# American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

OCTOBER 1973/75 CENTS


## THE FILMING OF THRESHOLD

## THE BLUE ANGELS EXPERIENCE

# SALE

CAMERA SALES CENTER CORP.,
625 West 54th Street, New York, N.Y. 10019

**Gentlemen: I am interested in** . . . . . .

. . . . . .

**Name** . . . . . .

**Firm** . . . . . .

**Street** . . . . . .

**City** . . . . . **State** . . . . . **Zip** . . . . . .

**Trades accepted! Satisfaction guaranteed or money back within 10 days!**

## CAMERAS

| | | |
|---|---|---|
| Bolex Pro Camera w/12-120 Angenieux zoom, 8 m/m Destagon, Crystal Motor & Battery, Charger, 3 Magazines; monopod, Case, Belt Battery | used | $7,500.00 |
| Photosonic H.S. Camera, 200 ft. Magazine, and Belt Battery | used | 1,995.00 |
| Arriflex II CBGS with Constant Speed Motor | used | 2,450.00 |
| Bolex Pro Camera w/12-120 Angenieux zoom, crystal Motor Battery, 400 ft. Magazine, monopod, Case, and Cable | new | 7,200.00 |
| Eclair N.P.R. with 2 magazines, constant speed motor, cradle & Case | used | 4,200.00 |
| Eclair A.C.L. Camera, Motor, Battery, Charger, Pistol Grip, Two Magazines, Case | new | 6,895.00 |
| Auricon Cine Voice Converted to Bell & Howell 400 ft., Magazines, Amplifier, and Case | used | 875.00 |
| Auricon Cine Voice Converted to Mitchell 400 ft. Magazines wired for Magnetic Attachment | used | 1,200.00 |
| Bell & Howell 70 HR Body only | used | 485.00 |
| Bell & Howell Eyemo with one Lens | used | 97.50 |
| Bell & Howell Compact Eyemo | used | 325.00 |
| Bell & Howell Spider Eyemo | used | 275.00 |
| Wall Sound Camera, with 2 Magazines, Amplifier, Power Supply, 40, 50, 75 m/m Baltar Lenses and Cases | used | 995.00 |
| VTR Concord Camera MC 12 | new | 197.00 |
| VTR 820 Recorder National Standard | new | 832.50 |
| VTR 19" Monitor | new | 198.00 |
| All three above VTR items | | 1,215.00 |
| Eclair A.C.L., Motor, Battery Charger, Two Magazines, Pistol Grip and Case | used | 5,850.00 |
| Arriflex S/B Sync Generator | used | 2,350.00 |

## TRIPODS AND MOUNTING EQUIPMENT

| | | |
|---|---|---|
| Arriflex 35 m/m Tripod | used | 49.50 |
| Akeley Standard Tripod, Baby Legs, Hi Hat, and Cases | used | 459.50 |
| Akeley Gyro Tripod Head | used | 250.00 |
| Akeley Hi Hat | used | 20.00 |
| Akeley Standard Legs | used | 89.50 |
| Akeley Baby Legs | used | $ 79.50 |
| Pro Jr. Standard Tripod with Friction Head | new | 179.50 |
| Pro Jr. Standard Legs | new | 89.50 |
| Pro Jr. Baby Legs | new | 89.50 |
| Pro Jr. Hi Hat | new | 27.50 |
| CSC Triangle Dolly | new | 149.95 |
| Triangle Dolly | used | 20.00 |
| CSC Adjustable Wedge | new | 159.50 |
| Worral Geared Head with Case | new | 2,200.00 |
| Feerless Dolly | used | 795.00 |
| O'Connor Model 50 Head-Pro Jr. Base | new | 774.00 |
| O'Connor Model 100C Mitchell Base | new | 985.00 |
| O'Connor Level Head for 100C | new | 387.00 |
| Mitchell type tripod Regular or Baby | new | 137.50 |
| Miller F Head and Legs | new | 370.00 |
| CSC Body Brace (Fully Adjustable) | new | 84.50 |
| Arriflex Gyro Standard Tripod | used | 795.00 |
| Arriflex Shorty Legs | used | 129.50 |

## LIGHT METERS

| | | |
|---|---|---|
| Spectra Combination 500 Complete | new | 119.00 |
| Spectra Professional Meter Complete | new | 99.50 |
| Spectra Professional Meter with Pointer Lock Complete | | 109.50 |
| Minolta Professional Meter with Case | new | 74.50 |
| Minolta Spot Attachment for Professional | new | 21.00 |
| Spectra 3 Color Meter—AS IS | used | 125.00 |
| General Electric Meter | used | 14.50 |
| Gossen Scout Meter | new | 15.95 |
| Gossen Luna Pro | new | 73.00 |
| Minolta Spot Meter and Pouch | new | 269.50 |
| Weston Master V or VI | new | 37.50 |
| Weston Ranger 9 | new | 63.75 |
| Sekonic Studio L28 Meter | new | 49.95 |

## LENSES

| | | |
|---|---|---|
| 9.5.9.5 Angenieux "C" Mt. | new | 1,850.00 |
| 9.5.9.5 Angenieux 10" finder "C" Mt. | used | 1,650.00 |
| 12-120 Angenieux Eclair Mt. | used | 875.00 |
| 12-120 Angenieux Arri Mt. | used | 875.00 |
| 17-85 Pan Cinor Arri Mt. | used | 279.50 |
| 17-85 Pan Cinor with finder "C" Mt. | used | 375.00 |
| 25-100 Pan Cinor "C" Mt. | used | $ 275.00 |
| 25-250 Angenieux Arri Mt. | used | 2,100.00 |
| 25-250 Angenieux Arri Mt. | new | 3,895.00 |
| 5.9 Angenieux Arri Mt. | used | 575.00 |
| 8 m/m F2 Distagon Arri Mt. | used | 499.00 |
| 17.5 F2 Cooke Arri Mt. | used | 399.00 |
| 25 m/m F1.4 Xenon Arri Mt. | used | 175.00 |
| 25 m/m F1.5 Xenon Arri Mt. | used | 169.00 |
| 25 m/m F2 Cooke Arri Mt. | used | 325.00 |
| 25 m/m F2 Kinoptic Arri Mt. | used | 175.00 |
| 28 m/m F2 Xenon Arri Mt. | used | 185.00 |
| 35 m/m F2 Xenon Arri Mt. | used | 199.50 |
| 50 m/m F2 Xenon Arri Mt. | used | 219.50 |
| 50 m/m F2 Cooke Arri Mt. | used | 325.00 |
| 50 m/m F2 Rodenstock Arri Mt. | used | 175.00 |
| 75 m/m F2 Speed Panchro Arri Mt. | used | 389.50 |
| 75 m/m F2.8 Cooke Arri Mt. | used | 325.00 |
| 75 m/m F2 Xenon Arri Mt. | used | 189.50 |
| 75 m/m F2 Xenon Arri Mt. | used | 179.50 |
| 75 m/m F2 Knoptic Arri Mt. | demo | 269.00 |
| 100 m/m F2.8 Cooke Arri Mt. | used | 359.00 |
| 100 m/m F2 Xenon Arri Mt. | used | 420.00 |

## SOUND EQUIPMENT

| | | |
|---|---|---|
| Nagra III Recorder with ATN, Crystal, and Case | used | 1,075.00 |
| Nagra 4.2L and Accessories in stock | Prices on Request | |
| Sennheiser EM 1008 Wireless Receiver with Antenna, Case, Microphone and Transmitter | used | 625.00 |
| Sycron S-10 Condenser Microphone | new | 185.00 |
| Electro Voice 742 Microphone | new | 249.50 |
| Sennheiser 804 Microphone | used | 279.95 |
| Sony ECM 50 Microphone | new | 129.50 |
| RCA BK-5A Microphone in shock mt. | used | 79.50 |
| RCA BK-5A Microphone in shock mt. and Wind Screen | used | 89.50 |
| AKG D12 Microphone | used | 69.50 |
| Electro Voice 650 Microphone | used | 59.50 |
| Electro Voice 654 AS IS | used | 29.50 |
| Jensen Synchronizer 205S | used | 299.00 |
| Walkie Talkies 5 Watt Pair | used | 149.50 |

## EDITING EQUIPMENT

| | | |
|---|---|---|
| Rivas Tape Splicer 16 m/m or 35 m/m straight-cut | new | 137.50 |
| Rivas 16 m/m or 35 m/m straight-cut | used | 115.00 |
| Guillotine 16 m/m straight and Diagonal | new | 157.50 |
| Guillotine 16 m/m straight only | new | 147.50 |
| Guillotine 35 m/m straight and Diagonal | new | 179.50 |
| Guillotine 35 m/m straight only | new | 157.50 |
| Maier Hancock 8/16 Hot Splicer | new | 234.00 |
| Maier Hancock 16/35 Hot Splicer | new | 326.00 |
| Maier Hancock 16/35 Hot Splicer | used | 275.00 |
| Bell & Howell 35 m/m Foot Splicer AS IS | used | 749.00 |
| Griswald 16 m/m R3 Splicer | new | 39.00 |
| Griswald 8/16 m/m Jr. Splicer | new | 25.00 |
| 4 Gang Synchronizer Ediquip | new | 153.00 |
| 4 Gang Combination 2/35-2/16 Moviola Synchronizer | new | 245.00 |
| 4 Reel rewinds with spacers and clamps | new | pr. 72.00 |
| Griswald clamp-on rewinds | new | pr. 45.50 |
| Solid State Amplifier | new | 62.50 |
| Solid State Amplifier, two inputs, separate Volume control | new | 99.50 |
| Moviscope Viewer | new | 155.00 |
| Precision 600 RL Reader Optical only | used | 159.50 |
| Precison 800 RL Reader Optical and Magnetic | used | 239.50 |

Prices subject to change without notice.

*Hundreds of additional items available at huge savings — write, wire or phone for quotations / satisfaction guaranteed or money refunded within 10 days of purchase / add sales tax where applicable — shipping charges additional / all equipment subject to prior sale / trades accepted.*

SUSTAINING SMPTE MEMBER

ASSOCIATE MEMBER FILM PRODUCERS ASSOCIATION OF NEW YORK

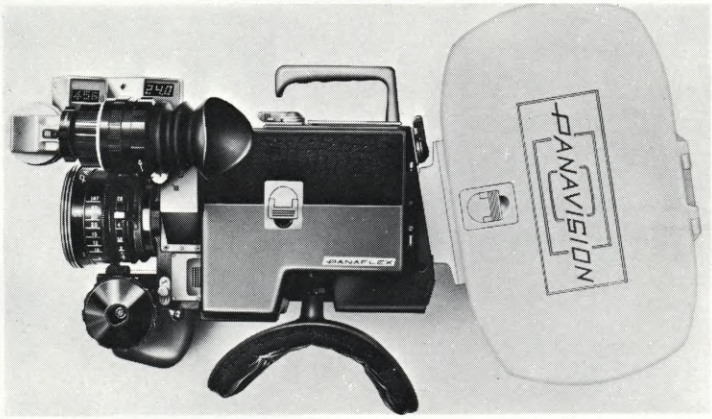
CSC

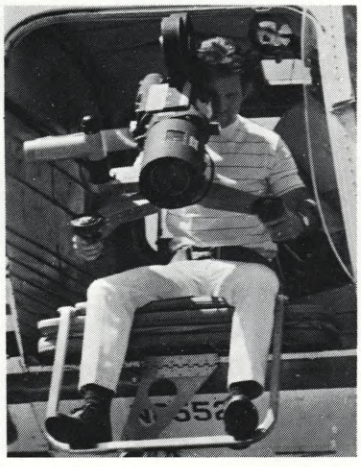
# CAMERA SALES CENTER CORP.

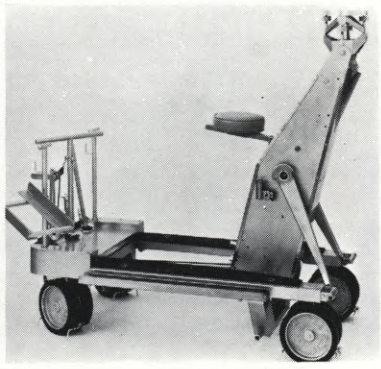
SALES AFFILIATE OF CAMERA SERVICE CENTER, INC.

625 West 54th Street • New York 10019 • 212 PL 7-0906

# The source:



In filmmaking, compromises can be expensive. Especially when it comes to equipment.

When you want the performance of a Panavision camera or lens, you don't want to be "sold" on a substitute.

If you need the steadiness of a Tyler helicopter mount, you don't have time to gamble on someone else's.

If your sound man wants the versatility of a Fisher boom or dolly, you don't want to settle for something else.

At General Camera, we understand.

We've built a company around the idea. Offering the latest, finest cameras, lenses, lighting, grip, support and sound equipment from literally dozens of the world's top manufacturers. Either individually, as a package or on our own ultramodern multiple sound stages in the heart of Manhattan.

That's why we're known as "the source" to many motion picture people: their one stop for all the equipment and supplies they need. Because they don't want to settle for anything less.

general camera corporation

471 Eleventh Avenue, New York 10018 (212) 594-8700

# 30 cine mobiles

FILMING • JUL/AUG • '73

## CONRACK — GEORGIA
20TH CENTURY FOX
MARTIN RITT / IRVING RAVETCH — PRODUCERS
MARTIN RITT — DIRECTOR
JOHN ALONZO — CINEMATOGRAPHER

## STREETS OF SAN FRANCISCO
QUINN MARTIN PRODUCTIONS
QUINN MARTIN — EXEC. PRODUCER
JOHN WILDER — PRODUCER
JACQUES MARQUETTE — CINEMATOGRAPHER

## McQ — SEATTLE
BATJAC-LEVY-GARDNER / WARNER BROS.
MICHAEL WAYNE — EXEC. PRODUCER
JULES LEVY — PRODUCER
JOHN STURGES — DIRECTOR
HARRY STRADLING JR. — CINEMATOGRAPHER

## DEADLY TRACKERS — MEXICO
CINE GUARANTORS / WARNER BROS.
EDWARD ROSEN — EXECUTIVE PRODUCER
FOUAD SAID — PRODUCER
BARRY SHEAR — DIRECTOR
GABRIEL TORRES — CINEMATOGRAPHER

## MAN ON THE SWING — CONNECTICUT
PARAMOUNT PICTURES
HOWARD B. JAFFE — PRODUCER
FRANK PERRY — DIRECTOR
ADAM HOLENDER — CINEMATOGRAPHER

## SERPICO — NEW YORK
PARAMOUNT PICTURES
MARTIN BREGMAN — PRODUCER
SIDNEY LUMET — DIRECTOR
ARTHUR ORNITZ — CINEMATOGRAPHER

## TERROR ON THE BEACH — PISMO BEACH
20TH CENTURY FOX
ALAN JAY FACTOR — PRODUCER
PAUL WENDKOS — DIRECTOR
BILL JURGERSON — CINEMATOGRAPHER

## RUDDERCLUB — HAMBURG
STUDIO HAMBURG
R. FREISLER — PRODUCER
D. WEDEL — DIRECTOR
GERO ERHARDT — CINEMATOGRAPHER

## DR. FRANKENSTEIN — ENGLAND
UNIVERSAL PICTURES
HUNT STROMBERG JR. — PRODUCER
JACK SMIGHT — DIRECTOR
ARTHUR IBBETSON — CINEMATOGRAPHER

## THE GAMBLER — NEW YORK
ROBERT CHARTOFF / IRWIN WINKLER PRODS.
KAREL REISZ — DIRECTOR
VICTOR KEMPER — CINEMATOGRAPHER

## FAIR GAME — OREGON
PLAYBOY PRODUCTIONS
RON ROTH — PRODUCER
BORIS SEGAL — DIRECTOR
BILL BULTER — CINEMATOGRAPHER

## SLEEPER — DENVER
ROLLINS-JOFFE / UNITED ARTISTS
JACK GROSSBERG — PRODUCER
WOODY ALLEN — DIRECTOR
DAVID WALSH — CINEMATOGRAPHER

## CRAZY JOE — NEW YORK
INTER PRODUCTIONS / COLUMBIA PICTURES
DINO DE LAURENTIIS — PRODUCER
CARLO LIZZANI — DIRECTOR
ALDO TONTI — CINEMATOGRAPHER

## 99 44/100% DEAD — SEATTLE
20TH CENTURY FOX
JOE WIZAN — PRODUCER
JOHN FRANKENHEIMER — DIRECTOR
RALPH WOOLSEY — CINEMATOGRAPHER

## PERRY MASON — LOS ANGELES
20TH CENTURY FOX
ART SEID / ERNIE FRANKEL — PRODUCERS
JOHN BADHAM — DIRECTOR
JACK WOLF — CINEMATOGRAPHER

## ALVIN THE MAGNIFICENT — PASADENA
WALT DISNEY PRODUCTIONS
RONALD MILLER — PRODUCER
TOM LEETCH — DIRECTOR
CHARLES WHEELER — CINEMATOGRAPHER

## ISN'T IT SHOCKING — OREGON
ABC CIRCLE ENTERTAINMENT
HOWARD ROSEMAN — PRODUCER
JOHN BADHAM — DIRECTOR
JACK WOLF — CINEMATOGRAPHER

## SPIRIT OF ENGLAND — ENGLAND
INTER-70 FILMS LTD.
WIESLAW KLISZEWICZ — PRODUCER
DON SHARP — DIRECTOR
MIKE REED — CINEMATOGRAPHER

## CHURCH ST. CRUISERS — GALVESTON
SANDY HOWARD PRODUCTIONS
ROBERT ROSEN — PRODUCER
WILLIAM GRAHAM — DIRECTOR
PHIL LATHRUP — CINEMATOGRAPHER

## THE SLAMS — LOS ANGELES
PENELOPE PRODUCTIONS
GENE CORMAN — PRODUCER
JONOTHAN KAPLAN — DIRECTOR
ANDY DAVIS — CINEMATOGRAPHER

## THE TAKE — ALBUQUERQUE
TIGER PRODUCTIONS / COLUMBIA
STANLEY RUBIN — EXEC. PRODUCER
ROBERT HARTFORD DAVIS — DIRECTOR
DUKE CALLAGHAN — CINEMATOGRAPHER

