

JANUARY 1971

AMERICAN CATALOG 1967

75 cents

# Cinematographer

International Journal of Motion Picture Photography and Production Techniques

16 27 70 116 J 49330 67 9 8 9 2

67 9 7 1 9

67 9 8 0 6

67 9 4 3 3

67 9 4 5 4

67 9 5 1 0

67 9 7 1 3

67 9 8 1 7

67 9 8 3 4

67 9 7 1 6

67 9 8 0 5

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

CATALOG 1961

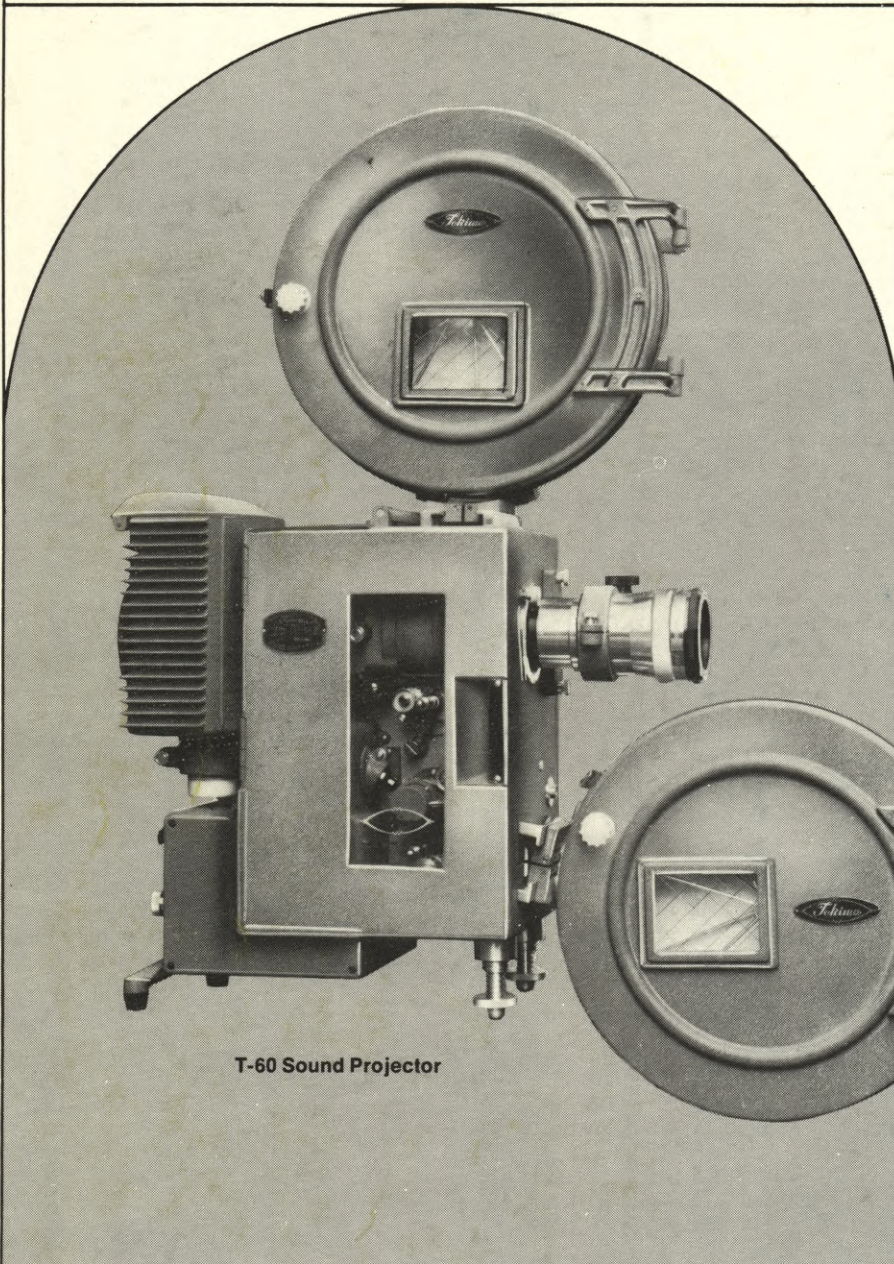
67 9 8 1 6

67 9 8 3 3

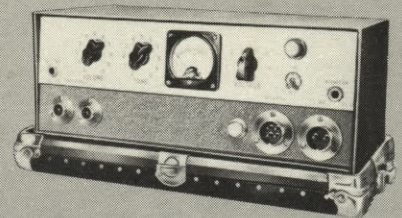
John Whitney on ANIMATION MECHANISMS

**SOS/Tokiwa  
35 MM Portable Sound  
Projection System**

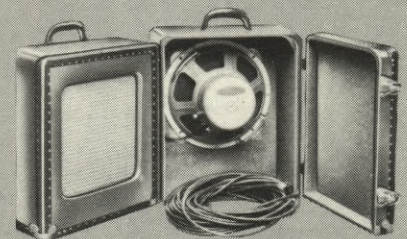
An excellent quality, lightweight,  
precision system for Theatres,  
Studios, Road Companies, Schools,  
Colleges, Business and Industry



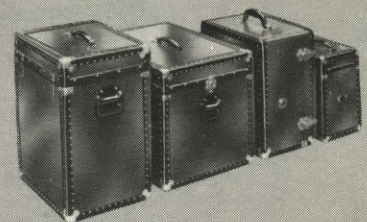
**T-60 Sound Projector**



**Type T Portable Amplifier**



**Type T Speaker System**



**Carrying Cases**

- Features:**
- Lightweight, easy to carry
  - Converts quickly for standard, Cinemascope® and wide screen projection
  - Heavy-duty, fire-resistant construction
  - High light-transmission efficiency
  - 2000' magazine and reel
  - 1500 W incandescent lamphouse
  - Portable amplifier
  - High-fidelity speaker system

\* Registered trademark 20th Century Fox

**SOS**  
SOS PHOTO-CINE-OPTICS, INC  
A DIVISION OF F&B/CECO INDUSTRIES, INC.

**Dept. ACI-1**  
EAST: 40 Kero Road, Carlstadt, New Jersey 07072 • (201) 939-5250  
315 West 43rd Street, New York, N.Y. 10036 • (212) 586-1420  
WEST: 7051 Santa Monica Blvd., Hollywood, Calif. 90038 • (213) 469-3601  
SOUTH: 51 East 10th Avenue, Hialeah, Florida 33010 • (305) 888-4604  
D.C.: 2215 M. St., N.W., Washington, D.C. 20037 • (202) 659-9600

The difference is . . .



## GELATRAN™

Gelatran is not like any other color media. The difference is the unique deep dye process which chemically links the color t-h-r-u-o-u-t the Mylar™ (not just washed on the surface).

Deep dyed Gelatran is:

- Heat resistant
- Doesn't dry out — Won't tear
- Moisture proof
- Resists fading for longer life.

Daylight and incandescent conversion colors available in sheets and rolls.

Arc correction colors come 30" wide.

Tear-off box for easy handling and storage.

Write for detailed literature and sample swatchbook.

*Quality - Service - Innovation* **Berkey-Colortran, Inc.**

1015 Chestnut Street, Burbank, Calif. 91502 (213) 843-1200



# g e l a t r a n™

FINEST COLOR MEDIA FOR INDOOR/OUTDOOR MOTION PICTURE, TELEVISION, THEATRE, AND STILL PHOTOGRAPHIC LIGHTING APPLICATIONS.

A DIVISION OF  
**Berkey**  
PHOTOGRAPHIC

# "Ok, quiet down. Hit the lights. Slate in. Camera. Camera... What the hell's wrong now?"

Who knows?  
A gear? A cable? A little  
gizmo in the motor?  
You've got to learn to live  
with things like that when  
you rent equipment. Or  
do you?

We're in the camera  
rental business and we've  
been at it for about five  
years now. We learned a  
good lesson when we  
opened our doors and  
we're not about to forget it.  
It's simply this: give a  
customer just one piece of  
apparatus that isn't letter  
perfect, just once in a  
hundred rentals, and he'll  
forget every good thing



you've ever done for him.  
And do you know what?  
He's right.

That's why we check  
every single piece of  
equipment when it comes  
in off a job. And then  
re-check it before it goes  
out again. If there're 97  
pieces in your order, you  
can be damn sure you'll  
receive 97 pieces on

your set. If there's a 0.95  
lens or a high speed  
Milliken on your list, we  
don't have to scour the  
town looking for one. It's  
in our inventory.

It's the only way we  
know how to do business  
and we don't ever expect  
to change.

We don't want anyone  
asking us "what the  
hell's wrong now?"

**GENERAL CAMERA  
CORPORATION**

321 West 44th Street  
New York, N.Y. 10032



# AMERICAN Cinematographer

International Journal of Motion Picture Photography and Production Techniques

JANUARY, 1971

VOL. 52, NO. 1

Herb A. Lightman  
editor

Three Tyler  
editorial assistant

Jan Mazza  
advertising manager

Barbara Prevedel  
accounting

Pat Barrier  
circulation

Lina Carasso  
research

#### Editorial Advisory Board

Charles Clarke, Chairman  
Robert de Grasse  
Burnett Guffey  
Winton Hoch  
George Mitchell  
Kemp Niver  
Harold Rosson  
Walter Streng

#### Editorial—Business Offices

1782 North Orange Drive  
Hollywood, Calif. 90028  
876-5080

#### Advertising Representative

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

#### • FEATURE ARTICLES

- 26 Animation Mechanisms
- 34 On Location With "CARNAL KNOWLEDGE"
- 42 The Crystamatic Sync System
- 44 Sound Stage 627
- 52 11th Annual IFPA Conference
- 54 1970 "CINDY" Awards
- 56 Make This Transitioner
- 62 The Photography of "I WALK THE LINE"—Part II
- 66 Tennessee Portfolio

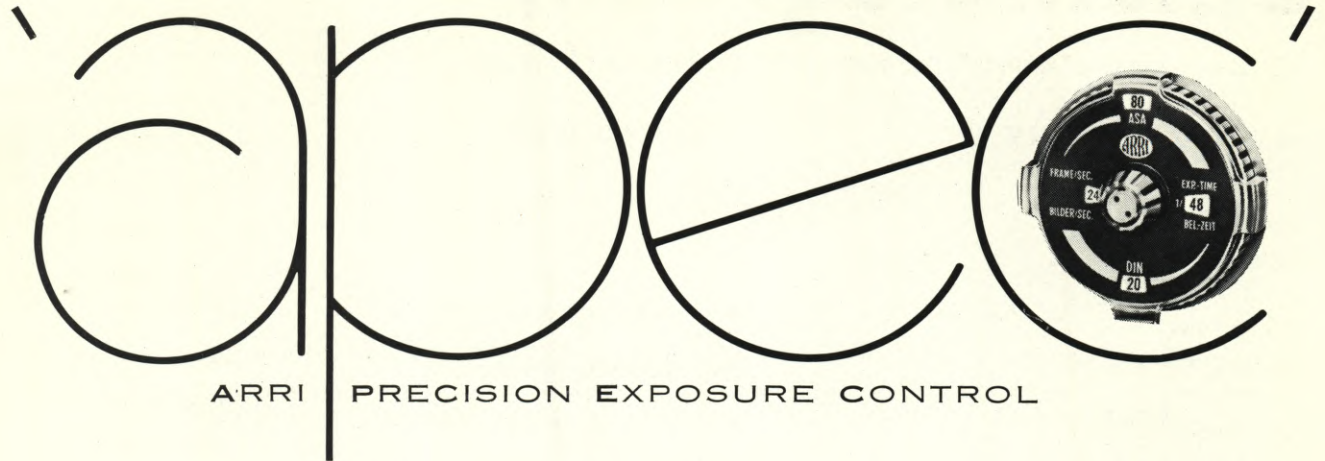
#### • DEPARTMENTS

- 8 What's New
- 18 Cinema Workshop
- 68 Questions & Answers
- 78 Industry Activities

ON THE COVER: Film strips from "Catalog, 1961" by John Whitney, whose feature article on Page 26 describes the animation mechanisms that were used to make that film. These mechanisms were the forerunners of the Slit-scan process used in "2001: A SPACE ODYSSEY". John Whitney is president of Motion Graphics, Inc. and is presently conducting research in computer graphics with graduate student seminars under the California Institute of Technology and IBM sponsorship.

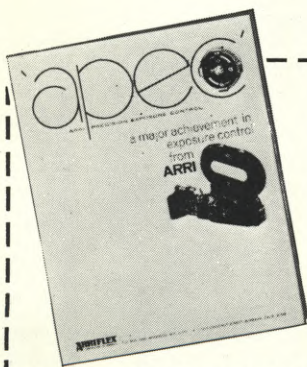
AMERICAN CINEMATOGRAPHER, established 1920, in 52nd year of publication, is published monthly in Hollywood by ASC Agency Inc., 1782 North Orange Drive, Hollywood, California 90028, U.S.A. **SUBSCRIPTIONS:** U.S. \$7.00; Canada, foreign, including Pan-American Union, \$8.00 a year (remit International Money Order or other exchange payable in U.S.) **ADVERTISING:** rate card on request to Hollywood or New York office. **CHANGE OF ADDRESS:** notify Hollywood office promptly. Copyright 1971 ASC Agency Inc. Second-class postage paid at Los Angeles, California.

# have you seen



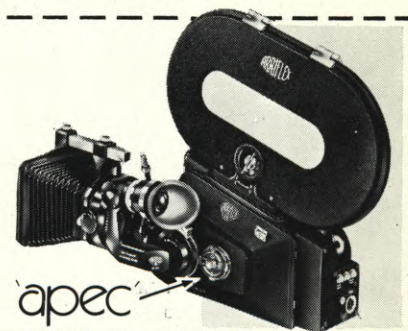
the thoroughly professional  
**EXPOSURE CONTROL SYSTEM**  
that's unequalled for accuracy  
and reliability? It's now built  
into the **ARRIFLEX® 16BL**

Be sure to see 'apec' at the dealers listed or write for literature



**ARRIFLEX COMPANY OF AMERICA**  
P.O. Box 1050, Woodside, N.Y. 11377

NAME \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_  
STATE \_\_\_\_\_ ZIP \_\_\_\_\_

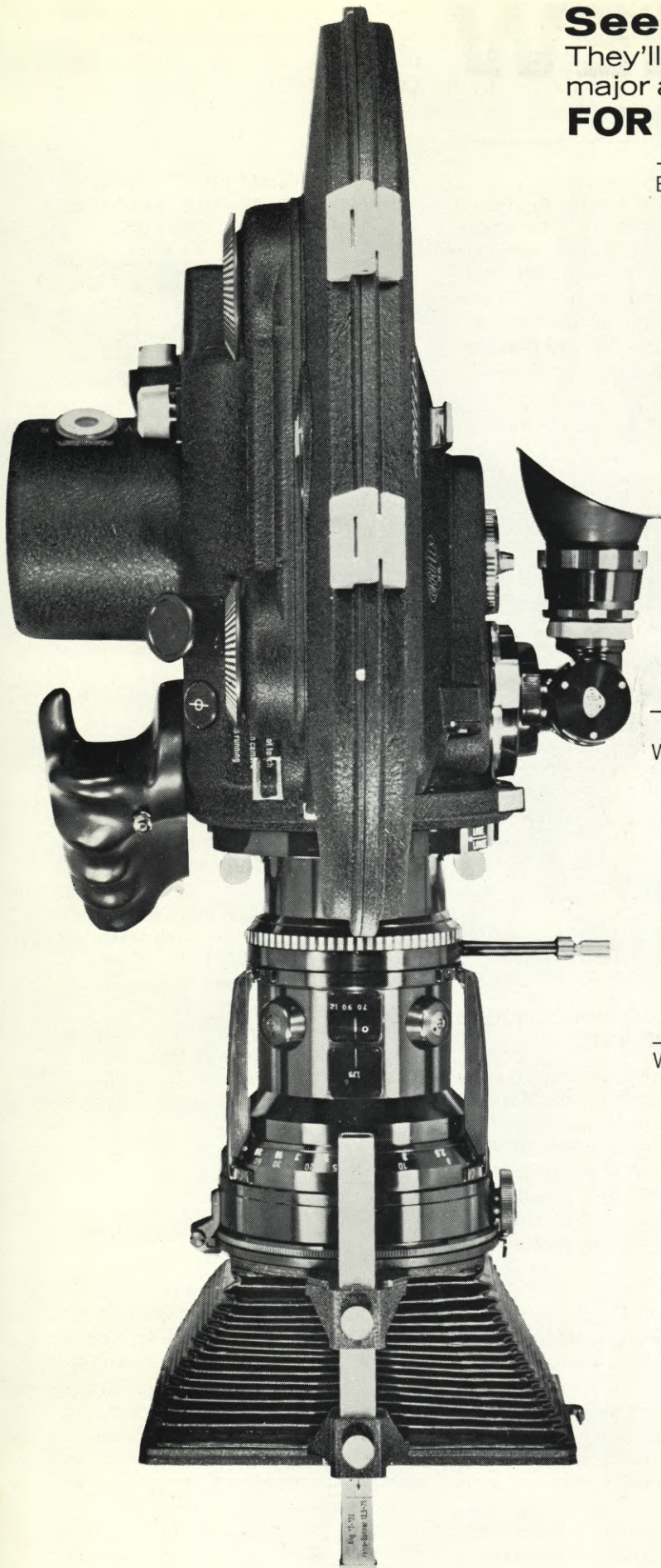


**See it at these dealers!**  
They'll be delighted to demonstrate this  
major achievement in camera design.  
**FOR SALE, RENTAL or LEASE**

- EAST**
- Bill Billing's Photo**  
129 South Front Street, Rockwood, Tenn. 37854
  - Brenner Photo, Inc.**  
5215 Wisconsin Avenue N.W., Washington, D.C. 20015
  - Camera Mart, Inc.**  
456 West 55th Street, New York, N.Y. 10019
  - Camera Sales Center, Inc.**  
625 West 54th Street, New York, N.Y. 10019
  - Cinelease, Inc.**  
1331 Ponus Ridge, New Canaan, Conn. 06840
  - Cine "60"**  
630 Ninth Avenue, New York, N.Y. 10036
  - Crimson Camera Technical Sales**  
152 Sixth Street, Cambridge, Mass. 02141
  - Ed's Camera Shop**  
1279 Madison Avenue, Memphis, Tenn. 38101
  - F & B Ceco, Inc.**  
315 West 43rd Street, New York, N.Y. 10036
  - Frye's Camera Shop**  
220 Luckie Street N.W., Atlanta, Ga. 30303
  - Claus Gelotte, Inc.**  
185 Alewife Brook Parkway, Cambridge, Mass. 02138
  - Oscar H. Hirt, Inc.**  
41 North Eleventh Street, Philadelphia, Pa. 19107
  - Look Photo Service, Inc.**  
93 Main Street, Andover, Mass. 01810
  - Motion Picture Laboratory**  
781 South Main Street, Memphis, Tenn. 38106
  - Standard Theatre Supply Co., Inc.**  
P.O. Box 20660, 125 Higgins St., Greensboro, N.C. 27420

- MID WEST**
- Behrend's, Inc.**  
161 East Grand Avenue, Chicago, Ill. 60611
  - Calvin Cinequip, Inc.**  
1105 Truman Road, Kansas City, Mo. 64106
  - Century Camera Shop**  
119 North 9th Street, Minneapolis, Minn. 55403
  - Victor Duncan, Inc.**  
11043 Gratiot Avenue, Detroit, Mich. 48213
  - Helix Ltd., Inc.**  
679 North Orleans Street, Chicago, Ill. 60610
  - P. B. Odom Enterprises, Inc.**  
7204 So. Pennsylvania Ave., Oklahoma City, Okla. 73159
  - Seymour's Photo Center**  
6010 Camp Bowie Blvd., Fort Worth, Texas 76116
  - Southwest Film Lab.**  
3024 Fort Worth Avenue, Dallas, Texas 75211
  - Treck Photographic**  
1124 Stinson Blvd., Minneapolis, Minn. 55413

- WEST**
- American Camera Exchange**  
615 South Spring St., Los Angeles, Calif. 90014
  - Bel Air Camera**  
927 Westwood Blvd., Los Angeles, Calif. 90024
  - Birns & Sawyer Cine Equipment**  
1026 North Highland Avenue, Hollywood, Calif. 90038
  - Brooks Cameras, Inc.**  
45 Kearny Street, San Francisco, Calif. 94108
  - F & B Ceco of California, Inc.**  
7051 Santa Monica Blvd., Hollywood, Calif. 90038
  - Bob Gambles Photo Supply**  
5170 Santa Monica Blvd., Los Angeles, Calif. 90029
  - Adolph Gasser, Inc.**  
5733 Geary Blvd., San Francisco, Calif. 94121
  - Glazer's Camera Supply**  
1923 Third Avenue, Seattle, Wash. 98101
  - Alan Gordon Enterprises**  
1430 No. Cahuenga Blvd., Hollywood, Calif. 90028
  - Harrys Camera**  
12142 Ventura Blvd., Studio City, Calif. 91604
  - Jack Pili's Camera Equipment**  
1135 North Highland Avenue, Hollywood, Calif. 90038
  - San Diego Camera Exchange**  
1071 Sixth Avenue, San Diego, Calif. 92101
  - Schaeffer Photo Camera & Supply**  
1553 North Cahuenga Blvd., Hollywood, Calif. 90028
  - Stockdale & Co., Inc.**  
200 East First South, Salt Lake City, Utah 84111
  - Western Cine Service, Inc.**  
312 South Pearl Street, Denver, Colo. 80209



# WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE

## MIIDA INTRODUCES THE "THREE-LEGGED MONOPOD"

Whether you think of it as a "three-legged monopod" or a "one-legged tripod" the new Miida Step-On Tripod offers the important virtue of both camera supports, in a single sturdy unit.

Before use, the solidly-built aluminum unit looks, handles—in fact, it is—a high-grade monopod. But when tripod steadiness is required, the user is swiftly able to obtain stability that is impossible with a conventional monopod. He simply unscrews the unit's "foot"; three legs, which are hinged to store inside the monopod barrel, unfold; the "foot" is reinserted into the barrel, this time with the legs extended and tightened again. The Miida Step-On Tripod is now able to "stand steady on its own three feet."

Anybody who has ever struggled under the burden of a conventional tripod should recognize immediately the many useful capabilities of the Miida Step-On Tripod, as well as its advantages over previous camera supports. It offers monopod lightness and carrying convenience; it can be dangled from the user's wrist by its own wriststrap or slipped into the exterior straps built into many gadget bags. But unlike conventional monopods, which when in use sway side-to-side and fore-and-aft, the Miida's tripod feet hold the unit as steady as any light-weight tripod. The unit is so stable, in fact, that the user can walk away from his Miida tripod-mounted camera, whether Super-8, 35mm or 2 1/4, leaving it unattended without fear of its falling over; he can direct poses from up close, or actually get into his own shot, using the camera's self-timer, neither capability being possible with conventional monopods. Travelers, wildlife photographers, and any other cameraman working on location—as well as users of binoculars and small telescopes—will appreciate this unprecedented combination of lightness, compactness and stability. Even studio photographers can capitalize on the unit's unique qualities, because the camera becomes tripod-steady without sacrificing hand-held mobility. The "three-legged Monopod" features a ball head, for instantaneous camera leveling on uneven terrain and can even double as a versatile mike stand.

Two models of the Miida Step-On Tripod are available: the three-section model is priced at \$16.50; the four-section model is priced at \$19.50.

Further information may be obtained by writing to Marubeni-lida (America), Inc., 200 Park Avenue, New York, N.Y. 10017.



## NEW 16mm MAGNETIC SOUND READER INTRODUCED

A 16mm magnetic sound reader which becomes a base for the Moviscop viewer and is in dead sync with it, is being manufactured by Satellite Film Service. The reader is completely self contained with its own sound head, amplifier, and speaker all in one small case which fits neatly beneath the viewer.

The reader works with existing editing equipment. There is no need to buy anything else or change your method of editing. Since the reader sits under the viewer, no extra room is needed on the table. Simply thread the workprint and track through the viewer and reader and then through a synchronizer. The relationship of the track to the picture is dead sync at both the reader and viewer, and at the synchronizer. This completely eliminates the problem of having a displaced track when editing.

Cost of the entire unit is \$75.00.

Complete information can be obtained by writing the manufacturer at Satellite Film Service, P.O. Box 6476, San Jose, California 95150.

## A NEW LIGHTWEIGHT REFLEX CONVERSION OF THE MITCHELL MARK II

Cine/Precision Engineering Co. of Hollywood announces the conversion of a Mitchell Mark II Camera to a Pellicle type Reflex system. Following is a partial list of features incorporated into this lightweight, positive pin-registration studio type camera:

1. Removal of the rotating stainless steel mirror and the drive gears in the forward part of the camera, not only cuts down weight, but reduces significantly the noise level.

2. A flicker-free, no distortion, bright and constant reflex viewing of the image being photographed is achieved.

3. A rugged, yet lightweight, hard front BNC bayonet type lens mount accepts all BNC Super Baltar lenses, most zoom lenses without support, and the full complement of Panavision line of lenses.

4. Easy and instantaneous removal of the ground glass or Pellicle for cleaning is accomplished through the larger lens opening in the new front cover plate. Also the changing of mattes is made easier.

5. Makes possible the standardizing and interchangeability of all lenses on the Mitchell line of Reflex Cameras, including all the latest conversions on the market today.

For further information, write or phone Cine/Precision Engineering Co., 1038 No. Highland Avenue, Hollywood, California 90038. Tel. (213) 462-8787.

## NEW FULL-LINE BROCHURE AVAILABLE FROM MACBETH

A new 4-page illustrated brochure describing the complete line of densitometers, color analyzers, and quality control lighting equipment manufactured by Macbeth Corporation, a division of Kollmorgen, is now available. Included in the brochure is an application table which clearly shows where each device should be used for maximum benefit.

For a free copy, ask for Full-Line Brochure (CAT 1.2) from Macbeth Corporation, Box 950, Newburgh, New York 12550.



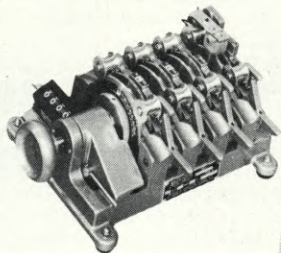
★ **New**



**NEW ITEM**  
Moviola Console Editor  
(Write for Price)



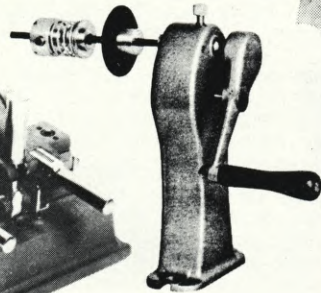
**NEW ITEM**  
Moviola 50 16mm Table Viewer  
\$325.00



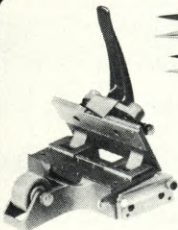
**Cat. #2687**  
Moviola Synchronizer  
\$200.00



**Cat. #2589**  
Maier-Hancock Portable  
Hot Splicer Mdl. 1635  
\$369.00



**Cat. #2678**  
Moviola Rewind WD only  
\$29.00



**Cat. #2577**  
Guillotine Splicer  
M2-35mm-2T  
\$155.00



**Cat. #2769**  
Film Nippers  
\$4.95



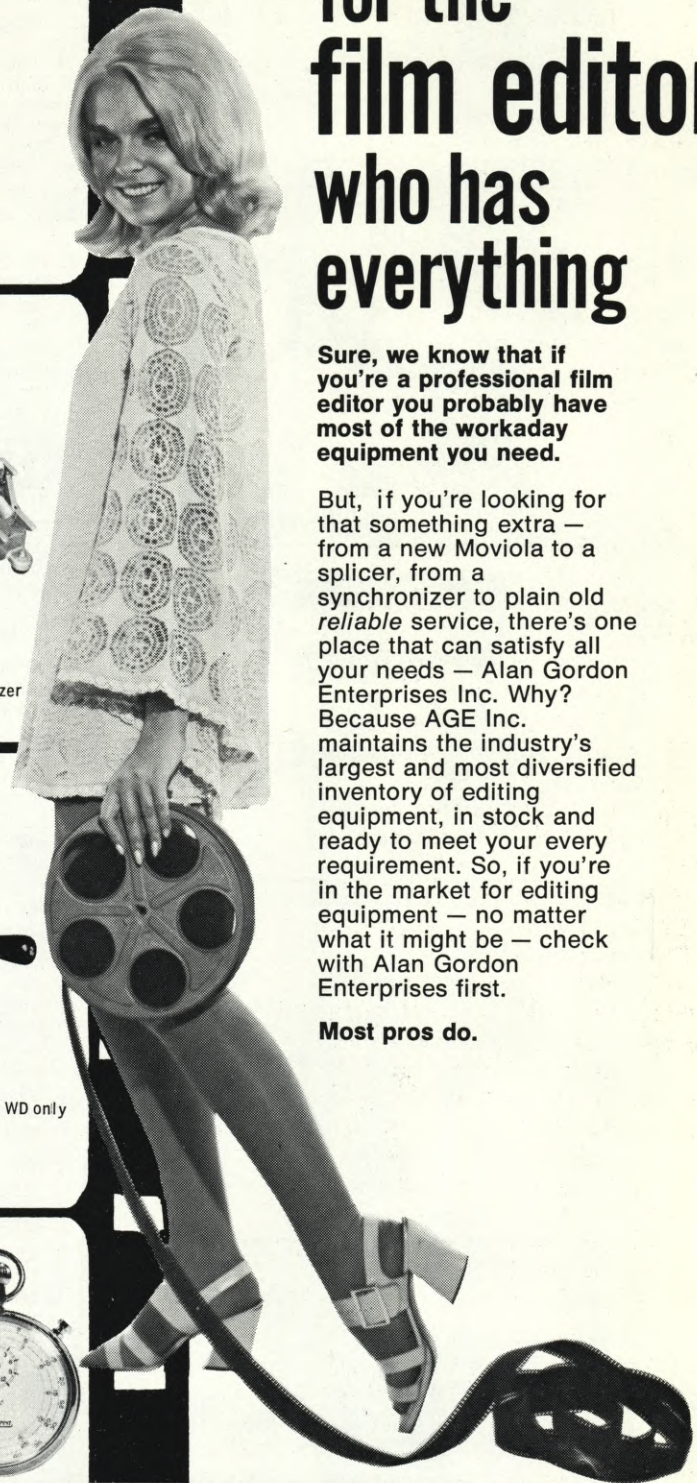
**Cat. #2763**  
Filmmeter Stopwatch  
\$38.75

# for the film editor who has everything

**Sure, we know that if you're a professional film editor you probably have most of the workaday equipment you need.**

But, if you're looking for that something extra — from a new Moviola to a splicer, from a synchronizer to plain old *reliable* service, there's one place that can satisfy all your needs — Alan Gordon Enterprises Inc. Why? Because AGE Inc. maintains the industry's largest and most diversified inventory of editing equipment, in stock and ready to meet your every requirement. So, if you're in the market for editing equipment — no matter what it might be — check with Alan Gordon Enterprises first.

**Most pros do.**



SERVING THE WORLD

**alan gordon enterprises inc.**



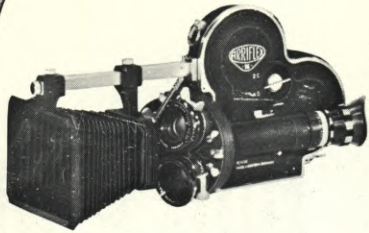
1430 North Cahuenga Boulevard • Hollywood, California  
Telephone (213) 466-3561

# BEL AIR CAMERA AND HI-FI

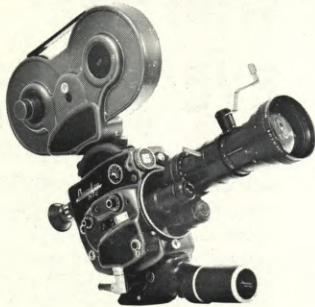
927 WESTWOOD BOULEVARD  
LOS ANGELES 90024 (213)272-5214

## West Los Angeles Headquarters for ARRIFLEX

BEL AIR CAMERA has long enjoyed an enviable reputation as an unquestioned source of information and counsel on all subjects pertaining to professional and advanced amateur 8 and 16mm cinematography. Bel Air Camera's thoroughly competent staff is constantly available to assist in any cinematographic problem. Additionally, every available Beaulieu, Arriflex, Siemens and Uher product is instantly available from stock. We will be happy to send you literature on any of these superior cinema products. Just mail the coupon below, or phone if you prefer. You will enjoy your association with Bel Air Camera.



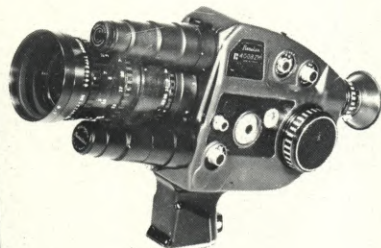
1



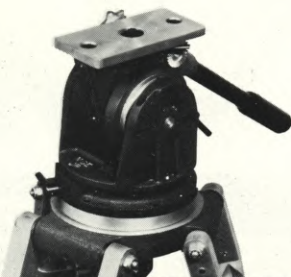
2



3



4



5

1. The ARRIFLEX 16S. A highly advanced motion picture camera with mirror-shutter reflex viewfinder; ultra precise registration-pin film movement; three lens divergent turret; fps tachometer; takes 100 ft. internal spool—400 ft. external magazines. Rugged, capable, and versatile. Electric motor drive. Available with or without motor, lenses, and matte box. An all around 16mm camera, capable of producing professional results without complicated operating procedures. The famous Arriflex 16M and Arriflex 16BL are also available at Bel Air Camera. Drop in and inspect these extremely fine cinema cameras... or write for literature.
2. The Beaulieu R16B. This is one of the world's most advanced 16mm motion picture cameras. Embracing features not found in any other 16mm camera such as the "Reglomatic" (Patented) automatic diaphragm control, mirror shutter, extra luminous reflex viewfinder system, electronic speed control, sync sound capabilities, self-contained battery, ability to use any C mount or 24 x 36mm miniature camera lens, and its extreme light weight, the Beaulieu R16B can answer, the requirements of any cinematographic project. Long the favorite of the news cameramen, it is fast becoming the first choice of the "New Cinema" producers. A thorough examination of the Beaulieu R16B will convince you that this is your camera.
3. UHER 1000/N Neo-PILOT "Sync" Tape Recorder, designed especially for studio quality sound motion picture production. Perfectly matched for use with such cameras as Beaulieu R16, the Arriflex, the Eclair, etc. The guaranteed frequency response of 20-20,000 Hz at its stroboscopically controlled speed of 7½ ips and full track recording leaves no margin for error, and results in perfect synchronized sound the first time—every time. Fully "climatized" to ignore temperature and humidity variations, and ruggedly constructed to withstand the unavoidable abuse of "in the field" operation. Combines such specialized features as interruptable automatic photo-electric level control, interruptable low frequency filter, Pilotone level test button, battery condition test button, off-the-tape monitoring, continuous stroboscopic speed control, built-in monitoring speaker, and adjustable playback and record equalization, (CCIR or NARTB)
4. The all-new BEAULIEU 4008ZM (motorized zoom/motorized macro) Super 8 motion picture camera fulfills the most exacting demands of the professional camera user, and enables the advanced amateur to produce motion pictures far above the average range and quality. EXCLUSIVE features include a macro system with precise power focusing as close as 1 mm from the surface of the lens, motorized zoom with infinitely variable speeds from 2 to 12 seconds, continuously variable frame speeds from 2 to 70 ips, and the largest, (27X Magnification!) and most brilliant of all Super 8 reflex viewing screens. Standard equipment includes the superior Angenieux 8-64 mm f.1:9 automatic zoom lens. Automatic exposure control, variable mirrored shutter, interchangeability of lenses.
5. The HERVIC HYDROFLUID JR. An ultra-precision, sturdy, vibration free tripod designed for cameras weighing up to 20 pounds. The only fluid tripod with integral ball and built-in spirit level for quick and exact leveling regardless of terrain. Velvet smooth pan of 360 degrees, and tilt from plus 85 to minus 85 degrees, mounted on pan and tilt shafts to accent its smoothness and precision. Finely finished all aluminum construction — only 17 pounds complete with V-groove heavy duty wooden legs equipped with secure quick-acting locks. Telescoping pan/tilt handle is adjustable for angle and right or left hand operation. The largest silicone dampening area in its class of fluid tripods. 3/8 inch tie down screw with quick lock.

Bel Air Camera and Hi Fi, 927 Westwood Blvd., Los Angeles, Calif. 90024.

Please send me literature on the cinema products checked.

Arriflex  Beaulieu R16B  UHER 1000/N  Beaulieu 4008ZM

SIEMENS 2000 Sound Projector - 16MM

HERVIC Hydrofluid Jr.  HUERTIER Dual—8MM Silent/Sound Projector

Name \_\_\_\_\_


Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

sure, there's more than  
one way to light a set...



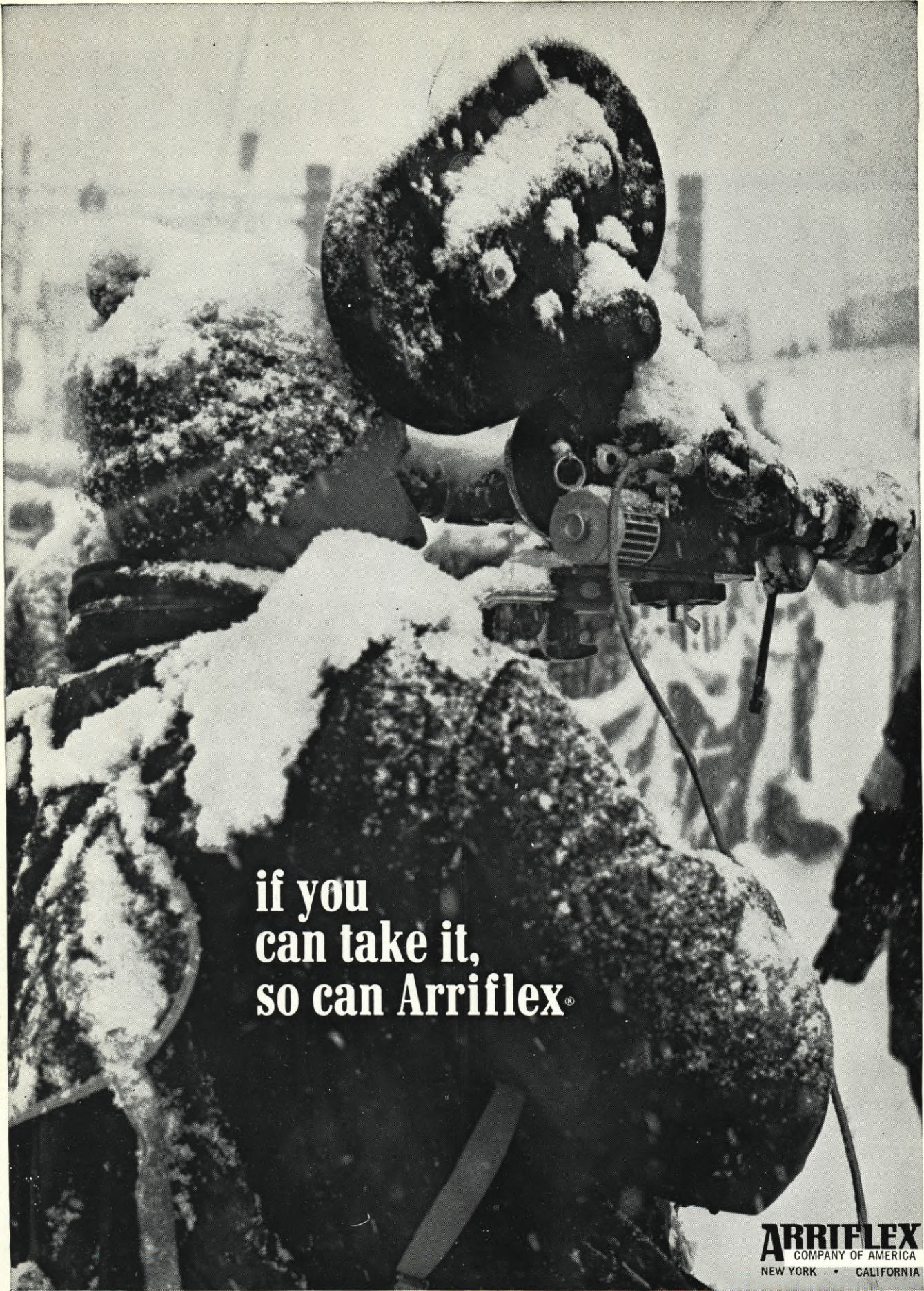
but why not select the best way? For many years, Charles Ross, Inc. has proved to be the best way for scores of motion picture producers who insist on the finest lighting equipment in the industry. Send for a schedule of rental rates!

THE EAST'S ONLY SPECIALIST — LIGHTING, GRIP EQUIPMENT, PROPS, GENERATORS  
RENTALS / SALES / SERVICE  Sole distributor of Mole-Richardson Company Products in Greater New York



*Charles Ross* INC.

333 WEST 52nd STREET, NEW YORK, N. Y. 10019, Area 212, Circle 6-5470



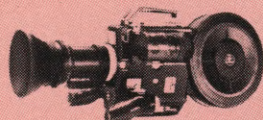
if you  
can take it,  
so can Arriflex®

**ARRIFLEX**  
COMPANY OF AMERICA  
NEW YORK • CALIFORNIA

Photographed at the Winter Olympics, 1968 — by Cinepress, Grenoble, France

# GET UNTANGLED!

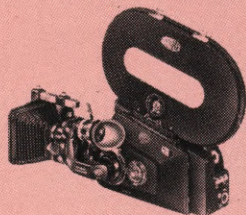
## *America's widest choice of wireless sync-sound options*



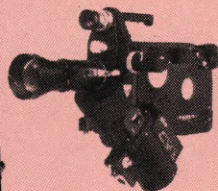
**BOLEX PRO CAMERA**  
Crystal motor with constant speed, variable speed and stop motion capabilities.



**CRYSTAMATIC**  
Makes Arri BL a crystal sync or variable speed camera. Also gives wireless control of Nagra.



**ARRI BL with  
PRECISION MOTOR  
CONTROL**  
Allows crystal control or constant speed operation as desired.



**ECLAIR NPR with  
BEALA MOTOR**  
Gives crystal accuracy with variable speed and constant speed options.



**TRANSIST-O-SOUND  
50CC MKII INVERTER**  
For use with Auricon, Eclair, or Arri BL with sync motor.



**FREZZOLINI 1000-DX INVERTER**  
Crystal-control of the Auricon Cine-Voice Conversion. Interchangeable energy packs.



**CINEMA PRODUCT DEVELOPMENT  
VARIABLE CRYSTAL  
MOTOR**  
For use with Mitchell BNC cameras in studio or on location. Runs from 30v power pack.

*For sale or rental in Detroit, Chicago and Dallas*

For information on specific crystal units, call or write Victor Duncan, Inc., Dept. W, 11043 Gratiot, Detroit, Michigan 48213.

# Go **WIRELESS** with VICTOR DUNCAN



RENTALS • SALES • SERVICE

11043 GRATIOT, DETROIT, MICH. 48213  
(313) 371-4920

155 E. OHIO ST., CHICAGO, ILL. 60611  
(312) 321-9406

2659 FONDREN, DALLAS, TEXAS 75206  
(214) 369-1165

In Canada  
**CINÉVISION**

**Montreal and Toronto  
can supply all your  
RENTAL  
needs.**

**CAMERAS**

Reflex SPR — BNC Mitchell (with CPD — crystal sync DC motor)

- R-35 Mitchells — blimped and hi-speed
- Arriflex 16 & 35 mm
- Eclair 16
- Arriflex Blimps 400' and 1000'
- Techniscope
- **PANAVISION**

**DOLLIES**

- Moviola
- Colortran
- Elemack
- Worrall
- Fluid and Gyro Heads

**LIGHTING**

Complete line of studio and location equipment.  
Authorized dealers for Mole Richardson, Colortran,  
Westinghouse and Sylvania  
Complete line of Grip Equipment

**SOUND**

- Nagra III and IV
- Electrovoice
- Sennheiser

**GENERATORS**

- AC and DC and Blimped

**SOUND STAGES ■ CAMERA SERVICE DEPARTMENT**

Canadian distributors for:

- CPD — "Joy Stick" Electric Zoom
- CPD — BNC Crystal Sync Motors
- SPR-BNC Reflex Conversions
- Sachtler & Wolf Products
- Samcine — Limpet Mount

**CINÉVISION**  
L T E E

2000 Northcliffe Ave. ■ Montreal, Quebec ■ (514) 487-5010  
244 Simcoe Street ■ Toronto, Ontario ■ (416) 362-6611

# If you're in a bind for lab service, Reela can bail you out.

When deadlines loom large, and you keep running into one delay after another, call Reela. Nobody offers faster service. And nobody will give you better quality work.

Reela's speed and high quality come about because of three things:

1. Competent, dedicated people.
2. Jet transportation, and an outfit that knows how to exploit it.
3. Sophisticated new equipment.

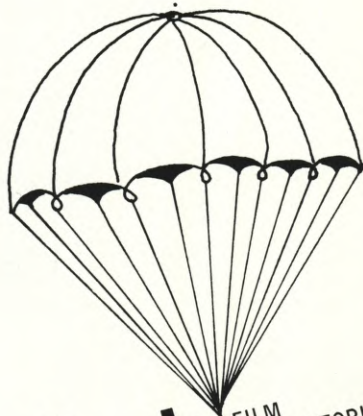
How many release prints do you need — 20? 100? Reela can make them.

Perfect. Sharp. Color-balanced. Back in your hands (or drop-shipped if you want) before you know it.

Why settle for less than the best? Call Reela now.

#### REELA OFFERS:

Complete editorial services • complete producer's services — animation — titling — sound • complete 8, 16, and 35mm laboratory services, including black and white or color dailies for Florida filming • Super 8 printing and cartridgeing.



**Reela** FILM LABORATORIES, INC.  
A DIVISION OF WOMETCO ENTERPRISES, INC.

65 N.W. Third Street,  
Miami, Florida 33128

Reela in Manhattan: (212) 279-8555  
100 West 40th Street

For service in other cities call Reela  
in Miami (305) 377-2611

# Now Super-8 Profits Come Twice as Fast!

## New W.R.E. High Speed System Gives *Single-Pass* Sound Transfer On 1-4 Format as well as 1-3

**Cash in on Super-8 sound,** your fastest growing profit opportunity in the 1970's. Versatile new Wide Range unit transfers sound from full-coated 16mm master track at 10 times projector sound speed.

**Double Capacity.** First system available that records simultaneously on head-to-tail and tail-to-head 1-4 tracks. Double the 1-4 capacity of any other machine.

**Records Master.** First and only system that can provide recording on its 16mm master transport, as well as reproduction. Make your master track from the customer's soundtrack, all with this one unit in one compact 24-inch rack.

