Advance Program

Unavoidable shifts in schedule and changes or additions to the papers listed sometimes occur after publication of the Advance Program. Barring these minor variations which may become necessary before or even during the Convention, the events on this program will take place in the order given here.

Detailed information is available from SMPTE headquarters in New York (LOngacre 5-0172). It is suggested that inquiries relating to scheduling of individual papers, committee meetings or other information that does not appear in the Journal should be made by telephone during the week preceding the Convention. Dates and schedules can also be confirmed directly with the Program Chairman, Herbert Farmer, whose number in Los Angeles is RIchmond 8-2311, Exts. 328, 269, 200.

SUNDAY—APRIL 20

2:00 Registration opens in the Main Lobby, Ambassador Hotel

MONDAY—APRIL 21

9:00 Registration

10:00 GENERAL SESSION

A Direct-Drive Automatic Iris Control
MERVIN W. LARUE, JR., *Bell & Howell Co., Chicago*
A new type of automatic iris control is incorporated in the Bell & Howell Design 290 8mm camera. The iris control is operated solely by power from a photovoltaic cell, made feasible by the exceptionally low power requirements of a unique rotary "barn-door" iris. The method of construction results in a highly shock-resistant mechanism with almost unlimited service life. The automatic control is described and some of the design considerations discussed.

Automatic Film Cleaning Machine With High-Speed Process Cycle
ROBERT GRUNWALD and HOWARD BOWEN, *The Harwald Company, Inc., Evanston, Ill.*
A high-speed film cleaning and conditioning process involving the use of solid additives in the cleaning solvent has recently been developed. The solid additives, intended to lubricate the film and prevent scratches, must be applied in controlled quantities. This is accomplished through use of closely controlled concentration of solids in the solvent and by electronically controlled fluid feed which allows accurate adjustment of film "wetness."

Lenses for 35 mm Film Cameras
GORDON HENRY COOK, *Taylor, Taylor & Hobson, Ltd., Leicester, England*
An earlier paper by the author (in the March 1956 Journal) discusses the optical problems to be overcome in providing a standard of performance which is adequate for subsequent enlargement at a considerable scale on large viewing screens in the theater. The present paper describes the characteristics which hitherto have limited the performance of conventional lenses and shows how the application of new design techniques together with the use of new optical materials has led to the development of a new and complete range of camera lenses to suit modern requirements.

12:00 Get-Together Luncheon

MONDAY AFTERNOON

2:30 CLOSED-CIRCUIT TELEVISION

Industry Standardization Effort in the Closed-Circuit Television Field
ROBERT G. DAY, *General Electric Co., Syracuse, N.Y.*
Recent SMPTE action indicates an interest in technical standards for closed-circuit television. The areas in which SMPTE can best contribute without duplication of effort are discussed, in addition to the background, organization, status, plans and problems of EIA activity in the field.

Aspect Ratio Treatment at Bartlesville
F. N. GILLETTE, *General Precision Laboratory Inc., Pleasantville, N.Y.*
A new electronic method of compressing CinemaScope and VistaVision films makes it possible for them to be shown on standard-size home TV screens, without noticeable cropping or distortion. The control console and installation features of interest are described.

Zoom Lenses for Closed-Circuit Television
FRANK G. BACK, *Zoomar, Inc., New York*
In the rapidly growing field of closed-circuit TV, zoom lenses have become of ever-growing importance. Several zoom lenses are already on the market. The different characteristics of these lenses and their advantages and disadvantages are discussed and their function demonstrated by pictures and diagrams on a television chain.

Generating and Processing Television Signals for Narrowband Transmission
DONALD M. KRAUSS, *General Electric Co., Syracuse, N.Y.*
The cost of wideband transmission over long distances has been a serious obstacle to the application of closed-circuit TV in many problem areas. Where the customer will tolerate reduced resolution and loss of continuous motion, some promising approaches to the problem are available. A survey is made of several methods of generating, transmitting and processing narrowband TV signals, with particular emphasis on a system utilizing conventional pickup and display equipment operating at standard scanning rates.

Sensitivity and Speed of Television Camera Tubes
R. G. NEUHAUSER, *Radio Corp. of America, Lancaster, Pa.*
The sensitivities of various camera tubes are determined in terms of the illumination levels required for both standard and nonstandard TV scanning rates. For convenience, these values are given in terms of equivalent ASA film exposure index values to facilitate the use of a common exposure meter to determine scene light or iris settings. The effective speeds of various camera tubes are also evaluated in terms of the ability to stop motion. This factor is evaluated both from the standpoint of deriving intelligence from the signal and from the standpoint of the aesthetics of the picture, i.e., absence of negative image or "long tail" carry-over of signal. The effects of over-exposure or of under-exposure on the speed of different camera tubes are also illustrated.

MONDAY EVENING

8:00 THE PAST AND THE FUTURE

The George Eastman House Film Collection
JAMES CARD, *George Eastman House, Rochester, N.Y.*
The George Eastman House opened in 1949 as a nonprofit museum of photography and cinematography. It contains a collection of motion-picture apparatus and a film library of some seven million feet, stored in specially constructed vaults. A program of copying nitrate film on acetate stock is in progress. Films are shown in the Dryden Theatre to visitors, to the 3000 members of the Dryden Theatre Film Society, and to special groups.

Language Translation by Machine
MAX G. KOSARIN, *U.S. Army Pictorial Center, Long Island City, N.Y.*
Projects are in progress throughout the United States and overseas, involving mechanical translation of foreign languages, utilizing the electronic computer. The mechanical translation process consists of four general steps: coding the source language for input data; producing word-for-word translation; translation of sentences and phrases; output of complete translation in target language. Machine translation is possible for foreign versions of motion pictures. The problem of obtaining an automatic print reader offers a challenge to the engineer engaged in the motion-picture and television industry.

Pay TV—Why the Controversy?
LLOYD HALLAMORE, *Hallamore Electronics, Inc., Anaheim, Calif.*
Pay TV will, it is believed, have to be a wire system and a telephone utility the organization to install and maintain the system. A new approach to Pay TV by completely wired communities is the use of the system for local free TV during the daytime hours with movies shown for a fee in the evening. When complete communities are wired for TV, the cables can be used for other industrial and community service closed-circuit TV programs, such as police, educational and medical training. It is believed that the entire movie industry from producers through exhibitors should be supporting the Pay TV plan, not fighting it, because it will greatly expand the field for motion pictures, and so the exhibitors are the logical operators of the Pay TV system.