## HOUSE ON SKULL MTN. — LOS ANGELES
CHOCOLATE CHIP / PINTO PRODUCTIONS
RAY STOREY — PRODUCER
RON HONTHANER — DIRECTOR
MONROE ASKINS — CINEMATOGRAPHER

## BETTER GO IN DISGUISE — ENGLAND
LYNCAH INTERNATIONAL FILMS LTD.
MARTIN CAHILL — PRODUCER
ERICK SYKES — DIRECTOR
KEN HODGES — CINEMATOGRAPHER

## WET STUFF — LONDON / PARIS
DYMPHANA FILM & THEATRE PRODS. LTD. / 20TH CENTURY FOX
ROBT. CHARTOFF / IRWIN WINKLER — PRODUCERS
IRVING KIRSHNER — DIRECTOR
GERRY FISHER — CINEMATOGRAPHER

## CHEVROLET INDUSTRIAL — HOLLYWOOD
L. P. PRODUCTIONS
PAUL LOHMANN — PRODUCER
BOB CURTIS — DIRECTOR
PAUL LOHMANN — CINEMATOGRAPHER

## REYNOLDS TOBACCO — LONDON
BROOKS FULFORD, CRAMER PRODS.
MARTIN McKEAND — PRODUCER
LEN FULFORD — DIRECTOR
MARTIN McKEAND — CINEMATOGRAPHER

## THE GIRL MOST LIKELY TO... — LOS ANGELES
ABC CIRCLE ENTERTAINMENT
EVERETT CHAMBERS — PRODUCER
LEE PHILLIPS — DIRECTOR
DICK GLOUNER — CINEMATOGRAPHER

## COMMERCIAL — NEW YORK
Z PRODUCTIONS
JIM ZACARALLI — PRODUCER
DICK CLARK — DIRECTOR
HERB WAGREICH — CINEMATOGRAPHER

## COMMERCIAL — NEW YORK
WAKEFORD ORLOFF PRODUCTIONS
CHUCK SLOAN — PRODUCER
JOE HANWRIGHT — DIRECTOR
GARY YOUNG — CINEMATOGRAPHER

## COMMERCIAL — NEW YORK
ANDREW LASZLO PRODUCTIONS
ANDREW LASZLO — PRODUCER/DIRECTOR

American Cinematographer
International Journal of Motion Picture Photography and Production Techniques

OCTOBER 1973 Vol. 54, No. 10



**Editorial—Business Offices**
1782 North Orange Drive
Hollywood, Calif. 90028
876-5080

**Advertising Representative**
Paul Gilbert
485 Fith Avenue
New York, N.Y. 10017
(212) 884-2911

## • FEATURE ARTICLES



## • DEPARTMENTS



ON THE COVER: In precise Delta formation, F4 Phantom jets of the "BLUE ANGELS", United States Navy Flight Demonstration Team, roar into the wild blue yonder. Photograph by RON RENTFROW.

*The A.S.C. is not a labor union or a guild, but an educational, cultural and professional organization. Membership is by invitation only to those who are actively engaged as Directors of Photography and have demonstrated outstanding ability. Not all Hollywood cinematographers can place the now familiar initials A.S.C. after their names. In a sense, the A.S.C. membership roster is as exclusive as the legendary London Club for it has become one of the highest honors that can be bestowed upon a professional cinematographer, a mark of distinction and prestige.*

**AMERICAN CINEMATOGRAPHER,** established 1920, in 54th year of publication, is published monthly in Hollywood by ASC Holding Corp., 1782 North Orange Drive, Hollywood, California 90028, U.S.A. **SUBSCRIPTIONS:** U.S. $8.00; Canada, foreign, including Pan-American Union, $9.00 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.  Second-class postage paid at Los Angeles, California.

Ready when you are, C.B.!

Impact. One of the key elements of motion picture creative success. How do you achieve it? With film.

With good film because there are certain scenes you can shoot only once...scenes you wouldn't care to do over. The "one-shots" that make a picture memorable.

"When we found out it would cost a hundred thou to kill Sonny Corleone, we figured we could do it only once. Jimmy Caan was wired with 110 explosive charges and we blew up a beautiful 1941 Lincoln Continental...but we ended up with a very realistic execution." Al Ruddy. Producer of "The Godfather."

"See, Shaft's supposed to shoot this helicopter down. We hauled a life-size mock-up 150 feet in the air over the Queensboro Bridge. Of course, traffic was blocked up for miles because the thing was full of high explosives. We got a beautiful take the first time. It's a good thing, because the cars would probably still be jammed up if we didn't." Urs B. Furrēr. Director of Photography, "Shaft's Big Score."

"Shooting Popeye's chase with a subway train was a one-shot sequence that took five weeks. We'd set up a particular shot, check out all the safety angles, get the car and cameras going, and cross our fingers. In addition, a lot of unplanned things happened that we couldn't duplicate. The total result was a focal point of the film." Owen Roizman. Cinematographer, "The French Connection."

All classic scenes. All shot on Eastman film... the first and only time.




EASTMAN KODAK COMPANY
Atlanta: 404/351-6510/Chicago: 312/654-5300/Dallas: 214/351-3221/
Hollywood: 213/464-6131/New York: 212/262-7100/San Francisco:
415/776-6055/Washington, D.C.: 202/554-9300.

# WHAT'S NEW

*IN PRODUCTS, SERVICES AND LITERATURE*

### AGE INC. INTRODUCES NEW SWINTEK WIRELESS MICROPHONE SYSTEM

Alan Gordon Enterprises Inc. has introduced the new Swintek Mark IV Wireless Microphone System, which features a transmitter that is about the size of a pack of cigarettes and weighs only five ounces.

Designed to meet the most exacting wireless sound recording requirements of the professional cinematographer, the Swintek transmitter is small enough to be hidden in a costume or shirt pocket and will accept any type of lavalier or hand-held microphone. It is powered by a nine-volt battery.

The receiver provides three simultaneous audio outputs at various levels and operates on AC or DC.

Price for the Swintek Mark IV System, which includes transmitter, receiver and carrying case is $960.00. A detailed specification sheet is available from AGE Inc., 5362 Cahuenga Blvd., North Hollywood, Calif. 91601.

•

### NEW COMPACT QUARTZ LIGHTING KIT AVAILABLE FROM CINEMA PRODUCTS

Cinema Products Corporation announces the availability of a new line of compact quartz location lighting kits. The new *"Aero-Kit"* is packaged in a sturdy aluminum carrying case which measures only 6½" X 12" X 26½".

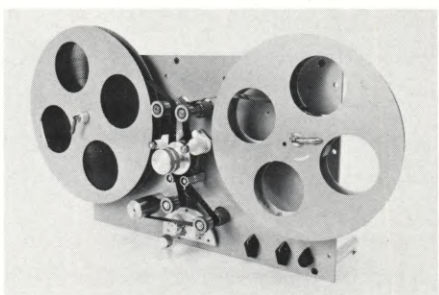
The Aero-Kit, which weighs less than 31 lbs., includes two *focusing* 600-watt spots and two detachable rotating four-way barndoors, one *focusing* 600-watt fill light with integral four-way barndoors, two scrims, three 10 feet long three-wire cables (with in-line switch), three 15 feet long three-wire extension cables, one gator grip, and three professional-type stainless steel light stands. These light stands (10 ft. high when extended, and 24" high when telescoped) are specially designed with extendable legs which permit easy and stable placement of the light stand on uneven ground surfaces.

The kit is ideal for motion picture documentary-type on-location photography, and for all still photographic purposes. Aero-Kit lighting fixtures each operate with 600-watt lamps at 120V AC-DC; each fixture can also be used with 250-watt lamps for 30V DC battery operation. The two focusing spots and focusing fill light are equipped with *new* and *improved* quartz lamp sockets which are especially heat-resistant.

The Aero-Kit is manufactured by Ryudensha Co., Ltd., Japan, one of the largest motion picture and television lighting equipment manufacturers in the world, for exclusive distribution in the U.S. by Cinema Products Corporation.

The Aero-Kit is priced at $369.00. For further information, please write to Cinema Products Corporation, 2044 Cotner Avenue, Los Angeles, California 90025.

•



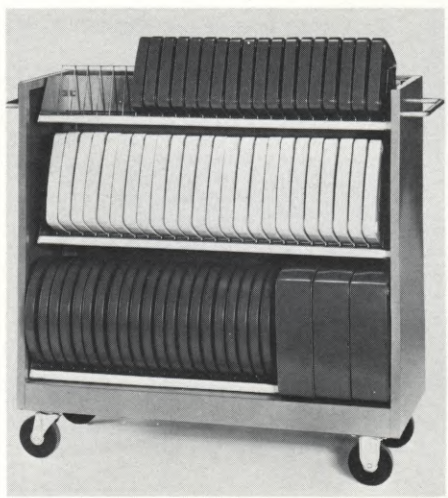
### NEW DUAL-LOCK R107U PROFESSIONAL RECORDER

Multi-Track Magnetics, Inc. offers the new Dual-Lock R107U, the first professional recorder designed specifically for universities, ad agencies, screening rooms, transfer and mixing studios. A single Dual-Lock R107U, which sells for less than $2,700, contains many of the features normally found in far more expensive recorders. The dual-lock, for example, is a simple device that serves as a mechanical interlock to a 16 or 35mm projector, or as an electrical interlock to be used with existing systems. And where a mixing set-up is needed, a number of R107U units can be mechanically coupled to form a compact set-up. By taking advantage of its coupling capability, the R107U can be easily customized to meet the exact mixing requirements of a particular set-up thus making it extremely economical.

For use with 16mm or 35mm projectors, the R107U is available with a 16/35mm capability. Two additional R107U models feature 16mm and super 8mm capability respectively. Multi-Track can also supply a 16 or 35mm projector to complement the Dual-Lock R107U.

Multi-Track Magnetic Sales Representatives are now located in the mid-west by Victor Duncan, Inc. and on the west coast by Alan Gordon Enterprises, Inc., as well as the north-east by The Camera Mart, Inc. For further information, write to Multi-Track Magnetics, Inc. at One Ruckman Road, Closter, N.J. 07024, or call (201) 768-5037.

•



### MOBILE FILM STORAGE UNIT

Plastic Reel Corporation Of America is pleased to introduce its newest addition to the MODU-LINE™ film storage series.

Called the MODU-LINE™ Mobile Film Library and Transport, this versatile film storage unit can be used as either a portable library that houses upwards of 75 films, or a mobile picking card for recirculating library operations.

The inside shelves which are fully adjustable, will accommodate either shipping cases or film cans, and can be changed from one to the other by simply removing the wire inserts and exchanging them for ones of the proper width.

Its tough, rugged construction makes

**Continued on Page 1348**

# LIGHTen up your load with portable lighting equipment from Alan Gordon Enterprises Inc.

## Aero Kit

A complete lighting set that weighs only 31 lbs. and fits in a sturdy aluminum carrying case that measures only 6½"x 12"x26½". Consists of two focusing 600W spots and two detachable rotating barn-doors, one focusing 600W broad fill light with integral four-way barn-doors, three 600W quartz lamps, three 10' 3-wire cord and switch and three heavy duty adjustable stands. Ideal for documentary or on-location cinematography where portability of lights is a must. PRICE: **$369.00.**

## Lowel-Light Vari-Flector

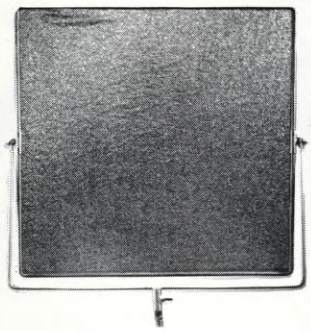
Portable reflectors that roll up into case for easy carrying. Surfaces are made of illuminized Mylar. Unique design principle provides the ultimate in sunlight-shadow contrast control. Light pattern can be spread out as much as 3-to-1 with finger-operated cam levers. Surface resists stains and scratches and stays bright with occasional dusting or washing. Takes only seconds to set up, available in two sizes: 2'x2' and 4'x4'. PRICES: 4'x4', stand and case, complete (V44SC): **$175.00.**

2'x2', stand mounting or handheld, complete with case (V22SMCC): **$75.00.**

## Special Lamp Sale

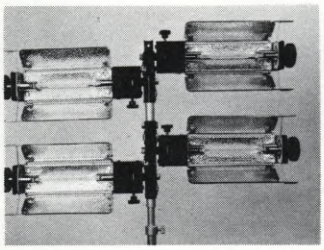
| | List Price | SALE PRICE |
|---|---|---|
| FAD | $10.80 | $ 8.65 |
| DXW | $16.40 | $13.10 |
| FEY | $36.50 | $29.20 |
| DYH | $11.70 | $ 9.35 |
| FBV | $15.45 | $12.35 |
| EKT | $10.40 | $ 8.30 |
| FCM | $16.50 | $13.20 |
| FDN | $11.90 | $ 9.50 |
| FHM | $15.95 | $12.75 |
| B532 | $15.25 | $12.20 |

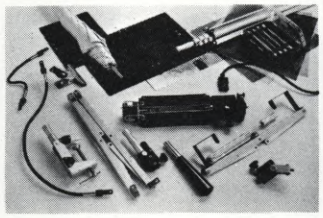
**Sale prices good through November 30, 1973. Any lamps not listed above available at 20% off list price.**



## Mini-Reflector

Featuring hard and soft sides, these 2'x2' reflectors are light enough to be handheld but come with mounting yoke for stand mounting. Several may be used when multiple reflector setup is required in limited space. Compact and easy to store. PRICE: **$40.00.**





## Lowel Tota-Light (New for '73)

Choice of 1000W, 750W and 500W quartz lighting with an integral system of lightweight modular mounting and light control components. Provides almost limitless location flexibility. Features a reflective umbrella that needs no accessories and a family of snap-together flags held by flexible arms. Using these and other components, Tota-Light can be stacked, diffused, converted in seconds to a softlight, mounted atop open or closed doors, fastened virtually to any surface and closed compactly to fit a kit or canvas pouch that loops over the belt. Available as a three-light or four-light kit.

PRICES: Three-light kit (TI-93): **$320.00.**

Four-light kit (TI-94): **$550.00.**

## Century Strand Ianebeam Spotlights

Lightweight variable focus quartz spotlights that are offered in three sizes: 650W, 1000W and 2000W. The 650W and 1000W spots are available with choice of yoke or clamp mount, the 2000W is manufactured with yoke mount only. Optional components such as accessory holder, four-way barndoors, dichroic filters, full double scrims, full single scrims, half double scrims, half single scrims are available.

PRICES:

650W, **$63.00.**

1000W, **$73.00.**

2000W, **$124.95.**

## Colortran 2k Mini Soft-Lite

An ultra-lightweight (8¼ lbs.) portable softlight. Uses two 1kW quartz lamps, each on its own switch. Equipped with a new combo stud that fits ⅝" studs of 1⅛" females. Needs no assembly. Merely plug in its 25' feed cord, turn on the light and you're ready to film. Newly designed reflector provides shadowless high output light: 110 footcandles at 10'. PRICE **$150.00.**

## Sylvania SG-65EXG Sun Gun

Portable 30V SG-65EXG Sun Gun operates from rechargeable nicad batteries. Complete unit includes 30V Sun Gun head, battery pack with built-in charger and lamp. SG-65EXG has adjustable head that lets you place the light exactly where you want it, from spot lighting to flood. Battery pack provides aproximately 30 minutes of shooting time with 250W lamp with fast recharge. Power unit weighs 17½ lbs. PRICE: **$550.00.**

## Sylvania Rapid Charge SG-77 Sun Gun

The professional movie light that's always ready to go. Powered by compact nicad energy pack which can provide power for a full 10 minutes of shooting time and recharges in only 60 minutes on either AC or an auto battery. With a second energy pack you can continue shooting while first pack is recharging. Special beam selector permits adjusting light from spot to flood even while shooting. SB-77 system contains rapid charge Sun Gun with 150W lamp, energy pack, battery recharger, universal mounting bracket and carrying case. Unit, including energy pack weighs only 3½ lbs. PRICE: **$137.95.**

## Special Sale, Like New Lighting Equipment

| | New Price | SALE PRICE |
|---|---|---|
| Colortran 500 flood, 1000W | $ 59.95 | $ 29.95 |
| Colortran scoop, 1000W | $110.00 | $ 37.50 |
| CYC-Strip, 1000W background light | $300.00 | $150.00 |
| CYC Strip, LQC 10 6-3 | $295.00 | $ 85.00 |
| Colortran Softlight, 8000W | $650.00 | $379.50 |
| Heavy Duty Crank-Up stands | $380.00 | $229.00 |
| 25' power cables, 4-way box, stage plug termination | $ 65.00 | $ 35.00 |
| "C" clamps with hanger pin | $ 9.90 | $ 4.50 |
| Mole Richardson 2000W Junior spot | $155.00 | $ 69.50 |

SERVING THE WORLD

**alan gordon enterprises inc.**

1430 N. CAHUENGA BLVD. • HOLLYWOOD, CALIFORNIA 90028

*SALES* (213) 985-5500 • *RENTALS* (213) 466-3561

# production insurance!

You take no chances with this proven professional. Because this tough little camera has the biggest reputation in the world for performance under any conditions. It's the kind of 'policy' no 16mm production can do without. See it at your professional equipment dealer — or write us for the fine print. And get protected. Your reputation rests on every frame!

## Arri 16S/B




16 S/B with 400′ magazine

**ARRI**

ARRIFLEX COMPANY OF AMERICA

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

# "My competition is starting to notice me."

When I opened Mobius Cine almost two years ago, I received six good luck cards and one potted plant from my competitors.

I've since lost the cards, the plant died, and my competitors treat me like a bad rash.

I can't say that I blame them.

With me around, the competition has had to take a long hard look at their pricing structures on motion picture equipment. My prices are rocking the boat.

They've also discovered that expedience is no substitute for selling the right equipment for the right job. I don't look at customers with dollar signs in my eyes. Now *they* won't be able to, either.

It seems that the more customers who get comfortable with the way I do business, the more uncomfortable my competitors get. So if you're a legitimate competitor, I'll be happy to send you a Sy Cane dart board (at cost, of course). It'll help you get rid of some tension.

