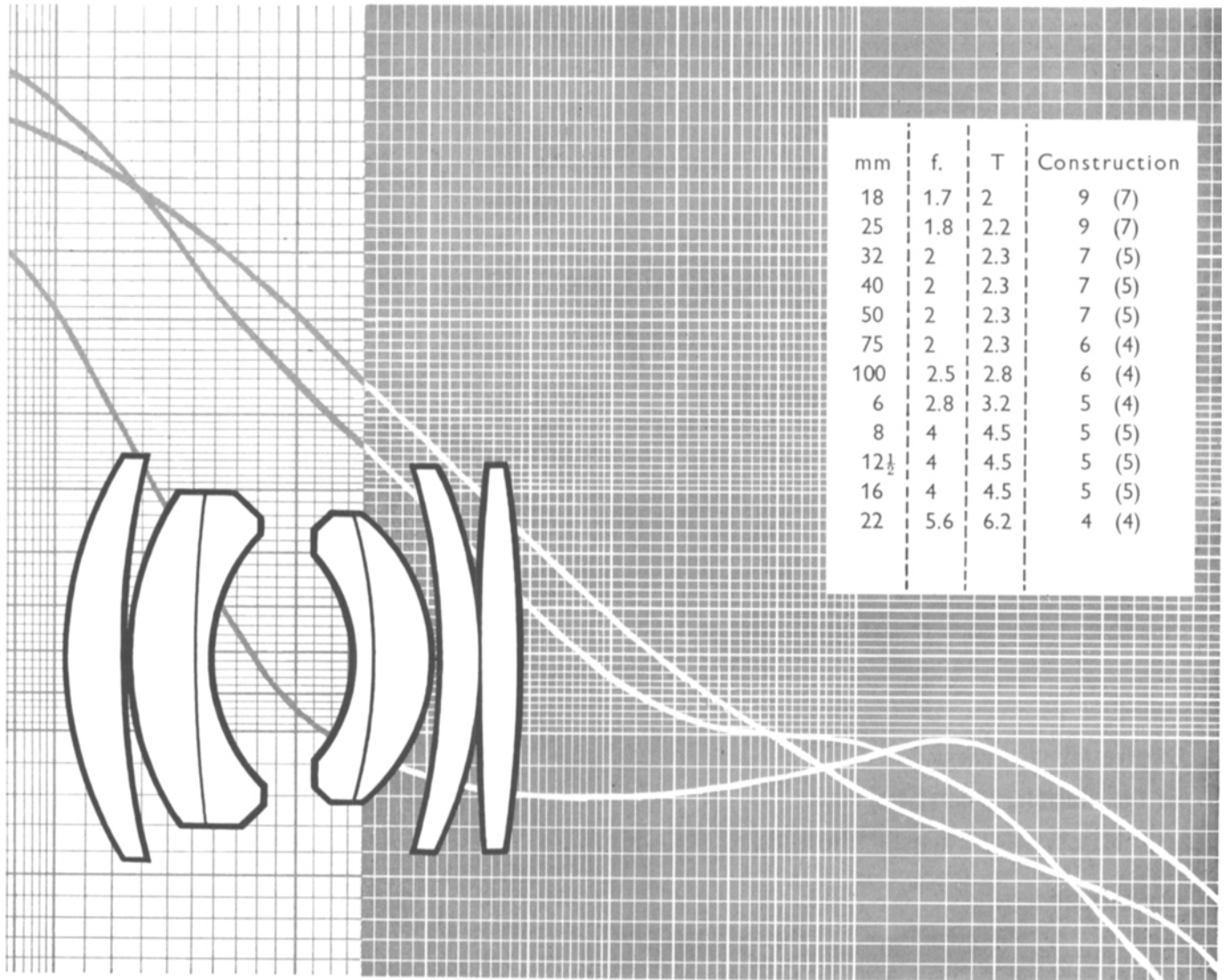
AUTOMATIC OPERATION

Standard punched-tape units have been recoded and modified to bring about automatic operations of film printing equipment. Punched tape performs the functions of discrete scene-to-scene light changes, dissolves shutter operation and automatic stopping equipment, adjusts light level and printer characteristics for any particular job. Complex printer operations may be performed with great accuracy at high speeds.

●
Write for further information
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A new range of lenses designed to meet present day requirements in the field of motion picture photography.

1. Seven basic designs applied to twelve focal lengths.
2. Design employs latest rare earth glasses.
3. High standard color correction, improved definition, and uniform image illumination.
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its first program in 1949 is traced. The advisability of future installations of permanent color TV facilities in major medical teaching centers is critically appraised in the light of the history of such installations and SKF's own experience. Emphasis is on the problems rather than the better-known advantages of such installations, and solutions to the problems are suggested.