TUESDAY—APRIL 22

9:00 SOUND RECORDING

Electrostatic Uniangular Microphone
HARRY F. OLSON and JOHN PRESTON, *RCA Laboratories, Princeton, N.J.*
The electrostatic uniangular microphone consists of an electrostatic transducer combined with an acoustical network to provide a uniform response with respect to frequency and a uniangular directivity pattern. The microphone exhibits a high order of directivity. The polar directional pattern is independent of the frequency.

Variable-Area Process Control Using Distortion Balance
RALPH R. WELLS, *Columbia Pictures Corp., Hollywood*
Processing of variable-area sound for television presents problems of time, quality and adaptability. Methods for using a new pulsed-signal generator provide a practical approach to the problems. Tests may be evaluated with a meter, oscilloscope, densitometer, or even a common loudspeaker. A new graphic technique provides process data not heretofore available.

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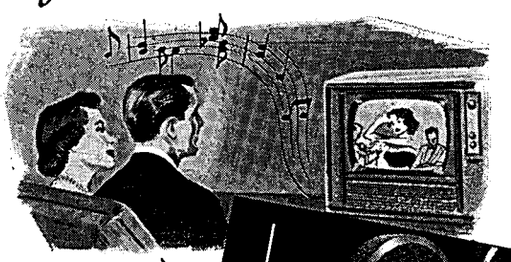

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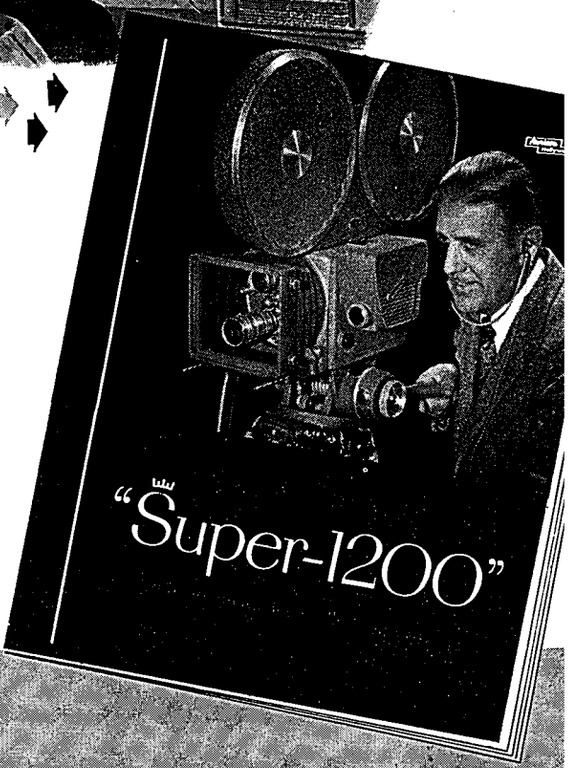

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An Investigation of Splicing "Pops" in Magnetic Tape

PHIL SWEENY and RALPH R. WELLS, *Columbia Pictures Corp., Hollywood*

The causes and remedies of "pops" due to splices have been investigated. The sources of several common causes have been traced. Several nonmagnetic materials were investigated as were splicing techniques. Splicer modifications, blooping and preventive maintenance have been used to overcome the effects.

A Portable Sprocket-Type Magnetic-Tape or Film Recording System

G. R. CRANE and E. W. TEMPLIN, *Westrex Corp., Hollywood*

Three professional magnetic recording systems have been designed, employing sprocket-hole ¼-in. tape or 16mm or 17½mm films, which meet the operating and quality requirements of the motion-picture industry. One of two small carrying cases contains a two-position mixer, including preamplifiers, recording amplifier and the 115-v a-c system power supply. The recorder includes a bias oscillator and monitor amplifier, both transistorized. The recorder operates synchronously from an a-c line or from power derived from the camera motor.

A Versatile Studio Photographic Recording System

G. A. BROOKES and H. A. MANLEY, *Westrex Corp., New York*

A variable-area or density photographic recording system has been designed with optional magnetic recording facilities. A short cabinet, containing transmission equipment of new design, and an associated table and recorder form a compact operating unit. The recorder provides a simplified film path for photographic and magnetic recording, improved optics and a novel visual monitor. Of particular interest are transistorized monitor amplifiers, simplified exposure meter and an improved compressor-amplifier which should find wide application.

An Integrated Sound-Service Studio for 16mm Production

ROBERT W. EBERENZ, *Byron Inc., Washington, D.C.*

After discussion of the physical construction of the new studios, the acoustical treatment and placement of equipment for ease of operation are illustrated with drawings and color slides. Special attention is given to the equipment selected for the studio: the unique new Westrex RA-1581 optical and magnetic recorder and its associated transmission system, including double-speed optical transfer operation and other associated equipment; the new eight-position recording console; looping facilities; and the motor reversing and control system.

TUESDAY AFTERNOON

1:30 INDUSTRIAL AND INSTRUMENTATION PHOTOGRAPHY

Design for Destruction

GLENN E. MILLER, *Lockheed Missile System Div., Van Nuys, Calif.*

Design for Destruction is a comprehensive film depicting the uses of Instrumentation Motion Pictures. Beginning with a short history of instrumentation cinematography, it describes specialized equipment and rigorous camera testing as well as present-day uses of films such as high-speed, on-board, schlieren, tracking and documentary. Photographed in 35mm Eastman Color negative, the film uses many actual scenes taken from recovered instrumentation cameras to provide a spectacular as well as informative film on modern uses of cinematography.

Ballistic Cameras

WILLIAM PABST, *White Sands Proving Ground, N. M.*

The requirements of cameras for ballistic studies are outlined, with related design characteristics.

A New Framing Camera

MILTON C. KURTZ, *Beckman & Whitley, Inc., San Carlos, Calif.*

The Beckman & Whitley Model 192 Framing Camera has been designed by retaining all the advantages of the existing framing cameras, but with additional capabilities of not requiring synchronization with the event under study, longer writing time, and greater number of frames. Reasons for construction, the design parameters, and performance specifications are presented. Slides will show the fabrication of the first unit.

