FEBRUARY 1969 ■ 75 CENTS

AMERICAN Cinematographer

International Journal of Motion Picture Photography and Production Techniques

FILMING "THE BET"

- MULTIPLE IMAGE TECHNIQUE FOR "THE BOSTON STRANGLER" • PAINTINGS AND CINEMATOGRAPHY
- HOW PROFESSIONAL FOOTBALL IS FILMED • EVOLUTION OF INCIDENT LIGHT EXPOSURE CONTROL

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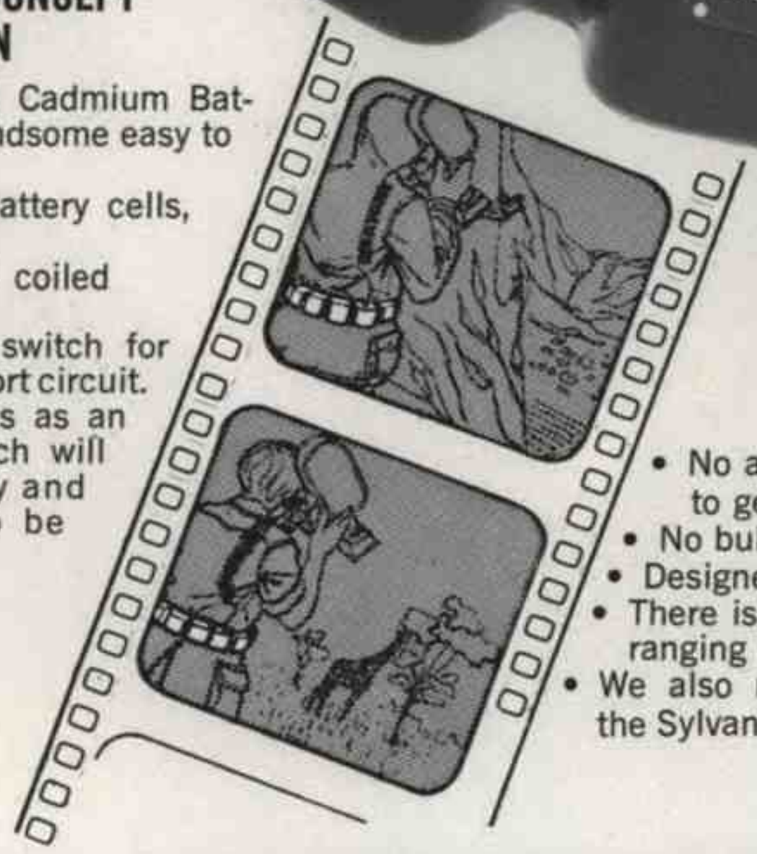

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AMERICAN Cinematographer

International Journal of Motion Picture Photography and Production Techniques

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Paul Gilbert
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New York, N.Y. 10017
297-5614

• FEATURE ARTICLES

• DEPARTMENTS

ON THE COVER: Frame blow-up of a dramatic moment from "THE BET", 24-minute featurette in which film-maker Ron Waller served as producer, director, screenwriter, star, part-time cameraman, special effects expert, makeup man, and practically everything else—with striking success.

AMERICAN CINEMATOGRAPHER, established 1920, in 50th year of publication, is published monthly in Hollywood by ASC Agency Inc., 1782 North Orange Drive, Hollywood, California 90028, U.S.A. **SUBSCRIPTIONS**: U.S. and Canada $6.00 a year; foreign, including Pan-American Union, $7.00 a year (remit International Money Order or other exchange payable in U.S.). Current single copies 75 cents; back-number single copies 85 cents; foreign current single copies 85 cents; foreign back-number single copies 95 cents; payable in advance. **ADVERTISING**: rate card on request to Hollywood or New York office. **CHANGE OF ADDRESS**: notify Hollywood office promptly.

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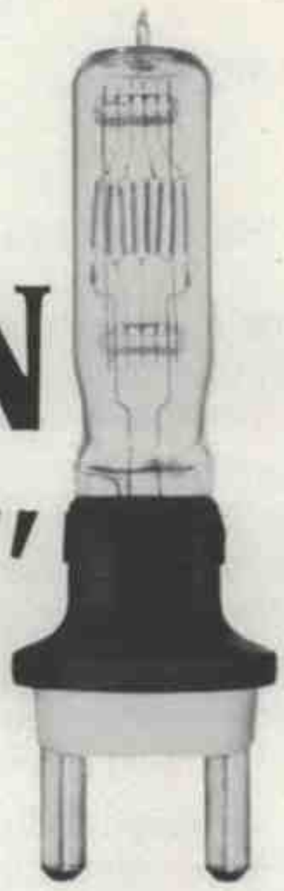
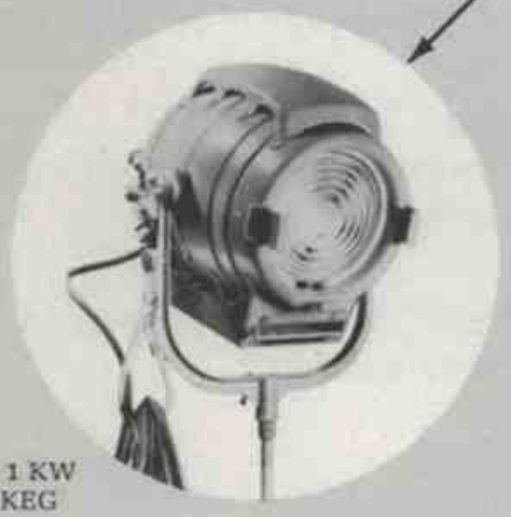
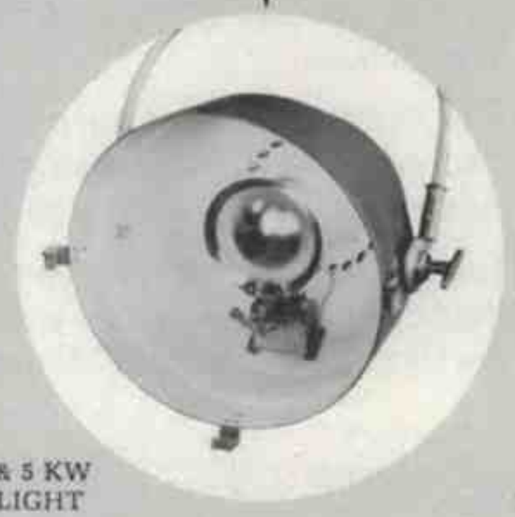




750 W & 1 KW
BABY KEG



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"CINE-VOICE II" 16 mm Optical Sound-On-Film Camera.
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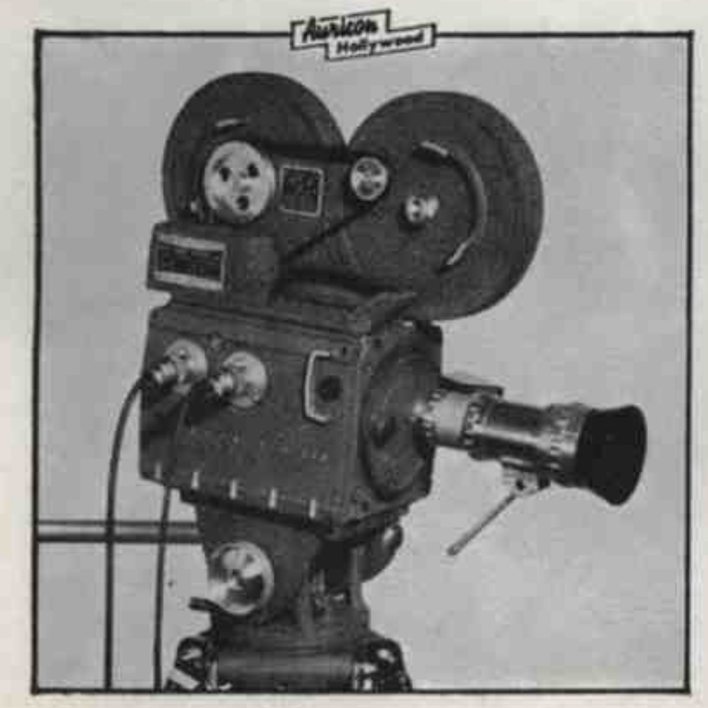
★ 1200 ft. film capacity for 33 minutes of recording. ★ $6425.00 (and up) complete for "High-Fidelity" Talking Pictures.



"PRO-600 SPECIAL" 16mm Light-Weight Camera.
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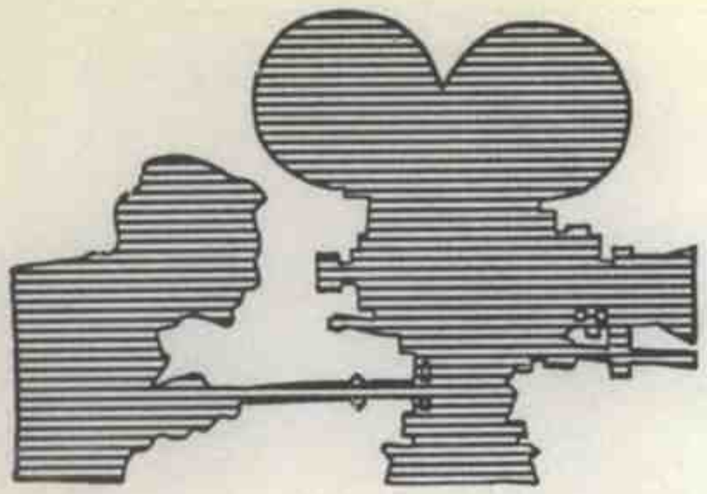

BEHIND THE CAMERAS

Where directors of photography are shooting this month

By THREE TYLER

ABC, N.Y.C.

VINCENT GAITO, IRVING HEITZNER, JOHN FLETCHER, DIRK ROY, "BC Scope" (tv)

JOE BIROC, ASC: "Too Late the Hero", 70mm–Metrocolor

PETER JESSOP: "The Avengers" (tv)

CASCADE

ROY SEAWRIGHT: Commercials

NELSON CORDES: Commercials

DONALD PETERMAN: Commercials

COLUMBIA

LANTHROP WORTH, ASC: "I Dream of Jeanie" (tv)

GORDON WILLIS: "Loving", Columbia Pictures-Brooks Ltd., Prod., shooting in New York and Connecticut, Wide screen color

DANNY FAPE: "Marooned", A Frankovich-Sturges Prod., Color-Panavision

HAROLD STINE, ASC: "The Outcasts" (tv)

EMIL OSTER: "The Flying Nun" (tv)

FRED JACKMAN: "Here Comes the Brides" (tv)

ROBERT TOBEY, ASC: "Bewitched" (tv)

HARRY MAY: Commercials

FILMEX STUDIOS, NY & HOLLYWOOD

SOL NEGRIN: Commercials

TOM MANGRAVITE: Commercials

INDEPENDENT

DRUMMOND DRURY, ASC: Commercials

HARVEY GENKINS: "N. Y. P. D." (tv)

JACQUES MARQUETTE: "Crossroads", Commonwealth United, Color

JACK PRIESTLY: "Stiletto"; Avco-Embassy Pictures; shooting in New York, Miami, Puerto Rico

GERALD HIRSCHFIELD, ASC: "Last Summer": Francis Prods., shooting in Fire Island, NY

RICHARD MOORE: "The Reivers", Ravetch-Kramer-Solar Prod., Color, Panavision

BERT SPEILVOGEL: Industrial Films-Peckham Films, NY

CHARLES ROY: Industrial Films, Commercials

WILLIAM HINES: "Law of the Sea", Jerry Fairbanks

JOHN STEPHENS: "Run, Angel, Run", Independent

HENRY JAVORSKY: Commercials

HEINZE PEHLKE: "deSade": American-International, shooting in Berlin

ROBERT HAUSER, ASC: "A Man Called Horse"; Color-Panavision, Sanford Howards Prods., Shooting in Mexico

NENARD JOVICIC: "Operation Cross-Eagles"; Eastman Color, Walter Reade Org. Noble Prod.-Treglav Film; shooting in Yugoslavia, Italy

ANTONIO SALINAS: "The Starmaker"; Jack O'Diamonds Prods., shooting in Berlin, London, Paris and Ireland

TOMISLAV PINTER: "The Gamblers" U-M Prod., Eastman Color, shooting in Yugoslavia

PIETRO PORTALUPI, ASC: "The Heroes"; Moulin Rouge Prod., Color-Widescreen shooting in Teheran, Iran

GEORGE KOBLASA: Commercials

BOB SOPANEN: "Documentary Films" Sopanen Films, shooting in American Samoa Islands

RICHARD KLINE, ASC: "A Dream of Kings", National General, Color-Panavision, shooting in Chicago

KENNETH PEACH, ASC: "Girl in the Leather Skirt", American-International

PETER BARLOW: "Royal Hunt of the Sun", Royal Films, Color, shooting in Peru.

AUSTIN MCKINNY: "Is This Trip Necessary" Dorn Thor Prod., Color

HASKELL WEXLER, ASC: "Medium Cool", H & J Pictures

LUIGI KUVEILLER: "The Lady", Clesi-Euro International, color, shooting in Italy

CHARLES ROSHER, JR.: VPI

DICK MILLS: "Public Broadcasting Labs. TV Documentaries"

MURRAY LERNER: "Industrial Film"

AL TAFFET: "Hawaiian Travel Film", Pablo Ferro Prod.

LARRY LINDBERG: "Sport Short", Larry Lindberg Prod.

MAX GLENN: "Discover 69", Jules Power Prods.

BOB FERGUSON: "Documentary Film", Francis Thompson Prod.

EDMOND BER GERRARD: "NET Documentary", Douglas Lester Prod.

ROSS LOWELL: "Presidential Inauguration" –News of the Day Prod.

TOM PRIESTLY SR.: "The Sahara"–NBC-TV, shooting in Europe and Africa

GERALD HIRSCHFELD, ASC: Commercials

LEN STARK: Commercials

BOB HAAGENSON: Commercials

IRVING DEUTCH: Commercials

BILL STORZ, ASC: Commercials

TED PAHLE, ASC: Commercials

ERNESTO CAPARROS, ASC: Commercials

PETER GARBARINI: Commercials

JOE COFFEY: Commercials

ED HUGHES: Commercials

MIKE LIVESEY: Commercials

TONY CIRRILO: Commercials

WARREN ROTHENBERGER: Commercials

DON COHEN: Commercials

LES GOLDMAN: Commercials

DAVID QUAID: Commercials

RAY LONG: Commercials

DON SHAPIRO: Commercials

JIM KOLOGERATOS: Commercials

GIL GELLER: Commercials

BERNIE HIRSCHENSON: Commercials

WALTER HOLCOMBE: Commercials

DICK BROOKS: Commercials

TORBEN JOHNKE, ASC: Commercials

TOM DiLEO: Commercials

BILL MONTGOMERY: Commercials

JACK SCHAATZ: Commercials

Continued on Page 243

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The Beaulieu has the first truly continuous Stimulus Response electronic circuitry ever built into a multi-lens 16mm. A behind-the-lens rapid response Cds meter sensor, coupled with an exclusive transistorized computer, provides for automatic control of a true iris diaphragm.

It responds instantly to new light conditions and adjusts to give you absolute precision exposure control.

This new genus of 16mm's has another unique feature . . . complete interchangeability of lenses. Besides the "1001" standard lenses, there are three magnificent Angenieux lenses you can use with it...all automatic... with zoom ratios from 4:1 to 10:1.

The new Beaulieu gives you brighter visual image control—25% increase in magnification and 50% increase in luminosity.

We've designed new lifetime NiCad batteries so revolutionary they virtually eliminate all power failures. All camera functions operate off the Beaulieu's new single-system power supply. Plus, take your choice of 500 or 1000 mA handgrip batteries or the

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1000 mA semi-professional pocket battery.

A new Form/Function handgrip makes the Beaulieu the easiest handling 16mm ever to roll footage. Particularly at four pounds light. You can use either the 100-foot standard load or our lightweight 200-foot daylight load magazine.

Both the magazine and the camera body are made of a special alloy so tough that your Beaulieu won't crack, even if dropped. Light leakage is passe.

The Beaulieu is also the only 16mm you can set for *any* speed from 2-to-64 fps...and it's equipped with a sync pulse connection for double system sound.

This is the dawn of a new era in 16mm cinematography...the big step forward to finer film making. The first of the New Breed is waiting for you at your Beaulieu dealer. Go watch it perform automatically and instantly. Or write for complete illustrated literature. Also, ask for a brochure on the famous Heurtier projectors.

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All equipment purchased from three major United States laboratories who recently up dated their equipment. All units except those noted were in use until the date of purchase.

1 each . . . Bell & Howell Model "E" 35mm Picture & Sound Continuous Contact Printer, forward and reverse operation (Panel Printer) running speed 180 f.p.m. for black & white. **Selling Price $17,500.00**

3 each . . . Bell & Howell Model "E" 35mm Picture and Sound Continuous Contact Printer, forward and reverse operation (Panel Printer) light changes with mattes — subtractive color at 100 f.p.m. **Selling Price $20,000.00 ea.**

NOTE: Any of the above can be modified for additive printing by adding an additive light source. Modification instructions can be supplied by us.

27 each . . . Bell & Howell Model "D" 35mm Continuous Contact Printers, some with roller gates and torque motors — notch counters 3 & 5 way apertures — running speed from 60 to 120 f.p.m. **Selling Price from $3,450.00 to $3,700.00 ea.**

1 each . . . Bell & Howell 35mm Continuous Contact Printer with Unicorn Wig Wag, setup to run track at 390 f.p.m. Special torque take-ups, air vacuum squeegees. **Selling Price $4,000.00**

1 each . . . Bell & Howell 35mm Continuous Contact Printer with Unicorn tape controls, 5-way aperture, air vacuum squeegees, special torque takeups with Unicorn Wig Wag to run over 300 f.p.m. black & white. **Selling Price $5,500.00**

1 each . . . Bell & Howell 35mm Continuous Contact Printer for picture and track with notch counter, roller gate, torque motor takeups 6100 Design — like new. **Selling Price $7,500.00**

1 each . . . Bell & Howell 35mm Step Contact Printer with Bell & Howell camera movement. **Selling Price $3,700.00**

3 each . . . Bell & Howell 16mm Model "J" Continuous Contact Printer — roller gate — notch counter. **Selling Price $3,650.00 ea.**

1 each . . . Bell & Howell 16mm Model "J" Continuous Contact Printer with one lamp (1000W) Fish Schurman Additive Color System (less reader) **Selling Price $5,000.00**

1 each . . . Bell & Howell 16mm Model "J" Continuous Contact Printer — notch counter — control panel — separate cue track. **Selling Price $3,650.00**

1 each . . . Bell & Howell 16mm Model "J" Continuous Contact Printer — roller gate — notch counter. **Selling Price $3,650.00**

1 each . . . Bell & Howell 16mm Model "J" Continuous Contact Printer — roller gate — torque motor takeups — control panel — on large frame. **Selling Price $3,650.00**

1 each . . . Bell & Howell 35/32 Continuous Contact Printer — roller gate — notch counter. **Selling Price $4,000.00**

2 each . . . DePue Reduction Printers 35 to 35/32 reduction or 35/32 to 35 blowup. **Selling Price $4,000.00 ea.**

*1 each . . . Cinex Tester — adapted for color using subtractive filters. **Selling Price $2,500.00**

*2 each . . . Cinex Testers — black & white — 16 or 35. **Selling Price $1,500.00 ea.**

*Any of the Cinex Printers can be converted to the HFC Color Scene Tester at an additional cost of $4,000.00.

1 each . . . Eastman Kodak 35mm Edge Numbering Machine. **Selling Price $1,250.00**

1 each . . . DuPont 35mm Edge Numbering Machine. **Selling Price $500.00**

1 each . . . Westrex Densitometer RA-1100-A. **Selling Price $1,500.00**

4 each . . . Duplex 35 to 16mm Reduction Printer. **Selling Price $1,000.00 ea.**

1 each . . . Fish Schurman 3 light color correcting additive color head Model D Serial #51. **Selling Price $2,500.00**

1 each . . . Eastman Kodak Waxer 35mm. **Selling Price $375.00**

2 each . . . Bell & Howell 35mm Sound Heads for Model "D" Printers (new). **Selling Price $2,450.00 ea.**

1 each . . . 35mm Loop Cabinet (holds approximately 100 ft.) not driven. **Selling Price $500.00**

1 each . . . Debrie Reduction Printer from 35mm to two 16mm black & white. **Selling Price $2,500.00**

1 each . . . Debrie Light Board. **Selling Price $750.00**

3 each . . . Eastman Sensitometer 2B. **Selling Price $1,100.00 ea.**

1 each . . . Photo Research Corp. Densitometer — picture & sound — black & white — as is. **Selling Price $450.00**

1 each . . . Two Head Roth Projector Generator — 1750 RPM—35V 65 amp. D.C.—Mtr. 220/440V — 60 cycle 3 phase — 7½ H.P. Century Motor. **Selling Price $450.00**

1 each . . . Star Printer Generator 2.5 KW — 500V D.C. 5.2 amps. 220/440V 3 phase 60 cycle. **Selling Price $350.00**

1 each . . . Panel Printer — black & white — 2 heads — action & track with 3 phase torque motor takeups. Fixed metal mattes for track head without lamphouse. **Selling Price $2,500.00**

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LOWELL STAND & SPACE KIT

If you think sturdy location stands have to be heavy and difficult to ship — pick up a Stand & Space Kit

5 STANDS: Lightweight, wide base, extremely sturdy, Lowell Link Stands, support over 40 pounds, extend to 9 feet, fold to 35″, have standard ⅝″ stud.

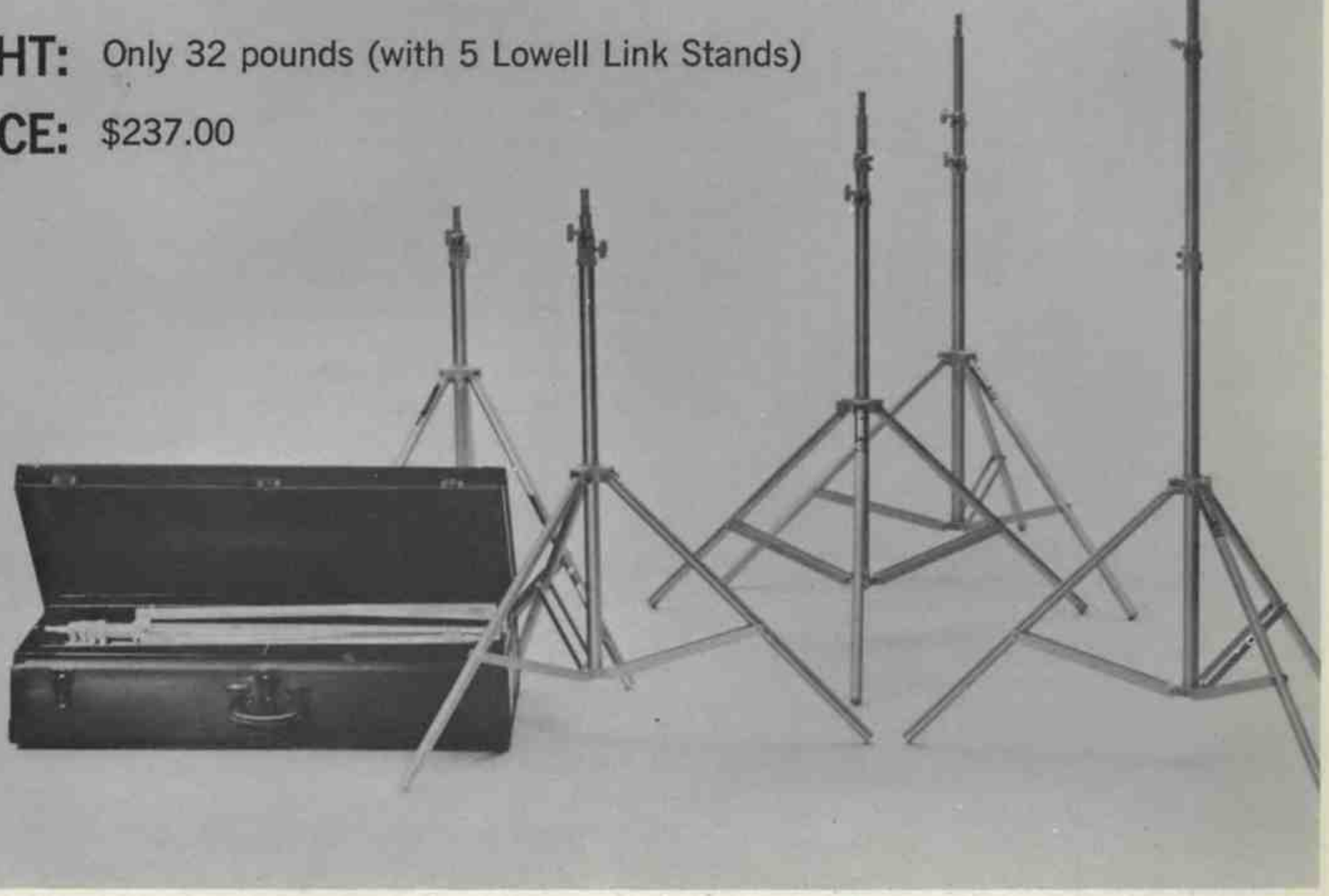
& SPACE: Rugged case has space for additional equipment such as: eight Lowell Water Weights & several Lowell Poles which extend stands to 14 feet and with Lowell Grip and Interlink, form a boom, a b.g. support, a door boom, etc.

PURPOSE: To simplify location work and travel; to compliment Lowell Quartz and Lowell Link Kits and most modern equipment.

SIZE: 18″ x 36″ x 7½″.

WEIGHT: Only 32 pounds (with 5 Lowell Link Stands)

PRICE: $237.00



From the company that introduced Gaffer-Tape, Lowell-Lights, Variflectors, and the Lowell Quartz System.

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WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE

Bardwell & McAlister Opens New Showroom

Bardwell & McAlister, Inc. announces the opening of their new, ultra-modern showroom located at 6757 Santa Monica Blvd., in the heart of Hollywood, California.

Staffed at all times by sales engineers specializing in professional motion picture and TV lighting methods and installations, the new showroom will have on display the full line of Bardwell & McAlister lighting fixtures, ranging from the famed 750 w. Baby Keg to the 10 KW "Big Mac" spotlight, plus the latest models of the new Tungsten-Halogen lights. In addition, full demonstration and testing areas will permit potential users to actually check out light output, control and balance features as well as operating procedures.

The new facility also includes sales and administration offices, under the supervision of John Murray, Vice President of Sales.

•

New Technicolor Compact Super 8 Sound Movie Cartridge

Technicolor, Inc. has placed on the market a new, "compact" sound Movie Cartridge for its Model 1000 super 8 Instant Movie Projector, it was announced by Robert T. Kreiman, vice president and general manager of the Commercial and Educational Division.

The new cartridge will hold up to 220 feet of Super 8 optical sound film with a maximum running time of ten minutes. It is companion to Technicolor's standard 580-foot, 29 minute Movie Cartridge. Both cartridges can be used interchangeably in the same projector.

"The cartridged film concept," said Kreiman, "eliminates the need to thread or rewind film." He added that because film is not driven by sprockets as in conventional projectors, there is substantially less film wear and breakage.

"The tremendous acceptance of the Technicolor 1000 Instant Movie Projector," said Kreiman, "has made it possible to add the flexibility of a second cartridge size. With the new 220-foot cartridge, producers of shorter sound films can package them at a substantial saving.

•

Washington D.C. Chapter Newest for IFPA.

Information Film Producers of America, Inc., allegedly the only national organization for the creative and technical personnel in the non-theatrical motion picture field, announces the formation of its newest chapter—Washington, D.C.

Accepting the chairmanship for 1969, Bruce Herschensohn, director of motion pictures and television for the United States Information Agency . . . Lt Col J.C. Stokes, Chief of the Presentation Division, Headquarters, USAF, accepted the vice-chairmanship; E. Del Smith, program chairman; James Thompson, secretary-treasurer; Lt Cmdr S. Sims Howell, USN, publicity; and Jay Brubaker, membership chairman.

The Washington Chapter will provide a larger scope and broader spectrum to government, industrial and independent professionalism.

The February meeting of the Chapter will feature Senator George Murphy as guest speaker.

•

New Behind-the-lens Filter Holder For Zoom Lenses Available

JACK PILL'S CAMERA EQUIPMENT announces a new behind-the-lens filter holder for the 12-120mm and the 9.5-95mm Angenieux zoom lenses. Designated the BTLF-12, this is a smaller version of the BTLF 25 for use on the 25-250mm Angenieux zoom lens which has proven so popular. Both models of BTLF's will accept up to 2 gels with a spare ring between to avoid Newton rings.