Exchange of Air Defense Information by Closed-Circuit Television

Lt. Col. HOLLIS DAKIN, *U.S. Army Pictorial Center, Long Island City, N.Y.*

A new type of studio vidicon camera has been tested on a closed-circuit microwave TV system. The equipment, personnel and techniques are described as used for the immediate exchange of radar plotting information between Army and Air Force Defense Installations in Norfolk and Cape Charles, Va.

FRIDAY—OCTOBER 24 9:00 SOUND SESSION, GENERAL MOTORS PHOTOGRAPHIC, 464 W. Milwaukee Ave.

The Soundtrack in Nontheatrical Motion Pictures

FRANK LEWIN, *Filmsounds, Inc., New York*
The functions of the three components of the soundtrack—voice, music and sound effects—are discussed with detailed guides for editing them. The preparation of soundtracks for re-recording is described. Procedures are suggested to facilitate mixing.

A Method of Recording, Editing and Mixing Magnetic Sound for Industrial Films

DONALD A. ANDERSON, ROBERT H. WINTER and REID H. RAY, *Reid H. Ray Film Industries, Inc., St. Paul, Minn.*

Methods of recording, editing and mixing live dialogue, effects and music in industrial film production vary greatly. This paper outlines one method and describes the conversion from optical sound equipment with a minimum of new equipment to all-magnetic sound used in recording, editing and mixing. Parallel techniques are followed using 35mm soundtracks whether the photography is 16 or 35mm. Seven steps are described from the original 35mm magnetic recording until the transfer to either 16 or 35mm optical sound negatives.

A Method of Minimizing Exposure Drifts in Film Recorders

GEORGE LEWIN, *Army Pictorial Center, Long Island City, N.Y.*

Serious drifts in exposure have been encountered when making long re-recorded negatives for release printing. These drifts are especially noticeable when using the 35/32mm method where the total recording time may be as high as one hour. Possible causes of this problem are discussed and a method of minimizing it is described.

A New Approach to Magnetic Half-Striping of Optical Tracks

MAXWELL A. KERR, *Melpar, Inc. (A Subsidiary of Westinghouse Air Brake Co.), Falls Church, Va.*

A new method of adding magnetic striping without losing optical playback is explained and demonstrated. Advantages over present half-striping are: reduction of distortion during optical playback; higher signal output from optical track; elimination of critical alignment of striping machinery with centerline of optical track; reduction of optical track scratching by magnetic playback head; ability to play back two channels of magnetic sound as well as optical track; more even distribution of headwear during magnetic track playback; can be added to old films with the original unilateral variable-area track as well as to presently used optical tracks.

Single-System Editorial Synchronism Using Magnetic Soundtrack

ELLIS W. D'ARCY, *D'Arcy Magnetic Products, Inc., Gary, Ind.*

Editorial synchronism in picture taking and release prints has been considered desirable since the beginning of sound pictures. For economical rapid film production of the news, documentary and training films, this objective can be achieved by means of prestriped magnetic picture taking stocks and an instantaneous soundtrack relocating re-recorder. This technique has been developed and a universal magnetic professional recorder designed for the purpose.

A Multichannel Selective Program Repeater Utilizing the New Mackenzie Continuous-Loop 1/2-in. Magnetic Tape Magazine

LOUIS G. MACKENZIE, *Mackenzie Electronics, Inc., Inglewood, Calif.*

This paper covers the design and operation of an endless-loop 1/2-in. magnetic tape magazine with uniform low-friction tape motion for precision applications and a five-channel selective program repeater. The salient features include high-speed solenoid actuation for instantaneously cued stop-start operation, and completely transistorized audio and control circuitry. The paper also describes pertinent applications in the film recording, television, radio broadcasting and allied industries.

FRIDAY AFTERNOON

1:15 STANDARDS AND STANDARDIZATION

Projector Noise Levels

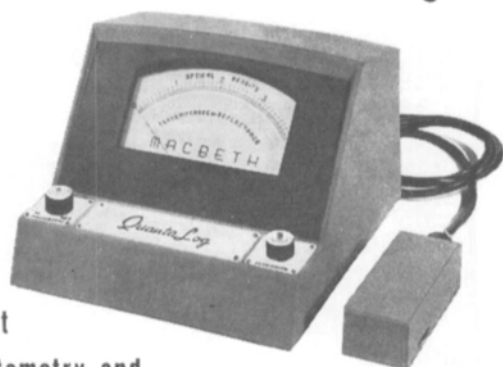
G. E. WHITNEY, M. T. BUCKELEW and J. F. McGRANE, *American Machine and Foundry Co., Alexandria, Va.*; M. L. BARON, *Signal Equipment Support Agency, Fort Monmouth, N.J.*
Analyses and empirical tests have been made to determine optimum noise levels of photographic