Electrical and Optical Characteristics of an Ultra-High-Speed Electronic Camera

R. CARROLL MANINGER, *Precision Technology, Inc., Livermore, Calif.*

An electronic camera has been designed with an image-converter tube which contains a grid to serve as a shutter, and a set of plates which permit deflection of images on the phosphor anode for multiple-frame and streak photography. The discussion is concerned primarily with characteristics such as spatial and time resolution, spectral response, light amplification, accuracy of synchronization with events, and image distortion. Particular attention is given to the characteristics most important in the photography of events that occur within 0.01 to 100 microseconds.

Image Illuminance and Irradiance With Carbon-Arc Image Furnaces

M. R. NULL and W. W. LOZIER, *National Carbon Company Research Laboratories, Division of Union Carbide Corp., Cleveland*

Carbon-arc motion-picture projection lamps are useful in the production of extremely high flux densities of radiant energy. The application of these to carbon-arc image furnaces has already been described. They are likewise valuable in many studies requiring high concentrations of radiant energy in any portion of the spectrum from the arc. Comparisons are made of the distribution of irradiance and illuminance across the image with three different types of optical systems. The spectral distribution of irradiance at the center of the image is also given.

Fast Photography in High-Temperature Physics

J. GAUGER, W. STARR and V. VALI, *Lockheed Aircraft Corp., Missile Systems Div., Palo Alto, Calif.*

Image-converter techniques have been applied to studies of shock-wave phenomena, electrical-discharge studies and spectroscopic measurements. Methods of obtaining pertinent data in each case are compared and experiments performed and proposed are discussed.

Photographic Techniques Applied to Recording Supersonic Track-Sled Shockwave Formations

NEIL KRENZEL, *U. S. Naval Ordnance Test Station, China Lake, Calif.*

A brief description is given of the various means available (schlieren, shadowgraph, and synchronized streak) to record shock waves produced by supersonic track sleds. Examples of the results obtained from the application of some of these techniques are included.

Color Exposure for High-Speed Photography of Some Self-Luminous Events

K. H. LOHSE, *Edgar C. Bain Laboratory for Fundamental Research, U. S. Steel Corp. Research Center, Monroeville, Pa.*

Many problems encountered in high-speed photography of variable self-luminous events such as fires, flames, liquid metals and furnace interiors can be overcome with lens attachments. A new approach to exposure calculation, using computed speed-characteristic curves of cameras, is explained and examples given. Slides and 16mm high-speed motion pictures illustrate the article.

X Minus Eighty Days

A color motion picture and discussion of the role played by the California Institute of Technology, Jet Propulsion Laboratory, in the building and launching of America's first earth satellite.

TUESDAY EVENING

8:00 CINEMATOGRAPHY (at M-G-M Studios)

Increased Depth of Field for Motion-Picture Photography

SIDNEY ZIPSER, *Technicolor Corp., Hollywood*

Greater depth of field has always been desired in motion-picture photography, particularly now with wider screens and larger camera apertures. A practical comparison is made of the lens focal lengths commonly used today, showing their depths of field in relation to focal distances and f-stops. A camera aperture pivoting on its vertical center and accurately calibrated is proposed as one means of achieving depth in a diagonal plane, permitting more dramatic staging.

Conformal Printing System for Todd-AO Projection

BRIAN O'BRIEN, *American Optical Co., Southbridge, Mass.*

The system described compensates in a single printing step for projection keystone, for horizon curvature due to curved screen, and for vertical line curvature due to barrel distortion introduced in very wide angle camera lenses. Resultant projected image appears substantially conformal. Since projection keystone and horizon curve are constant for all scenes, while barrel distortion changes with camera lens, correction for the latter is programmed automatically from scene to scene together with color and exposure corrections in printer.

Large Area Negative Printing at Technicolor

W. E. POHL, *Technicolor Corp., Los Angeles*

The background of large area negative photography and processing for use at Technicolor is reviewed, together with techniques for producing anamorphosed and deanamorphosed type prints from such negatives.

Large-Area Negative Photography at M-G-M

DOUGLAS SHEARER, *Metro-Goldwyn-Mayer Studios, Hollywood*

After a discussion, large-area production photographic systems and techniques used at M-G-M Studios will be demonstrated.

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WEDNESDAY—APRIL 23

9:00 LABORATORY PRACTICE

Traveling-Matte Process With Infrared
BERNARD LEONARD PICKLEY, *Hollywood*
Recent developments in dichroic coatings have made practical an effective method of producing traveling mattes using infrared techniques. The equipment, materials and methods are described.

A Professional 35mm Review Room
R. L. ESTES, *Eastman Kodak Co., Rochester, N.Y.*
A professional 35mm motion-picture review room is described wherein the variables of screen brightness, light distribution, and color temperature of the screen light are carefully controlled. Dual projection of two pictures side-by-side on the same screen requires arc lamps with automatic optical positioning of the carbons, selsyn interlock motors on each projector, and remote focusing controls on the projection lenses. The methods used to minimize flicker and control ambient illumination are discussed along with elements of room design, choice of screens, and mechanical equipment.

Motion-Picture Laboratory Projection Facilities for Servicing Television Film Programs
DON V. KLOEPFEL, *General Film Laboratories Corp., Hollywood*
Adequate viewing facilities are essential to quality control in a modern film laboratory. Facilities designed for viewing product for motion-picture screen use must be increased and supplemented before they can be used to view properly and inspect film intended for TV presentation. This paper describes such facilities as provided by General Film Laboratories.

Economic Aspects of Television Film Production in Color
SIDNEY P. SOLOW and LEWIS MANSFIELD, *Consolidated Film Industries, Hollywood*
This paper represents a survey made to determine the factors of increased costs affecting present-day TV film production in color as compared with black-and-white.

An Improved Professional 16mm Reversal Color Camera Film
N. H. GROET, M. M. LIBERMAN and F. A. RICHEY, *Kodak Research Laboratories, Eastman Kodak Co., Rochester, N.Y.*
A subtractive reversal color film with incorporated couplers has been designed to provide high-quality originals for the production of release prints. This paper is primarily concerned with the film structure, sensitometric characteristics, exposure requirements, suggested filters, and the printing behavior of this film. A demonstration will follow the companion paper on this film. This film is designated Ektachrome Commercial Film, Type 7255 (16mm).