The BTLF 12 sells for $5.00 with one retaining ring. Extra retaining rings are 25 cents each.

Another cameraman's friend has been released by JACK PILL'S CAMERA EQUIPMENT. This small ingenious device clips to the focus ear of any Arriflex lens. It supports a reference pointer which extends over a convenient surface on the camera body, to which a tape may be fastened for scribing reference marks for follow-focus shots. This makes it easy for the assistant cameraman to stay out of the way and yet easily control the lens focus ring from the rear, following marks he has calibrated on the tape to hold focus on dolly or follow focus shots. Called an AFI-1 it sells for $5.00.

•

San Diego Celebrates 200th Anniversary with Film Festival of Early Films Made There.

San Diego, California's little known role in the early days of movie-making was poignantly recalled January 3–5 at a festival of vintage films in the Fine Arts Gallery's James Copley Auditorium.

The Film Festival was part of the city's special 200th Anniversary celebration which will continue during 1969. Maury Cohen, now an independent movie and TV producer, was in charge of the festival. Cohen indicated that the festival may continue at intervals throughout the 200th Anniversary celebration.

A number of silent films produced in the San Diego area prior to the first World War were loaned by such well-known historians and film collectors as Kemp R. Niver, George J. Mitchell and Kent D. Eastin.

Among the earliest films shown was "Three Million Dollars" made in Lakeside, a San Diego suburb, in 1909. It was directed by Allan Dwan, later an important director, who helped Cohen assemble material for the festival. The cameraman was the late Roy Overbaugh, ASC. The company was the American Film Company "Flying A" Productions. A studio was established in nearby La Mesa and between 1909-1912, more than 200 films—mostly one reelers—were made. Overbaugh was in charge of photography and the late Alois Heimerl, ASC ran the laboratory.

"The Devil's Assistant", an early day horror film, and "Pearl of Paradise", a feature of 1915, both starring Margarita Fisher, were shown. Miss Fisher, who

attended the festival, recalled how she and her husband, the late director Harry Pollard, made these pictures in a studio they established in Balboa Park. "We made five pictures in 1915," she said, "but we went broke because a Chicago company that distributed them never paid us."

Other films shown were Mack Sennett's "Fatty and Mabel Visit the San Diego Exposition" (1915), Lubin's "Billy Joins the Navy" (1915) which was made in an open-air studio at Coronado, and a number of vintage newsreels re-filmed from Library of Congress paper prints by Mr. Niver.

Displayed outside the auditorium in the Fine Arts Gallery was an exhibit of still photographs showing these early San Diego companies at work. A Pathe Professional model camera, the type used during this period, was loaned the festival by Arthur C. Miller, ASC.

Jimmy Palmer, a retired cameraman of Local 659, recalled that the cameraman for the Pollard Picture Play Company was Stewart Featherstone Haugh. "I worked for a time as his assistant," said Palmer, "and I also sometimes acted in these films. We used a Pathe camera just like the one loaned by Artie Miller."

Among the many notables attending the festival was Linwood Dunn, ASC, accompanied by Mrs. Dunn. "I was pleasantly surprised at the splendid way the audience reacted to these old films," said Dunn. "Most of them were young people—teenagers and college students. They seemed to appreciate these pictures. This is gratifying to me because I've been interested in the preservation of old movies for a long time. The support of these young people is essential to such organizations as the American Film Institute and the Academy of Motion Picture Arts and Sciences, both of whom have active film preservation programs."

Dunn, one of the industry's leading special photographic effects experts, heads Film Effects of Hollywood.

•

Sol Lesser Donates Antique Camera Collection to USC

A magnificent lifetime collection of rare photographic equipment, constituting the virtual history of the birth, growth and development of the motion picture arts and sciences, has been given to the University of Southern California by Mr. Sol Lesser. The collection has been appraised at more than $150,000.

Mr. Lesser, 78, a pioneer motion picture producer, gathered the cameras, projectors and lenses during his 50 years in Hollywood.

The collection will go into the library of the new multi-million dollar Center for the Performing Arts which USC will build on its campus upon completion of a fund-raising drive. The building will house the USC divisions of cinema, drama and music.

Many of the early-day hand-cranked motion picture cameras donated by Lesser are the only ones of their kind in existence.

There are at least 70 different types of movie cameras in the Lesser collection. Some of them date from the first development of the photography of motion.

A collection of still and portrait cameras includes some of the types used by Matthew Brady in photographing the Civil War.

Every type of shutter and bellows mechanism ever used on cameras is represented.

Pre-cinema magic lanterns and slides, many of which can be found nowhere else, are included in Mr. Lesser's gift.

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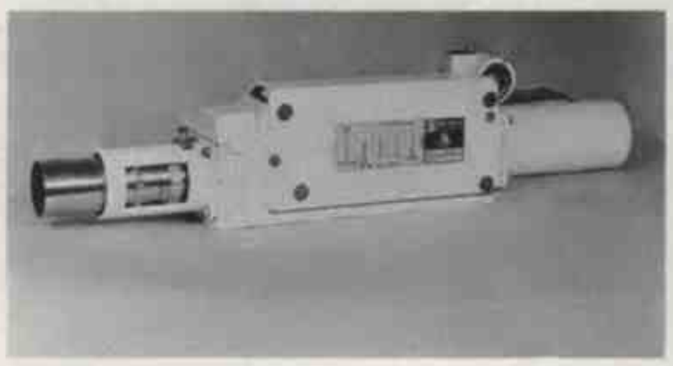

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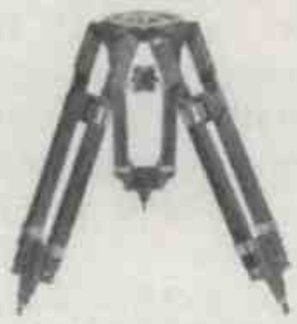

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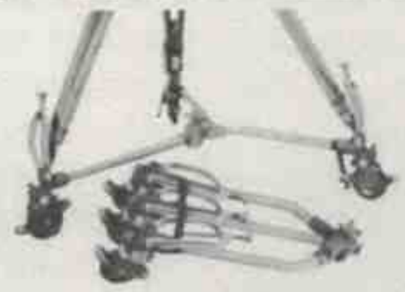

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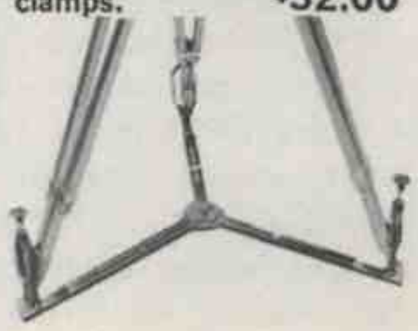

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MULTIPLE-IMAGE TECHNIQUE FOR "THE BOSTON STRANGLER"

System of presenting several scenes in panels on the screen simultaneously adds up to exciting method for telling a complex story on film

"THE BOSTON STRANGLER" is an exceptionally well-made film version of Gerold Frank's book dealing with the case history of Albert DeSalvo who, by his own admission, brutally murdered 13 women in and around Boston during the period June, 1962 to January 1964.

As produced by 20th Century-Fox in Panavision and subdued color it makes striking and creative use of an intricate technique in which multiple images appear simultaneously in varying configurations upon the wide-screen frame. The technique has been used before—most notably in the 17-minute short, "A PLACE TO STAND", which was one of the cinematic sensations of EXPO 67. It has also been employed sparsely of late, and with no great degree of imagination, in a few feature films, usually as a montage interspersed with titles.

But "THE BOSTON STRANGLER" is the first feature to use it extensively (about 35% of the total footage) and as an integral part of the filmic narrative. Its considerable audience impact and technical excellence has resulted from the dedication and skill of a team of key technicians, which includes: Director Richard Fleischer, Visual Designer Fred Harpman, Director of Photography Richard H. Kline, ASC, Editor Marion Rothman and Special Photographic Effects expert L.B. Abbott, ASC.

In the columns that follow, each of these technicians discusses his own work role in creating the exciting multiple-image sequences that make "THE BOSTON STRANGLER" a most unusual thriller:

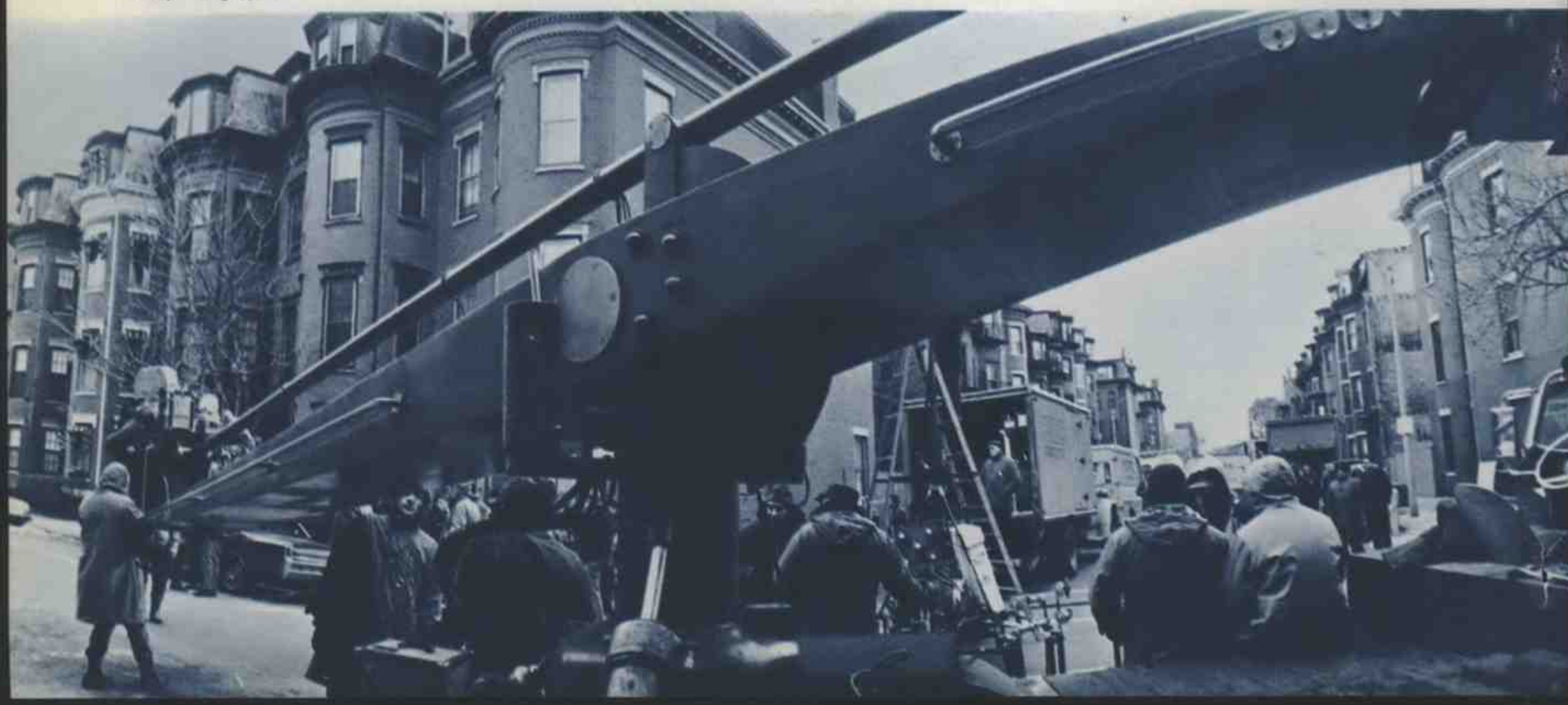
RICHARD FLEISCHER
Director

I have been interested in multi-image and multiple-screen processes for many years, having first seen such presentations in Czechoslovakia in 1942, where they have, in Prague, a theatre called Laterna Magica, and I was so enamored with it that I imported the show to New York and presented it in Carnegie Hall, where it ran, in 1944, for about three weeks. So I had a chance to study it and analyze its values and complications, and when I got back to Hollywood I always looked for a project for which I thought it would be applicable.

It was very difficult to explain what the process was like without demonstrating it. So there was a double problem. One was finding the right subject, a picture that would be suitable for it, and the other problem was, after you found the subject, to convince everybody that this was the way to do it.

EXPO '67 came to the rescue because there it was actually to be seen and it was a great demonstration of all the things I had been lecturing about here. So I convinced the right people that it did have a tremendous value, if the story was right. Then along came "THE BOSTON STRANGLER" and I felt it lent itself very well to all of the possibilities of multiple-image presentation. I felt that the requisites for using it were all present in this story, because one of the main requisites is simultaneous action—many actions, or more than one action, happening simultaneously on the screen, or within the same time in the story so that you don't have to cut back and forth in a conventional manner from one action to the other. You can show them both together.

Giant Chapman camera crane, with Panavision camera mounted, dominates the scene as 20th Century-Fox location crew films action in the streets of Boston for "THE BOSTON STRANGLER". Peculiar apparent distortion of the crane is due to the extreme wide-angle "fisheye" type lens used to take the photograph.



It is used most obviously in some of the sequences building up to the actual murders, but I also use it in several other places and in several other ways. For example, it is employed in place of a conventional montage to quickly establish a trend of similar, simultaneous occurrences. There are two important montages in the film. One is a round-up of all known sex offenders in Boston. As a matter of documented fact, this all happened very quickly—and I show it on the screen happening very quickly.

The second montage applies to the treatment of another kind of situation, that in which women are shown being molested by sex offenders. This happened all over the city, to all different types of women. I was able to show these individual actions happening simultaneously.

Then there was a lengthy sequence showing women being terrified at night, taking all sorts of precautions against the strangler. The multiple-image technique was a very effective way to show the mood of terror pervading the entire city. You really got the feeling of the whole city being involved at the same time.

Of course, the secret of making it work is not to put too much information into any one panel or to try to tell a complete story in any one segment.

One great challenge on the project evolved from the fact that the suspense which you normally have in a "murder film" does not exist in "THE BOSTON STRANGLER", because—first of all, you know *who* did it right from the start and, secondly, you know that there's going to be a series of murders. So there is no great surprise about discovering another murder. Faced with a problem like that, as a director, I concluded that what I would have to play for would be the anticipation and suspense. I used the split screen to enhance both of those elements.

For instance, for anticipation we see, on one side of the screen, a group of innocent people going about their everyday tasks, unaware that in the next room there is a dead body. Then we see, on the other side of the screen, what they are about to discover. So, we are anticipating their discovery of the body, and there is great feeling and great mood built up when you see it that way.

To build suspense, of course, one sequence that comes to mind is where you see the prospective victim going about her daily chores unmindful of the fate that is about to befall her, while on the other side of the screen you see the strangler approaching, and there's no way to stop it. It's like a juggernaut of fate bearing down upon her. There's no way out.

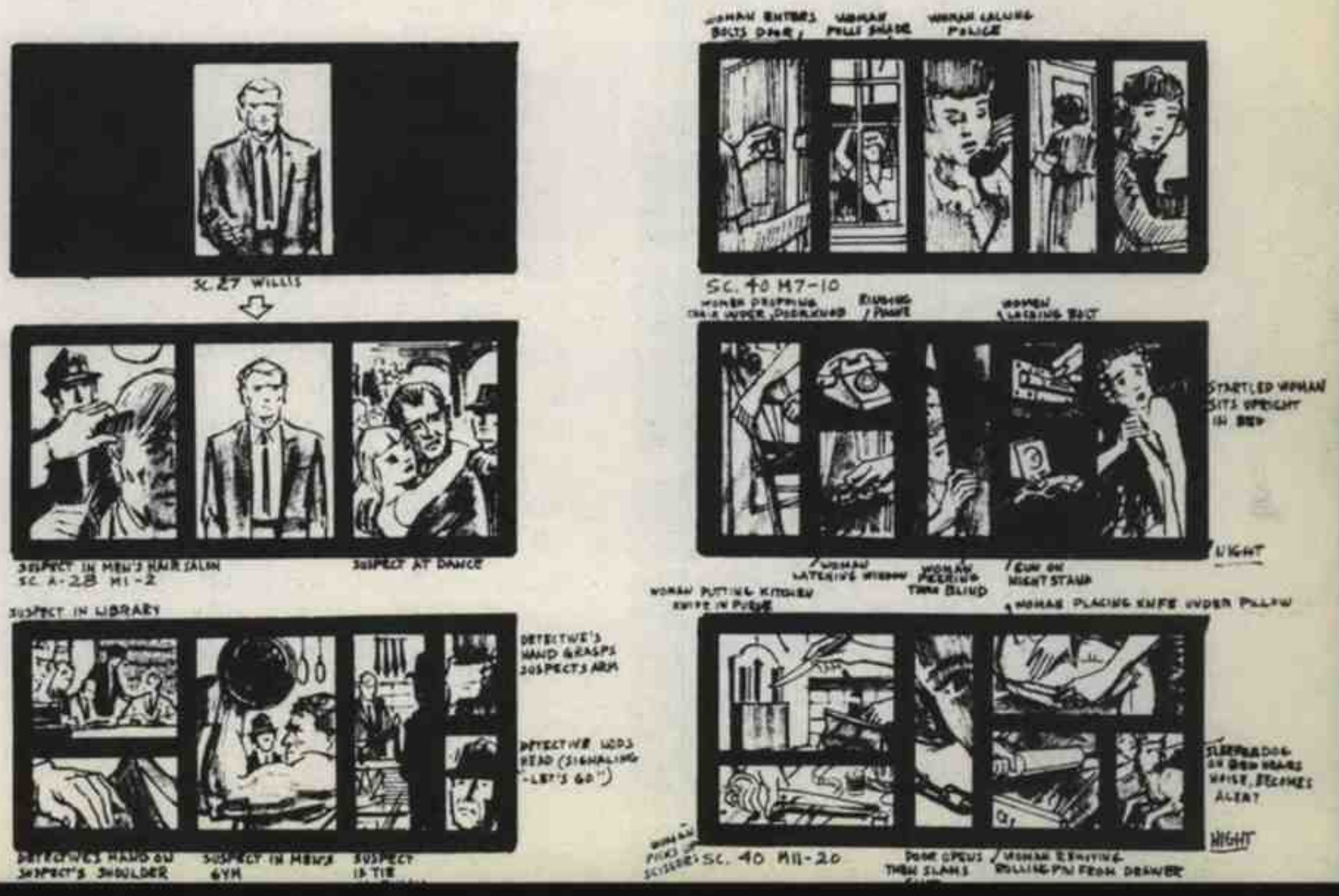
Monochrome frame blow-up from the film, showing six panels of separate but related actions filling the wide-screen composition. Multiple-image technique presented unique design and editing problem.

You have to be very, very well prepared for using such a technique. It's not something that you can just keep in your mind. You have to blue-print it in great detail, because the panels themselves each have a shape and they keep changing their shapes on the screen. Each time they do, the entire composition changes. The panels, even without an image inside of them, have a composition of their own on the screen, so that has to be very carefully planned. You can't change the shape of one panel without balancing everything else to it. And then, the image that goes inside the panel also has to be carefully planned, particularly in terms of timing, so that the climax of the action of one panel doesn't interfere with the climax of the action of another. They don't happen simultaneously; they happen very closely together, but never *exactly* together.

In planning all this, I had a great deal of help from the Visuals Designer assigned to the film, Fred Harpman. Fred is an extremely clever young man and we collaborated very closely in working out the details for every sequence, so that we would know exactly what our shape was going to be for each panel, and which bit of action would be placed inside of that shape. This took about eight months of pre-planning.

In filming scenes for the various panels, we used not only diagrams but special mattes which were manufactured to fit into the camera's viewfinder, and we framed for the image that was enclosed by the matte. What actually appeared on the film filled the entire frame, but we knew that we were only going to use a certain portion of it, the segment we had lighted to fit the particular matte we were framing to. The significant action was centered during shooting, and later it was moved optically to its proper position within the frame.

Two pages from the exhaustive storyboard sketch book prepared by Visual Designer Fred Harpman to indicate development of multi-image sequences. This book served as a blueprint for key technicians during each phase of production.



Director Richard Fleischer, title-role star Tony Curtis and Director of Photography Richard Kline enjoy a light moment between camera set-ups during location filming in Boston. Multiple-image technique required an extraordinary number of separate set-ups.

We were very careful to frame each image to its proper size and perspective so that it would not be necessary to blow up or reduce anything in making the final multiple-image composite. We were already suffering with one extra generation and we didn't want to go into more than that. As it turned out, I feel that we ended up with terrific technical quality.

While it might seem that this technique would consume three or four times as much footage as that used in a conventional film, in actuality it required only a little more film. However, it did take more time, because after the main action of the film had been completed, I had to continue on for another week of shooting just the images that would go into the panels. They were little tiny bits and pieces, but each one required a separate camera set-up. The length of time each panel-image remains on the screen is very short. They usually run about three feet, and more often about a foot and a half—which means that in order to sustain a sequence that runs for a minute on the screen, you have to shoot a lot of set-ups. Sometimes you have as many as 12 images appearing on the screen simultaneously —each one changing every foot and a half. In that week during which we shot fragmentary scenes for the panels, we averaged about 50 set-ups a day.

In getting a multiple-screen or multi-image technique to work, the critical phase is the editing. I worked very closely with the editor, Marion Rothman, on this, and Fred Harpman was very helpful, too. This was Marion's first feature as an editor and she worked under the most difficult circumstances. It was the most complicated sort of thing to cut, but she came through beautifully. We had graphed each shot so that we could match things by counting the squares on a graph superimposed on a sketch of the scene and then counting them again through the matte in the viewfinder. This was the method we used to make sure the separate images would end up in the right places within the total wide-screen composition. Marion had to be aware of every shot we made and where it was to go. Then she had to order all this material in print form and get all of the timings right. She had to use a tremendous amount of imagination in ordering all of these materials so that it would come out right, and it did about 90% of the time. She understood exactly what we wanted, and she did a fantastic job.

So did the cameraman, Richard Kline. He understood so well what we were after and he was extraordinarily good at getting it onto film. We made a lot of tests before we started shooting and we learned a lot from those tests about the lighting of areas. Dick had to change some of his thinking in regard to how he was going to do it, but he really came up with some wonderful things. Because he is so imaginative, he was exactly the right man to photograph this picture—"perfect casting", I would say.

I feel that the multiple-image technique should be more widely used in feature production, but it must be used cautiously. It has great applicability to some subjects, but not to *all* subjects. I think it would be a great mistake to use it simply as a gimmick and that's very easy to do, because it's a kind of "show-off" thing in its own way, a means of showing how clever and versatile you are. But if it has no real value to the film other than as a flashy technique, then it can only hurt the film.

As for the ability of the audience to absorb so many images simultaneously, I can only say that the mind and eye have been proved to be capable of tremendous speed and versatility in accepting multiple impressions—to a far greater extent than most people would believe possible. The eyes see everything and the mind takes it all in. Viewers in the audience may feel that they are just on the verge of missing something, which is fine, but the total effect on the audience is wonderful, because it makes them work. It makes their eyes and ears explore the entire screen and keeps them very conscious of what is happening. So there's an added excitement in trying to follow and keep up with it, which is something you just don't get in a conventional film. We know this technique stimulates the audience, because 90% of the preview cards mentioned the multiple-image effect in a favorable way. The audience loved it. They thought it was smashing.

I think that for "THE BOSTON STRANGLER" it was the best, the most powerful way to tell the story. I don't know of a better way. We could have used conventional filming techniques, certainly, but I'm sure we would have lost a great plus value. ■

Editor Marion Rothman assembles scenes with aid of Moviola. "THE BOSTON STRANGLER" was her first feature assignment. "Luckily, I enjoy puzzles," says she.

FRED HARPMAN
Visuals Designer

One of the reasons I became so excited about this project from the very beginning was that Dick Fleischer explained to me that we were going to

progress three different stories, on three different levels, simultaneously, in such a way that they would eventually come together and overlap—and that we would do it by means of multiple-images appearing in separate panels on a single wide-screen frame.

One story would be that of the murders told from an objective viewpoint, that of the police. It would concern itself with their search, pursuit and apprehension of the killer.

The second story would concentrate on the overall growing terror of the people of Boston, their panic and how it developed.

The third story would focus in on the strange double life of DeSalvo—that of an ordinary family man, on the one hand, and the notorious "Boston Strangler" in his other splinter of personality.

Designing the visuals approach to the multiple-image sequences was a great (and fascinating) challenge. In my area there were two basic problems. One had to do with the design and progression of individual scenes in terms of how people move and travel on the screen—the same problem you encounter in designing an ordinary film. But in addition, there was a much more complex problem of graphics—concerning such things as: in what areas of the frame the panels should appear, their individual sizes and scales, how many there should be on the screen at any given time, when and how panels should pop on or off (or should they do that at all?), in what manner and with what timing should they travel across the frame, etc.

We went up together to EXPO 67 to see the unusual film presentations, and we got all excited over them. However, the one big difference we noted was that none of these formats were used as devices to tell, or progress, an actual story. For that reason they could get much more mechanical purely for effect, much more graphic in the true sense of the word, than we could. We knew that if we were to go that mechanically graphic, purely for the sake of surface decoration or to create visual excitement, we would lose our audience.

We had to concern ourselves, at all times, with how the separate panels inter-related dramatically. Let us say that, at a given moment, there are three separate panels on the screen—two on the right, one on the left. Where is our center of interest? How are the panels tied together so that they don't conflict? Where is the eye? Is it reading all three scenes at once? Two scenes? Or does one scene become so important that it takes over from the other two? Then, too, how do we "lose" these panels when they are no longer significant?

In actual practice we found that we had to *simplify*. We found that we could not be mechanical just for effect. We started out that way and soon learned that the more mechanical you become with your panels—like animating them across the screen or opening them up—the more the mechanics become *the* most important thing, and the more your audience grows aware that you are manipulating the panels.

One thing I feel that we achieved successfully is the fact that the audience *doesn't* become self-consciously aware of the technique, because they are so involved in the story.

In designing the panels for the multiple-image sequences I kept in mind a basic philosophy which Dick Fleischer had expressed. Fundamentally, he doesn't like the anamorphic aspect ratio

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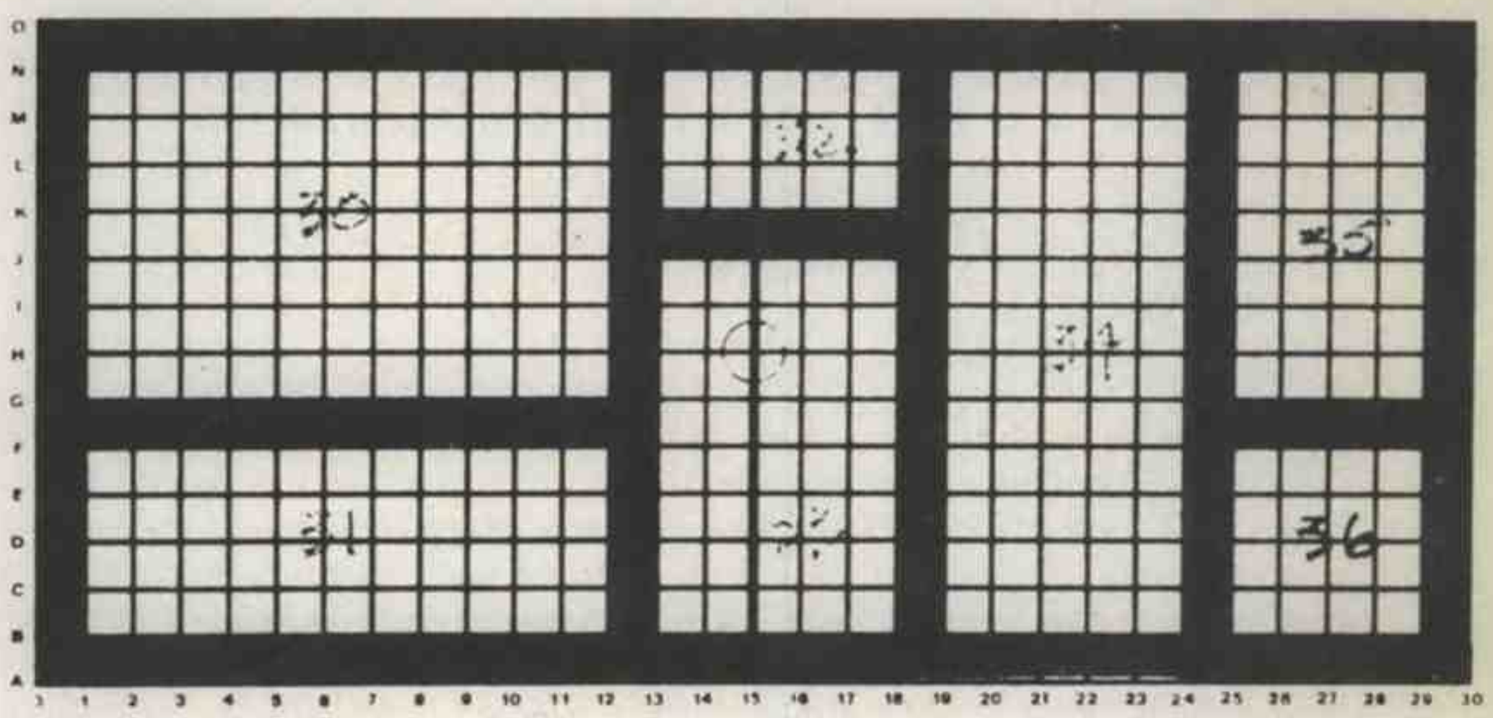


(TOP) Original design sketch for a multiple-image sequence prepared by Harpman. (CENTER) Grid graph indicating mattes to be used. Proportions of panels have changed slightly, but relationships are the same (BOTTOM) Frame blow-up showing four panels in composition. Others appear as sequence develops.