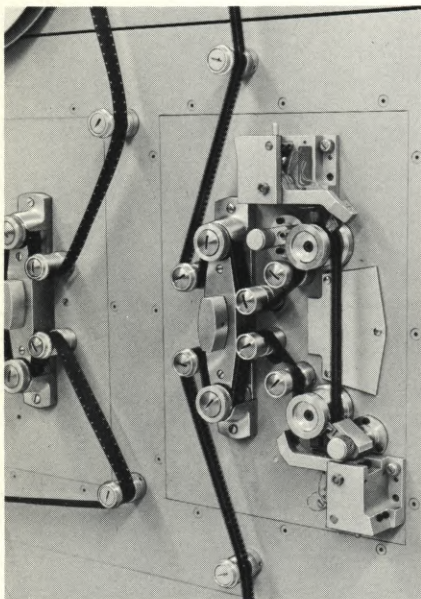
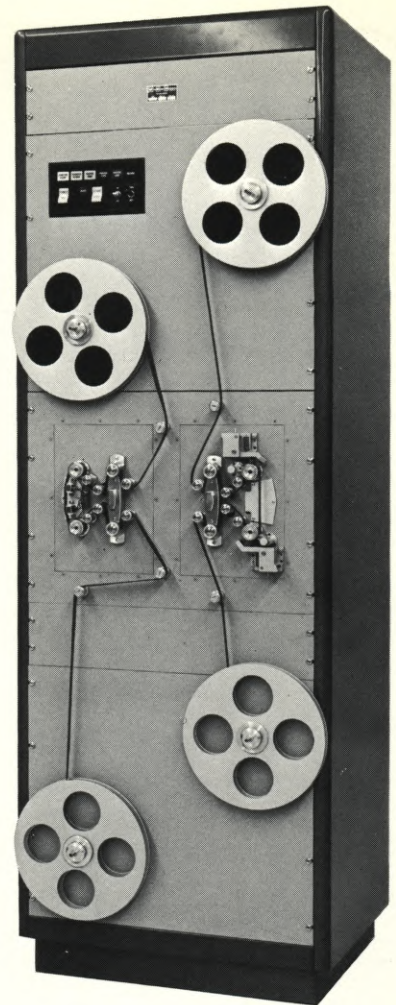
**Film Versatility.** Adapts for 35mm

Quad-8 4-rank film, too. Change Alfenol head assemblies in less than two minutes, to set up for 2-rank 1-3 film, or 1-4, or 35mm 4-rank.

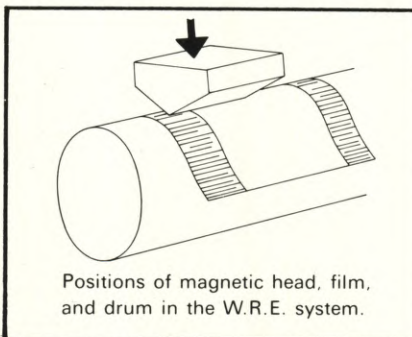
**Full Compatibility.** Interlocks to any companion unit with precise synchronization, using tested, reliable selsyn interlock system.

Use in slave mode with any Super-8 printer. Sync/interlock composite drive motor in the W.R.E. transfer unit is driven by the printer's master drive.

**Proved Capability.** Fully tested in operation at leading labs. The Wide Range Electronics high-speed Super-8 transfer system establishes another new standard of excellence in recorded sound technology.



## Recommended "On-the-Drum" Recording Configuration Eliminates Magnetic Sound Production Problems



"On-the-drum recording provides the best assurance of quality sound transfer whether on raw or processed film," as described in *Equipment and Film Parameters for Optimum Magnetic Sound Transfer on Super 8 Print Film* ... a paper presented at the 107th SMPTE Technical Conference by R.W. Bauer, H.F. Ott and R.E. Uhlig of the Eastman Kodak Photographic Technology Division. Wide Range offers the first and only high speed Super-8 transfer system using the configuration recommended.

Tell us about your requirements for magnetic recorders, dubbers, and magnetic-to-optical transfer.

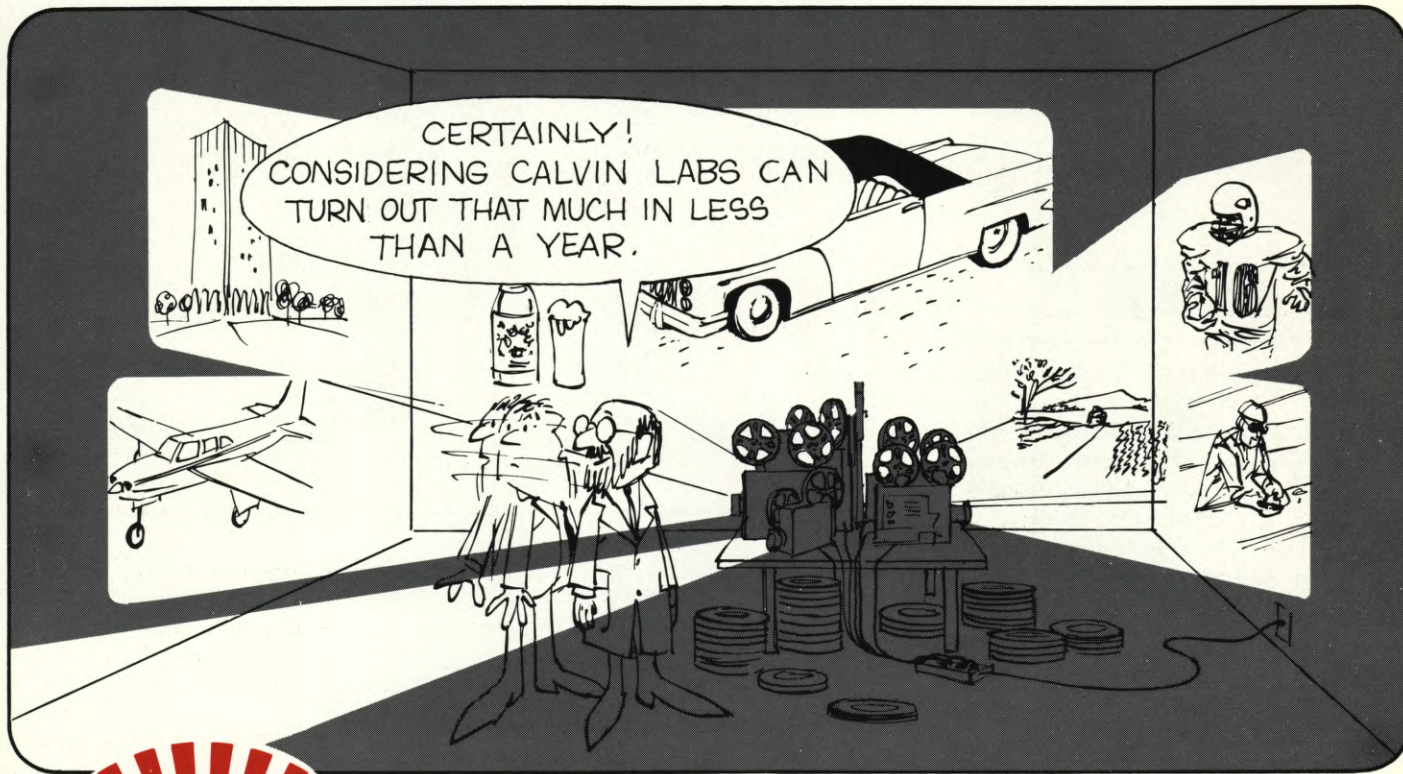
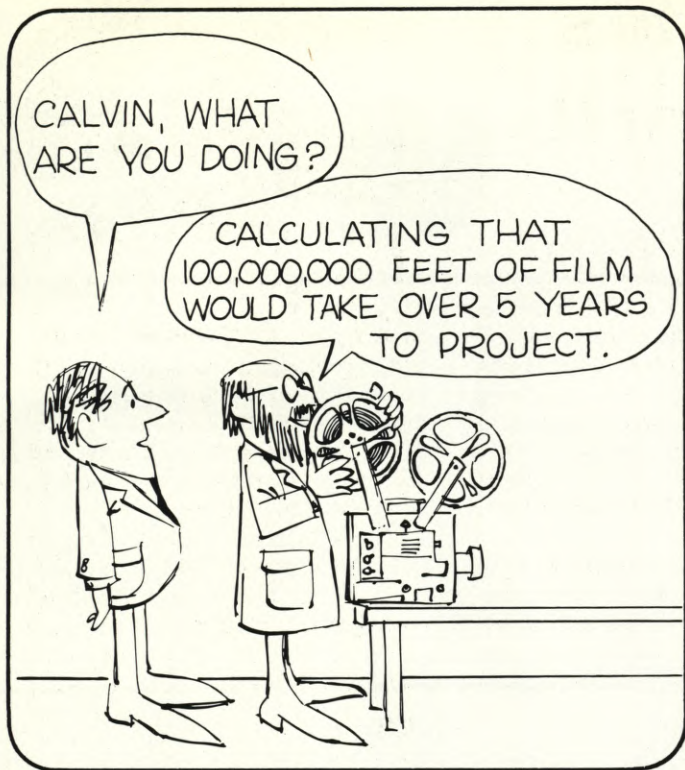


**W**IDE **R**ANGE **E**LECTRONICS

2119 SCHUETZ ROAD • ST. LOUIS, MO. 63141 • PHONE (314) 542-5366

EXPORT DEPARTMENT 2200 Shames Drive, Westbury, New York 11590 • Cable Address: CHURCHIN • Phone 516-334-3303





05695



## CALVIN LABORATORIES

A big, fully equipped lab, centrally located in Kansas City, Missouri—the Heart of America. Calvin can serve you better, faster and with fewer problems.

## CALVIN LABORATORIES

Where every customer is treated as an individual and assigned a Service Director to personally expedite all film requirements.

## CALVIN LABORATORIES

A Division of Calvin Communications Inc.  
1105 Truman Road • Kansas City, Missouri 64106 • Phone: (816) 421-1230

# CINEMA WORKSHOP



By ANTON WILSON

Proper color rendition can only be achieved if the color temperature of the light source matches that of the film stock. This prerequisite for good color is easily adhered to in the studio where the inherent color stability of tungsten halogen lamps can be fully utilized. Unfortunately, once outside the studio it is seldom that the cinematographer encounters a lighting condition that is perfectly matched to the film.

In some cases the studio condition

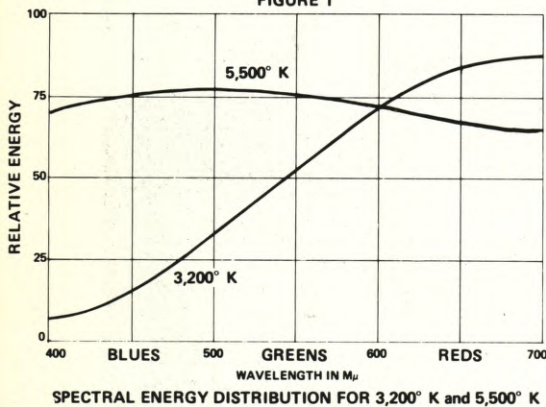
day can range anywhere from 4000°K to above 25,000°K depending upon prevailing conditions. Light balancing and conversion filters were designed to compensate for those deviations that invariably exist between the light source encountered and that for which the film is ideally designed.

The basic principle of light balancing filters may be most easily understood by taking a closer look at one of the more common conversion filters. Type

allow almost 100% of the red energy to pass through unscathed while absorbing 70 to 80% of the blue energy (in the case of the #85B). Notice that the shape of the #85 series transmittance curves are similar to the shape of the energy curve for 3200°K light.

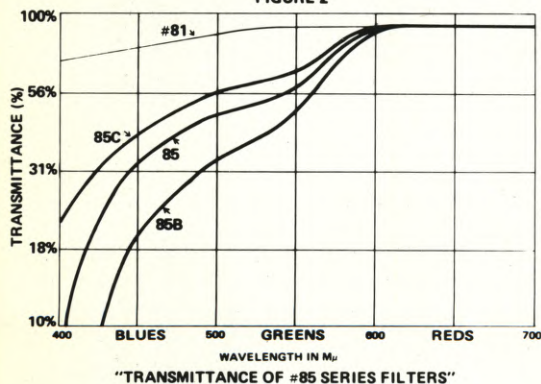
The #80 series filters are bluish in tint and perform the exact opposite function. By absorbing reds and transmitting blues 3200°K light can be converted to daylight. This practice is not

FIGURE 1



can be recreated with portable quartz lighting. However, in most cases the cameraman is forced to shoot with exotic mixtures of tungsten halogen, conventional tungsten, daylight, candle-light, etc. In addition, the cameraman who believes that he is automatically achieving proper color balance by using "daylight" film outdoors is grossly mistaken, for color temperatures during the

FIGURE 2



B films, such as 7252 and 7242 are balanced for 3200°K light. If these films are used outdoors without any filtration the results will have a definite blue cast. This is predictable when the two curves in FIGURE 1 are compared.

The 5500°K light has much stronger blues and less red than the 3200°K light for which the film was balanced. The #85B filter, which is normally used in this situation, is designed to transmit red energy while strongly absorbing in the blue region. Therefore, 5500°K light that passes through the filter will now possess a strong red content with weaker blues due to the absorption and thus closely resemble the color quality of 3200°K light. This is reflected in the 85 series transmittance curves of FIGURE 2 where it can be seen that these filters

as popular due to the inefficiency of the operation. From the curve in FIGURE 2 it can be seen that 3200°K light has most of its energy in the red region, with very little in the blue region.

Daylight has a fairly even energy distribution; its red and blue content are about equal. Therefore, to convert

Continued on Page 80

FIGURE 3

Color	Filter Number	To obtain 5500°K from:	To obtain 3200°K from:
BLUE	82	5210°K	3100°K
	82A	4930	3000
	82B	4670	2900
	82C	4400	2800
	82C & 82	4220	2720
	82C & 82A	4050	2650
YELLOW	81	5780	3300
	81A	6100	3400
	81B	6450	3500
	81C	6800	3600
	81D	7150	3700
	81EF	7700	3850

Light Balancing Filters

FIGURE 3A

Color	Filter Number	Conversion
BLUE	80A	3200 to 5500
	80B	3400 to 5500
	80C	3800 to 5500
	80D	4200 to 5500
ORANGE	85C	5500 to 3800
	85	5500 to 3400
	85B	5500 to 3200

Conversion Filters

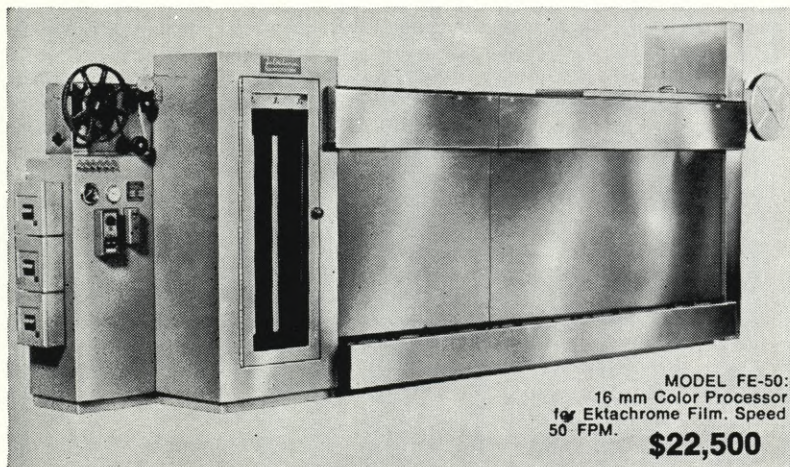
# The Money-Makers

## FILMLINE'S professional color film processors for motion picture laboratories.

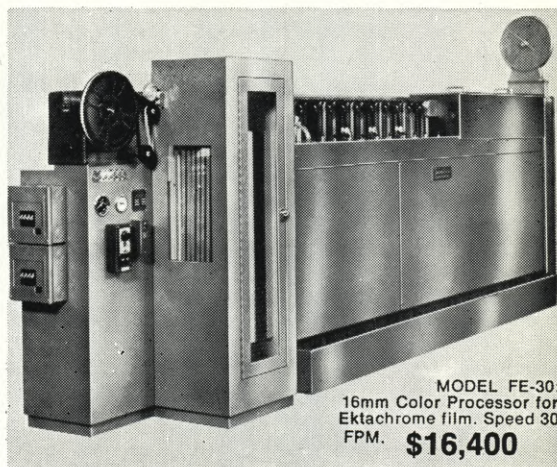
The Filmline Models FE-30 and FE-50 are fast, foolproof, troublefree and long-lasting. They turn out consistently superior work. The design is backed by Filmline's reputation as the world's leading manufacturer of film processors for the motion picture laboratory industry.

Now enjoy the benefits of professional equipment incorporating exclusive Filmline features that have paced the state-of-the-art in commercial, industrial and defense installations at a cost lower than processors offering less.

Check the exclusive Filmline features below:



MODEL FE-50:  
16 mm Color Processor  
for Ektachrome Film. Speed  
50 FPM. **\$22,500**



MODEL FE-30:  
16mm Color Processor for  
Ektachrome film. Speed 30  
FPM. **\$16,400**

### ● "FILMLINE OVERDRIVE FILM TRANSPORT SYSTEM"

This marvel of engineering completely eliminates film breakage, pulled perforations, scratches and operator error. The film can be deliberately stalled in the machine without film breakage or significant change of film footage in solutions. The heart of any film processor is the drive system. No other film drive system such as sprocket drive, bottom drive or simple clutch drives with floating lower assemblies can give you the performance capability of the unique Filmline Overdrive Film Transport System.

● "TORQUE MOTOR TAKE-UP" gives you constant film take-up and does not impose any stress or strain on the film itself. Completely independent of the film transport system. This FILMLINE feature is usually found in professional commercial processors but is incorporated on the FE-30 and

FE-50 models as standard equipment. Don't settle for less!

● "TEMP-GUARD" positive temperature control system. Completely transistorized circuitry insures temperature control to well within processing tolerances. Temp-Guard controls temperatures accurately and without the problems of other systems of lesser sophistication.

● "TURBO-FLOW" impingement dryer. Shortens dry-to-dry time, improves film results, and carefully controls humidity content of your valuable (and sometimes rare) originals. Immediate projection capability is assured because the film dries flat without the usual curl associated with other film processors.

"ZERO DOWN TIME" The reputation of any film processor is only as good as its reliability. The

combination of the exclusive and special added Filmline features guarantees trouble-free operation with absolute minimum down-time and without continual operator adjustments. Recapture your original investment in 2 years on maintenance savings alone. Filmline's "Push the button and walk-away processing" allows inexperienced operators to turn out highest quality film.

● "MATERIALS, CONSTRUCTION AND DESIGN" All Filmline machines are constructed entirely of metal and tanks are type 316 stainless steel, heliarc welded to government specifications. The finest components available are used and rigid quality control standards are maintained.

Compare Filmline features to other processors costing more money. Feature-by-feature, a careful evaluation will convince you that Filmline offers you more for your investment.

## Additional Features included in price of machine (Not as extras).

Magazine load, daylight operation ■ Feed-in time delay elevator (completely accessible) ■ Take-up time delay elevator (completely accessible) ■ Red brass bleach tank, shafts, etc. Prehardener solution filter ■ Precision Filmline Venturi air squeegee prior to drybox entry ■ Air vent on prehardener ■ Solid state variable speed D.C. drive main motor ■ Bottom drains and valves on all tanks ■ Extended development time up to two additional camera stops at 50 FPM ■ Pump recirculation of all eight solutions thru spray bars ■ Temperature is sensed in the recirculation line ■ All solutions temperature controlled, no chilled water required ■ Built-in air compressor ■ Captive bottom assemblies assure you constant footage in each solution ■ Change over from standard developing to extended developing can be accomplished in a matter of seconds ■ Impingement dryer allows shorter put through time.

Partial listing of Filmline Color Installations: — NBC- New York, NBC- Washington, NBC- Cleveland, NBC- Chicago, CBS & ABC Networks, Eastman Kodak, Rochester.

Laboratories: De Luxe Labs, General Film Labs (Hollywood), Pathe-Labs, Precision Labs, Mecca Labs, Color Service Co., Capital Film Labs, Byron Film Labs, MGM, Movie Lab, Lab-TV, Technical Film Labs, Telecolor Film Labs, Guffanti Film Labs, A-One Labs, All-service Labs, NASA Cape Kennedy, Ford Motion Picture Labs.

TV Stations: WAPI-TV, WHP-TV, WMAL-TV, WXYZ-TV, WWL-TV, WMAR-TV, WJXT-TV, KETV-TV, WTOP-TV, WEAT-TV, WCKT-TV, WAVE-TV, WAVY-TV, KTVI-TV, WCPO-TV, KTAR-TV, WSYR-TV.

All prices F.O.B.  
MILFORD, CONN.



AJ

Send for Literature.

Time & Lease  
Plans Available.

"When you buy quality Filmline Costs Less"

# Prestige

Our only explanation for MPL having such a high prestige throughout the 16mm industry is that we consistently live up to what our clients need and want: prints of high quality, genuinely personalized service, and the speed with which we get their work done. We can give you the same high



quality on your 8 mm prints. Planes arriving and departing the Memphis International Airport every hour of the day and night, bring every city from coast to coast within quick and easy reach of MPL. Send your film to the *complete* 16mm laboratory—Motion Picture Laboratories, Inc.

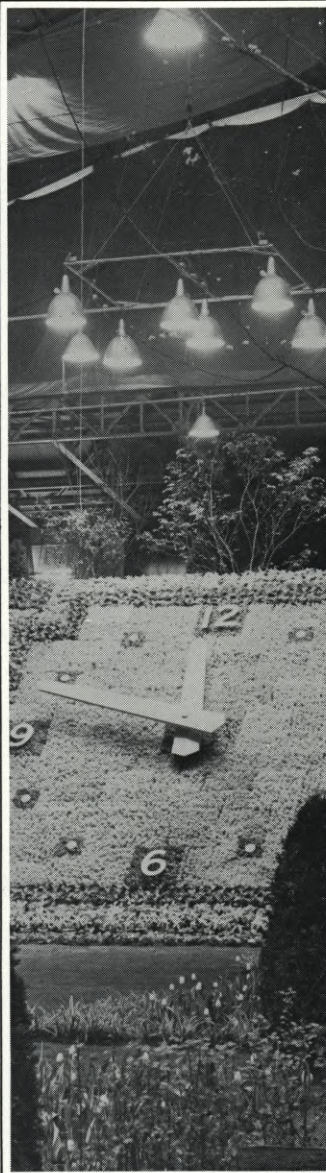
# LIGHTING THE SHOW FOR OVER 30 YEARS!



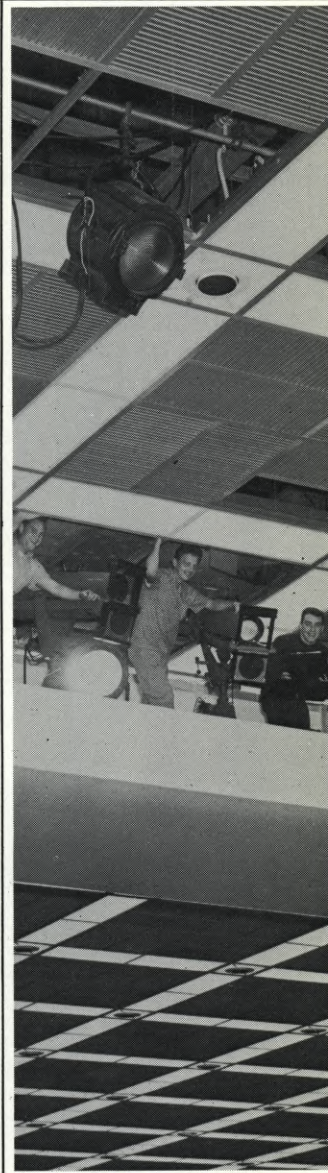
In 1956 thousands witnessed the *This Is Your Life* Network Show honoring Ernest Breech. Lighting was by Jack A. Frost.



Tons of Frost lighting equipment traveled to Havana for this 1958 Steve Allen TV Show. Today Frost experts are still lighting "the show" wherever temporary lighting and power are needed.



Frost has been creating artistic lighting effects for special exhibits, such as this Flower Show, for over a quarter of a century.



The first Auto Show in Detroit's Cobo Hall started right with lighting by Frost and Frost is still lighting these important shows.

## Just call the EXPERTS / JACK A. FROST

HOME OFFICE  
234 Piquette Avenue  
Detroit, Michigan 48202  
Phone: Area 313, TR. 3-8030

COBO HALL OFFICE  
1 Washington Blvd., Rm. 3143  
Detroit, Michigan 48226  
Phone: Area 313, WO. 2-1255

**SHOOTING  
IN EUROPE?**

# THE SAM-MASTER CAMERA CRANE

When we decided to build an entirely new camera crane, new from the wheels up, we took into consideration the needs of all who would be involved in it's operation and 'designed-in' something for everyone.

For the PRODUCER we built in power operated counterbalancing so that no time would be wasted manhandling lead weights.

For the DIRECTOR we devised ten different positions that the camera can be placed relative to the boom arm, thus immensely widening his scope.

For the DIRECTOR OF PHOTOGRAPHY we provided 17ft of rise and fall and a choice of where that 17ft is, from a minimum lens height of only 2ft to a maximum of 26ft plus a possible maximum reach of 20ft.

For the CAMERA OPERATOR we built a smooth as silk panning turret and a system of locating it so that a 360° pan is possible without the crane coming into shot.

For the CAMERA ASSISTANT we incorporated all of his camera leads into the boom itself so that no loose cables are left to dangle into trouble.

For the SOUND RECORDIST we gave each member of the crew operating the crane an aircraft type intercom system so that no one has to shout.

For the GRIPS we mounted the boom completely on ball bearings making it feather-light to operate, and made the arm only 10ins square so that it will be less affected by wind.

For the DRIVER we provided proper rear wheel steering so that it becomes easy to stay on narrow tracks even when running backwards at speed.

For the ELECTRICIAN we have an electric drive system for silent running which may be operated either off internal batteries or off external power supply.

We even thought of the INSURANCE BROKER and used a travelling counter-weight to provide speedy counterbalancing, rather than toxic mercury, a leak of which could put a studio stage out of action for weeks.

And for US we have provided the international film industry with a major item of equipment of which we are very proud.



## FOR ALL YOUR PRODUCTION REQUIREMENTS

**CAMERAS:** Arriflex, Auricon, Bolex, Eclair, Mitchell, etc.  
**LENSES:** Wide Aperture, Wide Angle, Normal, Telephoto and Zoom.  
**PANAVISION:** Anamorphic lenses, 35 and 65mm. cameras, etc.  
**DOLLIES:** Colortran, Elemack & Moviola.  
**CRANES:** Up to 28ft. lens height.  
**TRIPOD HEADS:** Cartoni, Miller, Moy, O'Connor, Vinten & Worrall.  
**HELICOPTER MOUNTS:** Tyler Major & Mini.  
**LIGHTING EQUIPMENT:** Colortran, Lowell, Mole Richardson, Battery portable, etc.  
**RECORDERS:** Nagra, Westrex, etc., mono or stereo.  
**SOUND ACCESSORIES:** Fisher Booms, all types of microphones.  
**TELECOMMUNICATIONS:** Walkie talkies, Transmitter/receivers up to 25 watts output, Loudhailers, etc.  
**SOUND TRANSFER:** 1/4in., 8, 16, 17.5 and 35mm., by Westrex.  
**EDITING EQUIPMENT:** Moviola & Steenbeck Editing Machines, Joiners, Synchronisers, Moy Numbering Machines, etc.

**EDITING FACILITIES:** Cutting Rooms, Productions Offices, Music & Effects Libraries, Mobile Cutting Room & Viewing Theatre.  
**DUBBING:** Westrex 16mm. Reversible.  
**VIEWING:** 16 and 35mm. Single or Double Head.  
**PORTABLE PROJECTION:** 16 or 35mm. Single or Double Head.  
**STILL CAMERAS:** Pentax, Polaroid.  
**CLOSED CIRCUIT T.V.:** Plumbicon & Vidicon, T.V. Viewfinders for Film Cameras, VTR.  
**CAMERA CARS:** With front, roof & rear platforms, Casper Camera Cars.  
**PRODUCTION FACILITIES:** Full technical crews as required.  
**TECHNICIANS:** All grades.  
**FREIGHT AND PASSENGER HANDLING:** Our own Offices at London & Amsterdam Airports.

**DAY & NIGHT • 7 DAYS A WEEK • WORLD WIDE SERVICE**



Samuelson Film Service Limited  
 Samcine House  
 303-305 Cricklewood Broadway  
**LONDON N.W.2.**  
 Telephone: (01) 452 8090  
 Telex: 21430  
 Cables: Samcine, London



Samuelson International N.V.  
 Building 106  
 Schiphol East  
**AMSTERDAM**  
 Telephone: (020) 171990  
 Telex: 14613  
 Cables: Samcine, Amsterdam



Samuelson Alga Cinema  
 162 rue Saint Maur  
**PARIS XIe**  
 Telephone: 023-58-82  
 023-19-86  
 Telex: 67260  
 Cables: Samal, Paris



Samuelson Freight Limited  
 Room 65  
 Cargo Agents Building  
**LONDON AIRPORT**  
 Telephone: (01) 759 9969/70  
 Telex: 22197  
 Cables: Samfreight, London

**ATTENTION: Independent Producers**  
**Our Lab is YOUR COMPLETE HEADQUARTERS FOR:**  
**35MM EASTMAN COLOR PROCESSING**

EASTMAN COLOR NEGATIVE DEVELOPING . . . . .	.059 PER FOOT
COLOR DAILY PRINT W/PRINT THRU EDGENUMBERS . . . . .	.10 PER FOOT
OPTICAL SOUND TRACK TRANSFER (NEG. TRACK) . . . . .	.07 PER FOOT
(FROM CUSTOMER ¼ INCH OR 35MM MAG TRACK)	
COLOR FIRST TRIAL ANSWER PRINT . . . . .	.15 PER FOOT
RELEASE PRINTS AFTER ANSWER PRINT . . . . .	.065 PER FOOT

*Above Prices for feature length productions. Negative must be developed at H&H*

**POST PRODUCTION RENTAL FACILITIES AND SERVICES:**

35MM MOVIOLA EDITING ROOM WITH ALL EDITING EQUIPMENT . .	\$40.00 DAY
35MM NEGATIVE CUTTING TABLE AND EQUIPMENT . . . . .	\$20.00 DAY

*Services Available:*

Titles, special titles & Hi-Con 35mm mattes, Animation, Dissolves, Fades, Negative conforming, sound transfer, Re-Recording, Music Library for Film, B&W or Color Masters. Dupe negatives, prints, etc.

Technical Assistance available for producers wishing to perform their own editing, dubbing, conforming and effects using our facilities.

We can handle ALL, or any part of your feature work. FAST SERVICE assured because we have two processors set-up for 35mm Eastman Color . . . One for Color Negative Developing, the other for Color Print developing with track.

One-Day In-Plant Service for Negative Developing and Daily Prints. Negative received in the morning is back on a plane the same day.

**CHECK OUR PRICES BEFORE SHOOTING!**

Our separate machine for Eastman Color Negative assures uniform color balance, which simplifies answer print . . . thus allowing lower cost for prints. All prices on this list based upon feature length work with all work being done in our plant.

**FOREIGN ORDERS INVITED!!**

Using Tampa, Florida as port of entry assures prompt handling of your order. US Customs at Tampa International Airport is a short distance from our plant.

*Foreign Shipping Information:* Ship Exposed Color Negative or other materials as below:

**H&H Color Laboratory**  
3705 N. Nebraska Ave.  
Tampa, Fla. 33603  
Hold At Airport and Call 248-4935 or 248-4937  
Also notify: Sack & Menendez, Inc.

Sack & Menendez, Inc. is our customs broker in Tampa. They make two daily trips to the airport to clear packages. BE SURE TO MARK ON Package and waybill that TAMPA, FLORIDA USA is airport of destination.

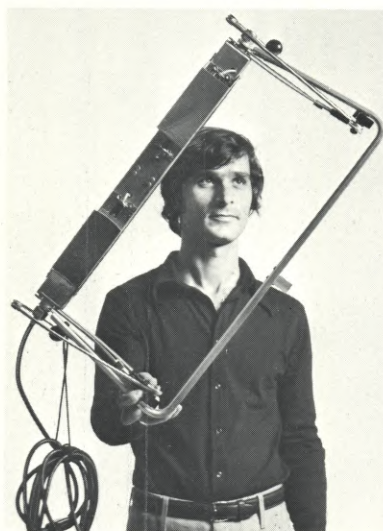
**H&H COLOR LABORATORY**

3705 N. NEBRASKA AVENUE

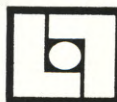
PHONE (813) 248-4935 (DAYS)  
(813) 248-4937 (NIGHTS)

TAMPA, FLORIDA 33603

the new Lowell Soft Light is soft and light



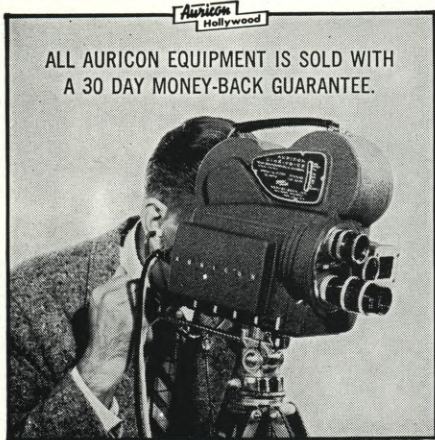
Twice the light output,  
1/5 the weight of  
studio units;  
folds flat and fits  
into a small case.



LOWEL-LIGHT PHOTO ENGINEERING  
421 WEST 54TH STREET  
NEW YORK, N.Y. 10019  
(212) 245-6744

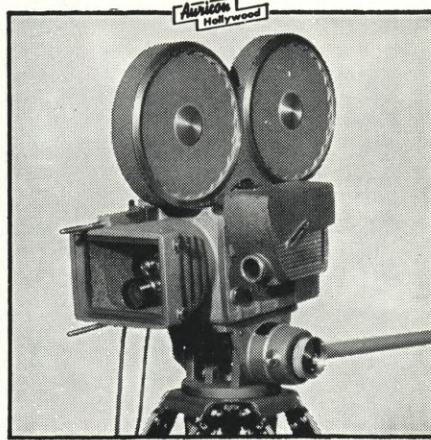


# AURICON 16mm Sound-On-Film for Professional Results!



ALL AURICON EQUIPMENT IS SOLD WITH A 30 DAY MONEY-BACK GUARANTEE.

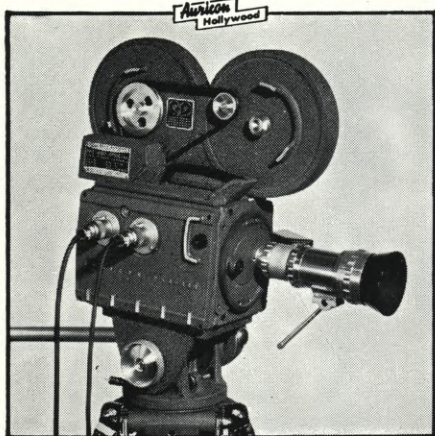
**"CINE-VOICE II" 16mm Optical Sound-On-Film Camera.**  
 ★ 100 ft. film capacity for 2¾ minutes of recording; 6-Volt DC Converter or 115-Volt AC operation. ★ \$1180.00 (and up).



**"AURICON PRO-600" 16mm Optical Sound-On-Film Camera.**  
 ★ 600 ft. film capacity for 16½ minutes of recording. ★ \$1820.00 (and up) with 30 day money-back guarantee.



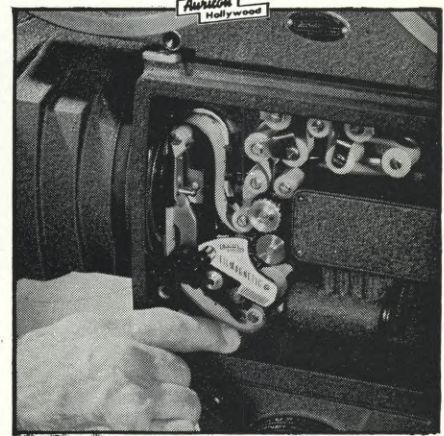
**"SUPER 1200" 16mm Optical Sound-On-Film Camera.**  
 ★ 1200 ft. film capacity for 33 minutes of recording. ★ \$6425.00 (and up) complete for "High-Fidelity" Talking Pictures.



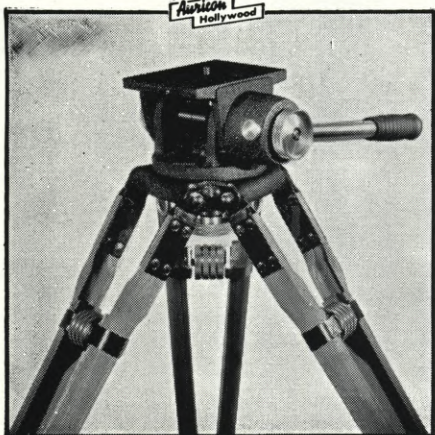
**"PRO-600 SPECIAL" 16mm Light-Weight Camera.**  
 ★ 400 ft. film capacity for 11 minutes of recording. ★ \$1620.00 (and up).



**PORTABLE POWER SUPPLY UNIT — Model PS-21...** Silent in operation, furnishes 115-Volt AC power to drive "Single System" or "Double System" Auricon Equipment from 12 Volt Storage Battery, for remote "location" filming. ★ \$337.00



**FILMAGNETIC** — Finger points to Magnetic pre-stripe on unexposed film for recording lip-synchronized magnetic sound with your picture. Can be used with all Auricon Cameras. ★ \$1325.00 (and up).



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

## Strictly for Profit CHOOSE AURICON

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

Strictly for Profit—Choose Auricon!



### BACH AURICON, Inc.

8902 Romaine Street, Hollywood 38, Calif.  
 HOLLYWOOD 2-0931

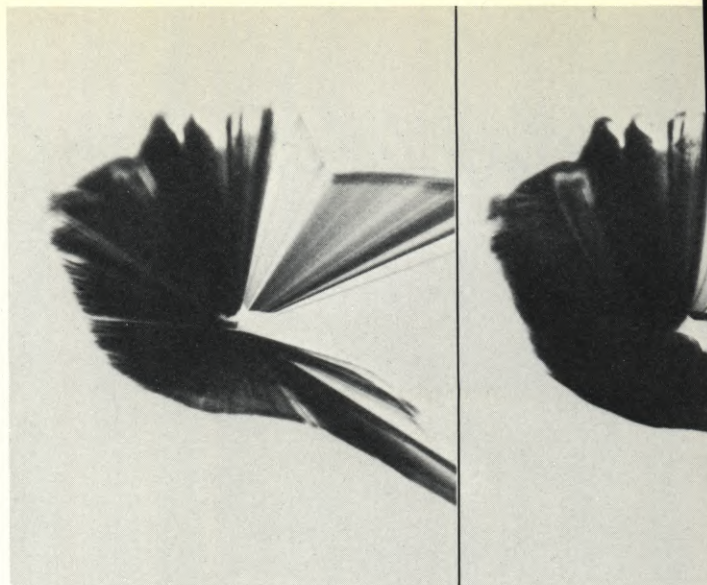


Write for your free copy of this 74-page Auricon Catalog



★ Auricon Equipment is sold with a 30-day Money-Back Guarantee. You must be satisfied.

MANUFACTURERS OF PROFESSIONAL 16MM CAMERAS SINCE 1931



## Animation Mechanisms

The October, 1969 issue of *American Cinematographer* contained an article on filming the Star Gate sequences for "2001: A SPACE ODYSSEY". Reference was made to my animation mechanisms and I have been invited to describe these.

As early as 1957 I had begun to construct mechanical drawing machines, reasoning simply that since the motion picture phenomenon is a precise incremental stepping process, a drawing tool capable of incremental variation would be useful. It is important to explain that I was not motivated to create representational images with these machines but, instead, wanted to create abstract pattern in motion. Since 1940, I had found myself devoted to the concept of an abstract visual art of motion structured in time, having for some years reflected over and over again upon the extraordinary power of music to evoke the most explicit emotions directly by its simple patterned configurations of tones in time and motion. The tendencies of much art of this century toward abstraction and kinetics served to reinforce these views during many moments of serious doubts of the validity of my own concepts.

My first machine, 1957, was immediately put to use in an unexpected way when Saul Bass included a few short sequences, drawn upon hundreds of animation cells with the machine's stylus, for the title to

Alfred Hitchcock's film "VERTIGO". For one with such visions as mine centered in the fine arts, (an art so "fine", incidentally, as to be quite invisible), such applications as titles to a not very significant movie were scant reward.

Also, I soon saw the absurdity of a drawing machine producing countless animation cells which had to be photographed in turn onto motion picture film. So my next machine replaced the drawing stylus with a light which optically exposed the image sequences directly onto motion picture film by the simple dynamic process of holding the camera shutter open while the light itself completed one excursion for each frame.

There were plentiful absurdities in this procedure, it soon became clear since, in effect, I found I had labored long and hard only to produce hardly more than a mechanical equivalent of the cathode ray tube oscilloscope.

The mechanical motion which first moved the drawing pen over animation cells and, later, the light to and fro over the objective field of an ordinary animation stand assembly was merely a set of crank and lever arrangements similar to the ubiquitous child's circle pattern drawing toy or the more elaborate drawing or etching mill used in the bank-note printing industry.

By this time, however, I became aware of two areas of possibility, the coincidence of which had considerable effect upon the following developments.

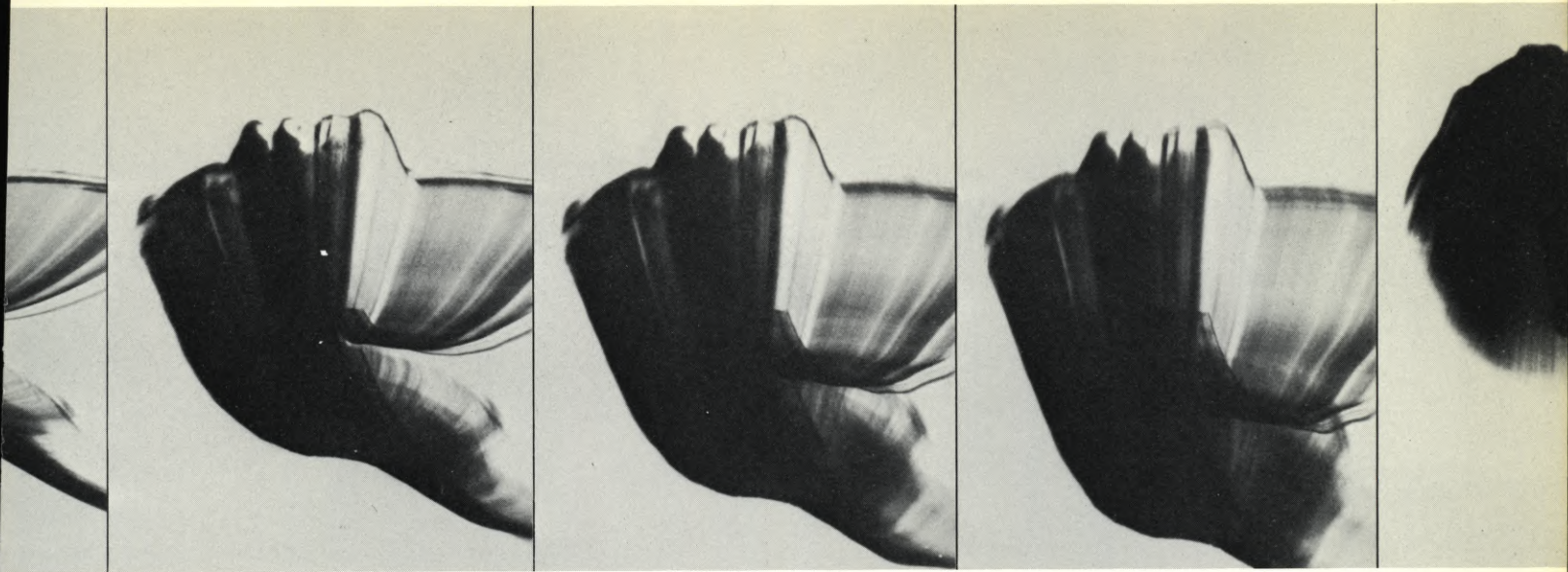
I began to comprehend how camera advance, art work, orbital and rotational

motion, and illumination, could all be knit into a comprehensive automated functioning system. Simultaneously I acquired, (not exactly overnight) a highly specialized skill in adapting the almost worthless mechanical junk excreted from army depots across the country as the Army, Navy, Air Force, and Marines unloaded materiel on the surplus market. Junk such as brand new thirty-thousand-dollar anti-aircraft specialized analog ballistic problem-solver computers dating back to World War II.

My next machine employed hardware from war surplus. Selsyn motors to interlock camera functions with artwork motions. Ball integrators to preset rate programming of some motions. And differential assemblies to control the incremental advance of the motions as each frame advanced.

Instead of a point source of light capable of drawing only lines, the camera was fixed above a light field about twelve inches wide. Artwork consisting usually of film negatives of typography or rudimentary abstract patterns (clear images on an overall black field) could be orbited, rotated or moved in a great variety of compound sine function excursions within the twelve-inch light field.

LAYOUT DESIGN BY STEPHEN NOWLIN



The camera above was motorized to advance one frame automatically at the instant of the completion of one cycle of the artwork motion. Driven through a clutch-brake and continuously running motor, camera advance was made as rapid as practical to minimize that blind segment of the artwork cycle required for pulldown for the next frame to be exposed. Thus, throughout the major portion of the artwork excursions the camera shutter would be in open position.

In order to clarify the simple principles involved here we may take as an example a sequence from my film "CATALOG"\*. A film negative having

\*Byjina Flores, 1964, produced by John Whitney Jr., age 18. See Expanded Cinema, Gene Youngblood, E. P. Dutton, New York, 1970.

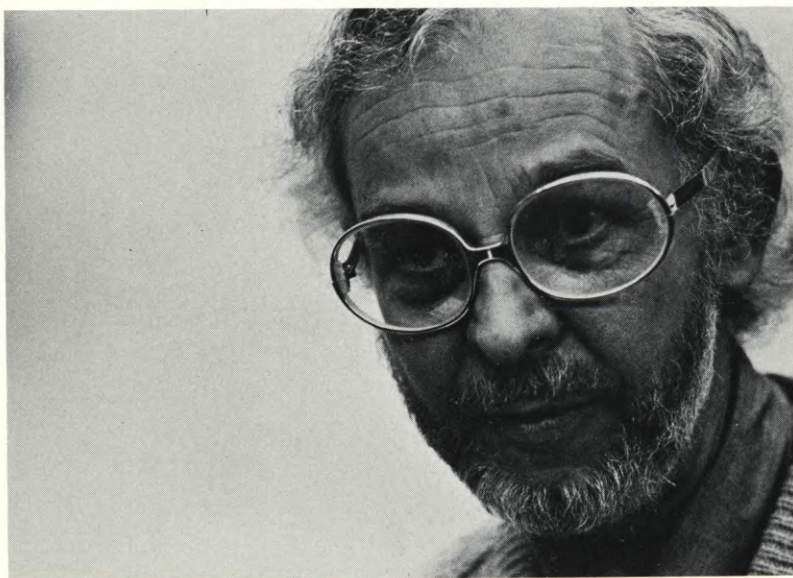
"1961" (clear type face on a black field) is mounted on the artwork holder. This artwork is attached so that "1961" is located at dead center in the camera field when viewed through the rack-over viewfinder of the 35mm Mitchell camera (crank and lever mechanisms had been replaced by a more elaborate variable amplitude compound cam assembly by this time).

