

a linkage changing the iris with the zoom position. This fact made the zoom lens mechanically cumbersome, complicated, and unpractical. I had to think of a way to get around the dependence between the equivalent focal length and the entrance pupil. When I replaced the mathematical definition $E.F.L./Den$ with L''/Dex the variable equivalent focal length disappeared from the formula. ($E.F.L.$ is equivalent focal length; Den is diameter of entrance pupil; L'' is distance between exit pupil and focal plane; Dex is diameter of exit pupil.) Consequently, if the distance between the exit pupil and the focal plane could be made constant, the entire problem of variation in f speed would disappear. The simple solution was to place the iris diaphragm behind all movable elements of the zoom lens.

Fifteen years ago, I tried to obtain a patent on that principle of having the diaphragm placed behind the movable elements in a zoom lens. The patent examiner did not understand the significance of that breakthrough, but since then, every single zoom lens on the market today, regardless of design, whether optically compensated or mechanically compensated, has its diaphragm behind the last movable element.

92d Convention Papers Program

The Program's format was one of over 50 technical papers in eight sessions, two sessions of reports on the papers at the Sixth International Congress on High-Speed Photography, an extensive tour of the Argonne National Laboratory and a full session of equipment papers and demonstrations. This was prepared by Program Chairman Jack Behrend and his committee of Topic Chairman under the general direction of Editorial Vice-President Glenn E. Matthews and the Papers Chairman Robert C. Rheineck.

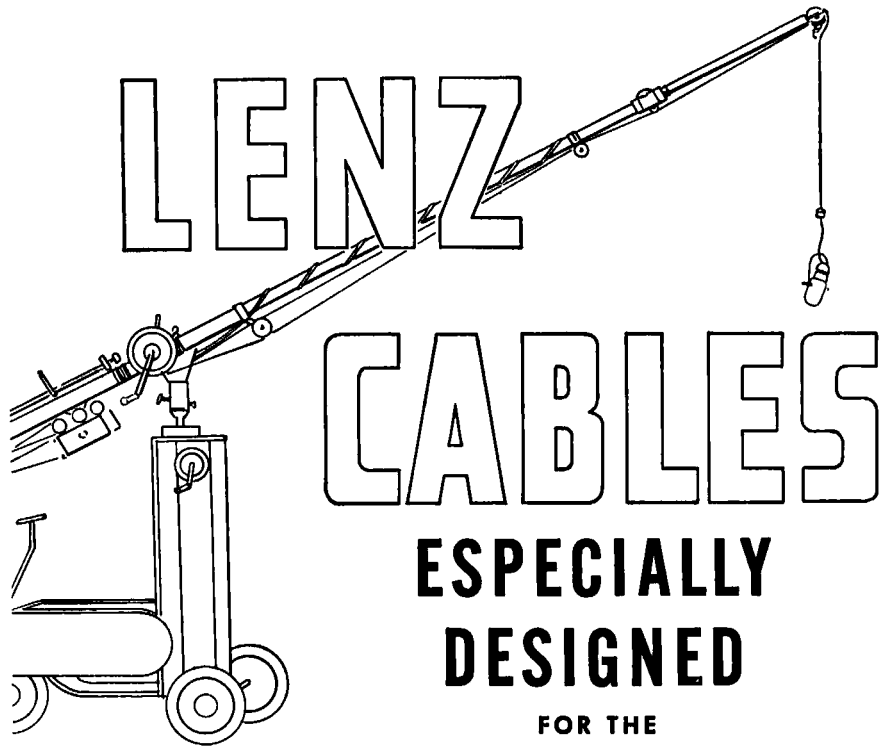
A major portion of the papers cited below was shown in the Advance Program published in the September *Journal* which included abstracts, when available, for all papers. A copy of the final Program is available upon request to Society headquarters.

Short film subjects shown at each session of the convention were representative productions made by Midwest producers. These were very favorably received. These were garnered by Kenneth M. Mason who contributed substantially in this way as well as many other unannounced ways to the success of the Convention.

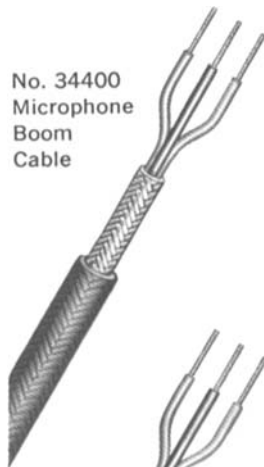
In the story below the sessions are described as nearly as possible as they were finally arranged and held at Chicago.

Projection Practices

I. F. Jacobson, Topic Chairman, was assisted by Session Chairman John W. Ditamore and Session Vice-Chairman Richard E. Vuillaume at this informative Monday Morning Session. The film *Mural: Midwest Metropolis* by Fred A. Niles Productions and four papers were presented. The first paper, "Cold Mirror Lamps for 8mm Projectors," was given by John O. Geissbuhler of General Electric. Arthur E. Nupnau and Jaroslav Cherniav-



No. 34400
Microphone
Boom
Cable



No. 34400J
Microphone
Boom
Extension
Cable



SPECIAL QUALITIES needed for efficiency and dependability that are found in these cables:

EXTRA FLEXIBILITY to permit rapid and noise free adjustments.

ADEQUATE SHIELDING to guard against electrical interference.

EXTREME DURABILITY to overcome and resist mechanical damage.

Keep your sound tracks free of interference—install Lenz Cables!

MICROPHONE BOOM CABLES

No. 34400-3 Conductor—Shielded—Cotton Covered
No. 34406-6 Conductor—Shielded—Cotton Covered

MICROPHONE-AMPLIFIER-TRANSMISSION CABLES

No. 34400J-3 Conductor—Shielded—Plastic Jacket
No. 34406J-6 Conductor—Shielded—Plastic Jacket

MULTI-DUTY POWER CABLES

No. 41000-8 Conductor—Shielded—Plastic Jacket
No. 44120-4 Conductor—3 Phase—Plastic Jacket

CHANNEL CABLE

No. C-22-ST-J-2 Conductor—Ground Wire—Shielded—Plastic Jacket

Carried in stock and distributed by

WESCO ELECTRONICS

1715 East Colorado Boulevard, Pasadena, California



CABLES

and

WIRES

LENZ ELECTRIC MANUFACTURING CO. 1753 No. Western Ave., Chicago 47, Illinois
IN BUSINESS SINCE 1904

skyj of Bell & Howell presented the next paper, "An Automatic Threading 16mm Sound Projector." "The A/16 Proposed Format — Horizontal Projection of 16mm Film Having Two Picture Tracks and Two Sound Tracks for Quality, Economy and Convenience," was read by E. H. Reichard for the authors, Robert L. Neyman and Floyd E. White of Apollo Corp. A paper by A. D. Saint-Hilaire and L. Martin, "Double 8 Film With Single Row of Perforations," was read by Mr. Martin who came from France to attend the Convention.