The Processing of an Improved Professional 16mm Reversal Color Camera Film
DEANE S. THOMAS, JR., HOWARD W. VOGT, and HERBERT L. REES, *Color Technology Div., Eastman Kodak Co., Rochester, N.Y.*
The processing of Ektachrome Commercial Film, Type 7255 (16mm), in Process ECO-1 is described in some detail. The processing cycle consists of First Developer, First Hardener, Reversal Printing, Color Developer, Second Hardener, Ferricyanide Bleach, Fixing Bath, and Stabilizing Bath, with water washes following each bath except Bleach and Stabilizer. Tank and replenisher formulas, important control factors, processing equipment, and necessary precautions or successful processing are discussed. The Eastman Kodak Co. will process this product on the same facilities and at the same laboratories now used for Kodachrome Commercial Film, Type 5268, which the new film is designed to replace. Ektachrome Commercial Film may also be processed by the user if desired.

WEDNESDAY AFTERNOON

1:15 LABORATORY FACILITIES

Ultrasonic Cleaning of Motion-Picture Films and Magnetic Tapes
ROBERT P. GUTTERMAN, *General Kinetics Inc., Arlington, Va.*
Ultrasonic energy in a solvent bath has been applied successfully to cleaning motion-picture negatives and magnetic tapes. Full realization of the process potentialities is accomplished with a special drying device which prevents redeposition of removed soils. Self-contained machines have been designed and built for both special purpose and general laboratory use.

A Powered Film-Cleaning Drum
HARRY BRUEGGEMANN, *Pathe Laboratories, Inc., Los Angeles*
After trying many devices and systems, Pathe Laboratories in Hollywood has decided that hand cleaning on a drum produces the cleanest possible film. Unfortunately, this is also the most expensive technique; therefore, in building our latest drum, we have tried to make the operation as efficient as possible. The drum has a low turning moment, is motor-driven forward and reverse, has a solenoid brake, and the drive and brake can be disengaged for hand turning.

Dirt-Free Exhaust Hood for Cleaning Film
HOWARD F. OTT, *Color Technology Div., Eastman Kodak Co., Rochester, N.Y.*
Motion-picture film is usually cleaned with materials that require the use of an exhaust hood to prevent any hazard to the operator. In the usual exhaust hood there is a steady influx of air carrying airborne dirt, some of which settles on the film just cleaned. A dust-free exhaust hood has been developed which utilizes a curtain of filtered air to prevent the entrance of airborne dirt.

A Color Timing Calculating Machine

G. T. KEENE, A. J. SANT and J. D. CLIFFORD, *Color Technology Div., Eastman Kodak Co., Rochester, N.Y.*

In a previous paper, to appear in an early issue of the *Journal*, a system was described in which a slide-rule type calculator was used to predict subtractive printer balances. In the present paper, the equations for the slide rule have been incorporated into a machine calculator based on the Wheatstone bridge principle. This machine will present printing information directly from negative density input data. It may be used for either subtractive or additive printing and can utilize either gray card or integrated full-frame negative density information. The timing accuracy is ±0.03 log E for the first print relative to the standard print for the system in use. Motion-picture prints are available to illustrate the timing of a 700-ft test roll.

Variable-Speed Printing

IRWIN A. MOON and LEWIS H. HUMPHREY, *Moody Institute of Science, Los Angeles*

By keeping the lamp voltage constant it is possible to compensate for varying filter factors, lamp aging, overall negative density, etc., by varying the speed of the printer. In this way it is possible on a single light negative to always print at light 22 and the maximum possible speed thus effecting greater savings in printing time.

An Automatic Shutter for Motion-Picture Printing Machines

THEODORE W. BATTERMAN and MATHEW POBOG, *Electronic Systems of Illinois, Inc., Chicago*

A device has been designed to meet the exacting requirements of the laboratory in obtaining high-quality prints with increased productivity. The unit replaces present hand-operated shutters and converts a printer for fully automatic operation. The inherent problems considered are overshoot, or bounce, manual performance and repeatability of manually operated shutters, especially evident when short scene changes are desired at increased printer speeds. The shutter operates from either of two different types of control systems: programming board or punch tape with new dial perforator. It is small in size and designed for ready installation on machines of several manufacturers.

A Two-Speed Drive for Continuous Motion-Picture Printers

JOHN J. GRAHAM and HOWARD F. OTT, *Color Technology Div., Eastman Kodak Co., Rochester, N.Y.*

In this two-speed drive, which was adapted to a Bell & Howell Printer, Model D, two motors drive two electrical clutches that are mounted on the same shaft. The two motors running continuously, drive two pulleys in the same direction, one at approximately twice the speed of the other. The armatures of the clutches are splined to the hub of a third pulley that drives the printer. An electrical circuit triggered by a cuing system activates one clutch or the other to change the speed of the printer within a short enough interval so that there is no loss in projection quality of the print. Operation speeds of 100- and 200-ft/min, 60- and 120-ft/min, and 30- and 60-ft/min have been used. Such a speed changer would permit optimum productivity on a printer using negatives containing scenes of widely varying densities.

A Subtractive Color Printer With a Geneva Scene-Change Mechanism

HARRY BRUEGGEMANN, *Pathe Laboratories, Inc., Los Angeles*

At the present state of the art, the scene-change system of a subtractive color printer can be made very reliable as compared to an additive printer. This paper describes a scene-change system which uses a Geneva movement to turn a sprocket, which in turn moves a color filter scene-change matte. The action transports the matte smoothly and reliably.

A Film-Processing Machine of Flexible Design

IRWIN A. MOON, *Moody Institute of Science, Los Angeles*

A combination 16/35mm, black-and-white and color processing machine has been constructed at Moody Institute of Science. Unconventional features include individual torque motor drive on each shaft, the lack of full-shaft elevators, novel recirculation and constant-tension systems, automatic "pile-up" and "break" controls and the use of plastic materials throughout.