**MOBIUS CINE LTD.**
**565 Fifth Avenue, New York, N.Y. 10017**
**(212) 697-8620**

# QUESTIONS & ANSWERS

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, Hollywood, Calif. 90028.)*

**Q I have been confused by conflicting statements regarding ECO. Since ECO is balanced for 3200°K, it is a Type A film and not a Type B film (which is balanced to 3350°K). Why should not an 85B filter be used to convert daylight to 3200°K, instead of an 85 filter which only brings daylight down to 3350°–3400°K. It seems to me that ECO must be balanced to 3400°K and an 85 filter should be used. If so, then why is an 81A filter necessary when using photoflood lamps?**

**Emulsion 5242–7242 is also supposedly balanced to 3200°K yet an 85B filter is called for which makes sense. Then why not the same for ECO and 5254?**

A As the reader astutely observes, ECO 7252 is balanced for a color temperature of 3200°K. The film has been adjusted in manufacture so that proper color balance is achieved with the 85 filter. It is a decision of the individual cameraman whether or not to use the 81A filter with photofloods. Many prefer not to employ an extra filter—and refinements in color timing are readily available from the laboratory.

Regarding 7242, much of this production is for television (news, etc.). Because of the peculiar reproduction characteristics of TV chains, a more pleasing and neutral color balance is obtained through use of the 85B filter. Kodak will be happy to discuss these problems in more detail if you will send your inquiry to their film marketing offices.

**Q When the mechanism of my camera is replaced in the camera, after having been removed for adjustment or repair, it is necessary to re-seal both the turret plate and the mechanism chassis to prevent light entering the film chamber. What sealer is recommended for this purpose?**

A I use plasticine modeling clay (the kind that never dries out), which is obtainable in any art store, or windshield sealing compound, obtainable at any auto supply store.

**Q I am planning to shoot a documentary in color in the Cinemascope format, using a 35mm camera fitted with an anamorphic lens. Is it necessary that I have special sprocketing in order that this picture can be produced for theatrical showing with Cinemascope equipment?**

A Not necessarily. The negative can be produced on film with the regular sprockets, and the prints made on standard Cinemascope print stock which, as you know, has sprocket holes of a different size than regular 35mm films.

**Q In soundstripping motion picture film, will a normal application of iron oxide magnetic track give better sound results than a laminated track? Should this be applied before or after applying a protective coat to the film? Also, if 16mm magnetic sound film is stored in a metal container, and wound on a metal spool, will this cause a loss of sound quality?**

A There should be little or no difference in the sound quality rendered by either type track. The track material should be applied to the film before the protective coating is applied. We know of no instance where magnetic film or tracks have been adversely affected by storage in metal containers or reels.

**Q I am preparing to do some aerial photography in color, using a 35mm Bell & Howell camera and Eastman Color negative. How can I insure correct exposures? What filters, if any, should I use?**

A Take a meter reading on bald blue sky, since any clouds that will be included in your shots will be the "hottest" areas in your pictures.

Three-quarter front cross-light is preferable for day shots, thy reverse for night shots. When using Eastman Color film on exteriors, always use an 85 filter on your lens. When making day-for-night shots (night effect shots filmed in daylight), combine a 60% non-graduated neutral density filter with the 85 filter. This will reduce daylight exposure two stops and create the desired illusion of night.

# One of these Canon Super-8 cameras will make your film.

## Five great cameras with zoom ratios from 3:1 to 10:1 — for the serious cinematographer.

Because so many fine movies are created in the camera, Canon gives you cameras you've been waiting for. Here, in the Canon Super-8 of your choice, you have the capability to make your imaginative movie images come to the screen, just the way you see them.

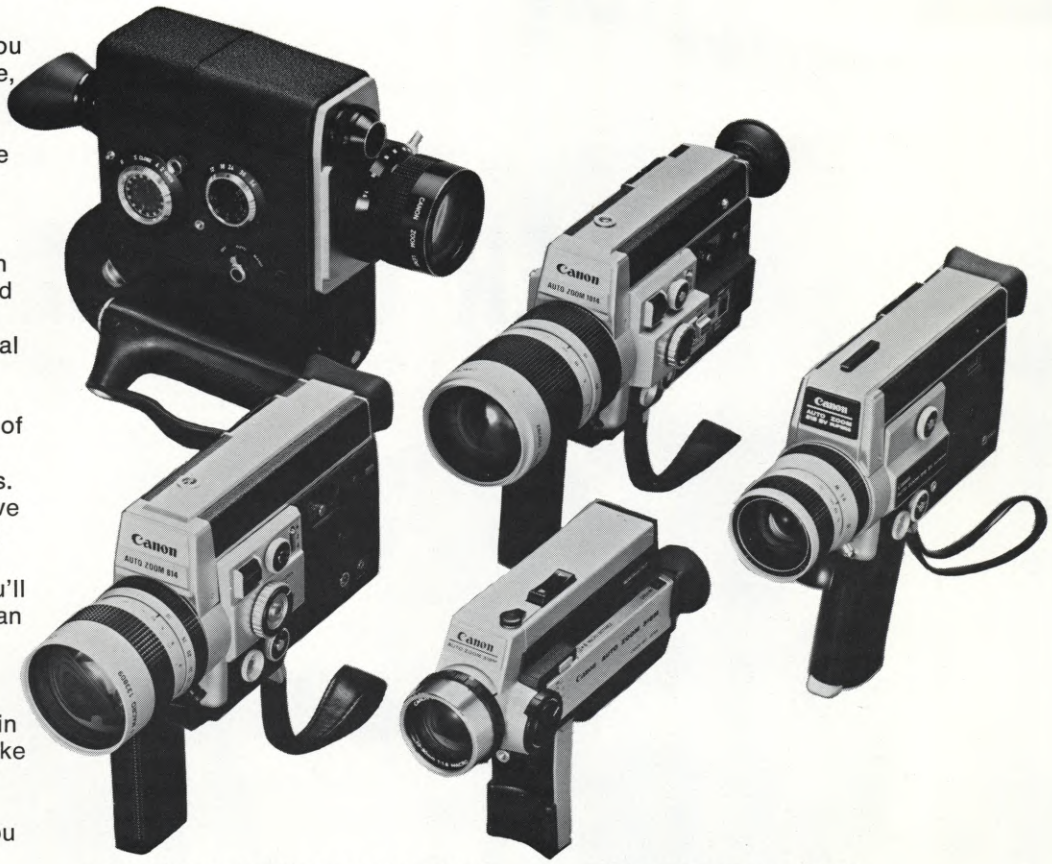
You can have shutter control that lets you fade in or out, or create professional lap dissolves. A selection of filming speeds for exotic effects and mood control. Automatic or manual exposure capability to suit your special feeling, or adjust to tricky lighting situations. Super close-ups without special accessories. Plus a full range of accessories when you do want them. And, of course, a wide range of zooms.

All these great Super-8 cameras give you the strength and smoothness that Canon is world famous for. Whether you're zooming or single-framing, you'll appreciate the ease with which you can control the various operations.

In their balance, ease of handling, and responsiveness, all five Canon Super-8's feel as though they belong in your hands, just waiting for you to make the moves that make the movies. And the unsurpassed quality, even in the most modestly priced models, tells you these are Canon cameras. Unmistakably.

Wherever you want to go in film-making, you'll have a great start with these sophisticated cameras right now. And you'll be on your way to producing the movies you really want to make. With Super-8 cameras from Canon, maker of the best selling cameras in Japan.

Visit your Canon photo dealer and check out these great cameras for yourself. Or write for more information. Whatever you want your film to be, a Canon Super-8 will make it for you.




**CANON Zoom DS-8 Double Super-8**

Uses double-8 film for 200 continuous feet of shooting. Zooms 8:1 (7.5-60mm) with fast Canon f:1.4 lens. SLR viewfinder with split-screen rangefinder focusing. Servo automatic exposure control system. Plus variable shutter control, motor driven rewind, film speeds from 12 to 54 fps and single frame.

**CANON Auto Zoom 1014 Electronic**

Power or manual zooming through spectacular ten times ratio (7.0-70mm). Fast Canon f:1.4 lens with built-in macro capability. Variable shutter control plus lap dissolve and superimposition capabilities. Servo aperture control meter through the lens. Remote control shooting plus single frame with synchronized flash, and choice of filming speeds. Interval Timer E for time lapse, special effects. Self Timer E for delayed action filming that gets you in the picture, right from the first frame.

**CANON Auto Zoom 814 Electronic**

In so many ways the shooting twin of the 1014 but with zoom ratio of 8:1 (7.5-60mm). Same fast Canon f:1.4 lens, plus macro mechanism for close-ups without attachments. Variable shutter control, servo electric eye meter reads through the lens. Remote control shooting plus single frame with synchronized flash, and range of speeds plus Interval Timer E and Self Timer E.

**CANON Auto Zoom 518 SV**

More than just a superb value in a Super-8, the 518SV is perhaps one of the most versatile moderate-cost cameras of its type. Fast Canon f:1.8 lens with power or manual zoom (9.5-47.5mm). Highly accurate exposure control with servo meter readings through the lens. Aperture control allows high and low key filming plus fades. Wide range of filming speeds, too, with important accessories available. Zoom range can be extended through use of Wide-Converter and Tele-Converter.

**CANON Auto Zoom 318M**

A camera to start with — and to stay with. High resolution Canon 11-element lens has excellent color balance, plus power (or manual) zooming from 10mm to 30mm. Focus-easy system yields great depth of field. Also features single-frame capability, SLR-type viewfinder and close-up shooting (near as 8⅞" from film plane) and macro adapter. Folds up grip-to-body for easy transit. Ideal vacation camera that produces Canon-quality films.

**Canon®**

Canon USA, Inc., 10 Nevada Drive, Lake Success, New York 11040
Canon USA, Inc., 457 Fullerton Avenue, Elmhurst, Illinois 60126
Canon Optics & Business Machines Co., Inc., 123 East Paularino Avenue, Costa Mesa, California 92626
Canon Optics & Business Machines Canada, Ltd., Ontario

# NEW

FROM

# Gordon Yoder, Inc.

Formerly
Professional Cine Products, Inc.

**PROFESSIONAL MOTION PICTURE EQUIPMENT & SUPPLIES**

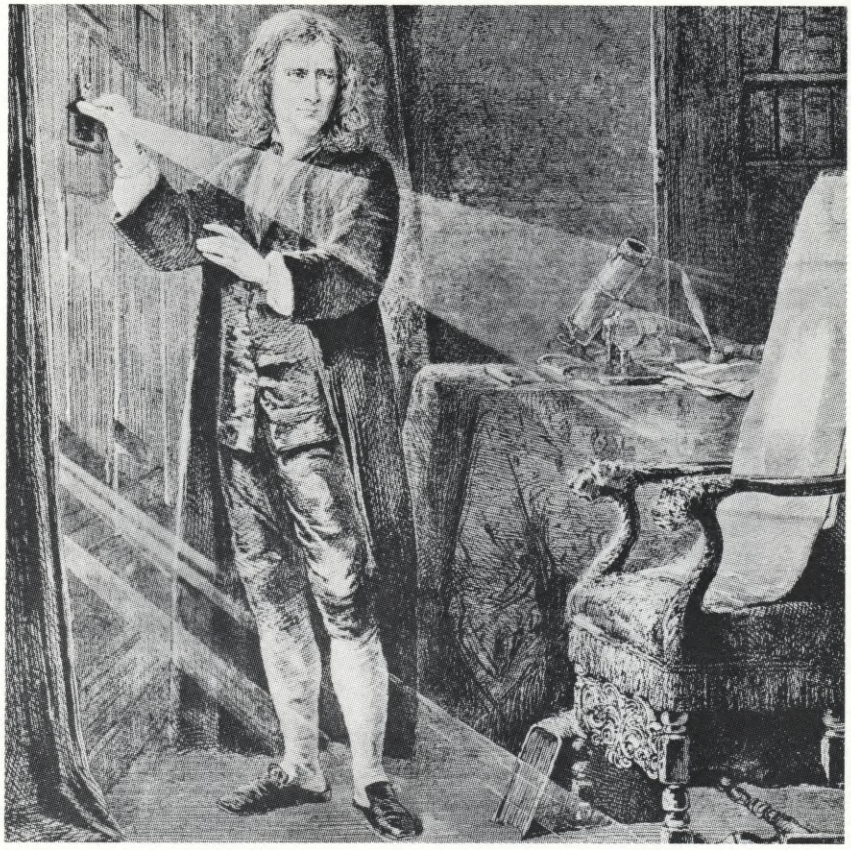
# YODER CRYSTAL 16

NEWS AND DOCUMENTARY FILM CAMERA
FOR SINGLE AND DOUBLE SYSTEM

WRITE OR CALL FOR FURTHER INFORMATION

**2840 REWARD LANE, DALLAS, TEXAS 75220**
**Phones (AC 214) 357-3045 or 357-2725**

# Pioneering has always been a lonely business...



## ...but it's the one first step to total service.

Total service? Cinema Research covers the field of optical printing. Color and density corrections, matte shots, inserts, titles, 16-35mm enlargements and reductions, 16-16 and 35-35mm combinations. Name it. We do it.

Pioneering? Many of the techniques used in optical printing today originated at Cinema Research, such as

- the first commercial submersible liquid gate
- first additive head printing for 16mm masters and blow-ups
- retention of original key numbers on 16mm & 35mm optical negatives
- anamorphic blow-ups from 16mm flat originals
- multiple panel techniques in 35mm and 16mm
- first "artwork to film" aerial image
- film to film aerial image
- silk screen process for producing titles
- color analyzers for better quality
- high contrast processing for precision mattes
- specialized equipment for shrunken films
- ultrasonic film cleaning
- in-plant registration contact printing for quality interpositives and negatives

... all these and more are standard services used daily at Cinema Research.

It's not really surprising that this should be the case. Our staff of pioneers is made up from the finest technicians in the industry. Their combined experience is equivalent to 300 years of optical printing. Their creative enthusiasm arises naturally from a sense of absolute mastery of their field. To such master craftsmen as these there are no "problems," only fascinating opportunities for possible new solutions; solutions resulting not only in new ways and techniques, but in increased speed and economies.

To give them the greatest possible freedom to operate, we have provided the finest tools available, including the new Research Products optical printers, all housed in a building specifically designed to meet our particular needs—complete with controlled temperature and humidity 'clean-room' atmosphere.

So if you have a problem (oops, sorry) *opportunity*, bring it to the pioneers of Cinema Research Corporation. We specialize in new solutions and expanding horizons. Or, perhaps, your need is not so much exotic as plain scarey; say a deadline so hot you even hesitate to put it into words. Relax. That too, is an old story out our way. We're fast and effective and our prices are a lot closer to 1969 than 1973. That's a pretty effective form of pioneering itself.

Write or call Cinema Research Corp., 6860 Lexington Avenue, Hollywood, California 90038; Phone **(213) 461-3235.** Ask for Jack Glass or Hal Scheib.

**CINEMA RESEARCH CORP.**

# CINEMA WORKSHOP

## By ANTON WILSON

### SYNCHRONOUS MOTORS

Historically, the synchronous motor is probably the most important of all the types of camera drive systems. From the beginning of sound pictures to the present time, the synchronous motor has been at the heart of double-system sound production, both in the studio and on location. Although its popularity on location has waned in recent years (due to the introduction of the crystal servo motors), it still remains one of the most used, least complex and least expensive of all studio double-system sound techniques.

Before discussing the synchronous motor, we must first take a look at the electric power that comes out of the wall socket. Power in this country is usually 117-volt 60-cycle A.C. The important point here is not so much the voltage, but the 60-cycle A.C. The A.C. stands for "alternating current" as illustrated in FIGURE 1a. Here it can be seen that the power sinusoidally changes polarity 120 times a second. The synchronous motor is constructed with special windings that respond to these changes in polarity.

**FIGURE 1a—Diagram illustrating how alternating current changes polarity sinusoidally 120 times a second.**

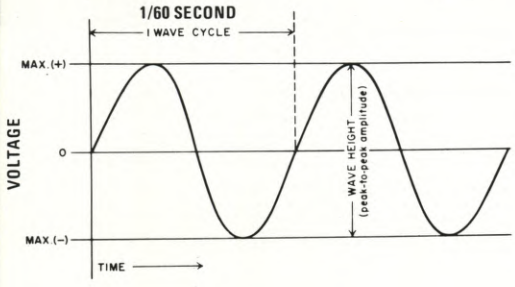
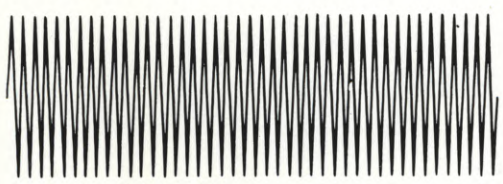



**FIGURE 1b—Diagram showing how the peaks of A.C. power correspond to the teeth of a gear.**



For example, an electric wall clock is probably the most familiar of all devices powered by a synchronous motor. The motor in the clock is designed in such a way that for every 60 cycles of A.C. power, the second hand moves one second (or the second hand will make one revolution for every 3600 cycles). Take a look at FIGURE 1b. Hopefully this rendering of several cycles of A.C. power will suggest a "gear" the peaks of power corresponding to the teeth of a gear. This is precisely what is actually occurring. The A.C. cycles essentially drive the synchronous motor much like one gear meshes and thus drives another. For a given number of cycles, the motor will be driven the specified number of revolutions.

The motion picture drives in this country are designed so that for every 60 cycles, the motor will turn the camera 24 frames *exactly.* Remember, the motor is essentially "geared" to the A.C. current—for every 60 cycles, the camera moves 24 frames.

The main theory of shooting double-system with synchronous motors should now be clear. Any number of cameras with synchronous drives and any number of sprocketed recorders with synchronous drives may be employed, and all units will be in sync with one another (assuming they are all plugged into a common power source). Because they are all powered (and thus "gear driven") by a common A.C. signal, they are all essentially "geared" to each other. If the speed of the 60-cycle signal should deviate, all the cameras and recorders will likewise deviate the identical amount.