The art, "1961", so positioned in center field, can be articulated by the cam system which, for the moment, is set at "O" amplitude. The light field below the artwork is turned on, then the entire system is turned on. Art Work "1961" sits there throughout several complete "O" amplitude cycles while the camera advances at the completion of each cycle, exposing on each frame the image "1961", immobile at dead center field. Now the amplitude controls, through

differential gears, begin a minute orbiting which moves the art on an orbit with an increasing radius whose center is still camera field center. The simple image, "1961" now begins to be transformed into a progressively less readable pattern. The pattern that is produced, moving as it does, smoothly, and expanding outwardly, will continue to hold visual interest if only as a simple attractive abstract pattern. (see illustration, FIGURE 1)

If, instead of a continuously operating filament-type light source, a strobe light is used, the continuous pattern on the film can be broken into individual distinct overlaying images such as those illustrated. (FIGURE 2)

I have selected both of these simple actions to suggest some of the possibilities of which the machine is capable. My

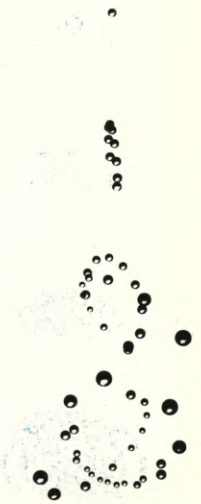


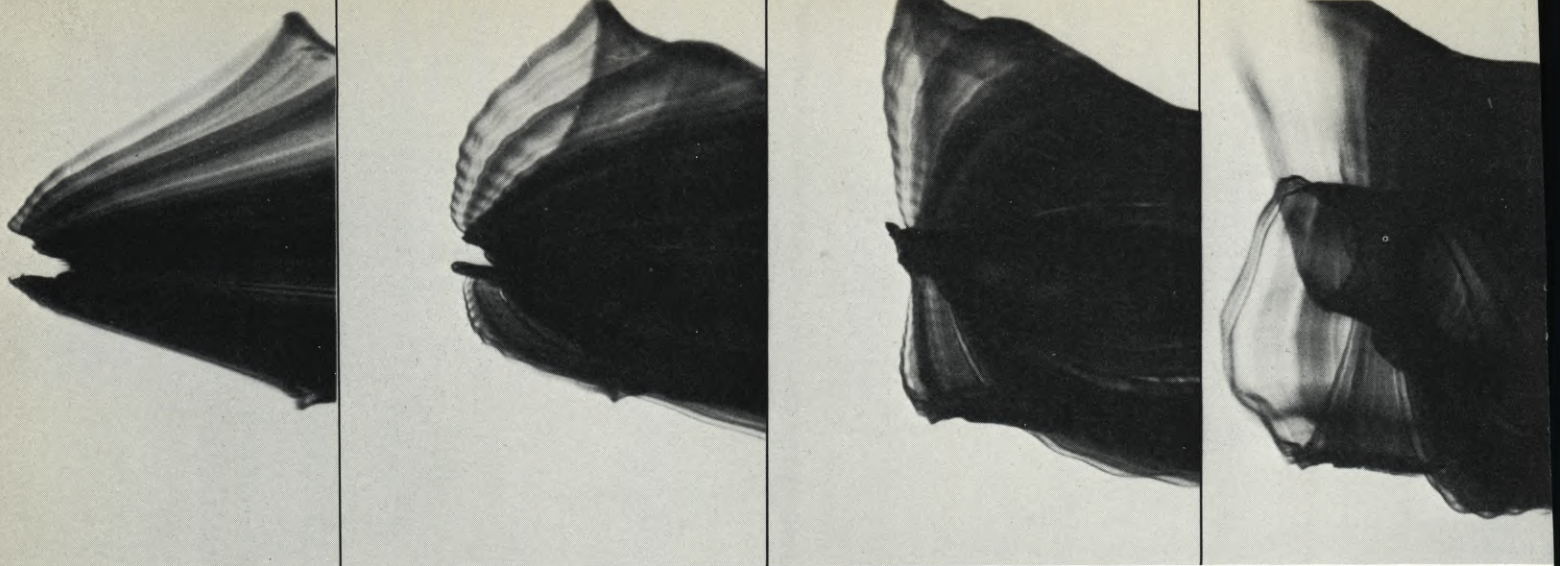
1

UNIVERSAL EDUCATION AND VISUAL ARTS



2





film "CATALOG" (see cover illustration) is a more diverse demonstration of the versatility of the machine. This film, used as a sample reel, was to be very productive of commercial assignments in the following years. The titles to the Chrysler, Bob Hope Television Show and portions of *To the Moon and Beyond* of the New York World's Fair, Alcoa commercials and titles to the Dinah Shore Show were typical. Of all the productions of this period, however, the one film which will probably endure was produced with my second version of this machine and made by my brother James. The film I refer to is titled "LAPIS". It has received many awards and continues to be a very popular film.

The following is a description of the effects seen throughout "LAPIS". Most of the patterns are center-oriented, con-

stantly moving dots of color which continuously reform into new concentric arrays. They were achieved by a strobed rotary action of the artwork which combined an orbit, whose diameter was constantly changing, with drifting rotation. The artwork consisted usually of nothing more than a simple random dot pattern which was hand-drawn.

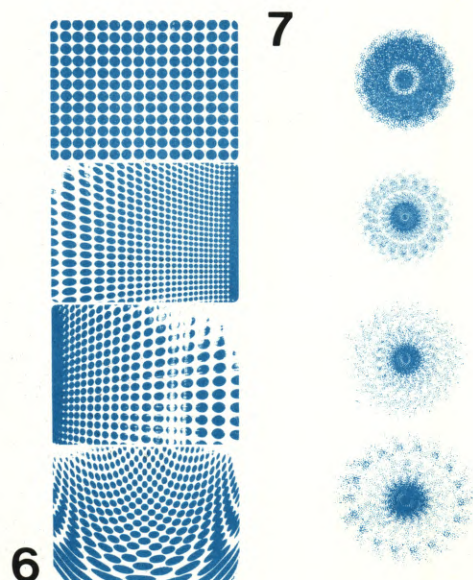
My brother and I were much intrigued by the results achieved by these simple random dot inputs. It was astonishing to discover the variety of orderly patterns generated by as random a source as these dot patterns. The original artwork contains no hint of the patterns that were produced. (FIGURE 3)

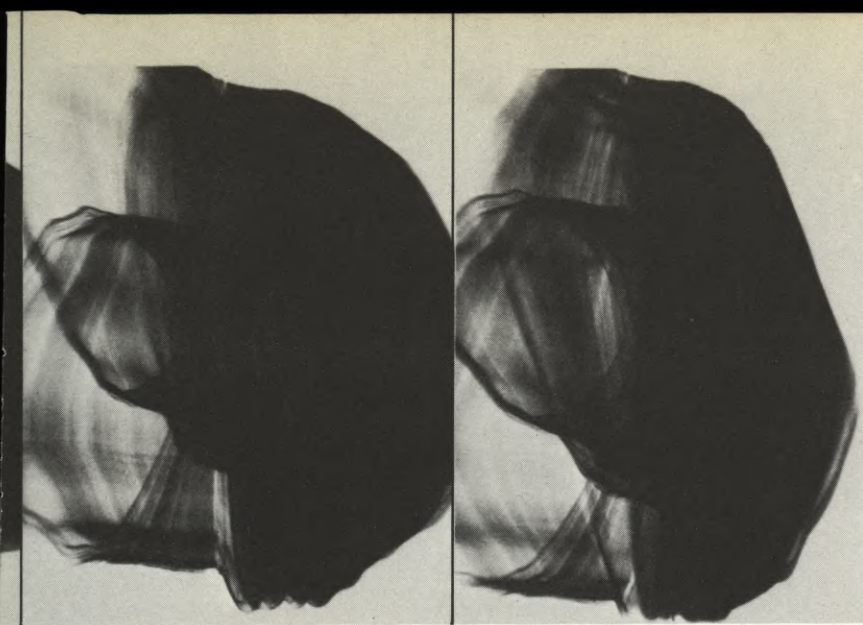
The above descriptions, however, still represent but the simplest of countless transformations that can be achieved

with essentially the same mechanical system. For example, the shape of the orbital motion can be varied into back-and-forth motion on any angular axis with the X and Y controls of the compound cam assembly. A straight back-and-forth motion along a line at right angles to a line of type for example produces an effect such as that illustrated. (FIGURE 4)

Countless further variations can be produced by altering cycle phasing relative to camera advance or exposing only some fraction of each cycle or by changing the timing of the illumination, its frequency and/or its on-and-off duration.

These possibilities are greatly expanded by inclusion in this fully integrated system of a servo-motorized zoom lens. The zoom cycle is phased and operated





Selected frames from a new film by John Whitney, Jr., "TERMINAL SELF", sponsored by Universal Education and Visual Arts.

through all or part of its full magnification range in cycles that coincide with the various excursion cycles of the artwork. The illustration (FIGURE 5) is from a commercial for a milk product made in 1964 and was generated from artwork consisting of a careful hand-rendering of a single droplet of milk. In this case the orbit of the artwork began with the zoom lens at about mid-point of its magnification range. Then the zoom was operated through progressively greater magnification amplitudes per cycle as the elliptical orbits of the artwork were modified. The drawing was strobed nine times per cycle, producing a ring of nine orbiting spheres.

Finally, since my earliest casual interest with motion picture photography had been in a college astronomy department, I was familiar with various applications of optical slit-scanning connected with solar spectroscopy. It was, therefore, logical to apply these principles to my motion picture system. The titles for MGM's "GLASS BOTTOM BOAT", and many other commercial assignments, were done with a slit attached to one element of the compound cam assembly. The typography was attached to the other cam. The slit was set to move one full excursion across the full width of the type, while the type moved north and south one or more times per half-cycle of the slit. The return phase of the slit-scan cycle was accomplished while the camera shutter remained advanced, one half cycle, in closed position. Since

there was a preset differential drift of the north and south movement of the typography the lettering on the screen appeared to undulate smoothly as if in water. (FIGURE 6)

The combination of this slit-scan technique with zoom produces very pronounced spatial motion in depth. This is specifically the slit-scan effect used to produce the Star Gate sequence of "SPACE ODYSSEY". My son's film, "BYJINA FLORES"\* was produced by this slit-scan zoom combination. The artwork consisted merely of a standard Benday process overall dot pattern with a slit-scan and zoom cycle in differentially drifting interlock. (FIGURE 7)

The existing machine is grossly over-designed. As a prototype, many experimental sub assemblies have been installed and removed or permanently established over the recent years. In fact, like some machine tools, each new film assignment involves some hardware assembly or knock-down. The machine practically fills the room into which it was built. The machine was featured on a CBS 21st Century Television segment in 1968. Two overhead wood beams, 4" x 12", span the room and carry the camera on a transverse dolly hanger assembly whose movement is free and independent of the artwork manipulating mechanism and illumination table below. This camera hanger assembly permits 360° continuous rotation of the camera, and back-and-forth straight-line travel over about twenty-four inches. The assembly connects all the camera's electrical leads; selsyn, film advance, zoom functions and phase shift through

\*Catalog—7 min., and other films by the Whitney family are available from the Museum of Modern Art, New York or Pyramid Films, Box 1048, Santa Monica, California 90406.

slip ring contacts to permit the continuous around-and-around camera rotation. These camera motions, of course, can be phased and synchronized precisely with the artwork motions below.

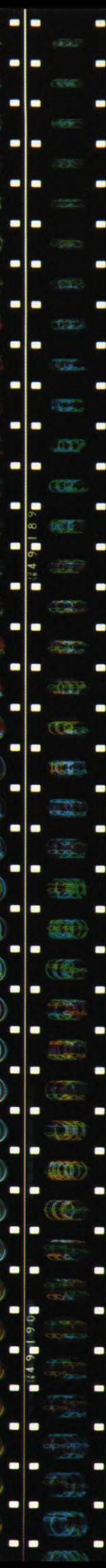
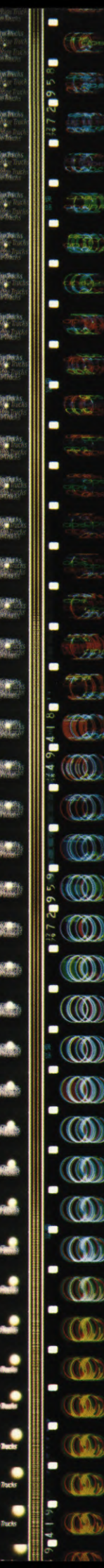
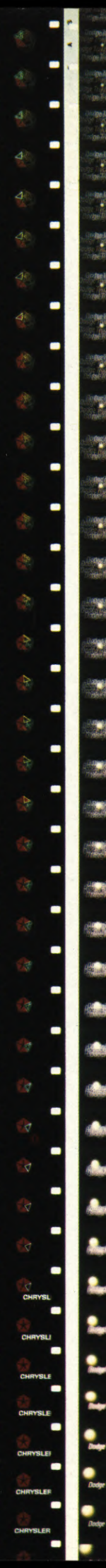
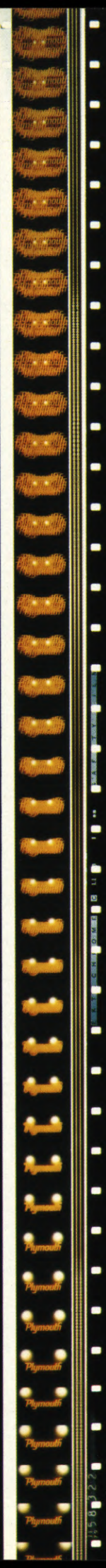
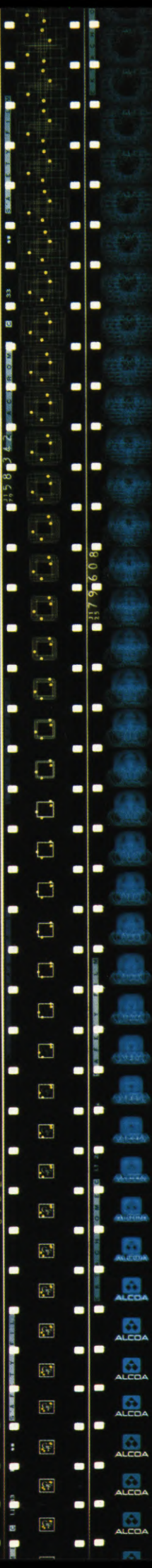
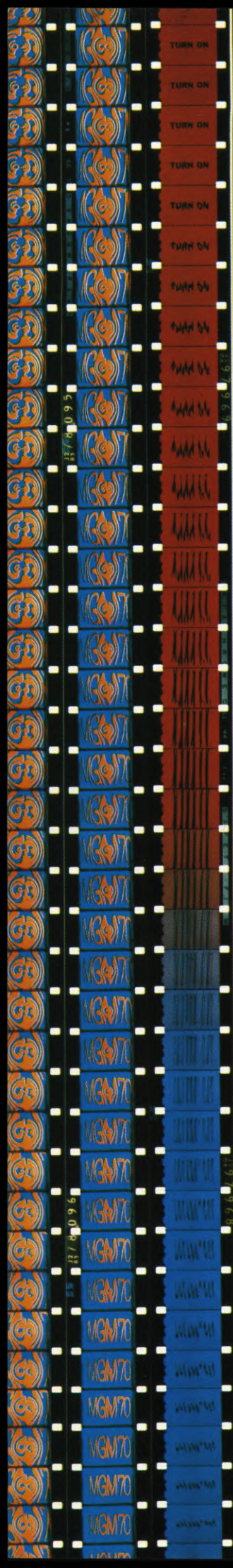
The artwork table below can be rotated 360° as a total unit, but cannot be operated continuously around because of its electrical connections. Since some of the cam functions have been covered already I will skip any further description except to say that at present the machine possesses four complete cam assemblies, any one of which can be set up to manipulate artwork or scanning slits or color filter patterns, etc. These units can be compounded in various ways to produce sum and difference effects.

It is somewhat idle information to count components but as an index of the complexity to which this kind of design system can be extended, the following statistics are suggestive:

- 17 Bodine Motors
- 8 Selsyns
- 9 differential gear units
- 5 Ball integrators

This present machine is now serving to test out a vastly simplified and rationalized system operated by servo drives and controls which, with a designed interface, will permit direct digital computer control. The new machine will be marketed under a patent granted in 1963 and others in development.

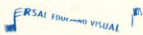
Continued overleaf



(RIGHT) a recent photo of the analog cam machine. The overhead camera hanger is rotating and, therefore, appears blurred in this photograph.



A refinement of the slit-scan process involving compound rotation.



UNIVERSAL EDUCATION AND VISUAL ARTS

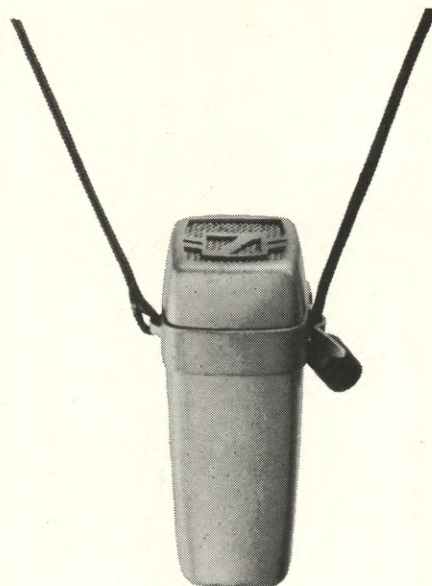
In conclusion, may I be permitted a comment from a very specialized point of view:

My optimism is more secure today than in 1940 regarding the arrival of altogether new forms of art for television and the newer home library cassette systems. I foresee new forms of abstract design and typography, which will bring unfamiliar delights of music for the eye to enjoy and a language of information that would mean the ascendancy of a new way with words, images and ideas.

Any casual viewer of television throughout the year 1970 may have noted that graphics, especially typography, have

found a new dynamics that is quite happily suited to the television medium. For example, three major networks, in 1970, sponsored promotional interludes that anyone with an eye for design could respond to with unreserved pleasure. Yet, television in the United States, which is sometimes a thing of national pride, is, also, far too frequently, a matter of national disgrace. Aside from bad taste, bad design, establishmentarianism and commercial imprudence, the problems of television still have much to do with a medium that seeks to find its own "right way to fly". Traditions, especially from the theatre, are still a dead weight against flying new video ideas. My work has always been with new kinds of "flying machines". ■

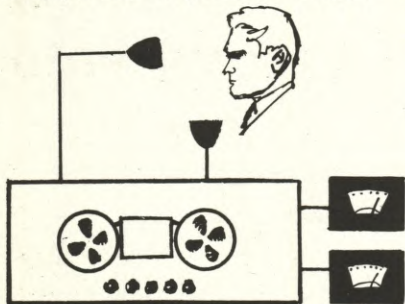
# Now... the first lavalier microphone without 'lavalier sound': the MD 214 by SENNHEISER



Among the many reasons for using lavalier microphones are their constant distance from the performer (less need to 'ride gain') and unobtrusiveness. However, ordinary lavalier microphones have 'lavalier sound,' a muffled, noisy quality that makes them unsuitable for commercial use.

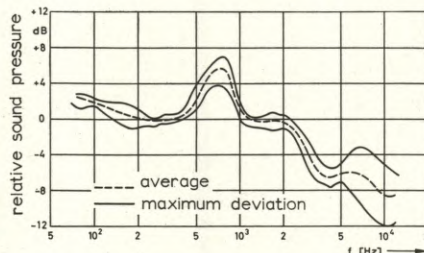
## What causes 'lavalier sound'?

**1. Directional sound radiation:** The mouth radiates sound, especially higher frequencies, in a beam-like pattern, resulting in lower off-axis sound pressures at lower frequencies. Since lavalier microphones are always significantly off-axis, a loss of 'presence' results.



**2. The vibrating chest:** Extensive research has shown that the chest acts as a radiator in the region of 600-800 Hz, with peak energy radiated around 700 Hz (surprisingly, this figure varies little between the sexes). When ordinary lavalier microphones are placed in position they pick up this energy, imparting a boomy quality to speech and singing alike.

**3. Noise problems:** Three kinds of noise plague the ordinary lavalier microphone: mechanical noise conducted along the microphone cable, noise from friction generated when the microphone rubs against clothing, and airborne noise, such as cloth rubbing against itself.

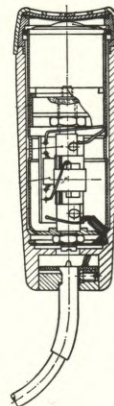


## How the MD 214 eliminates these problems:

**Contoured response restores lost 'presence':** Sennheiser engineers conducted extensive tests, comparing the response of a microphone placed in the lavalier position with an identical one placed on-axis. Using a number of subjects, they were able to plot an average curve of difference. By judicious construction of the transducer assembly, the MD 214's response was tailored to a 'mirror-image' of the difference curve. The result: unusually flat response in the audio range.

**Filtering prevents boominess:** A specially-engineered filter, unique with Sennheiser, attenuates frequencies in a narrow region around 700 Hz, eliminating the hollow, muffled quality produced by pickup of chest vibrations.

**Shock-isolation cuts noise:** The MD 214 is built to eliminate noise from the inside out. The transducing assembly is housed in a 'case-within-a-case,' a separate assembly which is pneumatically damped and slides in a permanently-lubricated plastic gasket. This unit, which serves as a noise baffle, is in turn surrounded by a thick cast housing, which has rounded corners to reduce friction, while preventing the microphone from rolling side-to-side. The microphone cable has a flexible internal strain relief, which prevents mechanical noise from reaching the transducer via the cable.



The result of these engineering innovations is a microphone specially-created to meet the stringent pickup requirements of the film and broadcast industries. For technical data on the MD 214 or any other dynamic or condenser microphones in the Sennheiser line, please call or write:

**SENNHEISER**  
*electronic*  
CORPORATION (N. Y.)



500 Fifth Avenue, New York, N.Y. 10036,  
Telephone (212) 564-0433  
(manufacturing plant, Bissendorf, Hannover, West Germany)



# A man. His work. And his camera.

LeRoy French — Professional Underwater Filmmaker □ Designer & Manufacturer/Underwater Camera Housings □ Executive Producer/International Underwater Film Festival (Santa Monica) □ On the Board of Directors/Academy of Underwater Photographers.



Whether filming a turtle boat in the West Indies... or filming inside the Navy's Sea Lab III on the West Coast... or filming a dangerous underwater sequence in some far off exotic locale — LeRoy French relies completely on the Beaulieu 16mm camera system to capture his exciting footage.

**"The Beaulieu 16mm camera, with 200 ft. magazine, is the finest system I have ever used. It is extremely lightweight, compact and dependable. It works as well underwater as it does topside... Shooting in the humid tropics or underwater, the Beaulieu system comes thru when it counts. Beaulieu's powerful battery supply runs the 200 ft. magazine without a hitch under all conditions. Incredible exposures under extremely adverse conditions... The finest thru-the-lens metering system on the market today."**

**Beaulieu.  
It lets you be  
there when  
it's happening.**

**CINEMA**  **Beaulieu**  
A DIVISION OF HERVIC CORPORATION

To receive literature on the Beaulieu 16mm camera, visit your finest camera store or write  
Cinema Beaulieu, General Office: 14225 Ventura Blvd.,  
Sherman Oaks, California 91403.

# ON LOCATION WITH "CARNAL KNOWLEDGE"

Reporting from the set of the new Mike Nichols film—a complete change of pace from "CATCH-22"

By HERB A. LIGHTMAN

## Vancouver, British Columbia

For me the excursion to this gemlike Canadian city constitutes a twofold pleasure. It is, first of all, an opportunity to observe fellow director Mike Nichols in the process of applying his own special magic to film. Secondly, it constitutes a reunion with my good friend, Director of Photography Giuseppe Rotunno, ASC, whom I haven't seen since I visited him on the set at Cinecittà in Rome during the filming of Stanley Kramer's "SECRET OF SANTA VITTORIA".

The project under way here in Vancouver is the shooting of Mike Nichols' new picture, "CARNAL KNOWLEDGE", an Icarus Production from a script by Jules Feiffer for Avco-Embassy release. I am especially flattered by the invitation to come on board during shooting because the sets have been rigorously closed to the press from the onset of production—and still are. However, since I am rightly considered to be a fellow film technician rather than a journalist, I receive a warm welcome from Mike Nichols—plus *carte blanche* to take whatever technical photographs may be necessary to augment the excellent production shots being made by unit still photographer Toby Rankin.

Seeing Rotunno again and watching

(LEFT) Famed Italian Director of Photography Giuseppe Rotunno, ASC, captured candidly in a spectrum of moods on the set of Mike Nichols' "CARNAL KNOWLEDGE".

him work is a special pleasure. Called "Peppino" by friends and crew, he is a true artist of the camera and a wonderfully warm human being, as well. Unlike the other Romans I know, who are effervescently emotional (just like in the movies), Peppino is very quiet, almost shy, but a real tiger behind the camera. Fresh from having photographed the flamboyant "FELLINI SATYRICON"



Academy Award-winning Production Designer Richard Sylbert, making his fourth film with Director Nichols, strives for total simplicity in set design.

(ABOUT THE DIRECTOR OF PHOTOGRAPHY: GIUSEPPE ROTUNNO, ASC, started his career as a still photographer. During World War II, he saw military service in Greece, finished the War as a German prisoner manning heavy machinery in a steel town in the Ruhr. His opposite number in this round-the-clock slavery—a fifteen-year-old Russian boy.

Giuseppe Rotunno returned to the Italian film industry as a camera assistant, and later operator, working with Rossellini, De Sica, Visconti and the like.

He finally got his chance as a Director of Photography on Visconti's "WHITE NIGHT" when the incumbent, G.R. Aldo, died suddenly and tragically in mid-schedule. Assistant directors on that production were two eager young men named Franco Zeffirelli and Franco Rossi.

For "CARNAL KNOWLEDGE" Rotunno flew in his usual three-man camera team from Rome, eight-year collaborator Giuseppe Maccari (operator), assistant cameraman Giampiero Servo and gaffer Rudolfo Bramucci.

Between feature films he returns, when possible, to documentaries to try out new techniques. 70 per cent of his films have received Industry Awards.

His many credits include: "THE BIBLE", "ANZIO", "CANDY", "ON THE BEACH", "THE SECRET OF SANTA VITTORIA", "BREAD, LOVE AND DREAMS", "THE SUNFLOWER", "YESTERDAY, TODAY AND TOMORROW", "ROCCO AND HIS BROTHERS", "BOCCACCIO 70", "THE LEOPARD", and "FELLINI SATYRICON".)



(LEFT) Camera Operator Giuseppe Maccari (dressed for the Riviera), Cinematographer Rotunno and Director Mike Nichols hold a production discussion on location in Vancouver, B.C. (CENTER) Setting up to shoot a sequence in an actual location interior. (RIGHT) Rotunno takes an exposure reading on stand-in on the set of the Panorama Studios in Vancouver.

and De Sica's "SUNFLOWER", it is a distinct change of pace for him to be called upon to shoot Mike Nichols' "little picture".

"CARNAL KNOWLEDGE" is *little* compared to Nichols' previous effort, "CATCH-22", which surged across the screen in spectacular sweep to the tune of twenty million dollars or so.

To all appearances, "CARNAL KNOWLEDGE" is being shot as if it were a low-budget film—a minimal crew (just the people who are needed, minus the usual mass of hangers-on), very simple sets (and only a very few of those to augment the actual locations) and basically just four people in the cast. Of course, when one considers that the four people are Candice Bergen, Jack Nicholson, Ann-Margret and Art Garfunkel, this does change the economics a bit.

The crew is oddly assorted, but working together in the closest harmony. Rotunno, his operator, assistant cameraman and gaffer are from Italy, of course. Other key technicians hail from Hollywood, and the rest are local people. There is a free and easy atmosphere on the sound stage, with everyone taking their cue from Mike Nichols' hang-loose attitude.

#### Keeping It Simple

Just now the company is shooting interiors at the Panorama Studios, a small but very well-equipped facility high on a hill in the countrylike suburbs of Vancouver. There are two small stages crammed to the walls with sets that include dormitory rooms of the Amherst/Smith type, circa 1946—plus a

typical college town beer tavern interior. The sets are almost Spartan in their simplicity.

This austere approach to design is explained to me by Production Designer Richard Sylbert, who has worked on all three of Nichols' previous films, winning an Academy Award in Art Direction for "WHO'S AFRAID OF VIRGINIA WOLF?". His other credits include such impressive films as "GRAND

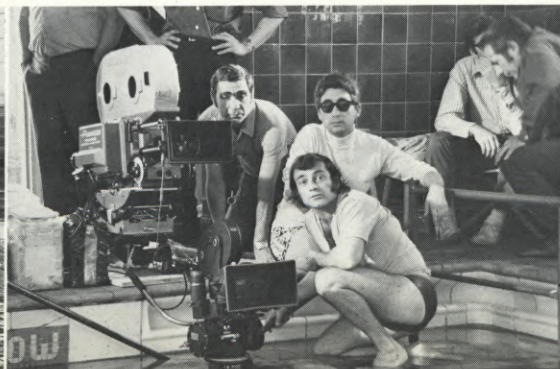
PRIX", "ROSEMARY'S BABY", "THE ILLUSTRATED MAN" and "APRIL FOOLS".

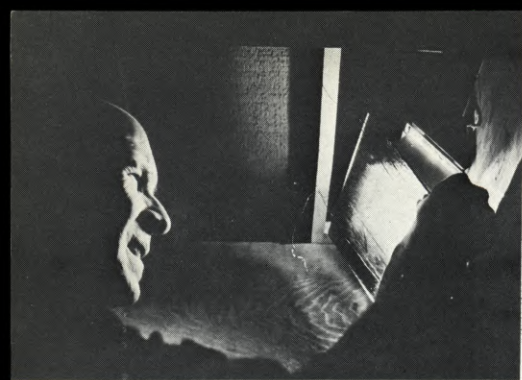
"We're trying to keep the picture very simple in the visual area," he tells me. "Since there are really only four actors in it, other than extras, you might compare it to 'chamber music'. For this reason, we decided to stick to a few simple textures and simple colors. This is faithfully in key with the time



Since nature did not oblige on schedule with actual snow, a special machine is brought in to chop ice blocks into man-made snowflakes and blow them into realistic drifts about college exterior location in Vancouver. Texture of this type of snow is considered more authentic than ground gypsum which was formerly used for such purposes.

(LEFT) An interior swimming pool is commandeered as the locale of a collegiate sequence featuring Art Garfunkel and Jack Nicholson. (CENTER) Panavision Silent Reflex camera above and Arriflex camera below are set up at poolside, as Rotunno, Assistant Cameraman Giampiero Servo and Operator Maccari line up the scene. (RIGHT) Panavision camera on crab dolly is wheeled into a sparse studio set representing a dormitory room of the 1940's.





(LEFT) Gaffer Rudolfo Bramucci hangs amber filter in front of a Nooklite affixed to a beam of the tavern set ceiling. (CENTER) Two Panavision Reflex cameras are set to shoot two simultaneous angles of the action. (RIGHT) College tavern set in the process of being lit with amber light exclusively, a bold technique in which rendition of flesh tones becomes critical.

and place—eastern college life as it was more than 20 years ago. Such places were built of plaster, wood and brick, usually done in tan or brown or cream tones. There's no furniture in any set that isn't absolutely necessary and, so far, there is nothing on the walls in any scene. The amazing thing is that not

only don't you miss these trimmings, but the austerity gives the picture a sort of 'unity of reduction'. Each film should have its own unity, and this film in particular. It's really under total control.

"Peppino Rotunno understands this kind of thing very well. He understands that one has to get from bare wall surfaces as much as one usually gets from a lot of other things. You've got to work the walls and windows, because that's all there is—only what is absolutely necessary. A scene in a dormitory room will have one chair and two beds—that's all. There may be a few small props that belong to people but, basically, the decor is stripped down entirely. The reason is that this is not the type of picture in which you use things to make statements about the way people live—at least in the conventional sense. You're not saying: *This is what I know about them*. You're taking everything away, so that if a lamp is there, that lamp represents the entire period."

I remark that such simplicity is really quite difficult to utilize if one wants to put across certain subtleties and *nuances* and undercurrents of relationship.

"That's very true," says Sylbert. "In 'THE GRADUATE', for example, it was very easy to make a visual comment about the people and the way they lived. The same thing applied to 'VIRGINIA WOOLF', which was a picture about intellect and the things that intellect collects. This picture is entirely different, and really much more difficult. Instead of adding things, you walk into a set and begin by *subtracting*. It's fascinating to view the rushes and see how clean everything is, the clarity of it.

After one has done a picture like 'VIRGINIA WOOLF', it's fun to reduce things to the bare minimum."

I observe that it's necessary to have a highly talented cameraman in order to get the most out of such a challenge. Otherwise, the result could be pedestrian, to say the least.

"You're quite right," says Sylbert, with only the trace of a shudder, "but Rotunno has been doing a really wonderful job. He has a great sense of light and what it can do on surfaces. After all, the only thing that's finally there for the light to hit is the texture—and that texture has to be developed by light. Otherwise, you can't see it. Since this picture takes place about 60% at night, the sources are also very important.

I ask him how much actual collaboration was necessary with Rotunno in order to arrive at the unified visual result.

"We've tried to work together with as much preparation as possible," he tells me. "As soon as Peppino arrived from Italy we held a series of meetings. We examined sketches that I had made and discussed the overall principle of the picture. Once we all understood what we were going for, we could begin to discuss specifics. These talks were very fruitful because, since we are working up here in Canada, we had to bring everything with us.

"It's very important for a designer to talk in depth with the cameraman, because a skilled cameraman makes an enormous contribution to the film. What Peppino is doing may look very simple but, in its own way, it is very difficult to do. He lights sets with complete ceilings and struggles with the



(TOP:) Front facade of the Panorama Studios in Vancouver, B.C. (BOTTOM) One of the two Panorama sound stages used for shooting "CARNAL KNOWLEDGE" interiors.

(LEFT) The camera crew and Art Director Sylbert discuss approaches to shooting in a dormitory set. (CENTER) Camera Operator "Beppe" Maccari enjoys a joke between set-ups. (RIGHT) Assistant Cameraman Servo readies the Panavision camera in preparation for filming a shot of Candice Bergen, seen at piano in the background.



surface of a wall that has absolutely nothing on it but fine texture and gets it to work in place of something very elaborate.

"He isn't doing all this because it's tough to do, but simply because it's right for this particular picture. The great thing about this film is the opportunity to eliminate all the things you've found easy to do for years, to keep pushing the surface cleaner and cleaner. The simple thing is very difficult to get right, but there's something about struggling with problems like this that makes the result very interesting."

#### College Is a Brown Paper Bag

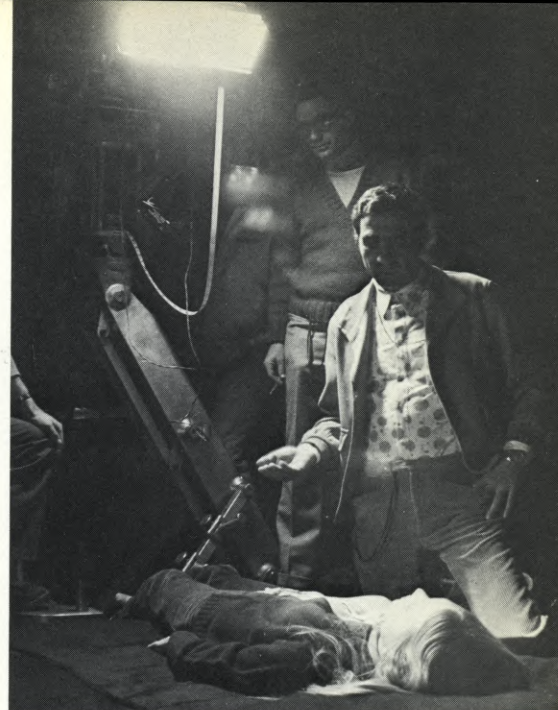
I remark about the absence of color in the decor. All of the sets I see on the stages are done in the cream and tan and brown tones which Sylbert has mentioned.

"It's true that there is little color," he explains, "but it's not because of a conscious avoidance of color. It's a

series of conditions are made to come alive in real terms on the screen. It becomes clear to me that Sylbert, for all his quiet and relaxed mien, is a very "together" sort of technician, one who leaves nothing to chance in achieving a desired cinematic effect.

"There is no excuse for a picture to be ugly, even if you are talking about ugliness," he tells me. "In my opinion, ugliness is the inability to control something. I also feel that there's no excuse for a screen image that isn't really well thought out. After all, that is what we are here for. But the only real security anybody has when it comes to these elements is the director. I began my work in film with Elia Kazan ('A FACE IN THE CROWD', 'SPLENDOR IN THE GRASS') and then did three or four pictures with Sidney Lumet in New York. This is my fourth picture with Mike Nichols.

"Over the years I have been concerned, first, with the material—and,



Cinematographer Rotunno checks the lighting on Miss Bergen prior to filming a scene. To him light is the basic element of cinematography, and worthy of the closest attention.



(LEFT) In the tavern set, Candice Bergen plays a light-hearted scene with co-star Jack Nicholson. (RIGHT) Director Nichols eats lunch with stars, Bergen, Garfunkel and Nicholson in commissary he had erected at the studio, consisting of three "mobile home" units joined together. Extensive menu equalled that of the finest restaurants. (BELOW RIGHT) Panavision camera on a boom is moved into position for high night-for-night exterior scene.



visual way of growing from college—which I always assumed was the color of a paper bag—to the 1970's. You see people differently in 1970 from the way they looked in 1946. There is a change in contrast. Back in college, under the tans and browns and brick colors, the edge was very soft. With time, life takes on a very hard edge. The mature man wearing a black velvet suit in a white room is, in every way, drastically different from the boy he was in college, with his khaki pants and khaki room and khaki bedspreads and khaki book covers. As the emotional pressures of the film's story increase, the contrast—which was soft and delicate in the beginning—will harden up. This is the effect that Peppino will be striving for, also, as shooting progresses."

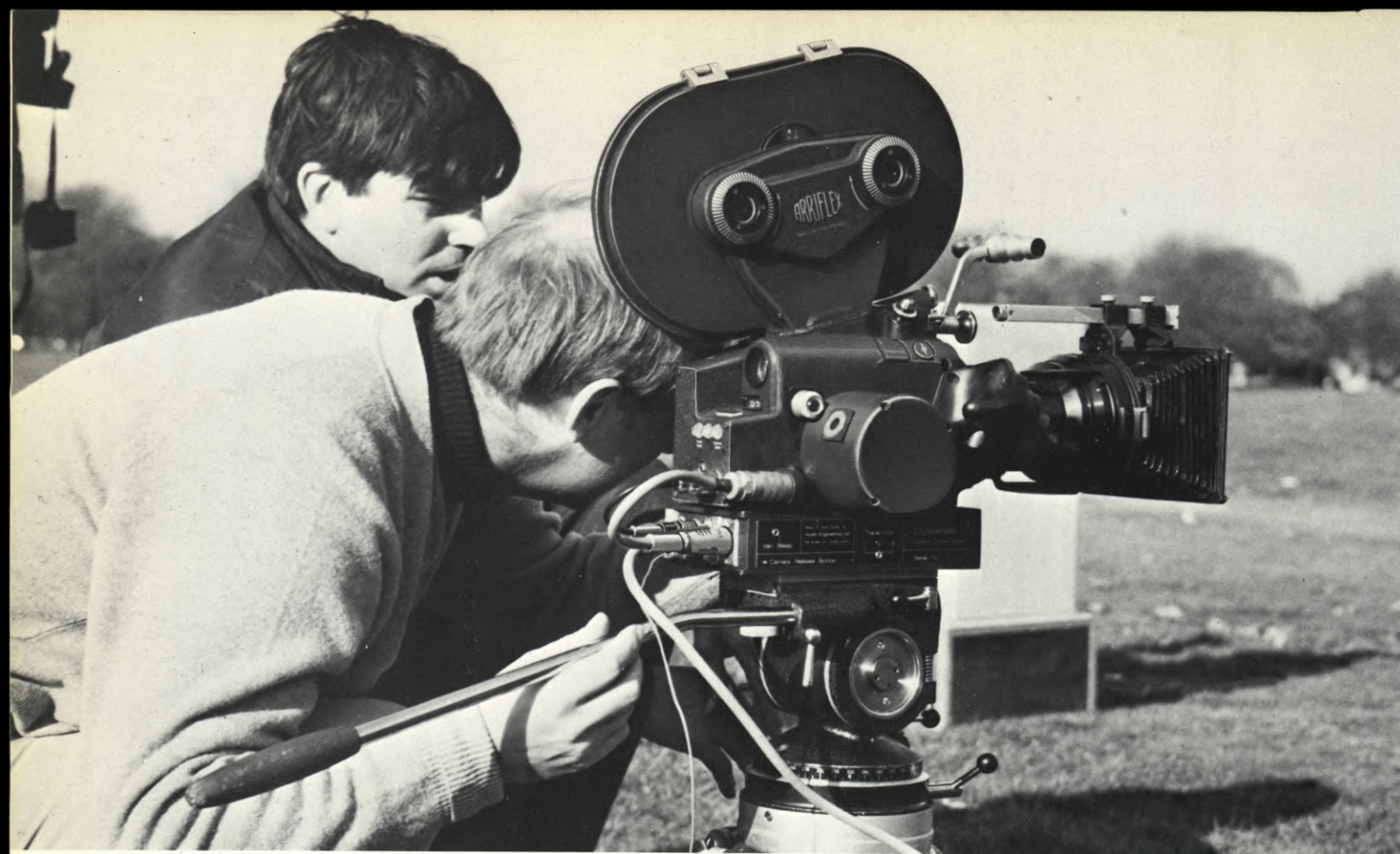
We speak, then of concepts of filmmaking and of how theories and abstrac-

secondly, with the quality of intelligence of the people involved. After all, it's just as hard to do a terrible film as it is to do a fine one. There's just as much work involved in putting up a terrible set as there is in doing a good one. The way to eliminate such concerns is to work with directors like Kazan and Nichols who, in themselves, guarantee against such things. They're not going to do a picture that's a waste of time. That's why I say that it's always the director that matters to me.

"There is also the matter of personal relationship and mutual respect—which is a big thing to me. After the four pictures that Mike and I have done together, there is a journalism that comes into it—a kind of shorthand. When you've lived with someone professionally for months on end (we were on

Continued on Page 86





# Crystamatic

## Computer Camera Control System

The Crystamatic performs three functions which are basic to mobile double system film making.

1. It eliminates the need for a sync cable by precise crystal control of the camera motor speed and by providing an equally precise 50 Hz or 60 Hz pilot-tone, at the tape recorder.
2. The computer provides an automatic clap mark on the film and sound track at the start and end of each take.
3. It counts the takes automatically and puts a mark to indicate the take number at the start and end of every shot.

A "no cables" post-sync shooting facility.

A 24/25 fps option at the flick of a switch.

A variable speed 8-50 fps option.

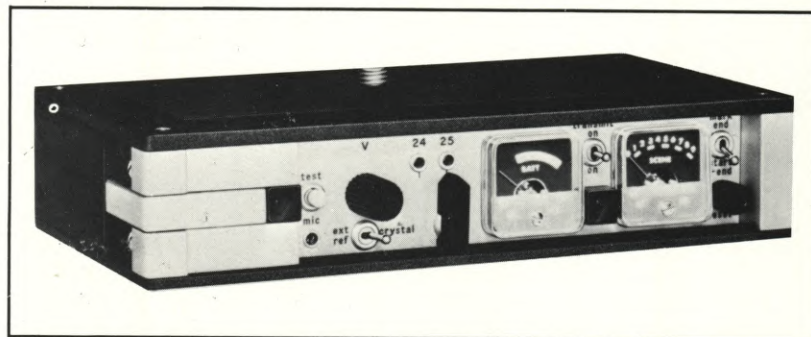
Cameraman to sound man talk back via the built in radio link.

Remote stop-start of the tape recorder in step with the camera.

An audio alarm in the cameraman's ear to indicate a malfunction such as a camera jam or a faulty cable.

Continuous monitor of the state of the batteries.

A complete system check facility and even a crystal check facility for use on location.



**For Sale . . . Rent . . . or Long Term Lease**

Persons requiring additional information are requested to call or write Mr. Leo Rosenberg, 212-757-6977

Distributed by:



**THE CAMERA MART INC.**

456 W. 55th St., (Nr. 10th Ave.) New York, N.Y. 10019 • (212) 757-6977

**RENTALS ○ SALES ○ SERVICE**

## New E-V Model 668 Dynamic Cardioid Boom Microphone

with built-in  
programming panel!

**BRAIN  
ON A  
BOOM!**

**E-V** It's just like having 36 microphones in one, at the end of your boom! Simply match the computer-style programming pins to the color-coded jack field inside the new E-V668. You'll get any combination of flat response (40 to 12,000 cps), bass and/or treble rolloff, treble rise, and 80 or 8,000 cps cutoff. The 668 built-in passive equalizer matches response to need precisely without loss in output level—mixes perfectly with any other microphone.

The 668 cardioid pattern is symmetrical in every plane with excellent rear cancellation at every program setting. Two independent Continuously Variable-D\* systems provide this uniformity, yet permit high output (-51 dbm) for distant pickup without added equipment or special cables.

Light in weight and small in size, the 668 with integral Acoustifoam™ windscreen and shock mount minimizes shadow problems while allowing noise-free fast panning, indoors and out. Its 1 lb., 11 oz. weight eliminates "fishpole fatigue" and counterbalancing problems.

The 668 is guaranteed **UNCONDITIONALLY** against malfunction of any kind—even if caused by accident or abuse—for two years. And, like all E-V Professional microphones, it's guaranteed for life against failure of materials or workmanship.

The E-V 668 is the result of a three year intensive field testing program in movie and TV studios from coast to coast. It has proved itself superior to every other boom microphone available. Find out why with a no cost, no obligation trial in your studio. Call your E-V Professional microphone distributor today, or write us direct for complete specifications.

NEW! MODEL 667A Identical to Model 668 except sharp cutoff filters and HF-rolloff eliminated. List price: Model 667A, \$345.00; Model 668, \$495.00 (less normal trade discounts).

\* Patent No. 3115207 covers the exclusive E-V Continuously Variable-D design.

**ELECTRO-VOICE, INC., DEPT. 111-AC**  
681 Cecil Street, Buchanan, Michigan 49107

**Electro-Voice**  
SETTING NEW STANDARDS IN SOUND

high fidelity speakers and systems • tuners, amplifiers, receivers • public address loudspeakers  
• microphones • phonograph needles and cartridges • organs • space and defense electronics

You Can Get It At **BROOKS CAMERAS**

## *Beaulieu* 16 B

THE AUTOMATIC 16mm  
REFLEX IN A CLASS BY  
ITSELF!

Available with Angenieux  
12-120mm F2.2 Auto. Lens  
**\$2067.00**

Or with Angenieux  
17-68 mm F2.2 Lens  
**\$1469.00**

● Gossen light meter housed right in the reflex viewing system, measures light intensity coming directly through the lens. It electronically controls a miniaturized motor that instantly rotates the Angenieux lens's diaphragm ring to the correct aperture setting.

● 45° angled mirrored shutter eliminates the need for a prism between the lens and the film plane. This reciprocating shutter alternately directs 100% of the light onto the film or 100% of the light onto the reflex viewfinder screen.

● Weighs 10½ lbs. when equipped with 200-ft. daylight-load magazine, sync pulse generator, Angenieux 17-68mm zoom F2 lens, and 500MA nickel-cadmium battery.

● Powered by a rechargeable nickel-cadmium battery that is built into the camera handgrip. A fully recharged spare can be installed in seconds.

● Variable film speeds anywhere between 2 and 64 fps plus single frame shooting. Remote control by cable or radio. Viewfinder eye piece adjustable to individual eye sight.

### We also carry the *Beaulieu* 4008ZM Super 8

● Motorized zoom lens has infinite number of speeds between 2 and 12 seconds. Macro focusing as close as one millimeter from subject. Filming speeds between 2 and 70 fps. Big, bright viewfinder has 27X magnification. Built in Gossen meter for automatic exposure control. F1.9 automatic 8-64 power zoom Angenieux lens. Variable shutter. Lens interchangeability.