FILMING THE BET

Not a Jack-of-all-trades, but a master of many cinematic techniques, determined film-maker creates an (almost) one-man movie that reflects style, impact and professionalism

By RON WALLER

In order to explain how I came to produce the 24-minute featurette called "THE BET", it is necessary to backtrack a bit. In 1955, when I got out of the Army, I started acting with little theatre groups in Hollywood and then became a bit player in films. About the time I started getting better roles in pictures, I took off for Europe for a year of study and then came back to UCLA to study motion picture production. I set out to try to learn everything I could about all the different facets of making films.

Then I started working as a grip on industrials and documentaries. Next I became an electrician and, finally, a gaffer. I also got involved in makeup and special effects and all kinds of other things, while still doing an occasional bit of acting. I worked on "SKATER-DATER" doing a variety of chores, working as assistant director, herding the kids around, even repairing skate boards. It was while I was working on this film that I realized how handicapped a crew is on location without proper support facilities. So I bought a great big truck and, during the following year, completely rebuilt the inside of it to include toilets, a kitchen, a darkroom, as well as built-in heating, air-conditioning and power supply.

When I got the truck finished we went back east and filmed "RIVER BOY" in Louisiana and "REFLECTIONS" in New York. In the meantime I had racked up more than 200 industrials, documentaries and commercials that I had worked on in one capacity or another.

During the first part of 1968, after having saved for a number of years to build up a certain reserve of capital, I decided that I wanted to make a short film of my own, using my own financing (so that I could do everything the way I wanted to do it), and I began searching for some kind of story or property to serve as a vehicle.

I talked about it to various people and said, "I want to do everything on this film that is possible for one person to do, without any help."

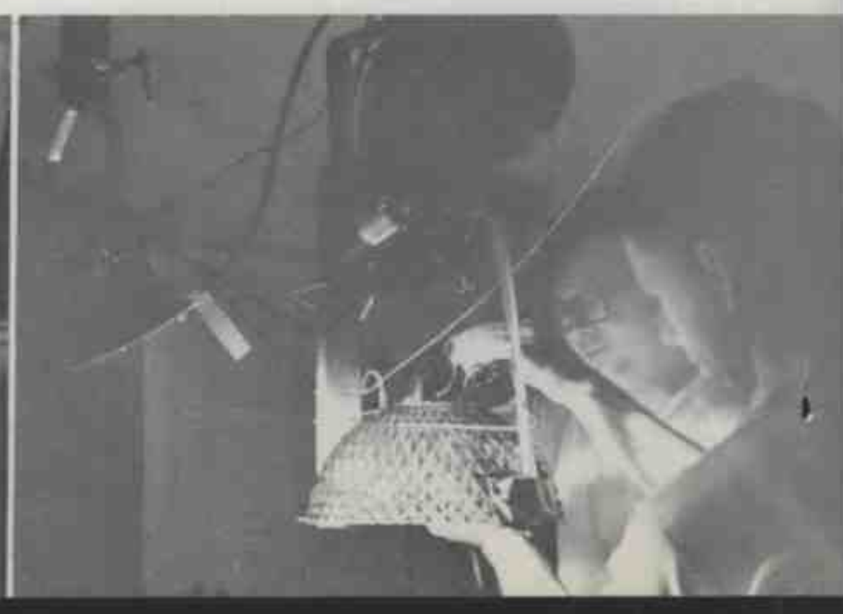
And they said, "You're nuts. You'll never be able to make a film that way and have it come off, because no one person can spread himself that thin."

I answered, "I agree with you, but I'm a nut anyway, so I want to try it."

In the interim, I went over to the Film Industry Workshop at Columbia Studios and started acting again, just to kind of woodshed, because I hadn't done any acting for a long time. Then, one night in September, I was lying in bed reading a book by Dr. William S. Kroger, the prominent hypno-therapist, who had written quite a bit about time-distortion. This reminded me of a story I had once read about a guy who had been locked up in a room for a long period of time, and I began to think how intriguing it would be if a man were to employ self-hypnosis to distort time, so that he wouldn't know how long he had been locked up in such a room.

I couldn't remember the name or author of the story I had read, but I instigated a search for it and soon had

(LEFT) Ron Waller, star (and practically everything else) of "THE BET" rehearses scene filmed in his own apartment, as was approximately 80% of the action. (CENTER) Doubling as slate-boy, Waller prepares to sync a scene in which he will then be the sole character. (LEFT) Rigging Eclair Cameflex camera to light fixture in preparation for shooting a dramatic swinging lamp shot.



more librarians than I could count looking around, trying to find this story. Finally, a librarian in the Los Angeles Downtown Library said, "Oh, sure—that's 'THE BET', by Anton Chekhov."

She told me this on a Friday. I found the story in an anthology at the Pickwick Bookshop on Saturday, and by the following Monday, the first scene was written. At the time, I was making a half-hour film on the State of Oregon for one of the airlines, but as soon as I finished it up I started production immediately on "THE BET".

The script, an updated version of Chekhov's story, deals with a man who bets a wealthy friend that he can stay locked in complete isolation in one room with bath for a period of five years. The friend agrees to give him his yacht if he sticks it out for the total time.

During his period of isolation the man ranges from boredom to hysteria to the edge of madness before finally entering a period of calm, self-enlightenment that culminates in his winning the bet. During his periods of upheaval he has cryptic dreams and suffers frightening hallucinations. These are very subjective in content and were to be portrayed on the screen using an almost surrealistic style of visualization.

The production would be a one-man *tour de force*. I determined to write, produce, direct, compose the musical score, star in it and photograph the scenes (dreams and fantasies) in which I did not actually appear. The "studio" (in which the bulk of the action was to be filmed) would be my own apartment.

Actually, since I would appear in many of the scenes, it would not be possible to do absolutely everything myself, and I was lucky enough to enlist the aid of some fine helpers. Jim Berry, an excellent cameraman, photographed all of the black and white sequences in which I appeared, while I did the color photography for the other sequences. Al Husky was my Production Manager, but that was just a title, because he did just about everything under the sun—whatever needed doing.

I wanted to keep the pre-planning as tight as possible. We ended up, by the way, shooting the film in a ratio of 3-1/2 to 1 and we printed 2-1/4 to 1, and that was one of the restrictions I placed upon myself before I even started the film, in addition to the fact that I wanted the film to just deal basically with one character in one room, and be able to create enough visual excitement with those restrictions, so that people would feel that they were in the room with the guy and would live through what he was going through. Also, of course, the running time was limited to 24 minutes. Originally I wanted to limit it to 2,000 feet; about 18 minutes. But the film just wouldn't cut that way. It dictated its own length.

At any rate, I wanted to place all those restrictions on myself, hoping that the guys in the know around Hollywood would realize that this is a kind of difficult thing to do, and especially for one man to do so many things.

All of the black and white sequences filmed inside the room were photographed on Plus-X negative in the 1.85 aspect ratio. The film was to be processed by Consolidated Film Industries. One of the problems we knew we would encounter would be how we should expose the film, and what corrections we should make (if any), in order to print black and white negative onto color release stock, which we would have to do, of course, in order to dissolve from black and white to color. I talked this over with Ted Fogelman of CFI and he suggested that we underexpose a half-stop. We found that by doing that we got the contrast effect we wanted, with very rich blacks.

All of the interior lighting was done with a half dozen ColorTran 650-watt quartz lights and some photofloods which I own.

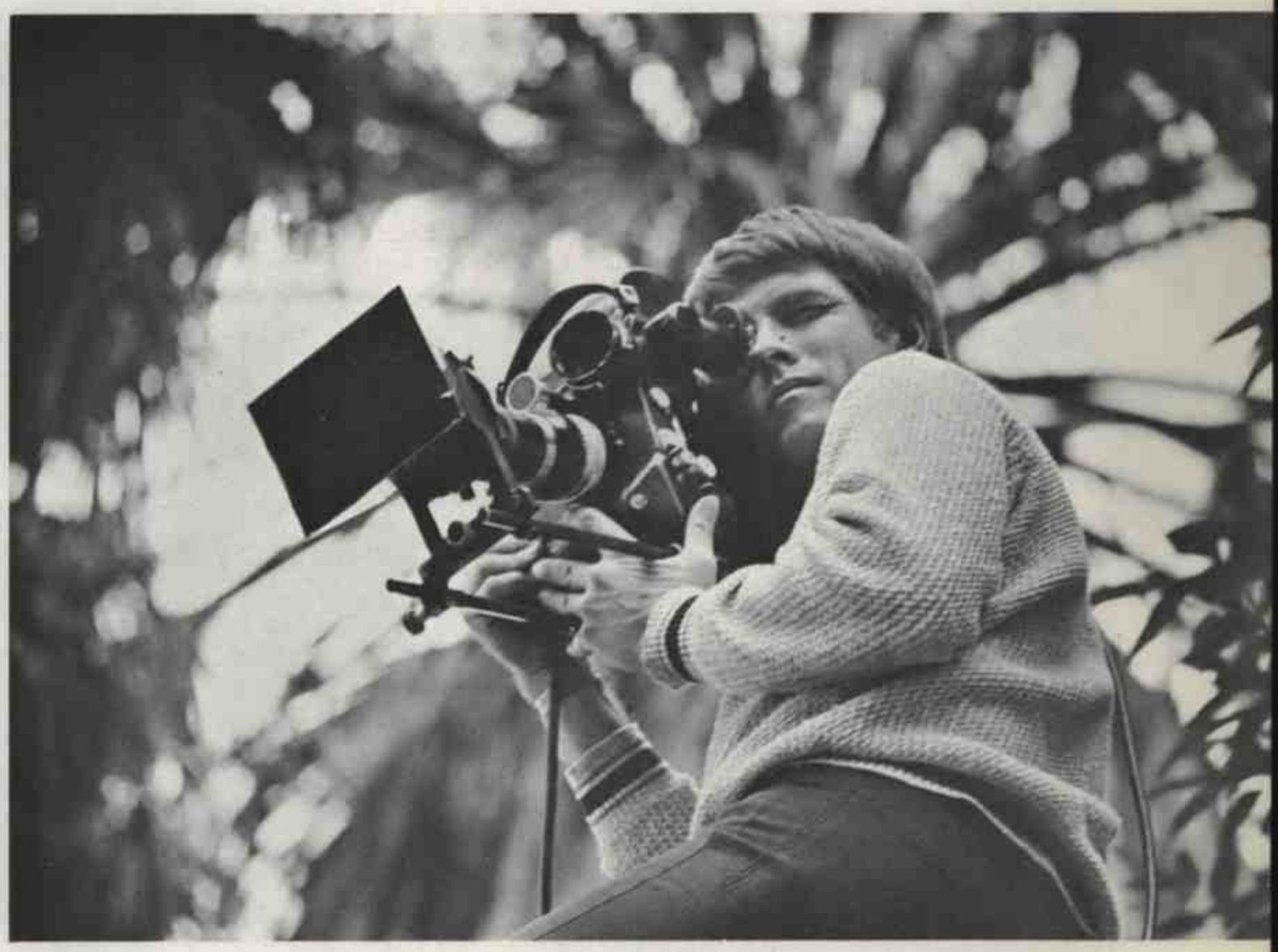
Making a complicated film in that small room was not easy. It is only about 12 feet square, with an adjoining alcove for the piano that is approximately six feet square. Some of the tricky shots I dreamed up didn't make it any easier, but I felt they were necessary to the story.

For example, Jim Berry came in one morning and I was busy fiddling around with this and that and the other—and Jim said, "Okay—what's the shot today?"

I said, "Jim, the first thing I want to do is to start in with a tight close-up of me at the piano and then I want you to pan across the strings of the piano and when you get to the end of the piano let the camera go all the way down to the floor, and when it gets there then I want to come in at the top of the frame doing push-ups, and after I have done five of these then I want you to come back up with me on the 5th one and I'll go back down. You pan across the room until you frame on the bed and I will be there doing sit-ups."

And the reply was, "You've got to be out of your gourd."

I said, "Come on, we can do it." So I took the Eclair and I said, "Look, here's the kind of move that it has to be. Thank God for periscope finders." So I went through it once and said, "Alright now, let's try it for timing and see how fast I'm going to be able to move."



The author, shown with his Eclair Cameflex camera that once belonged to Orson Welles. Waller produced "THE BET" with his own finances in order to demonstrate how well he has learned his craft, after more than a decade of performing a great variety of film production chores—mostly in other people's pictures.

Frame enlargements from "THE BET", illustrating the progressive development of the character. (RIGHT) In semi-stupor, he contemplates bottles of liquor which are his only solace. (CENTER) He flips out prior to running destructively amuck in his self-imposed prison. (RIGHT) After five years, a calm and "better" person, he calls friend with whom he made the bet to come and pick him up.

So we started timing me, and started timing the camera and figuring out how in the world he could gently lower that camera all the way down to the floor and then bring it back up again and then make another pan. So after some 30-odd rehearsals we finally decided we'd shoot it.

I had to be sitting behind the piano playing, and, as soon as he panned me out of frame, then I had to dab glycerine on my forehead for sweat, get out of the shirt I was in, move around behind him, and get over in position to do push-ups. In order for me to come in beard first from the top of the frame, I had to do the first push-up on one hand; then I could bring the second hand in. After that, when he started panning across, I had to lie flat on the floor, and strip off the sweatshirt and then roll across the floor, and roll up onto this bed and get myself into an exact position to do these sit-ups so that when I came up into position at the end of each sit-up I would always be in focus—which, at the light-levels we were using, left me about a 3-1/2 to 4-inch leeway.

So we started to shoot it after some 30-odd rehearsals and on the 18th take I finally said, "It was good for me. How was it for you?" He said, "Oh let's print the damned thing." So we did.

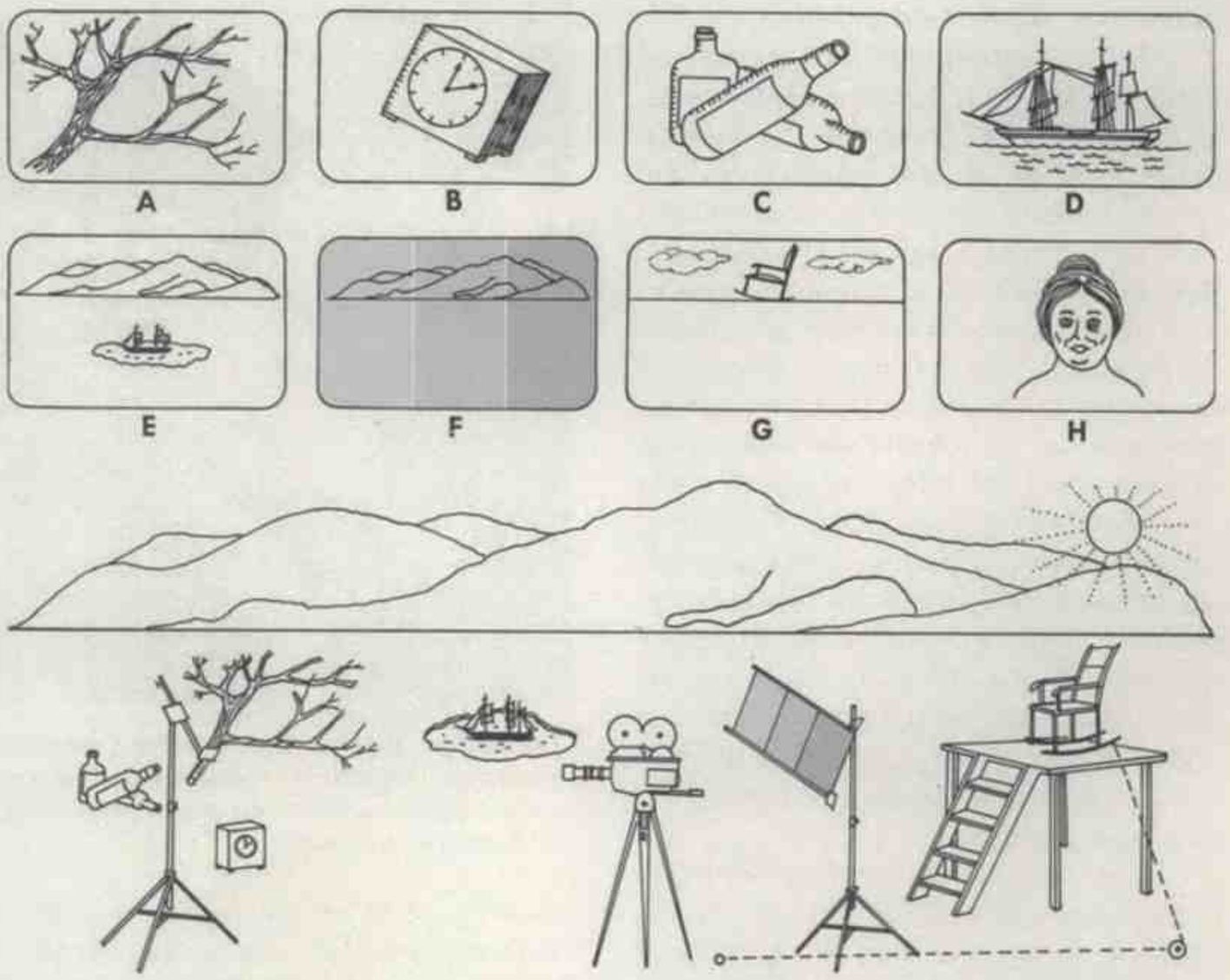
But I didn't like it when I saw a print the next day, so we went back and did some 40-odd rehearsals more and got it on the sixth take. That was probably the most difficult shot in the film.

In the sequence where the character nearly flips out and runs berserk around the room some unusual effects were indicated. I had two such effects in mind. I was going to hang a camera from the ceiling and make it revolve, and then I was going to cut another shot down on the floor where the camera would be revolving in the same direction.

Then I got to thinking about it and decided that I wanted to use a swinging light effect, motivated when the character bumps his head on the lamp as he stands up abruptly, so that the scene would go from black to light repeatedly. Since that was the effect I wanted, I thought, "Well, let's shoot something that's never been done before. Let's shoot a scene with the POV of a light bulb."

I started experimenting with this idea and designed a rig that bolted up through the ceiling into the rafters of the attic, in order to support all the weight. (God, if my landlord only knew!) The rig would hold an Eclair pointed straight down, with the Kinoptic 9.8mm ultra wide-angle lens mounted. Then I got out my slide rule and figured, with that lens, how big the light bulb should be and how far from the lens it should be mounted. I took a duplicate light shade, cut a little larger hole in it and soldered in a 110-volt light bulb, because I'd found that 12-volt bulbs just weren't big enough.

I ran all the wiring over to the side and, since we couldn't afford a rheostat, I built a light bank which held light bulbs in series, and we could run them either in series or parallel until I got the intensity that I wanted. We put the whole rig up with pieces of heavy twine and pulleys mounted on each side of the wall. Jim stayed out in the kitchen and Al was over on the other side of the room, because with that 9.8mm lens we covered practically the entire room.



Diagrams illustrating one of the most complicated continuous scenes in the film, a dream fantasy photographed in Death Valley. (TOP) A—Dissolve in to out-of-focus bush, which then racks into focus. B—Focus racks through bush to big closeup of clock. C—Camera pans to bunch of bottles in snow. D—Camera pans to close shot of yacht in water. E—Zoom lens racks back to reveal yacht as miniature model floating in puddle-sized desert pond. F—Camera pans landscape through series of three progressively denser 85 orange gels. G—Camera comes to rest on ghostly sunset shot of chair rocking on horizon. E—Scene dissolves to "Oedipus type" closeup of character's mother. (BELOW) Diagram of the complicated set-up for filming scene in Death Valley. Remote cord arrangement made possible rocking of chair from camera position.

Some of the most demanding shots were those made in color to visualize the character's dreams and hallucinations while isolated in his room. One such scene, as described in the script, reads: "The following dialogue occurs as VOICE OVER with a COLOR MONTAGE showing the clock and empty whisky bottles in the desolation of Death Valley. We ZOOM TO a rocking chair on the horizon . . ."

I knew what I wanted in this scene. I wanted to be able to float a boat in the middle of the desert, and the only place I could find that had any water level at all was Death Valley. So I said to Al Husky, "Hey, Al, how do you feel about spending a couple of days in Death Valley?"

He said, "Well if you really need the shot, Ron, we'll do it." So then we took the big camera truck and we towed the little truck behind it, and we left Hollywood on a Thursday night, and drove through 18 inches of snow in Barstow, and had to stop and spring for $50.00 for a set of tire chains for that big truck. We drove all night, arrived at Death Valley in the middle of the next day, and got set up at the camp site. Then we took the little truck and looked around for locations. We couldn't find anything. So we spent the night in the truck.

The next morning we started looking again and I finally found a place down on the Devil's Golf Course that looked like it would work. Someone said there was water down there, and sure enough there were a few little holes around that were about 6 inches in diameter, and you could look down about a foot and a half, I guess, and there was water. So Al and I spent Saturday with a pick and shovel digging the hole in Death Valley, and that took the whole damned day, just digging the hole.

On Sunday we went back over to the location again and started setting up this complicated rig and figuring out exactly where the step ladder had to be so that the rocking chair would look like it was riding right on the horizon, and setting all the rest of this stuff and so on. That took us until about 2:30 in the afternoon. We stopped for a breather, and the light was getting to be just about right, when all of a sudden the wind changed directions 180 degrees and started blowing all these clouds back again. It blew over the stand that was holding the gels so we had to shore that up and I said to Al, "We've got to get it. We're losing our light."

So with all these changes of focus and with all the zooms and everything we locked this thing off and we got it in one take—and it's a good thing, because right after that shot the wind blew the rocking chair over, the step ladder and the whole bit—and the boat was rocking so much in the water that it wouldn't work anymore.

Ron Waller (CENTER) shown directing a scene from another film project. In the background can be seen the large truck which he outfitted as a completely equipped location vehicle, and which was used as base of operations for filming desert sequence.

I said to Al, "It looked good on camera." He said, "All right." So we packed up and started home. We got about 20 miles from Death Valley and the camera truck decided it wanted to blow a rod. So there we were out in the middle of nowhere. We got into the little truck and went down and got something to eat and spent the night in the truck again, and the following day I took Al into Las Vegas so he could fly back home, and I bought parts, and for about three days after that I rolled around in a combination of snow, slush, and mud underneath that truck rebuilding the engine so that I could get it back to Hollywood again.

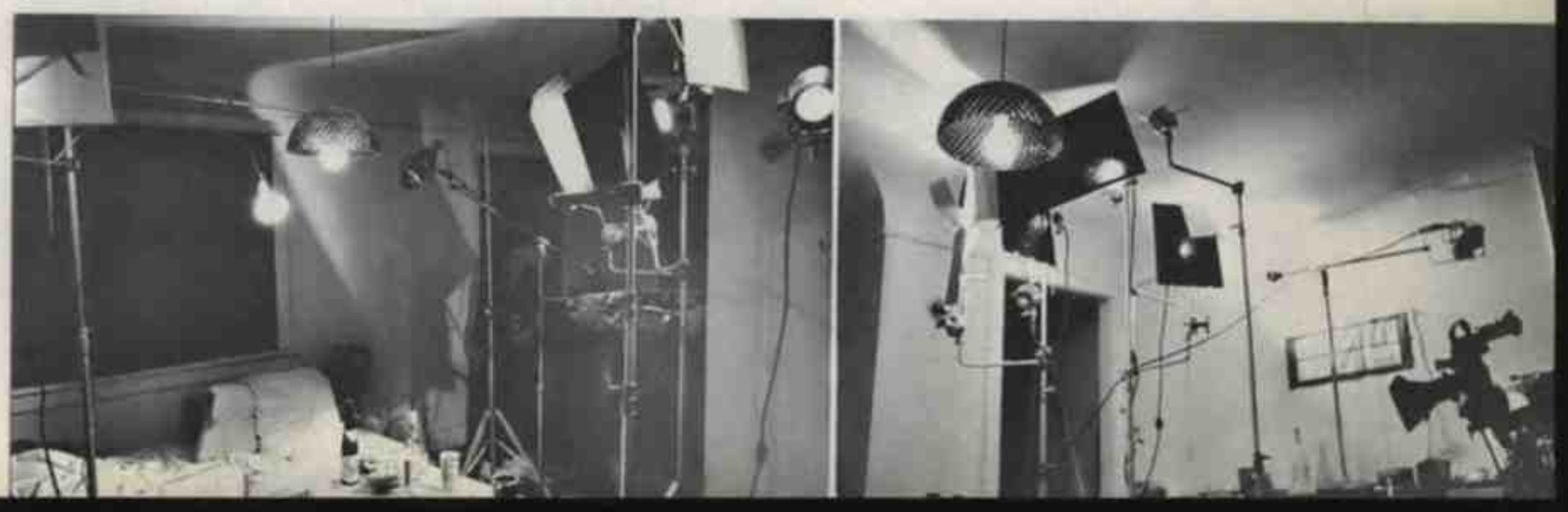
In the final cut, the sequence shot in Death Valley goes something like this: We first dissolve from a tight close-up of the hair on the guy's head (shot in black and white) through to a closeup of an out-of-focus bush. This racks into focus, and then the focus racks through the bush to a big close-up of a clock. The clock then goes out of focus and we pan across to a bunch of bottles that look like they're set in snow (which is really salt), and they come into focus. Then they go back out of focus and we pan across again to what looks like nothing but water or a kind of a bluish murk. To get this effect, I had to dye the water in the bottom of Death Valley because it wasn't the right color.

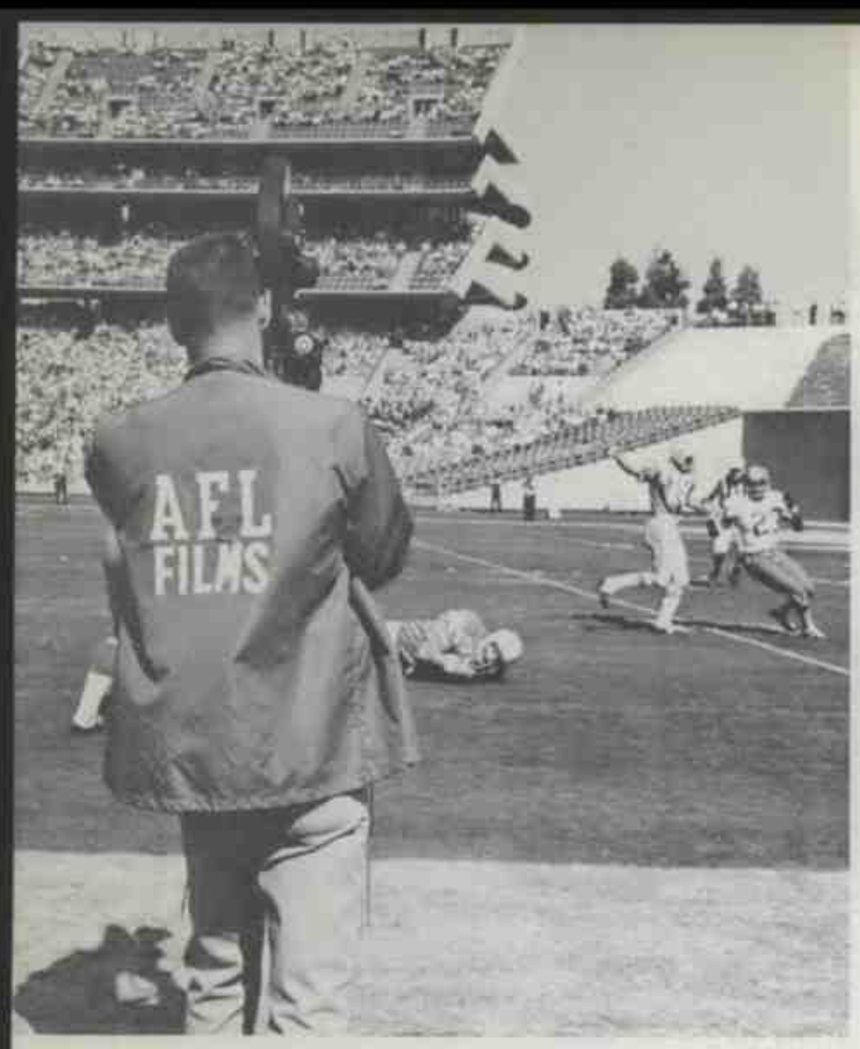
Then, as it comes into focus, we reveal the yacht, and we start a zoom back to let the audience know that it really isn't a yacht out in the ocean. It's just a little model boat in the middle of the desert. The lens zooms all the way back until we see all of the desolation out there and the mountains in the distance. Then we pan to the right, still wide, seeing the desolation, and we continue to pan through a series of three different gels of varying densities of 85 orange.