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THE NEW
MACBETH

QuantaLog



A Universal Instrument
for Densitometry, Photometry and

Light Measurement. A quality Instrument for Under **\$400.00**

(NOT INCLUDING
ATTACHMENTS)

FEATURES

- 1** Direct reading, in black-and-white or color, through narrow band pass filters, to density 4.0.
- 2** Large easy to read scale 0-4.0 density units, eliminates scale changing and tracking error. Scale is linear with density. Instrument has an accuracy of $\pm .02$ density units over entire scale.
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SMPTE 84th Convention
Sheraton-Cadillac Hotel, Detroit, Mich., October 20-24

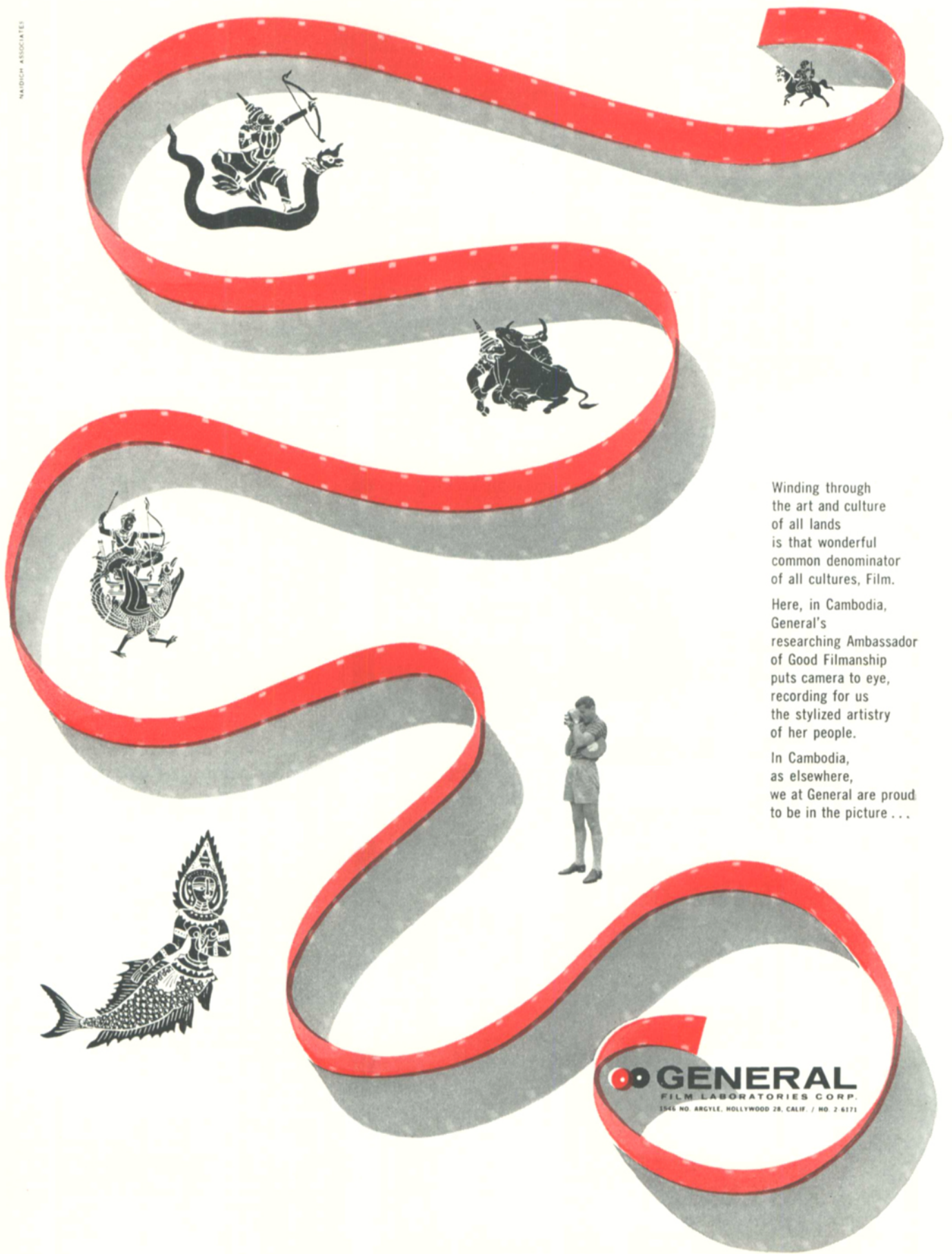
Photoengravers' Convention
Netherland Hilton Hotel, Cincinnati, Ohio, October 13, 14 and 15

If you would like to receive complete literature and specifications on the new Macbeth QuantaLog, please address correspondence to Dept. ML

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projectors. It is shown that to achieve 96% intelligibility (per cent of sentences understood) the projector should have an "articulation index" greater than 0.4, a quantity related complexly to noise and frequency. The index is simple to determine when the projector noise spectrum parallels the spectrum for ordinary speech, i.e., when it peaks near 500 cycles/sec. Measurement of the index is more difficult when the spectra are nonparallel.