**\$829<sup>50</sup>**

CHARGE ACCOUNTS INVITED

**CAMERAS**

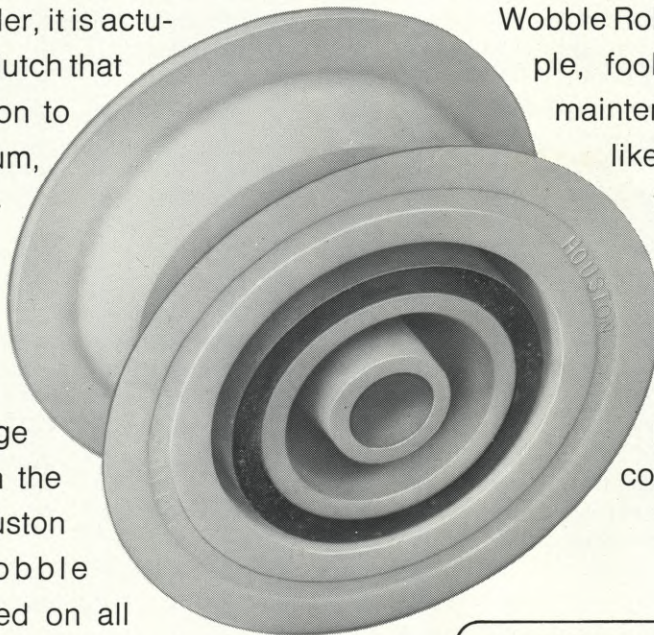
# Brooks

**(415) 392-1902 • 45 Kearny Street, San Francisco 94108**

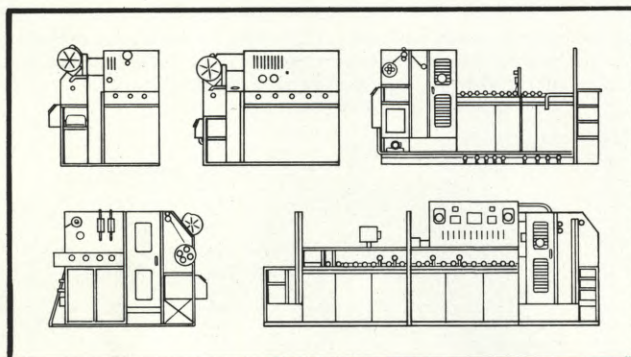


# Ingenious new Wobble Roller - secret of the gentlest, smoothest film transport ever

This ordinary looking film transport roller is not in the least bit ordinary. It is really quite a remarkable invention. Called the Kodak Wobble Roller, it is actually an automatic clutch that reduces film tension to an absolute minimum, assures ultra-smooth starts and stops of the transport system and eliminates film scratches, breakage and abrasion. • In the new series of Houston processors, Wobble Rollers are installed on all bottom drive shafts. The top rollers are not driven. When idling, the Wobble Rollers are completely disengaged, but as the driven rollers in the dry box are activated, the automatic



“fluid clutches” in the Wobble Rollers gently engage to provide an ultra-smooth start. • The principle of the Wobble Roller is extremely simple, foolproof and virtually maintenance-free. If you’d like to know more about this remarkable invention and what it can do to eliminate many of your film processing problems, send the coupon now.



HOUSTON PHOTO PRODUCTS, INC.  
655 E. 20th St., Yuma, Ariz. 85364

- Send info. on Wobble Rollers  
Send processor brochures for  
 Super 8mm  16mm  35mm  70mm  
 b&w  Ektachrome  Kodachrome  
 Kodacolor  \_\_\_\_\_

Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

# THE CRYSTAMATIC SYNC SYSTEM

A crystal-controlled method of severing the "umbilical cord" that has long bound the camera inseparably to the recorder

Crystal-controlled sync systems offer the cinematographer the ultimate in flexibility. The advantages include: No restricting sync cable or "umbilical cord," an unlimited combination of cameras and recorders, and no distance limitation between cameras and recorders. Despite these appealing attributes, however, there have been several factors associated with crystal-sync systems which have impeded their wide acceptance. Highest on the cameraman's list of grievances is the absence of a slating system. Not only is this an inconvenience, but it renders multiple-camera filming virtually impossible and thus negates one of the crystal's strongest virtues. The Crystamatic Computer Camera Control System has been developed to solve these problems and, in addition, to provide optimum flexibility and accuracy.

The Crystamatic, which is manufactured in England by Audio Engineering, Ltd., was initially designed for the European television film industry and tailored both electrically and physically for the Arriflex 16 BL. However the unique features of these units are equally applicable to all phases of double-system filming and to all types of professional cameras. It is for this reason that Anton/Bauer Inc., through exclusive arrangement with Audio Engineering, Ltd. has developed special versions of the Crystamatic specifically for the American cameraman. The Anton/Bauer units can be used with the Arriflex 16S, 16 M, 16 BL, Arriflex 35 IIC and Bolex H-16, and come in various configurations (vest, belt, custom-installed in camera, etc.) to offer the cameraman

comfort and freedom of movement.

The Crystamatic is composed of two basic systems: a crystal motor control, and a radio slating device.

The radio slating system is the most unique aspect of the Crystamatic. It is composed of a computer circuit and radio transmitter at the camera and the "C.R. 1" unit at the Nagra. The C.R. 1 (FIGURE 5) which is included in the Crystamatic package price, consists of a radio receiver and a crystal (no additional crystal for the Nagra is necessary). The C.R. 1 is designed to slip into the pouch on the side of the Nagra III or in its own pouch on the Nagra IV.

The radio slating system functions as follows: when the camera is started, the start mark bulb in the camera is activated and a "beep" is transmitted via radio to the C.R. 1 unit where it is then recorded by the tape recorder. Thus the sync marks are identical to the Pilotone cable system. However, the first time the camera is started, an additional short flash and "beep" is recorded on the film and tape. This indicates scene or take #1. When the camera is turned off, the motor will continue running for an instant while the film and tape receive another short flash and "beep," again indicating scene #1. When the camera is turned on the second time, in addition to the start mark, there will be two short flashes and beeps, indicating scene two. As before, when the camera is turned off, the two flashes and beeps will be repeated. The Crystamatic will continue to automatically count and mark the scenes in this manner up to ten, after which it will begin at one again. The scene number is displayed to

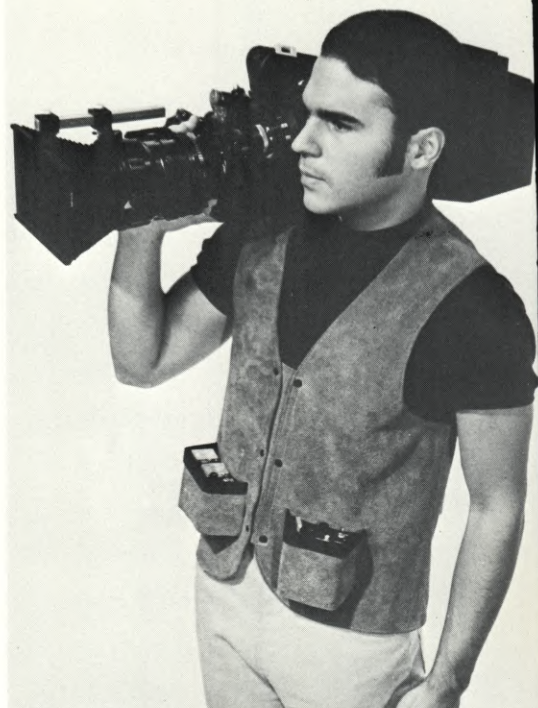
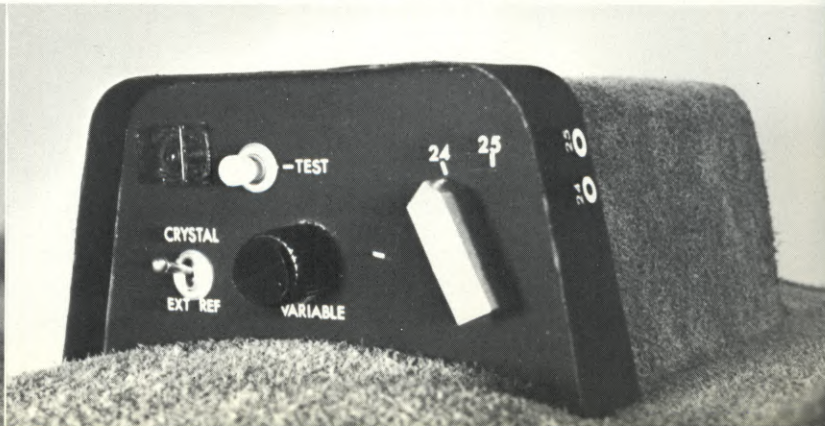
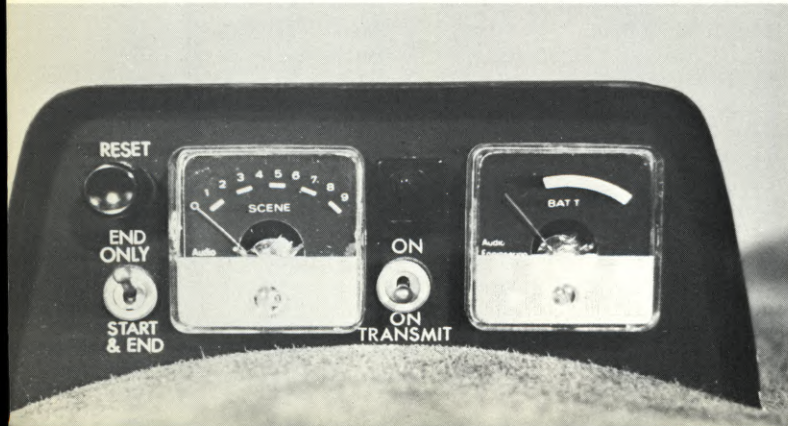


FIGURE 1—The Anton/Bauer Crystamatic vest, hand-made from top-grain leather, contains the Crystamatic electronics in two modules located at the front, batteries in rear.

the cameraman via a motor on the control dash (FIGURE 2). The cameraman can reset the scene counter at any time by pressing the reset button.

Some documentary cameramen may not wish to have the scene marks flashed at the beginning for fear of obliterating some vital action. In such a case, the switch in the lower left of FIGURE 2 can be put in the "end only" position which will place scene marks

(LEFT) FIGURE 2—The computer module contains the logic circuits that count the scenes and control the radio transmissions to the Nagra recorder. (RIGHT) FIGURE 3—The crystal-control module houses the crystal reference and the servo motor control circuit. Designed in England originally for use with the Arriflex 16 BL, the Crystamatic has since been adapted to work with four different Arriflex models, plus the Bolex H-16 camera.



only after the camera is shut off by the cameraman. (When used with an Arriflex, the edge marker can be used in lieu of the start marker, and thus all scene marks will appear only on the film edge, out of the picture area.)

When using multiple cameras, each camera is given a different pitch "beep" by adjusting the "varibleep" control on each transmitter. Thus, when transferring to full coat, each camera can be identified by the pitch of the start mark. Under multiple camera situations the "beeps" for both start mark and scene marks can not go in the sound track for obvious reasons. In such a case, the beeps can be recorded inaudibly on the Pilotone track. In this way the cameras and scenes can still be identified while maintaining an undisturbed soundtrack. By using a beep system of this type, start marks can be identified even if several cameras start at the same instant.

Each transmitter and receiver is equipped with three transmission channels which are selected by a switch. If, on location, it is discovered that another group is filming on a particular channel, or if interference is encountered on one of the channels, one of the remaining open channels can easily be selected. It should be made absolutely clear that

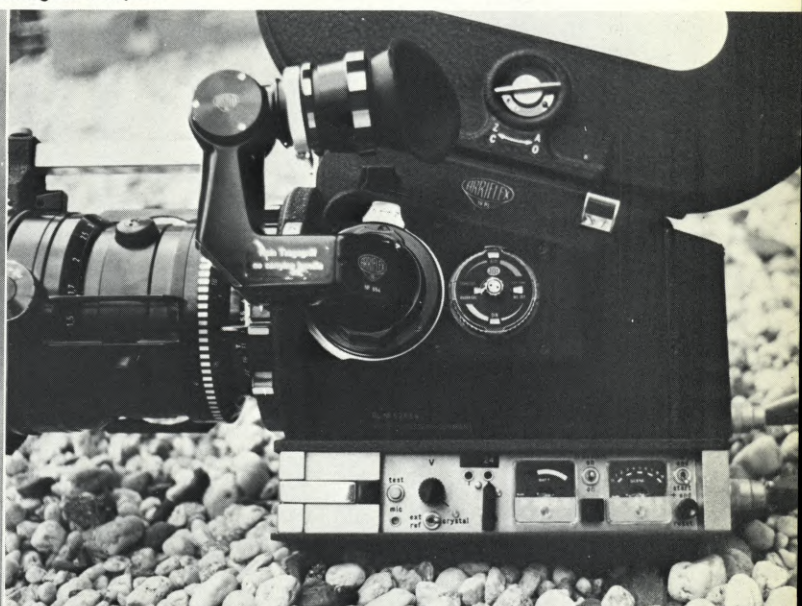
Ironically, a crystal unit of this degree of sophistication can sometimes offer the cameraman so much freedom that the vital rapport between cameraman and soundman may be jeopardized. To preclude this occurring, a miniature microphone has been included in the transmitter, complete with an automatic gain control. By depressing the transmit switch (FIGURE 2) the cameraman can talk to the soundman and thus maintain communication. Actually, if the tape recorder is running, the cameraman's remarks will be recorded, thus providing an aid to the editor. If the transmit switch is left on, a protective over-ride will shut it off automatically when the camera is running, thus preventing unwanted remarks from entering the sound track. If the inaudible slating system is employed, the cameraman's remarks can also be recorded inaudibly via the Pilotone head.

Finally, if a situation occurs where a soundman is not available or where sound is only desired when the camera is running, the Crystamatic can automatically turn the tape recorder on and off with the camera, via the radio system. In addition, the tape recorder will continue to run several seconds longer than the camera to allow the



FIGURE 4—The Crystamatic Sync System shown being used in conjunction with the Bolex H-16 camera. Crystamatic electronic modules, and batteries, in this case, are contained in top-grain leather belt from Anton/Bauer. On special order, Crystamatic and batteries can be custom-installed in the camera.

(LEFT) FIGURE 5—The C.R.1 unit contains the radio receiver and crystal reference for the tape recorder. It slips into the pouch on the side of the Nagra III, or in its own pouch on the Nagra IV. (RIGHT) FIGURE 6—Standard Crystamatic is bolted to the bottom of the Arriflex 16 BL camera by means of the tripod thread, resulting in a convenient configuration for shooting on a tripod.



speed synchronization between cameras and recorders is maintained by the crystal motor control circuit *not the radio transmitter*. Thus if for some reason the radio signal is lost, you may lose your start mark (which can be found later) but you can never go out of sync.

cameraman to cue his own takes if he so wishes.

Despite the apparent complexity of this radio system, its operation is virtually automatic. The latest solid state switching, integrated circuitry, and fully encapsulated modular design ensure optimum performance and reliability.

The radio slating system establishes start marks, numbers the scenes and provides a communication link between cameraman and soundman, but it is the crystal motor control system that maintains the absolute speed accuracy between cameras and recorders. The crys-

Continued on Page 72



(LEFT) Soundman Harold Lion stands by with shotgun microphone during shooting of rare exterior scene from *Brotherhood of Electrical Workers* film produced by Allied Motion Picture Center of Washington, D.C. (CENTER) On the outside shooting into the taxicab "studio", assistant John Lieb sets up a remotely controlled camera. (RIGHT) Phil Martin, director of the mobile epic, shown in front of the United States Capitol.

# SOUND STAGE 627

The challenge of filming a documentary on Washington, D.C. from inside a tiny "studio" on wheels—with hardly room enough for lights, camera and actor, let alone the cameraman

By GLENN JOHNSTON

I thought I'd heard of and worked on small stages, but #627 beats them all. Its inside dimensions are 6½' x 4½'. It is also self-propelled and is the only stage ever built by the Checker Cab Company. Specifically a 1961 Marathon Checker.

It all started back in February of 1970. The Allied Motion Picture Center of Washington, D.C. was assigned to produce a motion picture for the International Brotherhood of Electrical Workers. They are an international labor union, but this picture was to be quite different from anything previously produced by organized labor. No axe-grinding, no recruiting, no propaganda. We were to make a picture about America—what it is like today and where it can go tomorrow. Quite an undertaking, but we were all eager to try.

Basically, the story involves a Washington D.C. cab driver and the great cross section of humanity he carries every day. Washington, with its government buildings and many memorials,

gives a natural boost to conversation about America and politics.

Our driver gets all kinds. Ultra conservatives, ultra liberals, silent majority, hippies—the works.

With all of this, the message of the picture is simple: Be involved. Do something if you don't like what's happening. Use the machinery that is there to be used. The writer, Bill Lundgren, did a beautiful job of putting this all together and creating characters we all know. I like Bill very much. But not always. He wanted this to happen in a cab. A real working cab running around in Washington traffic. No process shots, no blue backings, no post-syncing the track. Real.

Our first production meeting was between Pat Jones, the producer, Phil Martin, the director, and myself, the director of photography.

A few things became immediately apparent. We were going to have to find as big a cab as possible. It was going to have to be completely self-contained in

that the entire crew and cast would be in the cab at once. Phil had his set-ups in his head and decided that it would be to no advantage to push or tow the cab. It was also not possible to tow from either side with a camera truck. It would have been literally impossible to weave through some of the traffic we had in mind, and we didn't think the Metropolitan police escort would be too happy. We were right. They said they'd rather we wouldn't. And of course the cab could not be drilled into or have permanent mounts that would spoil its appearance for run-by shots. Why not two cabs you say? The budget answered and said, "One cab, boys. Figure it out the best you can."

So that was the assignment. A 28-minute 16mm color picture, 98% sync dialogue and 95% of it in a moving cab in traffic. Our choice, of course, was the largest cab possible which is the Checker with the jump seats. The Yellow Cab Co. of Washington had such a cab and put us in touch with its driver-owner. A

(LEFT) Eclair camera set on seat mount, with two Mole-Richardson Nooklites secured to the ceiling of the cab. Daylight correction gel has not yet been positioned. (CENTER) Eclair on seat mount and Nooklite set to film a profile closeup running shot of the driver. Though quarters were cramped, cameraman managed to ride along for this scene. (RIGHT) Electrician Ron Lamendola tapes up blue gel to correct color temperature of Nooklites.





(LEFT) This diminutive go-cart, towed along behind #627, accommodates a McCullough 2000-watt generator inside its "soundproof" housing. (CENTER) With very little room to emote, actor Stan Brando sits, nevertheless, poised to give his all for the take. (RIGHT) By simply turning the camera around on its ingenious door mount, a sturdy mobile platform was provided for the filming of some excellent travel shots.

fine gentleman by the name of Lee Mercy. Our first meeting with Lee and his cab included Phil Martin, director; Ron Lamendola, electrician; Mike Cassidy, grip, and myself. Phil laid out the following:

1. A 3-shot of passengers in the back seats from the front.
2. 2-shots from the front.
3. 1-shot from the front.
4. 3-shots of driver and 2 front-seat passengers from the *outside* of the cab, so that all faces could be seen.
5. 2-shots like this.
6. Also 1-shots.
7. Same for driver's side.

In other words, we had to be rigged to photograph any combination of passengers and driver from any angle.

One of my first considerations was the selection of the camera. We were dealing with sync sound, so it quickly boiled down to an Arriflex BL or an Eclair NPR. I have used them both many times and find them to be excellent. The low-profile design of the Eclair, however, seemed the most appropriate. We would be in a low overhead situation most of the time and I needed every inch I could get. Phil's director's finder indicated that we could get almost all camera angles with the conventional 12mm-120mm zoom lens, with the exception of three shots.

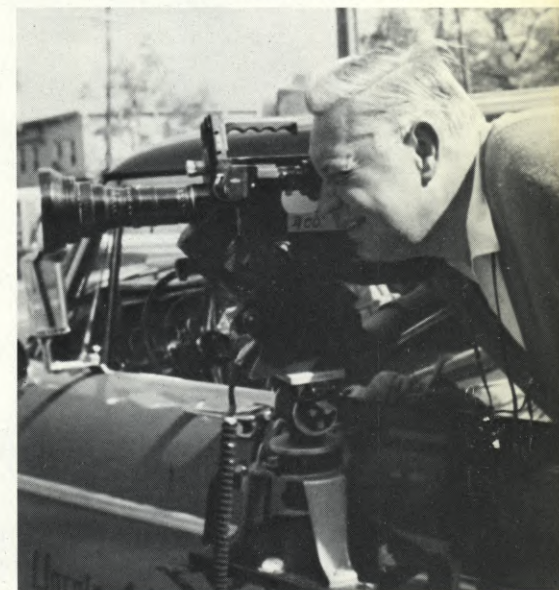
There, we would need a 9mm or 10mm wide-angle lens. Focus from the inside back of the front seat, where our camera would be mounted, to a character sitting in the back seat proved to be close to five feet, the minimum focus for the 12mm-120mm. Other scenes, such as a close-up of the driver from the front seat, proved closer than five feet but could be brought into focus by the addition of a 1/2 Proxar. A 3-shot from outside, of the driver and two passengers, indicated that the 9mm lens would be needed. Here, of course, focus was no problem since I anticipated at least T/4 to T/5.6 (how wrong I was).

At any rate, the camera problems seemed not serious. All that was left was how to mount the camera and light the interior. Mike and Ron went into action here and came up with designs for an interior and exterior mount that would be flexible, steady, and quickly demountable. As can be seen in the accompanying illustration, the inside mount is a glorified baby seat. Much stronger and beefier, but essentially two steel straps that fit over the back of the front seat and terminate in an adjustable mount for a Pro jr. hi-hat. There was additional bracing from the back of the seat to the rear floor. Of necessity and choice I was my own operator and with my weight in the seat (which is no laughing matter) it was extremely

steady. The outside mount clipped onto the door between the window and door and was stabilized with a plate-glass suction cup device. The sheet steel of the door allowed a slight up and down motion but over a reasonably smooth street there was no problem.

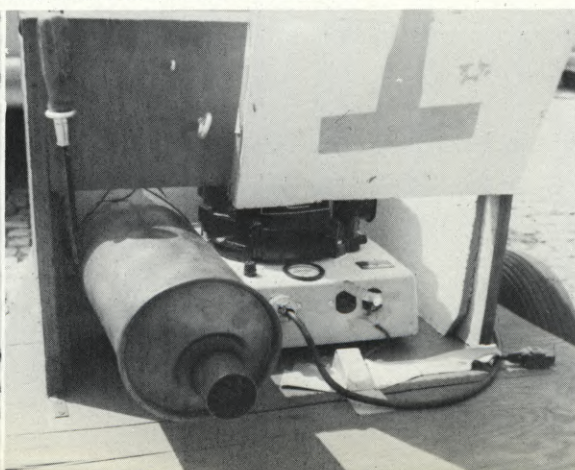
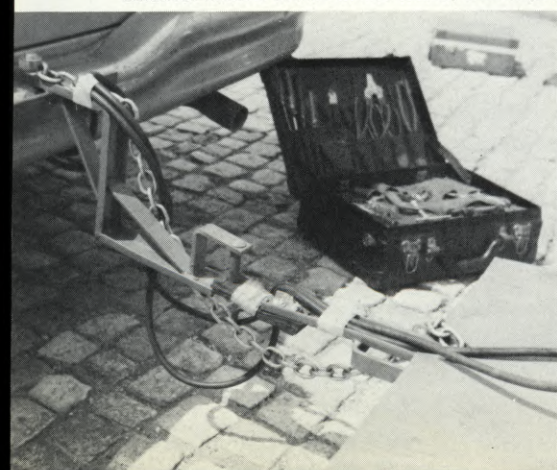
We had two ways to go on lighting: (1) Gel all the windows with 85 Gel and

Continued on Page 82



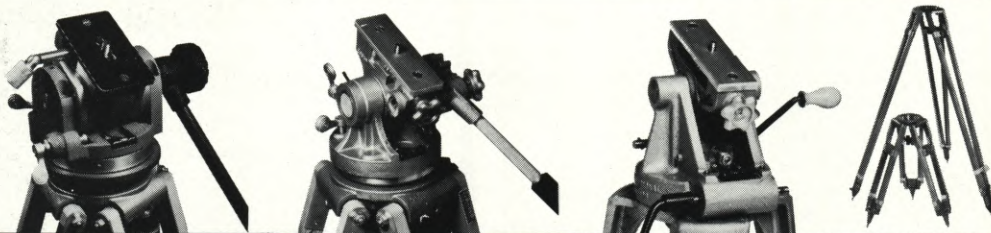
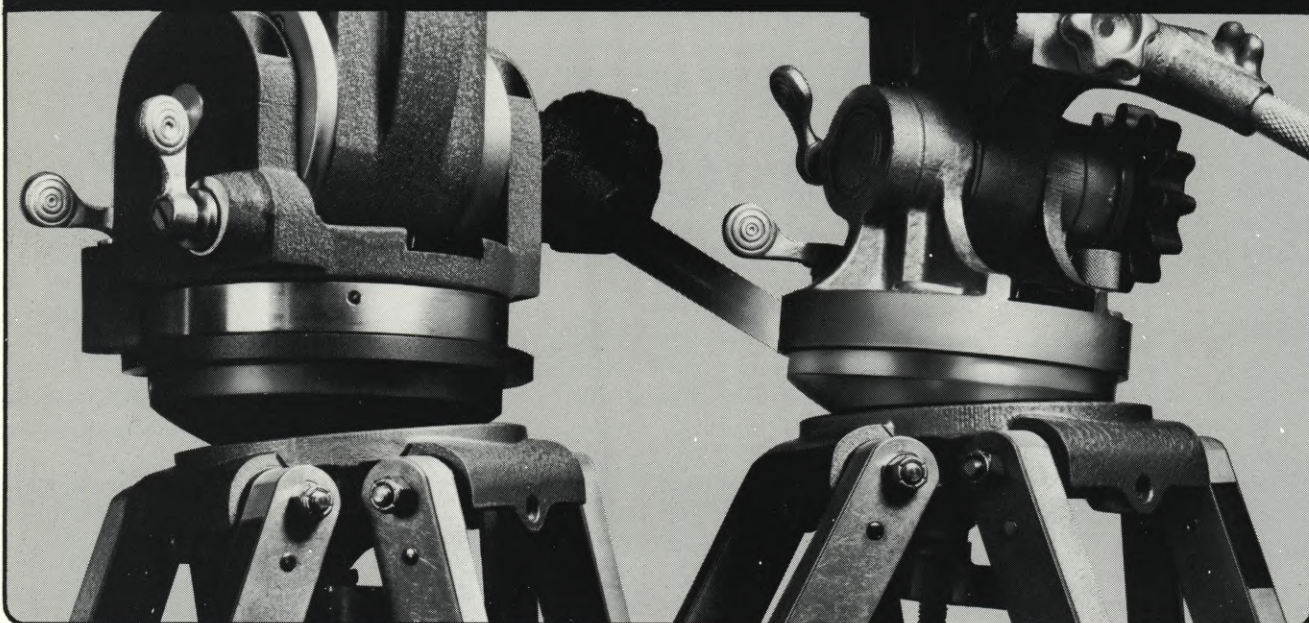
From inside the cab, the author lines up the Eclair for a point-of-view shot. For him, this assignment required not only skill and ingenuity, but a sense of humor, as well.

(LEFT) Intricate hitch arrangement joining generator cart to taxicab involved a rubber link to eliminate sound conduction. (CENTER) Looking like some form of "secret weapon", the exhaust muffler of the generator protrudes from its mobile housing. (RIGHT) Marathon Checker cab #627, the smallest mobile studio in the world, shown proudly parked outside the U.S. Capitol.



F & B/CECO Has Another Way to Help You Keep a

# LEVEL HEAD



## Meet the Whole Family of F & B/CECO Pro-Jr. Tripods

Introducing two members of the 1970 family of Pro-Jr. Tripods. On the top left, our fluid drive now with instant leveling swivel bowl. On the right, our friction drive with instant leveling swivel bowl. Both help you keep a level head no matter what conditions you encounter — rocky road, rice paddy or just an uneven floor. The swivel bowl instantly levels the head, eliminates tripod leg adjustments. It's part of F & B/Ceco's great design to make your work easier.

*Shown left to right.*

**Pro-Jr. Fluid Drive Head** Features camera balancing screw, accessible camera mounting knob, adjustable panhandle, T-spirit level. W/Flat base, \$395; w/swivel bowl, \$450.

**Pro-Jr. Friction Drive Head** Accessible knob for mounting, tension control knobs, T-spirit level, adjustable panhandle, 2 positions for attaching handles. W/Flat base, \$150; w/swivel bowl, \$200.

**Pro-Jr. Geared Drive Head** Pan and tilt action controlled by metal crank handles which snap on either side. With 1/4 x 20 or 3/8 x 16 camera tie-down screw and standard Pro-Jr. flat base, \$350.

**Pro-Jr. Adjustable Tripod Legs** Constructed of hard maple with aluminum and steel hardware. "V" groove design gives almost twice the gripping surface. Standard or baby legs w/flat base, \$110; w/swivel bowl, \$125. (When head and legs are ordered together, deduct \$10.)

**Full line of accessories include metal tripods, collapsible triangles, portable dollies, carrying cases.**

**For information, write Dept. AC1-1**

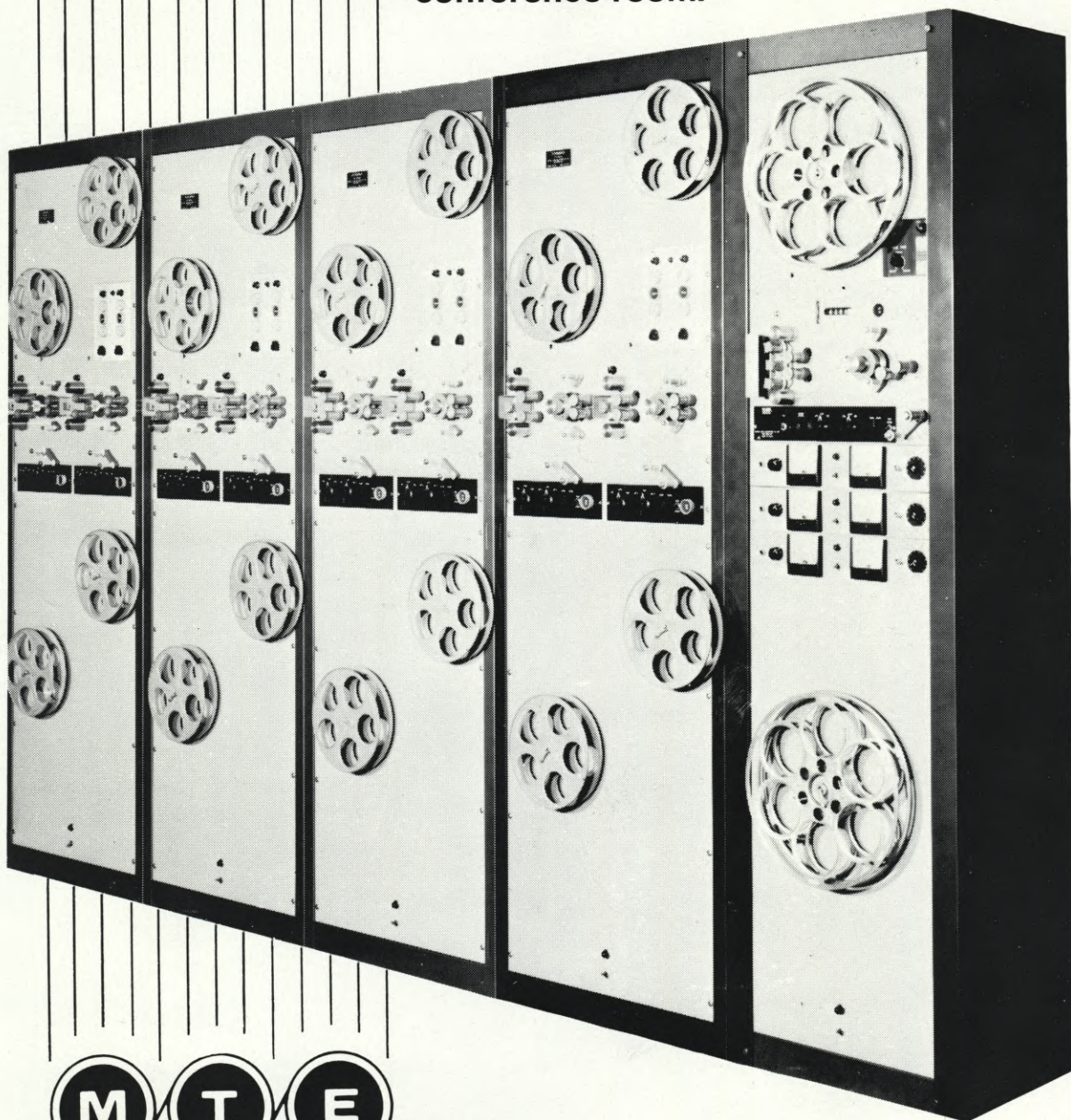
**F & B/CECO** I N C.

315 W. 43rd St., New York, N. Y. 10036 • (212) 586-1420  
7051 Santa Monica Blvd., Hollywood, Calif. 90038 • (213) 469-3601  
51 East 10th Ave., Hialeah, Fla. 33010 • (305) 888-4604  
2215 M St., N. W., Washington, D. C. 20037 • (202) 659-9600



# M. T. E. Recording & Projection Equipment

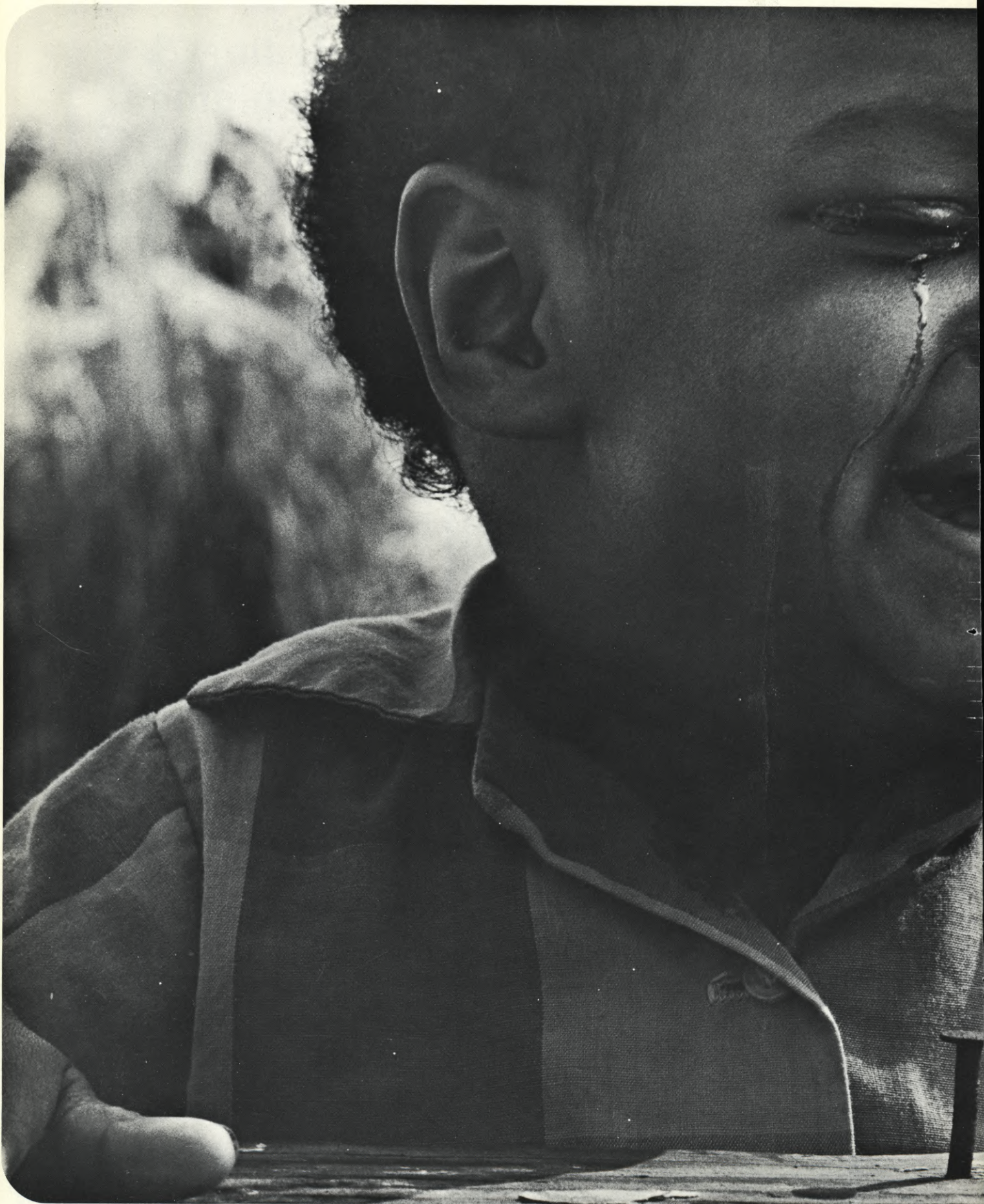
- System Engineering
  - Automated technique
  - Reversible sync-interlock operation
- For your sound studio, screening room, preview room and conference room.



**MAGNA-TECH ELECTRONIC CO., INC.**

630 Ninth Avenue / New York, N.Y. 10036

- Quad Eight - Magna Tech, 11810 Vose St., North Hollywood, Ca. 91605
- Cinesound International, Ltd., Imperial Studios, Maxwell Road, Borehamwood, England
- Magna-Techtronics (Aust) Pty., Ltd., 49 Whiting St., Artarmon, N.S.W., Australia 2064







## How long will the action wait while you change magazines?

A minute?

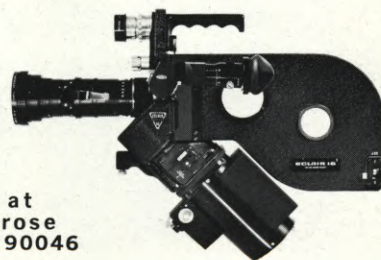
Ten seconds? It depends, of course; but ten seconds is all you'll lose while changing the NPR's magazine. That's including five seconds for checking the gate. And that's two or three *minutes* less than you lose with every other silent running camera on the market.

Snap off the old magazine, inspect the aperture, snap on the new magazine. That's all. You don't need to touch the film. The film is threaded and the loop is formed inside the magazine when you load it, before shooting starts. The rear pressure-plate is on the magazine; the aperture is on the camera body. When you snap off the magazine, there's the aperture, right before your eyes. Couldn't be easier to clean.

With unscripted action that won't wait, you can leave the tape recorder running when you run out of film, and cover the lost five seconds with a cutaway later. The NPR's built-in clapper and sync pulse will automatically re-establish sync. In the studio with a script, the five-second magazine change can prevent everyone on set going off to make a phone call when they hear the dread cry: "Reload." With the NPR, it's just another take. Immediately.

The NPR's rotating two-lens turret, its precise reflex viewing, light weight, registration-pin movement, balanced shoulder-resting, and, of course, its blimp-free silence — they all make life easier, too. May we send you our NPR brochure?

# eclair



Eclair is at  
7262 Melrose  
L. A. Calif. 90046

Wherever you go, whatever the shooting situation, CINE 60's exclusive Power Belt gives you the power you need to run every professional camera on the market. Plus the all-important mobility to go where the action is (how do you think recent skiing and motorcycle movies were made?).

The Power Belt is as convenient to use as it is foolproof. Available in voltages from 6 to 30V, this handsome, easy-to-wear unit features high capacity, rechargeable nickel-cadmium cells. With its built-in charging unit, the Power Belt is ready to go. And wherever you go, you'll find its sealed, trouble-free design means day-in, day-out reliability. In the event of a short circuit, a built-in automatic overload switch disconnects the batteries, resetting when normal conditions are restored.

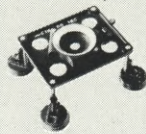
Why put up with awkward battery cases and long cables? Or bulky boxes that tug your shoulder and keep you off-balance? Especially when you can have the CINE 60 Power Belt—now the standard power supply worldwide.

For increased maneuverability, an accessory 6-foot coiled power cable (11" retracted) is available for use with Arriflex and other cameras.

**CINE 60 has a number of other exclusive time- and money-saving products for the professional filmmaker, including:**

**The Vacu-Platform** suction-actuated platform which can be posi-

tively fastened to any smooth surface (car tops, floors, etc.) without marring. Especially useful for low-angle work, it mates with standard tripod heads.



**The Single Universal Shoulder Pod** the "unipod" is a lightweight shoulder mount that accepts all cameras. Easily removable between takes, it keeps the camera in the ideal shooting position while offering the maneuverability of single-shoulder construction. Used with the CINE 60 Uni-Eclair Mount, this is the only practical pod for the Eclair NPR-16.



**For details on these and any of the other products in our line, please call or write:**

**CINE 60**

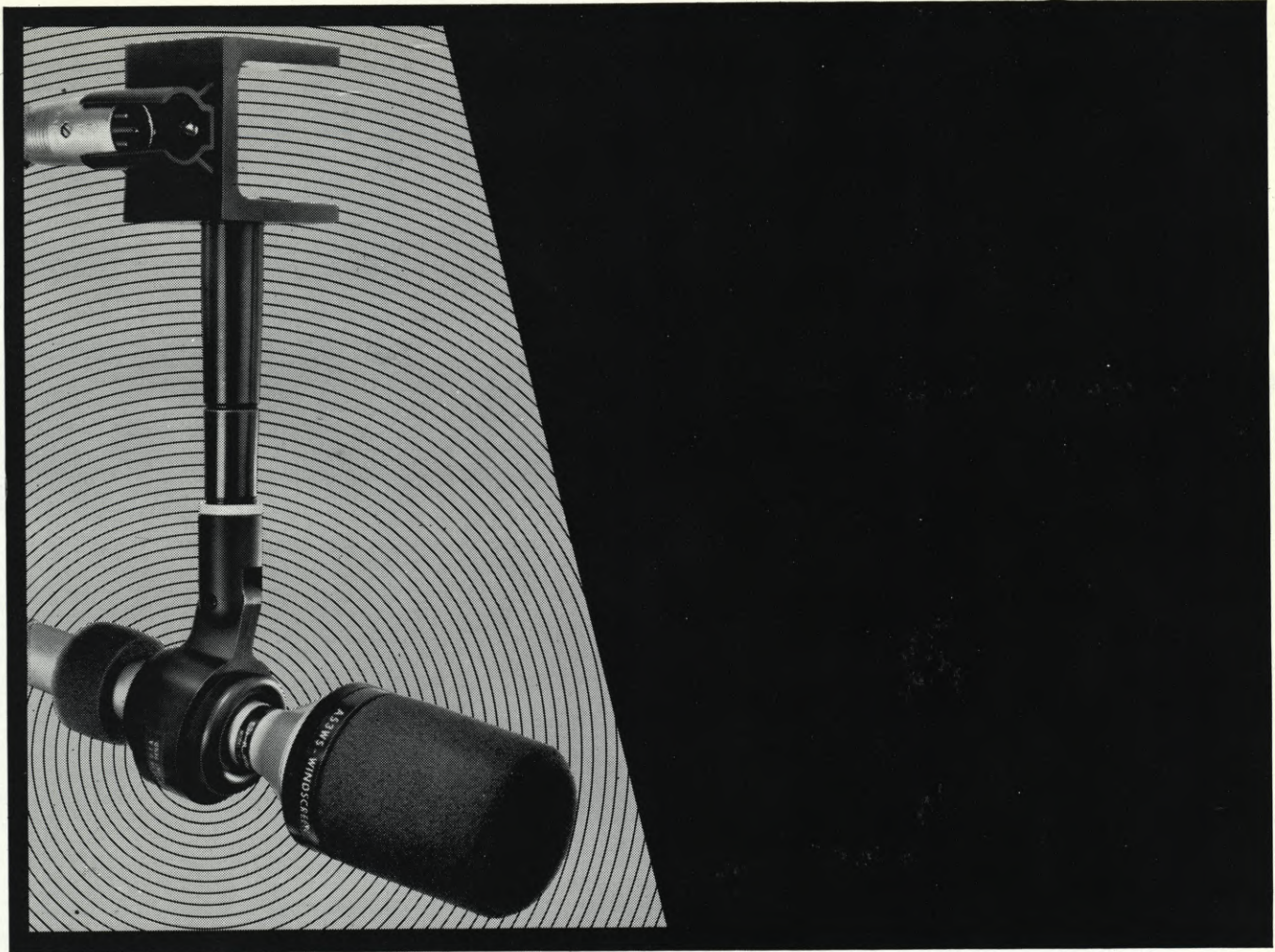
**INCORPORATED**  
 Film Center Building/630 Ninth Avenue  
 New York, N.Y. 10036/Tel: (212) 586-8782

# INSTANT POWER



® U.S. Patent #3274476





## Boom Boon.



We've taken our most versatile, best-performing unidirectional studio microphone, the *Shure SM53*, and made it even more versatile by developing a complete boom accessory system that equips the SM53 for every conceivable boom and "fish-pole" application! Shure design engineers started with a major breakthrough in design: a small, lightweight, extremely effective isolation mount. They developed a super-flexible isolation cable, a pair of highly-efficient front-and-rear windscreens, and a 20" boom extension pipe. Finally, they developed a complete boom assembly that combines unusually small size with superb control and noise isolation. Result: an accessory lineup that makes every Shure SM53 studio microphone a complete microphone system! Write: Shure Brothers Inc., 222 Hartrey Avenue, Evanston, Illinois 60204.



**SHURE**

# IFPA

## 11th ANNUAL CONFERENCE OF THE INFORMATION FILM PRODUCERS OF AMERICA, INC.



The NEWPORTER INN, site of IFPA's 11th Annual National Conference

The 11th Annual National Conference of IFPA (Information Film Producers of America, Inc.), held recently at the Newporter Inn, Newport Beach, California, was climaxed by a formal banquet at which the prestigious CINDY awards were presented to producers of the outstanding commercial, industrial and government informational films for the year.

Based upon the rather ambiguous

theme: "The 1970's, Challenge or Change?" (couldn't there possibly be both?) the Conference was opened by keynote speaker James Gibson, Director of the National Audio Visual Center, who spoke on the subject, "The Challenge to Filmmakers".

The second half of the opening day of the Conference was devoted to "The Moving Media: Electrons and Emulsions" and zeroed in on such subjects as

"Educational Films", "Cable Television" and "Television Film Recording". A Panel Discussion followed, with Dr. Al Hibbs of the Jet Propulsion Laboratories as Moderator.

The theme of the second morning of the Conference was "Responsibility and Ethics", with Robert Hecker serving as Chairman of the session. There followed several addresses of a soul-searching nature in which the point was made and re-made that the film and television industries have certain ethical obligations to society and the community at large. All of which is certainly true—but one wonders whether it really required three hours and five different speakers to get that single point across. The most prominent speaker in this particular session was Bruce Herschensohn, USIA Director of Motion Pictures and Television, whose paper was entitled "Our Conscience".

The afternoon session was oriented about the theme: *Multi-media & Multi-screen Values*" and the session was highlighted by a very lucid and interesting paper on the subject, "Why it Works", delivered by Gary Standard, Director-Film Media Division of Communication Consultants.

By way of illustrating his topic, Standard then fired up a complex array of automated slide and film projectors to present a stunning mixed-media commercial subject produced by his organization for the Lange Co., manufacturers of ski boots and skis.

The Monte Carlo Room of the Newporter Inn, Newport Beach, California, serves as an exhibition hall for a comprehensive display of the latest motion picture equipment, provided by leading manufacturers and rental houses.



On the morning of the final day of the 11th Annual IFPA National Conference, the session theme was *"The State of the Art"*, with John Mahon as Chairman.

Especially noteworthy at this session was a paper titled *"Optical Effects"*, presented by Frank Van der Veer and illustrated by some striking examples on film, produced by his company.

*"Electronic Photographic Effects"*, presented by Jack Mauck of Technicolor's Vidtronics Division, was subtitled *"Video Tape to Film"*. He reported the latest refinements in the Vidtronics tape-to-film process (having to do, mainly, with a considerably increased number of lines to the scan) and described how his company is now providing full videotape camera crew services for the shooting of material exclusively for television (mainly commercials) which would later be transferred to film. His presentation was illustrated by a reel of film clips from the most recent Vidtronics product.

The afternoon session, winding up the formal seminar aspect of the Conference, was designated on the program as *"The New Wave"* and was chaired by *AMERICAN CINEMATOGRAPHER* Editor Herb Lightman. He jokingly stated that the session designation sounded to him like the title of a surfing movie—or else a reference to the neo-creative phase indulged in a dozen or so years ago by certain French directors—now more "old hat" than new anything.