Laboratory Practices

Topic Chairman William H. Smith, assisted by Session Vice-Chairman Mac

Blair, had organized a program of seven papers for Monday afternoon. Edward Feil Productions made the opening film *Safety in the Chemical Laboratory*. W. E. White of Eastman Kodak opened with a paper on "A Semiautomatic Analytical Recording Densitometer." Second was a tutorial paper by Stanley A. Powers and Oran E. Miller, also of Eastman Kodak, titled "Pitfalls of Color Density." The third paper, "Picture Quality and Its Relationship to Internegative Printing", was presented by Robert O. Gale and Allan L. Williams of Eastman Kodak. W. Engel, A. S. Pratt and H. C. Wohlrab of Bell & Howell were authors of "A New Fast Acting Light Value Control System for Film Printers."

The fifth paper, "A Multiple-Head Reduction Printer — 16mm to 8mm," was given by Geo. W. Colburn. This was followed by "Ektachrome Original Film Processing — The Application of Engineering Improvements," read by William D. Hedden, with co-authors Robert L. Sutton and Robert Gyori of Calvin Productions. J. W. Zuidema of Eastman Kodak presented the last paper of the session, "The Sulfuric Acid-Potassium Dichromate Bleach in the Black-and-White Reversal Process."

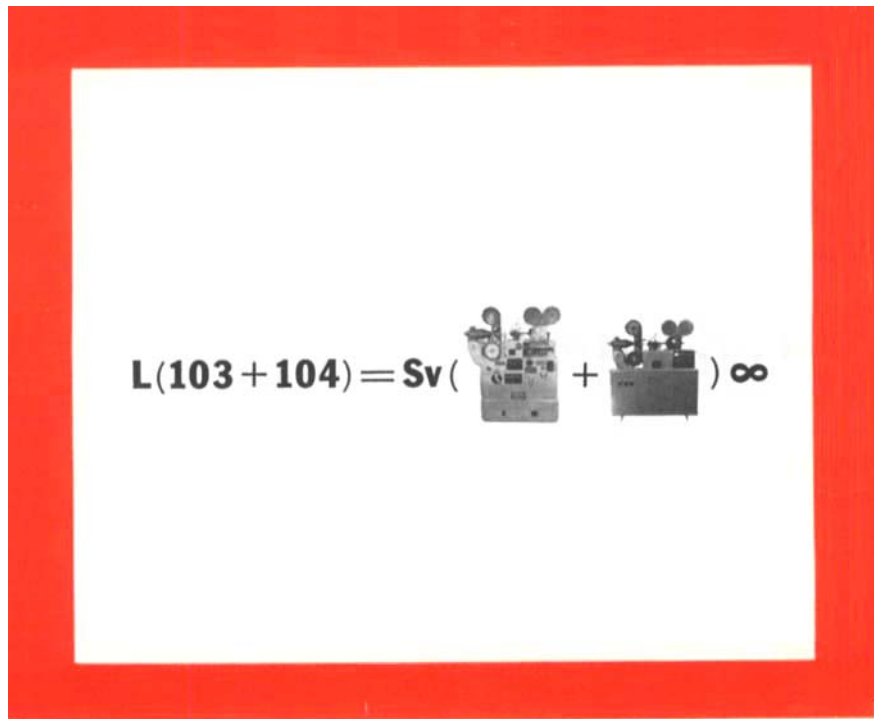
8mm Films

Two sessions on 8mm and small-format films highlighted the technical sessions of the Convention. The first session on Monday evening was moderated by Ellis W. D'Arcy (Topic Chairman, Sound Recording) and Vice-Chairman, Robert A. Colburn (Topic Chairman, 8mm Films). The Session began with the showing of *Cash on the Barrel Head* by Reid H. Ray Film Industries. The first paper, "Facts Are Obstinate Things," was given by Ellis W. D'Arcy, describing a psychological survey of motion-picture teaching techniques. An interesting and informative panel discussion followed. Panel members participating were: John A. Maurer, Malcolm G. Townsley, Robert A. Colburn and Louis Forsdale. There was also extensive discussion from the floor. This has been recorded for transcribing and abstracting for publication.

The sound session on 8mm films, on Tuesday morning, was led by Topic Chairman Robert A. Colburn who was assisted by Session Vice-Chairman Rene Mathieu. After a film, *Daring the Darien* by the Jam Handy Organization, five papers were presented. Eyre Branch of Noel Enterprises sent his paper as an 8mm film, "A Survey of Commercial Use of 8mm Sound Prints." He was followed by Louis Forsdale of Columbia University Teacher's College who spoke on "Opportunities in Education for Individual 8mm Sound Film Viewers." "Teaching With 8mm Sound" was the subject of a paper presented by Lee H. Schank of Fairchild Camera and Instrument Corp. Hans F. Napfel, also of Fairchild, gave a paper on "Capabilities and Considerations in 8mm Sound." The final paper, "8mm Photographic and Magnetic Sound Films — A Comparison on a System Basis," was presented by John A. Maurer of JM Developments.

Sound Recording

On Tuesday afternoon, seven informative papers followed the film, *Motion Picture* by Frank Paine, Southern Illinois University. Topic Chairman Ellis W. D'Arcy was assisted by Session Vice-Chairman William Koch. William Moehring of World Magnetics presented the first paper, "Recent Developments in Magnetic Heads for Use in Motion Pictures." He was followed by Lloyd D. Lubinski and Alfred H. Moris of 3M Co. who gave a paper on "A New Magnetic-Recording Tape With Increased Signal-to-Noise Ratio." "A New Look at the Problems of Automatic Volume Level Control" was a paper given by Arthur Kaiser and Benjamin B. Bauer of CBS Laboratories. The fourth paper, "Symmetry Tape Device for Adjusting Magnetic Tape Re-



OUR FORMULA FOR YOUR SUCCESS!

L = LEASING

(103+104) = ACME SPECIAL EFFECTS OPTICAL PRINTER *plus* COMPANION MODEL!