A 16/35mm Daylight Film Processing Machine

STANLEY GEORGE FITCH, *Newman & Guardia Ltd., Harlow, Essex*

After a brief introduction, a 16mm sound film describes in detail the design and operation of the Lawley Junior 16/35mm daylight film processing machine. Lantern slides illustrate performance and characteristics of film stocks and processing solutions when combined in the processor.

WEDNESDAY EVENING

6:45 Cocktail Party

8:00 BANQUET AND DANCE

THURSDAY—APRIL 24

9:00 GENERAL SESSION

16mm Automatic Film Splicer
HARRY TEITELBAUM, *Hollywood Film Co., Hollywood*
The machine has been designed to repair and/or butt-splice all types of 16mm motion-picture film including acetate, Cronar or nitrate base with the aid of a special Mylar transparent tape, perforated to match the film to be spliced and coated on one side with a pressure adhesive. The tape is precut and rolled onto the film automatically from a precision sprocket.

Easy Editor
HARRY TEITELBAUM, *Hollywood Film Co., Hollywood*
Sound effects and music film editors normally work with five to six reels mounted on long-shaft, hand rewinds with an end support. Removing any of the reels becomes a cumbersome job and one that is no longer necessary as a result of the new Easy Editor which drives any or all of the reels through friction and permits the easy withdrawal of any reel without disturbing the others. In addition, a braking method on either side permits the operator to hold the film on any of the reels taut in spite of the fact that some reels may be larger or smaller than others.

Improved Television Viewfinder for Motion-Picture Production
KARL FREUND, *Photo Research Corp., Hollywood*
This paper describes a low-cost TV viewfinder using a 1-in. vidicon with 600 lines resolution. The miniature viewfinder is a further development of a viewfinder exhibited at the 80th Convention at Hollywood which used a ½-in. vidicon with 300 lines resolution. The new viewfinder, which eliminates previously used optical systems, will enable a motion-picture director to see the picture on a TV monitor, thus assisting him to make decisions regarding re-takes. Use of the viewfinder is expected to result in considerable savings in motion-picture production.

A Method of Measuring the Steadiness of Motion-Picture Cameras
A. C. ROBERTSON, *Eastman Kodak Co., Rochester, N.Y.*
The unsteadiness of cameras can be evaluated by a double-exposure technique using a "step-wedge" shaped object for the first target and a simple bar for the second. The results are obtained in the form of individual, whole values; hence simple counting methods are used in analyzing the data rather than complicated measuring equipment and consequently there is less fatigue for the observer. The action of some cameras is described, and their errors analyzed by the use of this technique.

Colorvision: A New Additive Color System for Motion-Picture Photography
LIONEL H. WHEELER, *Colorvision, Inc., Los Angeles*
Photographic fields in which an additive color system is desirable are examined, as are also applications to color television and Armed Forces instrumentation photography. The problems of an operational additive color system are outlined and the solution to these problems is related to the Colorvision camera, printing and projection equipment. The technique of making subtractive prints from an additive negative is described.

16mm Super Anscochrome Films
JOHN L. FORREST, *Ansco, Binghamton, N. Y.*
16mm Super Anscochrome Daylight Type 225 was introduced in 1957 followed by Super Anscochrome Tungsten Type 226 in early 1958. Both films have an exposure index of 100 with normal processing. This high speed now makes possible the production of motion pictures in full color which previously was not possible. The films are described and their uses illustrated.

THURSDAY AFTERNOON

1:30 PRODUCTION PROBLEMS

Design of Flexible Portable Power Equipment for Motion-Picture and Television Locations
M. A. HANKINS and PETER MOLE, *Mole-Richardson Co., Hollywood*
The amount of lighting power required for motion-picture and TV locations varies over a wide range from one site to another. Portable engine-generator sets have been developed which may be used singly or in multiple to supply economically the peak power demand of any particular location. These portable power plants together with recent developments in flexible transporting equipment can accommodate the required combinations of the power plants and their fuel supply.

Soil Removal Problems in Wardrobe Cleaning
HERBERT MEYER and GEORGE SOYKA, *Motion Picture Research Council, Hollywood*
Special cleaning methods are required for clothes worn during a motion-picture production. Removal of "cosmetic dirt" presents a cleaning problem that cannot be solved by use of ordinary cleaning methods. In addition to soil removal requirements, speed is essential. Frequently a wardrobe must be cleaned overnight. Methods devised to meet these requirements are described.

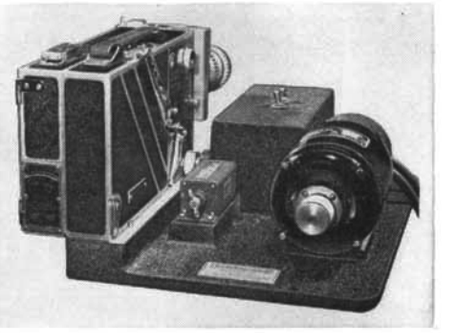
When you can't budge from the Budget... see CECO!

Bell & Howell Continuous Film Printer

Prints either sound or picture by contact. Suction-cooled lamphouse; removable filter holders; 300 watt projection type lamp. Other B & H Models and accessories available. **$4,600.00**

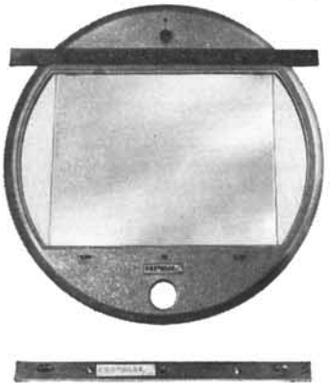
Other Printers from **$167.50**

When you make commercial films, the budget is sacred. It isn't like the old days in Hollywood when a big name director could go a couple of million over his budget—and get away with it. Today if you exceed your budget, it very likely will come out of your own pocket. So do what other smart producers, directors, cameramen and sound engineers do. Consult CECO. *Our experts have the know-how about equipment and money-saving techniques. We carry the world's largest assortment of professional cameras, lenses, tripods, recording, editing, lighting, laboratory and processing equipment, etc. There is never any charge at* CECO *for consultation. Come by for help with any problem, large or small.*



CECO Stop Motion Motor for Cine Special

110 volt AC operation; ½ second exposure. Has forward, reverse, on-off switches; frame counter; power cable. Attaches easily to camera without special tools. **$450.00**



Bowlds Animation Disc and Peg Bar

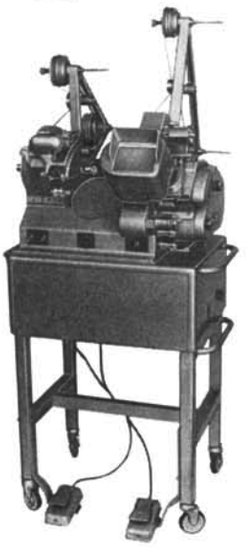
Animation Disc features oversize contoured glass; convenient rotation; positive lock; full vision sliding scale; and clear, opal, or frosted glass. Peg Bar has precision pegs so that cels slip on and off easily. Has countersunk holes and flush screws for easy attaching.