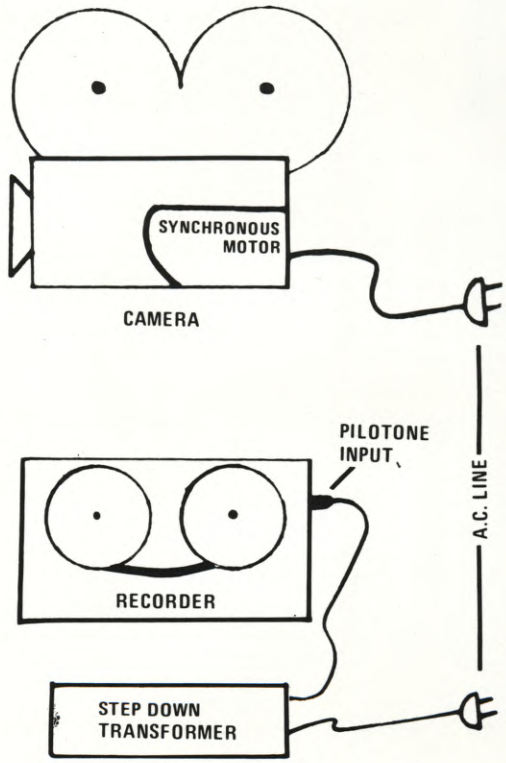
Note that the synchronously-powered recorders mentioned earlier were sprocketed and not ¼-inch. A synchronous motor on a ¼-inch tape recorder would be useless. For that matter, any precision digital motor (such as a crystal drive) would be useless on any capstan drive recorder. When a sprocketed recorder is driven with a precision motor, one is assured that the sound tape is, likewise, traversing at the precise speed because it is "geared" to the recorder drive via the sprocket holes.

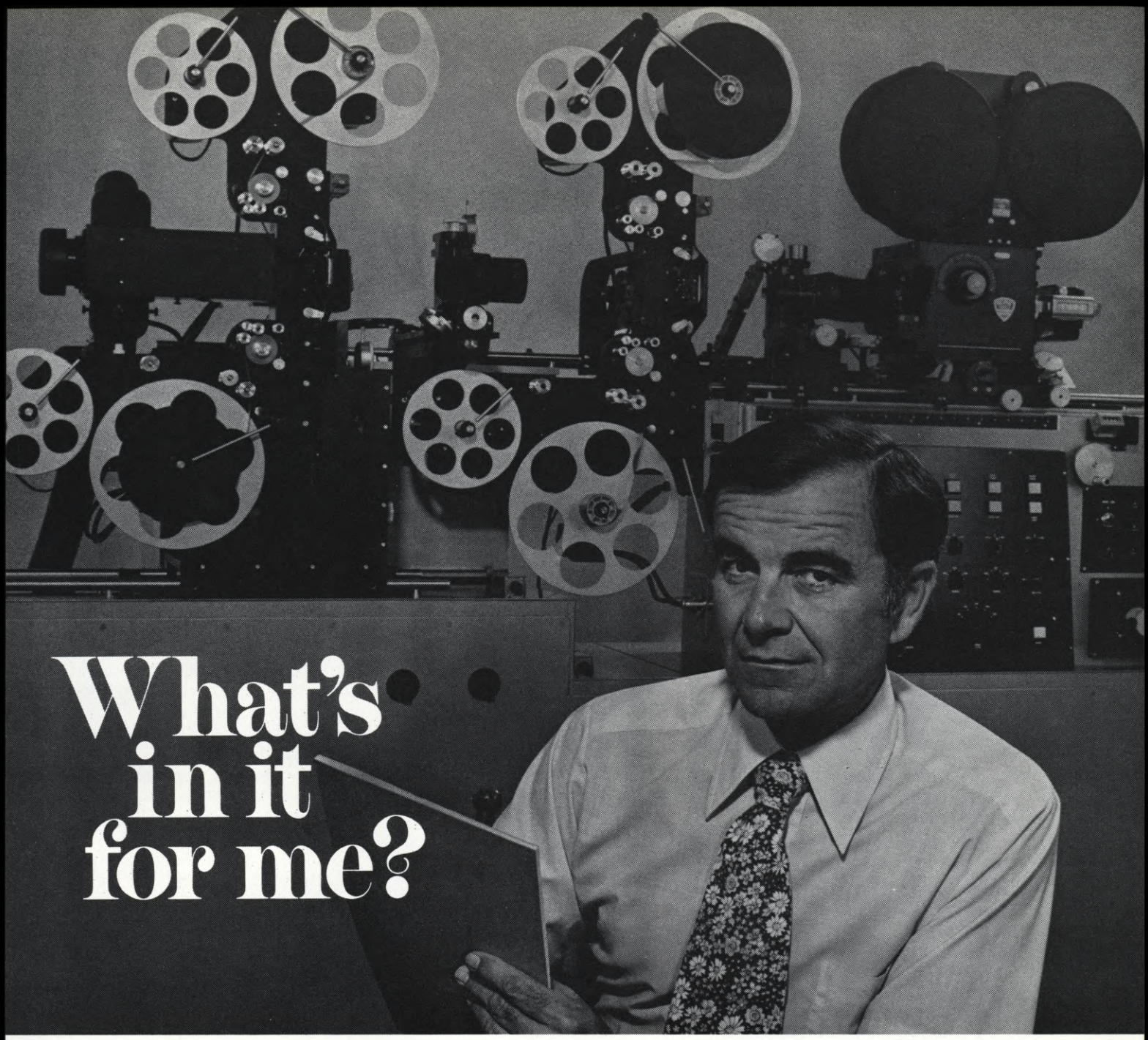
On the other hand, there is no guarantee that the tape in a capstan machine will follow the precise speed of the capstan drive. The tape can slip in the capstan during recording or transfer, and could also stretch or shrink subsequent to taping.

This does not mean one cannot use a ¼-inch recorder for double-system synchronous filming. FIGURE 2 illustrates a simple and accurate method for double-system, employing a ¼-inch capstan recorder with a pilotone system. Any number of cameras with synchronous motors may be employed. The recorder is powered by its internal batteries. However, it receives a sync signal from the A.C. line. All that is necessary is a small step-down transformer that takes the 117-volt 60-cycle

**Continued on Page 1343**

**FIGURE 2—A simple and accurate method for double-system, employing a 1/4-inch capstan recorder with pilotone system.**





# What's in it for me?

Maybe we ought to start out by saying what is *not* in our new Model 2101 Aerial-Image Optical Printer.

To be exact, we left out mechanical gear trains, levers, one horsepower motors, shafts, stop-motion clutches, solenoids, relays, knuckle joints and a lot of other things like that. We thought of it as leaving out trouble. After all, if mechanical drive systems are going to wear, vibrate, backlash, gum up, drag or stick, you know when they are going to do it. Right in the middle of your rush job. When else?

Not any more.

Which brings us back to that original question. What we put in, in place of all that worry, was our space-age drive system called "PhotoTron". It's an all electronic film drive using computer-accurate stepping motors and solid-state electronics on snap-out circuit cards. That's right, *snap-out* circuit cards. They may not exactly eliminate down time, but they should put a pretty big dent in it.

If all that sounds pretty good, listen to this. We made our new printer automatic. Automatic zooms from 4X enlargement to 5X reduction, automatic dissolves, logarithmic or linear for perfect fades or dissolves without overlap, an automatic shutter that can be programmed, at the flip of a switch, over a predetermined fade count, and an automatic skip-frame programmer that gives you unlimited combinations at all speeds and with three heads at once.

Sound pretty impressive?

We like to think so, but there's more. By making the drive system all-electronic, it can be adapted easily to computer control or tape programming. So when you're ready for this, you'll know that your Model 2101 will be too.

Price? Brace yourself. The lowest in the industry for an optical printer with the same features. That's something you don't hear every day. But it's really very simple. By throwing out all that expensive tailor-made hardware and simplifying construction, advantage went up and cost of manufacture went down.

What's in it for you? Plenty.

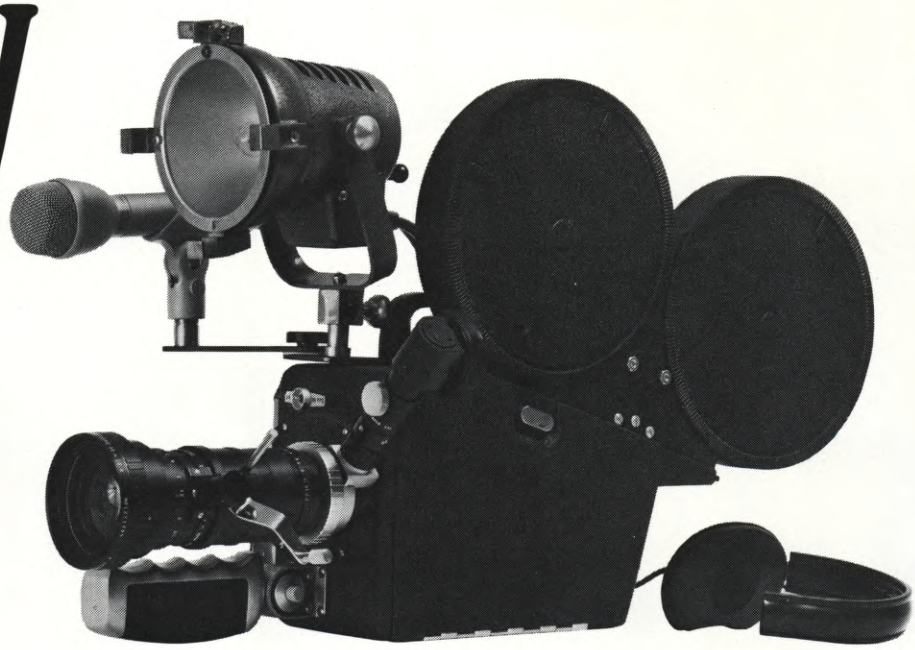
Write, wire or phone for our full line catalog and our custom engineering capabilities. Research Products, Inc., 6860 Lexington Ave., Hollywood, Calif. 90038; Phone: **(213) 461-3733;** Cable: "RESEARCH"

Purchase or lease plans available.

RP **RESEARCH PRODUCTS**

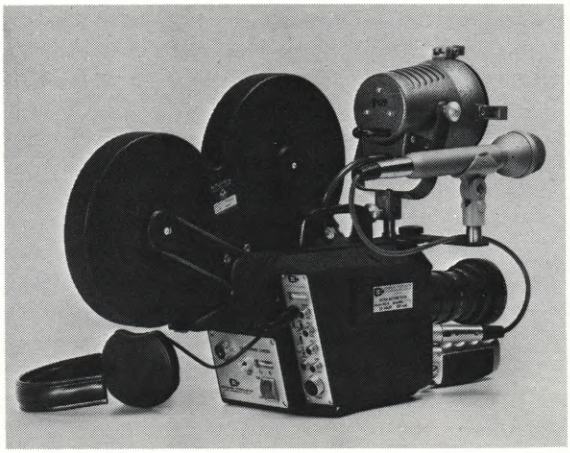
*Research Products are Products of the Future*

# Ready to Solo?



Lately, more and more TV-newsfilm cameramen have been called upon to go it alone—responsible for both picture and sound. With our CP-16/A news / documentary camera you are ready to "take off" in no time. Ready to go any place. Cover any assignment. Solo or not.

The CP-16/A is the ideal camera to solo with. Grab the handle of a CP-16/A, and you pick up a complete camera and sound system. Lightweight, rugged, dependable. And extremely silent in operation.



The compact CP-16/A rests easily on your shoulder, its silhouette low and unobtrusive. Its balance makes the CP-16/A feel as comfortable and natural as an extension of your own body. Its total systems design gives you complete freedom to "do your thing" as it was meant to be done.

Freedom to move in and out of tight shooting situations. Freedom to mingle in a crowd without distracting it. To merge with the action without intruding on it.

The CP-16/A Crystasound amplifier is built-in—designed from its very inception to be an integral part of a total modular camera and sound system. An amplifier system not tacked on. Not an afterthought. The Crystasound 3XL magnetic record/playback head provides extra long life, and never requires adjustment.

The CP-16/A also features a snap-in nicad battery which will drive some 4000 feet of film on a single charge; Mitchell-type 400 ft. or 1200 ft. magazines which can be instantly attached to the camera due to a unique spring-loaded sliding latch; and a super accurate crystal controlled motor, making the CP-16/A an outstanding sound camera—both single *and* double system sound.

The CP-16/A is a no fuss, no hassle camera. No fidgety frills. No headaches. No backaches.

So you can concentrate on the action. And capture it on film. Picture *and* sound. Solo or not.

**The CP-16/A**
**... a cameraman's kind of camera.**

SYSTEM CP-16

CP-16/A camera shown with Mike/Lite bracket, RE50 microphone, and Cinema Products' new *Sturdy-Lite* quartz 250-watt/30V battery-operated focusing spot light. The *Sturdy-Lite* focusing spot weighs only 12 ounces!

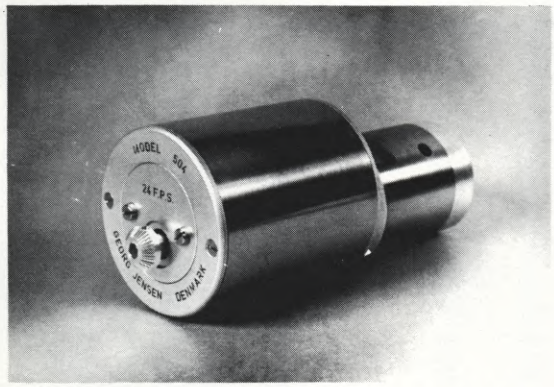
*For further information, please write to:*

cinema products CORPORATION

*Technology In The Service Of Creativity*

2044 Cotner Avenue, Los Angeles, California 90025
Telephone: (213) 478-0711 ■ Telex: 69-1339 ■ Cable: Cinedevco

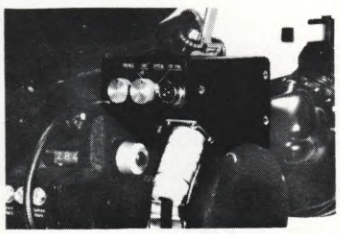
# Crystalize Now!



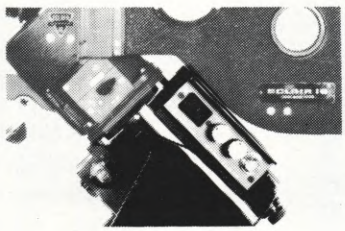

**Arri S or M Model 504**

**With the unique Jensen 504. $975**

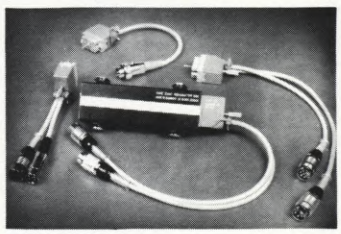
- Automatic out-of-crystal sync safety stop.
- No cables or adaptation — simply slip into camera and crystal sync with other cameras, recorders.
- Uses your standard battery and cables.



**Arri BL**
Model 505
$775

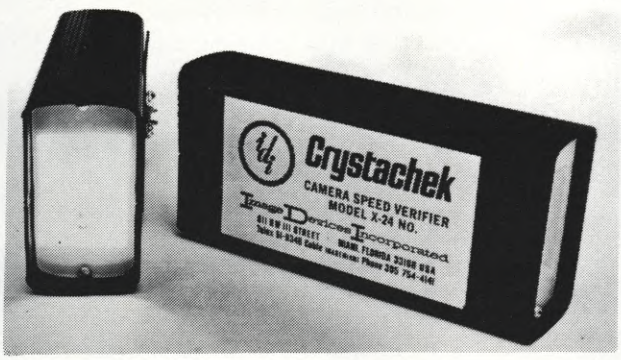


**Eclair NPR**
Model 508 Conversion
$975



**Any Tape Recorder**
Model 550
$250

## New Crystal Checker!




Model X-24 (24fps) or X-25 (25fps) only $200.

Slip the new IDI Crystachek out of your pocket, switch it on, and point the internally crystal controlled flashing light at your shutter to check camera speed to 24 frames ± 0.001%. A model is available with external reference so you can match recorder and camera crystal.

IN MIAMI
YOUR CINE
EQUIPMENT RENTAL
SALES & SERVICE SOURCE
FOR
S.E. USA · CARIBBEAN · BAHAMAS

*Esoteric Sight & Sound Equipment*

Image Devices Incorporated
811 NW 111 STREET · MIAMI, FLORIDA 33168 USA
Telex 51-9348 Cable IMAGEMIAMI Phone 305/754-4141

idi

# THE BOOKSHELF

By GEORGE L. GEORGE

BASICS OF THE CRAFT

The 4th edition of AMERICAN CINEMATOGRAPHER MANUAL, recently issued by the American Society of Cinematographers, has been in the making ever since 1969, when the 3rd edition was published. What with Charles G. Clarke and Walter Strenge as its compilers and editors, a more qualified team of experts would be hard to assemble.

The manual's indispensable nature for cameramen at every level of proficiency, its exhaustive yet succinct coverage of all technical data of the craft, and its handy pocket-size format, bound in durable plastic, are too well known and appreciated to need further comment. What the 4th edition contributes is the revision and up-dating of information contained in previous issues, together with an evaluation of every new device, procedure and tool that has become available to date. Through abundant text, diagrams, tables and illustrations, the Manual covers cameras, lenses, accessories, color/b&w film, lights, exposure, processing and such specialized subjects as Super 8 and 16, day for night cinematography, helicopter shooting and blue screen. (ASC $17.50).

* * *

An attractive pictorial and statistical yearbook, SCREEN WORLD 1973 (Crown $8.95) combines the eye appeal of a profusely illustrated almanac with reliable reference data. Over 1,000 photographs and some 8,000 entries document all features released in the U.S. last year. Full cast-&-credits including cameramen, biographies, and vital statistics are included.

* * *

Leonard Maltin's comprehensive survey, THE DISNEY FILMS (Crown $9.95) will delight film buffs and serious students alike. An attractive large format volume, it is copiously illustrated and covers the full range of Disney's work (features, cartoons, TV shows and documentaries). While the tone is a trifle idolitory, the scholarship is irreproachable.