Sv = SERVICE

([image] + [image]) = MAINTENANCE, WHENEVER AND WHEREVER REQUIRED... WORLD-WIDE

∞ = INFINITY — FOREVER



PRODUCERS SERVICE CO. MANUFACTURERS OF THE ACME OPTICAL PRINTER

A DIVISION OF BOOTHE LEASING CORPORATION

1145 No. McCadden Place Hollywood 38, Calif. HO 6-4151

Cable Address PRODUSERV

Color Prints by TRI ART

printed ADDITIVELY
*with FIBER OPTICS **
*Pat. Pending

**A new application of
an amazing Optical Principle**

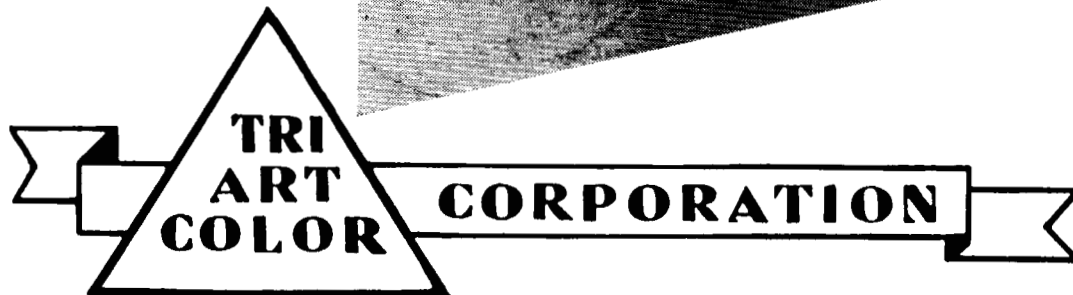
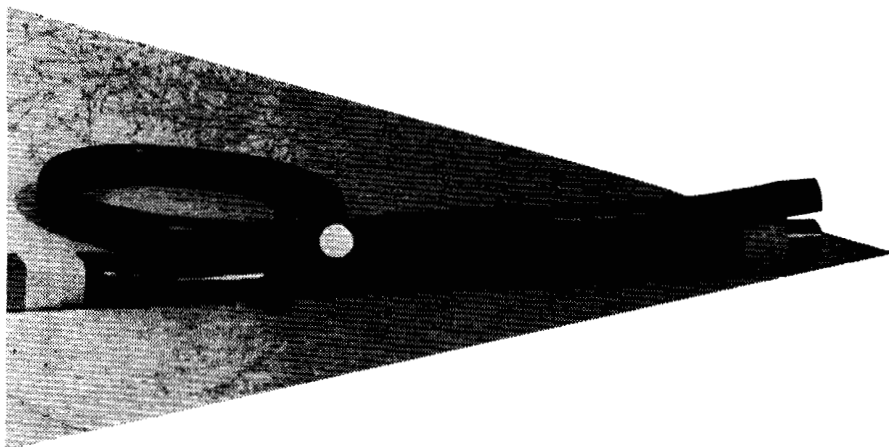
FIBER OPTIC PRINTS—

By diffused light — Minimize Negative Physical Defects

FIBER OPTIC PRINTS—

Give uniform FIELD EXPOSURE — No Center Hot Spot or Edge Fall Off

A Technical Paper on Fiber Optics Printing was given on May 12, 1961, at the SMPTE Convention, Toronto, Canada, by A. J. Miller, Vice Pres., Du Art Film Labs & Tri Art Color Corp. Copies are available on request.



Subsidiary of DU ART FILM LABORATORIES, INC.
Du Art Film Building • 245 West 55 Street
New York 19, N. Y. • PLaza 7-4580

IN CANADA: ASSOCIATED SCREEN INDUSTRIES, Ltd. 2000 Northcliffe Ave., Montreal, Can.

coders," was given by Maria A. Curry of Agfa, Inc., New York. Frank A. Comerci of CBS Laboratories spoke on "Surface Induction Measurements." Then a paper by Wolf Grau of Mosaic-Film, Berlin, on "The Art and Technique of Dubbing Foreign Films in Germany," was read by Hans C. Wohlrab. Finally, substituted for a paper earlier scheduled was "Feedback Stability Made Possible by Frequency Shifting" by James H. Roseberry, Audio Electronic Products.

Instrumentation and High-Speed Photography

Two sessions on this topic were held at the Argonne National Laboratory. A tour of the Laboratory comprised the first session on Tuesday morning. Transpor-

tation was provided by the Chicago area film laboratories. Sessions Chairman Nelson W. Rodelius and Vice-Chairman George W. Lindholm coordinated the thorough-going tour.

The afternoon session was also at Argonne. Topic Chairman Daniel S. Giroux and Vice-Chairman Nelson W. Rodelius organized a program of three papers and a film for this session. An orientation talk was given by an ANL staff member. The film was *High-Speed Photography in Nuclear Reactor Development* by ANL. E. N. Pettitt of ANL presented the first paper, "High-Speed Photography of Destruction of Fuel Elements During a Reactor Transient." He was followed by Goro Matsunaga who, instead of pre-

senting the scheduled paper by Tsuneyoshi Uyemura of the Institute of Industrial Science, University of Tokyo, gave the filmed presentation *Instantaneous Photography for Bursting Tests of Rotating Steel Discs*. This high-speed film has been presented to the Society and is available for loan to Sections or local groups. A paper given by William Palmer, W. A. Palmer Films, "Optimum Highway Median Barrier Selection by Photoinstrumentation," concluded the second session.

Joint Army-Navy High-Speed Photography Display

On exhibit by the Registration Desk was a display of 25 photographs, 16 by 20 in. in size, arranged in six panels. This exhibit had earlier been an attraction at the Sixth International Congress on High-Speed Photography in The Netherlands. The sources and subjects were:

U.S. Naval Ordnance Laboratory, White Oak, Md.:

- Explosive driven sliding shutter (sequence photographs)
- Aerodynamic heating of explosive-loaded slugs (sequence photographs)
- Study of launching technique of thin-wall models (sequence photographs)
- Study of ignition system for light gas gun (sequence photographs)
- Explosive studies using the concave mirror camera (sequence photographs)
- Shaped-charge jet penetrating a Plexiglas slab (sequence photographs)
- Study of ablating model (single exposure)
- Hyperballistic shot (single exposure)
- Detonation of Tretyl pellet (sequence photographs)
- Initiation of Tentolite (sequence photographs)
- Two cylinders of Pentolite simultaneously detonated (sequence photographs)
- Explosive release of high-pressure gas (sequence photographs)
- Typical ruby laser patterns (sequence photographs)
- Shock initiation of Pentolite (sequence photographs)

U.S. Army, Frankford Arsenal, Philadelphia:
High-speed x-ray pictures — piercing steel plate (sequence photographs)

U.S. Naval Ordnance Test Station, China, Lake, Calif.:
Explosive detonation research pictures of detonation of PBXN-3 and charge of PUGH (sequence photographs)

U.S. Naval Ordnance Laboratory, Corona, Calif.:
Magnetic domain reversal (sequence photographs)

U.S. Naval Electronics Laboratory, San Diego, Calif.:
Tank and deep water tests of underwater sparks and pneumatic sound sources (sequence photographs)
Splitting of surgical tubing (sequence photographs)
Bubbles from parallel electrodes (sequence photographs)
Underwater spark gaps (sequence photographs)
Underwater bubble development (sequence photographs)
Underwater bubbles from spark gaps (sequence photographs)



**RANK KALEE
FLUTTER METER
TYPE 1740**

BRIEF TECHNICAL DATA

Operating carrier frequency
3,000 c.p.s. $\pm 5\%$

Minimum Input signal
50 mV R.M.S.