In any event, he preferred to re-title the session as *"New Directions in Film-making"*, and introduced as his guest panelists, Haskell Wexler, ASC, (Academy Award-winning cinematographer for *"WHO'S AFRAID OF VIRGINIA WOOLF?"*), Director of Photography on *"AMERICA, AMERICA"*, *"THE*



The "New Wave" (or "New Directions in Film-making") session of the Conference. Panelists on the dais are (left to right) Haskell Wexler, ASC, Donald Fox, Justin Purchin, Chairman Herb A. Lightman, Richard Moore and Joan Keller Stern. The panel, including top professionals of the feature film industry, plus young film-makers new to the medium, ranged over a wide spectrum of opinion.

*THOMAS CROWN AFFAIR"* and *"IN THE HEAT OF THE NIGHT"*; writer-producer-director-cinematographer of *"MEDIUM COOL"*); Richard Moore (Director of Photography on *"WILD IN THE STREETS"*, *"WINNING"*, *"THE RIEVERS"*, *"MYRA BRECKINRIDGE"*, *"WUSA"* and *"SOMETIMES A GREAT NOTION"*); Joan Keller Stern (Academy Award-winning short subject producer of *"THE MAGIC MACHINES"*); Donald Fox (creator of the experimental film, *"OMEGA"*, which won the Silver Phoenix Award at the Atlanta Film Festival) and Justin Purchin, head of educational films for Hanna-Barbera.

During the course of the program that followed, *"OMEGA"*, *"THE MAGIC MACHINES"* and a portion of a

Hanna-Barbera anti-drug film were shown. Lightman introduced the guests, asking each to give his appraisal of new directions in film-making, after which the panel was thrown open to questions from the audience.

Following are selected excerpts from the session:

**STERN**—What film means to me and a lot of people like me who are just starting to make films is that it is a medium set up to communicate ideas—ideas about social change and people and understanding. It is an incredible medium by means of which to communicate in a non-didactic way where people are at. You can let people know things about other people without

Continued on Page 89

(LEFT) The Palmer Room of the Newporter Inn was the site of many of the more important seminars conducted during the three days of the Conference. (CENTER) A bevy of attractive PSA stewardesses, retained to help in presenting the "CINDY" Awards, poses prettily outside the Newporter Inn's Monte Carlo Room, scene of the annual formal Awards Banquet. (RIGHT) Luncheons in the Inn's Carousel room were highlighted by papers presented by additional speakers.



# 1970 "CINDY" AWARDS

## FIRST AND SECOND PLACE IFPA AWARD WINNERS

### PUBLIC RELATIONS FILMS:

#### First Places (Gold)

(Gov.) *"Somebody's Got to be Kidding"*  
Los Angeles County Motion Picture Unit, L.A., Calif.

(Comm.) *"We Used to Call it Printing"*  
Peckham Productions, New York City

(Inst.) *"All the Difference"*  
Eastman Kodak Company, Rochester, New York

#### Second Places (Silver)

(Comm.) *"Micro"*  
Owen Murphy Productions, New York City

(Inst.) *"This Blooming World"*  
Eastman Kodak Company, Rochester

(Gov.) *"A Place of Refuge"*  
Dept. of Travel and Industry, Province of British Columbia,  
Canada, Victoria, B.C.

### TRAINING FILMS:

#### First Places (Gold)

(Comm.) *"Inertial Navigation"*  
Milner-Fenwick Productions, Baltimore, Maryland (for Aero-  
space Audio Visual Service, Norton AFB, San Bernardino,  
Calif.)

(Inst.) *"A Life on the Line"*  
Aetna Life and Casualty Co., Hartford, Conn.

(Gov.) *"Right Hand of the Court"*  
Los Angeles County Motion Picture Unit, L.A., Calif.

#### Second Places (Silver)

(Comm.) *"Medical Facts for Pilots"*  
Tecfilms Company, Boston, Ma.

(Inst.) *"Hold Up"*

Wells Fargo Bank Training Dept., San Francisco, Calif.

(Gov.) *"Landing Illusions—Short Landings"*  
Aerospace AV Service, Norton, AFB, Calif.

### EMPLOYEE RELATIONS/INDOCTRINATION & ORI- ENTATION FILMS:

#### First Places (GOLD)

(Comm.) *"What's It All About, Harry?"*  
Parthenon Films, Los Angeles

(Inst.) *"Our Aching Backs"*  
The Sandia Corporation, Albuquerque, New Mexico

(Gov.) *"The Air Force Now #5"*  
Aerospace Audio Visual Service, Norton AFB, Calif.

#### Second Places (Silver)

(Comm.) *"Reflections of the Company"*  
J.J. Hennessy Productions, Los Angeles, Calif.

(Inst.) *"A Giant Leap for Mankind"*  
TRW Systems Group, Redondo Beach, California

(Gov.) *"The SAMSO Story"*  
Aerospace Audio Visual Service, Norton AFB, Calif.

### TECHNICAL FILMS:

#### First Places (Gold)

(Comm.) *"The People Saver"*  
Sandler Institutional Films, Los Angeles

(Inst.) *"Nuclear Fingerprinting of Ancient Pottery"*  
Lawrence Radiation Lab., University of California, Livermore,  
Calif.

(LEFT) Tom Frandsen, aided by comely assistant, presents the "Cindy" Awards at banquet of the Information Film Producers of America. (CENTER) Posh formal affair was held in the main ballroom of the Newporter Inn, Newport Beach, California. (RIGHT) Famed documentary producer David Wolper addresses the audience, emphasizing the importance of information films in the world of today.



(Gov.) *"The Long Haul"*  
Aerospace Audio Visual Service, Norton AFB, Calif.

### Second Places (Silver)

(Comm.) *"Flight Without Wings"*  
J.J. Hennessy Productions, Los Angeles, Calif.

(Inst.) *"Space for Power"*  
TRW Systems Group, Redondo Beach, Cal.

(Gov.) *"The Sky Net System"*  
Aerospace Audio Visual Service, Norton AFB, Calif.

### SALES & ADVERTISING FILMS:

#### First Place (Gold)

(Comm.) *"Ski Racer"*  
Summit Films, Denver, Colorado

(Inst.) *"Simulation—High Green to Learning"*  
McDonnell-Douglas Corporation, Santa Monica, Calif.

#### Second Place (Silver)

(Comm.) *"Chrysler-Plymouth Coming Through to You"*  
Petersen Productions, Los Angeles, Cal.

(Inst.) *"Beats Reading the Annual Report"*  
TRW Systems Group, Redondo Beach, California

### ENRICHMENT FILMS:

#### First Place (Gold)

(Comm.) *"Kutlwanong—A Place of Hearing"*  
Association-Sterling Films, New York

#### Second Place (Silver)

(Comm.) *"Molokai—USA"*  
Carm-Larr Productions, Los Angeles

(Inst.) *"The Mississippi River Festival"*  
Southern Illinois University, Edwardsville, Illinois

(Gov.) *"You Got to Think About It"*  
Naval Photographic Center, Washington, D.C.

### ACADEMIC INSTRUCTION FILMS:

#### First Places (Gold)

(Comm.) *"New Students—New Friends"*  
Sandler Institutional Films, New York

(Inst.) *"The Color Computer"*  
Edutronics Systems International, Los Angeles, Cal.



The "Cindy" Award, in its newly designed form, is a handsome plaque. Shown as a sample is gold plaque presented in Sales and Advertising category to Summit Films, Inc. for "SKI RACER".

(Gov.) *"The Quiet War"*  
Aerospace Audio Visual Service, Norton AFB, Calif.

#### Second Places (Silver)

(Comm.) *"Group Psychotherapy: The Dynamics of Change"*  
Julian Films, Hollywood, Calif.

(Inst.) *"Gateway to Tomorrow"*  
Orange County Media Center, Orlando, Florida

### VIDEO TAPE PRESENTATIONS

#### First Place (Gold)

(Inst.) *"Picturephone—A Demonstration"*  
Bell Telephone Laboratories, Murray Hill, New Jersey

### SPECIAL CATEGORY FILMS

#### First Place (Gold)

(Inst.) *"Quick Rise"*  
Alan Gordon Enterprises, Hollywood, Calif.

(Comm.) *"Like It Is"*  
Pat Sims Productions, Dallas, Texas

(Gov.) *"Volunteer Story"*  
Los Angeles County Motion Picture Unit, Los Angeles, Calif.

#### Second Place (Silver)

(Comm.) *"Outward Bound"*  
Summit Films, Denver Colo.

(Gov.) *"Kites to Capsules"*  
Federal Aviation Administration, Washington, D.C.

(Inst.) *"Westinghouse Apollo Television"*  
Westinghouse Defense and Space Center, Audio visual Dept.,  
Baltimore, Maryland

# MAKE THIS TRANSITIONER

Though a little bit on the "Rube Goldberg" side, this do-it-yourself transitioner makes possible effects that would otherwise have to be made in the lab

By F.C. MOULTRIE

There are times when some forms of camera-produced scene-transitional effects are required, without resorting to laboratory services. Although some cameras are fitted with continuously-variable shutters, this is not common.

Whether one is a movie hobbyist or a semi-professional, the judicious use of transitional devices may contribute greatly in giving one's films a certain 'polish.'

Although the device we are about to describe can be constructed from any materials you may wish to use, we decided upon "wood-plus-metal" construction, since we had such materials on hand in our workshop.

Choosing the simplest "iris" we could make,—which is incidentally one of the most "modern" in its effect,—namely, a centrally located "diamond" shape, opening or closing down at will, we set to work without delay.

We used good quality 1/4" plywood as our front and base-boards. The front-board must be cut to suit the camera one uses. For this reason it is not possible to give precise dimensions. The board should be cut in a length which will extend from base of camera to about 3 3/4" above the top of the camera lens-barrel. (Some cameras may require mounting the board horizontally, in order to avoid obscuring the viewfinder, which, on our Bolex H16, is located to one side of the taking-lens.) The unit can easily be made with adjustments for setting further in or out, to accommodate for shorter or longer lens barrels.

In order to assist the reader to "get the picture", we will describe our own hastily-constructed unit, leaving it to other constructors to make their own innovations, dimensions or improvements. The first task is to measure carefully and mark off the place on the front board where the lens-barrel aperture is to be located, then to bore through the board—preferably with an adjustable bit—an aperture just about a couple of thousandths *larger* than the lens-barrel.

This is done in order that the lens-barrel may slide in and out smoothly, without binding when lens is being focused.

The front-board should be as WIDE as possible, to allow space for the actuating mechanism, and at least 3/8" allowed if possible from the "narrow" margin of the board to the edge of lens aperture. The next task is to firmly glue (if wood is used), two strips of good grade wood, smooth and square and about 6" long, on each side of aperture, clearing the latter by about 1/16" each side. The strips, (which can be planed off later) should be about 1/4" cross-section. (SEE FIGURE 1) The strips must be ABSOLUTELY PARALLEL.

We now come to the stage where utmost precision is required and this is the only point at which one must exercise all the skill he can muster. First one must find or obtain some very thin sheet metal (preferably NOT aluminum, since this cannot be successfully or easily soldered). It may be brass,

bronze, or tinned or galvanized iron. (We used the latter.) It should be as thin as possible consistent with reasonable stiffness. Cut TWO pieces about 3" long and of a width to fit the channel formed by the wood-strips. It is IMPERATIVE that the plates are cut ABSOLUTELY accurately, with parallel edges and it is also essential that they slide to and fro in the channel without binding, yet not loose enough to rock. When this is satisfactorily accomplished, mark off each plate with 2 lines, parallel to upper and lower edges, and exactly the same width from edges as the distance from the inner borders of the wood channels to EDGE of lens aperture.

One will now have reached one of the most tricky operations in the project. Carefully scribe a line, centrally located between the two above-mentioned lines (on both plates), and parallel with them.

It is advisable to check that the lines on both plates match up with each other. If so, one may proceed. The OUTER lines must now be provided with marks set in 3/4" from the leading edges. From these marks it is necessary now to mark off a distance exactly that of the width between the upper and lower scribed lines. Mark 45-deg. lines from center line, one upward and one downward, ending exactly at the 3/4" marks (on each plate). (FIGURE 2) Carefully remove all cutting burrs with a fine file, and carefully chamfer off all sharp corners, slightly rounding them, then check the two plates in position in the channel, to verify that the apex of each "V" meets precisely when brought together and that, when drawn fully apart, (i.e. when the sloping edges of the "V's" are just clear, each side of the lens aperture), the 3/4" tines on upper and lower leading edges of each plate are still slightly overlapping each other; also that their lower, or inner edges, remain clear of the lens opening. If this is all satisfactory, temporarily remove the plates and replace them with card and/or paper packing, to equal the thickness of both plates combined, plus an additional (approx.) 4-thousandths inch.

Now, with a sharp plane, adjusted for

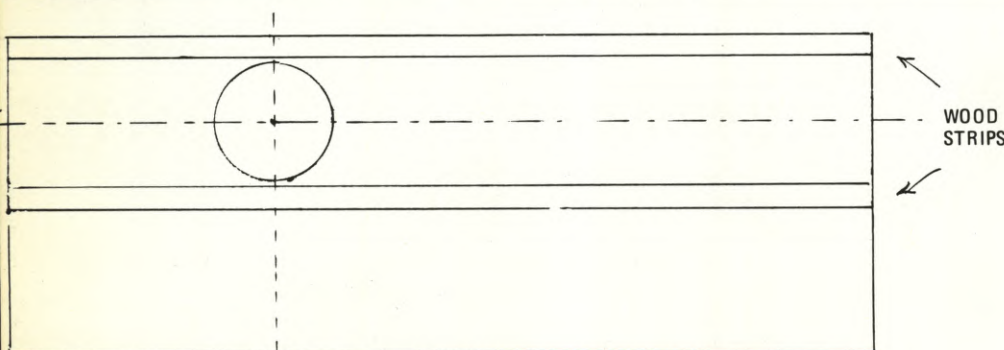


FIG. 1



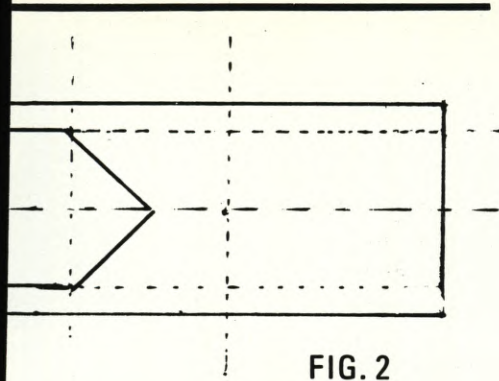


FIG. 2

PEARANCE OF EACH  
ATE WHEN CUT

extremely shallow cut, plane down the two wood strips till they are level with the packing. If the wood strip down the narrow edge of board is overlapping, it may be trimmed level with the board-edge at this time also. Next, cut two strips of the same metal sheet, to run the length of the board, and of a width to extend from the *outer* edges of each wood strip to a point just clear of the aperture. Again from the same metal, form about six angle brackets. One set is bent to pass around board to opposite (lens) side on the 'narrow' edge, and the others as simple "└" angles. These can be spaced at convenient points and screwed down with fine wood-screws. When in place, their upper sections are soldered to the long strips to form a closed channel for the plates to slide. If the plates now bind, the brackets and strips may be cautiously raised with a knife-blade till free sliding is restored.

Pull both plates apart till the angle sides of each "V" are about 1/64" clear of the lens aperture, and drive in a small wood-screw at each end to act as limiting stops. Drive in one more screw into the board at each end, about 2 1/2" from the outer edges of the plates, and solder a shortened piece of nail, head down, in line with these, near the edges of the plates. Place an elastic band (or suitable small spring) in position to keep the plates fully apart as their normal position, and of sufficient strength to bring them apart when brought together and gently released. The next operation is to solder on two LEGS (of coat hanger wire), bent to bridge over the strips, and reaching down toward the wide section of the board. (SEE FIGURE 3). They should be soldered firmly, one on each plate, extending upward to a little beyond the center point, and the lower ends of indeterminate length, to be adjusted according to other dimensional details. They must be "humped" to pass

over the strips, brackets, etc. then brought reasonably low above the board, and should be spaced not less than 4 1/2" apart when in the open position; also the spacing should be equidistant from the vertical center line when in "closed" position.

We now require something to use as a small, actuating cylinder or "drum". We used a small bottle cap, the screw-on variety, for want of anything better. After filling in the screw indentations with solder and smoothing off the circumference to a reasonably circular contour, we drilled a hole in dead center and reamed same till it was a snug fit over a #6-32 machine screw. Drilling another hole in the board at dead center, low enough for the bottle-cap to clear the adjacent wood strip by about 1/8", we mounted the bottle cap, head down, on the board, placing a washer under the screw-head and another over the screw where it projected through opposite side of board, securing same with two locking nuts.

The project is now approaching completion. One must now locate some pieces of fine, flexible wire. We used 28-gauge Nichrome resistance wire, because we happened to have some on hand, but any fine, tough but flexible wire would suit. Possibly bronze or brass picture hanging wire might suit, though it must have no appreciable stiffness.

Cut two 4" lengths of the wire and solder the end of one piece to the top of the 'drum' extending to the RIGHT and the other piece to the bottom of same, extending to the LEFT. Make sure plates are fully extended to the OPEN position. See that both wires are STRAIGHT. Now solder the upper wire

to the RIGHT slider-leg, and the other to the LEFT leg. Before cutting off surplus ends of wire, check that the apex of each plate "V" meet in dead center of the lens-aperture. If one plate draws too far ahead of the other so that there is an off-center close-off, unsolder the wire from the leg of the off-center plate and resolder the wire with that plate drawn forward, or set back a little, to make the necessary correction. Once set, it is seldom any more trouble. The entire unit—particularly the surfaces of the sliding V-plates—should be coated with matte black paint or lacquer, and the slides should have this done just prior to soldering on the actuating wires, then allowed to dry thoroughly before finally putting in place. Nothing much remains to be done except to place a very narrow collar of black felt around the lens barrel, to fit snugly, attached to board around periphery of lens aperture on camera-side of board with rubber cement. This is to prevent stray light leakage. Similarly, several other places might benefit from little black felt baffles. On outer side, two metal channels may be soldered to provide means of slipping in a square of filter-gelatine when required. Finally, a slender metal actuating lever may be soldered across the open face of the drum, so placed as to describe an even arc when diamond masking is opened and closed. When all is working smoothly and is easily under control, we may attend to the final stages of mounting in correct position, making provision for fast attachment and removal and for in-and-out settings for various lens barrel lengths. If you tackle this project, you will find it will have been worthwhile. Good Luck!

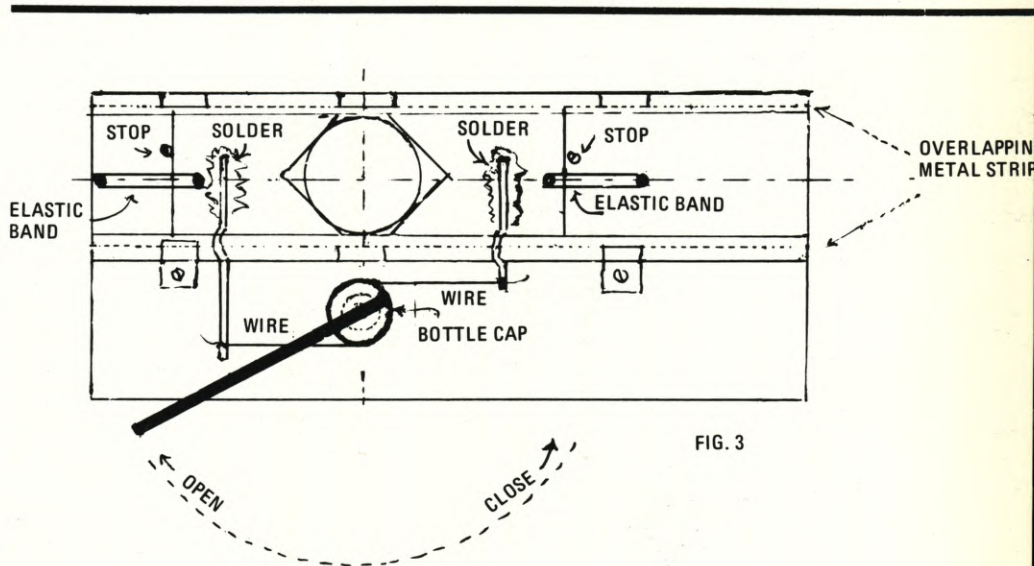


FIG. 3

Something old . . .

Something  
**NEW!**



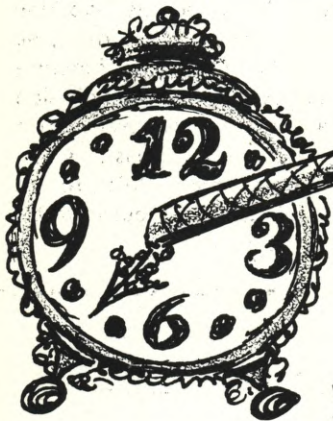
### MITCHELL MARK II PELLICLE REFLEX CONVERSION

Features a rugged BNC TYPE HARD front bayonet lock lens mount • Elimination of the stainless steel rotating mirror and drive gears significantly reduces noise level • Accepts Super Baltar, Panavision and most zoom lenses without support • Easy and instantaneous removal of the ground glass and Pellicle for cleaning is accomplished through the larger lens opening in the new front cover plate, also the changing of mattes is facilitated • Makes possible the standardizing and interchangeability of all lenses on the Mitchell line of Reflex Studio type cameras including all the latest conversions on the market today. For further information, write or phone



'Geared to the Future'

1038 NO. HIGHLAND AVE., HOLLYWOOD, CALIF., TEL. (213) 462-8787



*When the clock has the whip hand...*

**simply call (303) 471-2150**

With virtually all of our facilities under one huge roof . . . the balance in another building only yards away . . . Perfect Film Laboratories provides a full service for clients throughout the United States and Canada . . . with a speed that enables us to cut weeks from the major jobs; days from the lesser ones.

**IN DETAIL, OUR SERVICES:** EDITING? Yes! We have skilled staff editors always available. Or —complete facilities for your own editing use may be rented. **OPTICAL EFFECTS?** Yes! We'll handle your requirements for optical effects, including Wet Gate, Blow-ups or Reductions. **ART SERVICE?** Yes! Oxberry, Hand Lettering, Press and Animation are yours to command. **SOUND?** Yes! There's a complete studio, using the newest R.C.A. 35MM and 16MM equipment. **LABORATORY?** Yes! Here in one location . . . every facility for the finest, fastest film processing . . . Bell & Howell Model C 35MM or 16MM . . . Producers Service 101 High Speed Reduction Printer . . . Fast processing of both 35MM and 16MM Negative, Positive, Black and White and Color film. **DISTRIBUTION?** All major airlines, through Denver and Colorado Springs provide optimum service. Where urgency demands, door-to-door expediting is provided, in Colorado or across the nation.

Pick up your phone and call us (303) 471-2150 for details about how our service can be faster for you . . . more saving in total cost . . . and with quality of workmanship at our near-perfect level.



**FILM LABORATORIES, INC.**

3200 North Nevada Avenue Colorado Springs, Colorado 80907

A lot of productions use a lot of different cameras for a lot of different purposes. One camera might be blimped and mounted for sound work. Another might be hand-held for wild shots. A third might wind up on the camera car. And if time-lapse, animation or underwater footage is required, the call might go out for cameras number four, five, or six.

Arriflex had a better idea — one rooted in logic, convenience and economy. Why not use one camera and a choice of accessories to do many jobs, instead of many cameras to each do one job?

The idea's validity has been pretty well substantiated over the past three decades. An Arriflex 35 is a 200' or 400' camera that can be hand-held, that squeezes into any corner its operator can, that leaves some room in the camera car for the cameraman. And that same Arriflex is also a blimped 1000 footer, with sync generator and automatic slate, if you wish. There's no shortage of underwater housings, intervalometers and animation motors; and Arriflex mirror-shutter viewing is as beneficial on the animation stand as in live shooting. While the single purpose cameras do all these jobs more expensively, none do them more conveniently, quickly or better.

So if your writers call for all kinds of tricks, or if you expect the unexpected, pick the one that's done them all: Arriflex 35.

## **ARRIFLEX® 35 users use accessories where other-camera users use other cameras**

# **ARRIFLEX® 35 2C/B**

the  
one-camera  
inventory



**ARRIFLEX**  
COMPANY OF AMERICA

P. O. Box 1050, Woodside, N. Y. 11377  
1011 Chestnut Street, Burbank, Calif. 91502



# AMERICAN SOCIETY OF CINEMATOGRAPHERS

ROSTER • JANUARY 1, 1971

## Active Members

L. B. Abbott  
David Abel  
Lloyd Ahern  
Norman Alley  
Herbert Alpert  
Murray Alvey  
Gert J. Andersen  
Howard A. Anderson, Jr.  
Lucien Andriot  
Arthur Arling  
Monroe Askins  
Charles Austin  
Lucien Ballard  
Charles E. Bell  
Manuel J. Berenguer  
Carl Berger  
Joseph Biroc  
Haskell Boggs  
Joseph Brun  
Charles E. Burke  
Taylor Byars  
Ernesto Caparros  
Frank Carson  
S. C. Chuck  
Charles G. Clarke  
George T. Clemens  
Wilfrid M. Cline  
William T. Cline  
William Clothier  
Edward Colman  
Olle Comstedt  
J. Burgi Contner  
Stanley Cortez  
Floyd D. Crosby  
Art Cruickshank  
Russell Cully  
Mark H. Davis  
Robert de Grasse  
Dale Deverman  
Drummond Drury  
Linwood G. Dunn  
A. Farciot Edouart  
Russell Ervin  
Daniel L. Fapp  
Arthur Feindel  
Ray Fernstrom  
Gerald Finnerman  
George J. Folsey  
William A. Fraker  
Ellsworth Fredricks  
Henry Freulich  
Lee Garmes  
Frederick Gately  
Maury Gertsman  
Donald C. Glouner  
James B. Gordon  
Robert Gough  
Jack Greenhalgh  
Loyal Griggs  
Burnett Guffey  
Robert G. Hager

Conrad Hall  
Sol Halprin  
Russell Harlan  
Charles Harten  
Robert Hauser  
Charles W. Herbert  
John L. Herrmann  
Sid Hickox  
Gerald Hirschfeld  
Robert Hoag  
Winton C. Hoch  
David S. Horsley  
Eric Horvitch  
James Wong Howe  
Ub Iwerks  
Andrew Jackson  
Torben Johnke  
Boris Kaufman  
Richard A. Kelley  
W. Wallace Kelley  
Glenn Kershner  
Jess Kizis  
Benj. H. Kline  
Richard Kline  
Lloyd Knechtel  
Fred J. Koenekamp  
H. F. Koenekamp  
Milton R. Krasner  
Charles B. Lang  
Joseph W. LaShelle  
Andrew Laszlo  
Ernest Laszlo  
Philip Lathrop  
Sam Leavitt  
Paul K. Lerpae  
Lionel Lindon  
Harold Lipstein  
Jack MacKenzie  
Glen MacWilliams  
Don Malkames  
Karl Malkames  
Fred Mandl  
William Margulies  
Brick Marquard  
Jacques Marquette  
Joseph V. Mascelli  
Ted McCord  
Ray Mercer  
Russell L. Metty  
Virgil Miller  
Victor Milner  
Hal Mohr  
Nick Musuraca  
Harry C. Neumann  
John M. Nickolaus  
Meredith M. Nicholson  
Louis Page  
Ted Pahle  
J. F. Painter  
Ernest Palmer  
Kenneth Peach  
Harry Perry  
Frank Phillips  
R. W. Pittack

Robert H. Planck  
Clifford Poland  
Pietro Portalupi  
Ray Rennahan  
Gayne Rescher  
Irmin Roberts  
Charles Rosher  
Harold Rosson  
Giuseppe Rotunno  
Joseph Ruttenberg  
Robert Sable  
Charles Salerno, Jr.  
David Savitt  
Howard Schwartz  
James Seeley  
John Seitz  
Leon Shamroy  
Douglas Shearer  
Richard Shore  
Lester Shorr  
William V. Skall  
Clarence W. D. Slifer  
Harkness Smith  
Edward J. Snyder  
William E. Snyder  
William Spencer  
Harry Squire  
Alan Stensvold  
Clifford Stine  
Harold Stine  
George J. Stoetzel  
William J. Storz  
Archie J. Stout  
Harry Stradling, Jr.  
E. Charles Straumer  
Walter Streng  
Karl Struss  
Robert L. Surtees  
Jack Swain  
Philip Tannura  
Ellis Thackery  
Robert Tobey  
Thomas E. Tutwiler  
Charles Van Enger  
James C. Van Trees  
Zoli Vidor  
Paul C. Vogel  
Ted Voightlander  
Joseph Walker  
Harry Walsh  
John F. Warren  
Gilbert Warrenton  
Harold E. Wellman  
Frederick E. West  
Joseph Westheimer  
Albert Wetzel  
Haskell Wexler  
Charles F. Wheeler  
William F. Whitley  
William N. Williams  
Rex Wimpy  
Harry L. Wolf  
Ralph Woolsey  
Lothrop Worth  
Frank C. Zucker

## Associate Members

Herbert Aller  
Mark Armistead  
L. J. Baker  
Haworth B. Belford  
Edgar Bergen  
Herbert Bragg  
James Branch  
Robert E. Burns  
J. P. Carson  
Gifford S. Chamberlain  
Ronald Cogswell  
Kenneth J. Coleman  
Michael Crane  
Robert B. Creamer  
William A. Cushman  
Dr. C. R. Daily  
Fred H. Detmers  
Edmund M. di Giulio  
Ferdinand Eich  
Walter G. Eggers  
Ted Fogelman  
Milton Forman  
Richard B. Glickman  
Dennis F. Godfrey  
Henry Goldfarb  
Robert Gottschalk  
Allan Haines  
William Hansard  
Wm. H. Harrison  
R. Bruce Hill  
Wilton R. Holm  
G. Carleton Hunt  
Fred Hynes  
Alan Jackson  
Neal Keehn  
John J. Kowalak  
Herb A. Lightman  
Lewis Mansfield  
John H. Maynard  
Kemp Niver  
Capt. Don Norwood  
Otto Paoloni  
Warren Parker  
John Pistor  
William J. Reddick  
Edward H. Reichard  
Jay Rescher  
Loren Ryder  
Clarence Schwiebert  
Vaughn C. Shaner  
Norwood L. Simmons  
Sidney P. Solow  
Abbott Sydney  
Harry Teitelbaum  
Lou Vincent  
William J. Wade  
Jack Webb  
Ralph D. Whitmore, Jr.  
Ted Winchester  
Michael Zois

## Honorary Members

Col. Edwin E. Aldrin, Jr.  
Neil A. Armstrong  
Col Michael Collins  
Edward P. Curtis  
David MacDonald  
G. A. Mitchell  
Richard F. Walsh

# The world's finest filters

at your local cine dealer wherever you are



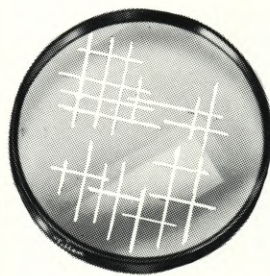
## 4 1/2" DIAMETER ACCESSORIES

Tiffen 4 1/2" filters are engineered to meet the exacting standards of large diameter professional lenses. The 4 1/2" filter will fit numerous lenses, using Tiffen adapter rings, eliminating the need for various costly special-size filters. Available in all standard colors, combination colors, neutral densities, rotating polarizer; and diopters 1/2, 1, 2, and 3.



## FOG EFFECT

Natural fog conditions can be created by the use of Tiffen Fog Filters #1, #2, #3 and #4. Fog effect can be created in different densities using filters individually or in combination. The control of exposure and development can change the density of the fog effect with any of the fog filters. Supplied in series sizes, screw-in mounts, 4 1/2" diameter and squares.



## STAR EFFECT

Highest quality in 1, 2, 3mm grids to create star effects on highlighted areas. Use individually or in combination to achieve the star effect desired. Supplied in series sizes, 4 1/2" dia., squares, rectangles and screw-in sizes double threaded.

Available in 1mm, 2mm, 3mm lines.



Tiffen Offers Its Optical and Filter System

Brochure to You by Return Mail

All the sizes, the colors, the threads, the holders, adapters and accessories . . . all of the details you need to complete your camera system are incorporated in this just-off-the-press brochure: TIPPEN PROFESSIONAL LENS ACCESSORIES.

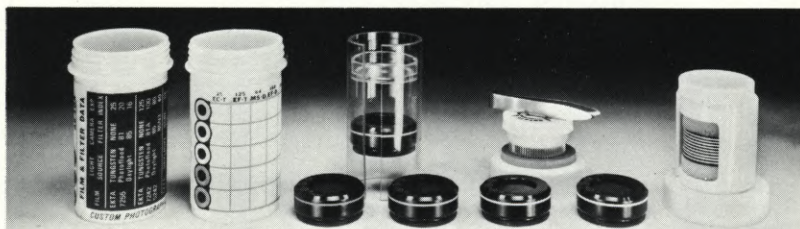
Write today for your copy. Or ask your cine supply house for further information on the complete line of Tiffen optical aids.



# TIFFEN OPTICAL COMPANY INC.

71 Jane Street, Roslyn Heights, L.I., N.Y. 11577

Selected by NASA for Apollo flights and earth resources programs



## BEHIND-THE-LENS FILTER HOLDERS THAT FIT ALL ANGENIEUX ZOOM LENSES

having either type of Arriflex mount – the regular or the steel bayonet, including the BL and the BL with the new Arri Precision Exposure Control; or with the Eclair mount for the NPR and CM3. Type AE3GS holders fit all of these.

Our type BTL35A holders fit Angenieux 25-250 and 35-140 lenses for 35mm Arriflex and Eclair CM3 cameras.

Do some of your longer focal length shots appear 'soft focus'? A gel filter introduces less optical interference than a glass one – hence, better resolution.

Have the convenience of a full inventory of filters to meet any filter situation – all at little expense.

THESE FILTER HOLDERS AND KITS ARE REALISTICALLY DESIGNED THROUGHOUT TO OFFER THE UTMOST IN CONVENIENCE AND USEFULNESS FOR THE PROFESSIONAL CAMERAMAN.

A two inch square of Wratten filter gel will make four filters for either type holder. Each holder has a ring of color to identify its place on a filter holder data chart where you can write in the exposure index for the films with which you will want to use it. The holders also have spacers to prevent Newton rings when more than one gel is used to make up a combination filter. They are packaged in kits with gel cutter, tweezers and indexed container for extra gels which has places for eight in each of nine compartments.

And there is a FILM & FILTER DATA CHART for handy reference.

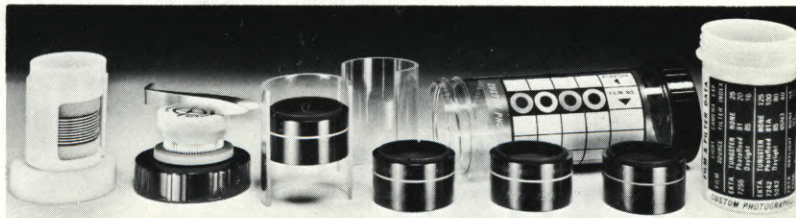
Ask for brochures

## For ANGENIEUX

25 - 250

35 - 140

Type BTL35A



## For ANGENIEUX Lenses:

9.5 - 95

12.5 - 75

12 - 120

12 - 240



Prices include AIR MAIL shipment same day to anywhere in U.S. & foreign.

Type BTL35A –  
FOUR holders with kit . . . . . \$65.00

Type AE3GS –  
FIVE holders with kit . . . . . \$45.00  
FOUR holders with kit . . . . . 40.00

GUARANTEED to meet with your complete approval or money refunded.

CUSTOM MADE BY  
**CUSTOM PHOTOGRAPHICS**

P.O. Box 25007 Portland, Oregon 97225  
PHONE 503-292-5569



# THE PHOTOGRAPHY OF **I WALK THE LINE**

## PART II

By RICHARD PATTERSON

*(EDITOR'S NOTE: Following is the conclusion of a two-part feature article begun in the November, 1970 issue of AMERICAN CINEMATOGRAPHER. It represents the observations of the author made by him while he was serving an American Film Institute internship with Director John Frankenheimer during production of "I WALK THE LINE" on location, as well as in the studio.)*

Perhaps the most interesting studio lighting set-up created during production of "I WALK THE LINE" was that required for the only scene that takes place inside the apartment of the deputy, Hunnicutt (FIGURE 1). This scene was filmed in one continuous shot, although the beginning of it was to be intercut with a scene taking place outside the apartment.

Hunnicutt is looking out the kitchen window as his wife calls to him from the Starting point on the sound stage for a complicated follow shot, utilizing a hand-held Arriflex. The camera followed the actor from this kitchen through the hallway to the bedroom of the small apartment (see diagram, FIGURE 1). For protection, the scene was also shot with the camera mounted on a ColorTran dolly, but the director preferred the hand-held shot after viewing dailies.

bedroom where she is sitting in bed watching television. He crosses the kitchen to turn out the light, returns to the window, and then walks through the hall to the bedroom, where he looks out both windows. After he is in the bedroom, his wife gets off the bed, turns off the television, and exits past the camera towards the bathroom where she delivers her final off-camera line. The scene was shot with a 50mm lens following Hunnicutt as he moved around the apartment.

The key light in the kitchen with the lights on was an open-eye Junior (1) which provided 100 foot-candles of illumination on Hunnicutt as he walked around the kitchen. This Junior and an open-eye Baby (2) were both connected to a cue box which was wired to the switch on the wall of the set. Once the

Conclusion of an "eye-witness" article on the location and studio filming of director John Frankenheimer's latest feature production

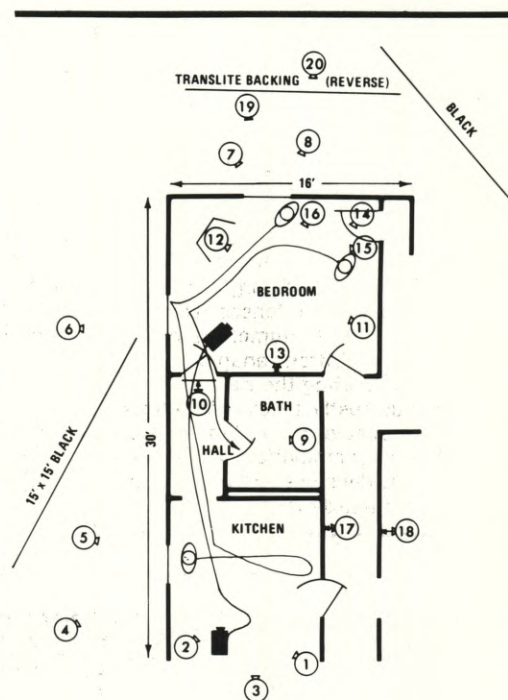
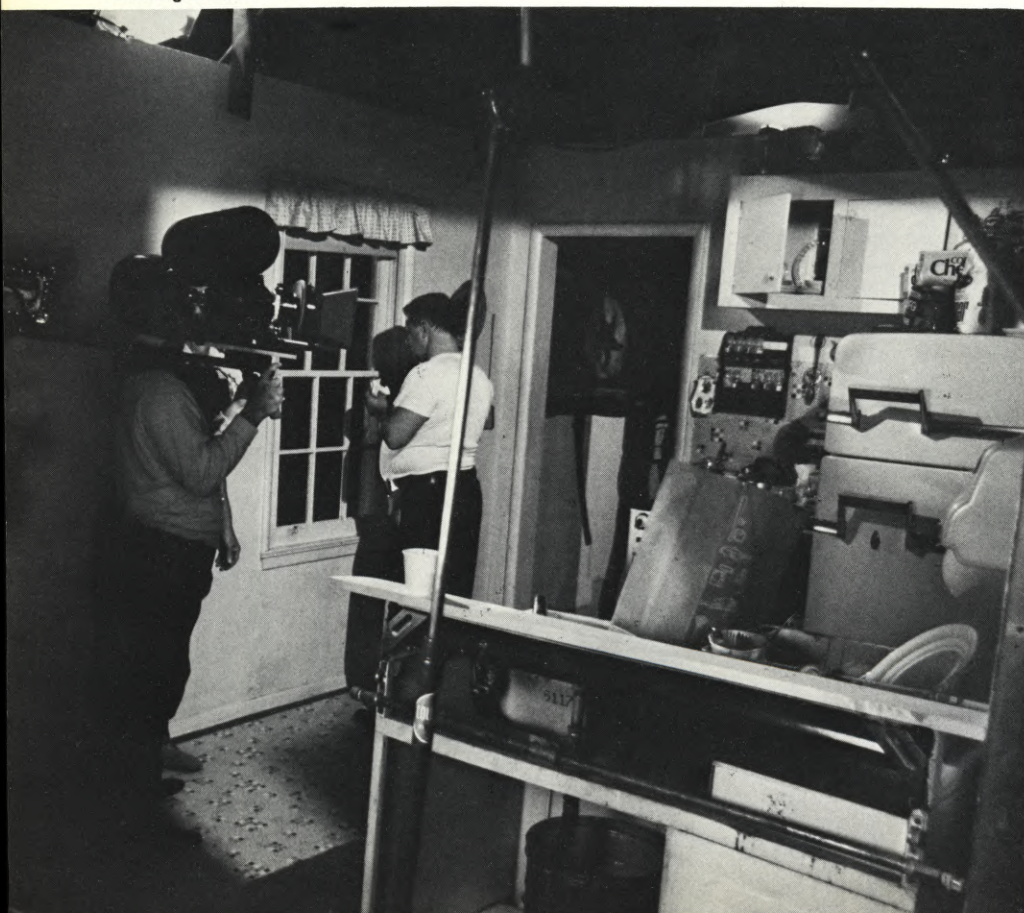


FIGURE 1—Scene 179: Interior Hunnicutt Apartment Night

- 1) Open eye Junior on cue box wired to practical wall switch
- 2) Open eye Baby on cue box wired to practical wall switch
- 3) 750W cone with double silk
- 4) Open eye Senior with ½25 (moonlight)
- 5) Open eye Baby
- 6) Open eye Senior with ½25
- 7) Open eye Junior with 25 & Y-1 (street-light)
- 8) Open eye Baby from below
- 9) Baby
- 10) Midget with double scrim bounced off white card
- 11) Baby with double silk
- 12) 150W Photoflood on dimmer with 25 and plain in TV cabinet
- 13) Midget bounced off wall
- 14) Open eye Baby with silk and double scrim
- 15) Baby
- 16) Inky with snoot
- 17) Baby with diffusion bounced off wall
- 18) Baby with diffusion bounced off wall
- 19) 250W Gimmick with plain, 25, and Y-1 (street lamp)
- 20) Baby with snoot through window in backing





(LEFT) A complicated location set-up in which the extension arm of the Chapman "Titan" crane made possible a close shot of the driver of a car about to sink beneath the water. (RIGHT) A strung-out crew films a moving close shot of Gregory Peck. Director of Photography David Walsh operates camera mounted on shoulder brace, while assistant follows focus and supporting actor plays off-camera dialogue to Peck. A grip braces Walsh as he moves backwards, and gaffer Joe Smith walks a Baby spot with Macbeth filter for fill light.

lights were out in the kitchen, there was only a 40-foot-candle key of bluish light coming through the window from an open-eye Senior (4) with a 1/25 filter. Low-level fill light for the kitchen came from a 750-watt cone (3) with a double silk, and an open-eye Baby outside the window provided an additional effect.

As Hunnicutt walked through the hall, he was lit only by 75 foot-candles coming from a Baby in the bathroom (9) with minimal fill for the hallway from a Midget with a double scrim (10) bounced off a white card. There was nothing about the scene that required the bathroom light to be on as he walked through the hall; but there was also no reason why it could *not* have been on, and it obviously contributed an interesting effect to the scene.

There were no lights on in the

Three of the four cameras involved in set-up for special effects scene which would be difficult to re-stage. Panavision Reflex camera is on the crane, with Arriflexes set up on platform and opposite shore.



bedroom except for the television set, so that the source for lighting was taken to be the moon or a street light outside the apartment. The key coming through the bedroom windows was set at 40 foot-candles. An open-eye Senior (6) with a 1/25 filter provided moonlight through one window, and an open-eye Junior (7) with a combination of a full 25 and a Y-1 filter was used to simulate the bluish green light from a street light outside the other window. Fill light for the room was provided by a "midget" (13) bounced off the wall and two Babies (11 and 14) with silks. The light for the television set was a 150-watt Photoflood (12) on a dimmer with a 25 filter and plain diffusion. Since the screen was not seen in the shot, a light inside the television cabinet could be used to create the effect of light from the screen.

Two blacks and a translite backing were used outside the windows. Because the backing which had to be used was one originally made for use in a day scene, it was reversed and used without any light except a Baby with a snoot (20) which shone through a window in a building in the backing. In addition a street lamp visible to the camera was simulated by using a 250-watt "Gimmick" light (19) with plain diffusion and a Y-1 filter around it. The rest of the lighting in the set was for smaller lighting effects (8, 14, 16) or for minimal fill on background walls (17, 18). The level of fill light on the set was probably as low as five foot-candles in some places. The film was exposed at F/2.8 and developed normally.

Another interesting night scene was shot night for night on location and included almost a full city block in the background (FIGURE 2). The action consisted simply of the moonshiner's daughter crossing the street and entering the courthouse where the sheriff was working late. The set-up illustrated, one of two angles for the scene, involved a wide shot with a 50mm lens from the

corner opposite the courthouse. The five Seniors inside the courthouse were filtered with 1/2MT2 filters to give the light from the windows a warmer color than the moonlight or the light from the street lamps outside. The actual street lamp in front of the courthouse was disconnected, since it was not included in the shot, and the color temperature of its light was incompatible with the light for which the film was being exposed.

Continued overleaf

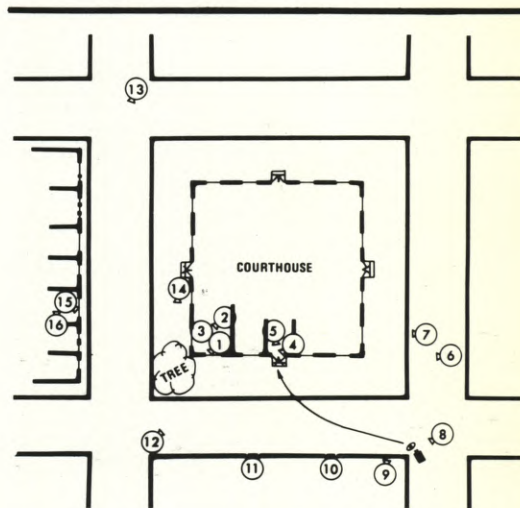
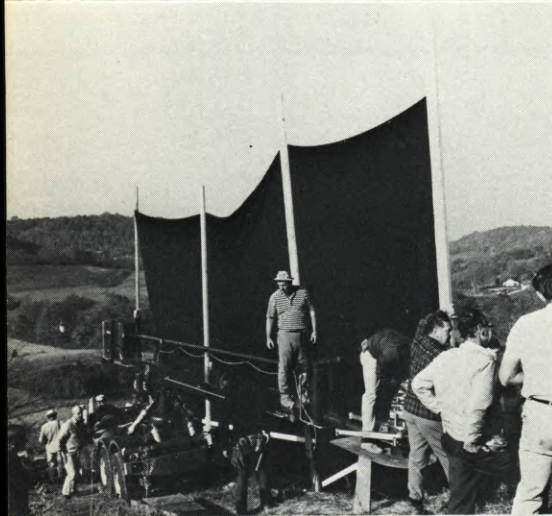
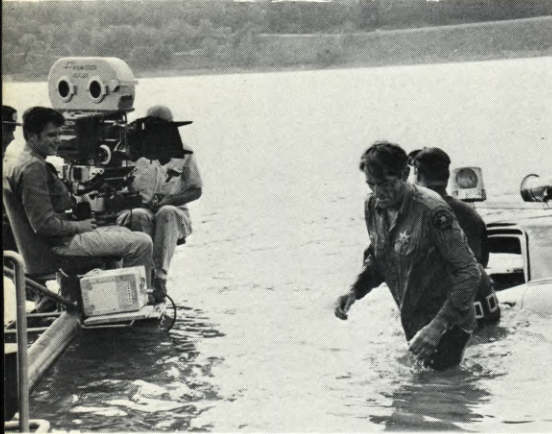


FIGURE 2—Scene 64: Exterior Courthouse Night for Night 50mm Lens at f/2.5

- 1) Open eye Senior with 1/2MT2
- 2) Open eye Senior with 1/2MT2
- 3) Open eye Senior with 1/2MT2
- 4) Open eye Senior with 1/2MT2
- 5) Open eye Senior with 1/2MT2
- 6) Arc on crane with full 54
- 7) Arc with full 54
- 8) 10K with 25TD from high angle
- 9) 10K with full MT2 and scrim
- 10) 10K with full MT2
- 11) 10K with 1/254
- 12) Open eye 10K up onto side of courthouse
- 13) Arc with full 54 onto store fronts in background
- 14) 9-lite with spun glass onto tree
- 15) Junior with full MT2 inside store onto wall
- 16) Junior with full MT2 inside store through window



(TOP LEFT) Camera car, with arc light, prepares to tow a pickup truck that has an Arriflex mounted in front of its hood. (CENTER) A dripping wet Gregory Peck "walks action" through the water in rehearsal before Panavision camera. (BOTTOM) Arm of the Chapman crane is used to support a large black Dubatine scrim for shading hillside to match lighting of scene shot previously on overcast day.