As things get more and more orange we start to zoom in to where we finally have the silhouette of this rocking chair

Continued on Page 236

Scenes inside Waller's apartment, used as set for filming majority of footage in "THE BET". All interiors were lighted with six 650-watt ColorTran quartz lamps, plus a few photofloods. Cramped quarters created continuous production problem.





Harvey Weber of NFL-AFL Films, Inc., shown filming ground action in the San Diego Stadium.

HOW PROFESSIONAL FOOTBALL IS FILMED

Experience in all aspects of sports cinematography, plus a thorough knowledge of pro football is what it takes to get 200 games onto film each season

By ROBERT V. KERNS

Each week across the nation a vast television audience is entertained by such filmed shows of professional football as "This Week in the NFL", "NFL Game of the Week" and "AFL Highlights." In each of these shows, the motion picture camera is often able to capture the hidden element of pro-football that cannot be seen by attending the game as a spectator or by watching it on live TV.

These shows are all produced by NFL-AFL Films, Inc., Philadelphia, Pennsylvania, headed by Ed Sabol. And for those who don't keep up with football, NFL-AFL means National Football League and American Football League, the two pro-football organizations that provide the action for these exciting sports shows.

In addition to the three weekly shows, NFL-AFL Films produces an occasional special devoted to some aspect of the sport. During the past season, TV audiences saw a special show that spotlighted Vince Lombardi, head coach of the Green Bay Packers. This show pre-empted Ed Sullivan on the CBS-TV network and prompted Ed Sabol to try another special—to be described further along in this article.

Last season NFL-AFL Films photographed nearly 200 pro-football games played by the National Football League and the American Football League. More than thirty cameramen plus an even larger number of assistants, soundmen and helpers made this possible. The miles of footage these men photographed was rushed to Philadelphia where it was edited into the final weekly TV shows. The logistics of maintaining these far-flung camera crews, located strategically across the country, is a tribute to the smoothness and efficiency with which Ed Sabol keeps things going.

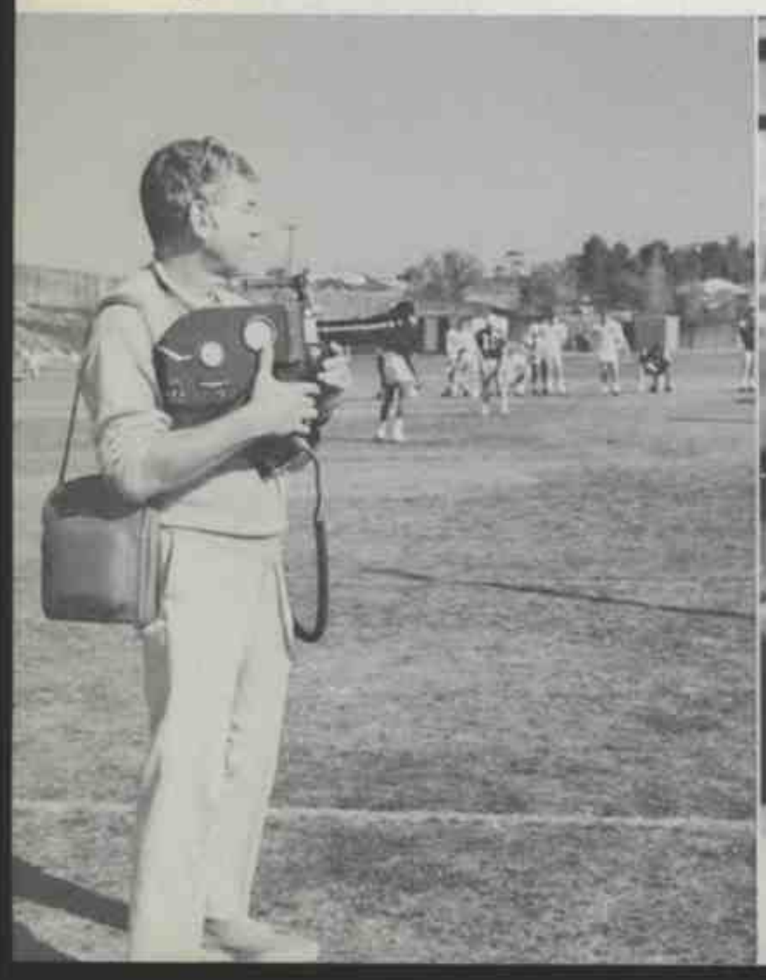
Gene Leff and Harvey Weber are typical of the NFL-AFL cameramen who operate far away from the base of operations. Both are stationed in San Diego, California, and are primarily assigned to West Coast coverage although it is not unusual for them to hop a plane and speed across the continent to shoot a game in some place like St. Louis or New York City. Weber and Leff, who also have their own film production company in San Diego, have been specializing in sports cinematography for more than ten years and are recognized as among the best in the country.

Spending an afternoon recently in the San Diego Stadium watching Weber and Leff at work shooting a pro-football game was an enthralling—and educational—experience.

Ever wonder how the cameraman assigned to cover pro-football manages to always keep the action properly framed? It's certainly not easy. Experience in all the aspects of sports cinematography plus a thorough knowledge of pro-football are what it takes.

"The one essential ingredient of football that best describes the game is the *unexpected,*" says Gene Leff. "That is what makes it so difficult to *properly* film football. Football is a sport full of surprises so the cameraman must be well versed in the fine points of the game. This enables him to often anticipate what is to come. But this can also be a trap because expectation of a play can

(LEFT) Ed Sabol, head of NFL-AFL Films, Inc., prepares to shoot slow motion with Eclair GV-16 camera at San Diego Chargers practice field in La Mesa, California. (RIGHT) Weber, rigged with the Arriflex equipment he uses to cover ground action. Ground cameramen of football games are called "moles".



unnecessarily influence the movement of the camera. I think it is most important for the cameraman to follow the flow of action in a natural manner, moving the pan-handle only when he is sure of the direction of the play."

Harvey Weber adds: "Our job is to catch the dynamic action of football—to bring the game literally to the viewer. That sense of participation in the game is one of the important points that has made the NFL-AFL shows so popular with sports fans everywhere."

A minimum of two cameras are used in filming the NFL-AFL shows. The main camera position is usually located at a high vantage point on the fifty yard line—normally in the press area of the stadium. This is the camera that will cover the game in its entirety.

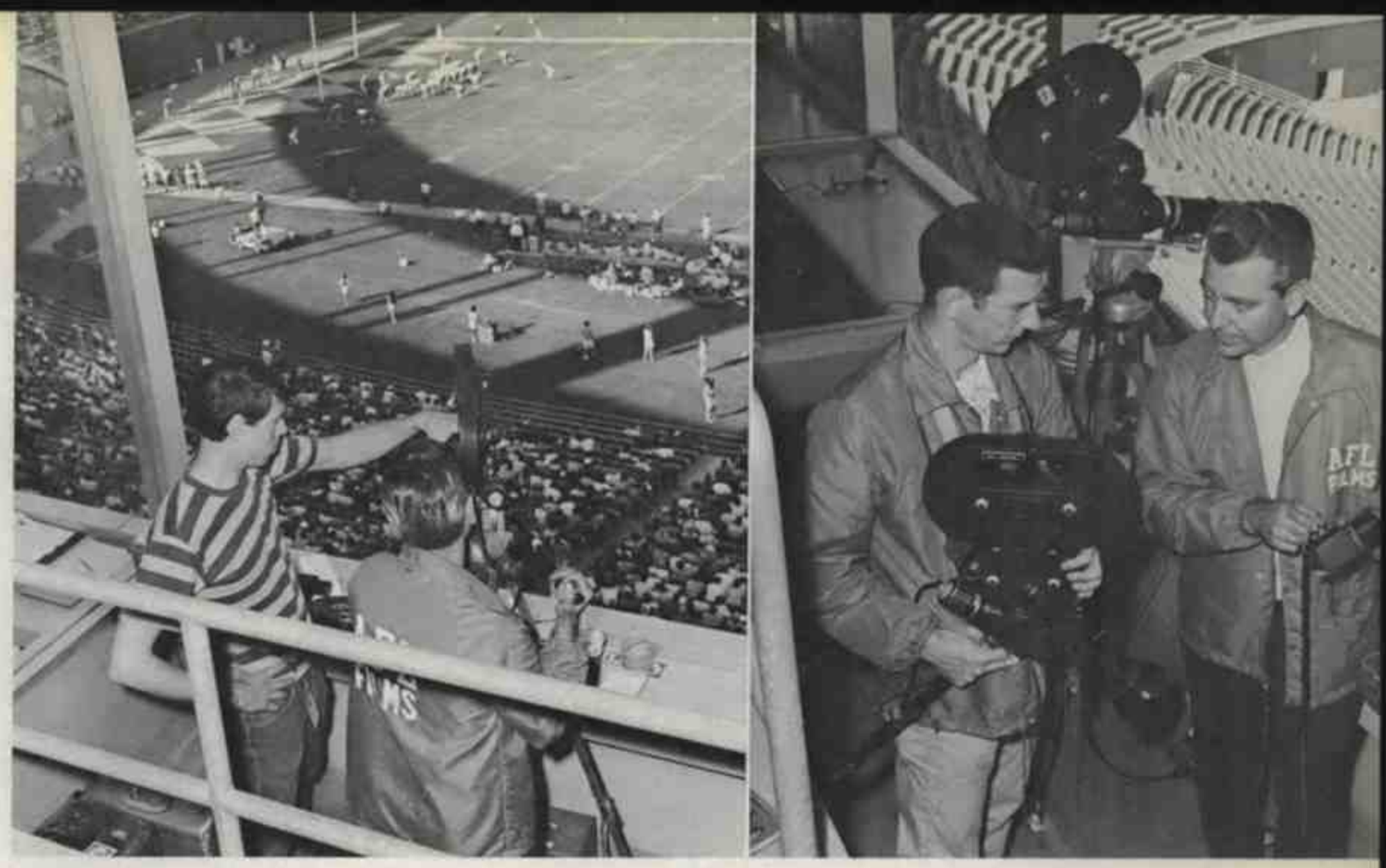
The second camera is the ground camera and is as close to the scrimmage line as possible. In football cinematography, ground cameramen are known as "moles". Their job is peripatetic in nature. They must be always on the move to capture the fast action of the scrimmage line. "Moles" work in as close as safety permits.

On many occasions in filming NFL-AFL games, additional camera coverage is required. This falls into categories called "isolated coverage" and "ultra slow-motion coverage."

In isolated coverage the camera concentrates on a particular player or players. The cameraman is always given detailed instructions on what he must shoot. He photographs only a very special aspect of the game. The isolated camera is usually placed alongside the main camera.

In ultra slow-motion work, a special camera such as the Eclair GV-16, which will film at 120 fps or faster, is used. Special instructions on the type of plays to cover are given the cameramen but generally these instructions will stress run coverage. The ultra slow-motion camera does not photograph the entire game.

Both Weber and Leff use the Arriflex



(LEFT) Gene Leff of NFL-AFL Films, Inc., shoots pro football game in San Diego Stadium, while Assistant Cameraman Mark Heliger adjusts exposure on Nikon 85mm-to-250mm varifocal lens. (RIGHT) Weber and Leff check out spot type exposure meter prior to filming game. Weber will shoot ground action, while Leff handles topside camera.

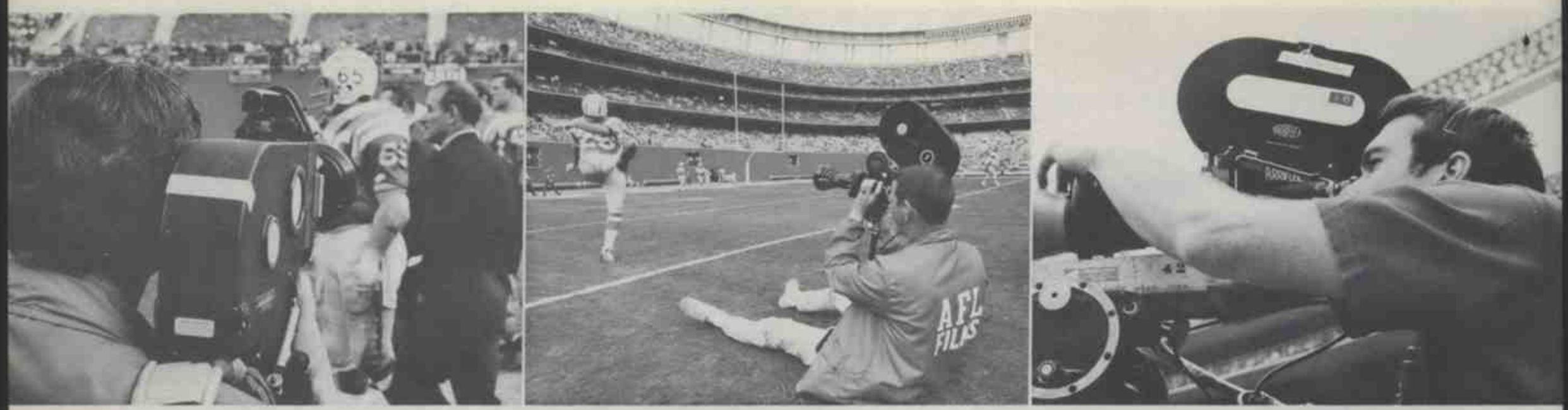
Model S camera with 400-foot magazines. Leff is usually on the main camera, which is mounted on a fluid head tripod and tied down securely. His Arri is fitted with a specially modified Nikon varifocal 85mm-250mm F/4 lens. "This lens is used on the main camera because it has the capability of getting in close—literally on top of the action. The audience is brought right into the game", explains Leff. "This lens has the range we need. It can handle tight coverage or it can be 'zoomed' back for a more general view." The Nikon 85-250 was modified specially for the Arriflex by NFL-AFL Films technicians in Philadelphia. "A varifocal or 'zoom' lens is essential in filming pro-football," adds Leff.

Weber is the ground cameraman—the so-called "mole". His Arriflex Model S has an Angenieux 12mm-120mm F/2.2 varifocal lens. Weber designed his own carrying rig. It is a unipod socketed in a leather sling which is hung around his neck. His battery pack is also homemade and is unique. It is an army cartridge belt with small nickel cadmium batteries in the cartridge pouches. "After a lot of experience—and discomfort—I finally evolved this rig," explains Weber. "I have the freedom of movement and the camera steadiness that is so essential in this type of filming. It is a sort of 'Rube Goldberg' rig but it works better for me than any of the commercially manufactured designs I tested."

Kodak Ektachrome EF color film (tungsten) Type 7242 is the raw stock most often used by the NFL-AFL camera crews. Frequently, because of poor weather conditions, it is pushed from one to two stops in order to obtain more exposure.

Camera coordination, including basic exposure determination and selection of filters, is the responsibility of the cinematographer assigned the main camera position. "We generally arrive at the stadium early so we can set up the cameras several hours ahead of game time," says Leff. "The cameraman on the main camera determines the exposure index that will be followed so that color consistency will be maintained when footage from the other cameras is intercut. This is when we determine whether or not the film will be exposed at the normal ASA rating or will be pushed one or two stops. Various fac-

(LEFT) Gene Leff shooting from main camera position in San Diego Stadium. (CENTER) Weber, using special rig, ranges about the field shooting ground action. Behind him is assistant Craig Leff. (RIGHT) Leff operates camera fitted with specially adapted Nikon 85mm-to-250mm, F/4 varifocal lens. Modification of lens was done by NFL-AFL technicians in Philadelphia.



(LEFT) Cameraman Morris Kellman uses Eclair NPR camera to film close shots of Coach Sid Gillman of the San Diego Chargers. (CENTER) Cameraman Harvey Weber, operating on the field as a "mole", uses Arriflex S camera to film low angle shot of player in the San Diego Stadium. (RIGHT) Jack Loosli, NFL-AFL Films, Inc., using Arriflex M equipped with 600mm Omnitar lens.

tors, such as the weather, the lateness of the season with an early sunset, will determine this. We also decide the type of filters we will use—usually an 85N3 in good weather at the start of the game. Sometimes we shoot under stadium lights. Usually no filter is necessary when using Type B film but in some stadiums, such as Shea Stadium in New York City and the San Diego Stadium, where special lighting has been installed, it is necessary to use corrective filters such as the 81D and the 81EF. This brings the color temperature of the light to the necessary 3200 degrees Kelvin we need. Incidentally, we use walkie-talkies to communicate between camera positions."

"During the past season—the 1968 season," Leff continued, "in covering the AFL Championship play-off game between the Oakland Raiders and the Kansas City Chiefs, the weather conditions at game time in Oakland, California was generally dark, overcast and rainy. Although the influence of daylight was still predominant, the decision was made to use the #85 filter and to push the film two stops. This meant that all cameramen set their meters at ASA 320. By doing this, it allowed the isolated camera which was fitted with a 600mm Omnitar lens with a maximum stop of F/5.6, to be well within its range. We also had to consider the ultra slow-motion camera in setting our exposure index."

Leff uses a spot type of exposure meter with a one degree angle of acceptance. "I am usually working at a vantage point of from 200 to 400 feet away from the field," says Leff. "This type of meter is very useful in determining exposure from this distance. I can quickly calculate the proper exposure in the shadow and sunlight areas of the field plus the correct balance on the uniforms." Weber has found that a Gossen Lunasix incident type meter fits his needs.

A spare camera motor and a spare torque motor are kept handy. Power is provided from the regular stadium power lines using an AC converter, but just in case there is a power failure a nickel-cadmium battery pack is always provided. Four 400-foot magazines are adequate since the assistant cameraman will make re-loads when necessary, either in the stadium darkroom or in a changing bag. Generally, Leff will expose between 1,600 feet and 2,500 feet of film during a game. Weber's film tally is likely to be somewhat lower—between 1,600 feet and 2,000 feet.

Cameramen wear colored windbreakers with "NFL-AFL Films" lettered on the front and back. This affords police and stadium guards a quick means of identification and is especially facilitative to the "mole" who works in a very restricted area.

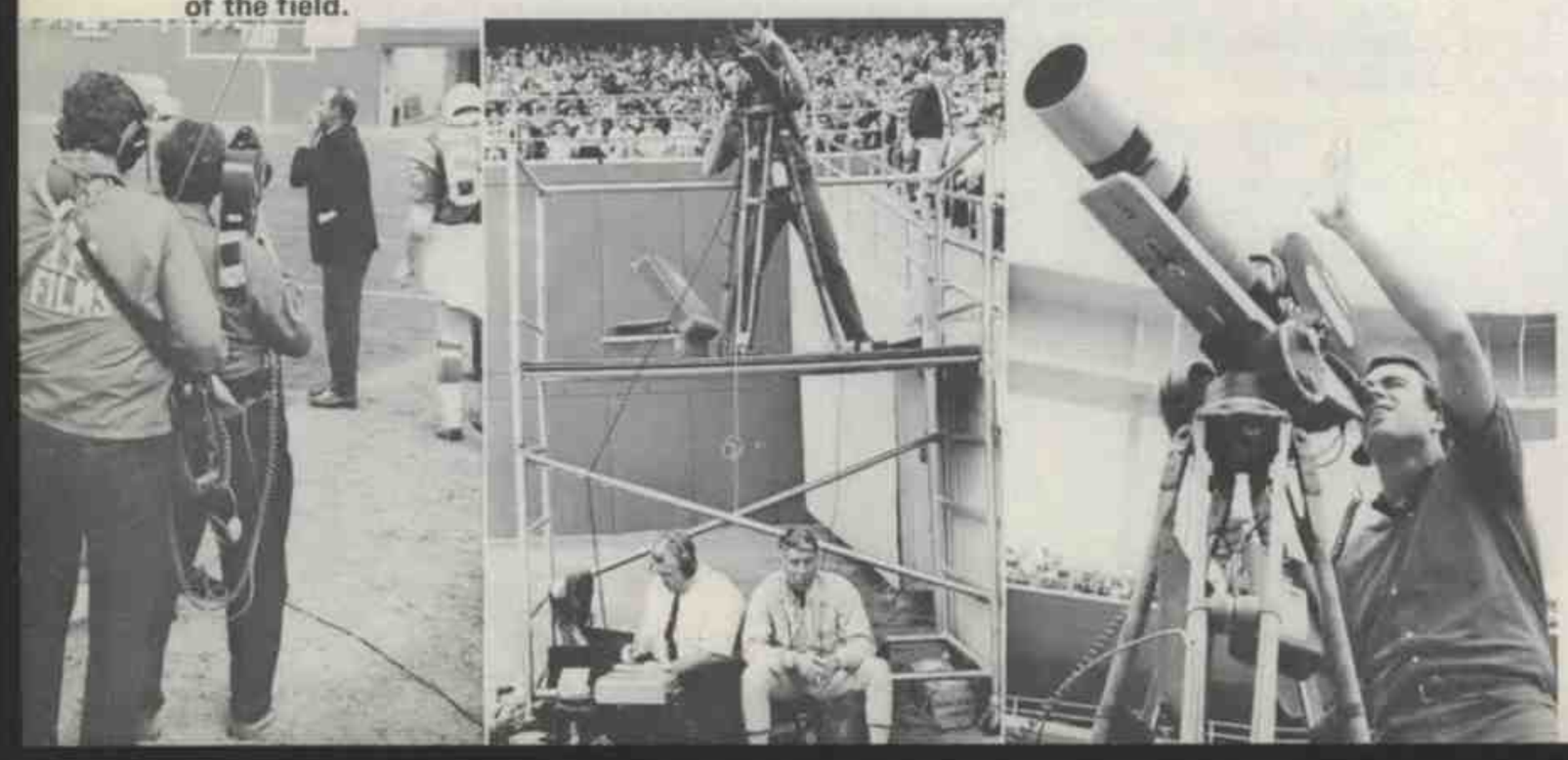
"The main camera documents the entire game, so it is very important that the cameraman not miss any plays," says Leff. "The other cameramen—the isolated camera, the 'mole', the slow-motion camera—will catch action the spectator never sees. Perhaps the isolated camera may concentrate on a player like Lance Alworth of the San Diego Chargers or Joe Namath of the New York Jets. Or we might use the ultra slow-motion camera to slow down a long run. All of this footage *supplements* the main camera coverage so that our exposure must match in color quality. That is why the man on the main camera position is the logical person to make decisions on exposure and filters."

"Some cameramen feel that pushing color film as much as two stops affects picture quality," continues Leff. "This is not necessarily true. It all depends on the laboratory. My experience has been that close coordination with a conscientious laboratory that practices good quality control will produce a picture of good photographic quality. Witness many of the games seen on 'AFL Highlights' and 'NFL Game of the Week'. In many cases the film had to be pushed two stops in order to cover the game properly but I don't think the overall pictorial quality suffered."

All football action is filmed at 48 frames per second except in cases where the cameraman may decide to film in slow motion—at 64 fps. This is done

Continued on Page 250

(LEFT) Cameraman Kellman and Soundman Jack Newman photograph Gillman for a football special film. (CENTER) Parallel set up in west end zone to film action. Loosli operates camera. Below, at Nagra recorder, is Soundman Fred Magnusson. Producer-director Ed Sabol looks on. (RIGHT) Loosli uses 600mm Omnitar lens to get close shot of Gillman, who is on opposite side of the field.



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A.S.C. CELEBRATES GOLDEN ANNIVERSARY WITH GALA BALL

Festivities herald end of Society's first half-century, and beginning of its second

BY HERB A. LIGHTMAN

Charles E. Rosher, ASC, one of the four living Charter Members of Hollywood's oldest professional motion picture organization, accepts from Mayor Sam Yorty certificate proclaiming Friday, January 17, 1969 as ASC GOLDEN ANNIVERSARY DAY in Los Angeles.

A festive spirit pervaded the International Ballroom of the Beverly Hilton Hotel as, on the evening of January 17, A.S.C. members, their friends, and luminaries of the film industry gathered at a formal dinner-dance to celebrate the 50th Anniversary of the American Society of Cinematographers.

Chairman of the gala event Charles G. Clarke, ASC, his gracious wife, and Co-chairman Sol Halprin, ASC, had spared no effort to make this affair one long to be remembered, and the magnificently decorated ballroom bore witness to their diligence and taste.

Early arrivals chatted in the elegant outer bar or danced to the rhythms of Manny Harmon's orchestra before sitting down to a gourmet dinner at tables of ten.

As the flames died down on the *Cherries Jubilee Flambé* and the elevator dance floor of the ballroom rose to platform height, A.S.C. President Hal Mohr took charge of the proceedings. A droll and dapper host, he sketched, briefly, the fifty-year history of A.S.C., told of its continuing research and philanthropic activities within the motion picture industry and acknowledged the many congratulatory telegrams which had poured in, among which was one that read:

To the ladies, gentlemen and guests of the American Society of Cinematographers:

My hearty congratulations on achieving your 50th Anniversary. You, as Directors of Photography, have contributed so much to the world in the areas of information and entertainment. My very best wishes for your success in the years to come.

Sincerely,
Richard M. Nixon

Mohr then read a congratulatory telegram from A.S.C's colleagues in the British Society of Cinematographers and expressed his pleasure at working currently with one of its outstanding members, Jack Hilyard, on the Alfred Hitchcock production of "TOPAZ" at Universal City Studios.

He also acknowledged the concurrent 50th Anniversary of the Mitchell Camera Corporation and paid special tribute to A.S.C. Honorary Member George A. Mitchell, inventor of the famous world-standard studio camera which bears his name. Mr. Mitchell was present with his wife and son, a motion picture officer in the U.S. Air Force.

Hal Mohr then introduced a special friend of A.S.C., Academy of Motion Picture Arts and Sciences President, Gregory Peck. In sincere and informal acknowledgement, Mr. Peck said:

"If I may equate myself with the Academy and its 3,000-plus members, I wish to convey their greetings to you, on the 50th Anniversary of your wonderful organization. We congratulate you and we express our affection and respect for you, and for what you represent to the art of motion pictures. I've met here tonight a number of old friends, the Picassos and Matisses of the art of cinematography. Some of them I haven't seen for years, and I can't resist departing, for a moment, from my role as official spokesman for the Academy, to say hello to them, just as a working stiff who is particularly grateful to such people as Karl Struss, Russ Metty, Charles Rosher, Sam Leavitt, Joe Rut-

Continued on Page 231

Beautifully decorated International Ballroom of the Beverly Hilton Hotel was scene of formal dinner-dance celebrating ASC's 50th Anniversary.

(LEFT) ASC President Hal Mohr presents gold pins with Society's emblem to Charter Members Victor Milner and Charles E. Rosher. (CENTER) Hollywood luminaries turned out in full force to honor the cameramen. (RIGHT) ASC Associate Member Edgar Bergen makes the crowd laugh.

(LEFT) Academy of Motion Picture Arts and Sciences President Gregory Peck and wife chat with a tablemate. (CENTER) Behind the Big 50, Hal Mohr and Edgar Bergen swap stories with Charter Members Milner, Wilky and Rosher. (RIGHT) Hard-working camera crew films a motion picture record of the fete.

(LEFT) Robert Mitchum swaps stories with Charter Members Victor Milner, ASC, Charles E. Rosher, ASC, and L. Guy Wilky, ASC. (CENTER) Director Robert Wise ("WEST SIDE STORY", "SOUND OF MUSIC") and wife enjoy the party. (LEFT) George A. Mitchell, inventor of the Mitchell camera, greets the Pecks.

(LEFT TO RIGHT) A—Gregory Peck pays a sincere and glowing tribute to ASC. B—Victor Milner, ASC, shown with his son, Col. Victor Milner, Jr., of the U. S. Air Force. C—ASC attorney, David Fleming, M. C.'s the entertainment. D—Songstress Dodie Stevens does her thing.