Input Impedance
1 Megohm

Input amplifier bandwidth
-3 dB at 2,500 & 3,500 c.p.s.

Effective limiter range
 ± 10 dB

Meter scaling—"Peak wow"
0 to $\pm 1\%$ (centre zero)

"Wow" and "Flutter"
0 to 1% and 0 to 0.2% R.M.S.

Crossover frequency
20 c.p.s.

"Flutter" meter response
-3 dB at crossover
-3 dB at 200 c.p.s.

"Wow" meter response
-3 dB at crossover
-1 dB at 0.5 c.p.s.

C.R.O. output frequency response
level down to zero frequency
-3 dB at 200 c.p.s.

3,000 c.p.s. oscillator output level
5V R.M.S. into 0.5 Megohm
100 mV R.M.S. into 500 ohms

Accuracy
Meter presentations $\pm 2\%$ f.s.d.

Power consumption
35 watts

Mains
100/150v. and 200/250v. single phase
45/60 c.p.s.

Dimensions: Height 10 $\frac{1}{2}$ " 26.04 cm.
Width 12 $\frac{1}{2}$ " 31.12 cm. Depth 14 $\frac{1}{2}$ "
36.47 cm.
Nett Weight: 29 lbs. 13.15 Kilos.

Watch that **WOW!** with the Rank Kalee **FLUTTER METER** Accurate measurement of sound equipment speed deviations

The Flutter Meter measures those components which are commonly described as "Wow" and "Flutter" resulting from speed variations in sound recorders and reproducers. This instrument is equally suitable for use with machines employing perforated film, tape wire or disc records.

Type 1740 is of entirely new design. More compact, lighter in weight and costing considerably less than earlier Rank-Kalee Flutter Meters, but with the same high performance and facilities.

IMPORTANT USERS OF RANK KALEE FLUTTER METERS INCLUDE:

*B.B.C. Television and Research
Birmingham Sound Reproducers Ltd. (U.K.)
Collaro Ltd.
Commsiston Superioreure Technique, Paris.
Commonwealth of Australia, Melbourne.
Compagnia Commerciale di Cinesmatografia, Milan.
Dept. Posts and Telegraph, Dublin.
Egyptian State Broadcasting.
E.M.I. Research Laboratories.
Garrard Engineering and Manufacturing Co. Ltd
Magnavox Corporation of U.S.A.
Marconi Wireless.
Ministry of Supply (U.K.)
Ministry of Transport and Civil Aviation (U.K.)
Mullard Ltd.
N.V. Philips' Gloeilampenfabrieken, Holland
and Denmark.
N.Z. Broadcasting System.
Post Office Research Department (U.K.).
R.C.A. Photophone Ltd.
Southern Instruments Ltd.
Truvox Ltd.
Vortexion Ltd.
Westrex Co. Ltd.
Wright & Weatle Ltd.,
and users in India, Poland and Hong Kong.*

Sole U.S. Agents: Benjamin Berg Co.,
1410 N. Van Ness Avenue, Hollywood 28, Calif.
Cables: BENBERG, LOS ANGELES.
Tel: HOLLYWOOD 2-0871.



RANK KALEE A DIVISION OF
THE RANK ORGANISATION
Studio Dept. WOODGER ROAD · LONDON W.12 · ENGLAND
Tel: SHEpherd's Bush 2050 Cables: Rankprestu London

The superiority of new Altec Dynamic Microphones is all the more amazing when you discover their moderate price!

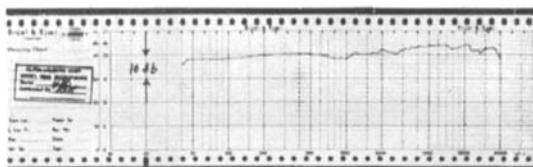
There are six dynamic microphones in Altec's new professional studio series. Each sets new standards of performance and durability in its class. Each offers distinctive features of significant value to the professional user, especially since the highest price model is yours for under \$100.00! Let's take a look at some of these features:

PROOF of Superior Performance

Each Altec 684A Omnidirectional and 685A Cardioid Microphone comes to you with its own certified calibration curve made on a Bruel & Kjaer Graphic Recorder. In the entire professional field, this practice is unique with Altec. The one shown here is typical of the 684A. The curve you receive gives visual proof of the remarkably smooth response provided by your Altec Microphone.

BALANCED PAIRS FOR STEREO: For stereo work, any pair of 684A or 685A Microphones is perfectly matched in performance characteristics. The calibration curves offer rapid means of assuring yourself of this balance.

DESIGNED FOR RIGOROUS PROFESSIONAL USAGE: The exclusive sintered bronze filter positively bars all foreign matter. These Altec Microphones may be used safely in any situation the professional engineer finds himself; not only in a protected studio, but anywhere — a



metals grinding mill if need be. Only Altec offers this absolute protection against the gradual degradation of quality common in ordinary microphones that can't prevent dust, moisture, and minute ferrous particles from restricting diaphragm movement.

Also featured are diaphragms of indestructible polyester that cannot be damaged by blasts, shock, impact — designed specifically for rigorous usage in any professional applications.

EXCLUSIVE ALTEC MICROPHONE EXCHANGE POLICY: After expiration of normal full year guarantee, you may exchange an inoperative microphone for a comparable new unit at a fraction of original cost. This Altec policy is unique in the industry; offered to better serve microphone users.