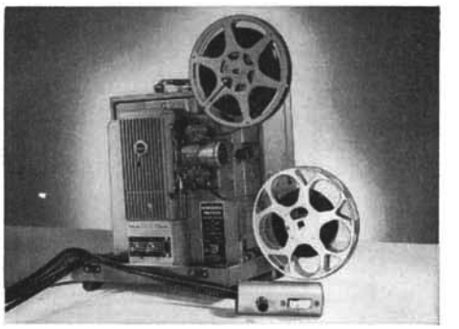
Animation Disc **$47.50**
Peg Bar **6.50**

Moviola Film Editing Machine "Series 20"

Designed so that short pieces can be used without putting film on reels. Rear projection screen. Reversed by hand-operation switches. Other models and Rewinders, Synchronizers, and Sound Readers available. Model UD20S (Illustrated) **$1,925.00**

Other Film Editing Viewers from **$49.50**





Weinberg-Watson Modified Version of Kodak Analyst

Gives flicker-free projection at speeds from 6 to 20 frames per second. Single frame operation forward and reverse without damaging film. Quick transition from continuous to single frame. **$795.00**

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SALES • SERVICE • RENTALS

3:00 PHOTOGRAPHIC TELEVISION RECORDINGS

16mm Color Kinerecording for Theater Projection

LEWIS R. BLAIR and LOUIS BEHRMANN, *Walter Reed Army Medical Center, Washington, D.C.*

The ability to secure high-quality 16mm original color film of telecasts displayed upon a trinescope has provided the means whereby professional medical telecasts can be distributed as projection prints at a fraction of the cost of films produced by any other method. Cameras, trinescope, and magnetic film recorders have been assembled in such a manner as to permit operation by one person and to provide cuing, clapsticking, and titling in addition to continuous recording.

High-Fidelity Video Recording Using Ultrasonic Light Modulation

LEO LEVI, *Defense Products Div., Fairchild Camera & Instrument Corp., Syosset, N.Y.*

The method makes it possible to record on photographic materials electronic signals at video frequencies. Employing the modulation of light intensity by ultrasonic waves, the system is capable of resolution and dynamic range performance well in excess of those attained with conventional methods. Both black-and-white and color modulation of light are possible. Ultrasonic light modulation has been successfully employed to obtain high-quality radar information, and it is inherently capable of providing a similar function in video recording — either field-by-field or continuous.

The Bryg System of Photographic Color Projection for Television

ADOLPH RAZDOW, *Bryg, Inc., Butler, Pa.*

The human eye has higher acuity for luminance (black-and-white) vision than for chrominance (color). This concept, applied to color television, permits gray-scale registration on panchromatic film (high resolution black-and-white large-size image; two low-resolution small-size images, filtered red and blue). Three images are transmitted through three pickup tubes with electronic matrixing providing green information. Automatic electronic references control transfer characteristics and gammas. Shrinkage and registration problems are analyzed.

Steadiness and Image Structure of Televised Motion-Pictures

D. F. LYMAN, *Apparatus and Optical Div., Eastman Kodak Co., Rochester, N.Y.*

If realistic motion pictures are to be produced on TV viewing screens, it is essential that recording cameras and TV projectors be of high quality with respect to the steadiness and image structure of the picture. Several mechanical improvements have been made in pulldowns and sprockets. New analyzing fixtures and methods contributed to these advances. An examination of prints from various laboratories shows the importance of providing good steadiness and definition in the original material.

THURSDAY EVENING

7:45 MAGNETIC TELEVISION RECORDINGS

Engineering Planning in the Evolutionary Development of the Video-Tape Recorder

JOHN M. LESLIE, JR., *Ampex Corp., Redwood City, Calif.*

There is a planned evolutionary process which is currently unfolding through an integrated engineering program surrounding the Ampex VR-1000 Video Tape Recorder. The full story on this program and its implications in TV broadcasting is covered here and in the papers immediately following. The questions to be answered include: (1) Will present production machines be obsoleted by developments of the immediate future? (2) How much will video head ass.mblies cost the user? (3) Exactly what procedures will be followed for editing of video-tape recordings? (4) How is the monochrome VR-1000 expanded to color with the prototype color conversion assembly? (5) What is needed in monochrome and color video tape recorders to handle special effects? (6) How will full interchangeability of tapes among video-tape recorders be accomplished without sacrifice of picture quality?

Electronic Marking and Control for Rapid Location of Vertical Blanking Area for Editing Video-Tape Recordings