The principal lighting on the girl and the street was the bluish light from the arcs (6 and 7) with full 54 filters, the 10K (11) with a 1/254 and the 10K (8) with a 25TD filter. The 10K lamps (9 and 10) with full MT2 filters provided the effect of light from store fronts off camera. Two 2K lamps (15 and 16) with MT2 filters were placed inside one store visible in the background, and an additional arc (13) with a full 54 was used to illuminate the store fronts along the street in the background. An open-eye 10K (12) was used to illuminate the side of the courthouse facing the camera, and a 9-lite was used to backlight a tree on the corner.

Two other day interior set-ups on location are also illustrated as an indication of lighting techniques employed on location. Most notable perhaps is the use of bounce lighting in scene 56 (FIGURE 3). Also in scene 56, ND.60 plastic or gelatin filters were placed over every door or window in the shot whereas in scene 112 (FIGURE 4), the cameraman would have liked to light for an exposure of F/4 but had to shoot wide open in order to have a sufficient difference in light levels between the interior and what was seen of the exterior. Scene 112 is also a good example of the way in which the art director, the cameraman, and the gaffer worked together to create some exceptionally interesting visuals for the film. The set, which was an abandoned mill

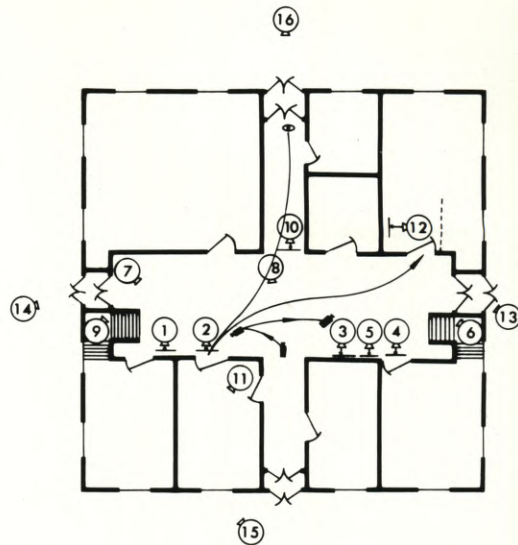
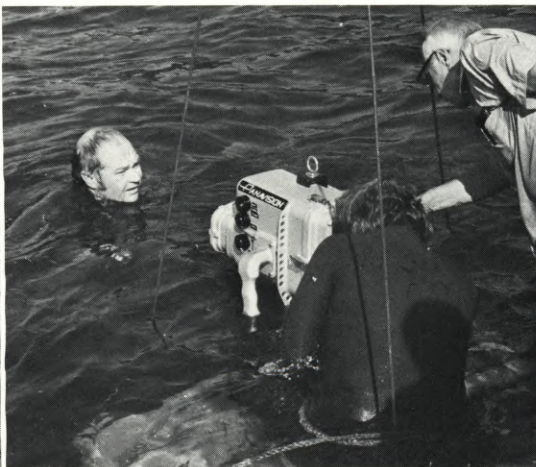


FIGURE 3—Scene 56: Interior Courthouse Lobby Day 50mm lens at f/4 with 85 correction filter

- 1) 5-lite from ceiling bounced off white card on wall
- 2) 5-lite from ceiling bounced off white card on wall
- 3) 9-lite on stand bounced off white card on wall
- 4) 9-lite on stand bounced off white card on wall
- 5) Single faye on stand bounced off white card on wall
- 6) 5-lite (4 globes) with spun glass on stand
- 7) 5-lite with spun glass from ceiling
- 8) Single faye from ceiling
- 9) 5-lite with spun glass on stand
- 10) 5-lite from ceiling bounced off white card
- 11) Single faye with silk on stand
- 12) 9-lite on stand bounced off white card
- 13) 9-lite with spun glass through doors with ND.60 filters
- 14) Arc with Y-1 through door with ND.60 filters
- 15) Arc with Y-1 through unfiltered window
- 16) Two 4'x4' Reflectors ND.60 filters on door

(LEFT) Flat on his back, Walsh hand-holds camera to get a low angle shot. He is flanked by the director and by the assistant following focus. (CENTER) The Panavision underwater camera mounted on a platform suspended from the end of a barge, is used to film a scene of a swimmer surfacing, and also to get a point-of-view shot in which the camera itself surfaced like the swimmer. (RIGHT) This suction mount for the Arriflex mounted on the hood of a car proved unstable because the metal of the hood was flexible. Suction mount for the quartz light worked acceptably because it was closer to the edge.





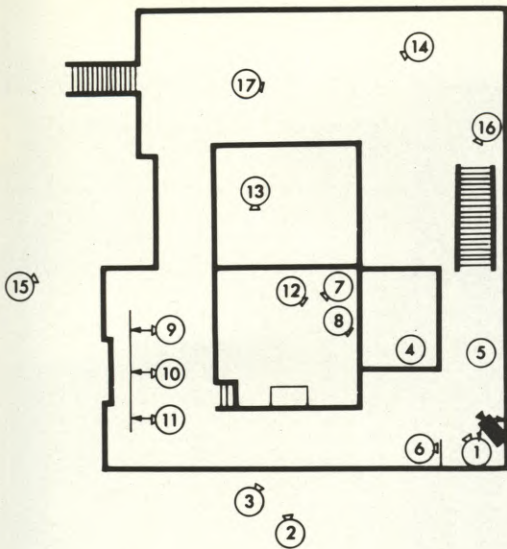
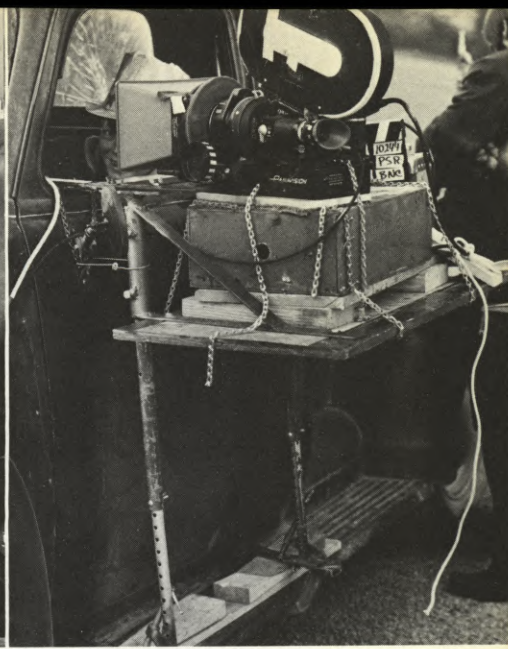


FIGURE 4—Scene 112: Interior Mill Day  
40mm lens at f2.8 with 85 correction filter

- 1) Senior with Macbeth and 3 double scrims
- 2) Arc with Y-1
- 3) 9-lite
- 4) 2K Quartz with dichroic bounced off white card on ceiling
- 5) 2K Quartz with dichroic bounced off ceiling
- 6) Single fay bounced off white card
- 7) 1000W Quartz with dichroic
- 8) 1000W Quartz with dichroic
- 9) Single fay bounced off white card on ceiling
- 10) Single fay bounced off white card on ceiling
- 11) Single fay bounced off white card on ceiling
- 12) Single fay from low angle
- 13) 2K Quartz with dichroic and spun glass from below
- 14) 9-lite above roof
- 15) Arc with Y-1 onto tree above roof
- 16) RFL-2 Photoflood with Macbeth for stairwell
- 17) 5-lite (2 globes) with silk fill for bottom of stairs



(LEFT) One of several instances in which the Arriflex was rigged to the outside of a vehicle in order to get an unusual angle. (RIGHT) Another use of special mounts for remote operation of the camera on a vehicle. The flat base of the camera facilitated such applications.

being used to house the still, was actually an abandoned pump house filmed on location in California.

The 800mm and 1000mm lenses were used quite frequently on location, often with light conditions that required shooting wide open (F/5.6 and F/6). Focusing became exceptionally critical and was often complicated by action which involved a subject running towards the camera or past a camera position which entailed shooting through foliage. Normally, during the staging or rehearsal, focusing marks would be established to enable the assistant to pull focus during the shot. The Panavision lenses, which are focused by means of a large knob on either side of the lens cradle, have a pointer rotating on a surface which can be marked with a grease pencil for various focus positions. In a situation where the action was relatively simple,

the focus would be set by eye for several of the actor's key positions, and the assistant would pull focus according to marks he had made. When the shot called for an actor to be running straight towards the camera, numbered stakes were put in the ground at convenient intervals, and one camera assistant ran parallel to the actor calling out the numbers while another pulled the focus according to corresponding marks on the focusing knob. Occasionally the cues had to be relayed to him because the unblimped camera noise kept him from hearing the assistant who was, perhaps, 30 or 40 yards away.

When one set-up called for a sustained pan with the 800mm lens as the actor rowed a boat down a stream and out into the lake, there was no way of establishing accurate enough focusing marks to enable the assistant to pull the

Continued on Page 69

(LEFT) Attaching the camera to the hood of a highway patrol car for a running shot. (CENTER) In order to stabilize the camera on the suction mount, the mount was attached to a metal plate which was clamped to a board held down by rods hooked under the fenders. This was the camera mount for the shot in which the car was driven to the water's edge. (RIGHT) Frankenheimer and Walsh on the hood of the car, as Peck drives toward the water's edge. In occasional extreme situations such as this or in set-ups involving a hand-held camera, Walsh operated his own camera.





GHOST MARE

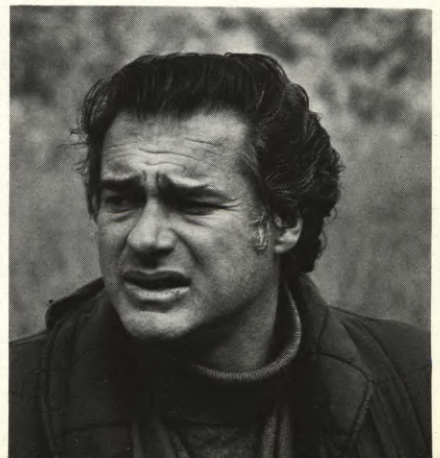
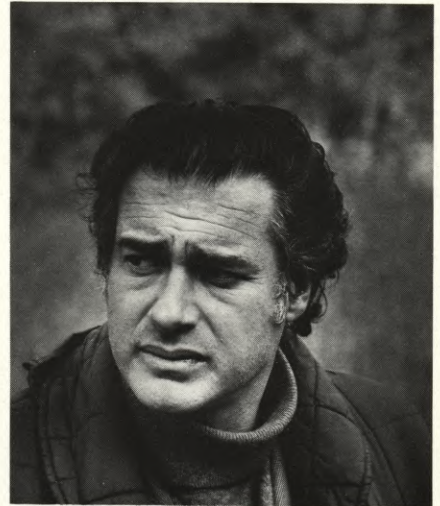
# TENNESSEE PORTFOLIO

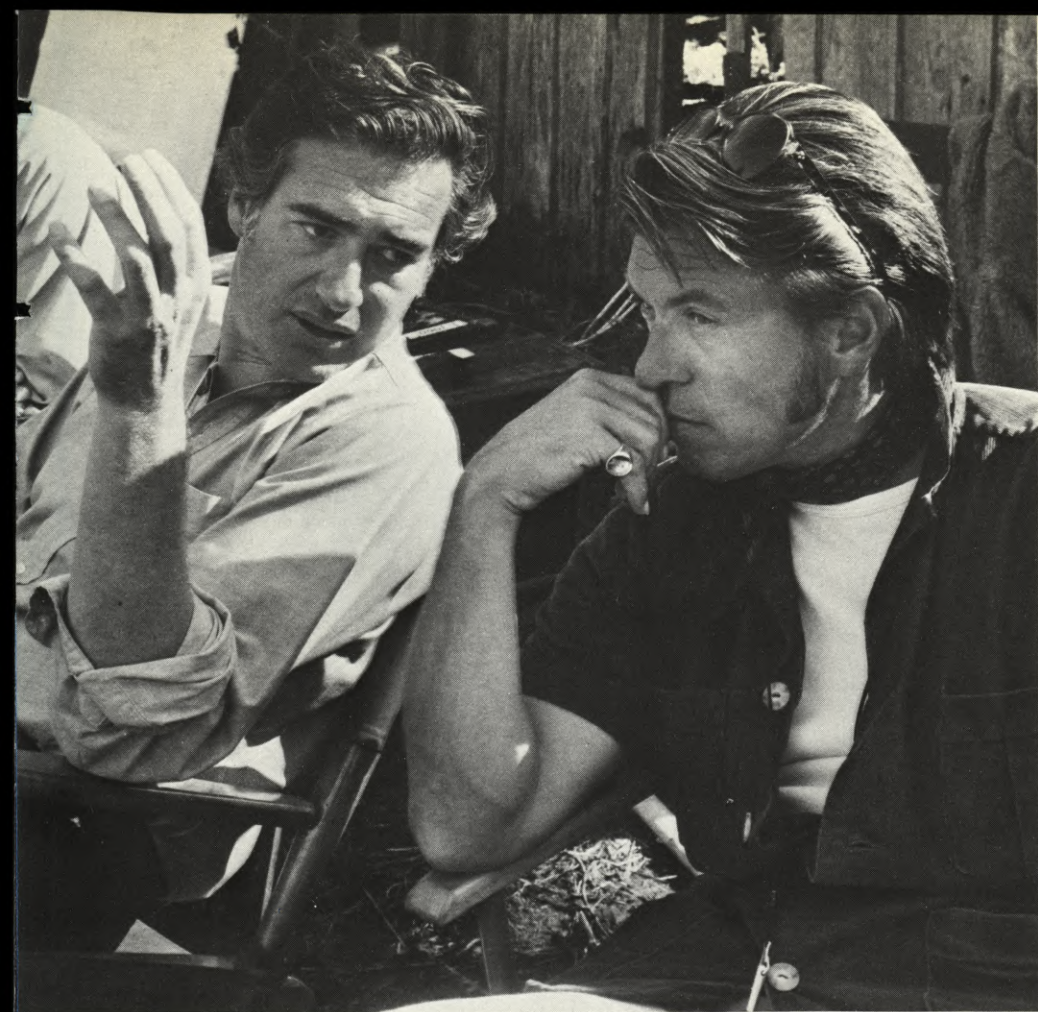
A collection of photographic studies made on location during the production of "I WALK THE LINE" by ANTHONY WOLFF

AUTOGRAPH-SIGNING TIME

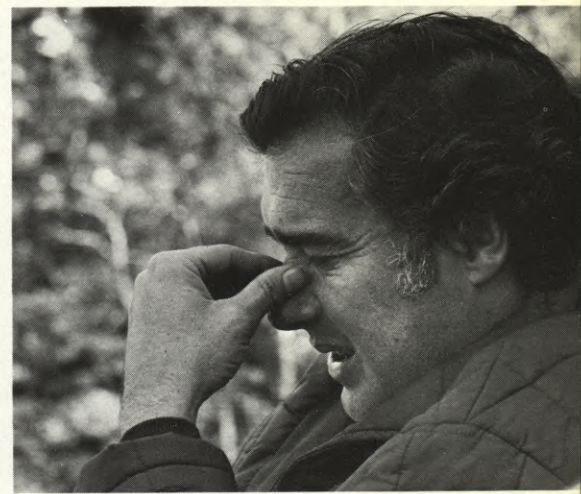
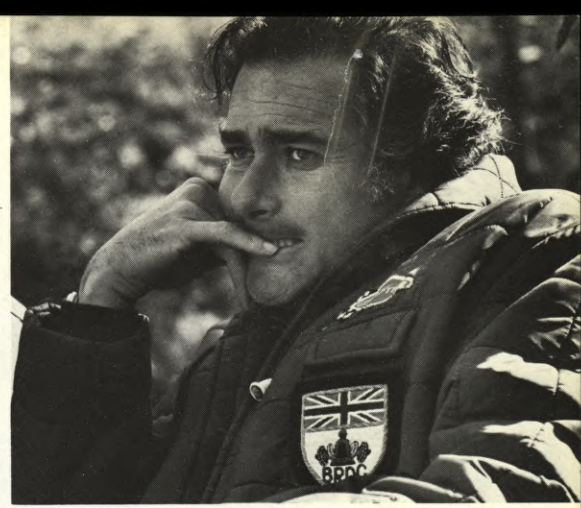


JOHN FRANKENHEIMER





FRANKENHEIMER WITH DIRECTOR OF PHOTOGRAPHY DAVID WALSH



YELLOW SKY



# WESTERN QUESTIONS & ANSWERS

## Cine



Conducted by CHARLES G. CLARKE, ASC.  
and WALTER STRENGE, ASC.

(Inquiries are invited relating to cinematographic problems. Address:  
Q. & A., AMERICAN CINEMATOGRAPHER, P.O. Box 2230, Holly-  
wood, Calif. 90028.)

COLOR  
POSITIVE  
RELEASE  
PRINTING

INTER-  
NEGATIVES  
with  
COLOR  
CORRECTION

## COMPUTERIZED PRINTING

Western Cine color duplicating is the better way to achieve the fine results you expect! Our computerized lab equipment permits wide flexibility that enables you to do more with your film... color correction, variable fade and dissolve lengths, zero cuts and R/F cueing.

And because the duplicating process is completely programmed and computerized, better quality control and economy result.

### COMPLETE LAB SERVICES

COLOR PROCESSING  
EKTACHROME COMMERCIAL EF & MS  
LIPSNER-SMITH ULTRASONIC FILM  
CLEANING ON ALL ORIGINALS  
COMPLETE SOUND RECORDING,  
OPTICAL PRINTING TRACKS  
OPTICAL PRINTING 16mm to 16mm  
and 35mm to 16mm  
INTERLOCK PROJECTION  
8mm PRINTING

Send for Producers' Net Price List



DENVER  
312 So. Pearl St. - Denver, Colo. 80209  
HOLLYWOOD  
Cine Craft  
8764 Beverly Blvd. - Hollywood, Calif. 90048

**Q** How can I produce a night effect in the daytime using color film?

**A** This is the question we most frequently receive, and though the answer has been given many times, still the key to the question is to *underexpose two stops*. Additional techniques which assist the illusion are to photograph the scene in back-light, using lights or reflectors as fill lights on the players. When such are not available, use front cross-light. By all means avoid any white sky in the scene. You may use a 85N6 filter, but disregard its factor. The N6 (Neutral density—6 transmission) portion of this filter will reduce the light transmitted by two stops. Therefore, you judge the exposure as if you were using the normal #85 filter for a *day* exposure; the N6 portion cutting two stops will produce the underexposure necessary for a night effect.

It will further the illusion if you can include in the scene some light source—such as lighted windows or street lamps. These must be boosted by using photo-flood lamps—using tracing paper or Bon Ami on the glass of the windows to diffuse the light from the naked globes.

**Q** I would like my Main Title to appear over live action scenes—having the text appear in white letters over the scene. What is the simplest method for doing this?

**A** This is best accomplished by the process known as *Bi-Pack printing* in which the developed title film negative is placed in contact with the developed positive background scene. Both are printed together on duplicating negative film stock—by one pass through the printer. The same bi-pack idea may be employed directly in the camera by threading the negative title film in front of the negative color film stock. The background scene is then photographed—such as waves breaking on white sand. The actual fade-in and out footage frames having been measured from the title negative (with sufficient footage in front for threading), the camera is faded in and out at these same positions. In this last case, the text will appear in

black letters over the light background. It is best to photograph the titles on positive film for maximum contrast and clear film surrounding the lettering.

**Q** I read that professional cinematographers normally light their sets at a predetermined foot-candle level. Why is this, and what is the difference between foot-candles and candles-per-square-foot?

**A** Motion picture sets are illuminated for a definite light level measured in foot-candles. The intensity of the light and the lens opening will vary with the speed of the film being used—and effect desired. The professional is only concerned with the incident light available—not with the reflective aspect of the players' clothing, backgrounds, etc., unless these are of a particularly light or dark tone—in which case exposure compensation may be required.

The term "foot-candle" is used in connection with the *intensity* of illumination at a given location. It is entirely dependent upon the intensity of the light source and its distance from the subject. Foot-candles are measured with an incident light meter.

The term, "candles-per-square-foot" is used in connection with the *brightness* of an illuminated surface. It is dependent upon the intensity of illumination on the surface *and* the inherent diffuse reflectance of the surface. Many reflected-light meters read in candles-per-square-foot.

**Q** I have to photograph a "Dow Board" in our local stock exchange. This is a black-light apparatus—and is just barely visible. How might I obtain an insert shot of this board in color?

**A** Use color negative—or equivalent 16mm high speed film and the fastest lens you can obtain. Request your laboratory to force develop your negative *one stop*. You may run your camera at 12 frames per second to obtain more exposure and also to speed up the action of the legend being spelled out on the board.

Continued on Page 77

## "I WALK THE LINE"

Continued from Page 65

focus. The shot was further complicated by having to shoot through varying amounts of foliage in the foreground which made it difficult, first of all, to find the subject as it came into range of the camera and virtually impossible to hold the focus since the boat and rower were constantly being obscured by the foliage. Fortunately the action was covered simultaneously with an equally effective dolly shot using a 50mm lens, and the editor was able to use the sharp portions of the takes with the 800mm lens in combination with the wider shot.

In any situation involving critical focus the operator preferred to work with a squeezed image in the reflex finder of the PSR. The finder is made so that the operator can switch from a squeezed to an unsqueezed image in the finder by simply turning a knob. The squeezed image, while it can sometimes be distracting on a pan, is more reliable for checking focus because it is a *direct* image from the mirrored shutter, while the unsqueezed image is an *aerial* image, and a discrepancy in the focus between the two images is not uncommon.

During the course of the shooting almost every conceivable type of camera support was used at least once. The only item included in the grip equipment which was not used on location was a wheelchair. A Titan crane traveled with the company everywhere it went on location, making feasible otherwise impossible camera angles and moves. It also occasionally proved convenient as a time-saver for conventional stationary set-ups, as well as being used to support a carbon arc or even a large black drape. A Nike crane was also used two or three times in the studio. The McAllister crab dolly was the basic dolly for both location and studio work, but considerable use was made of the Colortran dolly as well. An Elemack Spyder dolly was used once or twice on location where space did not permit the larger crab dolly to be employed, and a Fisher dolly was used a good bit in the studio because of the low angles possible with it. A Western dolly with a tripod on it was used once on location when the equipment had to be taken across a lake on a barge. For stationary cameras an hydraulic tripod with a gear head was used for the Panavision Silent Reflex camera, while Mitchell tripods with O'Conner 100 fluid heads were used for the Arriflexes. Extensive use was made of hi-hats and a variety of mounts were rigged on doors and hoods of cars. A hanging mount was even used three or

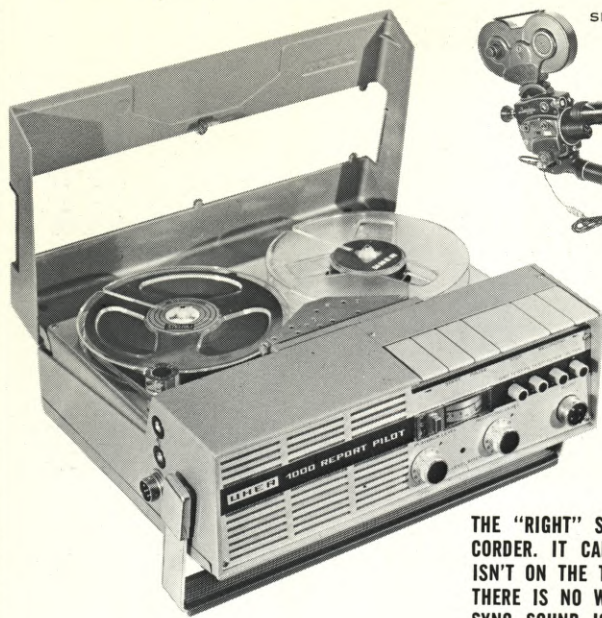
*We have a  
New **LAB** Price  
List for you.*

*motion pictures  
filmstrips  
slides*

Write, phone  
**bēbell**

**416 West 45 St.  
New York 10036  
(212) 245-8900**

# THE RIGHT SOUND



SHOWN WITH BEAULIEU CAMERA

**UHER**  
**1000/N**  
by **martel**

THE "RIGHT" SOUND BEGINS WITH THE RECORDER. IT CANNOT BE MADE RIGHT IF IT ISN'T ON THE TAPE IN THE BEGINNING. AND THERE IS NO WAY SURER THAN WHEN YOUR SYNC SOUND IS RECORDED WITH THE UHER 1000/N NEO-PILOT RECORDER. WHETHER YOUR PHOTOGRAPHY IS ACCOMPLISHED WITH THE BEAULIEU, ARRIFLEX, ECLAIR, OR ANY OTHER PROFESSIONAL SYNC/SOUND CAMERA, THE UHER 1000/N IS THE PERFECT RECORDING MEDIUM. ASK YOUR HERVIC DEALER, OR WRITE FOR DETAILED INFORMATION.

EXCLUSIVELY DISTRIBUTED IN THE U.S.A BY

**Herovic**  
CORPORATION

EXECUTIVE OFFICE: 14225 VENTURA BOULEVARD  
SHERMAN OAKS, CALIFORNIA 91403

# YES

## 7252 ECO-3 PROCESSING

*Can be force developed one stop  
Computerized printing*

ALSO PROCESSING ECO-2

*Color corrected answer and release prints  
Edge numbered work prints, same day service*

**uf**united film  
industries, inc.

1028 ACOMA STREET  
DENVER, COLO. 80204  
PHONE 303/244-4629

four times for the Arriflex.

Undoubtedly the most unusual dolly used consisted of a hi-hat on a 2"x12" waxed board sliding across another waxed board placed across the rear of a pick-up truck. The shot began with a view through the rear window of the truck cab, and the camera moved to the side and panned around to follow an actor as he approached and passed the truck. There was not room enough for the Colortran dolly to move around in the back of the truck, and only by placing the camera on a hi-hat on a board could the proper view through the rear window be obtained. The boards were both waxed with candle wax, and after a little rehearsal the move was executed extremely smoothly by grips pulling and pushing the ends of the top board.

Extensive use was made of hand-held cameras throughout the shooting on location and for at least three set-ups in the studio. The Panavision lensed Arriflex (either supported by a shoulder brace which David Walsh had designed or simply hand-held with no additional support) was used not only as a means of obtaining an otherwise impossible angle, but also in numerous situations where the scene called for the kind of camera style which is possible only with a hand-held camera. The prime example of this is the fight scene at the climax of the picture in which the "master shots" were provided by two Arriflexes on shoulder braces. The director was interested in the kind of visual excitement he knew he could get by having a hand-held camera virtually involved in the fight. Additional footage was provided by the PSR shooting from the crane with an 800mm lens and a third Arriflex on a tripod with the 50 to 500mm zoom, but the cameramen with the hand-held cameras were inevitably included from time to time in the footage provided by the stationary cameras.

Several scenes required shots inside a car and using a hand-held Arriflex braced on a 1"x6" board made it possible to get the shots on location rather than shooting with a mock-up and rear projection in the studio. The Panavision modifications for the Arriflex include a geared base which enabled the camera to rest firmly on a flat surface with the motor available as a handle for the cameraman's right hand. The base is light enough to be used on the camera even when the cameraman is holding it without any additional support, although it is a simple enough matter to replace the base with the standard Arriflex motor. For a close-up profile of the sheriff driving his car,

Walsh would simply sit in the front seat with the camera braced on a board placed across the dash and the back of the seat.

On two occasions an Arriflex on a shoulder brace was used for a sustained dolly shot. Both were medium shots of a character walking towards the camera with the cameraman walking backwards. In one case a path of 4'x8' plywood boards was laid across the field to insure steady footing. A grip would walk behind the cameraman bracing his back, an electrician would be carrying a lamp to provide fill lighting for the actor, and an assistant would accompany the cameraman to pull focus.

These shots both worked out quite well even though only very small pieces of them appeared in the final cut of the film; but there was another instance in which the hand-held camera proved to be inappropriate. For a scene in which the sheriff is snooping around the outside of an abandoned mill in search of the still, the crew began setting up for a dolly shot when it was decided that the effect of a hand-held camera might serve to heighten the mood of the scene. The dolly track was used as a path for the cameraman with the Arriflex with a 50mm lens on the shoulder brace.

When the shot was viewed in the dailies, it was obvious that it did not work. The uneven movement of the hand-held camera worked against the mood of the scene rather than with it. The primary reason seemed to be the fact that as the shot progressed it developed into a full-figure shot and there was no single dominant part of the composition moving in such a way as to serve as a kind of anchor for the wobbly movement of the camera. The movement of a hand-held camera can work very well in a shot which maintains a medium or close shot of someone walking because the camera movement relative to the head and shoulders of someone walking is considerably less noticeable than it is when the majority of the frame consists of stationary objects.

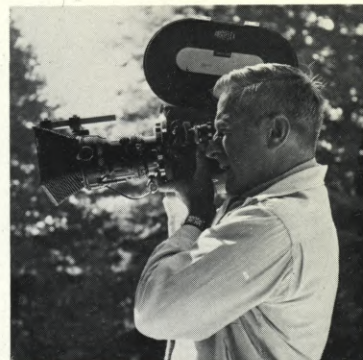
Noticeable camera movement of the sort obtained in a hand-held long or full-figure shot is appropriate only if the point is to convey a sense of the presence of the camera. In this particular instance the mood of the scene depended heavily on the feeling that the sheriff was quietly snooping around alone. The agitation and the sense of intrusion resulting from the hand-held camera were wrong. Fortunately there was no problem in reshooting the scene, and an extremely effective shot was obtained using a 100mm lens on a dolly.

Continued on Page 74

PLAN NOW TO BE "ON LOCATION" FOR ONE OF THE . . .

## 1971 FILM PRODUCTION WORKSHOPS

. . . IN THE GIANT REDWOODS OF NORTHERN CALIFORNIA



**THE ONLY INTENSIVE TWO-WEEK COURSE IN PROFESSIONAL FILM MAKING — TAUGHT BY PROFESSIONAL PRODUCERS, DIRECTORS, CAMERAMEN, SOUNDMEN AND EDITORS.**

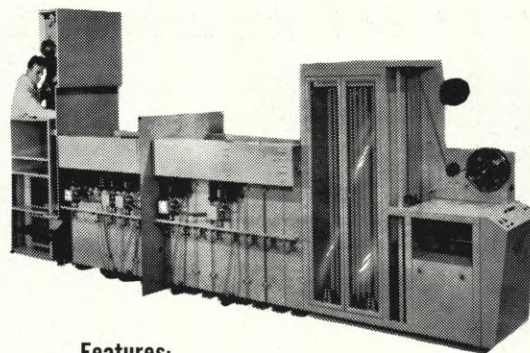
A "hands on" course, where students "learn by doing" — working with professional production equipment under the close guidance of experienced film makers.

CINEMATOGRAPHY, SOUND RECORDING, LIGHTING, EDITING, DIRECTION for all types of 16mm films: Television, Educational, Industrial, Travel, Documentary, etc.

12 days, 10 hours of training each day — 120 total hours. All equipment, film, room and board included in the low tuition fee.

**TWO WORKSHOPS THIS YEAR! JUNE 1-13 AND SEPT. 8-20, 1971. TOTAL COST: \$495.00.** Write or phone now for details and enrollment application. Film Production Workshop, CAMP LOMA MAR, LOMA MAR, CALIF. 94021. Phone: (415) 879-0710.

## Sale • 16mm Color Processor



**Pako 56-EK  
Ektachrome ME-4  
or  
ECO Process**

Designed to handle large volumes of film with minimum labor

**Features:**

- Modular construction — easy installation
- Lightweight bottom drive racks — constant tension maintained
- Spray-bar washing
- Air squeegee "wiping"
- Remote main control panel

Only one machine available at sale price. Machine presently in operation. Available for immediate delivery.

Sold new for over \$30,000.00

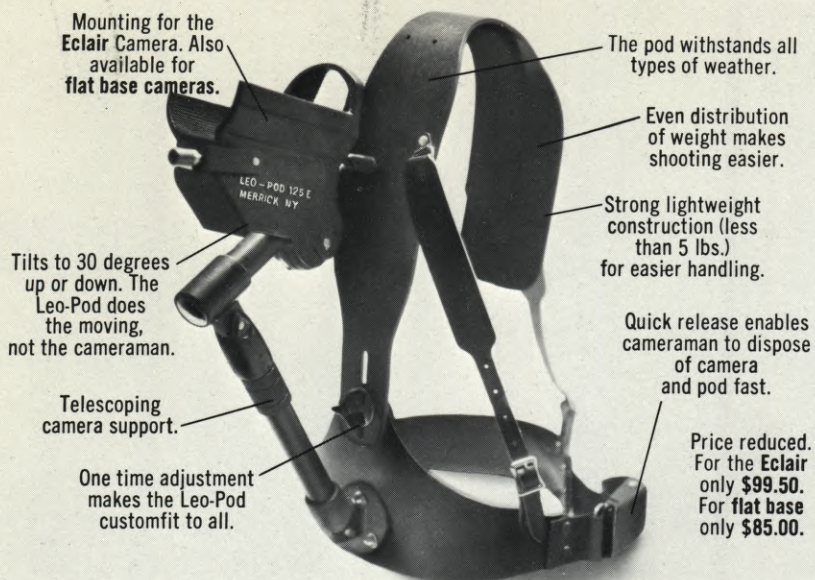
Sale Price: **\$15,250.00**

SERVING THE WORLD

**alan gordon enterprises Inc.**



1430 N. CAHUENGA BLVD. • HOLLYWOOD, CALIFORNIA 90028  
SALES (213) 985-5500 • RENTALS (213) 466-3561



Mounting for the Eclair Camera. Also available for flat base cameras.

The pod withstands all types of weather.

Even distribution of weight makes shooting easier.

Strong lightweight construction (less than 5 lbs.) for easier handling.

Quick release enables cameraman to dispose of camera and pod fast.

Price reduced. For the Eclair only \$99.50. For flat base only \$85.00.

Tilts to 30 degrees up or down. The Leo-Pod does the moving, not the cameraman.

Telescoping camera support.

One time adjustment makes the Leo-Pod customfit to all.

## The Ugly Leo-Pod? (Not with all of those comforting features)

The Leo-Pod is now available to all cameramen no matter what type of camera he uses. The pod is specifically designed to leave his hands free for zoom, iris, focus or sound adjustments. It is completely adjustable to the individual cameraman. The Leo-Pod comes equipped with a mounting designed to hold the Eclair camera or also is obtainable with a flat base mounting for the Arriflex 16 or 35mm, Auricon, Bolex or Kodak cameras. Guaranteed for 1 year.

Model 125A for flat base cameras, price reduced to only \$85.00.  
Model 125E for the Eclair camera, price reduced to only \$99.50.

Call or write now for further information.

Leopold Enterprises • 729 W. Sunrise Blvd. • Ft. Lauderdale, Fla. 33311 • (305) 527-9230

**LEOPOLD**  
ENTERPRISES, INC.

## CRYSTAMATIC SYNC SYSTEM

Continued from Page 43

tal-control circuit in the Crystamatic was designed with three basic goals in mind:

1. Accuracy—the crystal frequency is 7.2 MHz, six times higher than conventional units, and is coupled to a temperature compensating circuit which will provide an accuracy of  $\pm\frac{1}{2}$  frame in 1,200 feet of film from below zero degrees to above 150° Fahrenheit.

2. Flexibility—In addition to running at 24 fps the cameraman filming abroad can instantly film crystal-sync at 25 fps with a flick of the speed selection switch (FIGURE 3). Turning this same switch to its extreme left position engages the variable speed circuit, and by turning the knob marked variable, the cameraman can dial any speed from eight fps to over 50 fps. Unlike a "wild" motor, this variable speed circuit is servo-controlled, and once a speed is selected, it will not drift. For added convenience an external reference circuit is provided. When the reference switch is in the "Ext. Ref." position, the crystal is disengaged and the camera control circuit will lock the camera speed to any reference signal that is fed to the unit. For example, if the 60Hz signal from a wall socket is fed to the external reference circuit, the camera has effectively a synchronous motor which will keep the camera in absolute sync with any and all other equipment with synchronous motors. The Pilotone frequency from a non-crystal-controlled camera can also be fed to the external reference circuit, in which case the crystal-controlled camera will slave to, and run in sync with, the non-crystal camera. Thus two-camera shooting can be done even if only one camera is controlled by a Crystamatic.

As a safety precaution, all Anton/Bauer crystal motors have built-in governor circuits. If for any reason the electronics are damaged or lost, the camera can still shoot sync sound with just a battery and a sync cable. Lastly, the Crystamatic will operate from any 12-volt battery. The cameraman can use the batteries he now possesses and can even power from a car battery in a pinch. In summary, the cameraman has at his fingertips a 24 fps crystal motor, a 25 fps crystal motor, a variable speed motor, a synchronous motor, a slave motor, and a back-up governor motor.

3. Dependability—The Crystamatic incorporates a most unique testing, adjusting, and warning circuit. If the camera speed should deviate from the

## The new Stellavox Sp7 will become a giant in the recording industry.



**All 8 lbs. of it.**

Up till now, perfect stereo location recording meant lugging unportable portables.

So we've come up with a rugged precision instrument, the Swiss-made Sp7. It's small—8"x10"x3". It's light—only 8 lbs. with batteries. And, despite its size, Sp7's features measure up to any portable you're now using.

Plus giving you several advantages you'll get nowhere else, regardless of size.

Like four standard tape speeds. 3¾, 7½, 15 and 30 ips. It is also continuously variable from 0-30 ips.

Another exclusive: Our many tape head assemblies with up to four heads. They plug in. Are quickly exchanged in the field. And each one contains the components to equalize the electronics precisely for a particular tape speed, track configuration and tape oxide. With Neo-pilot for mono

and "Sychrotone" for stereo sync recording!

Then there's our 10½" real adapter. It gives you more recording time than any portable ever.

Plus: hands-off automatic stereo level control, dual peak indicating meters, internal powering for two condenser mikes, external AC supply and battery charger, and an internal quartz generator.

We expect this tiny Stellavox Sp7 to live up to the highest hopes of the industry. Because you don't have to be big to be a giant.

**STELLAVOX**

exclusively by

**GOTHAM**

AUDIO CORPORATION

2 West 46th Street, New York, NY 10036 (212) 265-4111  
1710 N. LaBrea Avenue, Hollywood, CA 90046 (213) 874-4444



reference by as little as a hundredth of a frame, both a red warning light (upper left FIGURE 3) and a buzzer will activate. Should the camera jam, or the reference malfunction, or a cable come loose, the same warning will occur. This same light is also part of a simple testing circuit. A battery meter is included in the complement of indicators and constantly monitors the battery voltage. (For the most paranoid, a test cable is provided to cross reference the crystal in the camera with that in the tape recorder.) Thus with the above systems, the cameraman (and producer) can have peace of mind knowing that if a malfunction occurs, it will immediately be manifest before any time or film is wasted. The crystal-control section of the Crystamatic is available separately as a "Crystallock". It provides all the motor functions of the Crystamatic, and can be later converted to a Crystamatic by the addition of the radio slating system.

The Anton/Bauer Crystamatic vest and belt are hand-made from top grain leather and contain the Crystamatic electronics in two modules located at the front. Batteries, which are housed in the rear, can be chosen from a variety of NiCads and Silver Cells. All controls are visible to the cameraman (FIGURES 1 and 4). The vest has a cushioned saddle on the right shoulder to facilitate comfortable and steady shouldering of the camera. All wiring in the vest is internal with the exception of the camera power cable which plugs into the right module.

On special order, the Crystamatic and batteries can be custom-installed in the camera for added convenience. For example, when the Crystamatic is installed in the Anton/Bauer back-magazine 16 BL, the camera balances perfectly on the shoulder without any additional support. This makes a flexible self-contained unit without any sync or power cables hanging from the camera. However, for hand-held cameras, such as the Arriflex 16S, the vest or belt offers greatest flexibility. No modification is necessary to any of the cameras used with the Crystamatic or Crystallock. The cameras, however, must be used with Anton/Bauer crystal motors which attach to the camera in the normal fashion. The exception is a 16 BL equipped with the Arriflex universal motor which can plug right into the Crystamatic.

The whole point of the Anton/Bauer Crystamatics is to provide the cameraman with greater creative freedom by totally automating the syncing and slating process in a configuration that is light and comfortable. ■

**CHANNEL 8 COLOR LAB**  
FOR BEST TELEVISION TRANSMISSION

**7389**  
**SILVER**  
**SOUND**  
**TRACK**

16mm EXTACHROME ECO-7252 PROCESSING	16mm CREATIVE & CONFORMING EDITING
16mm EKTACHROME ME-4 PROCESSING	16mm CREATIVE SOUND PRODUCTION (INTERLOCK)
16mm COLOR WORKPRINTING (1 DAY SERVICE)	PROFESSIONAL SLIDE PRODUCTION
16mm RELEASE PRINTING 3400K - 5400K	TRANSPARENCY DUPLICATION FROM
16mm SOUNDTRACK APPLICATION	35mm TO 30" x 40"
16mm ULTRASONIC CLEANING	35mm FILMSTRIP SERVICE

**905 JACKSON STREET / P.O. BOX 1410**  
**TAMPA, FLORIDA 33601 / 813 229-7781**

# WE'RE AGAINST DIRTY FILMS.

Dirt can ruin a film.

And our business is printing and processing 8mm, Super 8mm and 16mm for motion picture duplication and preprints.

Clean water. Clean air.

We can't operate without them.

That's why we've recently installed a unique water filtering system in our processing department.

Unique because this system filters water to one-millionth of a meter. Result: Incredibly pure water.

It's why we've put a highly sophisticated air-control system in our cartridge loading room.

In this system, air comes from thousands of tiny holes in the ceiling. It forces dirt and dust particles down to floor level and out the exhaust exits.

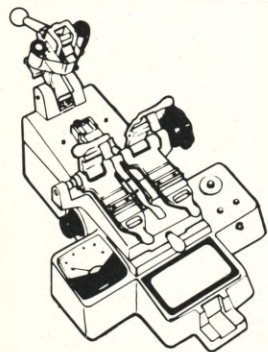
Dirt.

We think it's obscene.

## CINE MAGNETICS FILM LABORATORY

A DIVISION OF CINE MAGNETICS, INC.  
650 Halstead Avenue, Mamaroneck, N.Y. 10543 (914) 698-3434  
New York Receiving Center: 305 E. 45th St. (212) 682-2780

## the *ONLY* Thermo-Fusion Butt-Weld SPLICING EQUIPMENT



## for MOTION PICTURE FILM and VIDEOTAPE

- Get "end-to-end" splices in seconds for Super 8, 16mm, 35mm, and 70mm film
- No scraping of emulsion
- No messy cements
- No pressure sensitive tape
- No added thickness
- No extraneous noise on magnetic sound tracks

- Perfect film alignment
- Mends broken 16mm sprocket holes without loss of frames
- Simplifies and cuts cost of A & B editing process
- Models available for every splicing need
- Request literature on Prestoseal Butt-Weld Splicers

**RECOMMENDED BY THE BRITISH BROADCASTING CORP.  
AND MANY OTHER LEADING ORGANIZATIONS**

**PMC**

"The  
Thermo-Fusion  
People"

**Prestoseal Manufacturing Corp.**  
37-12 108th St., Corona, N.Y. 11368  
(212) 457-5566

## "I WALK THE LINE"

Continued from Page 71

The camera creeps along slowly as the sheriff examines one locked door and then opens another in a full-figure shot. The long lens and the greens in the foreground give the viewer the feeling that he is almost spying on the sheriff rather than the feeling that the cameraman was obviously there with him, and the smooth move heightened the quiet, somewhat suspenseful mood of the scene.

In a similar case involving a dolly shot in which the camera follows a character as he walks around one room, through a hallway and into another room; it was thought that a walking shot might be more effective than a smoother dolly shot. Most of the shot was a medium shot of the character, and the dramatic content of the scene was somewhat agitated, so that the hand-held shot did work out well; but alternate takes were done at the same time using the Colortran dolly as well.

The most difficult special effect required for the film came with a scene in which a character drives a car into a lake to commit suicide. The description in the script implied that the car would be driven off a bank and plunge into the water below, but the location chosen for the scene resulted in a completely different problem. It was decided to have the car drive into the lake at a place where a dirt road went right up to the edge of the water. This meant that instead of plunging into the water the car would simply drive in and keep driving until it was completely submerged. However right this was dramatically, it presented problems realistically because one can not count on being able to drive a car to the bottom of a lake. The motor would probably die, and the car might float temporarily.

The effect was accomplished by rigging a set-up to tow the car into the water by means of a cable around a pulley fastened to 10 tons of "dead man" on the bottom of the lake about 100 feet off shore. The cable was pulled by a winch on shore and covered with dirt so that it would not be visible in the shot. A second cable was attached to the rear of the car to pull it back out. To insure that the car would not float, the floorboards were removed from the car so that water could enter from below. The driver's door was modified so that it was hinged at the bottom rather than the side and fitted with a quick release latch to enable the stunt man to escape quickly once the car was completely submerged. The driver car-

ried an air tank with him, and a scuba diver was ready to go in to assist him as soon as the cameras were cut.

The set-up was such that the car could be towed only from the water's edge, so that the drive up to the edge has to be staged in such a way that it would cut with shots of the car being towed. The towing was rehearsed with a dummy car with considerable discussion of the best speed for the car. At first it was felt that the car would have to be going fast when it hit the water but there was a limit to how fast it could be towed before it began to act as a hydroplane. If the car lifted off the bottom and began to float, the effect would obviously be spoiled. Similarly if it went into the water too slowly, the effect might be ridiculous. Fortunately the set-up was such that the car was towed off a ledge just off-shore so that after it got into the water it nosed sharply under.

The scene was shot in five set-ups using as many as four cameras on one of the set-ups. The drive to the water's edge was shot with three cameras providing various angles and then restaged with a camera mounted on the hood of the car to provide a close-up of the actor driving the car. The car being towed into and under the water with a stunt man at the wheel was covered by four cameras. In order to get a closer shot of the actor at the wheel as the water filled the car, the camera was held over the water with the extended crane arm, and a second cable was rigged to the rear of the car to make sure it stopped just before it went under. Finally the underwater camera was mounted in the car as it was towed under with the stunt man at the wheel.