ALTEC 684A OMNIDIRECTIONAL MICROPHONE

Frequency Response: 35 to 20,000 cycles • Output Impedance: 30/50, 150/250, 20,000 ohms • Output Level: -55 dbm/10 dynes/cm² • Hum: -120 db (Ref.: 10⁻³ Gauss) Price: \$78.00 net



ALTEC 685A CARDIOID MICROPHONE

SHOWN IN ALTEC 181A BOOM MOUNT
Frequency Response: 40 to 16,000 cycles • Output Impedance: 30/50, 150/250, 20,000 ohms • Output Level: -54 dbm/10 dynes/cm² • Discrimination: Average front-to-back, 20 db • Hum: -120 db (Ref.: 10⁻³ Gauss) Price \$96.00 net



ALTEC 686A LAVALIER MICROPHONE

Frequency Response: 70 to 20,000 cycles • Output Impedance: 30/50, 150/250 ohms • Output Level: -55 dbm/10 dynes/cm² • Hum: -120 db (Ref.: 10⁻³ Gauss) Price: \$45.00 net

For specific engineering details, call your nearest Altec Distributor (listed in your Yellow Pages) or write Dept. SM12

ALTEC LANSING CORPORATION

A SUBSIDIARY OF LING-TEMCO-VOUGHT, INC.
1515 South Manchester Avenue, Anaheim, California

© 1962
Altec
Lansing
Corp.



- Underwater spherical electrodes (test tank) (sequence photographs)
- Underwater spherical electrodes (Lake Pend d'Orielle, Idaho) (sequence photographs)
- Underwater bubbles — rubber sphere (sequence photographs)
- Underwater bubbles — needle point electrodes (sequence photographs)

U.S. Army, Aberdeen Proving Ground, Aberdeen, Md.:

- Pentolite spheres detonated simultaneously (single exposure)
- Explosion — hollow cylinder of Pentolite (single exposure)
- 30-nanosecond photograph of detonation (single exposure)
- Pentolite detonation (0.1-microsecond Kerr-cell—single exposure)

U.S. Army Signal Research Development Laboratory, Fort Monmouth, N.J.:

- High-speed laser sequence (cinematograph)

U.S. Naval Biological Laboratory, Oakland, Calif.:

- Droplets emerging from spinning top (single exposure)

U.S. Army, Picatinny Arsenal, Dover, N.J.:

- Stopping projectile in free flight (single exposure)

Equipment Papers and Demonstrations

On Wednesday morning, Allen Hilliard, Exhibit Chairman, and Mel Green, Session Vice-Chairman, coordinated a substantial program of ten papers and demonstrations of equipment. After the showing of *Mexican Boy — Story of Pablo* by William F. Deneen, Jack Behrend, of Behrend Cine Corp. presented "Stellavox Recorder With Arri Sync Generator." He was followed by Victor James of the Arriflex Corp. of America, Inc., who spoke on "New Angenieux Zoom Lens for Arri 16; Siemens 16mm Sound Projector." "Gamma Scientific A-500, Scene Luminance Analyzer" was the subject of Harold T. Field of the Gamma Scientific Co. The fourth paper, "Oxberry 16mm Inspection Projector," was given by Edward J. Willette, Animation Equipment Corp. Karl Heitz presented the next paper, "New Kinoptik Apochromat 9.8mm f/1.8 Lens — New Angenieux Zoom Lens for Camex Camera — New Robot 18M 35mm Camera." "Minivox Sound Reader" was then presented by Arthur Florman of Florman & Babb. He was followed by Harold Kovner of Novatech Corp. who talked about the "New Nova Twin Lightweight Lighting Unit." The eighth paper, "Stellavox Recorder — Perfectone Three-Dial Mixer and Recorder Combination and Ryder Camera Synchronizing Devices," was given by Loren Ryder of Ryder Sound Services. Next, S. C. Peek of Sylvania spoke on "Quartz Iodine Lamps and Reflectors for Set Lighting."

At the conclusion of the session a talk of general interest entitled "Telstar Progress Report and Function of the Ground Station" was given by Hugh P. Kelly of Bell Telephone Laboratories. Mr. Kelly described the components of the Telstar system, its operation and performance to date, and the developments that are foreseen for it in the future.

OTHER ALTEC DYNAMICS PRICED FROM \$42.00 • ALTEC MINIATURE CONDENSER MICROPHONE SYSTEMS: Omnidirectional, \$236.00; Cardioid, \$275.00. • Altec offers a complete line of microphone accessories including desk and floor stands, switches, wall and boom mounts.



SMOOTH...

Two of the most difficult problems in sound recording have been made easier. Polished Gevasonor Magnetic Film Type 2.01 minimizes dust collection, and lowers wear on sound heads.

The iron oxide surface of Gevasonor Type 2.01 has a mirror-like polish. This means :

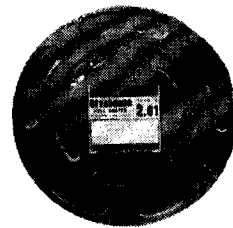
- 1 Closest possible contact between film and sound heads ; improved uniformity of reproductions.
- 2 Minimum wear on sound heads ; assures consistent quality of high-frequency reproduction.
- 3 No dust build-up on sound heads ; produces better recording quality.

Other Gevasonor Magnetic Films :

Type 2.02 : of higher sensitivity than the normal film Type 2.01 (+ 5 decibel) with less distortion (0.5 per cent) ; used for special work ;

Type 2.21 : 35 mm magnetic film with two tracks ; mostly used at the editing stage of 35 mm film production ;

Type 2.11 : 35 mm magnetic film with clear edges.



GEVAERT

All Gevasonor Magnetic Films have a new glossy coating !
Write for further information on these products :

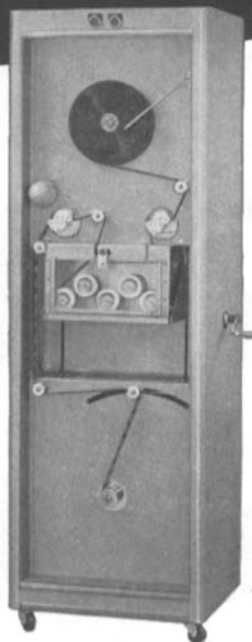
GEVAERT PHOTO-PRODUCTEN N.V., 27 Septestraat, Mortsel (Antwerp) Belgium
In the U.S. : THE GEVAERT COMPANY OF AMERICA, INC., 321 West 54 Street, New York 19
In Canada : PHOTO IMPORTING AGENCIES LTD., 345 Adelaide Street, Toronto 2B, Ontario

2 NEW WAYS TO SPEED YOUR FILM PROCESSING

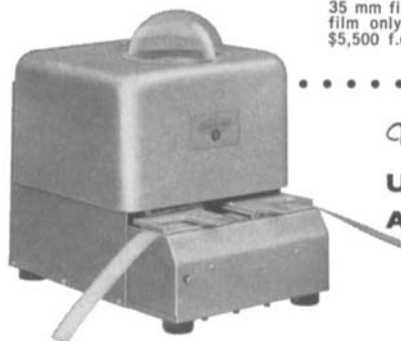
1. Use the UNICORN SOLVENT FILM CLEANER

Automatically cleans motion picture films at rates to 300 feet per minute with complete safety. Cleaning is accomplished by counter-rotating velvet covered scrubbing rollers, effectively removing dirt, lint, oil, fingerprints and wax.