* * *

PORTRAIT GALLERY

Lotte Eisner's classical study, MURNAU (U. of California Press $10.95/4.50), originally published in Paris in 1964, provides the first comprehensive English text about the director of such cinematic milestones as *Nosferatu* (1921), *The Last Laugh* (1924), *Sunrise* (1927) and *Tabu* (1929). The book contains Murnau's biography, a critical interpretation of his theories, a first-hand account of his working methods, a detailed analysis of his films, and *Nosferatu's* screenplay.

* * *

An extraordinary gift for total recall of the spoken word enables playwright Kieran Tunney to recount his most intimate memories in TALLULAH—DARLING OF THE GODS (Dutton $6.95). The late star appeared in 17 films, from *When Men Betray*, a forgotten 1919 epic that brought her rave notices, to the 1966 *The Daydreamer*, in which she dubbed the Sea Witch's voice. This biography is entertaining, sentimental and seemingly quite genuine.

* * *

Hollywood is dead. Long live Hollywood. This is the buoyant approach to a dream world in transition as seen by Arthur H. Lewis in IT WAS FUN WHILE IT LASTED (Simon & Schuster $8.95). Zesty interviews involve, among others, Mae West, Edward G. Robinson, Zsa Zsa Gabor and John Wayne, as well as Lewis Milestone, Dore Schary, skin-flick producer David Friedman, and ASC members Hal Mohr and James Wong Howe.

* * *

An important but little remembered innovator is recalled in Kalton C. Lahue's lively and documented book, MOTION PICTURE PIONEER: THE SELIG POLYSCOPE COMPANY (Barnes $10). Starting as a minstrel show magician, "Colonel" William Nicholas Selig switched to manufacturing projection equipment in 1896 and then to film production with such stars as Hobart Bosworth, serial queen Kathlyn Williams and Tom Mix. Unfortunately, most of Selig's films are lost, but Lahue's research and illustrations provide a fascinating look into the past.

* * *

INDUSTRIAL KNOW-HOW

A welcome clarification of the business side of filmmaking in all its often confusing procedures is provided in PRODUCING, FINANCING AND DISTRIBUTING FILM. Written by two experts, attorneys Paul A. Baumgarten and Donald C. Farber, the book is a clearly conceived, detailed and practical guide to all the interdependent facets of a film deal. From the acquisition of a literary property to agreements with exhibitors, it examines everything on the production end, such as contracts with talent and technical personnel, studio rentals, as well as sources of financing and distribution procedures. ($12.50 from DBS, 150 W. 52 St. NYC 10019.)

* * *

Technical advances in TV film and VTR production methods are reviewed and summarized in an excellent up-to-date manual by Gary Jones and Phil Squyres, 1973 ELECTRONIC FILM/TAPE POST-PRODUCTION HANDBOOK. Its discussion of timecode videotape editing introduces to movie studios, TV stations and film courses the inexpensive and novel technique of "manual off-line editing systems." ($2. from Fratellitre Comm., 3883 Turtle Creek Blvd., Dallas, Tx. 75219.)

* * *

Reprinting the contents of the U.S. Copyright Office Catalog of registered m tion pictures (1894-1969), a set of 10 booklets reproduces its 50,000 film list, adding copyright renewal data for over 25,000 of them and indicating the public domain status of the balance. Compiled by Johnny Minus and William Storm Hale, these BOOKS OF PUBLIC DOMAIN FILMS provide useful information for the royalty-free exhibition of movies. ($5.95 ea. from Seven Arts Press. 6430 Sunset Blvd., Hollywood, CA 90028).

* * *

WRITE ON!

Several new scripts have been added to the ever-growing number of this popular genre. An excellent example is CASABLANCA (Viking $7.95), directed by Michael Curtiz and written by Howard Koch and the Epstein brothers. In addition to the screenplay itself, the book offers an analysis by Richard Corliss, of its meaning and impact, press reviews, and Koch's description of problems that surrounded the film's making.

* * *

Novelist and scriptwriter John Collier's audacious undertaking to turn into a screenplay the classical 17th century epic poem, MILTON'S PARADISE LOST (Knopf $6.95), gives contemporary perspectives to Old Testament characters and religious beliefs of another era. This is a highly literary work, a challenge to any present day DeMille.

* * *

Costa-Gavras' sensational STATE OF SIEGE (Ballantine $1.50), written by Franco Salinas, is as dramatic to read as it is to view. Appended documents relate the movie to the realities of CIA-dominated South American politics. Francois Truffaut's THE WILD CHILD (Simon & Schuster 95¢) is the script of the moving "documentary" about the re-education of a forest-reared boy. BILLY JACK (Avon 95¢), directed by T. C. Frank from Frank and Theresa Christina's script, is a case history of successful independent filmmaking.

# Stellavox. Your best investment in professional sound recording equipment.

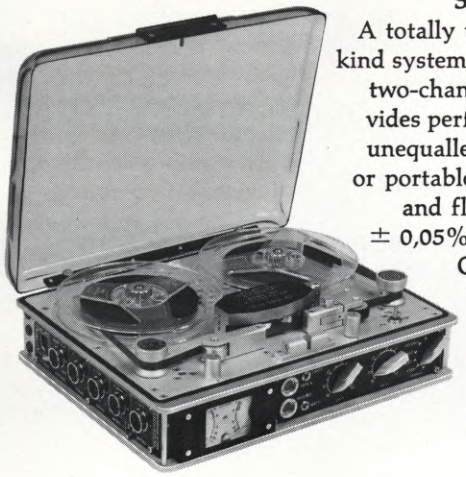
All Stellavox sound systems are designed and manufactured in Switzerland (land of engineering perfection) and incorporate the latest, most advanced "state-of-the-art" features* which provide *the* highest quality sound reproduction *every time* (even under the most demanding on-location recording conditions).

* **Plug-In Head Modules** (Only Stellavox recorders feature the capability of being able to accept all the mono and stereo track configurations in modules that are each individually tailored for ultimate performance on a specific recorder)

* **Increased Reel Capacity** (With the Stellavox ABR extension accessory, reel capacity is increased up to 10½" for longer recording time)

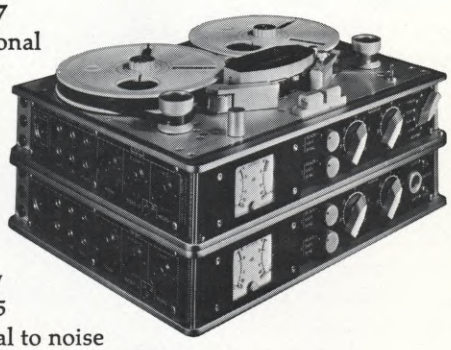
* **Battery Operation** (In addition to AC operation, all Stellavox recorders operate on batteries thus permitting the utmost in portability and flexibility)

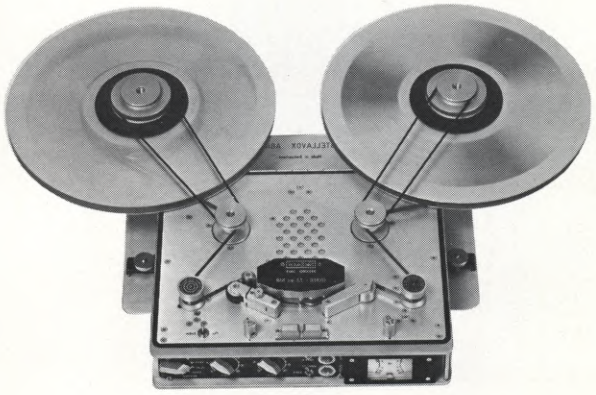
* **Professional Accessory Line** (A full selection of professional accessories are available for each Stellavox recorder)



**Stellamaster SM-7** A totally unique, one-of-a-kind system, the Stellamaster two-channel recorder provides performance abilities unequalled in either studio or portable recorders. Wow and flutter (weighted): ± 0,05% (0,04% typical). Overall frequency range: 20 Hz to 28 kHz ± 2 dB. Signal to noise ratio: 74 dB (Maxell UD 50)

**Quadrasonic SQ-7** The only professional 4-channel battery operated unit of its kind available today. Wow and flutter (DIN weighted): ≤ ± 0,06%. Overall frequency response: 25 to 25 kHz ± 2 dB. Signal to noise ratio (rel. 800 nW/m): ≤ 66 dB ASA A.





**Stellavox SP-7** The ruggedly built SP-7 is so compactly designed that you'll be amazed at how little it weighs (only 8 lbs. with tape and batteries). Wow and flutter: < ± 0,07%. Overall frequency response: 30 to 16,000 Hz ± 2 dB. Signal to noise ratio, weighted (ASA A filter) > 65 dB stereo and > 70 dB full track (at 50 mMx/mm).

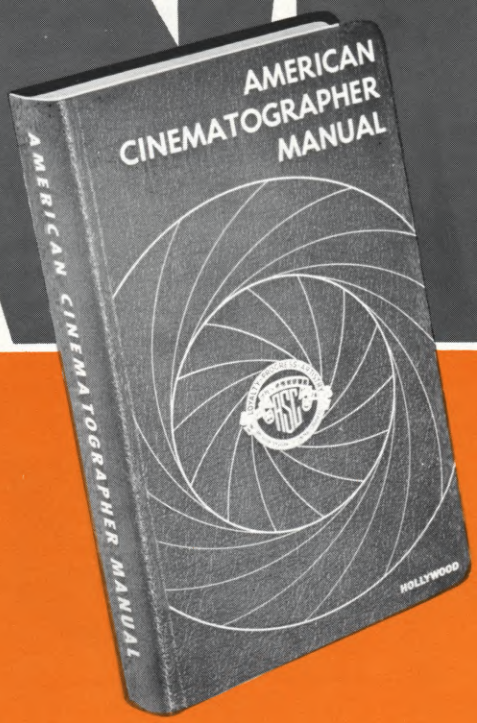
Each Stellavox recorder is backed by warranty service which is available through our service center in Los Angeles. Factory trained technicians, utilizing a full stock of parts and the latest in laboratory measuring devices, will handle all aspects of quality control, maintenance and repair of Stellavox products.

If you would like to receive full technical information on the Stellavox line of professional sound recorders, please write to:

Hervic CORPORATION

**Technical Products Division**
**14225 Ventura Boulevard**
**Sherman Oaks, California 91403**

# NEW!




# FOURTH EDITION

## AMERICAN CINEMATOGRAPHER MANUAL

**COMPILED AND EDITED BY TWO VETERAN CINEMATOGRAPHERS**

**CHARLES G. CLARKE, A.S.C.**
**and**
**WALTER STRENGE, A.S.C.**

## MOST COMPREHENSIVE COMPILATION OF CINEMATOGRAPHIC DATA EVER PUBLISHED !

This easy-to-carry, pocket-size, concise, book contains practical, informative text, tables, charts, diagrams, drawings and listings of all the latest production equipment and filming techniques in use today!

Key word printed on the edge of every right-hand page provides INSTANT INDEX for quickly locating desired data!

Completely updated Filter, Lighting and Lens sections. Data on most recent camera developments. Complete shooting data for Theatrical, Non-theatrical and Television cinematographers filming 16mm, 35mm or 65mm anamorphic or spherical motion pictures in any aspect ratio, in color or black and white, silent or sync-sound, in the studio or on location.

An Official Publication of the

**AMERICAN SOCIETY OF CINEMATOGRAPHERS**

Dealers are invited to write for quantity discounts.

**THE AMERICAN CINEMATOGRAPHER MANUAL**
**P.O. BOX 2230** **4TH EDITION**
**HOLLYWOOD, CALIFORNIA 90028**

Please send_____copies of the AMERICAN CINEMATOGRAPHER MANUAL @ $15.00 each, postpaid. No C.O.D.s'

*After September 1, 1973 $17.50*

NAME.....

STREET.....

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

# Now that you've bought a top lens, which camera should you own?

## CANON.

Truth in optics. A new generation, a new standard of lens performance, made possible by research at the molecular level. Utilizing artificially-crystallized fluorite apochromatic correction, chromatic aberration has been reduced to near-theoretical limits.

A superb example: the Canon 6x14 14-84mm zoom, designed specifically for the super-16 format. Its f/2.0, 16-element design provides a 14.35mm maximum image diameter. And actually exceeds the performance of many fixed lenses.

No less impressive is the C10x12 12-120mm macro zoom. Incorporating a new f/2.2, 18-element design, it provides close-focusing up to 1mm from the lens' front surface—and a wide variety of special effects.

But a superior lens is only as good as the camera behind it; so what camera should you own?

# THE HONOR ROLL

## HAROLD ROSSON, ASC

Harold Rosson began his career in film as an actor in the Vitagraph Studio, Shepherd's Bay, Brooklyn, New York at Christmas time in 1908. He went there to visit his brothers who were employed as actors.

Rosson's first assisting job was with Irvin Willat, who was the brother of Doc Willat and they had a lab in New York. Irvin was a cameraman at the Mark Dittenfass studios on the Old Morris Estate facing the Hudson south of Yonkers. The assisting job consisted mostly of making coffee for the cameraman. Irvin Willat knew a great deal about the technical end of photography and he used to do a hand test at the end of each reel of film. After the scene was shot he would run an extra foot or two of film, remove the film from the camera and give it to Rosson to go into a makeshift darkroom in the studio and develop the film to determine if it was going to be good.

Rosson also did some work for the Tannhauser Studio in New Rochelle for Carl Gregory who had worked with Akeley in Rhodesia.

In 1912 Rosson divided his time earning a living as an office boy in a stockbrokers firm and rushing up to the Old Famous Players Studio on 26th Street in New York to work assisting and as an extra and general handyman working for Lyman Brunning.

At the outbreak of the First World War in Europe in 1914, the Stock Exchange was closed for sixty days and people were thrown out of work so Rosson was able to devote himself fulltime to the picture making business.

He got a job in Green Point in Brooklyn as a ticket seller, ticket taker and projectionist in a little theatre.

In December of 1914, he was urged by his family to move to California since they were all working in studios there.

Rosson took a boat to New Orleans and a Southern Pacific train to Los Angeles and arrived at the First Street station late at night. Because he had little money in his pockets he decided to walk rather than take a streetcar the ten miles to Hollywood. Therefore, he arrived in Hollywood on foot. When he reached Hollywood Blvd. he began to look for Gower Street where his family was living. He finally recognized the family home because he had seen it in motion pictures.

He went to work for Metro Picture Corp. as an assistant to Danny "Kidd" Hogan who was the property man. Rosson's other assignments were assistant to the cameraman, assistant to the assistant director, still man and fan mail handler.

Arthur Cadwell was the cameraman at that time and fortunately for Rosson, Cadwell would permit him to do anything and everything he wanted to do and actually let him crank the camera.

Rosson worked at the studio in California for eight months and then was told that they were moving back to New York and Rosson could have his job in New York if he appeared there. Rosson managed to "appear" in New York and subsequently received a raise. He continued to work for Metro Pictures Corporation for three years traveling back and forth across the country.

In 1915 Rosson was a cameraman on his own. He was hired in 1916 by George Kleine who was the "K" in Kalem. He was making a serial in New York starring Billie Burke at the Biograph Studio on 175th St. in Bronx. Rosson was hired on an introduction by Don Bell under the guise of a Bell & Howell expert.

About 1917 Rosson was hired as a cameraman for Famous Players Company in Hollywood. This was the dream studio.

During those days there were no light meters and in order to light scenes it was a matter of balance and feeling.

Then went to Chicago to work for the Essenay Company and used nothing but Bell & Howell cameras and then joined up with the Army, in Spartanburg, South Carolina as a member of the 102nd Engineers and eventually was transferred to the ordnance department of the 27th Division, and photographed the receiving of British decorations to the 27th Division, this was the only photography I did during the war.

The day after Rosson was demobilized in New York he went to work on the Marion Davies picture, "DARK STAR", in Ft. Lee, New Jersey with Lyman Brunning as cinematographer.

Cameramen had to have their own cameras and so he was able to borrow a Pathe from an old friend of his David Abel who was then shooting a picture with Norma Talmadge.

On the completion of "Dark Star", Rosson was offered a contract with the Davies company and did "Buried Treasure" and "Heliotrope".

Rudolph Valentino was to have done "Buried Treasure" with Miss Davies but starred in another picture called "Four Horses of Apocalypse" instead.

The Davies Company was working in California and was located at the Robert Bronson Studios in Hollywood.

In 1920 Rosson was signed by Mary Pickford as a cameraman but not to work on her pictures. Instead he worked on pictures starring her brother Jack Pickford.

Later Rosson worked for the L. B. Mayer Picture Corporation and then Metro, Goldwyn, Mayer studios after which he went to First National to photograph Coreen Griffith.

Rosson went to work at MGM with DeMille and did a remake of "Squaw Man" and DeMille's one and only musical comedy "Madame Satan".

Rosson was photographing "Abie's Irish Rose" when a bomb hit the industry and the first sound picture "The Jazz Singer" was released. Not to be outdone, the studio decided to rephotograph the cantor sequence in the picture and have the cantor sing the death litany.