JOSEPH ROIZEN, *Ampex Corp., Redwaod City, Calif.*

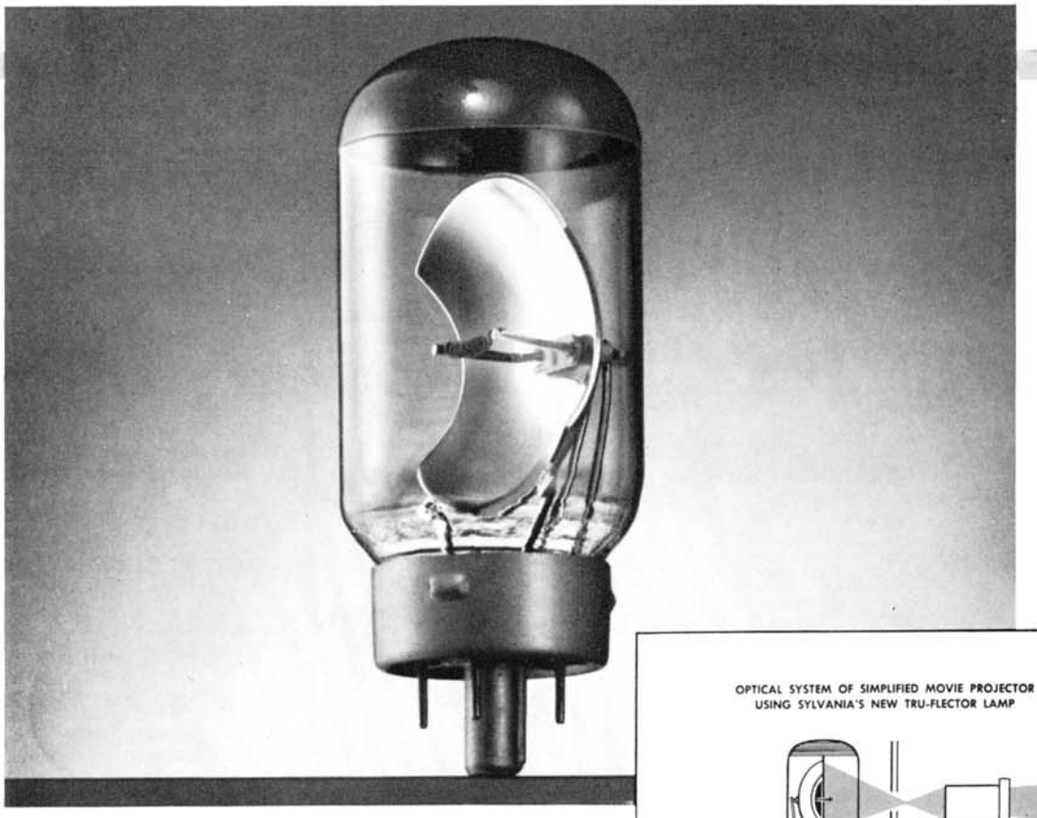
In the interim between prototype and the production VR-1000 Video Tape recorders now being delivered, Ampex Corp. has developed a relatively simple and inexpensive method for splicing video tape. This achievement required an extensive investigation of three problems: the visual "development" of the magnetic image on the tape, the accurate positioning of the splice in relation to the small mechanical tolerances within which the splice must be placed, and methods of joining tapes to achieve maximum mechanical strength with minimum effect on the head assembly. Electronics have been included in production VTR's to provide accurately spaced "edit" pulses to position the splice. Simplified tray or spray "development" methods have been attained. The inherent characteristics of the equipment make video editing and sound dubbing relatively simple. The dubbing of sound may be accomplished using standard studio techniques for handling audio. The versatility of the video-tape recorder is tremendously enhanced by the ability of the broadcaster, agency or film studio to splice in pre-recorded commercials or any combination of tape segments from other sources for smooth program continuity.

Electronic Conversion to Color Recording With the Ampex VR-1000 Video Tape Recorder

CHARLES E. ANDERSON, *Ampex Corp., Redwood City, Calif.*

Following the development of a practical system for monochrome television recording on magnetic tape, the logical direction for further refinement was toward a system capable of recording color.

of the projector industry!



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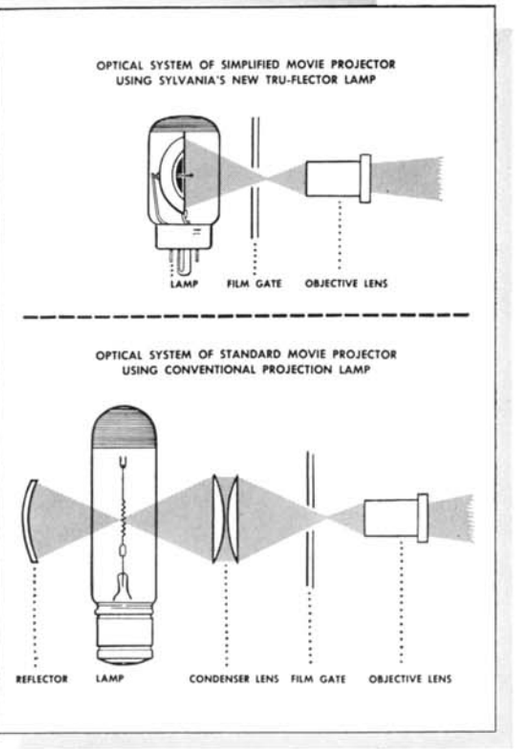

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The successful development of such a system, in the form of a color conversion accessory which connects to the Ampex VR-1000 Video Tape Recorder, is described here, with the operational theory of the accessory discussed fully.

Timing and Frequency Requirements for Color Video-Tape Recording

EARL ROGER HIBBARD, *Ampex Corp., Redwood City, Calif.*

The development of the video-tape recording system in widespread use today was aimed primarily at fulfilling the immediate need for recording monochrome TV programs. In extending the techniques necessary to record color, improvements were needed in two general areas: in timing performance in the basic electromechanical system and the extension and control of frequency response in accordance with the stringent requirements imposed by the NTSC color system. A description of the options available for the solution of these problems and an account of the technical reasons behind the choices made are given here.

Interchangeability of Color Video-Tape Recordings

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

The rigid tolerances characteristic of the NTSC color system, in regard to time-base stability and bandpass characteristics, make the problem of interchangeability of color TV programs recorded on magnetic tape considerably more difficult than with monochrome programs. The broadcast industry demand a color VTR system capable of maintaining maximum quality on an interchangeable basis. The engineering problems imposed by these requirements are fully discussed here.

Magnetic-Tape Recording of Color Television Signals

JEROME L. GREVER, *Broadcast and Television Dept., Radio Corp. of America, Camden, N.J.*

The technique of recording television signals on 2-in. wide magnetic tape by high-speed transverse scanning of the tape has been extended to include the recording of color television signals. This development encountered a number of interesting and challenging problems. The paper describes some of the precise signal-handling techniques and special equipment that had to be developed in order to build a broadcast quality video-tape recorder capable of both color and monochrome TV recording.