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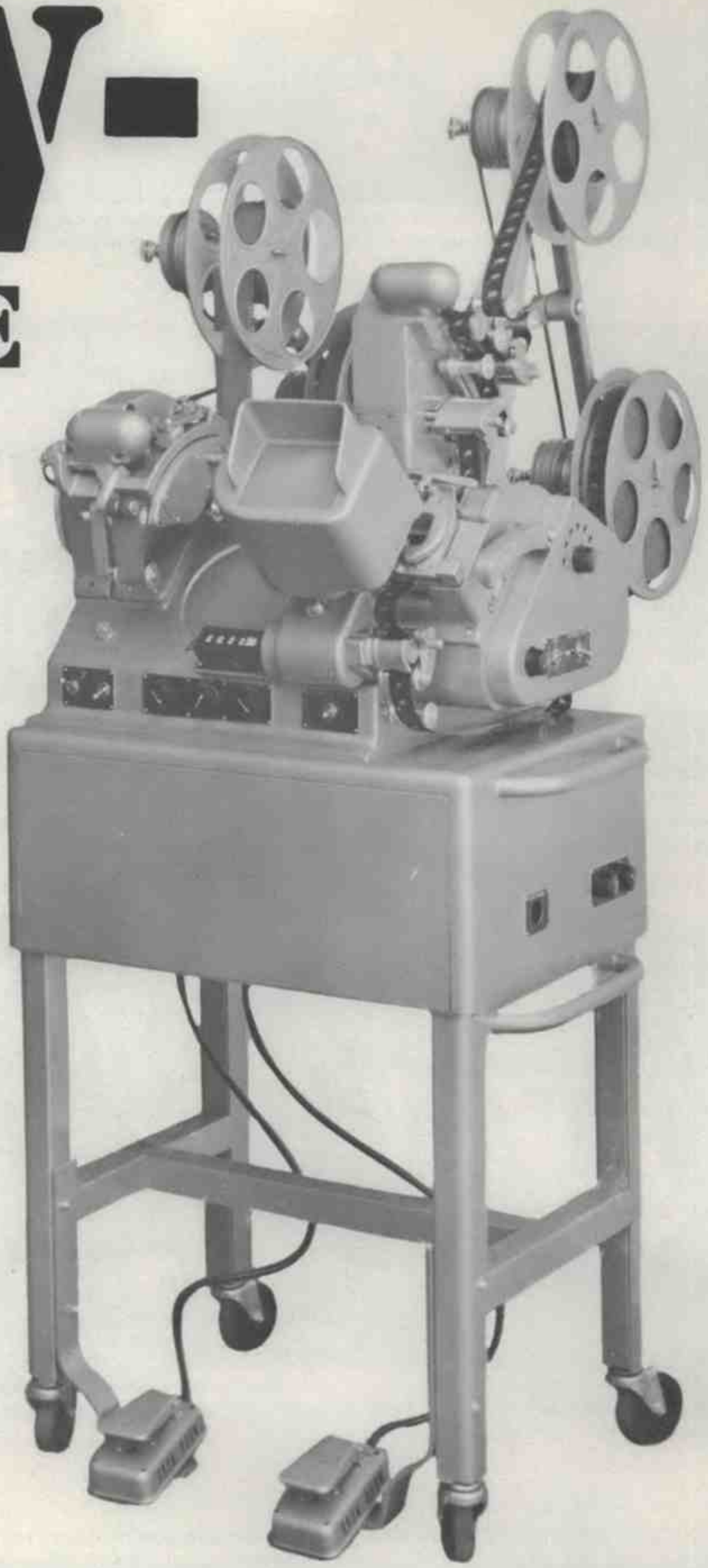

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Wally Gentleman, CSC, checks storyboard for "COME HERE I WANT YOU" with artists James Macauley and Doug Manning.

THE MOTION PICTURE AS "CONTROL" FOR A MIXED MEDIA PRESENTATION

By BRIAN ALDWORTH

The evolution of multi-media shows, such as Laterna Magika from Czechoslovakia, as well as the use of scrim, slit and stretch screens, has provided the means to merge live action with the motion picture in a provocative and telling manner.

Optically fragmented images and carefully programmed multiple slide projectors have offered further advantages to the motion picture producer seeking to add maximum impact to his presentation.

The Bell Telephone Company of Canada is particularly aware of the unique merits of the motion picture form, coupled with other media, as a means of delivering sales promotion and public relations information, and has proved eager to utilize the maximum potential of such systems to present their ideas. An especially successful and technically complex example of this usage is the recently completed production, "Come Here I Want You", a title based on the famous utterance of Alexander Graham Bell to his laboratory assistant, bidding his presence by voice transmission across a wire to a neighboring room. It was intended to trace the history of the telephone, its proliferation, customer service and future in a whimsical, light-hearted manner.

In this enterprise Bell Telephone was abetted by the story development skill of Bob Hills of Bob Hills Productions, Pa., and the creativity of SPEAC Ltd., Montreal, who brought to reality an excellent and informative script.

Adherence to a pictorial continuity precisely developed in advance was clearly indicated by budget restrictions. Such close attention to detail, meticulously planned and executed by Wally Gentleman, CSC, and principal cameraman Paul Guest, resulted in a shooting ratio well under two-to-one.

Continuity sketches thus provided enabled Bell Telephone to have a clear understanding of how their wishes would be realised and overcame the difficulties of maintaining liaison with the scriptwriter at a distance in the U. S. A. Without sacrifice to the flexibility and range of interest within the final production no deviation from the original approved story board was necessary.

The entire production was handled by Special Photographic Effects and Allied Crafts, and it incorporated

(LEFT) Art Director Jim Macauley checks camera position as Bob Hills sets marker to indicate frame limit. (CENTER) Bob Hills substitutes his hand for that of narrator during photography of pretzel-stealing insert. (RIGHT) Jean Claude Labrecque lines up main camera as Wally Gentleman, CSC, mans second camera.

synchronised Carousel slide changes from a motion picture master utilising animation, optical and stage effects in concert with live-action, as well as location and studio cinematography.

Bell technicians were responsible for technical installation at the site within the Toronto National Exhibition grounds in Ontario, together with the staff of Atlantic Films, Montreal.

Production design required 16mm rear-projection. The motion picture became the control for the entire system by welding flexible metal contact strips to the film at intervals predetermined to control the switching of twin Kodak Carousels covering each side screen with slides.

Each Carousel was fitted with a blanking shutter to allow for fast flickerless picture change, each projector tray load being made up of alternate slides for continuity in selection. Compatibility in colour temperature was assured by using Xenon source light throughout.

The culmination of the show was to be a simulated telephone call "around the world" from a performer in the CNE, Toronto, to her partner located at the opposite end of the stage. The sound and cinematography for this sequence were shot in the telephone exchange centre in Montreal.

The "once only" set-up was covered by a 16mm Arriflex BL under the control of Paul Guest and the 16mm Eclair of Jean Claude Labreque, both synchronised to Nagra recorders. An additional Nagra monitored the voice exchanges of the distant telephone operators as they speedily routed the Montreal operator via London, Hong Kong, Sydney and Vancouver, while the camera recorded with zoom facility the procedural manipulations of the switchboard.

Footage from both cameras was later intercut. Scenes of the foreign cities, lighted and arranged to accurately indicate the time zones through which the call was passing on its two minute hook-up, were designed to produce an interesting flow of images on the side screens at the Toronto performance. The stage artistes paced their explanatory dialogue to these slide changes and pauses of the telephone operator's voice from the film's optical sound track.

The theme of the presentation (that telephones are for people and that telephones bring people together) was emphasised by the use of male and female live narrators who attempted to upstage each other in the presentation of facts—evoking a state of friction that evaporates when they reach an understanding with each other by means of physical rapprochement on stage.

(LEFT) Caricatured sketch of Eskimo, as he appeared on the storyboard. (RIGHT) Live action counterpart of Eskimo fishes through hole in styrofoam "ice", snagging a telephone that rings underwater and a goldfish obliging handed up by prop man.

This was graphically paralleled by photographing an antique telephone and receiver. Each Type-C colour print was cut and mounted onto a colour background identical to that used for the cinematography.

Across the motion picture work, two undulating lines represented wave form generations visualized by animation in sync with "Watson—come here I want you" and, upon settling to two quiescent parallel lines, became the connection leading to the receivers shot as still slide material. Using pop-on technique, phones appeared on the side screens. Next, the continuation of the motion picture wire connection, then a series of inward displacements that animated the still slide images in close detail, and into the motion picture screen where animation stand work continued the inward motion of the phones to adjacent centre positioning in time with the stage artistes' movement and "bringing people closer together" dialogue as they joined hands to explain other Bell Services.

To summon an opinion, a man on screen was attracted out of his shower, a call was put through to an Eskimo at his fishing hole in the Arctic, a preoccupied sports fan disturbed at his television and a trapper from his forest.

To add fun to such scenes properties were apparently stolen out of the screen by the stage narrators. The trapper's gun, antique head sets, pretzels, directories were concealed on shelves behind hinged flaps that doubled as doors between the three screens that the stage actors partially closed behind them as they entered.

Such actions placed all properties within easy reach and careful timing was mandatory so that the narrators' hand and arm movements reaching into the screen were synchronised with the prephotographed continuation of their movement into the screen.

Finalising the screen size enabled the cinematographer to establish the correct image size required to render the projected image to match the dimensions of the live actors. Century stands were placed at the edges of the set to establish true frame edges and the location of extraneous hands and artifacts required to be photographed with the studio action.

(LEFT) Girl narrator stands ready to enter stage rear through wings where props previously photographed are concealed. (RIGHT) Props concealed on shelves behind hinged flaps doubling as doors leading onstage.

At one point the trapper, as he answers an impossible telephone fixed to a tree in nowhere, loses his rifle to the stage actor who is able to remove it from the screen and demonstrate it to the audience before mysteriously returning it to its bewildered owner.

In one situation the girl charms an antique phone to her side of the screen and the boy attracts it back and finally takes it out of frame. In order to avoid an animation sequence the phone was set up on a trolley against backing paper. The same type of paper was erected as a foreground matte to the camera and balanced through a viewing glass. By maintaining the depth of field a straight line blend was made through the horizontal base of the instrument concealing its support and activation mechanism and the shot made by prop rope pulls on the trolley.

A small but historically important piece of apparatus was carried normal size to screen centre by the narrator who had left it unsupported. This scene was shot as before but with a fast zoom on the Angenieux lens that presented a full screen image showing relative detail.

The enormous and rapid expansion of telephone distribution was depicted by animating from the motion picture area into the side screens as an ever larger number of different antique phones appeared by pop-on and they were connected up by means of rapid scrape-off connection lines.

With the assistance of Doug Manning all animation and art work was developed by SPEAC Art Director James Macaulay whose fine understanding of

(LEFT) Boy and girl narrators take their bows onstage at the end of one of the shows. (RIGHT) Fascinated spectators, some sitting on the floor, watch a performance of "COME HERE I WANT YOU" presented by Bell Telephone at the Toronto National Exhibition grounds in Ontario, Canada.

lens disciplines created an excellent storyboard.

The technological advance was symbolised by macro-photography of printed circuits and a series of swish pans and tilts along and down the internal wiring of varied computer multi-coloured modules, to the mechanics of a Telex unit and switchboard wiring in a forceful, free-wheeling, fast cut sequence. Among these elements were inserted jewel-like transistor nodes shot obliquely from an adjustable camera wedge to produce a dynamic pictorial angle that could be cut in a Kaleidoscope of erratic movement.

The staggering verbal statistics of Bell's services were all oblivious to the Eskimo who, by fishing through a hole in the styrofoam ice, came up with first a telephone that rings under water and then a goldfish obligingly attached to his line by a prop man below the set. The Eskimo in turn was despatched to insignificance by an optical zoom which put him "on top of the world". This led into an animated sequence of microwave communication by bounce technique over the Arctic.

The prelude to the show was a symbolic display of various apparati of the telephone industry. For this, stylized cut-outs of micro-circuits, antennae, switch-gear and hand-sets were fretted in black card. This was positioned closely behind a fine-grain rear-projection screen and a battery of six Aldis 500W film-strip projectors provided by Bell were fitted with small electric motors eccentrically rotating bull's eye lenses.

Primary colour filters were positioned over paired sources and the music track was taped and played to modulate the lamp circuit amplitude, thus giving rise to colour oscillations. These were recorded by the 16mm Mitchell running with a constant speed motor from the B. P. screen on the reverse face.

The introduction of a voice into the music track splintered the image and the show started with an animated sequence of Alexander G. Bell with commentary by live narrators on stage.

The theatre exhibit was designed as a walk-in area, but since the show had a duration of 17 minutes, most people preferred to sit on the floor. When such an inclination is foreseen, it is very desirable that some sort of seating be provided, since planned sight lines become negated and ensuing parallax between real and screen images is disturbing.

Photography on Ektachrome Commercial stock was entirely satisfactory in conjunction with the ambient fluorescent light of the telephone exchange, since the intimacy of the situation permitted an aperture of F/4.5 using 1000W quartz lighting units that overcame the predisposition to a green hue which the fluorescent light would ordinarily impose.

Comparison of the huge variations in the terrain of Canada was effected by photography of four half-plate Ektachrome reversal originals, copying the centre section of each with the motion picture camera and using the left and right wings of the same transparency to provide left and right slides for still presentation.

To indicate the past, artwork was drawn in sepia tone and the progression to the present and future accentuated by passing into black and white, through to full colour art and then to the final realism colour photography.

The show was acclaimed by the Toronto press as the type of show all companies should aspire to, which was indicative of an excellent script, well interpreted by interested and enthusiastic craftsmen. ■

Detailed storyboard developed by Art Director Macauley, sketches action to appear on central 16mm rear-projection screen, as well as two side screens for slide projection.

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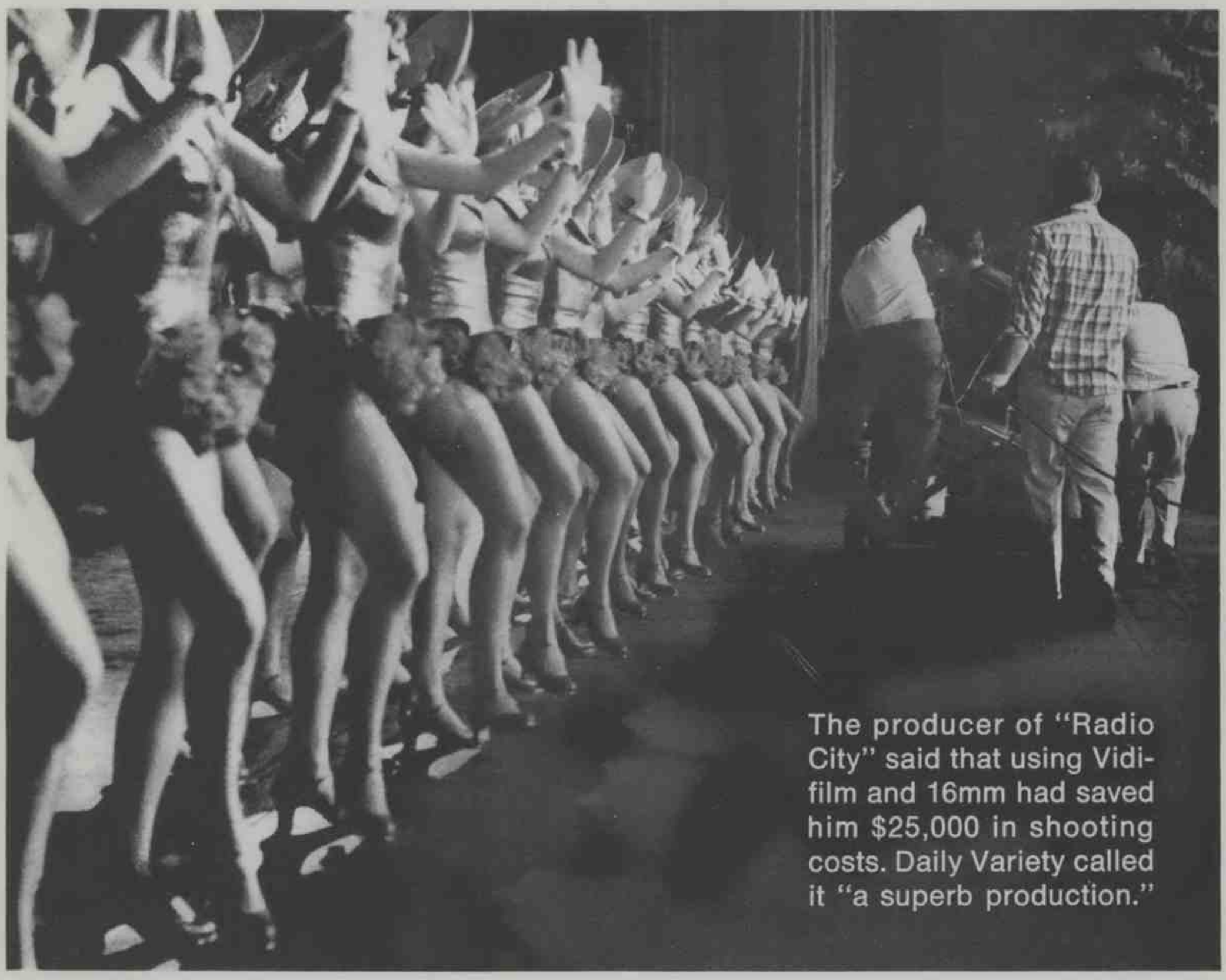

The producer of "Radio City" said that using Vidifilm and 16mm had saved him $25,000 in shooting costs. Daily Variety called it "a superb production."

"Radio City Music Hall at Christmas Time" was an hour-long, color NBC-TV Special. It was shot in 16mm, with three Eclair NPRs, in five nights, starting at midnight. By then, the performers had already done two shows that evening. The fewer retakes, the better. And with a cast that large, time was even more money than it usually is.

Multiple cameras were obviously called for. But this was a prime-time, network show. Speed was necessary, but so was production quality. Both were achieved by using Vidifilm. This Vidifilm multi-camera technique is very interesting. The cameras all shoot 16mm film in the usual way. But they also transmit the exact image being exposed on film in each of the cameras to a television monitor console.

The Director sees exactly what each camera is getting, and he can control it by intercom. The action can be edited, live TV style, onto videotape, and transferred onto film as a complete, edited workprint. Money saved. Rehearsal time, shooting time and editing time are all saved, too. Perfect film image quality, of course; and instant magazine changes. No blimps. Vidifilm uses the NPR.

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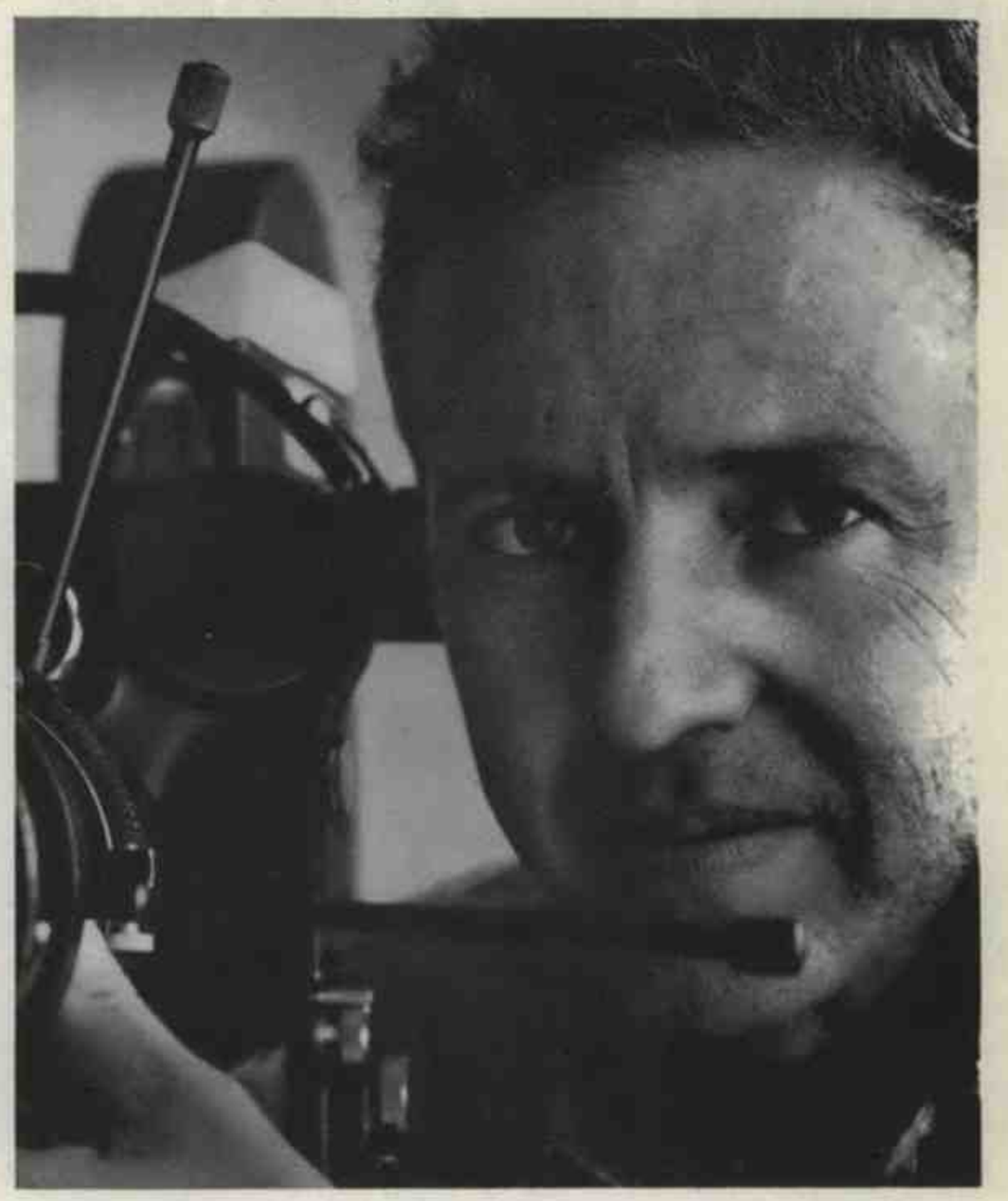
Director of Photography Haskell Wexler, A.S.C., won an Academy Award for his cinematography of "Who's Afraid Of Virginia Woolf." He also shot "In The Heat Of The Night," which won six Academy Awards.

The man in this photograph is Haskell Wexler; and that's his CM3.



In both films he used two cameras: a Mitchell BNC and an Eclair CM3.

In the days before the Mitchell offered reflex viewing, Mr. Wexler used to shoot with the CM3, (which has extremely clear and accurate reflex viewing), when framing or depth of field were critical. The Mitchell's 1,000 foot load made it his choice for most studio sequences, even though the CM3's pre-threaded 400 foot magazine can be changed in literally five seconds. He used the CM3 for about 50% of "Virginia Woolf." But on his own feature production "Medium Cool," Mr. Wexler used a specially made 1,000 foot magazine on his CM3, as well as the standard 400 footer; and he shot the whole picture with the CM3.

Because of his extensive experience in shooting documentaries, Mr. Wexler's photographic style has a strong feel for realistic treatment. He approaches the lighting of a studio interior set as though it were a real room on location, with four walls and available light sources. The living room set in "Virginia Woolf" was realistically cluttered and cramped for space. The CM3's small size and light weight enabled Mr. Wexler to use this to advantage, instead of having to fight it. He could put the camera in among the clutter, and get the lens close to objects on the bookshelf or whatever. No need for a bulky crab dolly.

On location, the fact that the CM3 can be mounted on a lightweight wooden-leg tripod makes moving a few feet over to a better angle quick and easy. With a 300 pound rig, says Mr. Wexler, you're tempted to stay where you are. Shooting "The Thomas Crown Affair," he also mounted his CM3 on a dune buggy, in a helicopter, on a home-made "skateboard," and, of course, on his own shoulder. Because the CM3's magazine is mounted on the rear, says Mr. Wexler: "No other 35mm camera balances so well on your shoulder."

When Mr. Wexler shoots a scene inside a moving car, it's a real moving car, not a car set with a process screen background. For various reasons, many of the Tennessee location shots for "Heat Of The Night" had to be made fast, without elaborate rigs or setups; but the script called for a lot of car interiors. The CM3's rear-mounted magazine gives the camera a low profile, which enabled Mr. Wexler to sit inside the car with the actors, and shoot at normal eye-level with the CM3 on his shoulder. No other 35mm reflex camera would have fitted under the car's roof. And no process shot would have looked as genuine. Even an external camera rig would not have looked as real, says Mr. Wexler, because of the rigid camera position and fixed image size. CM3 versatility helps.

For more CM3 information, contact Eclair at 7262 Melrose Ave., Los Angeles 90046.

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HISTORY OF A UNIQUE SCIENTIFIC ADVANCE: THE NORWOOD PHOTOGRAPHIC EXPOSURE METER

How one man, seeking a better, more accurate way, developed a totally different approach to photographic exposure control—one that is now used by professional cinematographers everywhere

By IAN TAYLOR

Enter any sound stage in Hollywood. Observe the cinematographer measuring the light intensity. (See Fig. 1.) The chances are that he will be using a photoelectric measuring instrument which has, as an integral part, a unique, translucent, light-collecting, hemisphere element, which looks like half of a small white ball.

The same may be observed in motion picture studios in New York; or for that matter, in almost any studio in the U. S. A. Further, it may be observed in motion picture studios in Japan, in India, in Brazil, in Argentina; in fact, throughout the world. Professional cinematographers everywhere place great reliance on the dependability of this particular type of light-measuring instrument. It helps them to produce pictures having excellent technical quality.

What is the history of this particular type of light meter? How did it come into being? Who invented it? What is the function of that small white ball?

In general, the first large scale introduction of photoelectric exposure meters occurred around 1932. Those meters were of a type which reads on light *reflected* from a photographic scene. One of those instruments was purchased by an Air Corps lieutenant who was on duty as a flying instructor at Randolph Field in 1933. The off-duty avocation of this Air Corps pilot, Lieut. Don Norwood, was cinematography.

Lieut. Norwood tried out that reflected-light type of exposure meter and was disappointed with the exposure results, because those results simply were not dependable.

FIGURE 1—Using a Norwood Super Director exposure meter, Director of Photography Edward Colman, ASC, takes an incident light reading prior to filming a closeup of actor John Compton. The photosphere light collector concept, pioneered by Don Norwood, was the first system to measure the totality of light falling upon a three-dimensional subject from several directions.

Consequently, he gave long and thoughtful consideration to various aspects of why the reflected-light meter failed. What factors were involved? What could be done differently in order to achieve success?

One scene in particular presented elements which were very challenging. (See Fig. 2.) This scene included the Norwoods' Negro housekeeper, Ethel, and the lieutenant's young son, Dick, who was a natural platinum blond at that age. When the reflected-light meter was used close-up to Ethel, one exposure reading was given. A quite different exposure reading resulted from a close-up reading of Dick. A third exposure reading resulted from a longer range position which included both persons in the field of view. This third type of reading was further complicated by the type of background in the scene. With sky or white stucco buildings in the background the reading shifted excessively in one direction. With a dark shrubbery background the reading shifted excessively in the other direction. If the subjects wore other clothing, of darker colors, still different readings resulted.

What, among all of the varying elements, presented a significant value, one that could be depended upon as a firm basis for exposure determination? It seemed to the lieutenant that the only dependable element in the situation was the illumination intensity. Consequently, he started a study of the relationship of illumination to exposure.

A series of carefully planned and conducted experiments ensued. They soon disclosed a positive and valuable relationship between illumination and exposure. Furthermore, the study of illumination falling upon a photographic subject revealed another very important fact. It was observed that such illumination is three-dimensional. It was found that this three-dimensional nature must be considered in any evaluation of illumination falling upon a three-dimensional photographic subject.

In detail, it was found that the exposure effectiveness of illumination from any source depends not only upon the intensity projected to the subject's location, but also upon the angular relationship between the camera-subject axis and the light-source—subject axis. Thus, a 400 foot-candle intensity of light, projected to subject location from a source located adjacent to the camera, is much more effective in lighting the camera-side of the subject than similar illumination projected from a source located on the far side of the subject. Intermediate angular locations of the light source provide intermediate values of exposure effectiveness.

It was found that when both the *light intensity* and the *geometry of illumination* were thus taken into account, the resulting exposures turned out to be better than anything that had been previously seen.

Lieut. Norwood then constructed, in 1933, an exposure meter which was the first to properly evaluate *3-D incident light*. (See Fig. 3.) The underpinning for this meter was a

two-celled reflected-light meter, which was modified by the addition of a 3-D light-collector over each of the two cells.