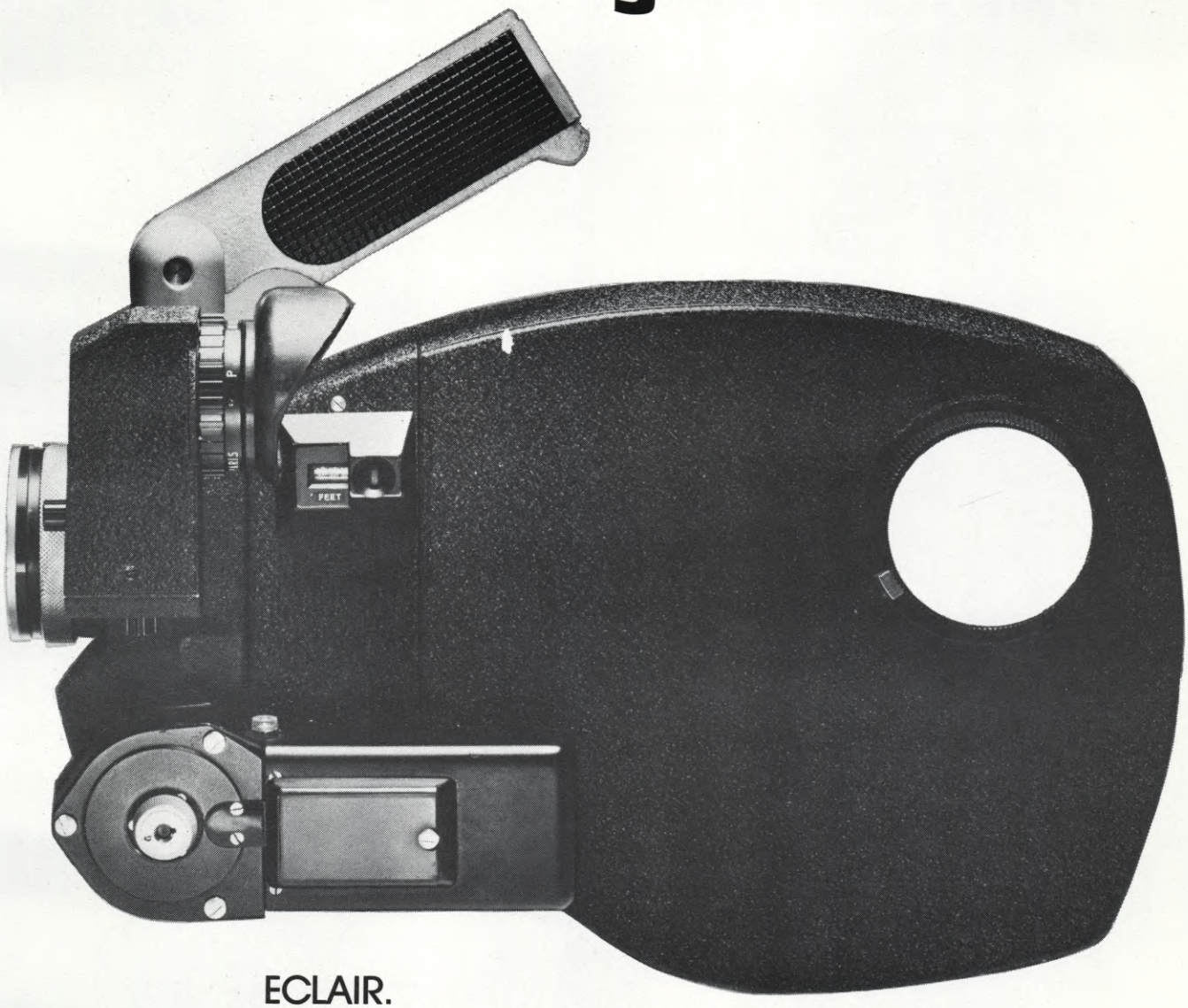
Hal Rosson became famous during the early twenties as Gloria Swanson's favorite cameraman. Following the flattering photography Rosson gave his first Swanson film, the famous and popular Miss Swanson never allowed another cameraman to photograph her until contractual terminations sent Rosson to another studio.

Twenty-three years after Rosson photographed Billie Burke in the Bronx, he again photographed her in "The Wizard of Oz" at MGM in 1939.

In 1940 Rosson received an Academy Award nomination for "Boom Town" and again in 1957 for "The Bad Seed".

In 1957 Hal Rosson received the "George" Award for outstanding achievement in motion pictures. He was among twenty well-known personalities for their outstanding contribution to motion pictures during the memorable "silent" era of 1915-1925. ■

# Rrright.




## ECLAIR.

Truth in cameras. Inconspicuous in size and silence. Conspicuous quality and reliability. Designed for no-compromise performance, without compromising your technique. As the ACL and NPR superbly demonstrate.

Hand-held or tripod-mounted. Conventional or super-16, there is nothing conventional about Eclair cameras. From their rugged CA-1 lens mount to 5-second magazine change. From their low power consumption to their rock-solid sync. From their tough, simple, silent mechanism to their effortless balance. And the way they make shooting as natural as seeing— in the most restricted locations and difficult environments.

Canon lenses. Eclair cameras. Truth in making motion pictures. Can you afford anything less?

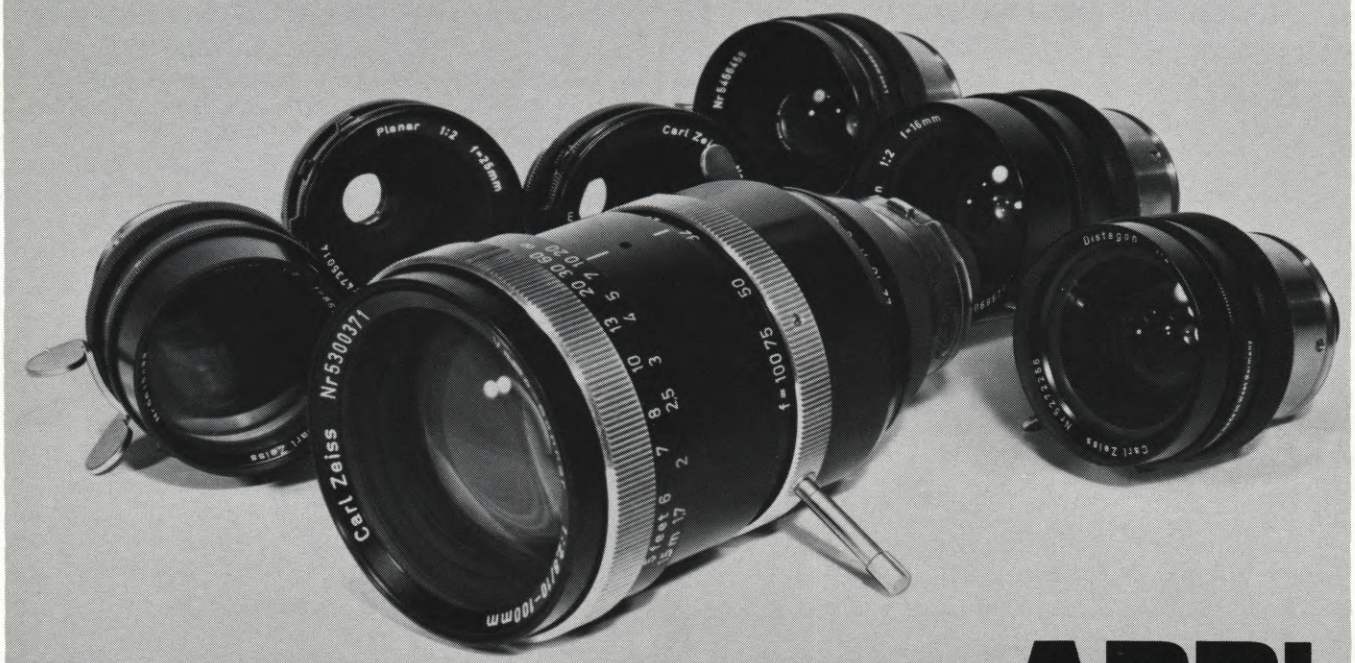
Eclair Corporation of America, 62 West 45th Street, New York 10036 (212) 869-0490
7262 Melrose Avenue, Los Angeles, California 90046 (213) 933-7182

# what's the yardstick for choosing a zoom lens?

Sharpness! But how sharp? As sharp as the best equivalent fixed focal length lenses — throughout its entire zoom range! The Zeiss 10-100mm Vario Sonnar is an advanced 16 element zoom optic that satisfies this scrupulous standard of quality. Unquestionably. And when you compare Zeiss to Zeiss, you're measuring with the most exacting yardstick in the world of optics.

So if you're looking for a superb zoom lens — that will continue to perform reliably year after year—look to the Vario Sonnar. You'll see what makes it a Zeiss.

# Zeiss 10-100 Vario Sonnar




**ARRI**

ARRIFLEX COMPANY OF AMERICA

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

# Would you be astonished?

A 16mm producer in a distant city who for years has had all his laboratory work done at MPL, recently came to visit us for the first time. He said he was astonished at what he saw, and exclaimed, "I had no idea of the size of this place!"

MPL is a large laboratory, but we take no pride in our mere size. If we have reason to be proud of anything, it is that we have a complete 16mm laboratory, fully staffed and fully equipped, affording our customers an unusually comprehensive service.

Our extraordinary growth in the past 15 years attests to the fact that we consistently give our customers, in every part of this country, prints of superior quality—and do it promptly.

We give them the same quality and service on 8mm film.

If you want a dependable, comprehensive laboratory that gives you prints of superior quality, and promptly, send us your film today!

## MPL's Comprehensive Services Include:

**PROCESSING:**
B & W Reversal
B & W Neg/Pos
Color ECO and EF
Color Interneg/Pos
Reg. & Super 8, also

**PRINTING:**
B & W Interneg/Pos
B & W Reversal
Color Interneg/Pos
Kodachrome Prints
Ektachrome Prints
Printing Masters
Reg. & Super 8, also

**SOUND:**
Original Recording
Rerecording
Mixing
Interlock Screenings
Sound Optical Transfers
Music Libraries

**PRODUCTION SERVICES:**
Editorial
Conforming A/B Rolls
Titling
Film Treatments
Film Lubrication
Scripting

**SPECIAL SERVICES:**
Color or B & W Videotape to Film Transfers
35mm to 16mm Optical Reductions
16mm Opticals with Effects
16mm to 8mm Reductions


**MOTION PICTURE LABORATORIES, INC.**
781 South Main Street
Memphis, Tenn. 38106

# INDUSTRY ACTIVITIES

## FILMS LINED UP FOR CHICAGO INTERNATIONAL FILM FESTIVAL

Michael J. Kutza, Jr., Founder and Director of the Chicago International Film Festival—now in its ninth year—has scheduled this year's Festival for November 2-12. Kutza has just returned from France, England, and Germany lining up films for his November Festival. Countries already invited to participate with features include France, Italy, Spain, Russia, Poland, Sweden, Iran, England, and the U.S.A.

The Chicago Festival, which last year had over 25 nations represented, presented one World Premiere from Peru, 18 United States Premieres, and 12 Midwest Premieres, with 4 complete Retrospectives, and has even more lined up for the United States this year. Chicago, which is less interested in the market and equipment side of the festival world, plans a complete three-day EDUCATIONAL FILM CONFERENCE, November 9, 10, 11. Visiting educators will be housed on the campus of the University of Chicago during workshops, seminars, and screenings of the 1973 Educational Film entries, which will be a separate competition.

The INDUSTRIAL FILM FESTIVAL, also a separate event during Chicago's Festival, kicks off daily November 9, 10, 11, at the Museum of Science and Industry, using two auditoriums equipped for multi-media showings, as well as 16mm and 35mm. The entries in the Industrial and Business area will be screened there, free to all.

Kutza has lined up three major film retrospectives, with the directors present in Chicago. These will take place daily during the November 2-12 Festival at the famed Oriental Institute on the campus of the University of Chicago.

Kutza, invited to be a guest of the Moscow Film Festival, but unable to attend, will send a representative in his place. His next screenings will be in Spain in September, and then on to Rome and Hungary to invite feature and short films to Chicago.

The 1973 Regulations Books are now available in French and English. Competitive categories include:

Feature Films
Short Subjects
Student Films
Business and Industrial
Educational
Television Production
Television Commercials

To obtain Regulations Books and entry forms filmmakers should write to:

Chicago International Film Festival
12 E. Grand Avenue—Room 301
Chicago, Illinois 60611

The deadline for entry forms is September 10, 1973.

•

## FILMEX TO COORDINATE UNPRECEDENTED 4-HOUR SPECIAL: "THE MOVIES"

THE MOVIES, a unique two-part, four-hour special motion picture encompassing highlights from more than 100 American films spanning the entire cinematic spectrum, will be presented this fall on the ABC Television network. This "Colossal Compilation of Extraordinary Excerpts from the 70-Year Span of American Cinema" is unprecedented in its extensive representation of the Hollywood film and in the degree of cooperation being given by all elements of the motion picture industry.

More than 150 major movie stars will be seen in sequences from more than 100 films being made available by 20 film sources, including all of Hollywood's major production companies.

The special documentary is based on the highly successful presentation originally prepared for the 50th Anniversary celebration of the Motion Picture and Television Fund at the Los Angeles Music Center in June, 1971. Proceeds from the television broadcast will benefit the Fund.

THE MOVIES is produced by Gary Essert, director of the Los Angeles Film Exposition, who prepared the original 1971 show. "The gathering of film clips from so many sources for showing on network television is a massive project," Mr. Essert said. "Normally, it would be impossible. However, the industry's traditional support of the Fund makes the impossible possible."

As a celebration of Hollywood's heritage, highlights from some of the greatest motion pictures in screen history will be included in THE MOVIES. Film titles include BEN HUR, BRIDE OF FRANKENSTEIN, CABARET, CASABLANCA, CITIZEN KANE, GONE WITH THE WIND, THE GRAPES OF WRATH, INTOLERANCE, KING KONG, MEMBER OF THE WEDDING, MIDNIGHT COWBOY, A PLACE IN THE SUN, SINGIN' IN THE RAIN, SUNSET BOULEVARD, and 2001: A SPACE ODYSSEY.

"More stars than there are in the heavens" accurately describes the cast, which will include Fred Astaire, John Barrymore, Humphrey Bogart, Marlon Brando, Charlie Chaplin, Bette Davis, Marlene Dietrich, Clark Gable, Greta Garbo, The Marx Brothers, Liza Minnelli, Marilyn Monroe, Paul Newman, Mary Pickford, Gloria Swanson, Elizabeth Taylor, John Wayne and Mae West.

Some of the 50 great American filmmakers whose work will be featured are Busby Berkeley, Peter Bogdanovich, Frank Capra, Francis Ford Coppola, George Cukor, Walt Disney, John Ford, D. W. Griffith, Alfred Hitchcock, Stanley Kubrick, Ernst Lubitsch, Preston Sturges, Orson Welles and Fred Zinnemann.

Planning and preparation for the special has been proceeding for two years. Three months will be required to complete editing and other post-production work, which is being coordinated by Filmex through the Film Technology Company of Hollywood.

•

## 46TH ACADEMY AWARDS TO BE HELD APRIL 2, 1974, AT MUSIC CENTER

The 46th Annual Academy Awards, honoring motion picture achievements in 1973, will be held on Tuesday, April 2, 1974, at the Los Angeles Music Center, it has been announced by Walter Mirisch, president of the Academy of Motion Picture Arts and Sciences.

Announcement of the 1974 Awards ceremonies site and date was made following a meeting of the Academy's Board of Governors.

The Awards Program, which will be produced and staged in the Dorothy Chandler Pavilion at the Music Center, again will be telecast in color internationally by the National Broadcasting Company network.

•

## FILM FESTIVAL RELEASES PROGRAM OF ACTIVITIES

The INTERNATIONAL FILM & TV FESTIVAL OF NEW YORK has arranged a very diversified program of activities for this year's event, to be held from November 11-16. This is of interest especially to visitors coming to New

**Continued on Page 1346**

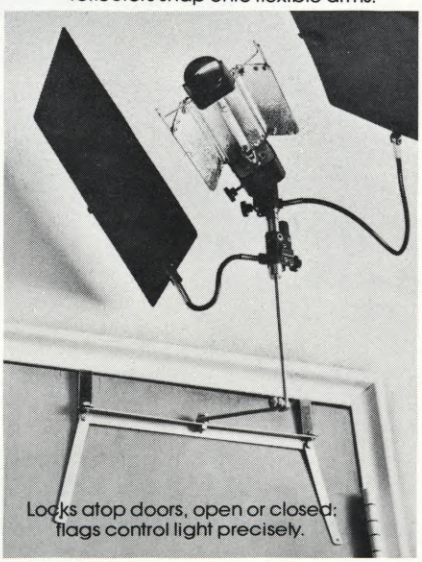
# Now, your location lighting problems are no bigger than this.

Tota-Light.* More than just a new light, it's a new lighting concept. Compact 1000, 750 and 500-watt quartz lighting with an integral system of lightweight, modular mounting and light control components. Providing almost limitless location flexibility.

With Tota-Light, a room is more than just an area to be lit: it becomes part of the lighting system.

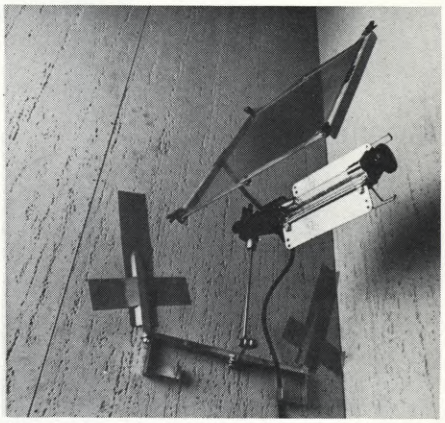
A system where three walls can be lit smoothly and evenly from a single light mounted on the fourth wall. Or four walls, ceiling and floor can be covered from a corner.

Snap-together flags and reflectors snap onto flexible arms.

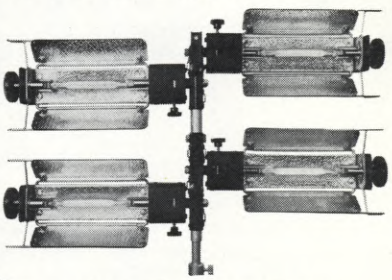


Locks atop doors, open or closed: flags control light precisely.