FRIDAY—APRIL 25

9:00 PLASTICS FOR THE MOTION-PICTURE AND TELEVISION INDUSTRIES

A Symposium on Use of Plastics in Motion-Picture Production

Presented as a joint effort by SPE and SMPTE, HERBERT MEYER, *Chairman*

1. Plastics for use in motion-picture laboratories; materials of construction for photographic processing equipment. 2. Plastics for use in set construction: (a) casting resins, structural materials, ornamental and functional coatings, vacuum heat forming materials and processes, foamed plastics, flexible sheets; (b) a paper on properties of principal polymers; (c) prepared questionnaire answered by panel; (d) questions from the floor answered by panel.

FRIDAY AFTERNOON

2:00 TELEVISION STUDIO PRACTICES

Studio Lighting and Production Facilities

WILLIAM R. NEEDS, *WPST-TV;* and GEORGE GILL, *Century Lighting, Inc., Southern Branch, Miami, Fla.*

To obtain the best studio lighting in the limited time available in an active studio, a lighting and curtain system was designed and installed. Lighting results have been improved and lighting time has been minimized. Two groups of rails are used so that lights can be quickly located wherever desired. Once set, control of the lights for each scheduled show is handled at the production control console. The installation has proven very flexible and completely adequate for our needs. Its principles are applicable in studios of any size.

Television Lighting Facilities for Black-and-White Today — Color Tomorrow

LOUIS ERHARDT, *Century Lighting Inc., Santa Monica, Calif.*

To anticipate the added requirements for color TV in both the amount of light and its control, certain improvements in equipment and refinements in control are discussed. An integrated control system is proposed for complete programming of lighting requirements with the minimum capital equipment to produce a maximum of control opportunity. The plan enables a studio to determine its own requirement consistent with its scale of operation.

"Preset Reloading": A New Approach to Television Lighting Control

WILLIAM M. RICHES, *CBS Television City, Hollywood*

The Preset Reloading System has been developed by CBS Television, Hollywood, to solve the problem of higher dimmer loading and greater numbers of dimmers required by color television, and to eliminate the need for physical repatching of load cords during broadcast. Through the use of this low-voltage preset programming system the lighting loads from different scenes may be switched as a group, at any time, to any preselected group of dimmers, thus re-using the dimmers many times during a broadcast.

Television Camera Lenses
GORDON HENRY COOK, *Taylor, Taylor & Hobson, Ltd., Leicester, England*
Lenses intended for use on vidicon-type TV cameras must have wide relative aperture, uniformity of illumination throughout the picture area and yield the type of performance demanded by TV transmission channels. The picture format is larger than that utilized in 16mm film cameras and the aberrational effects of the tube end glass thickness are perceptible. The paper discusses the suitability of standard cinematographic lenses under these conditions of use and describes a new range of lenses designed specifically for this purpose.

A New Series of Vidicon Camera Lenses
JOHN D. HAYES, *Bausch & Lomb Optical Co., Rochester, N.Y.*
The continued growth of the vidicon type of pickup camera in both the industrial and studio television fields has dictated the development of new camera lenses designed to fulfill the requirements of these applications. The series of lenses to be described has been especially developed to provide a high degree of illumination throughout the entire field as well as an excellent aberrational correction. Details of these, and other pertinent parameters, are to be discussed.

The Chroma-Key Process of Live TV Composites
FRANK J. GASKINS, *National Broadcasting Co., Burbank, Calif.*
An outline of the basic concepts of color differentiation as contrasted to standard luminance matting is presented. Included also is a brief description of Chroma-Key equipment now in use at NBC together with a discussion of some of the techniques employed in its use.

FRIDAY EVENING
8:00 DISTRIBUTION OF TV PROGRAMS ON FILM

This session will be held at ABC Television Center, Hollywood. Presentation of the papers will be followed by a guided tour of the network and local film facilities in the new Technical Building.

The Coordinated Effort—A Study of Network Film Programming
FRANK G. RALSTON, Jr., *ABC TV Center, Los Angeles*
TV network film programming is the result of coordinated effort. All departments must work together to get the film image on the home TV screen. Sales, Traffic, Station Clearance, Video Recording, Film Departments, Accounting, Programming and other departments are interdependent in that the flow of information and materials from these departments is essential to successful network film programing.

Operation of a Network Film Exchange
CHARLES E. BUZZARD, *NBC, Hollywood*
Conditions and procedures affecting a network film exchange are analyzed on the basis of: types of recordings, negative and kinescope recording numbers, kinescope recording and film service policies, reference prints, differences in policies in kinescope recordings and film programs, and general shipping procedures.

The Editor's Responsibilities in TV Film Distribution
HENRY J. MILLER, *ABC TV Center, Hollywood*
The differences between the responsibilities of the TV film editor and the motion-picture editor are delineated for these areas: commercial integration; negative show level vs. negative insert rolls for positive insertion; a step-by-step discussion on rerun programming; and how time and cost affect the TV film editor.

Is Standardization in TV Film Possible?
JOHN P. BALLINGER, *Screen Gems, Inc., Los Angeles*
The pros and cons of standardization in the TV film industry are discussed in regard to: production, such as cues, leaders, formats, commercial splits; distribution, such as booking requests and confirmations, transshipment requests and confirmations; and in regard to the handling of prints at the station level, such as procedures of editing, curing, splicing-in of commercials, and the keeping of proper records of shipping and playdates. After assessing the possibility of standardization of certain elements, then the question is what might be accomplished by such standardization.

Prolonging the Life of Motion-Picture Release Prints
ERIC C. JOHNSON, *Eastman Kodak Co., Rochester, N.Y.*
Hundreds of release prints are discarded annually because of needless damage to the film. This fact has received renewed emphasis with the increased use of film in television. This paper outlines proper film handling procedures and techniques starting with the "green" print and the need for film lubrication on through projection, cleaning and inspection.

Panel Discussion
Since no question periods will be scheduled during the presentation of the above group of papers a panel discussion will be held immediately after the last paper.

Introduction to the Tour of the New ABC Film Facilities
WILLIAM W. EDWARDS, *ABC Television Center, Hollywood*
The authors will examine the planning of the various flow patterns and work-area facilities and review the tremendous preliminary investigation and comparison of existing modern installations before the decisions on the present installation were reached. This planning has resulted in the finest TV film facilities available.