Solvent barrier protects film at all times; can't be scratched or marred. All cleaners are completely self-contained and feature: adjustable speed control, 0 to 300'/minute * automatic shut-off in case of defective splices * automatic rewind * low cost operation (one pint non-inflammable solvent cleans 3,000 feet of 35 mm film).



Model A-5100 combination 16/35 mm film cleaner. Other cleaners available for 16 mm film only, 35 mm film only and for 70 mm film only. Price: Model A-5100 \$5,500 f.o.b. Sylmar, California.



2. Use the UNICORN AUTOMATIC FILM SPLICER

Unicorn 35 mm Automatic Film Splicer. Two other standard models available for 16 and 70 mm film stock. Price: (35 mm model) \$2200.00, f.o.b. Sylmar, California.

Perfect, darkroom splices in 8 seconds! Use of Mylar tape assures no-break bonding; automatic operation produces uniform splices, even in darkroom production. The two ends of the film are butted and tape is completely wrapped around, forming smooth splice for free passage through film processing machines. Safe, simple push-button control allows operation by non-technical personnel.

For more data on how these Unicorn products speed your processing and increase production volume, write to:

UNICORN Products

Computer Measurements Company

A DIVISION OF PACIFIC INDUSTRIES

12970 Bradley Ave., San Fernando, Calif. • EMpire 7-2161



6th International High-Speed Photography Congress

Two sessions of reports from the 6th International High-Speed Photography Congress were included in the Convention. Max Beard was Session Chairman for both sessions which were in the form of panel discussions. After a short film, *Help Wanted* by the Centron Business Communications Corp., Max Beard introduced the panel and the topic. Morton Sultanoff, Ballistic Research Laboratories, spoke on the "Possibilities and Limits of High-Speed Photography." "Image Tube, Kerr Cell and Unusual Applications," was covered by J. S. Courtney-Pratt of Bell Telephone Laboratories. H. E. Edgerton of M.I.T. discussed "Light Sources." The final report of the session was presented by J. W. Corcoran of Beckman & Whitley who spoke on "Rotating Mirror Cameras and Applications."

The second session, on Thursday morning, had Earl Quinn as its Vice-Chairman. A CENCO Educational Film, *Outer Space*, began the session. B. E. Drimmer of the U.S. Naval Ordnance Laboratory spoke on "Cameras and Techniques for Shock Waves and Explosives." He was followed by David C. Oakley, Lawrence Radiation Laboratory, University of California, who discussed "Flash X-Ray and High-Speed Applications." After the presentations, the panel held an intensive discussion which was recorded for subsequent abstracting and publishing.

Industrial Audio-Visuals and Films in Television and Education

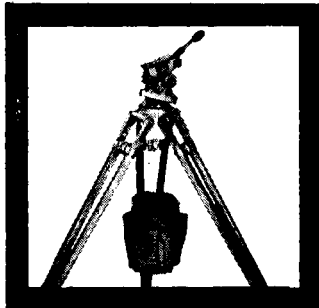
A total of thirteen papers were presented during these two sessions, both chaired by Topic Chairman William D. Hedden who was assisted by Harry E. Paney, Vice-Chairman. The Thursday morning session began with the film *Football as It Is Played Today*, by Ohio State University. Charles O. Probst of the Cook Electric Co., using film extensively, gave the paper "Three R's of Aerospace Photography." He was followed by George Schwartz of the University of Rochester Business School and John Flory who spoke on a "Survey of Business Film Usage in One City." Mr. Flory, of Eastman Kodak, also presented the next paper, "Doomsday for Film: The Crisis in Motion-Picture Archives." "The Planning and Development of a Text-Film," was the subject of a paper delivered by Albert J. Rosenberg of McGraw-Hill. The fifth paper, "Overseas Use of Educational Film and Television," was presented by Don G. Williams of the University of Kansas City, Mo. Robert W. Wagner of Ohio State University gave the next paper, "Motion Pictures and the University." The final paper, "Television and the University," was delivered by Ray Stanley of Ohio State University.

The second session was held on Thursday afternoon and started off with a film, *Two Steaks*, by Iowa State University. C. Henderson Beal of the University of Miami presented the opening paper, "A New Design for a Visual Communications Center at the University of Miami." He was followed by Merlyn C. Herrick of Indiana University, who spoke on "Educational Film Production in an Academic Training Program." The third paper, "A Three-Pronged Approach to Educational



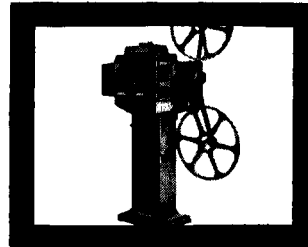
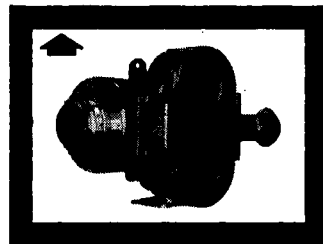
ONLY FROM CECO

THIS SUPERB FILM MAKING EQUIPMENT



CECO PRO JR. FRICTION HEAD TRIPOD
with Revolutionary Ball Joint... TR8VB
Net \$190.00
Assistant's Ditty Bag Net \$7.50

CECO REFLEX MODIFICATION FOR THE 35mm B&H EYEMO CAMERA
Conversion Net \$1200.00
Camera with Conversion Net \$1500.00
This modification is also available for Mitchell and B&H 2709 Cameras at...
Net \$2500.00



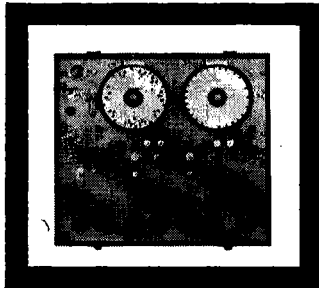
BAUER SELECTON 110 16 mm XENON OPTICAL & MAGNETIC PROJECTOR

5000 ft. capacity allows 2½ hrs. of uninterrupted showing. Light output with 2000 watt Xenon measures 4,100 lumens. Fills a Cinemascope screen over 40 ft. wide. 2-speed synchronous motor.