The Panavision Underwater Camera was used for the opening sequence of the film in which the sheriff is swimming around the remains of his old house which was flooded when a dam was built. The shots of the sheriff surfacing with the dam in the background were done on location while the house was a set constructed in the underwater tank at the Columbia ranch.

The underwater camera was used for two of the set-ups on location. One was simply a water-level view of the lake and the dam with the sheriff surfacing in the foreground. The other was a subjective camera set-up in which the camera was to begin under water and lunge to the surface, "seeing" what the sheriff would see. Because of the bulk of the underwater housing this shot proved very difficult to get. The camera was first mounted on a platform which was big enough to support the operator and his

## EXCELLENT WILDLIFE STOCK FOOTAGE

North American and African

Great slow motion action scenes  
Superb close-ups

Buy only what you know you can use  
at far less cost than sending a  
cameraman afield

Our film vault protects 300,000 feet

### BORDEN PRODUCTIONS, INC.

Great Meadows Road  
Concord, Massachusetts 01742  
Area Code 617-369-5030

# You perform like a professional.



## Meet the lab that treats you like one.

Photo Processors Inc., was established on the simple philosophy that a service-type industry, wherever located, can attract a national and even international clientele if it furnishes professional excellence in its product in a fraction of the usual in-shop production time. (at no extra charge). We are gratified with the results achieved in so short a time.

Motion Pictures Services. Our modern Treise Engineering custom equipped laboratory offers black and white reversal processing (16 mm and super 8 mm), black and white negative processing, ME-4 color processing (16 mm and

super 8 mm) with application of optical sound track simultaneously. Also, Ektachrome commercial processing through a separate processor for the optimum color original. Automated, tape-controlled, color corrected prints are made on the Bell & Howell model "C" color printer, "The Standard of the Industry." Also, we offer black and white prints on Bell & Howell equipment.

In order to offer complete services to our clients, Photo Processors has installed the finest sound department possible along with a complete custom still laboratory.

### We keep Pros happy, at no extra cost.



For further Information and Price List, write or call:

### PHOTO PROCESSORS INC.

Box 2116A • Austin, Texas 78767 • Phone AC512-472-6926

**YOUR PRODUCTION CREWS ARE READY IN CALIFORNIA AND FLORIDA**  
 Any part or all of your 16/35 filming needs answered *anywhere* with our top-quality equipment (Arriflex BL—single and double system, Nagra IV, Eclair, Sennheiser wireless sound, etc.) operated by expert personnel.

Post Office Box 28-8746  
 San Francisco, Cal. 94128  
 S.F. Mobile Operator  
 (415) Y J 2-9220

**DAVID HAYLOCK PRODUCTIONS**  
 DIVISION OF CINE UNLIMITED INC.

P. O. Box 38-517  
 Miami, FL 33138  
 (305) 754-4141

## This is the latest IMPROVED CINEKAD CAMERA BRACE

*Used world-wide by discriminating cameramen.*

This Camera Brace will support all 16-35mm hand-held movie cameras; Auricon, General Camera SS-III, Arriflex, Bell & Howell, Mitchell, Beaulieu, Canon, Bolex, Nomag, Eclair, etc. Guaranteed steady and Balanced Brace affords perfect shooting with any weight of camera, without fatigue and strain. It eliminates the necessity of using any tripod, particularly in crowded or limited spaces.

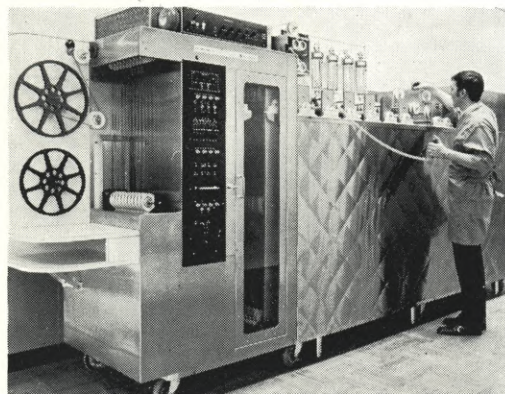
**The CINEKAD Camera Brace provides  
 SPEED, FLEXIBILITY and PORTABILITY.**

*Write for catalog and prices.*

**CINEKAD ENGINEERING COMPANY**  
 757-59 Tenth Ave., New York, N.Y. 10019



# Gentle



Demand-drive gently transports film under very low tension. Automatic Burette Replenishment controls chemistries accuracy. Performance proven design is backed by 12-month B&H warranty.

## EFFICIENT RELIABLE NEW

Film Processors for Photofinishers, TV stations, Microfilm, schools and industry, as well as Motion Picture Laboratories.

- A complete line for every chemistry, film formats and speed.
- Low Tension Drive
- Silent Rotary Buffer Squeegees
- Automatic Replenishment
- Installation by experts

### PROFESSIONAL EQUIPMENT DIVISION

7100 McCORMICK ROAD, CHICAGO, ILL. 60645 U.S.A.



**BELL & HOWELL**

CALL  
**THE PROS**  
 FOR PRINTING  
 & PROCESSING  
 EQUIPMENT  
 312/673-3300

assistant as well and which was rigged to a hoist on the front end of a barge. It was initially thought that the shot could be done within 600 feet of the shore in which case a winch on a truck could have been used to haul the platform up to the surface of the water. In order to get the proper angle on the dam, however, it was necessary to move further off shore; and six grips had to haul up the platform with the camera and two men on it by means of a rope over a single pulley. The resulting shot did not really yield the effect desired because it was impossible to haul the platform up fast enough. For a second set-up a cable was attached directly to the camera, and the operator swam free. This proved more successful because the camera could be hauled to the surface more quickly and was free to bob in the water at the surface the way a swimmer would. Even this shot, however, was not effective enough to use in the final cut.

The first attempt to shoot in the underwater tank was hampered by a malfunction in the water filtering system which caused the water to cloud up. The second time, however, the water was murky enough to be realistic, without being too murky to shoot. Lighting for the tank was provided by a total of 17 arc lamps including four 36's which most of the electricians had not seen in use for ten years. Light was poured in both from above the surface and through windows below the water level, enabling the cameraman to shoot at F/4.

The size of the set, which consisted of an L-shaped porch and facade for a two story house, presented a problem because it was difficult to get a wide enough angle with the 35mm lens to establish the set as a whole. The use of a convex mirror to provide a wider angle was considered, but finally it was decided to shoot the establishing shots with a 9.5mm spherical lens and then crop and squeeze the negative optically.

Once the editor decided which takes with the 9.5mm lens he was going to use and which portions of the frame he wanted to crop to get the proper aspect ratio, an interpositive was made which was then cropped and squeezed optically to produce a negative which would cut in with the Panavision footage. In going from a full aperture flat negative to a 2:35/1 squeezed negative, half the height of the frame is cropped. This can be taken from the top or the bottom or both, and it is possible for the printer to scan during a single take so that, for example, the bottom could be cropped on the start of a take and the top later on in the same take. ■

## QUESTIONS & ANSWERS

Continued from Page 68

**Q** How can I produce the effect of smoking, boiling liquids for a kitchen scene?

**A** Use liquid smoke (titanium tetrachloride) and light it with backlight. More readily obtainable is dry ice, which produces the effect of steam and the action of boiling water. Backlight makes all smoke and fog scenes more visible.

**Q** Where can I obtain aperture markings and aspect ratio data for the current wide screen systems?

**A** The AMERICAN CINEMATOGRAPHER MANUAL, published by the American Society of Cinematographers, contains complete data and dimensions for all wide-screen processes. It also has data on television cut-off for both 16mm and 35mm film apertures—plus much more related data too long and detailed to reproduce here. ■

### NEW FUJICA PORTABLE HOME MOVIE VIEWER NEEDS NO SCREEN: OPERATES IN LIGHTED ROOM

A completely-new Fujica portable 8mm movie viewer, requiring no screen and designed for use even in a fully-lighted room, is now available according to Ehrenreich Photo-Optical Industries, Inc. (EPOI), U.S. marketer for the well-known Japanese brand.

Called the Fujicavision F10, the viewer will show either Single-8 or Super-8 film. It is compact (approximately 6¾" x 5½" x 8¼"); lightweight (4.2 lbs.); and has a 3-1/8" x 4¼" screen.

Film loading is similar to threading a tape recorder and the Fujicavision F10 has push-button controls for forward operation and fast rewind. Film can also be stopped for still projection or can be advanced manually frame-by-frame. It has been developed for home entertainment, as well as educational, industrial training and home study use.

Suggested retail price of the Fujicavision F10 is \$69.95, including carrying handle and plastic cover.

Other Fujica movie equipment presently available in the U.S. includes a complete line of Single-8 cameras and projectors as well as color and black-and-white movie film.

For additional information write: Fuji Division, Ehrenreich Photo-Optical Industries, Inc. Garden City, New York 11530.

# R7

## 5.9mm f/1.8

# MORE THAN WIDE



The Angenieux R7 extreme wide angle (94°) fixed focus lens is highly corrected for distortion and all other aberrations resulting in images of unequalled quality

Available in "C" and other mounts for most 16mm & Vidicon cameras

See the R7 and other Angenieux lenses at leading camera equipment dealers throughout the world

For Further Information and Technical Specifications Call or Write:

**angēnieux** corporation of america

440 merrick road, oceanside, n.y. 11572 • (516) 678-3520

*Enrollments Now Being Accepted*  
for our next course — (commencing Monday, March 1)

### MOTION PICTURE PRODUCTION

CAMERAS — SOUND RECORDING — LIGHTING — EDITING — ETC.

Evening Classes — Enrollment Limited — Literature on Request

**DANNY ROUZER STUDIO**

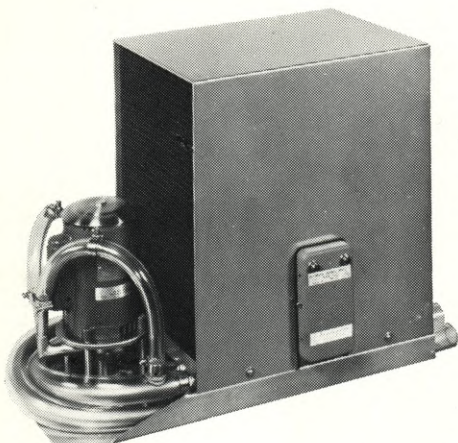
7022 MELROSE AVENUE

Hollywood, Calif. 90038

936-2494

## the automatic thermal unit

With recirculating system / Type 316 S.S. construction



smaller models available

**model 120a-20**  
(for 350 gallons or less)

**price: \$1545**

- cools or heats as set
- 1/10 degree temperature maintained

write for details

**FRIGIDHEAT INDUSTRIES**

box 6037, 1401 21st avenue south

nashville, tenn. 37212

telephone: (615) 291-4255

## High Lamp Prices Lower Your Profits

SAVE ON LAMP PURCHASES:

**PAR 64 Quartz Lamps, 1000 W.,**

**VNS, NS, Med., Wide Beam**

**\$14.50 each**

Write, wire or phone

**BRENNER PHOTO CO.**

5215 Wisconsin Ave., N.W. Washington, D.C. 20015

(202) 244-3800

# INDUSTRY

DOCUMENTARY ON THE ASC  
MUSEUM SOON TO BE AVAILABLE

"The Moving Picture Camera", a twenty-two minute 16mm color film about the ASC Museum, has recently been completed and will soon be made available as an educational service to schools, colleges, universities and related institutions by the American Society of Cinematographers, sponsors of the film. The picture was made under the supervision of the late Arthur C. Miller, ASC, the Museum's first curator and one of its early organizers.

The ASC Museum originated 15 years ago out of a sincere desire by members of the Society to preserve an important part of the moving picture's past and to provide rare pieces of equipment for study by today's film students, historians and film-makers. Most of the exhibits in the Museum were either contributed by ASC members or sources throughout the motion picture industry. The Museum is regarded as one of the finest of its kind anywhere in the world.

Arthur Miller believed that a short documentary film about the Museum and its collection of historic cameras could do a great deal to dispel the misconception prevalent among many contemporary film students and writers that the moving picture cameras of the past were crude and primitive machines. "They were actually very well made," Miller liked to explain. "All cameras used the same principle then as now. The image is transmitted through the lens to an aperture, behind which the film is exposed while the shutter is open. When it is closed, the film is moved down for the next exposure. It's just as simple as that no matter how it is dressed up."

"The Moving Picture Camera" is not a "nuts and bolts" type of film. It is, instead, a quick but thorough study of how the camera evolved from its beginnings to the present, using exhibits in the ASC Museum to tell the story. Many rare photographs from the ASC collection showing these cameras in actual use are shown throughout the film.

The film opens on the set of a large-scale Hollywood war film with behind-the-scenes shots that focus on the importance of the camera. Attention is quickly directed to the star of the

# ACTIVITIES

show—the moving picture camera—but from that point on, the audience is taken from the present into the past. All of the most important cameras of the silent era are featured.

A particular highlight of the film shows George Alfred Mitchell with an early model of the famous camera that bears his name. This sequence was filmed on the front lawn of the ASC clubhouse with Mitchell and Miller demonstrating the camera.

Inside the Museum Miller shows visitors an original Edison Kinetoscope using an early hand-tinted film, "Annabelle the Dancer", to illustrate how this early peep-show machine worked. "Annabelle" was filmed in the Black Maria, the first movie studio, located at the Edison Laboratory in West Orange, New Jersey.

An early Bell and Howell Standard camera—the first truly precision built moving picture camera—is examined rather closely. A number of still photographs are intercut showing the camera actually being used on the productions of artists like Charlie Chaplin, Erich Von Stroheim and others.

The Technicolor two-color camera is shown and its intricate mechanism demonstrated. This was the first really practical—and successful—color moving picture camera.

The versatile and unusual Akeley camera with its unique focal plane shutter and incomparable gyro tripod head is next seen. There are pictures of Carl Akeley, the explorer and naturalist who invented this camera, turning the crank on his personal machine. So, too, are scenes of the great documentary director-cameraman, Robert J. Flaherty, using the Akeley to film "Nanook of the North".

The French DeBrie Le Parvo is another important camera of the silent era as is the Eclair Gillon, also made in France by one of the world's oldest manufacturers of photographic equipment. This latter camera is the granddaddy of today's popular Eclair NPR and CM-3 cameras.

Perhaps the most famous and popular of the great cameras was the Pathé Professional Model, favored by D.W. Griffith's great cameraman, Billy Bitzer. There is a long, nostalgic look at this camera. The one shown in the film was used by Mr. Miller in 1913 to film "The

*Perils of Pauline*", most famous of all movie serials.

England produced the sturdy and reliable Moy. This camera was easily adapted for filming in Kinemacolor, the first movie color process. The model demonstrated in the film belonged to the late John M. Nickolaus, a pioneer cameraman and one of the industry's top laboratory experts.

In conclusion, two very early and important cameras are demonstrated—the Demeney with its odd beater movement and the Lumiere Cinematographé. The Cinematographé was a combination camera-printer-projector. As such it both filmed and projected the first moving picture shown on a screen to the public. A clip from this initial Lumiere film has been cut into this picture.

"The Moving Picture Camera" was photographed entirely at the ASC clubhouse except for some of the documentary scenes made inside Hollywood

Continued on Page 85

## CAMERA STOCKS

16mm EKTA Color 7242, 7241, 7255.....	.0525
16mm B & W 7220, 7222, 7231.....	.025
16mm Color Negative 7254.....	.06
35mm Colpr Negative 5251.....	.10
35mm B & W 5220, 5222, 5231.....	.035

## LABORATORY STOCKS

7387, 7253, 7385, 7234, etc.

## MAGNETIC SOUND STOCK

35 and 16mm New and Reclaimed

## FILM & EDITORIAL LEADER

Black Opaque 35mm .....	18.50
Black Opaque 16mm .....	16.50
Clear Leader 16mm .....	4.50
Also: Painted, Personalized Printed & Lightstruck.	

## studio film exchange

11555 VENTURA BLVD.  
STUDIO CITY, CALIF. 91604  
(213) 985-3303

Image Media Corporation  
is pleased to announce that  
**JACQUES LETELLIER**  
is available to the industry as  
an independent director  
**410 E. 50th St., NY NY (212) 752-5878**

PARAMOUNT STUDIOS  
5451 MARATHON STREET  
HOLLYWOOD, CALIFORNIA 90038  
463-0100

**HOWARD A. ANDERSON CO.**



CREATORS OF DISTINCTIVE IDEAS AND DESIGNS FOR  
SPECIAL PHOTOGRAPHIC EFFECTS AND OPTICALS FOR  
MOTION PICTURES AND TELEVISION.

THE PACESETTER IN TECHNOLOGICAL ADVANCES.

20TH CENTURY-FOX STUDIO  
10201 PICO BLVD.  
BEVERLY HILLS, CALIFORNIA 90064  
277-2211

- TITLES
- MINIATURES
- BLUE BACKING
- INSERTS
- MATTE PAINTINGS



transistorized hand unit for complete control of zoom motor

## NEW! smooth ZOOM MOTORS for ANGENIEUX 12-120 and ZEISS 10-100 Vario Sonnar

The popularity of zoom lenses is due to their versatility and potential for more imaginative camera work. Both features are considerably enhanced by the addition of a zoom motor.

We are pleased to offer two specially designed Electro Zoom Motors for the Arriflex 16SB and 16MB cameras. One each for use with the Zeiss 10-100 Vario Sonnar and the 12-120 Angenieux zoom lenses. They are mounted without tools or lens modification. Split clamp mounts do the trick in moments.

Each zoom motor comes with a fully transistorized hand unit that controls all functions—stop, start, direction and speed. Infinitely variable and smooth from 5 to 50 seconds across a 10X zoom. Operation from regular Arriflex 8 volt battery or from any DC source of 5 to 16 volts.

The precision, reliability and dependability you have come to expect of Arriflex equipment are built into these two Electro Zoom Motors. They're available now at all authorized Arriflex dealers. See them!



**ARRIFLEX**  
COMPANY OF AMERICA

P. O. Box 1050, Woodside, N. Y. 11377

## CINEMA WORKSHOP

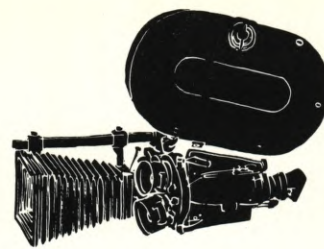
Continued from Page 18

3200°K to daylight the filter must absorb most of the red energy, leaving only a small amount approximately equal to the original blue content, so that the light transmitted by the filter will have essentially even amounts of red and blue energy and thus resemble 5500°K light. Thus, by bringing the red energy down to the very low level of the blue, the #80 series filter absorbs most of the original energy (about 75%) and an aperture increase of about two stops is necessary to compensate for this loss of light.

The aforementioned #85 series (orange) and #80 series (bluish) are referred to as conversion filters and compensate for great differences in color quality. More subtle deviations in color temperature are handled by the #81 series (yellowish, absorbs excessive blue) and the #82 series (bluish, absorbs excessive red), which are called light-balancing filters. The curve of an 81 filter is included in FIGURE 2 for comparison with the larger compensating factors of the #85 series. The charts in FIGURE 3 should prove helpful in calculating the proper filter for a given deviation from the standard color temperature conditions (3200°K type B and 5500°K "daylight").

A color temperature meter can prove a valuable tool in selecting the correct filter. However, the seasoned cameraman can usually obtain fairly consistent results by relying on his own experience and several basic facts. For example, conventional tungsten bulbs (100-watt household) have a color temperature of 2800°K to 2900°K and would thus give a warm or reddish tint to type B films (3200°K). By employing an #82B or #82C filter, fairly good results can be obtained.

Conversely, the daylight color temperatures most normally encountered are usually above the 5500°K for which Kodak "daylight" films are designed. Color temperatures on a sunny day with clear skies are usually around 6500°K in the summer months and about 6100°K in the winter. Totally overcast sky light is about 6800°K while light from a clear blue sky (shadows on a clear day) is 10,000°K to 15,000°K and as high, as 25,000°K during the summer months. It should be apparent that a set of #81 filters could be very helpful in these situations to remove the excessive blue. The proper filter for each of the above conditions is reflected in the chart of FIGURE 3.



## PROFESSIONAL PHOTOGRAPHIC EQUIPMENT

### for every working day of the year

Tripods, dollies, changing bags, rewinds, cutting barrels, quartz lamps, animation field charts light meters, 16mm and 35mm motion picture cameras recorders, projectors, film and magnetic stock.

And a ton of other motion picture equipment, all available for sale, daily or weekly rental, or long term lease.

—Compare Our Prices—

Where? CALVIN CINEQUIP, INC.  
An Affiliate of Calvin Communications Inc.



# CCI

## CALVIN CINEQUIP, INC.

Dependable service from two convenient locations

215 W. Pershing Road  
Kansas City, Missouri 64108  
Phone: (816) 421-1230

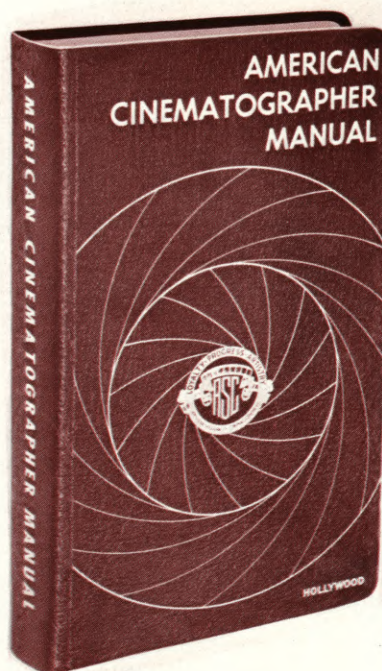
1909 Buttonwood  
Philadelphia, Pennsylvania 19130  
Phone: (215) 563-1686



# AMERICAN CINEMATOGRAPHER MANUAL

COMPILED AND  
EDITED BY  
Two Veteran Cinematographers  
ARTHUR C. MILLER, A.S.C.  
AND  
WALTER STRENGE, A.S.C.

THIRD EDITION



**WRITER/DIRECTOR  
ROBERT COLLINS SAYS:**

*As a writer going on the set for the first time as a director, I took with me two things—the script and a copy of the third edition of the AMERICAN CINEMATOGRAPHERS MANUAL.*

*There is a lot of jargon used in the making of a film and the clear and concise definitions contained in the MANUAL did much toward breaking the communication gap. I found the section of zoom telephoto lenses especially valuable and of course, the indexing made for easy, quick references.*

*I would recommend this MANUAL not only to fledgling directors, but to writers, producers, actors and anyone who contributes to the making of a film.*

**OFFICIAL PUBLICATION**



**AMERICAN SOCIETY OF CINEMATOGRAPHERS**

**ROY R. LOW  
JACK PILLS CAMERA EXCHANGE  
SAYS:**

*The up-to-date information in the MANUAL makes it the most useful cinematographic reference book available anywhere.*

**THE AMERICAN CINEMATOGRAPHER MANUAL**  
P.O. BOX 2230  
HOLLYWOOD, CALIFORNIA 90028

THIRD EDITION

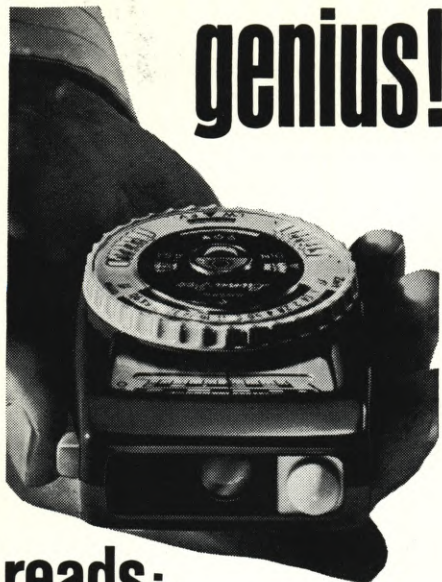
Please send \_\_\_\_\_ copies of the AMERICAN CINEMATOGRAPHER MANUAL @ 15.00 each, postpaid. No C.O.D.'s.

NAME .....

STREET.....

CITY.....STATE.....ZIP.....

California residents please remit 5% Sales Tax (.75 per Manual).  
Foreign Buyers please pay by International Money Order or U.S. Funds



**genius!**

**reads:**  
brightest sunlight...  
candlelight ... moon-  
light **plus\*** microscope,  
'spot' and enlarging too!

GOSSEN®  
**Luna-Pro**  
SYSTEM CdS EXPOSURE METER

There's a system to success and Gossen's got it! Their extraordinary Luna-Pro SYSTEM CdS meter masters every exposure problem in every photographic situation—in the studio, darkroom and laboratory. There's nothing like it!

\*Three optional lock-on attachments instantly convert the Luna-Pro from a reflected-and-incident meter to a: Variable Angle 'spot' Meter; Microscope Meter; and Enlarging Meter. You may never need them all but it's good to know your Luna-Pro can tackle any assignment.

Its famed 2,000,000 : 1 sensitivity range and convertibility SYSTEM makes it today's best exposure meter buy. See this superb instrument at your dealer today. Makes great reading!

**SPECIFICATIONS:** Smooth, one-hand operation ■ Measures reflected and incident light (with built-in hemispheric diffuser) ■ For still and movie cameras ■ 30° light acceptance angle ■ single "see saw" selector button for high and low range ■ Automatic "memory" needle lock ■ Computer range: ASA 6 to 25,000; f/1 to f/90; 1/4000th sec. to 8 hours; Cine from 8 to 128 fps ■ EV—8 to EV +24; .016 to 32,000 foot candles ■ Weighs only 7 ounces.

**Luna-Pro**

**\*OPTIONAL ATTACHMENTS**  
for every light measuring need!



VARIABLE ANGLE  
"Spot Meter"  
ATTACHMENT



ENLARGING  
ATTACHMENT



MICROSCOPE  
ATTACHMENT

**KLING PHOTO COMPANY**  
P.O. BOX 1060, WOODSIDE, N.Y. 11377



**SOUND STAGE 627**

Continued from Page 45

the right neutral density to balance the outside light, or (2) Use Dichroic filters or Blue Gel over our light source and use neutral Gel only as a balancing factor.

If I'd had my choice, I think I would have gone with #1 but the director felt he might want to have doors or windows opened during a take. So it had to be #2.

Next question—light source. For some time I'd had the feeling that battery-powered Sun Guns were not going to hack it—especially since we were going to a filtered light source and an 85 camera filter. One battery Sun Gun with a dichroic filter would not cover three people. It would hardly cover two people. And even spotted down (while still staying out of range in a close-up), it would not give sufficient exposure. I had hoped for T/4 to T/5.6 originally, now I was ready to accept T/2.8—but an even and uniform T/2.8.

This meant only one thing: an A.C. power source and 120-volt lamps. Space, of course, was the problem. I could see it now. The actor-driver, me and the camera, the sound man and director lying on the floor, and the actors sitting in the seat trying to act. We had to have light, but it was going to have to be as small as possible. The Mole-Richardson Nooklite seemed to be the best answer. Small and compact. And it would accept the 650-watt 3200° K element. I could use two of them on a movable bracket (see cut) to give an even light across. Dichroics were not available, but color-correcting blue gel was, and gel filter-holders.

Next—power source. Obviously, we were going to have to carry or tow a generator of sufficient capacity to power the quartz elements. Mike and Ron came up with a McCullough 2,000-watt gasoline generator. It would have to be baffled, of course, and an efficient muffler installed to hold the noise within limits. The rig worked well under test conditions and even our sound man allowed as how he could "live with it."

As you know, cameramen and soundmen are natural enemies. But in this case, I knew that my good friend and great soundman, Harold Lion, was going to need every break we could give him, what with the generator, traffic noise, heat, and just plain aggravation of lying on the floor clutching his shotgun mike. We didn't want his sanity to slip over the line so we gave him the final say-so on the generator noise. "Let's take it out and test it," he said. We did. It ran

**WE DO  
THIS  
BEST...**

**Super 8mm  
reduction  
printing  
from 16mm  
color or b&w**

Silent or sound... magnetic or optical. Double rank high-speed reduction printing on Bell and Howell "C"-type printers provides maximum sharpness and steadiness combined with economy.

**DOUBLE RANK SUPER 8mm  
CONTACT PRINTING FOR  
MAXIMUM ECONOMY ALSO  
AVAILABLE.**

Let us prepare your 16mm color inter-negative, or provide your own. Fast service and dependable scheduling.

*Cine-Craft*  
**PROCESSING  
LABORATORIES**

8764 BEVERLY BOULEVARD  
WEST HOLLYWOOD,  
CALIFORNIA 90048  
(213) 652-7357

**Complete 16mm Services!**

Write for price list.

# Choosing confusing?

When you buy new gear, it's hard to know if you're making the right choice. New equipment is introduced almost every day. Familiar equipment is constantly changed creating endless new applications. Confusing? You bet! To make a wise purchase, you need a lot of information. But who has the time to start a major research project? Helix has. At Helix, we don't just read the spec sheets. We go further. We test things. Things like cameras and lenses and lights. Sometimes we're just curious. Most of the time, we just want to make sure a product we sell performs the way it's supposed to. The more we know about the equipment we sell, the better we're able to help you choose the equipment that will best fit your needs.

When you're thinking of buying new equipment, think of Helix. We make choosing a lot less confusing.

Helix Limited, 679 North Orleans Street, Chicago, Illinois 60610.

**HELIX**   
**Pro shop to the industry.**

fine except for a tooth-tingling vibration that seemed to be conducted from the trailer frame through the cab frame. Harold looked at me and said something that I couldn't make out. The problem was solved by the addition of a reinforced rubber link in the trailer hitch.

The great day arrived. The cab was in position, generator roaring in its box, camera ready, everything ready. Sound rolled—speed—beep—the cab rolled and Phil gave our actor his cue. It looked great through the camera until both gels buckled and popped out of their frames bathing us in 3200° K light. Then there was no light because the generator quit. What happened was the classic example of test condition versus actual conditions. We simply hadn't run either lights or generator long enough to build up the heat that caused the trouble. The Nooklite is a fine, versatile little light but was never designed to operate in the heat we encountered. We'd had the foresight to put two layers of asbestos between the lamps and the vinyl header. But with windows closed, high outside temperature, and a long rehearsal the heat was just too much. Same story for the generator.

The baffling and heavy muffler worked fine, but the heat built up caused it to fail. The solution was simple. Forget the gel frames for the Nooklite. Instead, we taped a long piece of gel to the header of the cab and let it drape down in front to allow proper ventilation. It looked terrible and I don't think MGM does it this way, but it worked. The same with the generator. By drilling additional vent holes in the side of the baffle and cracking open the top an inch, we were able to provide adequate cooling. It still had to run almost wide open, but it held to the steady 120-volts that we needed for correct color temperature.

The second take was a success from the camera standpoint and throughout the days that followed we refined the system to work relatively trouble-free. The blue gel we used is called "no color blue" in the Rosco gel sample book and does match a Macbeth almost exactly. It is very important to maintain full-rated voltage to the lamps you are using (3400° K) in order to achieve daylight color temperature (5500° K). Dichroics would have been much easier to use had they been available but I'm not sure they could have withstood the heat.

I mentioned earlier that I was hoping for T/4 to T/5.6 basic exposure. My assumption was that the exposure would be appreciably helped by outside ambient light. It was not. Driving by some of Washington's white marble

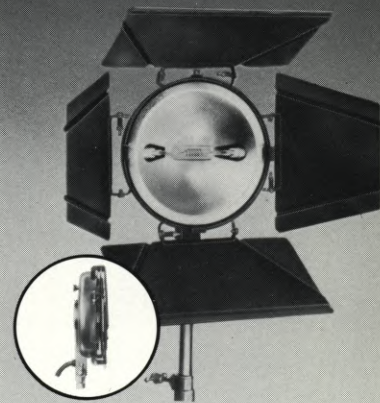
# new

**Slimline II**  
packs up in 3" of  
space, delivers more  
light than any flood  
or fill of its size.

It's another  
advance from

## B & M

THE INNOVATORS IN  
LIGHTING EQUIPMENT



What a combination for a 2,000 watt quartz lamp! So slim you can put 3 in the space of one ordinary flood. So high in intensity it does the job of much larger units. And with Slimline's extra sharp barn door cutoff, you control light better and easier than ever before. Want to know more? Write Dept. ACI-1



**Bardwell & McAlister Inc.**

A DIVISION OF F&B/CECO INDUSTRIES, INC.

12164 Sherman Way  
North Hollywood, California 91605  
(213) 875-1913

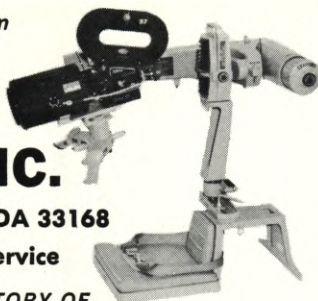
315 W. 43rd St., New York, N. Y. 10036  
(212) 586-1428



## TYLER CAMERA SYSTEMS

Academy Award Winning 16-35-65mm  
Vibrationless Camera Mounts

Write or call TYLER CAMERA SYSTEMS  
c/o EGON STEPHAN, Tel. (305) 757-5988



SERVICE  
RENTALS  
SALES



## CINE TECH INC.

801 N.W. 111th ST., MIAMI, FLORIDA 33168

Tel. (305) 754-2611 — 24 hr. Service

### HAS NOW LARGE RENTAL INVENTORY OF

16-35 MM ARRIFLEX CAMERAS, MITCHEL R-35, NC, & BNC "SPR" REFLEX  
CAMERAS, CINE 60 & METAL BLIMPS, AURICON CAMERAS ZOOM LENSES,  
UNDERWATER HOUSINGS, SOUND, GRIP & LIGHTING EQUIPMENT.

Send your Cameras, Moviolas, & Zoom lenses for professional servicing.

customer service is a CAPITAL idea!

# Don't take Their Word for it, but...

Read the recent comments below from some of the top professionals in the film business:

... "It's always a pleasure to work directly with people who really make a personal effort to get impossible things done."

... "We could not have met our show date without the enthusiasm and professionalism of your customer service department."

... "The deadline that we had was bad enough, but to expect a really good print from material that had exposures that wandered all over the place was a little too much to ask. However, that's exactly what I got."

But . . . don't take their word for it. Call our professionals in Customer Service . . . and find out for yourself.

---

Headquarters: 470 E St., S.W., Washington, D.C. 20024 • (202) 347-1717

---

Miami, Fla.: 1998 N.E. 150th St., N. Miami, Fla. 33161 • (305) 949-4252

---

Super 8 City: 1905 Fairview Ave., N.E., Washington, D.C. 20002 (202) 526-0505

---

# CAPITAL

FILM LABORATORIES, INCORPORATED

buildings helped some, but overall very little difference was noted. I settled for a T/2.8-T/3.5 and was lucky to get that.

Shooting 3-shots of the front seat from the outside mount created some interesting problems. A Cooke 9mm lens turned out to be the best compromise. There was some fore-lengthening distortion, but not excessively so, I thought, and the coverage was just right. The Nooklites for this set-up were mounted outside the cab on stands clamped to a car top carrier. Since cooling was adequate here, we were able to use the gel frames the way they were intended. If you're wondering where I operated the camera from, I didn't. It was strictly a tied-off shot. Director and soundman were in the back seat, but I pressed the button and watched stage 627 disappear into the distance. Driven by an actor yet.

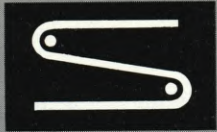
As it turned out, most of the days were full sun or bright thin overcast. This worked out to a basic outside exposure of T/10. It was never my intention to try to achieve an exact balance between inside and outside levels. In my opinion this distracts from the realism of the scene. In fact, it may look phony. In this, the director and producer were in full agreement. We wanted fully exposed interiors and *slightly* hot exteriors.

Since our basic outside exposure on a full sun day was T/10, we had to bring it down to approximately T/3.5—or ¾ to one stop over our basic T/2.8 interior exposure. We found that the cab windows had a neutral tint of their own in the amount of 30% or one stop. This brought it down to T/7. Not enough. We added sheets of 60% neutral density gel to reduce the exposure another two stops to approximately T/3.8. This was the balance we needed and was used for almost all scenes.

The picture is now cut and looks very good from both a technical and content standpoint. What would I do differently if I had it to do again? For one thing, a heavier generator. A 2,000-watt generator should run two 650-watt quartz lights with no sweat. But with the soundproof housing (which caused heat rise) and the heavy automotive muffler (which caused back pressure), it was barely adequate. Better cooling for the lights would be the next item, but I honestly don't know what more could be done.

#627 was a challenge. Fun some of the time. Misery the rest. My only hope is that someday I'll get to work on a really big stage.

Like, maybe, a Greyhound bus? ■



THE SYMBOL OF TOP QUALITY  
WORKMANSHIP AND SERVICE

## CUSTOM SERVICES

1. Daily processing of the entire family of 16mm Ektachrome films, B&W Negative & B&W Reversal.
2. Color & B&W Dailies.
3. Exclusive TRIAD® Additive Computerized Duplicating Process.
4. Color Internegative/Positive with TRIAD® Additive Scene-To-Scene Color Corrections.
5. Editorial Services — Creative Editing, Conforming, Editing Room Rental, Interlock Projection Facilities.
6. Complete Recording, Re-Recording, Music Scoring, Multiple Channel Mixing, Westrex Optical Track Royalty Free, and Westrex Electroprint Transfers.
7. 1:1 Optical Printing.
8. Ultrasonic Cleaning.
9. Equipment Sales and Rentals.

## OUR 20TH ANNIVERSARY

Twenty years of successful growth has been made possible by the teamwork of experienced, skillful hands and agile brains of our laboratory technicians. SWFL's staff of highly trained laboratory technicians represent in excess of 300 years of experience gained in the performance of many specialized jobs involved in the processing and completing of 16 mm motion picture film . . . Customers located in every metropolitan area throughout the United States, serviced by SWFL in Dallas, are assured of fast service, with over 500 flights in and out of Dallas' air facilities every 24 hours.

Fifteen years ago, SWFL introduced the TRIAD® Additive Control System for Kodachrome Printing. The years of pioneering additive color printing, and the continuing production of custom color prints has earned many awards throughout the industry.

An inquiry for additional information regarding complete in-house laboratory and sound services that are available to you, will receive a prompt response at no obligation.

## SOUTHWEST FILM LABORATORY, INC.

3024 FORT WORTH AVE. DALLAS, TEXAS 75211  
PHONE: 214-331-8347

## INDUSTRY ACTIVITIES

Continued from Page 79

studios or on movie locations. Filming was done with Arriflex 16mm cameras on Ektachrome Type 7255 film. Lightweight, portable Mole-Richardson and ColorTran "quartz" units supplied all of the lighting.

"The Moving Picture Camera" is a labor of love. It was produced, written and photographed by George J. Mitchell. The narration is by Phil Tonken and the sound recording by Robert E. Lee. Harvey Weber edited the film which was processed by DeLuxe-General Film Laboratories. Some of the special optical printing was done by Technicolor. G.W. ("Bill") Sutphin of Alan Gordon Enterprises, Inc. lent valuable assistance. Technical assistance was provided by ASC Associate Members Kemp Niver, Neal Keehn and Don Malkames, ASC.

Details concerning the purchase of a print of this film may be obtained through the American Society of Cinematographers.

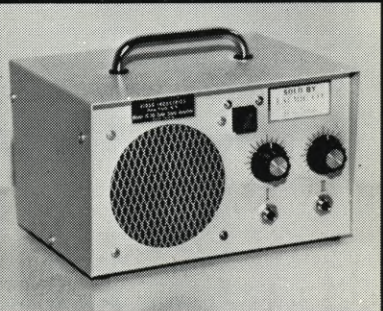
## 13 TECHNICAL ACHIEVEMENTS CONSIDERED FOR ACADEMY AWARDS

Thirteen technical achievements of the past year have been selected for 43rd Annual Academy Awards consideration, it was announced today by Gordon E. Sawyer, Chairman of the Scientific or Technical Awards Committee of the Academy of Motion Picture Arts and Sciences.

Pursuant to Academy policy, the following list of achievements under consideration is announced to permit those with claims of prior art or with devices similar to those under consideration to so advise the Academy:

Tungsten-Halogen Lamps, Sylvania Electric Products, Inc.; F&B/Ceco Mini 10-K, F&B/Ceco of California, Inc.; Xenon Arc Lamps, Xenotech, Inc.; Microminiature and Miniature Audio and Electronic Modules, Opamp Labs.; Zoom Control, Cinema Product Development Co.; Zoom Control, Panavision Incorporated; Zoom Control, Mitchell Camera Corporation; Proofing Printer, Consolidated Film Industries; Kodak Color Analyzer, Eastman Kodak Company and Photo Electronics Corporation; Dichroic Coated Par 64 Tungsten Halogen Lamp, Berkey-ColorTran, Inc.; Synctrol System, Columbia Pictures; Crystomatic System, Camera Mart; and Series 8000 Sound Systems, Electro Sound Incorporated. ■

Designed  
for the  
discriminating  
editor.



## IC-30 Solid State amplifier for film editing

### Features

- Exceptionally high peak power
- Ultra low noise/no audible hum and no microphonics
- Unconditionally stable, never oscillates
- Two separate and independent channels
- Accurately matched channels, individual gain indications
- All Solid State, integrated Circuit Design\*\*
- Instant operation/no waiting for warm-up
- Protection against radio broadcast interference
- Compact size, only 5 inches high by 6 inches deep by 8 inches wide
- Push button on-off control, leaves gain settings undisturbed
- Internal regular, corrects for line voltage fluctuations
- Extreme reliability, designed for many years of service
- One Year Guarantee
- Four channel Multi-Mixer available on request
- Earphone connection has wide impedance range

\*\*Patent Pending

## LAUMIC COMPANY, INC.

35 West 45th Street  
New York, N.Y. 10036  
Telephone: (212) 586-7666

SALES • RENTALS • SERVICE

**16mm • 8mm • Super 8**  
EKTACHROME PROCESSING



**Super 8 Optical  
and Magnetic Sound**

**COMPLETE  
FILM SERVICES**

- 35mm Color
- 16mm wet gate blow-ups to 35mm—fully corrected.
- 35mm to 16mm—16mm to 8mm or Super 8
- Processing—Printing—Editing
- Sound Transfer—Sound Stripping
- Super 8 to 16mm

**SAME DAY SERVICE**

24 Hour Processing  
Coast to Coast Service  
Send for Price List



1138 No. La Brea  
Hollywood, Ca. 90038  
(213) 467-1118

**AMERICAN  
FILM INDUSTRIES, INC.**

**ZOOM  
LENS REPAIRING**



**ANGENIEUX PAN CINOR**



**RANK TAYLOR HOBSON**

WE SERVICE ALL MAKES OF LENSES - 16MM, 35MM AND TV. EVERY LENS IS OPTICALLY TESTED BEFORE LEAVING OUR SHOP. PRECISE FOCUS COLLIMATION, COMPLETE REBUILDING AND SERVICING. WORKMANSHIP GUARANTEED. 24 YEARS EXPERIENCE. SERVICE AS FAST AS 8 HOURS.

*Century* Precision Cine/Optics

10661 BURBANK BLVD. NORTH HOLLYWOOD, CALIFORNIA 91601 (213) 766-3765

**"CARNAL KNOWLEDGE"**

Continued from Page 37

'CATCH-22' together for a year and a half), you can set your mind at ease and say to yourself: 'This is the kind of man I not only like personally, but he will guarantee that I won't have to worry about making a bad picture.' With such confidence in a director I don't even have to read the script to find out whether I like the idea of the picture. I know I'm going to like it simply because he's doing it."

Though highly individualistic, Sylbert is heavily imbued with the true professional's awareness that effective film-making is very much a *team* effort. This comes out very clearly in his comments about rapport between the Production Designer and the Director of Photography.

"The rapport is very close and we talk all the time," he says. "You must keep in constant touch and help each other to get certain effects. Nothing matters except the picture itself and the final result requires that everyone stick together until it's on the film. It's not: 'I put up this beautiful room and he didn't shoot it right.' That's a lot of baloney, and there's no excuse for it. Rotunno feels the same way. If he's after a certain effect and I can help him get it, I'm only too happy to do so."

On the sound stage they are preparing to shoot a sequence in the tavern set. All of the practical fixtures are faced with amber glass, so Rotunno quite logically suggests that the set (and the actors) be illuminated exclusively with amber light. This is, from the technical standpoint, a very bold gesture and one that requires the utmost care in execution, lest the actors all end up looking as if they've got jaundice. However, Nichols likes the idea and soon the entire set takes on a golden glow.

The extremely low ceiling makes it, at best, a very difficult set to light: Rotunno's gaffer, Rudolfo Bramucci, solves the general illumination problem by hiding tiny Mole-Richardson Nook-lites behind the beams.

Meanwhile, the Make-up Artist and the Hair Stylist are struggling to make Candice Bergen look plain—something like the girl-next-door—but it is obvious that they are fighting a losing battle. They remove almost all of her make-up, draw her hair back severely and (in a last desperate attempt to ugly her up) spray her classic features with artificial sweat. She's completely game, but nothing works. She still looks ravishingly beautiful.



**SUN-BURST**

**FILTERS EXCLUSIVELY FROM HIMOVITZ & ASSOC.**

At the request of two television networks, Himovitz & Associates developed the unique "SUN-BURST" filters which caught on almost overnight throughout the television industry. Used to film such shows as Johnny Cash Show, Everly Brothers Show, Hee Haw, etc. . . . Now you can create 4, 6, 8 and 16-pointed star effects in your own studio for still or motion pictures. Available in either Sharp (creates a star pattern while keeping the principle subject sharp and clear, without diffusion) or Dreamy (creates a star pattern, but with a slightly diffused or dream-like effect). Both can be used under low or high contrast lighting conditions with spectacular results.

Sold in sets of 3 different star effects (4 point, 6 point and 8 point patterns) or individually. Complete sets start at \$50.00, sizes from 13/16" (Series 4) to 6". Write today for technical data and price list.

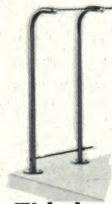
**HIMOVITZ & ASSOCIATES**

Dept. C-1

13813 Grand St. • Suite 104 • Van Nuys, Ca. 91401 • Ph. (213) 781-5142  
Distributed in Europe by W. Vinten, Ltd., Suffolk, England



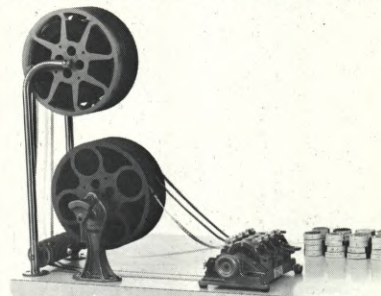
This is a  
**REAL HORSE**



This is a  
**REEL HORSE**

**BOTH STURDY AND STRONG**

The FILMKRAFT REEL HORSE is designed to feed 16mm or 35mm picture or leader to the cutter without overloading a rewind.



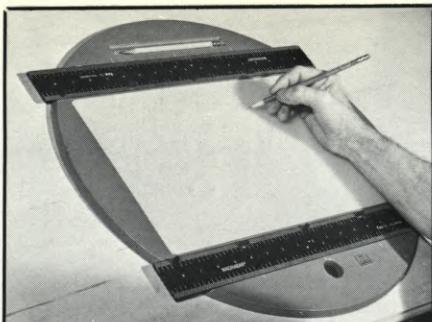
Price \$23.95 Plus \$2.00 Tax & Shipping . . .

For Further Information or Orders:

**FILMKRAFT SERVICES**

Dept. A

6850 Lexington Ave., Suite 217  
Hollywood, California 90038  
SORRY, NO C.O.D.'S



**ANIMATORS!  
TWO FIELDS—ONE DISC**

Both 12 and 16 fields are yours with the only disc having accurate, positive magnetic bar positioning: MAGNABAR®

Three full North and South positions . . . easy movement . . . thumbscrews eliminated.

Intriguing? So is the price: \$135.00.

For more information write or call

**Hubbard Hunt  
FAX COMPANY**  
475 S. Santa Anita Ave.,  
Pasadena, Calif. 91107  
213/681-3084

Interested dealers—write today.