SMPTE Contributions to Standardization in the U. S.

FREDERICK J. KOLB, JR., *Eastman Kodak Co., Rochester, N. Y.*

International Standardization of Magnetic Sound on Film — A Status Report

M. G. TOWNSLEY, *Bell & Howell Co., Chicago*
Standardization of frequency characteristics of magnetic sound on motion-picture film has been on the program of ISO TC/36, Cinematography, for several years. At Stockholm in 1955 tentative agreement was reached on a frequency charac-

teristic and a method of measurement. Later developments led to a disagreement on frequency characteristic, particularly in 16mm, and to a change in concept in the method of measurement. At Harrogate in 1958 a new agreement was reached, in which the frequency characteristic is given with tolerances which include both American and European practice and in which the frequency characteristic is specified in terms of relative levels to be recorded on the film.

International Standardization for Motion Pictures and Films for Television

DEANE R. WHITE, (*Leader, U.S. Delegation to the Harrogate Meeting of ISO/TC36*), *E. I. du Pont de Nemours & Co., Inc., Photo Products Dept., Parlin, N.J.*

The third meeting of ISO/TC 36, the committee responsible for development of international standards for motion pictures, was held in June 1958. Attention was given to problems arising from both television and theatrical usage. Areas of mutual understanding and agreement were enlarged. Improvement in the ease of inter-

national exchange of theater and television program material is the predictable result of this work.

INSTRUMENTATION AND HIGH-SPEED PHOTOGRAPHY

Techniques in High-Speed Microphotography
R. WAYNE ANDERSON, *Photographic Dept., Dow Chemical Co., Midland, Mich.*

The developments and techniques used by recognized authorities in the field of high-speed microphotography are reviewed. Slides and motion pictures illustrate micro studies obtained by using cameras that have been adapted or developed to resolve specific problems in micrography. Continuous and intermittent light sources are described as used in high-speed still and cinemicrography studies.

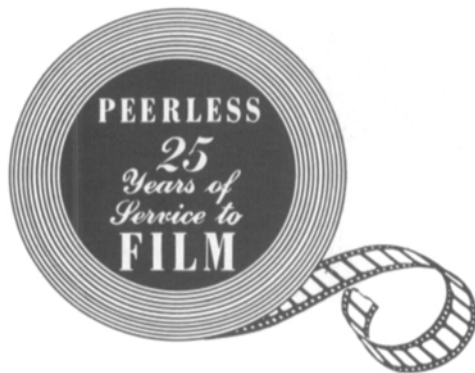
Shutter Image Converter Tube for Multiple Frame Photography

WILLIAM O. REED and WILFRID F. NIKLAS, *The Rauland Corp., Chicago*

Various systems for ultra-fast photographic shutters are described. It is shown that Shutter Image Converter Tubes have the advantage of light gain and the adjustable frame rate and frame spacing. A shutter tube is described which is capable of delivering 16 frames on the viewing screen, utilizing electrostatic focusing and electromagnetic deflection. This tube employs an Sb-Cs (0) photocathode formed by external Sb-evaporation, a cascaded focusing system, deflection yokes which are assembled around the neck of the tube, a lumped PDA system, and a yellow-green modified P20 phosphor for the viewing screen. The tube is capable of exposure times in the range of 1 millimicrosecond.

Color Exposure for High-Speed Photography of Some Events Requiring Artificial Illumination

KARL-HEINZ LOHSE, *U. S. Steel Corp., Monroeville, Pa.*



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Education, Industry News

A recording-reproducing color television system which puts color electronically on 35mm black-and-white film has been developed at Iowa State College, Ames, Iowa. The system is described as completely compatible with all current television standards and the film may be used to rebroadcast or reproduce the original color. Simplicity is noted as an outstanding feature of the ISC system. It is said to be less complicated and more economical to operate than the simplest black-and-white film chain and is designed to be operated by the average studio technician. The equipment is on display at the Electrical Engineering Building on the ISC Campus. It was first demonstrated on Sept. 17, 1958, and thereafter will be demonstrated from 10 AM to 4 PM on Oct. 1, 16, 17, 24 and 25.

A paper on the system, "Recent Improvements in Black-and-White Film Recording for Color Television Use" by William L. Hughes, appeared in the July 1956 *Journal*, pp. 359-364. Mr. Hughes presented at the Washington Convention in 1957 a paper "Some Theoretical Aspects of Storing Color Television Information on Black-and-White Film" which has appeared as Iowa State College Bulletin 180.