SOUND BLIMP FOR KODAK REFLEX CAMERA Net \$1950.00

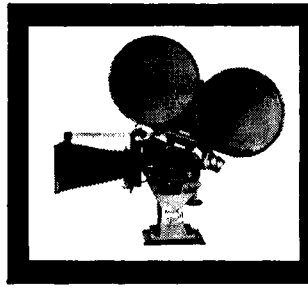
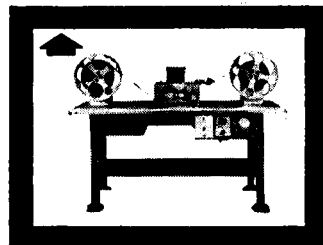
KODAK REFLEX ACCESSORIES:

- Matte Box Net \$225.00
- Single Speed
- Stop Motion Motor Net \$850.00
- Additional Single Speed Drives (¼, ½, 1 Sec.) Net \$150.00
- 110 V. AC-DC Variable Speed motor with Tachometer Net \$500.00
- Balanced Tripod for Blimp Net \$460.00
- Pro Jr. Spring Head Tripod for Camera with Ball Joint CECO Model TR6VB... Net \$240.00

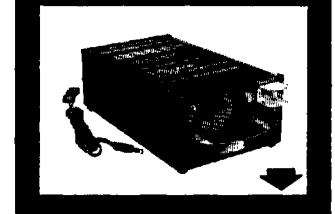
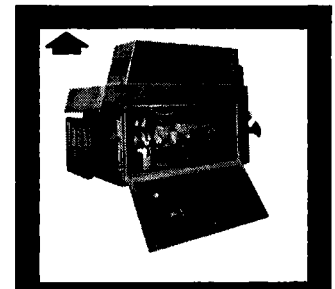


CECO PROGRAMMER for Time-Lapse Applications Net \$495.00

CECO HI-SPEED EDITING TABLE
With Torque Rewinds, Single System Sound and Counter. Acceleration to 240 feet per minute. Available in 16mm and 35mm Models Net From \$1750.00
3 YEAR LEASE available



1000' MAGAZINE FOR ARRIFLEX 35mm CAMERA
Complete with Veeder-Root Counter...
Net \$369.00

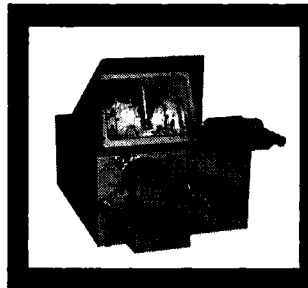
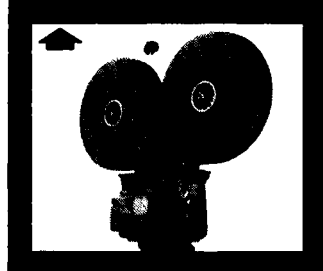


NICKEL CADMIUM PORTABLE POWER SUPPLY
for Kodak Reflex, Auricon, Arriflex and other Cameras with 110 V. Synchronous motors. Complete with built-in charger...
CECO Model PS 40 DD Net \$325.00



WADDELL NOVA III 16mm HIGH-SPEED CAMERA
New features include simplified Timing block and Film Chip Reducer...
Net From \$2335.00
3 YEAR LEASE available

CECO 400' CONVERSION for CINE VOICE CAMERA Net \$450.00
400' Mitchell-type Magazine, additional..... Net \$135.00



16mm CECO PROFESSIONAL FILM VIEWER Net \$375.00
(Also available with Single System and/or Double System magnetic installation).

INDUSTRIAL PHOTOGRAPHERS, Please Note!

— Ask us about our NEW "IN-PLANT STUDIO" PROGRAM.

For full information and literature on these as well as the thousands of other professional cameras and accessories available from CECO, write or phone today.

CAMERA EQUIPMENT CO., INC.

FIRST IN SALES, SERVICE, RENTALS AND REPAIRS

SUBSIDIARY OF CECO INDUSTRIES, INC.



NEW YORK, N.Y.
315 West 43rd St. Judson 6-1420

MIALEAH, FLORIDA
51 East 10th Ave. TUxedo 8-4604

HOLLYWOOD, CALIFORNIA
6510 Santa Monica Blvd. HOLlywood 9-8321

RESOLUTION?

Lines per inch.
Optical lines per mm.
TV elements per line.
Scanning lines per inch.
Scanning spot diameter.



CBS LABORATORIES' MICROSPOT CATHODE RAY TUBE

CBS LABORATORIES HAS THE ANSWER

Everybody defines resolution differently, but no one, with the exception of CBS Laboratories, specifies it as a precise quantity. We specify resolution as a given number of picture elements per scanning line at a percentage contrast.

For example, typical resolution for our new MICROSPOT cathode ray tube, type CL-1120P16, is 3000 TV elements per scan at 50% contrast and 9000 TV elements per scan at 2% contrast.

All CBS Laboratories new MICROSPOT cathode ray tubes are individually tested and measured for:

1. A minimum of 50% contrast at 2250 TV elements per scan.
2. A minimum of 5% contrast at 4500 TV elements per scan.
3. Uniformity of phosphor light output (shading).
4. Noise (fixed and random) in the phosphor light output.

MICROSPOT cathode ray tubes can be supplied aligned and encased with special magnetic focusing and deflection components.

For further information on MICROSPOT raster scan or line scan cathode ray tubes and their applications in your ultra high resolution scanning systems, write to: Electron Tube Department



CBS LABORATORIES

STAMFORD, CONNECTICUT
A DIVISION OF COLUMBIA BROADCASTING SYSTEM, INC.

Film Production," was given by Robert A. Weisgerber of Indiana University and San Francisco State College. Next, "Trends in the Single Concept Film" was a discussion by Steve Knudsen of Iowa State University. "The Midwest Program on Airborne Television Instruction Project" was presented by William R. Fall for the Staff of the Midwest Program on Airborne Television Instruction of Purdue University. The closing paper, "Los Angeles and Educational Television," was given by Rose Blyth of Community TV of Southern California.