**IMAGINATION IN IMAGES**



OPTICALS • TITLES • INSERTS  
& FULL RANGE OF OPTICAL SERVICES  
35MM and/or 16MM

**IMAGIC INC.**  
845 NO. HIGHLAND AVENUE  
HOLLYWOOD, CALIF. 90038  
TELEPHONE (213) 461-3744

In reference, apparently, to some private joke, Nichols keeps calling her "Bugs" and she responds with a most un-movie-starish good humor. Between set-ups Peppino introduces me to the lady, explaining that I am the editor of the A.S.C. journal. Innocently he asks her if she knows what "A.S.C." stands for.

"Of course," she replies. "My father's a member of it."

And so he is. Famed comedian Edgar Bergen has been an Associate Member of the Society for many years. At a recent A.S.C. dinner meeting he convulsed the crowd by remarking: "My daughter, Candice, thinks I'm pretty square. She says that if I ever took LSD I'd probably see Lawrence Welk."

**Very Close to the Truth**

My first chance to talk to Rotunno about his work on this film comes when the company breaks for lunch during my first day on the set. Heretofore, I am told, the Panorama Studios had boasted no on-the-spot feeding facilities, which is rather unusual for a studio so isolated from restaurants and such—but Nichols, believing that a well-fed crew is a happy crew is an efficient crew, asked that a commissary be built behind the stages. It was fitted together from three "mobile home" type modules, equipped with the latest kitchen gadgetry, and serves a menu any gourmet restaurant might well be proud of.

While we are chomping on our pheasant-under-glass, I ask Peppino how this assignment with Nichols came about.

"Mike Nichols had somebody in charge contact me while he was in Rome and we had our first meeting," he explains. "Then he began to write to me about this picture. I was eager to work with him, because I had seen all three of his films and found that he remains very close to the truth, a very important thing. Then, six months ago, I flew to Los Angeles to talk with him. It could be only for a few hours, because I was on another job. It was then that he asked me to photograph this picture."

I ask him what he considers to be the special challenges of photographing "CARNAL KNOWLEDGE" and he replies: "The story takes place in three different time periods. It begins in 1946. Then there is another part that happens in 1961, and the final part develops in 1970. We are trying to make the three sections of the film look different, in order to show the passage of time. But we are also trying to keep everything very simple, which means that the differences must come from the way that we use the light."

**FOR EUROPE'S FINEST  
SPECIFY THE ENTIRELY  
NEW**



**LABORATOIRES**

with the

**LATEST IN COLOR  
PROCESSING  
& PRINTING FACILITIES  
16mm-35mm**

REVERSAL  
NEGATIVES  
POSITIVES  
EKTACHROME  
7255 7241-42  
GEVACHROME  
600 605

●EASTMANCOLOR  
5254 - 7254

●ANIMATION STAND  
-35 - 16-

● OPTICAL AND  
MAGNETIC SOUND  
TRANSFER - 16/35

●SPECIAL EFFECTS

E. LEZE, *President*

**LABORATOIRES**

**VITFER**

47, Av. Victor-Cresson  
92

Issy-Les-Moulineaux  
Paris,

Phone 644-16-35  
or 644-50-88

## VERSATILE!



**P**The Palmer Interlock Projector is a double film projector, for running picture and separate 16mm magnetic sound track in perfect sync. Ideal for interlock previews. Indispensable for editing, too, since picture/track relationship can easily be adjusted without unthreading, and the touch of a lever runs synchronized picture and track forward or backward. Need a conventional optical sound projector? The picture side is the well-known Graflex 820 and retains all its regular features. And, if you'd like even more versatility, add our magnetic record amplifier and create your own sound tracks. Available with synchronous motor. *Write us for details.*

**W.A. PALMER FILMS, INC.**  
611 HOWARD STREET, SAN FRANCISCO 94105  
*San Francisco's complete 16 mm film service*

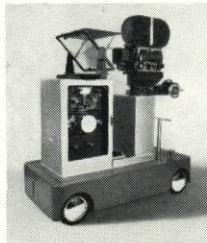
## How to go on location without leaving the studio.

Get the new FPC 101 front projection system.

This moving background 35mm projector is for rent or sale. It minimizes the need for costly location shooting, includes a full professional crew, and goes anywhere.

Hollywood: Wm. Hansard  
(213) 780-2156.

New York: Fred Wells (212)  
986-8980.



**FRONT PROJECTION COMPANY**  
6647 Matilija Avenue, Van Nuys, California 91405  
A SHERMAN FAIRCHILD ENTERPRISE

Rotunno tells me that shooting in the studio is a rarity on this picture, because most of the filming is being done in actual locales.

"We have been shooting inside many real buildings," he tells me. "We have shot sequences inside college buildings, dormitories, sorority houses, locker room, libraries—all kinds of places. In locations like this we use mostly small quartz lamps for lighting. We build on the stage only the rooms we cannot find in real buildings, but they are built in the same way, with low ceilings and everything—very real, very true."

I remark upon his daring in using amber light in the sequence I have just watched being filmed, and he comments: "It seemed real for that sequence and Mike Nichols liked the idea—so we did it. But I don't use colored light very much—only when it is really needed, like in 'FELLINI SATYRICON'."

I mention the fact that Leon Shamroy, ASC, (whom I know is something of an idol to Rotunno) is famous for his precise use of colored light.

Peppino's face becomes radiant at the mention of the name. "Ah, Leon," he says. "I will never forget Leon. He is truly in my heart. I worked with him as an assistant on 'PRINCE OF FOXES' in Italy. I was very young and he was very kind to me. I learned so many things from him about this job. He is a great cameraman—and a great man. I think that is even more important."

Like all professional cinematographers, Rotunno considers light to be the basic, plastic building material of the cinematic image, but he does not indulge in any high-flown theories about it.

"All you really have is three things: the key light, the fill light and the back light," he observes, "but you can do so much with those three, get so many different combinations—just like a kaleidoscope."

I mention to Peppino my conversation with Production Designer Richard Sylbert and he says: "I am working very closely with him. We talk together and help each other. We are always looking for the fastest way, but the best way, to do something, because now the costs on a picture are very important. You do not have time for experimenting. It takes so many people to make one movie. It is very easy for each person to go off on his own separate road, but if you work together you can create something beautiful, something that is very right for the picture. We are very happy in our work on this one, and I think it will show up on the film."

## Listen to Irish



You'll hear nothing. Nothing but the original sound as you recorded it. Sharp, clear, resonant.

Irish offers a complete line of professional quality audio tapes in all configurations: reel-to-reel, cassette, cartridge and duplicating tapes. It offers you superb uniform quality. That's why most major recording companies and sound studios use Irish.

Try it once. You'll hear the dramatic difference.

For complete specifications write:

**Irish Recording Tape**  
270 Newtown Rd., Plainview, N.Y. 11803  
*Export Dept. Morhan Exporting Corp.*

### PROFESSIONAL CINE PRODUCTS, INC.

Sells more

### CANON SCOOPICS

than any other dealer in  
the ~~South or Southwest~~  
**UNITED STATES**

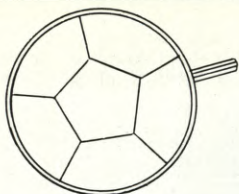
*There Must  
Be A Reason*



*Call or Write.*

**PROFESSIONAL CINE PRODUCTS**  
(GORDON YODER) AC #214 FL 7-3045  
2959 Ladybird Lane Box 20296  
Dallas, Texas 75220





## SIX IMAGE-72mm REVOLVING PRISM

Screw-in type for ANGENIEUX 12-120 and CANON SCOOPIC. For movie and television effects. In-sure multiple images of any scene. Additional effects possible by tinting prisms. **Only \$39.95**

## 72mm FADER

(Double Polarizer) for ANGENIEUX 12-120, CANON SCOOPIC and other 72mm threaded lenses. Permits infinite variable light acceptance to total extinction on a gradual basis by turning front filter. Other excellent features. Regular \$39.95. SPECIAL INTRODUCTORY OFFER **Only \$29.95**

IMPORTED BY:

**La Grange, Inc.**

1139 NO. HIGHLAND AVENUE  
HOLLYWOOD, CALIFORNIA 90038

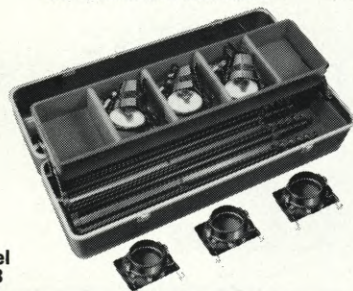
## QUARTZ STUDIO KITS



Model  
K2B

Two complete compact lighting systems in a case. 1800 watts of 3200° K Quartz Lights with 3 compact stands. Available with or without Barn Doors. See your dealer or write for descriptive literature on both the K2 and K3 Kits.

K2 \$115.00 without barn doors  
K2B \$150.00 with barn doors  
K3 \$165.00 without barn doors  
K3B \$200.00 with barn doors



Model  
K3B

AT YOUR DEALER OR WRITE FOR CATALOG  
**SMITH-VICTOR CORP.**  
Griffith, Indiana 46319

## IFPA CONFERENCE

Continued from Page 53

giving them a lecture. It's almost a miracle, the way you can do it. It's a poetic medium in which you can put images together and people can come out understanding things about other people. I love it. I'm just crazy about working in the medium and really thrilled that I have a chance to work in that way. I think it's wonderful and powerful and a medium which takes great warmth—unlike any other medium ever.

**MOORE**—It's interesting to me to observe how a person's life takes different directions. I've done a certain amount of work in the documentary field, similar to the work being done by many of the people here. Presently, and for some time now, I find myself in the feature film bag and it imposes certain limitations as to the amount of probing and experimentation that you can do. This is largely a financial consideration, because feature films must be aimed primarily at entertainment rather than teaching—the reason being, of course, that if a profit isn't shown, a person can't stay in the business long. I'm sure that there are a lot of people in the major studios who are finding that out to their chagrin at the moment.

In any case, as far as the feature film taking new directions is concerned, this has been rather slow in happening. I'm sure that Haskell Wexler will bear me out in this respect.

Recently there has been a good deal of pioneering in the technical sense, and one gets the feeling that we are finally getting off our backsides when it comes to the use of xenon arcs, micro-miniaturization, electronics, and so forth. I keep hoping that the manufacturers will bring out something new in the way of a truly silent 35mm hand-held camera. But as far as anything of revolutionary, earth-shaking significance is concerned, I really can't think what it might be.

It never fails to chagrin me when I go to work with a new director, that invariably his opening shot is: "Now, we've really got to think of some way to give this film a *different* look."

And you say: "Swell—what?"

Because, actually, there is relatively little that hasn't been done before—and a truly successful feature film, in terms of entertainment, is one that simply utilizes in a new and interesting manner the things that have been done many, many times before. I wish I had some panacea for the whole thing, but I honestly don't know of one. I find it

For Professional Equipment in  
**PHILADELPHIA,**  
it's  
**O. H. HIRT, INC.**

39 N. 11th St. • Phila, Pa 19107  
(215) 923-0650

## U.S.A. Coin Guide

Shows the value of over 1400 United States coins. Only \$1.00

**BELLS COIN SHOP**

Box 276  
TOLLESON, ARIZONA 85353

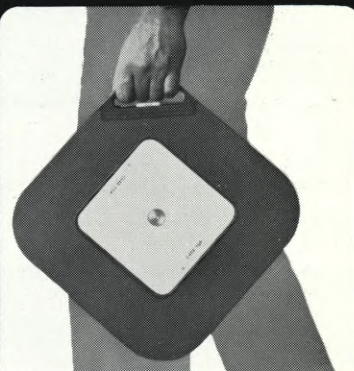
## MAGNETIC RECORDING AMPLIFIER

For Arriflex BL and Auricons  
Weights two pounds

See your dealer or write for pamphlet

**TRANSIST•O•SOUND™**

851 N. Eustis Dr. (317) 897-1549  
Indianapolis, Ind. 46229



**MASTEREEL®**  
**PLASTIC FILM CASE**

Smartest case in town . . .

•  
LIGHTER, STRONGER,  
MORE DURABLE  
and MOST VERSATILE  
•

**OPENS or CLOSES in ONE SECOND**  
**... AND IT COSTS LESS, TOO!**

Send for FREE Trial Offer Details.



**MASTEREEL**  
**INDUSTRIES, INC.**

25 HOME STREET, WHITE PLAINS, NEW YORK 10606  
TEL: (914) 946-4884

**ZOLOMATICS DIVISION  
SPECTRAN, INC.**

35mm Motion Picture Zoom Lens  
*Write for Literature*

941 N. HIGHLAND AVE., HOLLYWOOD, CA. 90038 (213) 464-8101

**PROFESSIONAL  
MAGNETIC SOUND STRIPING**

- Super-8 and 8MM originals or prints
- 2¢ per foot—plus postage
- One day service

**AERCO**

Box 171 Pennsauken, N.J. 08110

★ optical works  
★ blow-ups  
★ reductions  
★ titles

Slides from 16mm Movie Frames  
Super 8—16-35 • Liquid gate printing  
We blow up 35mm negatives from  
your 16mm originals.

WE DO OUR OWN PROCESSING  
AND PRINTING.

COAST TO COAST SERVICE.

**Slide Strip Laboratory, Inc.**

432 West 45th Street, New York, N.Y. 10036  
Phone (212) 247-4125 • (Cable: Slidestrip, Newyork)

- KEM Universal Editing Tables
- KEM Standard-Rapid Editing Tables
- KEM Transfer and Dubbing Systems

Revolutionary Systems for the Film Industry



a division of The Intercraft Corporation  
630 Ninth Avenue, New York, N.Y. 10036  
(212) 757-5017

**BLOW-UP**

HIGH QUALITY  
35MM NEGATIVES  
FROM YOUR 16MM ORIGINALS  
(OUR ONLY BUSINESS)

Stock Shots Enlarged to Match-in with  
your 35mm Negative  
Complete Pictures Transferred to 35mm

Call—Adrian at (213) 463-3178

**CINESERVICE, INC.**

1459 North Seward Street  
Hollywood, California 90028

particularly exciting to view the kind of films we've been seeing this afternoon—but when you're dealing with a major star, to shoot without any fill light or to try something really unique sounds great when you're talking about it. But then you go to dailies, and it's time to bail out and go back to something a little more conventional—because there's just too much investment and too much ego involved to go that other route.

**FOX**—I'm not going to say too much, but will just try to relate what film has meant in my own life. I've been making films since I was about 12 and I've really been fascinated by the medium all my life. I think that the really important "new direction" is the fact that younger people are able to express themselves in film. Years ago, this wasn't so. Maybe people would shoot home movies, just for fun, but now younger people are really getting deeply into the medium, and places like the AFI and UCLA are giving them a chance to get up in the world, to get into the limelight and find recognition for their work.

**WEXLER**—I've been very interested in what the others on the panel have expressed, and I sympathize particularly with some of the things that Dick Moore has said, but I would prefer, if I may, to make my comments in the form of answers to your questions.

**QUESTION:** In reference to "VIRGINIA WOOLF", which was a black and white film that had great impact, I'd like to ask Mr. Wexler if he sees any future for the black and white film—or if today everything has to be in color regardless?

**WEXLER:** I like black and white very much. I feel at home with it. I think it's a shame that it's gone. The reasons that it's gone—as you all know—are primarily economic and commercial. TV demands color, but I feel that there are certain films that would do very well in black and white, because I think black and white is just another tool to use in creating motion pictures. I don't think that it should disappear.

**QUESTION:** But why don't they make films that would lend themselves to a combination of black and white and color as the story progresses?

**WEXLER:** Some of the European filmmakers, particularly, have been using combinations of black and white and

**... CUT!** EDITING AND  
ALL POST  
PRODUCTION  
SERVICES

300 NORTH WINDSOR AVENUE  
Los Angeles, California 90004  
Phone (213) 469-7705

• FILMING •  
**INDIA ASIAN FILMS**

72 JANPATH, NEW  
DELHI-1; Cable: Movi-  
photo, New Delhi (In-  
dia); Telephone: 47995

IN FLORIDA IT'S  
**WARREN SOUND STUDIOS**

Complete sound production facilities

- Mixing ■ Dubbing ■ Transfer ■ Interlock Screening Facilities ■ 16 or 35 mm ■ Editing ■ Loc. Sound Trucks ■ Westrex, Nagra & RCA Equipment
- 35 NE 62nd St. • Miami, Florida 33138  
Telephone: (305) 754-9539

**MARK II MITCHELL CAMERA.**

Complete with all accessories. Like new.  
\$11,700. Or long term rental.

*Write for Rental catalogue.*

**Motion Picture Camera Supply Inc.**

424 W. 49th St. (212) 586-3690  
New York NY 10019

**COMPLETE LABORATORY AND  
POST PRODUCTION SERVICES**



**FOTO-KEM  
INDUSTRIES, INC.**

"Motion Picture Center"  
GERRY BRODERSEN • LOU  
VINCENT • REGINALD DUNN

- Fast service on developing ECO, EF and Color Dailies • Specializing in custom quality color-16mm and 35mm.

**Cutting Rooms & Facilities For Rent**

**HO 3-4111** 3215 Cahuenga West  
Hollywood, Calif 90028

**LINWOOD DUNN, ASC**

*Former Head of RKO Studio Effects Dept.*

**CREATIVE  
SPECIAL EFFECTS**

Complete Advisory and Technical Services  
From Story Ideas to Theater Screen.

*West Side Story My Fair Lady  
It's a Mad, Mad World Hawaii  
The Bible Thoroughly Modern Millie  
The Great Race Darling Lili Catch 22  
Expo 67-70 Shows Airport Song of Norway*

**FILM EFFECTS of Hollywood**

1140 N. Citrus Ave., Hollywood 38, Calif.  
Phone: 469-5808 Cable: FILMEFX

### Automatic TIME-LAPSE MOVIES

Made Easy by SAMENCO® Controls  
Complete system

See your dealer or write direct.

### Marion Van Ausdale & Associates

33 Dellwood Court • Decatur, Ill. 62521

5 India Pennies . . . . . \$1.00  
100 Foreign Coins . . . . . \$3.95

### BELLS COIN SHOP

Box 276  
TOLLESON, ARIZONA 85353

### SHOOTING IN NEW YORK?

Production management service for  
independent and non-union producers.

Professional Crews

Camera and equipment rentals

Production office and facilities.

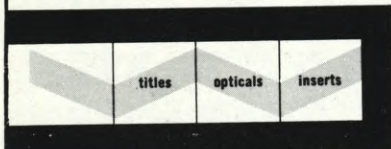
Stages, locations and permits.

*The service of facilitating motion  
picture production is our sole business.*

### Universal Creative Personae

304-A W. 18th St. (212) 255-9321  
New York NY 10011

### WESTHEIMER Company



Joseph Westheimer, A.S.C.

TITLES, TRAILERS, INSERTS AND OPTICAL EFFECTS

FOR MOTION PICTURES AND TELEVISION

HO 6-8271

736 Seward St., Hollywood, Calif. 90038

### SUPER-8 8mm or 16mm *Movie* DUPLICATES

★ Finest-Quality Kodachrome  
COLOR or BLACK & WHITE

- PROFESSIONALS: We are Specialists in  
35mm or 16mm to 8mm or Super-8 Reductions.  
8mm to 16mm Blow-Ups. ★ A & B Roll Printing.  
8mm & 16mm Eastman Internegs. ★ 8mm & 16mm  
Eastman Color Release Prints. ★ B & W Reversal  
Dupes. ★ Dup Negs. ★ B & W Positive Release  
Prints. ★ Single 8mm Printing ★  
Soundstripping ★ Splicing, Etc.

\* FAST SERVICE on Mail-Orders.

\* FINEST QUALITY WORK!

\* Guaranteed SATISFACTION!

Send for our Latest PROFESSIONAL Price-List.  
Write: Dept. A.

**Hollywood  
VALLEY FILM LABS.**

2704 W. OLIVE Ave., BURBANK, CALIF. 91505



color—though I suspect that it's done more for economic than aesthetic reasons. Many Directors of Photography are now told, when they shoot color films, that the color should be *desaturated*. The producers want the film to have a black and white look. In other words, there is a tendency to withdraw color from the color film. Almost in line with what Dick Moore was saying, they tell you: "We want a good, gutsy, contrasty film—but give us plenty of fill light so that we can see all of the actors' faces at all times." There is a great contradiction between what people say they want and what they are willing to accept—I'm speaking of people in the feature film industry.

**QUESTION:** But don't you think it takes greater skill in cinematography to shoot a black and white film than to photograph one in color?

**WEXLER:** I'd like Dick Moore to answer that, as well as myself—but I think you can make more, what might be called "mistakes", in color and get away with it than you can in black and white. For example, you can shoot a rather flatly lighted scene in color and have it look rather pleasing—but the same lighting would look terrible in black and white. This is, of course, because in black and white the separation of planes and objects has to be done by means of lighting—whereas color provides much of its own separation. Dick, do you have something to add on that?

**MOORE:** As a man who has won an Academy Award for black and white photography, you flatter me by even getting me in on the conversation. I've done only one show in black and white, but I wholeheartedly agree that you can get away with murder in color, as long as you get an exposure—and even that isn't so tough anymore because of the speed of the new film stocks.

**QUESTION:** I'd like to address a question to the entire panel. We're entering an era in which a lot of young film-makers are breaking into the business. However, I feel that many of them are getting recognized too fast—before they've had sufficient experience, that is. They want to break the rules of film-making before they even know what the rules are. Are we entering a period in which technical standards are being discarded too fast, and can this be detrimental to the industry? In other words, is there something missing in the education of young film-makers when

### HARRY WALSH, A.S.C. for FLORIDA filming

Supplying Visiting Producers with Crews,  
Equipment, Locations etc. over 25 years.

2711 San Domingo Coral Gables, Florida  
Phones—(305) 446-0566 and (305) 446-0811

### PROFESSIONAL LAMINATED SOUND STRIPING

Since 1958

THE

*Vitalone* CO.

SUPER 8'  
16mm  
& REG. 8

\$.03 Per Foot—\$11.40 Min. Charge

18991 RABBY ST.  
LA PUENTE, CALIF. 91745  
(Rowland Heights)

FAST SERVICE—FREE BROCHURE

### U.S.A. Coin Guide

Shows the value of over 1400 United  
States coins. Only \$1.00

### BELLS COIN SHOP

Box 276  
TOLLESON, ARIZONA 85353

### "HARRISON, where the service is"

Professional Motion Picture Equip-  
ment & Supplies / We Have What  
You Need for Your FEATURE-  
COMMERCIAL-INDUSTRIAL  
FILMS / Call Us First For Your  
Every Motion Picture Need  
RENTALS & SALES  
Harrison Camera & Lighting Corporation  
6745 N.E. Third Ave., Miami, Florida  
Tel. (305) 758-4409

MOTION  
PICTURE  
PRINTERS  
and  
accessories

### Peterson

Write for literature  
Peterson Enterprises, Inc.  
1840 PICKWICK AVENUE  
GLENVIEW, ILL. 60025  
(312) 729-1010

### NEPTUNE CORP.

35 W. 45th St. (212) 765-4785  
New York, NY 10036  
Sales / Service / Rentals

Bell & Howell Projectors  
xenon & double system conversions  
Write for literature

**ASIA** IS  
COVERED  
BY  
**FARKAS FILM COMPANY**

MARINA HOUSE  
HONG KONG

COMPLETE 16/MM & 35/MM  
PRODUCTION FACILITIES

### BOLEX ACCESSORIES

- 24-Frame Sync. Camera motor—115V
- Var. Speed Battery Camera motor—24V
- 400-ft. Magazine w/400' counter in camera
- Intervalltimer—Range 1/2 sec. to 36 min.
- Animation motor for new single-frame shaft

Write for Bolex Accessory Catalog

**STEVENS ENGINEERING CO.**

Dept. A, 340 Newport Blvd.,  
Newport Beach, Calif. 92660

5 India Pennies . . . . . \$1.00  
100 Foreign Coins . . . . . \$3.95

### BELLS COIN SHOP

Box 276  
TOLLESON, ARIZONA 85353

### SOUTHERN CALIFORNIA FILM INSTITUTE

Comprehensive  
Film Making Instruction

8625 Santa Monica Blvd.  
Los Angeles 90049 phone: 659-2320

### CAMERA SERVICE CENTER, INC.

*finest maintained  
rental equipment*

# ROSCO color media

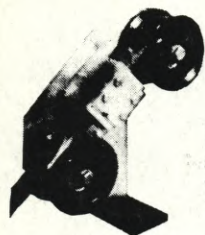
ROSCO, HARRISON, N.Y. 10528

### AURICON and ECLAIR CONVERSIONS

16mm and SUPER 16mm  
Write for price list and information

### CAMERA DEVELOPMENT CO.

31 Brewster Road West (516) 799-5307  
Massapequa NY 11758



### SQUEEGEE TROUBLES?

Want a sure cure?  
Nylon Squeegee. No  
water spots at only 1  
lb. air pressure. \$48.00  
Send for new catalog  
of processing ma-  
chines and parts

### METAL MASTERS

5599 University Ave., San Diego, Ca. 92105

they are taught only the aesthetics, but not the technical basics of film technique?

**LIGHTMAN:** Alright, now—who's brave enough to start answering that one? Joan, why don't you lead off?

**STERN:** I understand what you're talking about and I sympathize with you, to a certain extent. For example, right now I find myself in the position of making films and discovering that there are a lot of things I don't know—just a vast amount of things, because I don't have years of experience and a lot of technical knowledge behind me. But I'm busily trying to learn the things I don't know. I think it's important to realize what you know and what you *don't* know, because then you can go to those who are authorities on the subject and find out.

As for the young film-makers who are breaking the rules—I don't think it's always because they don't know them. Often it's because they're searching for new frontiers and want to communicate in new kinds of ways. There is a new approach to communication which has to do with juxtaposing images, rather than stringing sequential ideas together—and I don't know if that's all bad. I feel that, essentially, a film is a good film if it touches people. If it touches them and they understand it, they'll like it and the film will come out on top. The films which don't work will sink to the bottom. I think that goes for *all* films—both the "old" and the "new".

**MOORE:** Speaking from my platform in the "establishment"—which is where I've been most recently—I'd say: "Sure, break the rules! What rules? Who made them and who is to say that we have to stick with them?" The new methods of getting things across on film which Joan has just mentioned, such as putting things out of sequence, and so forth, are very valid—and I look with envy on the people who are involved in the making of films where the staggering financial considerations don't get in the way, because they have the opportunity to do this exploring—and I say GO! It's the only way.

**WEXLER:** I agree so much with what Joan has said—and I speak from my own experience. Who is to say what the rules are? You must ask yourself: Does it communicate? Does it put across the effect? Does this experiment work or doesn't it work? You have to try to *make* it work—and if it doesn't, it will be rejected. It's as simple as that. ■

### IS YOUR FILM DIRTY?

*Does your cleaner cloth leave lint?*

#### The HGA Film Cleaner pad

Removes dirt • Lint Free • Scratch Free  
\$1.50 Each — Minimum Order 3  
**HENRY GROSSMAN ASSOCIATES**  
519 S. 5th Ave., Mount Vernon NY 10550

### J. Burgi Contner A.S.C.

Director of Photography  
SPR Reflex BNC, SPR-NC,  
ARRIFLEX, Lights, Sound  
P.O. Box F1532  
Freeport, G.B., Bahamas

### UHLER MOTION PICTURE FILM PRINTERS

35, 16, and 8mm. Contact continuous, and optical reduction and enlarging for color and B&W films. Please write for information and prices:

Uhlér Cine Machine Cable: Uhlcima  
15762 Wyoming Ave., Detroit, Mich. 48238  
(313) 861-4663

### SHOOTING IN CANADA?

*Rent from the complete rental house*



CINEQUIP  
Motion Picture  
Camera and  
Equipment Rentals

41 Scollard Street, Toronto, Ontario, Canada. Phone 920-5424

### QUALITY 16mm PRINTS

OUR SPECIALTY

Satisfied customers coast to coast  
B&W • Kodachrome • Ektachrome  
Color Interneg • Positive

### TEKNIFILM, INC.

1923 N.W. Kearney St.  
Portland, Oregon 97209  
(503) 224-3835

### CAROLINA PHOTO-TECH INC. FILM LABORATORIES

Ektachrome Processing/B&W Pro-  
cessing/Work Prints/Release Prints  
Call or write David Conley for  
complete professional price list  
639 Wellons Village Shopping Center  
Durham NC 27703 (919) 688-7265

### MONITAL ZOOM LENSES

by Rank-Taylor-Hobson  
At your dealer

or call Mort Russin (East) (914) 358-4450  
or Bob Jones (West) (213) 985-3963

**RANK PRECISION INDUSTRIES, INC.**  
260 North Rt 303 West Nyack NY 10994

### U.S.A. Coin Guide

Shows the value of over 1400 United  
States coins. Only \$1.00

### BELLS COIN SHOP

Box 276  
TOLLESON, ARIZONA 85353

# BUY — SELL — SWAP HERE

## STUDIO PRODUCTION EQUIP.

ARRIFLEX 16S camera, two 400 ft. color magazines, Torque motor, constant speed motor, variable speed motor, matte box, case, battery & charger, 16mm & 25mm prime lenses & Pan-Cinor zoom \$2,250.00. 35mm Mitchell N.C. follow-focus unit \$250.00. UNIVERSITY SUPPLIERS, 225 West Ohio St., Chicago, Ill. 60610 (312) 467-6457

STORY-BOARD FORMS. Forms punched for three ring binder, six scenes per page, each outlined with a framed picture area for sketching, plus rulings for production notes. \$1.35 per fifty sheets postpaid. California residents add 5% sales tax. CINEPHONIS, Box 534, Del Mar, Calif. 92014

CANON SCOOPIC demonstrator \$795.00. Folding shoulder pods, new \$55.00. PROFESSIONAL CINE PRODUCTS, 2959 Ladybird Lane, Dallas, Texas 75220

35mm PROJECTORS (eight of them), Multi-screen used for only two months, Prevost, 130 Amp, water cooled, Selsync (Turner & Co.) motors 60 cy, 4,500 feet 55 minutes load, 8 rectifiers, 10 Prevost amplifiers. Coll-morgen lenses. All of them or by pairs. Cable SOLECINE or write Box 60.253 CARACAS

16mm PRINTER Peterson with soundhead and fader, complete with converters. Excellent condition presently in use. For sale \$6,800.00 or long term lease. MURRAY HILL PRODUCTIONS, 15 W. 46th St., N.Y.C., (212) JU-6-0357

ARRIFLEX 35mm & accessories & case. Like new (213) 761-2397

MOTION PICTURE laboratory equipment, new and used. Custom design and modification to suit your needs. We cater to labs of all sizes, with prices to fit your budget. Write-wire-phone: CARTER EQUIPMENT CO., INC., 232 So. Glasgow Ave., Inglewood, Calif. 90301, (213) 677-6117

MITCHELL MARK II 35mm reflex camera. Five Super Baltar lenses, studio finder, magazines, sync motor, hi-speed motor, cases, etc. Excellent condition. New cost almost \$17,000. Offered at \$8,500. VICTOR DUNCAN, (313) 371-4920

TWO 35mm MITCHELL cameras model GC. Complete outfit, excellent condition. \$2,295. each. Details on request. ABBE, 417 W. 44 St., New York, N.Y. 10036

MAGNASYNC 602.E, 16mm complete interlock system. Three dubbers, recorder, Ampex, Nagra, new transports and heads. Originally \$20,000, price \$11,000. Send for complete inventory. Moviola 16mm, 2 sound heads, like new \$2,995. JULIAN COLE, 701 Adams, Huntsville, Alabama (205) 534-8736

CLOSING ESTATE—Animation equipment—Acme 103 Optical Printer \$12,950.00. Acme cameras. Oxberry stand. 35mm Moviola \$1,195.00. 35mm Mitchell S.S. \$2,750.00. 16mm Magnasync. 16mm S-6 stencil Hoffman film recorder \$750.00. Auricon 400 ft. Yoder conversion with magnetic sound \$1,695.00 B & H 70 400 ft. camera outfits \$595.00. Maurer model 10 Optical Recorder. Editing equipment. B & H 16mm 302 Opt/Mag. Proj. \$550.00. Eastman AV-256, 25 watt proj. \$375.00. Write or phone for list. UNIVERSITY SUPPLIERS, 225 W. Ohio St., Chicago, Ill. 60610 (312) 467-6457

FILMO 70DL. Excellent condition. No lens. \$195.00. F. J. OWEN, 749 So. Garland Ave., Los Angeles, Calif. 90017

FOR SALE. Color TV camera, mfg. Commercial Electronics, Inc. Slight damage, submit bid. For additional information call Mc-BREEN & ASSOCIATES, (213) 391-0431

## STUDIO PRODUCTION EQUIP.

SYNC BEEP-1/4 inch tape prerecorded with high-level 1000 cyc. tone, backed with special pressure-sensitive adhesive for quickly affixing visual and audible sync indication on any magnetic film or tape. Industry-wide acceptance. Send \$2.50 cash, check or money order for postpaid packet containing 20 strips totaling 100 35mm frames. D. P. UPTON COMPANY, P.O. Box 5052, Tucson, Arizona 85703

B&S VG100 w/friction head  
Regular \$ 314.00, Now only \$ 189.00  
Pro Jr. tripod, legs only

Regular 110.00, Now only 55.00  
B&S VGM 200 tripod, w/ball  
Regular 195, Now only 85.00

ARRI 16BL w/12-120, 400' magazine, matte box, batt., deluxe case  
Regular 8,000.00, Now only 5,995.00  
ARRI 16S w/Ang. 12/120, VS motor

Now only 2,575.00  
Eclair NPR w/Ciblo motor, magazine, battery case  
Regular 5,500.00 Now only 3,500.00  
B&H 70DR, body perfect

Now only 325.00  
ARRI 3511C, latest w/4 Kinoptik lenses, Vs motor, 400' magazine, matte box, battery  
Regular 5,230.00, Now only 3,950.00  
Colortran M.B. 1000 w/acc. hold. and barn doors

Regular 107.50, Now only 35.00  
B.M. floods w/stands  
Now only 65.00  
Colortran master lites, 3 heads, 2 stands, converter

Now only 189.00  
Call Walter, Phone (213) 466-8211,  
BIRNS & SAWYER, INC.  
1026 No. Highland Ave., Los Angeles, Calif. 90038

(213) 466-8211—Cable: BIRNSAW

MIDWEST PRODUCER cutting down on rolling stock, disposing of location equipment consisting of:

1-55' diesel tractor, (White), Fruehauf trailer, made into deluxe diner. Has commercial range, 2 freezers, commercial refrigerator, 1500 gallon water storage, water pressure system, water purifier, heating plant, air conditioned. Walls covered with deep blue carpeting, long mahogany table with blue leather upholstered chairs, seating 14. Rear of diner has complete living facilities for two cooks.

1-55' diesel tractor, (White) Fruehauf trailer made into deluxe over the highway pullman that sleeps 12. Each bunk has clothes space and individual lights. Large bathroom facilities with 4 washbasins, 3 toilets and 2 showers. Large linen supply closet, hot water heater, 1500 gallon water storage, heating plant, air conditioned.

1-diesel bus, (Fixble) beautifully appointed for executive directors locations quarters. Fully carpeted, floors and walls, double bed, complete kitchen, bathroom with tub and shower, 600 gallon water storage, heated and air conditioned.

1-Fruehauf flatbed with Dodge CT-800 gasoline truck used for commissary with enclosed storage space for equipment.

1-Fruehauf flatbed with Dodge CT-800 gasoline truck used as power plant.

If interested please call GALAXY PRODUCTIONS, INC., Des Moines, Iowa, (515) 265-4208, leave your name and number and we will return the call. Or write to P.O. Box 861

MOVIOLA/MAGNASYNC interlock. 16mm recorder with four track mixer model 2216-E-7 sync-selsyn interlocked with magnetic/optical projector. Sacrifice sale of new equipment. AVC, Box 370, Evergreen, Colo. 80439 (303) 674-4615

## STUDIO PRODUCTION EQUIP.

AURICON CONVERSION—General Camera SS111, with crystal sync. 9.5-95mm Angenieux zoom, 3-magnesium mags, battery, perfect condition—\$4500. KAYLOR, 799 Broadway, New York, (212) 473-4220

HOUSTON 11B B&W reversal processing machine. Needs cleaning & some repairs as is \$400. RONALD H. PLANT, Box 20134, Long Beach, Calif. 90801

MAGNASYNC RECORDER \$650, Auricon Pro-1200 Mag sound-factory checked—\$1850. 35mm B&H \$575, animation motor \$225, 35 scope lenses for camera-projection. Box 3275, Hollywood Station, Los Angeles, 90028

16mm B&W, ME4, ECO-3 processing, work prints. Film production, sync sound. FOTO-MASTERS, INC., 825 So. Higgins, Missoula, Mont. 59801 (406) 543-8386

## THEATERS FOR SALE

ROLLA, MISSOURI, 1000 seat house, 750 seat house, 500 car drive-in, plus real estate. Good financing. JOHN TWITTY REALTY, Rolla, Mo. 65401

300 CAR DRIVE-IN, 18 acres. Bolivar, Mo. JOHN TWITTY REALTY, Rolla, Mo. 65401

## SITUATIONS WANTED

FILMMAKER-WRITER: Nine years' experience in documentary and educational film. M.A., cinema, USC. Films and resume available. Box 1722, AMERICAN CINEMATOG-RAPHER

## SITUATIONS AVAILABLE

SOUND MIXER-TECHNICIAN for top position with leading producers service lab. Latest and most sophisticated film transports, recorders and electronics now installed in our Pittsburgh studios. If you believe you can qualify for this important position, please get in touch with us as soon as possible. Call or write Donald Redinger, WRS MOTION PICTURE LABORATORY, 210 Semple St., Pittsburgh, Penna. 15213, (412) 683-6300

## WANTED

16mm MOVIOLA. State model, condition, age. Cash. Box 1723, AMERICAN CINEMA-TOGRAPHER

WANTED CINE special lens adapter for Macro Kilar Kilfitt lens. 16mm Maurer camera. 200 ft. Cine Special magazines. JAY H. SCHIFF, 500 Cornelia Ave., Chicago, Ill. 60657, (312) LA-5-7340

WESTREX RA-1231 Optical Recorder 16 or 35mm, any condition. DON PALMER STUDIOS, 563 2nd St., San Francisco, Calif. 94107 (415) 392-4449

200 Ft. 16mm BELL & HOWELL magazines. State price and condition. KALEIDO-6 PRODUCTIONS, 46 E. Grant Ave., Roselle Park, N.J. 07204 (201) 241-6614

## MISCELLANEOUS

CERTIFIED HYGROMETERS, tape timers, headphones, stopwatches, etc: write for catalog of unusual, useful items. TIMEKEEPER, Box 762, Mineola, N.Y. 11501

Free from PROFESSIONAL CINE PRODUCTS 1 set ZOOM SEE RINGS, 1 sunshade and 1 series 9 glass filter with every 12 to 120 zoom we sell.

RATES: Ads set in lightface type, 30¢ per word. Minimum ad. \$3.00. Text set in lightface capital letters (except 1st word and advertiser's name) 50¢ per word. Modified display format (text set in boldface type, capitals or upper-and-lower

case) \$3.00 per line. Send copy with remittance to cover payment to Editorial Office, American Cinematographer, P.O. Box 2230, Hollywood 28, Calif. Forms close 1st of month preceding date of issue.

# behrend's inc.

161 EAST GRAND AVENUE CHICAGO, ILLINOIS 60611

(312) 527-3060

## Watch for another new HYDROFLUID PRODUCT

Write for details to:  
**NATIONAL CINE EQUIPMENT, INC.**  
37 W. 65th St., N.Y., N.Y. 10023

## KRANZ AND ASSOCIATES MOTION PICTURE LABORATORY

19362 SALMON LANE  
HUNTINGTON BEACH, CALIF. 92646  
(714) 642-4933 24 HR.  
16 & SUPER 8 PROCESSING  
B&W & COLOR  
CAMERA RENTALS 16 & SUPER 8

## COLOR PROCESSORS

WRITE FOR INFORMATION

### HILLS

MANUFACTURING CO., INC.  
PO Box 125 (215) 345-1944  
Chalfont, Pa. 18914

## SERVICES AVAILABLE

**PROFESSIONAL CINE PRODUCTS** gives 48 hour service on Filmo & Auricon Filter Slots. Also quick service on Auricon and Filmo repairs.

16mm PHOTOGRAPHY, sound, **MATHEWSON**, 9551 James Circle, Villa Park, Calif. 637-5910

**PROFESSIONAL CINE PRODUCTS** repairs all types on conversions

**MITCHELL HARDING** dropout from KPFFK-Pacific radio. Warm, intelligent voice available for your documentaries or whatever. Over or underground. P.O. Box 8453, Universal City, Calif. (213) 462-3311

**CREATIVE SOUND** effects editing for your films. Also complete post production editing services. **RONALD H. PLANT PRODUCTIONS**, Box 20134, Long Beach, Calif. 90801, (213) 429-7582

**SAN FRANCISCO BAY** area. Experienced documentary crew. **Eclair NPR, Nagra IV, etc. VERIATION FILMS**, 131 University Ave., Palo Alto, Calif. 94301, (415) 328-6294

**EUROPE** 35mm and 16mm. All production services. Arriflexes, Nagra, Crews, News, commercials, known for quality work. **PAUL SIMMON**, 2, Market St., Halifax, York, England, Phone, Halifax 52240

**DIRECTOR/CAMERAMAN**, 16 & 35mm, commercial, documentary, 2925 Poinsettia, Ft. Lauderdale, Fla. 33316

**SHOOTING IN EUROPE?** For crews and equipment contact the professionals. **PATRICK WOOD FILM SERVICES**, 13, South Rd., Amersham, Buckinghamshire, England. Phone Amersham 4941

**PROFESSIONAL CINE PRODUCTS** builds a 15-oz magnetic amplifier for Cine Voice

**\$500 REWARD** For information leading to recovery of equipment stolen in Charlotte NC August 22, 1970. Includes: Mitchell #NC 172 (35mm) and accessories. For more information, write or phone: **MARTIN HILL**, 2736 Picardy Place Phone (704) 545-4491 or 334-6224 Charlotte NC 28209

## SOUND STRIPING

A or B Side — 8, Super 8, 16mm All  
Liquid Process.  
.03 Per Foot  
Guaranteed to Stick

**MAGNETIC FILM LAB**

P. O. 13573

St. Louis, Mo. 63138

5 India Pennies . . . . . \$1.00  
100 Foreign Coins . . . . . \$3.95

## BELLS COIN SHOP

Box 276  
TOLLESON, ARIZONA 85353



## Reflectasol



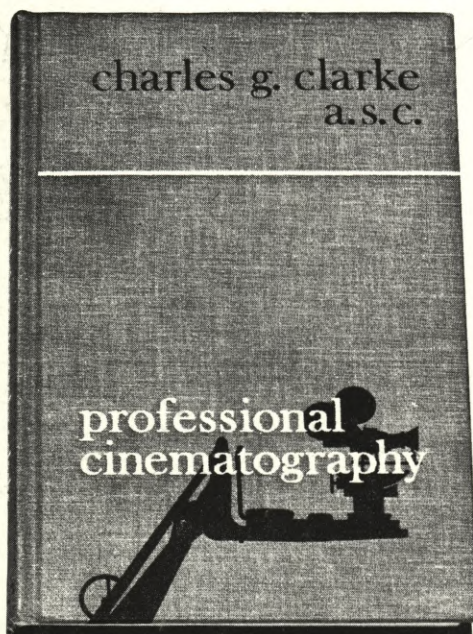
LARSON ENTERPRISES, INC. • 12817 SO. BROADWAY  
LOS ANGELES, CALIF. 90061 • PHONE (213) 323-3252

# SECOND EDITION

# PROFESSIONAL CINEMATOGRAPHY

By CHARLES G. CLARKE, ASC

Professional Guidance For Aspiring Cinematographers



**SUBJECTS INCLUDE:** Camera, camera mounts . . . Lenses, wide-screen lenses . . . Filters and Filter effects . . . Day-for-night photography . . . Exposure for color and black and white films . . . Light meters and their use . . . Color temperature meters . . . Equipment for set lighting and its control . . . Camera angles and techniques . . . Special lighting problems . . . Color psychology . . . Composition . . . Special photographic effects . . . Set operation on the sound stage . . . New film emulsions . . . Forced development data.

**ABOUT THE AUTHOR:** Charles G. Clarke, ASC, a top Director of Photography at 20th Century-Fox for many years, and an ASC member, taught Advanced Cinematography at the University of California at Los Angeles, where he recognized a need for practical professional guidance for students striving to be the industry's future Directors of Photography. It is this need which has given rise to his publication of a book on the subject and subsequently the latest revised edition of Professional Cinematography. The first edition of this valuable book has become required reading at many universities and schools offering courses in cinematography.

Order now and be assured of your copy of the revised edition of this valuable book! Postpaid for only . . .

**\$10<sup>00</sup>**

## The American Cinematographer

P.O. Box 2230, Hollywood, California 90028

Please send me . . . . . copies of **PROFESSIONAL CINEMATOGRAPHY** @ \$10.00 ea., postpaid. No C.O.D.'s. Single book orders will not be billed. Check or money order must accompany orders for single books.

Name \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_

California residents please remit 5% Sales Tax (50¢ per copy). Foreign buyers please pay by International Money Order or US funds.



Jim Frezzolini at work on a new project. He's the father of portable power for newfilm operations.

# Jim Frezzolini conceived and built a complete family of lightweight high-energy portable power packs for 16mm motion picture cameras and portable lights for the professional newfilm team.

(A) **New!** Lightest DC Power Pack for 8.4 volt camera motors. Uses interchangeable batteries of 1000-DX Inverter. Ask for **special ADAPTOR Model 1000-DX**.

(B) **Model 1000-DX**. The lightweight standard of AC power packs for all modern 400-ft. conversions with sync camera motors.

(C) **Auxiliary Charger** for spare batteries of Model 1000-DX.

(D) **New! Frezzi™ Model 800LL** lightweight high-energy silver-powered Battery Pack supplies 250 watts for 30 minutes to 28v. light heads or DC camera motors.

(E) **Model 200-DX AC Power Inverter** for rugged newfilm field operations. Powers any 400-ft. conversion. Modular construction allows fast change from battery supply to AC line supply (120/240v., 50/60 hz.)

with Line Converter Module. Camera heater power attachment available.

(F) **Power to run them all! Model 100-DX** is the standard of portable power for AC camera motors. Supplies up to 100 watts continuous output from internal batteries.

(G) **Portable Test Set** checks AC line and AC Inverter frequency and voltage, from any AC line or AC Inverter. Simulated camera load test is built in.

All Frezzolini AC Inverters can be supplied with a 50 or 60 hz. transistor-controlled module for single-system cameras or a precision crystal-controlled module for "double-system" camera operation. A matching built-in crystal-controlled module is available for pilotone Nagra® recorders.

Jim Frezzolini produces other professional motion picture equipment too. For more information about all his products see your professional motion picture supply dealer, or call or write James J. Crawford, Vice-President, Engineering.

## "one man's family"



MANUFACTURED BY

General Research Laboratories



DIVISION OF

Frezzolini Electronics Inc.

7 Valley St., Hawthorne, N. J. 07506

PHONE: (201) 427-1160

Byron announces best  
**Videotape-to-Film**  
service in the country  
at America's lowest  
prices--and it's  
**Color-Correct<sup>®</sup>**, too.




Tape-to-film is now better—faster—less expensive. That's saying a lot—but Byron makes it possible with the newest, most sophisticated Vidtronics and Electron Beam video film equipment. Transfer, printing, and processing under one roof means better quality control.

Another reason why your lab should be Byron!

**byron** MOTION PICTURES

65 K Street, Northeast, Washington, D.C. 20002 • 202/783-2700  
World's most sophisticated Film Laboratory

 ELECTRON BEAM RECORDING  
FOR BLACK AND WHITE