The 3-D light collector, in the form of a hemisphere, has a very special function. Normally used at the location of the photographic subject, it represents, in miniature, the camera-side of the photographic subject. This special form automatically and precisely integrates all illumination from all sources effective on the subject, not only according to the projected intensity of each, but also according to the geometric location of each source with respect to the camera-subject axis. The hemisphere then transmits this information to a photocell which, in turn, actuates the meter's electrical indicator.

The prototype meter was then calibrated to evaluate the 3-D illumination with respect to exposure. It turned out to be the granddaddy of all of the *3-D incident light* meters in use today.

As an interesting sidelight, it might be mentioned that Lieut. Norwood, at that time, encountered some difficulty in locating an appropriate translucent hemisphere which would have the right properties of light transmission and diffusion and be of the right size to match the size of the adjacent photocell. The answer, quaintly enough, turned out to be a section sawed from a baby's celluloid rattle. It served the new purpose very well.

Later on, in 1936, the 3-D incident-light meter shown in Fig. 4 was constructed. This meter had a single photocell and a single 3-D light collector.

In the normal course of his professional career as a military pilot, Lieut. Norwood was promoted to Captain. He then spent some years in charge of instruction at the Air Corps Photographic School. He later had the misfortune of being involved in an airplane accident which resulted in physical injury and long hospitalization. He was retired from the Air Corps for physical disability in 1939. He returned to Pasadena, and established a research laboratory there, not far from his former school, the California Institute of Technology.

In the autumn of 1939 he was requested by George Blaisdell, then editor of the AMERICAN CINEMATOGRAPHER, to write a technical article about photoelectric exposure meters. This was a topic in which A. S. C. members were becoming quite interested at that time. Consequently, four papers were prepared, and were published in the AMERICAN CINEMATOGRAPHER: November 1939, January 1940, February 1940, March 1940.

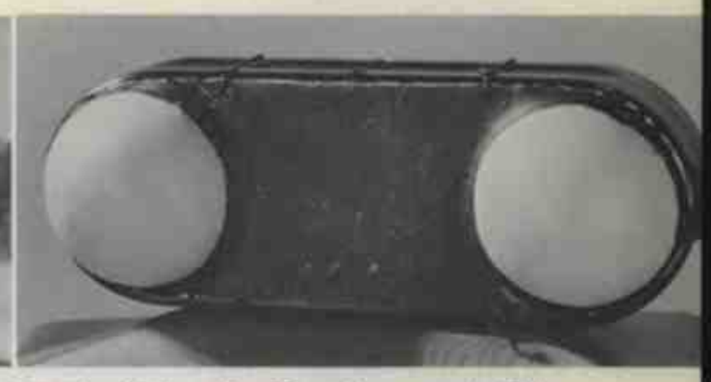
From his laboratory came new advances in the design of his exposure meter. There was the introduction of a perforated slide range-changer, in 1939, as shown in Fig. 5. A number of these meters were made and sold, including the first one that went to an A. S. C. cinematographer, Floyd Crosby, in 1940. He used a NORWOOD meter when photographing that outstanding picture, "HIGH NOON".

A patent on the unique meter, which had been applied for some years earlier, was granted in October 1940. It was U. S. patent #2,214,183, a basic patent.

An informative paper on the topic was prepared in the autumn of 1940, and read to the Society of Motion Picture Engineers, of which Norwood is a member. This paper was published in the SMPE Journal for April 1941.

An advanced model of the NORWOOD incident light meter was designed and constructed in 1940. (See Fig. 6.)

A further advanced model, with detachable and reversible head, (See Fig. 7), was constructed on special order, in 1941, for the Clarence B. Mitchell Laboratory in Chicago. Mr. Mitchell had read of the meter in the AMERICAN CINEMATOGRAPHER.



(LEFT) FIGURE 2—This early snapshot taken by Don Norwood of his housekeeper holding his infant son prompted him to seek an exposure system that would not vary with the reflectance of lighter or darker elements in the scene. (RIGHT) FIGURE 3—Norwood's first incident light meter, constructed in 1933, was basically a two-celled reflected light meter modified by the addition of a 3-D light collector over each of the two cells. Norwood used sections cut from a baby's rattle for earliest photosphere prototypes.

(LEFT) FIGURE 4—Constructed in 1936, this improved version of Norwood's original incident light meter had a single photocell and a single 3-D light collector. (RIGHT) FIGURE 5—A perforated slide range-changer was important 1939 improvement in the meter. First model incorporating this innovation went to Floyd Crosby, ASC, who used it in photographing "HIGH NOON".

FIGURE 6—An advanced model of the Norwood incident-light meter, with a case molded to fit the hand, was designed and constructed in 1940.

FIGURE 7—A "two-piece" model of the Norwood meter, with detachable light collector that could be reversed in relation to the meter scale for more convenient reading of light under certain conditions.

In 1941, Karl Freund, ASC, after reading the technical paper published in the April 1941 Journal of SMPE, showed up and requested construction of a meter for his use. Such a meter was built (see Fig. 8). After a short period of studio use on a film called, "THE CHOCOLATE SOLDIER", at MGM; Freund placed an order for a second identical model. He had found the first one to be so valuable in his work that he wanted another one to hold in reserve, in case the first was accidentally dropped, and was temporarily out of action while being repaired.

The same Karl Freund later formed a small manufacturing company and requested and obtained from Don Norwood a patent license contract which permitted the manufacture, use and sale of exposure meters built according to the Norwood design and Fig. 8 prototype, and using the patented principle. A number of such exposure meters, brand-named NORWOOD DIRECTOR, were made and sold to members of the A. S. C., to Air Corps photo units, and to professional photographers in general.

During this time Don Norwood prepared a book on the subject entitled, "A NEW APPROACH TO EXPOSURE CONTROL". He also prepared, from time to time, additional informative articles about this subject for professional periodicals. (See list in the terminal Summary.)

A major change occurred in manufacturing in 1947. At that time the American Bolex Co., in New York City, arranged to buy out from Freund's company the patent license rights which were granted from Don Norwood, the inventor and patent owner.

The American Bolex Co. evolved a new housing design for the meter, (see Fig. 9), and engaged in quantity production of the new design. A vigorous advertising campaign was also part of the program to bring the advantages of the NORWOOD DIRECTOR exposure meter to professional and amateur photographers all over the United States, as well as worldwide. A factor in this matter was the greatly increasing use of color films of the reversal type. Such films have a requirement not only for very precise exposure, but also for exposure based on principles which produce the most accurate rendition of flesh tones, and which do not unduly favor shadow areas at the expense of highlights. The NORWOOD DIRECTOR exactly suited these requirements. Large numbers of that model were produced and sold.

In 1957, 17 years after the basic patent had been issued, the said patent came to its normal termination. This led to various changes in the previously established business relationships which depended on the patent.

Other manufacturers then entered the picture. A new model, called the NORWOOD SUPER-DIRECTOR, (Fig. 10), was designed and a prototype built at NORWOOD INSTRUMENTS. It offered such patented improvements as the remarkable HELIOVALVE for range-changing, U. S. patent #2,913,955. The meter also provided for direct reading in F-stop notation, U. S. patent #2,824,696; and had an advanced type of calculator for auxiliary use. This meter was manufactured under license, by the Walz Co., in Tokyo.

Another Japanese firm, the Sekonic Co., started manufacture of an older model of the meter, on which the patent had expired. Still another Japanese firm, the Miranda Co., introduced a meter which featured the NORWOOD type of incident-light collector. Photo Research Co. re-established manufacture of an old model of the meter. Some German firms (E. Leitz, Inc., and the Gossen Co. with three models) introduced exposure meters which featured the NORWOOD type of incident-light collector. (See Fig. 11).

It has been said that, "Imitation is the sincerest form of flattery." The adoption of the NORWOOD invention by all of those exposure meter manufacturers constitutes a sort of left-handed tribute to the value of Norwood's contribution to the science of exposure control.

Because Don Norwood is a rather quiet type, with a studious manner, who is more given to conservative understatement than the reverse, the great extent of his work in this field has not been generally recognized.

It is interesting to note some technical aspects of his pioneering efforts in this field. In his research work on the 3-D, hemisphere-type incident-light meter, he divided the studies into two areas: *exterior photometry* and *interior photometry:* or, what happens to the light rays on the outside of the meter, and what happens to them on the inside.

EXTERIOR PHOTOMETRY takes into account the 3-dimensional nature of photographic illumination, the relationships between the camera-subject axis and the various light-source-to- subject axes, as well as the exterior light-collecting properties of the hemisphere light-collector. These factors were carefully studied, and the interrelationships were disclosed in a significant technical paper published in the SMPTE Journal, May 1950. Therein was shown the formula—

$$\frac{f^2}{t} = \frac{S\,E\,(1 - \Theta/180^\circ}{K}$$

(LEFT) FIGURE 8—Meter built by Norwood in 1941 for Director of Photography Karl Freund, ASC, who was later granted patent license by the inventor to manufacture the meters commercially. (RIGHT) FIGURE 9—New housing design for Norwood Director meter evolved by the American Bolex Company, which bought patent license rights in 1947.

which is quite basic. This formula has been translated into many languages, and is now used by exposure meter manufacturers located in a number of industrial countries.

INTERIOR PHOTOMETRY has also been the subject of intensive study in his laboratory. This study has revealed the behavior of the light rays inside of the hemisphere light collector, and the transmission paths followed to the adjacent photocell, under all of the varied conditions established by the various scene lighting arrangements which may be encountered in photographic practice. One result of the interior photometry research was the development of a significant formula, which was disclosed in U. S. patent #3,041,929, as follows:

$$V = \frac{C}{1 + \frac{m}{\frac{r}{2} + n}}$$

The application of this formula resulted in the design and construction of the unique HELIOVALVE for the meter. The HELIOVALVE serves to adjust the meter to match the film's ASA index. It makes obsolete the former requirement for a whole packet of slides or mattes for this purpose. The

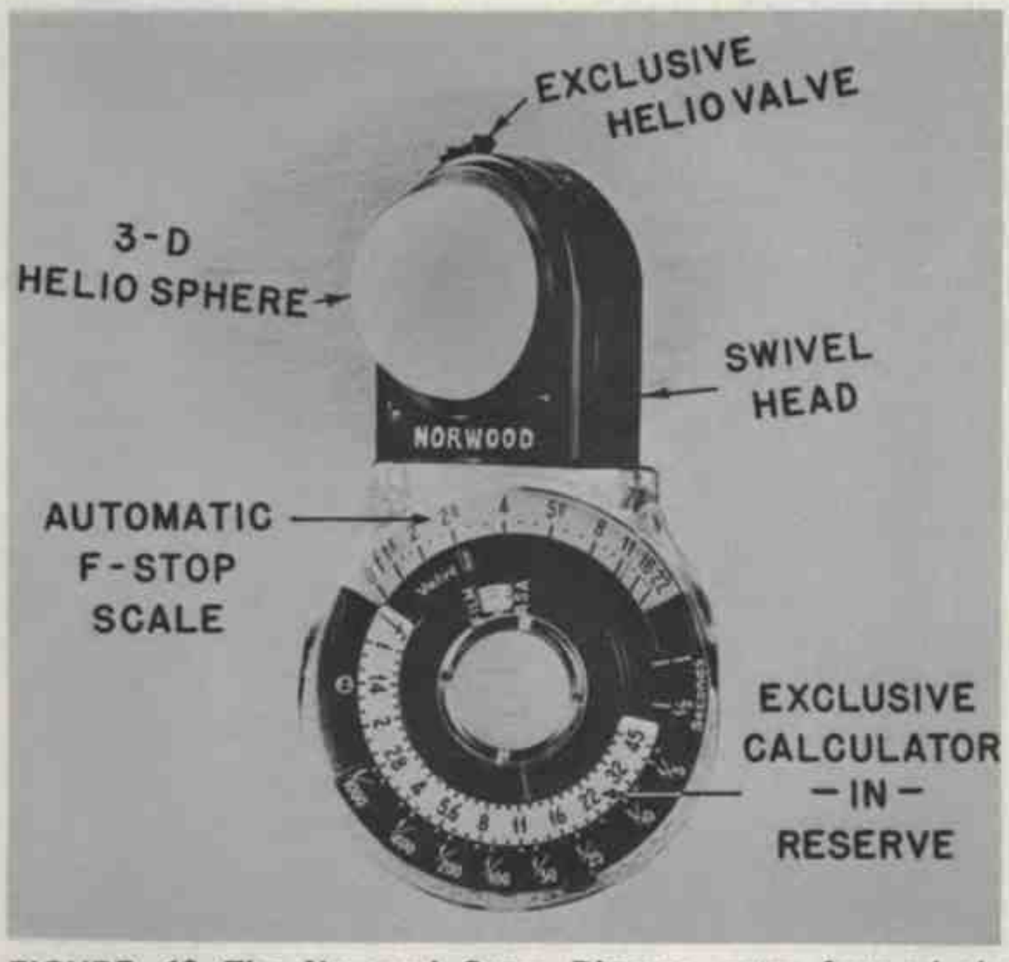


FIGURE 10—The Norwood Super Director meter featured the remarkable Heliovalve for range-changing, direct reading in F-stop notations and an advanced type of calculator for auxiliary use. This meter was manufactured under license by the Walz Co., in Tokyo.

HELIOVALVE has been used to advantage in the NORWOOD SUPER-DIRECTOR and the NORWOOD PRO meters.

Some professional cinematographers in Hollywood have used NORWOOD type meters for more than two decades in their daily work. Many have graciously expressed their liking for the meter and have commented on the assistance it has provided in their exacting work. Due to his contribution to the motion picture science Don Norwood received the honor, in 1950, of an invitation to become an Associate Member of the American Society of Cinematographers.

In conclusion, it is interesting to observe the profound effect which the contributions of just one dedicated scientist can have on the technique employed throughout an entire industry, such as the exposure control technique generally used by cinematographers throughout the entire motion picture industry, worldwide. Many types of cameras may be used, and many types of films, and many varieties of illumination, outdoors and indoors, as well as many types of lighting equipment; but the light meters generally used by professionals are of the NORWOOD incident-light type. ■

SUMMARY OF TECHNICAL PAPERS AND ARTICLES WRITTEN BY DON NORWOOD ON THE SUBJECT OF INCIDENT LIGHT MEASUREMENT FOR EXPOSURE CONTROL.

JOURNAL OF THE SMPTE

April	*1941*	*"NEGATIVE EXPOSURE CONTROL."*
May	*1950*	*"LIGHT MEASUREMENT FOR EXPOSURE CONTROL."*

AMERICAN CINEMATOGRAPHER

November	*1939*	*"STUDYING PHOTOELECTRIC EXPOSURE METERING I."*
January	*1940*	*" " " " " II."*
February	*1940*	*" " " " " III."*
March	*1940*	*" " " " " IV."*
April	*1943*	*"ILLUMINATION CONTRAST CONTROL."*
February	*1949*	*"EXPOSURE FOR TITLES AND CLOSEUPS."*
December	*1950*	*"THE SIGNIFICANT KEYLIGHT."*
December	*1957*	*"NEW, IMPROVED EXPOSURE METER."*
September	*1958*	*"EXPOSURE EVALUATION."*

INTERNATIONAL PHOTOGRAPHER

February	*1941*	*"NEGATIVE EXPOSURE."*
April	*1943*	*"NEGATIVE EXPOSURE—OUTDOORS."*

SUMMARY OF U.S. PATENTS GRANTED TO DON NORWOOD ON THE NORWOOD INCIDENT-LIGHT EXPOSURE METERS.

No. 2,214,283	*EXPOSURE METER.*	*Sept. 10, 1940*
No. 2,337,122	*METHOD AND APPARATUS FOR DETERMINING ILLUMINATION CONTRAST.*	*Dec. 21, 1943*
No. 2,444,464	*DEVICE FOR USE IN DETERMINING PHOTOGRAPHIC EXPOSURES.*	*July 6, 1948*
No. 2,489,664	*DEVICE FOR CALCULATING PHOTOGRAPHIC EXPOSURES.*	*Nov. 29, 1949*
No. 2,504,346	*DUAL RANGE EXPOSURE METER HAVING A LIGHT-DIFFUSING PIVOTED COVER.*	*Apr. 18, 1950*
No. 2,803,162	*AUTOMATIC EXPOSURE METER.*	*Aug. 20, 1957*
No. 2,824,696	*DIRECT-READING PHOTOGRAPHIC EXPOSURE METERS AND CALCULATOR DEVICES*	*Feb. 25, 1958*
No. 2,913,955	*DIRECT-READING LIGHT METER AND LIGHT VALVE UNIT THEREFOR.*	*Nov. 24, 1959*
No. 2,972,930	*LIGHT METER DEVICE.*	*Feb. 28, 1961*
No. 2,983,186	*DEVICE WITH THREE-DIMENSIONAL LIGHT COLLECTOR.*	*May 9, 1961*
No. 3,041,928	*DEVICE UTILIZING A LIGHT VALVE ACTUATED BY A LIGHT ACCEPTANCE UNIT.*	*July 3, 1962*
No. 3,041,929	*LIGHT VALVE STRUCTURE.*	*July 3, 1962*
No. 3,091,166	*PHOTOGRAPHIC DEVICE RESPONSIVE TO BOTH INCIDENT AND REFLECTED LIGHT.*	*May 28, 1963*
No. 3,112,684	*LIGHT RESPONSIVE CAMERA*	*Dec. 3, 1963*
No. 3,286,097	*PHOTOMETRIC DEVICE HAVING SELECTIVE RESPONSE TO LIGHT ON PHOTORESISTIVE CELLS.*	*Nov. 15, 1966*

FIGURE 11—A few of the many meters inspired by Norwood's original invention and manufactured after his patent expired. Don Norwood recently designed and patented several highly sophisticated new light-measuring instruments for photography, which will soon be on the market.

"THE BOSTON STRANGLER"

Continued from Page 205

with its wide, narrow frame. He feels strongly that it is, for many scenes, just too wide—if I may speak for him. He said to me, "Sometimes when you're telling an intimate story of two people, you simply don't need that wide of a screen. It's like with a painting or a picture; you don't take a frame and match the picture to the frame. You match the frame to the picture. Sometimes the painting is small, and that's all the frame has to be. If you have an intimate scene of two people, there's no reason to use the full wide screen."

What he said made sense, and the panel system lent itself perfectly to the expression of that philosophy. Many of our scenes were fragmentary closeups (inserts, actually) that fit quite nicely into a small square frame. Then, when we needed scope in a particular scene, the full wide frame was available. Fleischer's thought was: "Let's make the 'paintings' the size they should be and then frame them properly. Let's not let this wide-screen proportion dictate anything. It's just a field of operation."

It was my job to design a "panel plot" (complete with accurate compositional sketches) for each separate phase of each multiple-image sequence—and this is where Fleischer and I had to work very closely together. Edward Anhalt, who wrote the screenplay, could not write it the way we would eventually interpret it; this would have been an impossible thing to do. So he said, "I'll just write a straight screenplay and you, in essence, will be orchestrating the picture."

We would take each sequence as written and start to pull it apart into separate elements, which we laid out graphically in terms of individual panels. This was done using a grid that covered the full frame. Then we established mattes of several sizes and shapes that could be fitted into that grid—and designated them as A, B, C, etc. Matching mattes were made to fit into the viewfinders of the reflex cameras that Dick Kline was using.

A compositional sketch was made of each scene as it would fit into its specific panel, and this sketch was used as a reference when the scene was actually set up for shooting. All of the sketches were bound in sequence into a book, which became our production "Bible", and all the key people concerned were given copies of the book.

While each of our panel sketches was set with mathematical precision in advance, we had to allow for a certain amount of flexibility, because some of the scenes had to be sketched before we could know exactly what the location would be. Then there were times when we would get to a location and find that because of weather or the light or an actor commitment you couldn't use that location and would have to shoot the scene somewhere else. In a case like that we would re-sketch the scene according to how it was finally shot, so that editing and special effects would have an accurate blueprint to follow. ■

RICHARD H. KLINE, ASC
Director of Photography

Using the Panavision format was a great aid in shooting the multiple-image sequences, not only because of the wide-screen configuration, but because of the sophisticated equipment available, especially the lenses. We used zoom lenses almost exclusively, with occasional use of the 35mm (for wide-angle shots) and their macro lens to get in very close for some of the inserts.

We worked inside many very small actual interiors in Boston, where you couldn't possibly use a dolly, so we used the zoom in place of a dolly. We did have a very small ColorTran dolly and that, in conjunction with the zoom lens, worked out very well.

We used the Panafocal lens (which is a short zoom) and the Angenieux 50mm-to-500mm lens, but we rarely used them for zooming. They served more as variable focal-length lenses. There are only a couple of times in the film when we used fast zooms for shock effect.

In order to light the cramped location interiors I eliminated big lights, using no Brutes. We had a 150-amp generator and used quartz lamps and small incandescent lights exclusively. We tried to use source lighting and low-key as much as possible. Keeping most everything in low-key not only enhanced the mood, but made it easier for us to go into the black matted multiple-image sequences without too much of a visual jump.

Because we worked in low-key throughout almost the entire picture, and also because the zoom lens had a maximum aperture of F/4.5, we had to force develop practically everything one stop.

We used reflex cameras exclusively on this picture—Panavision cameras, Mitchell Mark II's and Arriflexes—so that we could get an accurate line-up of our mattes, which were placed in the viewing portion of the reflex system only.

We would, however, shoot full-frame, with the area in dead center that would be matted for a panel later on and moved to the area of the frame where it was designed to be. I would usually light only that area that was to be used in the panel and let the rest fall off. Also, in centering a small area that would eventually appear at the extreme right or left of the frame we would sometimes run off the set at the edges.

This caused a certain amount of consternation back at the studio. People watching our dailies would say, "My God, the scene's too dark!"—not taking into consideration the fact that we were only going to use the perfectly well lighted doorknob in the center of the frame. It also unnerved them to see sound booms and lights and grips hanging in at the edges. Even though they knew very well what we were doing, they could never quite get used to this.

Occasionally, instead of shooting a panel scene framed at dead center, we would position the subject in its precise

Continued on Page 238

Director of Photography Richard Kline (CENTER) studies the scene during location filming in Boston. Only reflex cameras (Panavision, Mitchell Mark II, Arriflex) were used for shooting, with mattes placed in viewing tube for each panel scene.

Continued from Page 215

tenberg, Arthur Miller, Charles Lang and others, the foremost cinematographers of our time, with whom I've had the great fortune to work. They're all out there somewhere, as is Leon Shamroy. Thank you, Leon. Thank you, George Folsey and Russ Harlan and the others out there who have helped me survive in this business for so many years. Congratulations again, and thank you for this wonderful evening."

Then it was time to honor the four living Charter Members of the American Society of Cinematographers: Victor Milner, Charles Rosher, L. Guy Wilky (all of whom were present) and Arthur Edeson who, unfortunately, was prevented by illness from attending. On behalf of the Society, Hal Mohr presented all of them with gold pins bearing the A.S.C. emblem.

The official amenities of the evening having been concluded, Mohr then turned the microphone over to A.S.C.'s young and talented attorney, David Fleming, who took charge of the entertainment portion of the evening. Proving himself as nimble a Master of Ceremonies as he is a legal eagle, Fleming made with the snappy patter, evoking appreciative laughter and applause from the crowd. He introduced *chic chanteuse* Dodie Stevens, who did several numbers. Then came A.S.C. Associate Member Edgar Bergen who, though caught with his dummy down, regaled the audience with his own special brand of witty dialogue. Songstress Shirley O. Mills, a bundle of verve, wound up the entertainment by practically sitting in Arthur Miller's lap at ringside and belting out a personalized parody of "Won't You Come Home, Bill Bailey?" It was a laugh a minute.

The Gala affair at the Beverly Hilton climaxed a fortnight of fond tribute to A.S.C. and its founding members. Both the Los Angeles Times and the Herald-Examiner had published comprehensive features on the Society, as had *Variety* and the *Hollywood Reporter*. The special 50th Anniversary Issue of AMERICAN CINEMATOGRAPHER had appeared, immediately becoming a collector's item. Mayor Sam Yorty had proclaimed Friday, January 17, 1969 as ASC GOLDEN ANNIVERSARY DAY in Los Angeles.

Entering its second half-century of "LOYALTY-PROGRESS-ARTISTRY", the American Society of Cinematographers would have something fine to remember. ■

TOWARD A VISUAL REFRESHMENT

To the cinematographer whose "eye" has become jaded, a study of paintings by the Old (and some New) Masters can re-stimulate the wellsprings of creativity

By RICHARD SHORE, ASC

Cinematographers are practical artists devoted to applying theories of lighting and composition to the solution of photographic problems. These problems are constantly varying not only from film to film, but within a film, between sequences and within sequences, from shot to shot.

Our preoccupation with practical solutions is all-pervasive because it is our task to translate script and directorial ideas into concrete images. This concern dominates our everyday existence and gives rise, quite naturally, to methods of visualizing each directorial idea. Because we are necessarily practical, there is, I believe, a great tendency to develop set ways of thinking about light and composition which are consistent with our proven experience of what works and what does not work. It should be obvious that these set ways, even though proven, are not nearly exhaustive of the possible ways of approaching a given lighting/compositional problem.

This is not to suggest that the optical and physical laws which govern how a specific lens or type of light or film respond are invalid. A given lens covers a given field and produces a given perspective and distortional effect. A given light will produce an intensity and shadow character which are dictated by the type and design of that light, and a given film will produce detail, grain sharpness and color rendition for a given set of conditions. The point is that the possible combinations of light, lenses, film and filters are so many and so variable that it is, for all practical purposes, impossible to exhaust them.

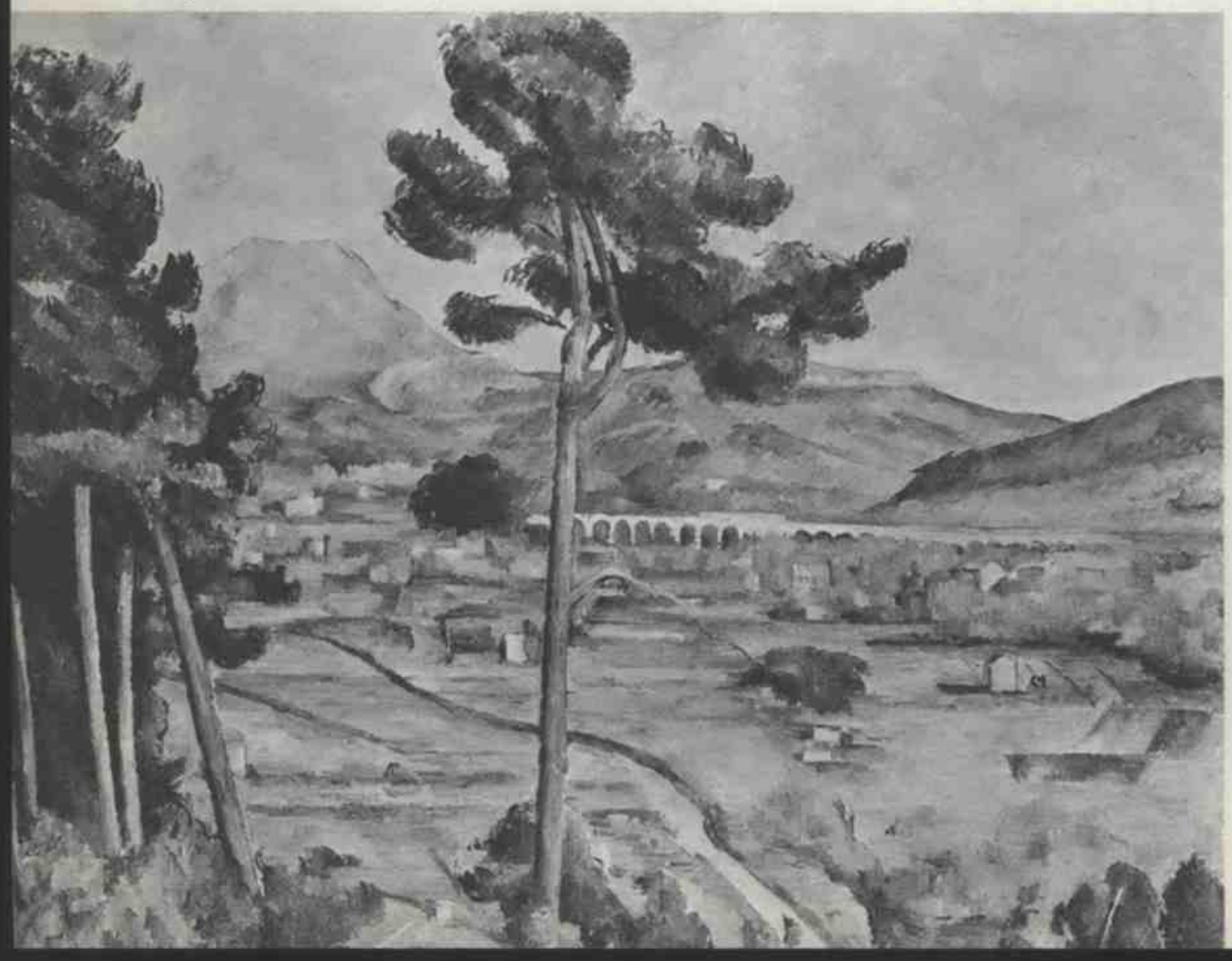
I believe that a fundamental problem of the practicing cinematographer is how to stay visually fresh and spontaneous. For us, the answer to not growing stale is to be found in heightening our visual perception and response. To see things in a refreshing way is the heart of the matter. It is easier, to begin with, to point out what this does not mean than to try to arrive at a positive definition. It does not mean the indiscriminate use of bizarre angles and lighting effects. These are easy traps on the road to something different. I'm suggesting that if we can approach a problem with an innocent eye, coupled, of course, with a thorough grounding in the principles and practice of our craft, then there is a chance of developing and maintaining a fresh response.