Cinematography

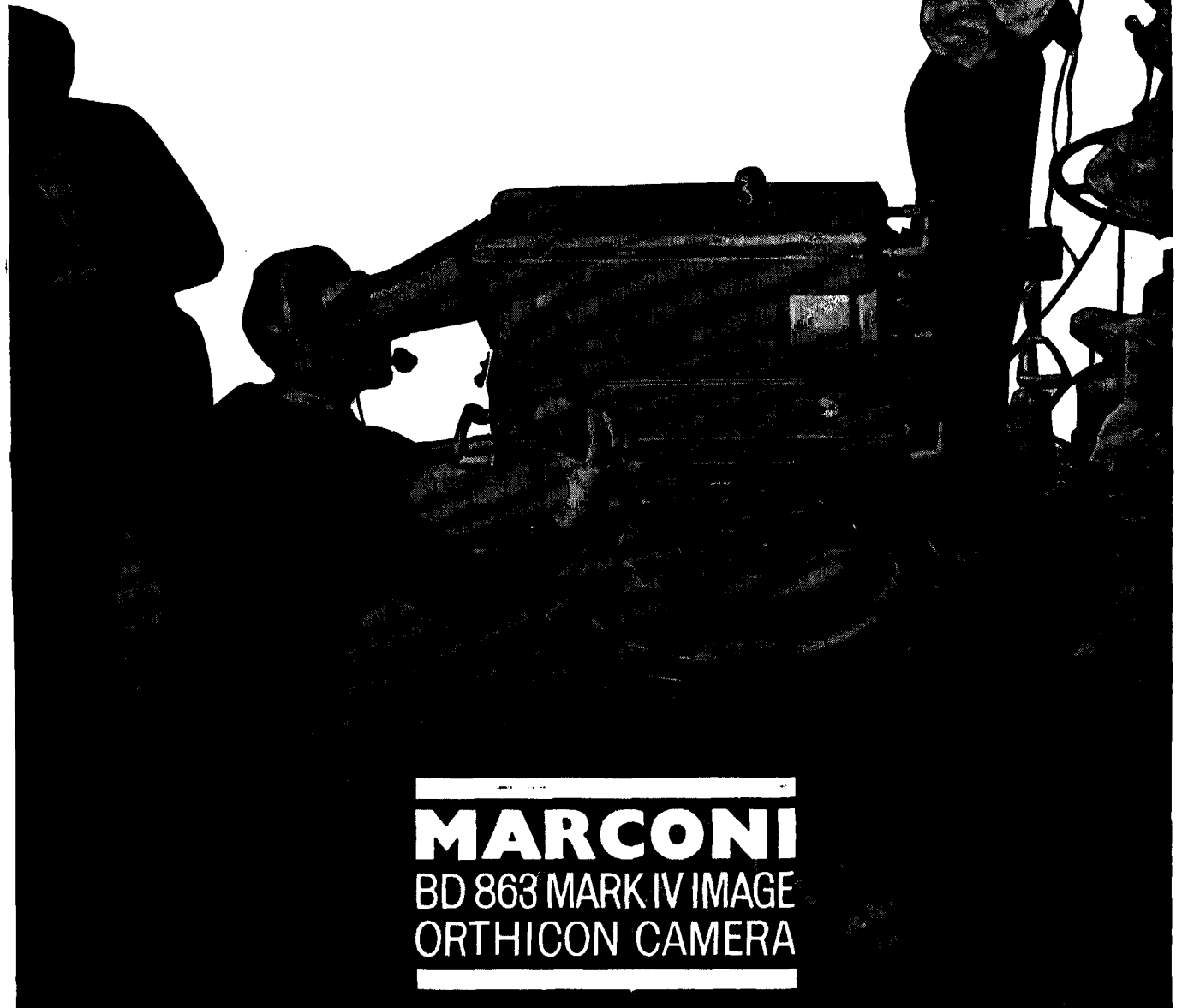
Hans C. Wohlrab, Topic Chairman, was assisted by Session Vice-Chairman Jack Whitehead for this Friday morning program. Six papers were delivered after the showing of a film, *Bowling*, by Fred A. Niles Productions. The first paper, "Photomultiplier Photometer for Scene Image Analysis," was presented by Harold P. Field and Royal H. Akin of Gamma Scientific Inc. Matt Lehmann of Stanford University Electronics Laboratories gave the following paper on "Development of a Light Meter for Cathode-Ray-Tube Photography." Hans C. Wohlrab read the next two papers, "Methods of Television Film Production Used in Europe" by Adolf Hinze of Siemens & Halske, Germany, and "Rotosyn, A System for Universal Synchronization" by Karl Schwartz of Siemens & Halske. The fifth paper, "Specialized Animation Techniques for Instructional Films," was delivered by William L. Millard of Rensselaer Polytechnic Institute. The closing paper, "The New Arriflex 16M" by Erich Kaestner of the Arriflex Corp. of America, was read by Robert Richter.

Television Equipment and Closed-Circuit Applications

Six papers and a film demonstration constituted this Friday afternoon session which was conducted by Topic Chairman Wilfred C. Prather and Vice-Chairman Richard K. Hance. After a film, *Mr. Moore's Dream Washer* by Vogue Film Productions, Norman F. Bounsall of Ampex delivered the first paper, "Technical Progress in Editing Video-Tape Recordings." M. W. S. Barlow of CFCF-TV, Montreal, followed with two papers: "The Operation of High-Power Television Transmitters in Parallel" and "A Proposal for the Conversion of 525-Line Television to 625-Line." Next was the paper "A High-Performance Closed-Circuit Television System" by C. E. Taggart, M. Altman and T. Asplund of General Precision Inc. Kurt R. Machein of Mach-Tronics, Inc., presented the fifth paper, "The MVR 10—A Portable Video-Tape Recorder." "Color Kinescope Photography" was a thorough, filmed presentation by Vernon J. Duke of NBC. Mr. Duke had also given the film a showing on Thursday as a special demonstration.

Finally, added to the Program was "Television Installation on Board the *France*" by P. M. C. van der Spank of Philips, Eindhoven. J. J. P. Valetton came from The Netherlands to present a well-illustrated lecture about this quite amazing installation.—Jane Case.

MARCONI'S HAVE DELIVERED 750
4½ INCH IMAGE ORTHICON CAMERAS
—MORE THAN ALL OTHER
MANUFACTURERS IN THE WORLD
PUT TOGETHER



MARCONI
BD 863 MARK IV IMAGE
ORTHICON CAMERA

EXTREME STABILITY • FIRST CLASS PICTURE QUALITY • LIGHT AND COMPACT

COMPLETE SOUND AND TELEVISION SYSTEMS

The MARCONI MARK IV camera is distributed in the U.S.A. solely by:
AMPEX Video Products Company, REDWOOD CITY • CALIFORNIA
Manufacturers of the VIDEOTAPE Television Recorder

MARCONI'S WIRELESS TELEGRAPH COMPANY LIMITED • CHELMSFORD • ESSEX • ENGLAND

B18