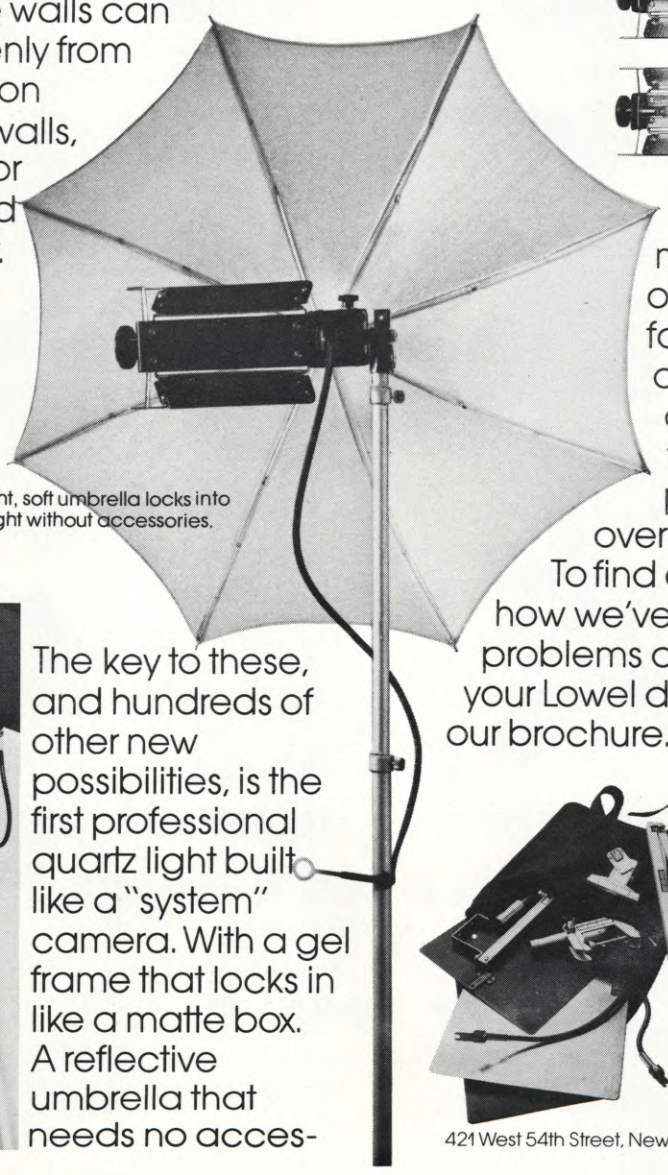
The key to these, and hundreds of other new possibilities, is the first professional quartz light built like a "system" camera. With a gel frame that locks in like a matte box. A reflective umbrella that needs no accessories. And a family of snap-together flags held by flexible arms. Using these and other components, Tota-Light can be stacked, diffused, converted in seconds to a softlight,



Tota-Light tapes to walls and windows; frame holds precut conversion and diffusion gels.



Stacks on stand or clamp.



Bright, soft umbrella locks into light without accessories.

mounted atop open or closed doors, fastened to virtually any surface...and closed compactly to fit a kit or canvas pouch that loops over the belt.

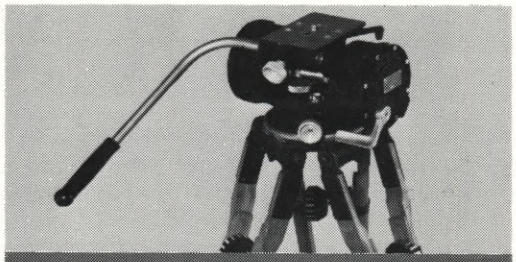
To find out more about how we've cut location lighting problems down to size, see your Lowel dealer or send for our brochure.

*TM Pat. Pend.

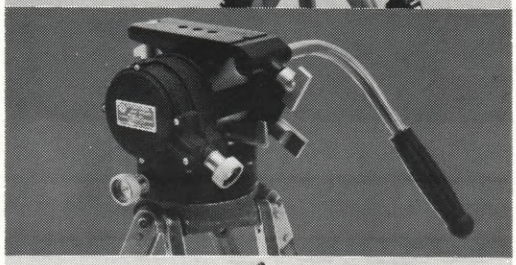
lowel

421 West 54th Street, New York 10019 (212) 245-6744

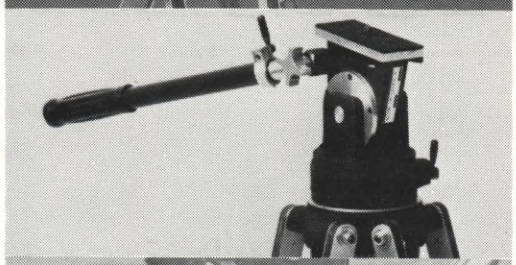
# If you want smoother footage, use our heads.



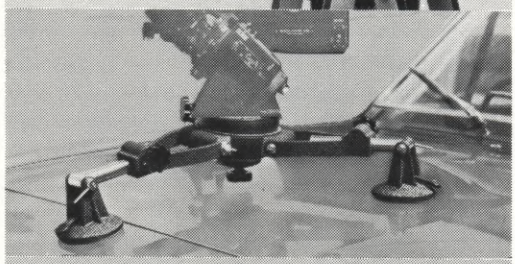
O'CONNOR MODEL 100-C.
Capacity: 100 lbs. Weight: 16 lbs.
360° Pan. Tilt: +60° to −60°.



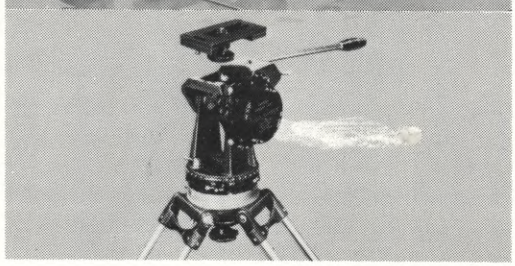
O'CONNOR MODEL 50-B.
Capacity: 50 lbs. Weight: 7 lbs.
360° Pan. Tilt: +450° to −45°.
Fully adjustable pan and tilt drag.
Camera Quick-Release Plate.



NATIONAL CINE SUPER MINI.
Capacity: 20 lbs. Weight: 4½ lbs.
360° Pan. Tilt: ±90° from center.
Right or left hand operation.
Positive pan and tilt locks.



RONFORD LOW-ANGLE TRIPOD.
Weight: 51 lbs. 360° Pan.
Height: Low Angle 7½". Stub
Legs 13½". Telescopic Legs
2 ft. 11". Additional attachments
available for mounting on cars, etc.



RONFORD FLUID 15 HEAD.
Capacity: 15 lbs. Weight: 21 lbs.
360° Pan. Tilt: 90° Forward;
70° Backward. Lightweight
aluminum construction. Damping
may be switched from light to firm.

Camera Mart has the steadiest heads in the business: National Cine . . . Ronford . . . O'Connor. Fluid heads that move smoothly and iron out the bumps, jerks and jolts.

Use them for every kind of camera and every kind of shooting. There are lightweight models and heavy duty models. Tripods that can take blistering heat or bitter cold. And if you prefer other makes or types, we have them, too.

Come to Camera Mart to buy or rent. And let us "head up" your next filming.

CAMERA MART AC10
456 West 55 Street
New York, N.Y. 10019

Send me your catalog which includes complete details of your entire line of tripod equipment.

NAME .....

TITLE .....

FIRM .....

ADDRESS .....

CITY .....

STATE .....ZIP .....

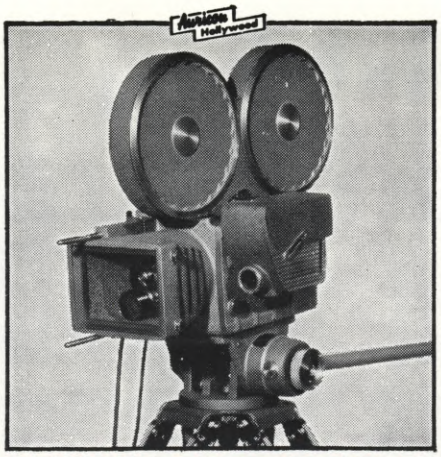
## The more equipment you need, the more you need Camera Mart.

**Camera Mart**
456 West 55th Street, New York, N.Y. 10019
(212) 757-6977

SALES SERVICE RENTALS

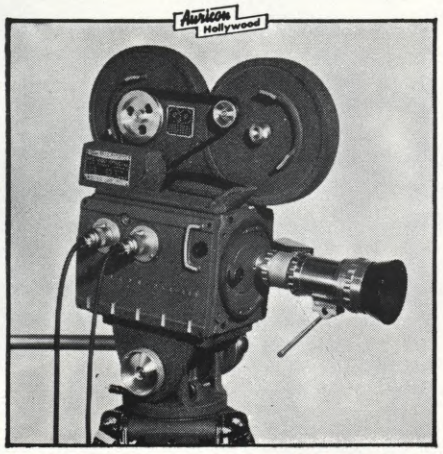
# AURICON 16mm Sound-On-Film for Professional Results!


**"CINE-VOICE II" 16 mm Optical Sound-On-Film Camera.**
100 ft. film capacity for 2¾ minutes of recording; 6-Volt DC Convertor 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.

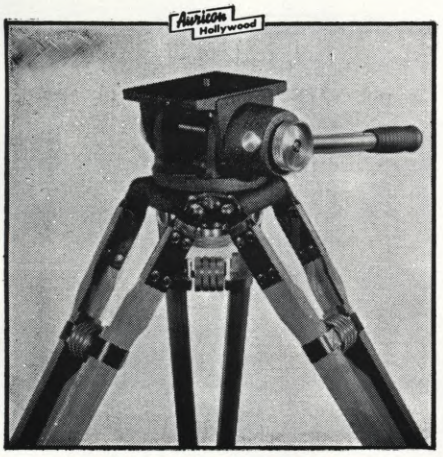

**"SUPER 1200" 16 mm Optical Sound-On-Film Camera.**
1200 ft. film capacity for 33 minutes of recording. $6425.00 (and up) complete for "High-Fidelity" Talking Pictures.




**"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.**
6902 Romaine Street, Hollywood 38, Calif.
HOllywood 2-0931

BACH Auricon ®

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

# If you're thinking SENNHEISER, think Camera Mart.


## The Mikroport System.

**Mikroport Transmitter SK 1007/1**

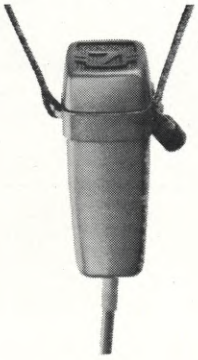
A 'High Band' wireless microphone system that affords a reliable radio link between microphone and recorder or sound reinforcement amplifier.

The sound quality meets the highest professional standards. The unique high output power of the transmitter in the VHF frequency range above 150 MHz allows an operation distance of at least 500 feet without interference.

A commercial VHF communication receiver has been modified by Sennheiser Electronic Corp. (N.Y.) and specially matched to the characteristics of the transmitter Model SK 1007/1. This receiver is available as Model R 1011. Fully tuneable operation between 148 and 178 MHz a fixed channel with crystal control can be selected. One crystal is supplied with the unit, a second fixed channel may be added by ordering another optional crystal.

**Sennheiser MKH 815**
**Transistorized Condenser Microphone**

A condenser microphone with excellent directional properties. Even at long distances it can be used without any loss of sound quality. Used in television and film studios whenever the microphone has to be out of the camera range. In spite of its unusual length the MKH 815 is relatively insensitive to wind and pop effects. Excellent signal-to-noise ratio. The MKH 815 can make the most difficult sound recordings with outstanding quality of sound.

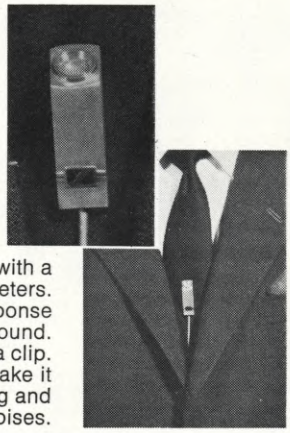


**Sennheiser MD 214**
**Lavalier Microphone**

Provides natural voice quality. Reduces interference of rustle caused by rubbing of housing and cable against clothes. Rectangular design reduces microphone rolling from side to side on the wearer's chest. Pressure-operated moving coil microphone with omnidirectional characteristics. Cable removes easily in case of damage.

**Sennheiser MKH 415**
**Transistorized Condenser Microphone**

A combination of a pressure gradient receiver microphone and an interference microphone. Cardiod directional pattern at low and medium frequencies. Close-talking effects are relatively small. Particularly suited for use by soloists, and its unusual length of 10″ makes it also very desirable for reporters.



**Sennheiser MK 12**
**Condenser Lavalier Microphone**

A small high quality microphone with a membrane diameter of only 6 millimeters. Smooth, resonance-free response provides a clear and natural sound. Fastened to clothes by a clip. Omnidirectional characteristics make it largely insensitive to handling and rubbing noises.

**For complete prices and details on these and other Sennheiser microphones write or phone:**

THE CAMERA MART INC.
456 W. 55th ST., NEW YORK, N. Y. 10019 • (212) 757-6977
RENTALS ○ SALES ○ SERVICE

# Introducing the Super8 Sound™ Recorder

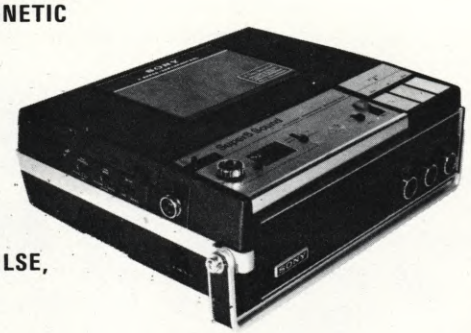
## With sound on Super 8 fully coated magnetic film, Super 8 sync filmmaking is as straightforward as 16mm practice

**THE Super 8 Sound Recorder IS A MULTIPLE PURPOSE MACHINE THAT RECORDS ON SUPER 8 MAGNETIC FILM AND COMBINES THE FUNCTIONS OF**

**LOCATION RECORDER**
**Crystal or Cable Operation**
**LABORATORY RESOLVER**
**SOUND STUDIO DUBBER**
**TRANSFER RECORDER**

**IT IS COMPATIBLE WITH MOST OTHER SYNC SOUND SYSTEMS, PROFESSIONAL OR AMATEUR, PILOTONE OR DIGITAL SYNC PULSE, REEL-TO-REEL OR CASSETTE**

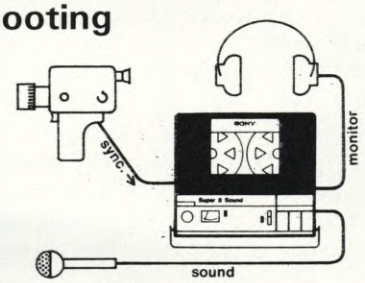
**THE PRICE IS $595**



**The Super 8 Sound Recorder can be used with a number of Super 8 cameras, with no camera modifications, to shoot original sync sound. The machine servo-controls its own speed to match the frame rate of the camera during filming. It produces a sound track directly on easily edited Super 8 Fullcoat. Or, for the filmmaker who prefers to record his sound on tape in the field, this recorder will automatically resolve the sync tape onto Super 8 Fullcoat for editing. The machine will also servo-control its speed to match the frame rate of a Super 8 sound projector, making it possible to view sync rushes or to transfer edited sound to magnetic edge stripe in precise sync.**

**The Super 8 Sound Recorder will also synchronize to other Super 8 Sound Recorders for multitrack rerecording or dubbing.**

## shooting



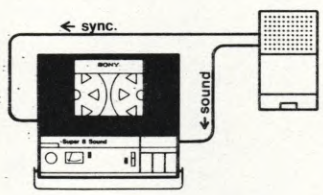

The **Super 8 Sound Recorder** has been designed to sync with the latest generation of "electronic" Super 8 cameras equipped with a once-per-frame contact switch (electronic flash socket).

*Argus 7310*
*Bauer C Royal 8E, 10E*
*Beaulieu 4008ZM2*
*Canon 814E, 1014E*
*Cinema Pathe DS8*
*Fujica Z800*
*GAF ST/802, ST/1002*
*Leicina Super RT1*
*Minolta Autopak-8 D10*
*Nikon R8, R10*
*Nizo S56, S80, S480, S560, S800*
*Rollei SL84*
*Sankyo CME 1100*

The **Super 8 Sound Recorder** servo-controls its speed so that one frame of Super 8 magnetic film passes the recording head for each frame of film exposed in the camera. A cable from the camera carries frame rate information to the recorder. The soundman can monitor sync condition using a sync indication meter on the recorder. The recorder will run between shots for continuous sound, or it can be stopped and started by remote control from the camera.

Cableless operation is possible with crystal sync cameras, since the **Super 8 Sound Recorder** has a built-in crystal that can hold its speed at 24 frames per second to within one frame in ten minutes.

## resolving

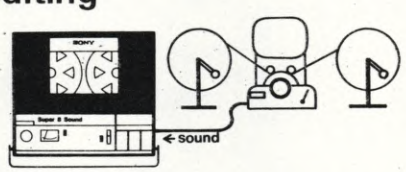



Super 8 magnetic film is now available to the filmmaker who already owns a sync sound system. The **Super 8 Sound Recorder** does not necessarily obsolete any existing equipment or, more importantly, any existing footage since it will automatically resolve sound from most* original sync tracks, Pilotone or Digital, Reel-to-Reel or cassette, including

*Alan Sidi Cine Sync*
*Bell & Howell Filmosound 8*
*Carol Cinesound*
*Chinon**
*Cine Slave*
*Farnell Tandberg*
*Nagra*
*Stellavox*
*Filmin/Optasound**
*Fuji Puls-sync*
*Philips/Norelco*
*Rivendell*
*Scipio*
*Synchronex**
*Volland Synton**
*Tandberg*
*Uher*

**Accessory equipment is required for systems that do not use the standard once-per-frame digital pulse or standard 60Hz pilotone.*

## editing

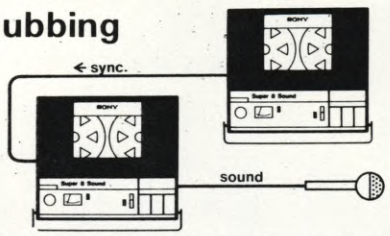



With new Super 8 fully-coated magnetic film, editing in Super 8 is almost identical to professional procedures in 16mm and 35mm.

A full line of Super 8 editing equipment is available, from inexpensive amateur editing benches to professional horizontal editing tables. The most economical approach is an editing bench-sync block, viewer, sound reader, and rewind arms, with the **Super 8 Sound Recorder** used as the editing bench amplifier.

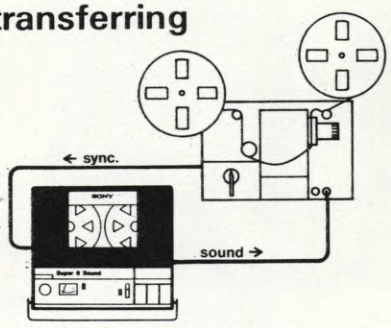
Filmmakers who learn Super 8 fullcoat editing techniques can apply them professionally in 35mm, 16mm, or Super 8 filmmaking. Filmmakers who are trained in 16mm techniques can now afford to own their own Super 8 fullcoat editing equipment as a means of making their own films on a modest budget.