How can we do this? How can we stay visually "innocent" in an age where our senses are subjected to what we might call an *ever-increasing din of impingement;* much of it of our own making. The cinematographer cannot retire to contemplate life from a distant mountaintop or sheltered campus or any of the other refreshing escapes open to the writer or composer or anyone practicing a solitary art.

However, I believe there are things right at hand that we can utilize in order to refresh our vision. The "things" I'm referring to are paintings; either the history of painting or a study of painting as it is practiced today. The subject is inexhaustible, and if one chooses to specialize, the rewards are very rich indeed. For instance, examining the invention of perspective in painting, its evolution, triumph, and abandonment is the kind of visual stimulus from which cinematographers can derive recreation. To view the art of painting from the Middle Ages into the 14th and 15th centuries is to see, amongst other elements, the evolution of perspective from flat, vertical, "heaven reaching" art to the Renaissance invention of monocular perspective—interestingly, usually from a low angle. In fact this visualization of perspective with its single vanishing point in the center of an imaginary cube really dominated painting for four centuries.

Of course the invention of perspective in painting did not develop in a single unbroken stream any more than

Mont Sainte Victoire, **an oil on canvas by Paul Cezanne. In this painting, Cezanne gives us an impressionist's view of space, attaching primary importance to planes, volumes and atmospheric haze. The effect is similar to the soft-focus of early cinematography which is enjoying a recurrent vogue.**



the present triumph of color cinematography developed in a smooth succession of better and better efforts. The painters of the 14th century, for example, would sometimes use perspective for only part of their work, the foreground, and relegate the background to the flat, vertical, non-perspective style of an earlier day. That combination of styles made the background look like a backdrop against which a real, in-depth action was occurring. Other painters, though not many, became interested in isometric projection which gives a more correct appearance of space in painting.

Another exploration into the problems of depicting space in painting was the invention of *chiaroscuro.* This effect, like a single specular light source from which all color and values emanated, represented another attempt at creating a depth-like effect. Later, the impressionists discovered the importance of atmospheric haze in creating realistic depth. Further, the impressionists discovered how shifting light tended to destroy sharply defined lines and give importance to planes and volumes. Theirs was a depth of color values. Later the cubists introduced the idea of time in painting; they did this by showing the object from several angles simultaneously or showing the object in motion through a successive displacement of the figure. Rhythm is a key idea of the cubists.

The study of the history of painting is not meant to suggest that artists got better and better; rather, it shows that styles changed with the times. Painting, like cinematography, is not a fixed study, and that is one thing which looking at the history of painting tells us. The space of contemporary painting is no longer the purely optically exact space of the Renaissance. It includes dynamic rhythms, distortions, optical motion, and a whole gamut of sensations that are more emotional than intellectually ordered. The entire field of contemporary painting offers visual refreshment for the cinematographer who is more interested in the forms of today than in historical development. All the most advanced styles (including expressions known as pop, optical painting, color field, shaped canvas, and minimal painting) are valuable to this end. The study of contemporary painting is valuable, not because of its affinity to cinematography, but for its remoteness. Remote, yet visually acute; that is the heart of the matter; that is the value to us as cinematographers.

The amount of prejudice which surrounds the very contemporary schools is too well known to belabor. The point is not to decide whether we are coming upon a new, and as yet unsung, Renoir or Van Gogh. In fact such considerations have nothing to do with the benefit we can derive from really *looking* at this stuff. So you say, "I've seen Campbell Soup cans. I've even photographed them; tricks of perspective are well known to me. I'm familiar with color values and how colors relate to one another. I already know these things and was doing them long before the present generation of painters came along."

"Well," I say, "were you really looking with a new eye?" A painter says: "Here is an everyday object of such banal familiarity that you don't even see it anymore—but behold . . . it is an object as worthy of our contemplation as a traditional bowl of fruit." A painter says, "Here are three colors divorced from any suggestion of subject matter, which, by their precise values, are emotionally evocative." A painter says, "Here are colors so close to each other in value that only after careful study can we see that there is any but one solid color on the canvas."

What of all this and so much more that is contemporary painting? For the cinematographer the lesson is not to go out and try to duplicate these effects because they are painting effects—pigment on canvas—and they belong nowhere but in paintings. But their contemplation like a study of the history of painting can refresh our vision, help us to see anew our very different visual problems. I think this is more valuable in many ways than, for example, going to the films to see how other cinematographers met, or failed to meet, the challenges of their pictures. Film viewing is pleasurable but it is not enough removed from our everyday experience to be really recreative. It is too concrete, too close to home, and thus inevitably puts us in the same frame of reference as the cinematographer who made the film. But studying some aspect of the history of painting or viewing contemporary painting of the most advanced, often seemingly outlandish, often difficult, styles is the stuff of renewed vision. Try it without prejudice. It really works. ■

Marilyn Monroe I, **oil on canvas by James Rosenquist. The artist presents objects of familiarity in a new way. This Pop Art study has the collage effect of a cinema montage.**

Three Miracles of St. Zenobius, **tempera on wood by Sandro Botticelli, is a fine example of the application of monocular perspective, with its characteristic single vanishing point. Narrow horizontal composition suggests the aspect ratio of the anamorphic film format. (Photos courtesy of the Metropolitan Museum of Art.)**

INDUSTRY

Free European Tours Offered In Travel Information Survey Program

Many AMERICAN CINEMATOGRAPHER readers travel extensively, either for pleasure or in the course of professional duties. Because we feel that they may wish to avail themselves of the opportunity offered in the following press bulletin, we are publishing it exactly as it was received from ROME:

ACCOMPLISHMENT OF 5000 CRUISES BY AIR AND LAND IN EUROPE "21 DAYS WHERE YOU WANT" FOR TWO PERSONS OFFERED GRATIS BY THE "SOCIETE' POUR L'ACCROISSEMENT DU TOURISME INTERNATIONAL" WITH STARTS FROM 20 U.S.A. TOWNS.

In cooperation with hotels and tourist organisations of eight European countries, the SATI has disposed an enquiry on preferences of American tourists in spending their holidays in Europe. There were scheduled 5000 cruises by air and land in Europe for two persons, for the duration of 21 days, as better specified below.

The names of the persons entitled to these cruises will be regularly drawn out among all people who will send a simple card to the **SATI, Enquiries Service U.S.A. Via Pandolfo 1°, n. 8 - 00162 ROMA,** indicating their names, surnames, addresses and professions; they should also declare whether they visited already Europe or not and point out the periods in which they would like to make their travels, specifying the reasons of the periods chosen.

The people whose names will be drawn out will be advised immediately by registered letter, by which they will get also all informations useful to program their travels.

The drawings will take place on the 1st and the 15th December 1968 and January, February, March and April 1969.

The travellers will be given: 1) N. 1 return ticket by air U.S.A.—Lisboa (Portugal), tourist class; 2) n. 1 bill for utilizing a FIAT 500 L mod. 1969 motor-car for 20 days in Europe; 3) n. 1 card for 20 free of charge overnight stays in hotels adherent to the SATI organisation (in Portugal, Spain, Italy, Switzerland, W. Germany, Holland, Belgium and France) for the periods chosen.

Each traveller will have to bind him-

ACTIVITIES

self to fulfil a form by answering questions regarding the tourist attractions in Europe, in the sphere of this enterprise, when the travel will be accomplished.

We shall do our best to favour the travellers with alloting the periods in accordance with their choosings.

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USC Honorary Cinema Fraternity To Hold Annual Awards Banquet

Delta Kappa Alpha, national honorary cinema fraternity, will hold its 31st annual awards banquet in the Foyer of Town and Gown at the University of Southern California on February 9 at 7:30 p.m., it is announced by Dr. Bernard Kantor, associate dean of the USC School of Performing Arts and chairman of its cinema division.

The USC chapter honored Jimmy Stewart, Mervyn LeRoy and Mae West last year, and in the past has conferred membership upon such leaders of the motion picture industry as Robert Wise, George Cukor, Jack L. Warner, Lucille Ball, Rosalind Russell, William Wyler, Irene Dunne, Jack Oakie, Frank Capra, Gregory Peck and many others.

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U.F.A./McGraw-Hill Scholarships Offered

The University Film Association announces opening of the third annual U.F.A./McGraw-Hill scholarship competition for motion picture students. Two awards—one for $1,000 and the second for $500—will be sponsored by the McGraw-Hill Book Company and will be administered by a committee of the U.F.A.

The scholarships are intended to acknowledge, reward and encourage excellence in creative film making, scholarly research and critical writing. Applications are invited from students who expect to make careers either as film makers or as film teachers and scholars.

Applicants must be currently enrolled as graduate students in university departments affiliated with the University Film Association and must be working towards a graduate degree either in film or in a closely related area with a specialization in film.

Application blanks and information about the scholarships can be secured from the University Film Association, Division of TV-Radio-Film, University of Iowa, Iowa City, Iowa 52240. Deadline for applications is May 15. ■

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rocking right on the horizon, through all of this orange sunset feeling. Then we dissolve through to a kind of Oedipus shot of my mother.

In order to get the chair to rock just right, and on cue, we rigged a cord from the chair, through a series of pulleys, to the camera position. Simply by pulling on the cord, we could get the chair to rock.

Following this there was another scene that really took a bit of doing. In the script the description read, simply enough: "DISSOLVE TO the face of a beautiful girl who runs nude through the ice and entices him to make love."

First of all, the young lady who was to do the nude scene (Elizabeth Knowles) had cut her hair very short, which meant that we had to put a fall on her, as well as complete body make-up. This called for getting up at about 2:30 or 3:00 in the morning in order to get all of that done before driving to the location.

What I had originally wanted was back-light on snow, so that I could get all those nice little sparkles. We drove all the way up the Angeles Crest Highway, after calling the weather department and praying, "Please snow, please snow!" Nothing happened.

So we drove clear back up into the Sierras and found snow all right—but no privacy for the young lady who had to run around in the nude. We finally did find some privacy, but the snow was so deep that I couldn't run in it with the hand-held, high-speed Arriflex camera, plus all those batteries and stuff that I had strapped onto me, which totalled close to 100 pounds—and, of course, I had to run after her in the scene. So we scrapped that idea after making two trips up there.

Finally they said it was going to snow in the Tehachapis. So off we went bright and early. And since it isn't so far away, we got up at about 2:30 and I put the fall on her here in town and did all the body make-up and so on and then bundled her up in something so she wouldn't be too cold, but at the same time something that wouldn't smear up all the make-up. We drove to the Tehachapis all the way to the top of Mount Pinas, and nothing . . . a little bit of snow. Coming back down we saw this area that was about 1/4 of a mile away. This must have been about 8:30 in the morning, something like that, and I said to her, "That looks like ice. You wait here. I'm going to find out." So I ran

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matte position at the right or left and pan it toward the center—or vice versa. This was in order to avoid having to go to a traveling matte later. It was especially valuable when we would start with a full frame and then narrow down to a fragment of the scene in a small panel, or the other way around.

For example, in a chase sequence we started on a full-frame shot of the strangler running toward the camera with a man pursuing him in the background. The idea was to zoom in on the man pursuing, and then have the matte focus in on a closeup of him as he screams. It was a very tough job to zoom with the matte in the camera and make sure that he would end up in precisely the right spot in the grid—so, in this case, we used a grid made of transparent film and marked on that film the area where he had to end up. It took several takes and great coordination for the operator to end up with him precisely centered, but we did it over until it was perfect, and all on one continuous piece of film.

One of the things I learned through testing was that it was very easy to lose the matte line, especially in low-key scenes, if I did not light so that all four sides of the matte had some highlight or information to preserve the shape of the panel. Since the matte was black, the edges would blend into any truly dark area in the scene and this really created a problem, especially in the night scenes where it was so dark that there just wasn't any separation between the edges of the matte and the darkest areas of the scene.

For a while, we even thought of using a white matte, but the white matte overpowered the scenes. I just had to find ways to light the edges so that you could determine where the matte stopped and the scene began.

In the full-frame scene that was on the screen just before transition to a multiple-image sequence, I would usually set a composition that had a huge, bold framing piece in the foreground, with generally no light on it at all. This framing piece would be positioned to match precisely so that it would become a panel or part of one as we went into the multi-image montage.

In the exteriors, for example, we used the bold trunk of a tree in the foreground, the side of a car, a fire hydrant, a mailbox—whatever form we could find to fill one side of the frame,

outlining an area that would eventually become a panel.

We used two cameras in shooting most of the location scenes, and on some, as many as five.

Sometimes we would use the linear elements of a full-frame scene as a compositional base for panels coming up in the next scene. For example, there's one sequence that takes place in a lonely Boston park. Positioned behind a fence, the camera picks up a woman walking along. Then we see a man walking. Suspicious and fearful, she scurries along the minute she passes him. The camera dollies in closer and closer until it arrives so near to the fence that there are five bars filling the frame. These bars become frames for panels showing activity going on in different parts of the city.

This took a bit of care in lighting and matching, for here you have five scenes that have to go into one frame of film side by side eventually. Color values and density values become important, because if one of the five scenes is lighted more brightly than the others, or has more vivid color, your eye will go to that panel and ignore the others. We went by the rule that color values were important throughout the whole show. ■

MARION ROTHMAN
Editor

"THE BOSTON STRANGLER" is my first feature as an Editor, but I had worked with Richard Fleischer as an Assistant Editor on "FANTASTIC VOYAGE" and "DOCTOR DOLITTLE."

He asked me to cut this film and I started working on it in the very early stages of planning. I was relatively new to editing, but I have a feeling he felt that this would be an advantage, because I did not have fixed ideas and rules limiting me. I have talked to some highly experienced editors who told me, quite frankly, that they would have been floored by the challenge. I probably didn't know enough to be floored by it—which is great, because I wasn't inclined to say, "You can't do that."

The truth is that we can do many things that may not have been done before. With the multiple-image technique, for example, I think that, to a certain extent, you have to set your own rules and conventions.

The pre-planning done by Dick Fleischer, Fred Harpman and Dick Kline was a great advantage to me in the editing phase, because they shot everything to the proper size for the final panel composites. The only problem

was the sideways or up and down shifting within the frame.

They would put these dailies through their optical printer according to the sequence plan and give me a very quick black and white composite with the scenes printed in their respective panels.

In effect, they would go through the same procedure that would be necessary to produce the final composite, except that they would not have to go to all the trouble of making separation masters or inter-positives.

In my optical order I would have indicated which particular shot would go into which panel, the size and shape of the matte to be used, the scene's duration on the screen, how it came in and went out, whether it was a direct cut from black or a dissolve or a fade. The black and white composite which they gave me back would tell me if my timing was correct, whether certain scenes looked well together and whether I would have to make any adjustments. Using the dailies in this way made it possible to get these answers practically overnight, instead of having to wait several weeks for a finished color composite.

The main problem of editing multiple-image sequences is the fact that, as

The sketches which were made ahead of time made it possible to eliminate almost all of the dialogue an editor would ordinarily have to engage in with the Photo Effects department, because they had the same sketches that I had. I did have to give certain instructions, of course, but normally they could tell from the sketches just how each scene should be positioned within the frame.

To me the biggest problem in cutting multiple-image footage has to do with something you can't very well pre-plan. It is not the selection of the significant action, but how to get from one group of panels to the next group of panels. You cannot simply make direct cuts. You have to achieve a *flow* of smooth panel transitions. You must preserve a pleasing design, while considering where the eye is going to go within the frame. Laying out the opticals is very much like working a puzzle. You have to enjoy puzzles in order to enjoy working on this kind of film—and luckily I do.

We hit upon an idea that speeded the editing up considerably. It involved using the color daily as a sort of negative to make a trial composite. For example, I would plan out a multiple-image sequence that had several panels working within it. Then I would write out the optical order and give it to the Photo Effects department along with the separate scenes in color daily form.

far as I know, there has never been developed any suitable apparatus for handling several strips of film at once. You have all these strips of film and a Moviola through which you can run only one strip at a time. You also have a synchronizer that you are lucky if you can get more than four strips into.

The truth is that you just can't sit there at the Moviola and imagine twelve, or even seven, scenes on the screen together. You do your best to visualize where the significant action in each panel is and how it will relate to the others. You try to retain it all in your mind, but you're never sure whether it will work until you see it in composite form.

I think that until someone dreams up some sort of more elaborate viewing apparatus, this is the way it will have to work. ■

L.B. ABBOTT
Special Photographic Effects

Our department became involved with "THE BOSTON STRANGLER" at the onset of the pre-planning stage. The multiple-image approach was a product of Richard Fleischer's thinking and it was backed up with an excellent story-board by Fred Harpman, who is a very talented designer. He and the director worked things out so well in advance that we were able to go "by the numbers" in doing our part of it. We manufactured a grid they could put into the viewing tube of the camera in order to line up the shots directly with the panels on the storyboard.

The picture was shot in Panavision which, of course, is an anamorphic system, but for technical reasons many of the multiple-image scenes were shot with spherical lenses. This was all right, because we knew about it in advance and had planned for it. We were able to optically squeeze these scenes and set them in nicely.

We used a double-head optical printer for all of the multiple-image work, which was a great help. It enabled us to carry a matte in the prime head and the subject matter film strip in the aerial image head. This head can zoom and relocate an image in the frame and do everything a normal single-head optical printer can do. You design your mattes to open or close or do whatever you want them to do. This leaves you free to locate the subject matter you are trying to put into a particular panel, in any dimension you may want it.

We did all of our duping with separa-

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BOOK REVIEW

THE PARADE'S GONE BY. By Kevin Brownlow. New York: Alfred A. Knopf. 1968. Illustrated. 608 pages. $13.95.

Here is a vivid, nostalgic story of the silent film era told primarily by means of interviews with many of the surviving Hollywood stars, directors, cameramen and other technicians and craftsmen who helped create this golden period of picture making. It is a big, handsome book with a veritable treasury of 261 stills, many never before published. Not only is this an entertaining book to read and to look at, but it is sure to become a valuable reference work for anyone interested in motion pictures.

Kevin Brownlow is a young British film-maker who has long been fascinated by the early history of the movies and the people who made them. Fortunately, he was able to personally interview many movie greats. Thus, we read first-hand accounts of what it was like during those halycon days when an art was in the making. They all speak in this book—directors like Allan Dwan, William Wellman, Henry King; stars like Mary Pickford, Buster Keaton, Harold Lloyd, Gloria Swanson; cameramen like Charles Rosher; editors like William Hornbeck and Margaret Booth; art directors, writers, stunt men and even the "back-lot" workers without whom no film could ever be made.

The author has a real admiration and affection for the cameraman, singled out in a splendidly written chapter. "The value of the cameraman's contribution to a motion picture cannot be overestimated," he writes. "Not that there is much danger. Reviewers still talk in terms of a director's 'fine, atmospheric lighting' or his 'brilliant handling of the camera.' Hardly ever does the cameraman rate a mention. This misconception has led to the assumption that lighting and composition are elements controlled by the director, with the cameraman merely carrying out instructions. Only a handful of directors—Maurice Tourneur, Josef von Sternberg, Clarence Brown, Rex Ingram—have ever influenced the photography of their pictures. In each case they worked with a cameraman who was little short of a genius. These cameramen—John van der Broek, Lee Garmes, Bert Glennon, Hal Rosson, Jackson Rose, Arthur Miller, Milton Moore, Wil-

liam Daniels, John Seitz—respected their directors, understood what they were aiming for, and achieved the finest possible results."

Charles Rosher, ASC, one of the all-time greats in cinematography, is the subject of an entire chapter. And it is a fascinating one that recounts his rather breath-taking adventures filming Mexican bandit Pancho Villa's 1913 exploits to his wonderfully creative years with Mary Pickford—years that produced some of the screen's finest photography.

The author decries today's practice of often judging silent pictures by some of the revivals seen on television; bad prints shown at the wrong speed that distort their beauty. "At their best," he writes, "the photography glistened and gleamed, lights and gauzes fused with magical effect until the art of lighting reached its zenith. It was not merely the stories or the stars that gave magic to the silent screen. It was the patience, hard work, tenacity, and skill of the silent-film technician—the man who, in less than ten years, had developed a craft and perfected an art." ■

ROBERT V. KERNS

BEHIND THE CAMERAS

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METRO-GOLDWYN-MAYER

ALFIO CONTINI: "Zabriskie Point"; Carlo Ponti Prod., Color-Panavision

MARIO CAPRIOTTI: "Samurai on a Horse"; Allen Klein Prod., shooting in Japan

MPO VIDEOTRONICS, INC

JOE COLEMAN: Commercials

PARAMOUNT

MICHAEL NEBBIA, FRED HOFFMAN: "Alice's Restaurant"; Florin Prod., shooting in Lenox, Mass.

CLAUDE RENOIR: "The Adventurers"; Eastmancolor & Panavision, a Joseph E. Levine Presentation, shooting in Italy, NY & Colombia

DAVID WATKINS, "Catch 22", Eastmancolor-Panavision, shooting in Guaymus

GIULO ALBNICO: "H2S"; shooting in French Alps

JOHN FINGER: "Gomer Pyle" (tv)

SID HICKOX, ASC: "Mayberry R. F. D." (tv)

HARNESS SMITH, ASC: TED VOGLANDER, ASC: "Bonanza" (tv)

MAURY GERTSMAN, ASC: "Here's Lucy" (tv)

STUDIO CENTER

WILL CLINE, ASC: CHARLES BURKE, ASC: "Big Valley" (tv)

MEREDITH NICHOLSON, ASC: "Get Smart" (tv)

MONROE ASKINS, ASC: "Gunsmoke" (tv)

FRANK PHILLIPS, ASC: "Hawaii Five-O" (tv)

PAUL VOGEL, ASC: "My Three Sons" (tv)

TWENTIETH-CENTURY FOX

CHARLES WHEELER, ASC: TAKAO SALTO: "Tora, Tora, Tora", Fox-Panavision-color, shooting in Japan, Hawaii, DC

LEON SHAMROY, ASC: "Justine"; A Pandro Berman Prod., Panavision, shooting in Tunisia

GAYNE RESCHER, ASC: "John & Mary", widescreen-color, shooting in Biograph Studios, Bronx.

HENRY STRADLING, ASC: "On a Clear Day You Can See Forever", Panavision

DAKE DEVERNABM ASC: "The Ghost and Mrs. Muir" (tv)

LLOYD AHERN, ASC: "Julia" (tv)

RICHARD KELLEY, ASC: "Felony Squad" (tv)

FREDERICK GATELY, ASC: "Lancer" (tv)

JACK SWAIN, ASC: "Daniel Boone" (tv)

HENRI DECAE: "The Only Game in Town", George Stevens-Fred Kohlmer Prod. shooting in Paris

UNITED ARTISTS

BURNETT GUFFEY, ASC: "The One With The Fuzz", color, Mirisch-DFI-TFT Prod.

WITOLD SOBEOCINSKI: "Adventures of Gerard"; Sir Nigel Films-A.G. Zug Prod., shooting in Rome

MICHAEL REE: "On Her Majesty's Secret Service"; Technicolor-Panavision, shooting in England

GIUSEPPE ROSSOLINI d'ERAMO OPPO: "Quemada", P.E.A. Prod.

JACK HILLIARD, BSC: "Topaz"; Widescreen-color

ROBERT MORENO: "Skullduggary", Technicolor-Panavision, shooting in Jamaica

STANLEY POLITO: "Colossus"; Technicolor-Panavision

ELLIS THACKERY, ASC: "Ironsides" (tv)

WM. MARGULIES, ASC, GENE POLITO, RAY FLIN: "It Takes A Thief" (tv)

BENJAMIN H. KLINE; ASC: "Blondie" (tv)

WARNER BROS.–7 ARTS

ROBERT SURTEES, ASC: "The Arrangement"; Athena Ent. Prod., Technicolor-Panavision, shooting in New York

MARGARITA PILIKHINA: "Tschaikowsky"; Soviet Ministry of Cinematography, shooting in Moscow.

ARTHUR GRANT: "Frankenstein Must Be Destroyed", Wide-Screen, shooting in London

WM. SPENCER, ASC: "F.B.I." (tv) ■

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tions, which produces a much better quality of dupe. If, for example, six panels were to appear in the frame at the same time, we would Cinex for color and density each of the six separate scenes, lay them out on a timing board and then go up and down the Cinex strips until we found compatible matches. Then a technician would sit at the optical printer for four hours and put it all together.

There is one multiple-image sequence in the picture which involves several TV screens, some in black and white and others in color. We set up a closed-circuit television chain and photographed the material right off of it. This closed-circuit system was designed to run at 24 frames per second, instead of the normal 30, so that the phasing problem was eliminated.

One thing that helped very much, especially since editing of the multiple-image sequences was such a problem, was the practice of making what we called "quick and dirty" black and white assemblages of the panels into composites, using the color dailies. We'd throw these together very quickly and everyone would look at them and say, "Let's make this a one-foot dissolve instead of two," or "Let's slip this action eight frames forward, or two feet backward."

This was a really practical way of checking simply for the mechanics of the sequence. We didn't have to get involved with color or balance or anything like that.

The use of the multiple panels, especially in this film, is very effective. It makes possible the progression of several story lines simultaneously and you can tell so much story in such a short space of time. The technique has its own special sense of excitement which seems to exhilarate the audience. What amazes me is the ability of the viewer to scan so many images and absorb so much. I wouldn't have believed it if I hadn't experienced it myself.

I really believe that the success of this multiple-image technique depends mainly upon the designer and the director. Fleischer is marvelous at this sort of thing. He really is a great pre-planner. Once he gets it set he doesn't change his mind. He goes that route. Which means that when we get all the parts, they actually fit together. With such careful preparation, the mechanics at my end—though tedious—become relatively simple. ■

FILMING "THE BET"

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the 1/4 of a mile down there and a 1/4 of a mile back and said, "Come on, come on! It's beautiful!" I jumped into all this equipment, and we ran down there. It had been two weeks since she had rehearsed the shot, and I was out of breath by the time we got there, of course, running with all this camera equipment. There were just the two of us. We got down there and I took about three deep breaths and said, "It's melting! It's melting! It's melting! The light is just right. Strip, baby!" I climbed into all this camera equipment and this poor young lady went running in the nude in about a 33° temperature and we got the thing in one take.

This struck me later as a bit phenomenal because, since this was a dream, or fantasy, sequence, it was shot in slow-motion. When you're shooting at 80 frames the action has to be fast. Otherwise it will drag and the audience will get bored with the whole thing. To get it just right usually calls for several rehearsals and many takes. However, we got it right in the first take. I made another for protection, but didn't bother to have it processed. We drove home very relieved that we had gotten the shot at long last.

When I first decided to do this particular film, I knew I was going to have to deal with what was going on inside the man's mind, and I decided that the best way to do that would be to use color as a tool instead of as a medium. So when we see the character on camera in the room, the scenes are in black and white, but the minute we go into what is in his mind, the scenes dissolve into color. This is the reason why the dream sequences are in color, as well as the sequences that occur when he is under self-induced hypnosis.

Years ago, when I first started experimenting with self-hypnosis, I found that the easiest way to go into the hypnotic state—for me, anyway—was to concentrate very, very hard on a certain color, and that color was always blue—a very rich cobalt blue. It would start in my mind's eye as a tiny little spot and it would get larger and larger and larger until, finally, my entire mind would be "a feeling of blue."

Well, I wanted to duplicate this effect in some way so that when the chap was in the process of hypnotizing himself the sudience would get kind of the same feeling. What I wanted was to see, first, a close-up of his face. The guy would close his eyes and begin to

concentrate and we would hear his thought process, verbalized on the sound track. In this way the audience also would be able to view the blue that would completely overwhelm his mind. So we went to an optical, which starts with a little blue spot in the corner of the eye, and it finally grows and grows until it does fill the entire screen. In order to achieve that I, first of all, had to find something that would give me an interesting blue and have some movement to it, something that wouldn't just be a gel. So I went around for a week staring through every blue object I could find. One day, in the drug store, I picked up a plastic tube of blue shampoo and held it up to my eye, tipping it so that the air bubble would float gently up to the top.

I said to myself: "This is *it*, man. This is going to work!" So I took a pair of plastic crayon boxes and welded them together with plastic cement. I inserted a tube in the bottom and bored an air hole in the top and filled the thing up with this blue shampoo. Then I mounted it behind a sheet of seamless paper into which I had cut a hole just big enough so that you could see the container. I put a 650-watt quartz light behind it that had a blue filter over it.

I mounted the Eclair camera with a motorized 25mm-to-250mm Angenieux zoom lens and a plus-2 diopter. I needed the diopter in order to be able to fill the entire frame. To get that tiny little spot of blue to grow, I cut two half-circles of black paper, and I had poor little Al Husky—bless his heart—standing behind the seamless with these half circles, slowly spreading them apart and moving them around so that the circle got larger and larger. Just before it got to the point where he was actually pulling those half-circles out from behind the hole in the seamless, I started the zoom motor on the Angenieux and we zoomed in all the way.

As we were zooming in, Al not only moved the two pieces of paper, but he also kept blowing air through the piece of tubing to make bubbles come up through the shampoo. It worked pretty well.

Some of the other scenes shot in color were actually filmed in the ice field where I had made the nude scenes with Elizabeth. I shot out-of-focus scenes of ice droplets falling off of tree branches, and got a beautiful effect by catching the light at just the right angle where it would actually refract, and I would get different colors of the spectrum off of these little droplets. But all of this was terribly time-consuming.

The final shot in the picture, the

sunrise scene in which the protagonist emerges from his self-imposed imprisonment, was actually the last shot that was filmed. It took me two weeks of driving around in order to find a location someplace that would look like the exterior of a cabin out in the middle of nowhere, a place that would not be cluttered up with telephone lines and moving automobiles and all that—but also a place so located that the sun would be rising directly into the lens as the door opened, in order that I might get the cloud effects I was after.

I finally found just the right location in Saugus, about 60 miles from Hollywood, and during the next month and a half, whenever the weather looked like it was going to be right, I'd get up before dawn and drive all the way to Saugus. I'd set the camera up and watch the sun begin to rise, and watch the clouds, and stand there and wish I could blow them in the right direction. Then I'd shake my head, pack up the camera, turn around and go home. I made 18 trips up there to Saugus before I finally got the scene that I wanted.

When the photography had been completed, my living room, which had been our studio, now became our cutting room—complete with Moviola, rewinds and all that. Then Michael Moore, who did the sound with me, started coming over as often as possible and he would sit in the bedroom with the Nagra recorder on the desk and say to me, "Okay now, I've got to have water pouring—three gurgles in about 4/10th's of a second and then four drops after that."

Anyone paying close attention to the effects track on the picture will find that there isn't a single place in there where anything occurs that there is not an appropriate sound effect. It is all covered even to the point where, when I throw a pencil down on a table, the pencil hits point first and then eraser end after that. That was all laid in wild. All the dialogue was wild too, because there was no way in the world that I would have in that small room, on a fairly busy street, been able to record sound. So all the dialogue was laid in wild, and it went on, and on, and on, into about seven tracks, as I recall.

Looking back at the filming experience now, I would say that the main technical problem was that of having to shoot in such close quarters, usually backed clear up against the wall. For one shot I ended up by taking out a window so that we could mount the camera outside, and then had to build a black box around it to keep out the daylight.

We used some very wide angle lenses, of course—the 9.8mm Kinoptic, rented from Mark Armistead, plus an Angenieux 18.5mm lens which I own. The Kinoptic took in practically the entire room and we had a devil of a time trying to figure out where we were going to put the lights in order to keep the cables out of the shot. Had it not been for quartz lights—if we were still messing around with ancient, cumbersome lighting equipment—we never would have made it. We took regular ColorTran stands and, using grip heads, ran them across like a grid from supports on the ceiling. We hung some of our lamps from that as well as from the bracket I had rigged for the swinging light effect.

The extreme wide-angle lenses produced considerable peripheral distortion, which was fine. In many instances we went out of our way to get distortion, because the film itself is based on distortion: visual distortion, audio distortion, psychological distortion. Sound distortion was particularly emphasized in the self-hypnosis sequence where you hear the chap reading aloud from a book and, superimposed over that, is his thought-voice with completely different timbre characteristics. When you hear these two voices simultaneously they are distorted and you can concentrate on one or the other, but you find your attention hopping back and forth between the two voices, understanding both of them and knowing what they are saying. Ryder Sound Services did a beautiful job of helping us get off-beat effects such as this.

When the film was completed, National General was kind enough to let me show it for a week at the Lido Theatre, along with "ELVIRA MADIGAN" in order to check audience reaction. They liked the film so much that they then booked it into the Fox Wilshire Theatre for five weeks, which was necessary in order that it might qualify for possible Academy nomination.

It has been shown at film festivals in Venice, Edinburgh, Tunis, Cork and Sydney—and has been given the CINE Golden Eagle Award. The film is being handled by the William Morris Agency, but except for one agreement with the Manson Distributing Corporation, no release has been set as yet.

I didn't make "THE BET" to sell, per se—I made it to sell *me*, so that I would be able to say: "Hey, look—I've learned my job." I hope that it has served that purpose. Now it's just a matter of seeing what happens in the future. ■

FILMING FOOTBALL

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when the cameraman thinks he can catch some special play. There is no set formula for shooting slow motion. It is left up to the discretion of the cameraman, but most cameramen know that the best slow motion action is the run. NFL-AFL Films makes extensive use of slow motion footage. This has been highly praised by sports fans who enjoy seeing a spectacular play slowed down.

Camera speed is extremely important and must be constantly checked. Both Leff and Weber frequently check the camera tachometer to make certain the camera is up to the required 48 fps.

Sideline action and half-time action, however, is shot at 24 fps.

The scoreboard is filmed at appropriate intervals. All injured players are photographed coming off the field.

Leff and Weber believe the toughest type of play to photograph is the passing game. In shooting this type of action, it is important for the cameramen to know the characteristics of the two teams. The low trajectory, fast pass is the hardest to follow. Experience by NFL-AFL crews has shown that this type of coverage is best done by starting the play with a medium field size and then moving in with a zoom after the pass has been completed, with the ball kept in the top rear of the frame. In that way the cameraman is able to pick up the receiver before the ball gets there. The ideal way, of course, would be to pan downfield and have the camera on the receiver *before* the ball arrives. Not too many cameramen have mastered this technique which calls for a sort of "sixth sense".

"One of the aims of a good football cameraman is to never miss a play," points out Leff. "By that I mean not get

'faked out' by a quarterback and not lose direction of the ball on a pass or a kick. As an example I may be shooting a game that I may feel is an outstanding one photographically when all of a sudden a quarterback going back to pass might make several arm fakes before passing and I lose the ball after he lets it go. When this happens I get pretty angry at myself. A good cameraman should be able to stay with it because he might miss a winning touchdown. Generally speaking, NFL-AFL teams pass fifty percent of the time so the cameraman has got to understand all of the tricks of holding the camera on the ball."

"Another problem that we must constantly cope with is the shadow that falls across the field in the late afternoon as the sun goes down," says Leff. "This causes an exposure difference of from two to three stops because the shadow usually runs diagonally across the field. A play might start in sunlight, go into the shadowed area and move back into sunlight before it is over. When this happens, the exposure must be adjusted. In an ideal case, it is done by the assistant cameraman. But sometimes I am working alone and have to do it myself. It is something that you have to practice to be able to do with any degree of accuracy."

Image sharpness in filming football is important; hence, the desirability of using a reflex camera like the Arriflex.

Concentration and strict attention to the job at hand are assets the football cameraman must have. It is important to constantly watch footage. Nothing is more exasperating than to be caught short on a magazine load. "You never take the outcome of a pro-football game for granted because the unexpected usually happens," says Leff.

Weber handles the ground action working close to the scrimmage line to get close-ups. It is essential to use a good lens such as the Angenieux 12-120 varifocal. This lens gives the cameraman the scope he needs.

"I have to second-guess the quarterback—to figure out what he is going to do," says Weber. "I must think ahead and try to position myself so I can get the best action for that particular play.

"In comparison with the top camera, whose job is to record the whole game, my assignment is to get the dynamic scenes—the close-ups—to literally place the viewer into the center of the game," adds Weber.

His job also includes filming side-line action—bench action—and spectator reaction. But here the emphasis is on the dramatic or the unusual. The human interest angle is most important in

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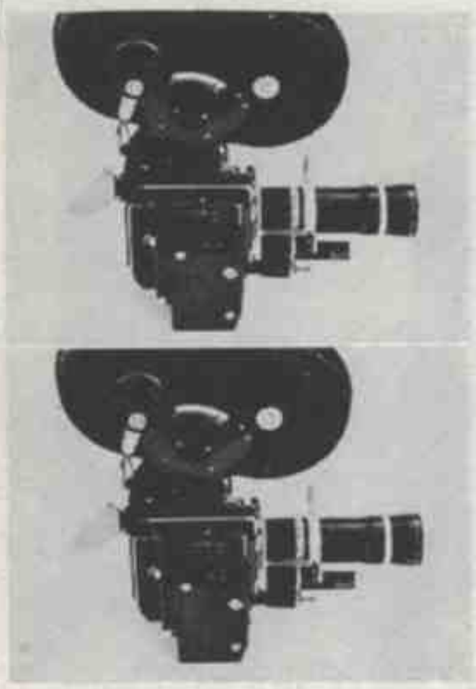

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Bolex H-16 Rex 5, The Professional.

catching sideline action and the "mole" must be constantly alert for this sort of shot. He must avoid the commonplace—the bland. The idea is to capture the atmosphere and excitement that is generated in a crowded stadium where tension is often at a fever pitch.

"Moles" generally work as close to the line of scrimmage as possible. They have to favor the offensive team but never get into the position where they must shoot over the defensive line and miss the quarterback.

End-zone shots are always great favorites with editors at NFL-AFL Films. This calls for mobility on the part of the ground cameraman. He must get into position quickly, frame his shot and shoot. There is not much time. End-zone shots give an unusual head-on angle which is most effective. They are made when the offensive team is inside the defensive team's twenty-yard line. The quarterback must be in the shot even if the cameraman has to cheat a little bit to frame him.

Filming cut-away and reaction shots is a primary responsibility of ground cameramen like Weber. Sometimes he is called upon to film pre-game material such as crowds entering the stadium. If there is an unusual situation such as extreme heat, extreme cold, heavy rain or snow, these elements are filmed. Off-stage action, so to speak, gives NFL-AFL film editors the type of material they need to intercut with the primary footage.

"I look for human interest shots and try to avoid the commonplace," says Weber. "Sometimes I will concentrate on shooting cut-aways and reaction shots. A case in point occurred during the Kansas City Chiefs-Oakland Raiders game. Kansas City went into the game the favorite but by the end of the third quarter it was pretty obvious they were being beaten, so I stopped shooting the game and crossed to the Kansas City bench to record their woes —and there were lots of long faces there! The anguish of the players, their coaches, and their supporters is fair game for any cameramen. A player slumped in dejection on the bench speaks eloquently. In contrast, I also filmed action on the Oakland side. Here it was all joy and jubilation. I try, as well, to look for the unusual amongst the spectators. It was raining and quite naturally the spectators were using a variety of ways to cover themselves. I noticed one attractive girl with an elaborate coiffure. She had a big piece of plastic—easily large enough to cover her body—but she was carefully shielding her hair-do—and getting soaked all over

OBITUARY

Walter Beyer

It was with profound sorrow that the membership of the American Society of Cinematographers learned of the passing of its beloved Associate Member, Walter Beyer, on January 12.

Born in Leipzig, Germany on November 29, 1913, Mr. Beyer came to the United States in 1951 and became a naturalized citizen in 1957.

He was employed initially as a laboratory engineer by the Bell and Howell Camera Corporation and joined Paramount Pictures as a special projects engineer in 1952. In 1955 he resigned from Paramount to join the staff of the Motion Picture Research Council, where he remained until that organization was disbanded in 1960. He worked briefly for Revue Studios and was then appointed head of research engineering at Universal Pictures Company, Inc., the position he held at the time of his death.

Survived by his widow and daughter, Walter Beyer will be sadly missed by his many friends in the motion picture industry. ■

in the process. So I photographed her. Candid shots like these are the ones I try to get."

The football cameraman's job is important when the game is over. He must collect his equipment and secure the programs and shot sheets needed by the film editors to cut the film into the weekly TV shows. Then he has to get his film to the airport and speed it on its way to the laboratory. According to Gene Leff, the editorial staff at NFL-AFL Films is a quick study in efficiency and speed. "The editorial staff has to work very quickly to get the material ready for the weekly shows, consequently they work directly with original material. Three Steenbeck editing machines are used in a dust-free, air-conditioned room. These viewing machines, which are European counterparts of our Moviola, seem to be ideal for the type of editing required."

Earlier in this article, we mentioned that each season NFL-AFL Films does a special program on some particular aspect of professional football. Last season Ed Sabol brought a camera and sound crew to the San Diego area and filmed material for a projected show that will be aired in the Fall. His subject was Sid Gillman, head coach and general manager of the San Diego Chargers. The success of the special he had previously produced and directed on Vince Lombardi was the yardstick Sabol used in filming material on Gillman.

Sabol uses no set script in doing these shows. The style is strictly *cinema verite*—nothing is staged. The camera records the events as they take place. Gillman was photographed at work and play in the four days that preceded last season's crushing defeat by the New York Jets. While Gillman's team was being beaten by the Jets, Sabol's camera and sound crew centered on the sideline action around the Chargers' head coach. It was a bitter day for Gillman but there was drama, tension and excitement, and that is the stuff good films are made of. All of this was captured on film by Sabol's roving camera crew that searched and probed out the moments of drama.

Doing a show like this one calls for complete camera and sound mobility.

Gillman was literally "wired for sound." A small Sennheiser wireless type microphone was hung around his neck and concealed under his shirt. The signals were fed into a Sennheiser receiver and, in turn, were recorded by a Nagra III recorder. A cameraman and a soundman followed his every move and utterance.

Following an energetic, dynamic per-

sonality like Sid Gillman about for five days can be vigorous. It is even tougher when you are loaded down with an Eclair NPR camera and Nagra/Sennheiser sound gear. But that is the job that Sabol assigned Cinematographer Morris Kellman and Soundman Jack Newman during the five days they filmed Gillman in action.

One of the tough things about this sort of work is for the cameraman to remain as unobtrusive as possible—to not "bug" the subject. Of course that is all but impossible to do with a professional motion picture camera—even a highly portable camera outfit like the Eclair NPR. But the cameraman and soundman can minimize their presence to a certain extent. They can sense when to stay back and when to move in. It is an intuition that a good cameraman needs in this type of filming. He has to get the shot, but, at the same time, avoid bothering his subject too much. If the subject gets annoyed, it shows in the film and the sense of reality is ruined.

Morris Kellman is the sort of cameraman who combines all of these qualities and watching him at work during the five days Gillman was his subject was rewarding. According to Sabol, the cameraman must be his own director. "You have to minimize your crew as much as possible. I tell my cameraman what I want and leave it up to him. The cameraman has got to have initiative. You can't have too many people moving around the camera in most of these situations we film. This is especially true during the game when we keep the crew down to just the cameraman and the soundman with the assistant moving in from time to time to check exposure and F/stops." In other words, the cameraman has to be discreet, but still he must get the shot.

The Eclair NPR camera, fitted with the Angenieux 12mm-120mm F/2.2 lens, was the workhorse of the assignment. Kellman used a carrying rig of his own design. It consisted of parts of a CECO brace and a Samcine support. The sync-pulse generator was tied into the Nagra recorder so that it acted like an umbilical cord in linking the cameraman to the soundman. Soundman Newman carried his Sennheiser receiver and Nagra III sound recorder over each shoulder. Although Gillman was wearing a wireless mike, other sounds were picked up with an Electro-Voice mike Newman carried in his hand. In addition to mixing the sound, Newman also covered his cameraman—protected him so to speak. He acted as his third eye. So it was interesting to watch the two men in action. Kellman concentrated on

the camera operation—fighting to seek out the best composition. Newman guided him "blind-man" style by tapping his shoulders, leading him about. The cameraman is literally blind to what is happening around him. His eye is glued to the viewfinder. From time to time the assistant cameraman moves in and quietly checks the exposure, changing the stop when necessary. This leaves the cinematographer free to concentrate on the subject. And that is the way it must be if he is to get a good picture! The whole operation is a study in teamwork.

"You have to be fast in shooting this type of material," says Kellman. "Nothing waits for you to get set. You either get the shot or it is gone. And that's it!"

Experience has shown that the cameraman must be completely mobile, so much of the filming is done by Kellman using the shoulder rig. The tripod is seldom used but when tripod usage is feasible Kellman mounts his Eclair on one. "You must keep up with your subject as he goes about his normal activities and it can't be done if you use a tripod," explains Kellman.

According to Sabol, this particular special will be either devoted exclusively to Sid Gillman or will be split with an NFL counterpart. "You have to play these things by ear," explains Sabol. He believes in shooting the film, doing the interviews and then building his material in the cutting room.

Sabol's approach to a show of this type is to analyze the man behind the players of professional football—to strive for the human angle. What sort of a person is the coach? What is he like away from the field? What are his hobbies? How does he spend his free time? And so on . . .

The camera crew followed Gillman about on the practice field and recorded his classroom sessions with the players studying the blackboard diagrams. Then the coach was filmed "off duty" at his pleasant home in the nearby spa of La Costa—listening to his fine collection of jazz records, playing tennis, picking at the piano and reminiscing about his career.

In filming the interiors, Kellman favors using the bounce light technique. In most cases he directs his lamps at the ceiling. This causes a soft even lighting pattern that seems to wrap around the subject. Lowel "quartz" lamps and sometimes Sylvania Pro Sun-Guns are used. The lamps are generally placed in the four corners of a room and pointed at walls and ceilings. With Ektachrome Type B film, Kellman can work at an exposure of between F/2.8 and F/4.

Some scenes were made in the San Diego stadium locker room. Here Kellman went the available light route. He switched to an Angenieux 9.5mm-90mm varifocal lens (to get the extra width and depth in such a confined area) and pushed the film two stops. Once again he worked at an exposure of between F/2.8 and F/4. Result: a natural effect in the lighting.

But the moment of high drama took place during the game between Gillman's Chargers and the New York Jets. The Chargers took a bruising 37-15 defeat in the process but there were many moments of tense drama that the camera was able to record. Some of Gillman's comments during his ordeal are—well, colorful, to say the least! And they will *probably* end up on the cutting room floor. Remember the wireless mike? Still, there will be a lot of what Gillman did say in the completed film.

In addition to Kellman and Newman, Sabol stationed a second crew across the field in the west end-zone. This crew was located on a specially erected parallel and included Cameraman Jack Loosli, Soundman Fred Magnusson and an assistant cameraman. Loosli's Arriflex Model M camera was equipped with a 600mm Omnitar telephoto lens. This was directed across the field at Gillman and covered the embattled coach in a head and shoulders shot as he directed his players from the sidelines. Magnusson's Nagra III was tuned to the wireless mike on Gillman. These signals were fed into a Sennheiser receiver attached to a small ladder behind the Charger bench. A cable connected the receiver to Magnusson's Nagra on the other side of the field.

While all this activity was being directed at Coach Gillman, his team was not being neglected. Both Leff and Weber were filming the game itself. As usual Weber was the "mole" and Leff was on the main camera.

Sabol sees a similarity between his two subjects—Gillman and Lombardi. "Both men come from the same mold," says Sabol. "Both are traditional coaches. Both coached at West Point. Both are totally involved in football with great dedication and complete knowledge of the game of football."

Perhaps Sabol, better than anyone else, sums up the hazards of filming professional football and its personalities: "We don't have the luxury of retakes in this business. We have to get it the first time or not at all. We only get one chance. No more. That's the only way we can get the intimacy our pictures must have." ■

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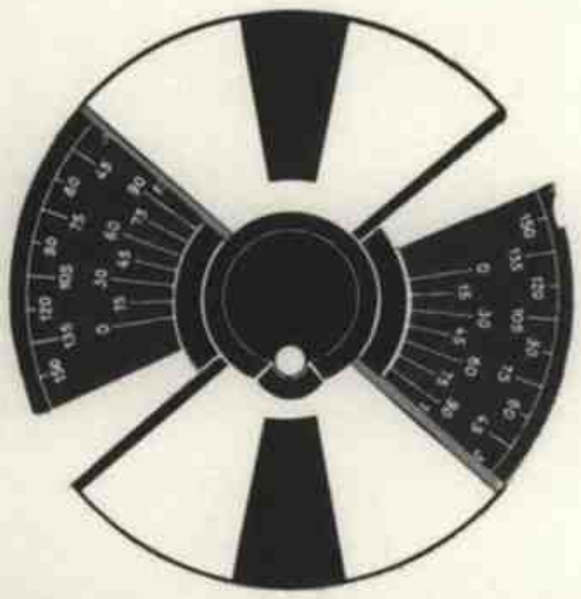

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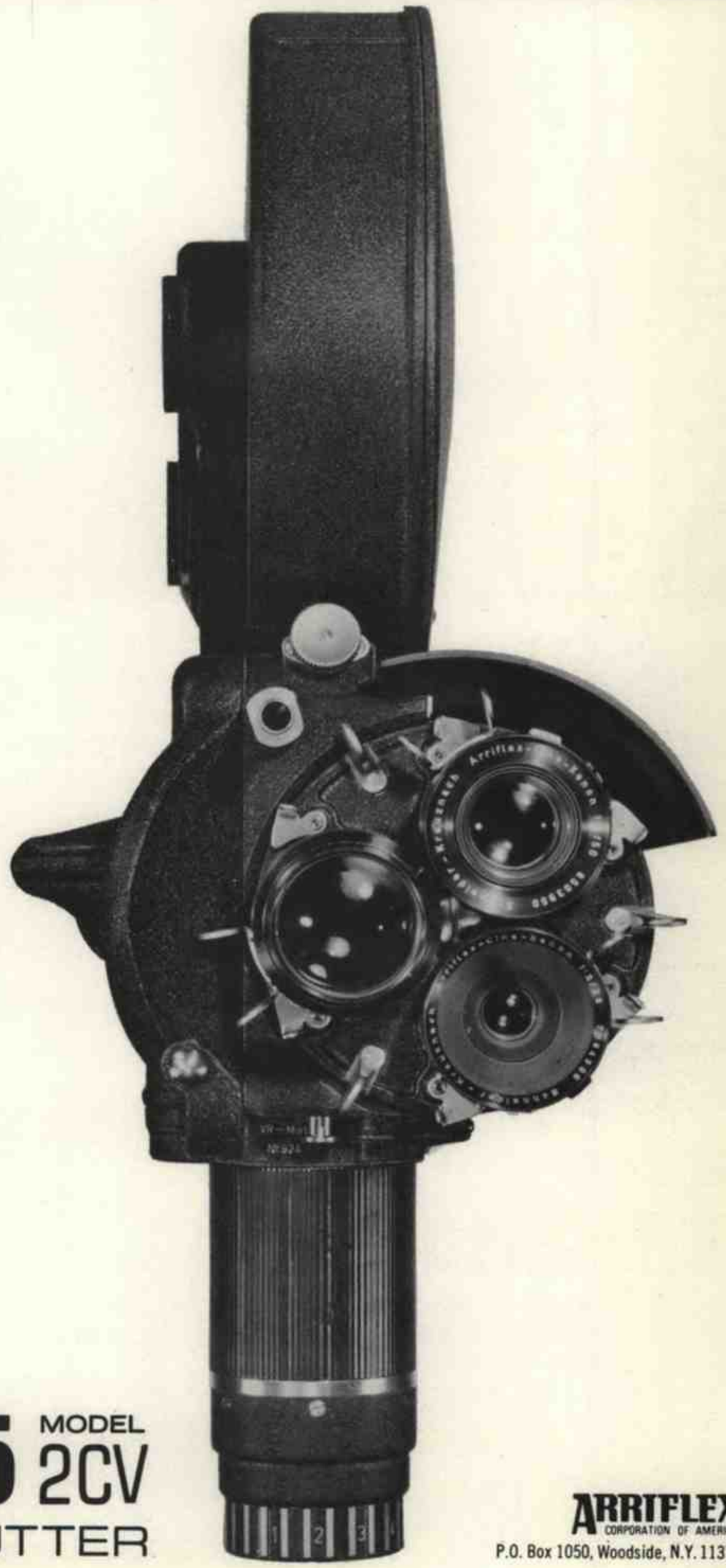

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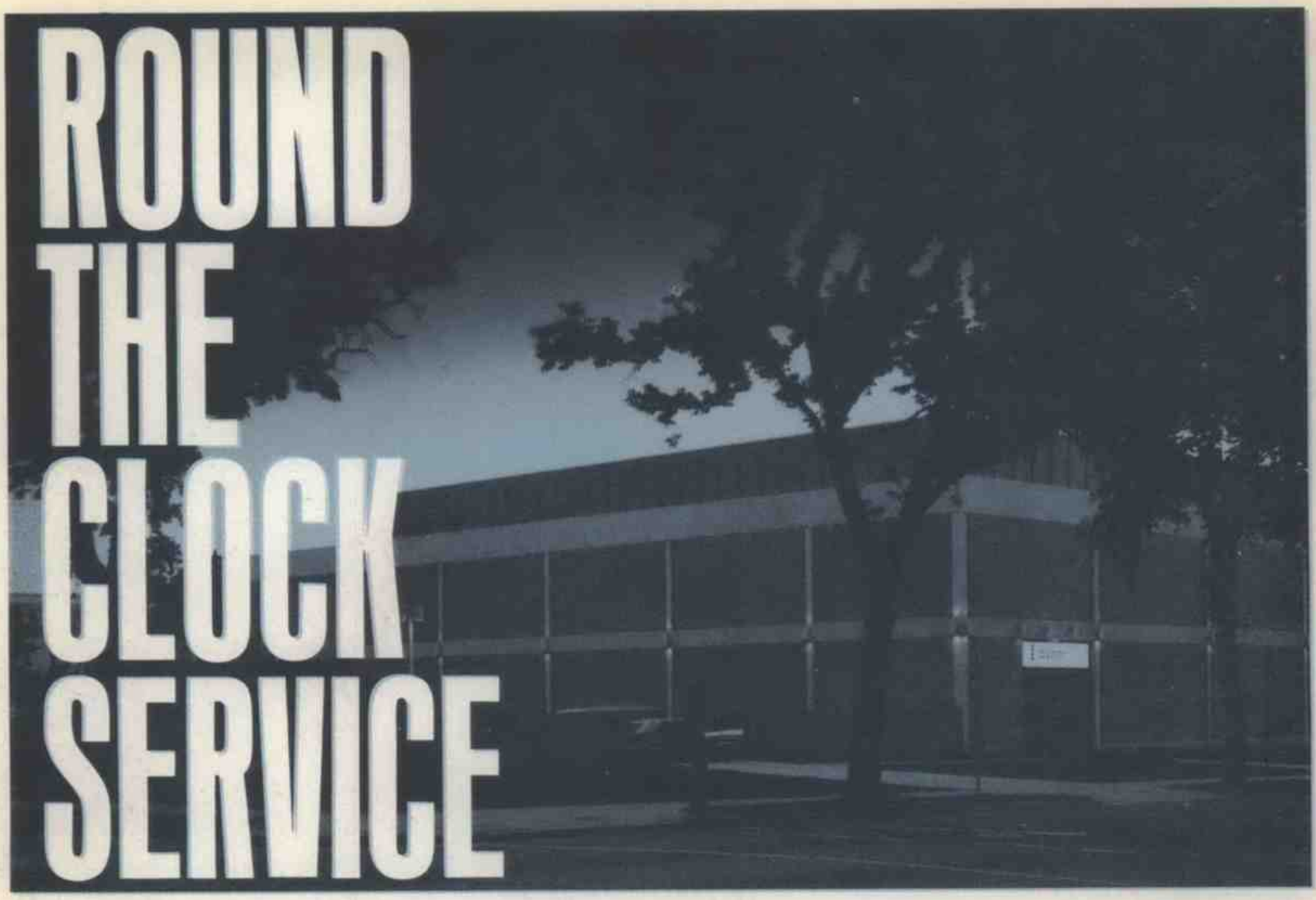

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