## dubbing




Any number of **Super 8 Sound Recorders** can be electronically interlocked. They are started simultaneously with a common start switch. Each recorder can be in either play or record mode, so that any number of original tracks can be rerecorded or mixed, and any number of new tracks can be dubbed in sync with original sound and with picture.

## transferring




Once edited, sound can be easily transferred to magnetic edge stripe. The master sound track is placed on the **Super 8 Sound Recorder** at the sound start mark. The striped release print film is threaded into the projector to the picture start mark. When the projector is started, the recorder starts automatically and maintains sync.

Transfer from the magnetic edge stripe back to magnetic film allows double system editing of single system films (e.g. Wilcam, Kodak Ektasound, or Synchronex sound films).

**The Super 8 Sound Recorder comes complete with all the above capabilities; camera interlock, cassette recorder interlock, self interlock, 60Hz AC interlock, projector interlock and built-in crystal speed control.**

**The Super 8 Sound Recorder is based on the well-known SONY TC800B variable speed servo-controlled tape recorder, augmented by six integrated circuits. Operation as a normal quarter-inch tape recorder is preserved, as is the one year full warranty.**

The **Economy Super 8 Sound System** includes a sync camera (Canon 814E or Nizo S56), the **Super 8 Sound Recorder**, a professional motorized 2-gang editing bench, a sync projector (Eumig S706), a microphone (SONY ECM-250), headphones, and all necessary sync and audio cables for $2200.

The price of the **Super 8 Sound Recorder** is $595. For a 14-page technical brochure and a free copy of the 24-page **Super 8 Sound Catalog** — a comprehensive listing of all Super 8 film production equipment — write:

**Super8 Sound™**

**77 HURON AVENUE, CAMBRIDGE, MASS. 02138**

# THE MAN WHO NEVER SHOOTS WITH HIS FEET ON THE GROUND

**Cinematographer who is a specialist at shooting underwater and from a helicopter discusses some of the rather unique problems of filming under these very special conditions**

By J. BARRY HERRON

For example, you don't hand-hold the camera underwater. It hand-holds *you.* I use a Birns & Sawyer submarine camera housing that weighs 150 lumbering pounds, with weights added. The weight isn't a disadvantage—it's made that heavy on purpose.

In strong surges or currents, that housing often saves you from being swept off the set. Even so, you can't shoot a master and then a close shot. If you cut the camera, the current will almost certainly cause a mismatch.

You have to shoot your long shot and your closeup all in one take, as you float in. And even then, you and the rig sometimes keep right on going until you bump into the actor. Since you and the rig weigh more than *he* does, you knock him out of the way, and keep on going out to sea!

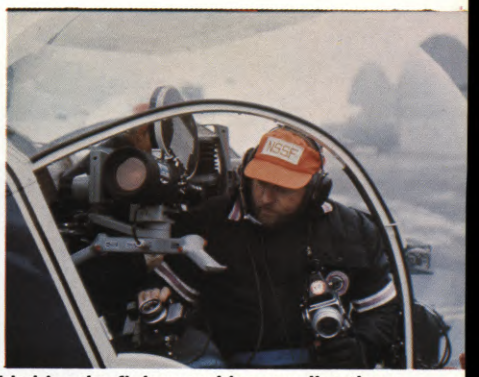
If you're working with professionals who'll repeat the action, you can set up a cutaway close shot. But even then, neither you nor the actor knows for sure which way the water will carry. You're constantly moving. *He's* constantly moving. You can't be sure the close shot will match—so you cover yourself with cutaways of curious fish swimming by.

You just have to treat each scene as an independent entity. Let the swimmer enter and leave the frame every time. And you have to tell him *before* you start, to favor the camera. You can't quickly move around him for a better angle.

On the other hand, some of the usual disadvantages of working with non-professional actors are minimized underwater. They're usually proficient divers. And even if they're camera shy, it's practically impossible to *swim* self-consciously. They can't speak, of course. And they have masks to hide behind. And, of course, they're busy doing what they went down there to do.

Some scenes underwater can be real-

**A helicopter shot circling Seattle's impressive Space Needle, photographed by the author, provides an interesting view of the famed landmark.**


**(LEFT) When shooting from a helicopter, Herron never moves the camera. All of the movement is provided by the flying machine, on directions given by him to the pilot. (CENTER) The helicopter makes possible a stunning view of Oregon's spectacular Crater Lake. (RIGHT) The author shoots from the helicopter using his favored combination of a Tyler mount and an Arriflex M camera with Angenieux 12-120mm zoom lens and 400-foot magazine.**



**(LEFT) Herron attaches an Arriflex S camera under the helicopter's belly by means of a World War II military camera mount he bought for $5.00. Equipped with a 5.9mm lens, he used it to get dramatic shots flying over the edge of the Grand Canyon. (CENTER) Using Arri 16S camera inside a Birns & Sawyer submarine camera housing that weighs 150 pounds, with weights added. Heavy weight makes for stability in surging currents. (RIGHT) Helicopter hovers low to film ships in harbor.**



**(LEFT) Helicopter, equipped with belly-mounted camera, moves into the Grand Canyon. The use of 5.9mm super-wide-angle lens provided an exciting perspective. (CENTER) The helicopter lands on imposing rock formation in the Grand Canyon to check the belly mount. (RIGHT) Helicopter moves in for a close shot of the Maid of the Mist, sturdy excursion boat operating at the foot of Niagara Falls. Author shot the Falls deliberately as if going over the edge in a barrel.**

ly strange, almost as eerie as Fellini footage. On a Special called "TREASURE", I was shooting divers hunting for wrecked Spanish treasure ships, reputed to have sunk 300 years ago in the shoals off the Florida keys. The divers were using a huge vacuum cleaner machine that sucked sand up off the ocean floor, and deposited it like a rain shower all over. They were trying to uncover buried treasure. But what I saw in the viewfinder was hypnotizing.

I'd be shooting a diver three feet in front of me. The water relatively clear. Suddenly, he would vanish, right on camera. You couldn't see the individual grains of sand raining down—the water just became opaque. Then a surge would sweep away the sand, and there he'd be again, calmly working three feet in front of the lens.

To avoid the sensation of looking through a tube, I use a 5.9mm Angenieux on the Arriflex 16S, inside the housing. The wide-angle lens helps to give you the feeling of having water all around. And it helps to open up the small TV screen.

That focal length is best suited to the flowing, fluid style you have to use underwater. You can't hope to compose too tightly, anyway. Whether you like it or not, every shot is a moving shot, and unrehearsed, and unrepeatable. The wide-angle perspective goes well with the ebb and flow quality of these shots. You have to let yourself go with the surge, and see things as a fish sees them, through a fisheye lens.

For a closeup of a piece of buried treasure, for example, you can't just frame it tightly. You have to gradually

creep in closer, wafting to and fro, fishlike. If you grab the seabed to steady yourself, you stir up a miniature sand storm that takes ten minutes to clear. It goes without saying that if you want a close shot down there, you have to *get* close. Zoom lens—what's that?

You can direct the action somewhat, with hand signals. A clenched first means "Hold it." Two fingers up means "Second take." A scissors movement with two fingers means "Get closer to the action." Rudimentary stuff. And you constantly have to modify what you're after as the action and the water movement dictate.

You're *really* dependent on equipment underwater. You have to deal with diving gear, as well as photographic gear. Inside the housing, there's no way to tell whether or not the camera is running okay. You have to trust it. You're not going to find out about camera problems until next week, when shooting's over.

I've been lucky, though. I've exposed more than 200,000 feet of 16mm film underwater since 1964, and I've come back with the footage every time but once—and that was poor loading. Down there, I use the Arri 16S with a 400-foot magazine. That little camera is more reliable than anyone has a right to expect, in my experience.

It's such a production, though, just getting to the location, and diving when the light is right and the water is clear and the tide isn't too strong, and the sharks are somewhere else, that every foot of film you *do* get is worth its weight in gold.

The first thing the producer says to you is: "Did you get it?" Of course, you tell him "Yes." But you have to sweat a little every time, until the rushes come back. That's the same as on dry land, of course—but it's more so.

For one thing, after spending a fortune and taking forever to get there and shoot the action, you get only one crack at it. Next week the divers won't be there. And the budget won't let you go back, anyway.

The same applies to helicopter work. Helicopters cost anywhere from $150 to $200 an hour. To get a good spectacular 10 or 15-second shot, you're probably going to spend all day. That's a couple of thousand dollars. It's a *lot* more expensive than a tripod.

It takes all day because most locations aren't next to the airport. And when you get there, you have to make a few dry runs to find out how best to cover the subject, and where the light is best, and when. You also have to spend at least an hour teaching an inexperienced photo pilot how to operate a flying dolly, which is what the helicopter is. A few have done it before, but most haven't, out where the scenery is.

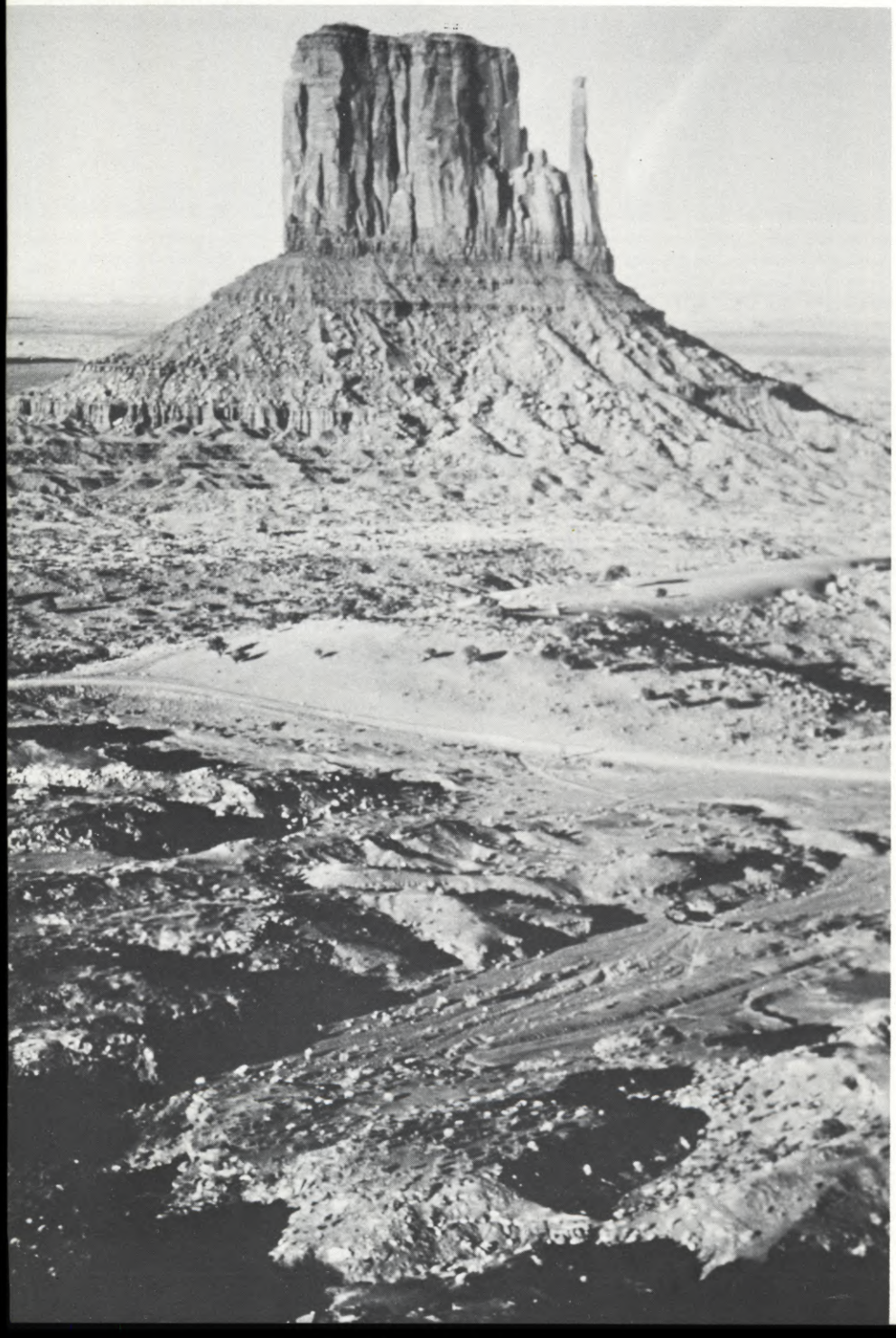
I never move the camera inside the helicopter. All the movement is supplied by the flying machine. You have to talk the pilot into it, during the shot—so the pilot is really the operator, and you're the D.P. "Give me some left rudder." "Down, slowly . . . ease right." He's facing front, of course, and the camera is looking out to the right.

The trick is to combine his maneuvers with some totally undetectable zooming. You have to use the zoom, of course, for framing, and to emphasize the movement. But the producer isn't paying you for zoom shots, by golly, and he doesn't want to see zooms on the screen. So you don't let him.

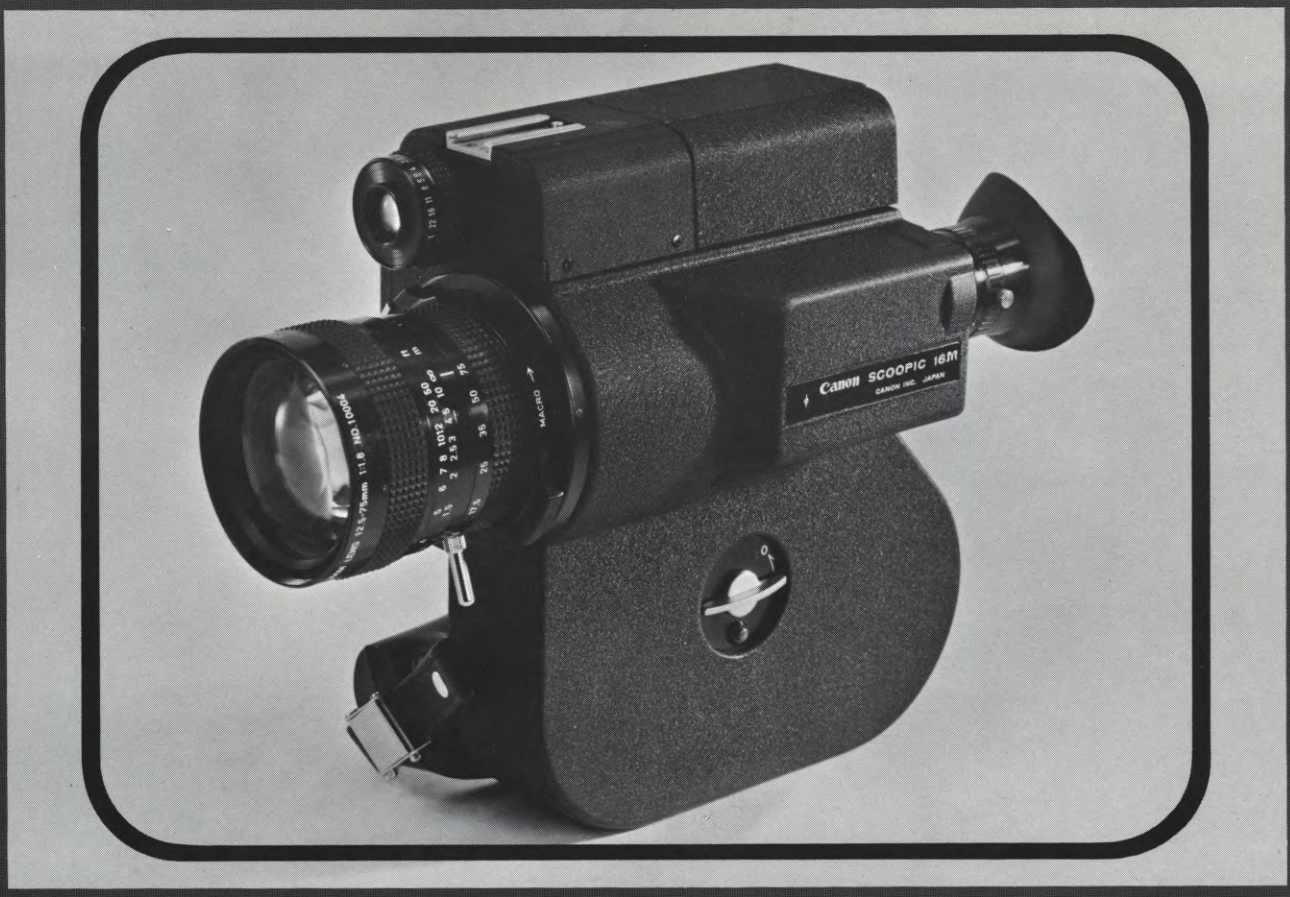
It's important to remember that he isn't paying you for "aerial views," either. You have to get down low and in close, where a fixed wing aircraft can't get. On a show about shooting the rapids on the Salmon River in Idaho, we started the shot at about 500 feet up, looking down into the canyon. Then we flew down between the canyon walls, and "shot" the rapids with the camera about five feet above the water. We

**Continued on Page 1330**

**One of the spectacular monolithic buttes of Monument Valley, as shot from the air by the author. It is almost impossible to capture the grandeur of such natural wonders when shooting from ground level. The helicopter can get down low and in close in a way that a fixed-wing aircraft never could. Zoom lens is carefully coordinated with plane movement so that zooming, as such, is undetectable.**



# Good news for news.




**T2.5 4 5.6 8 11 16 22 32**

There are times when only the new Canon Scoopic 16M can bring back the footage. Because it's the truly professional 16mm reporter that goes anywhere you go.

For such a newsworthy camera, the Scoopic 16M is surprisingly light — less than 7½ lbs. And thoughtfully designed, so it's completely natural to hold, to handle, to control. Yet, with all its compactness and maneuverability, the new Scoopic 16m is rock-stable, even on the run.

No wonder it's the unique camera that's perfect for television news and documentary work. Take a look through the viewfinder up above and you'll see for yourself what we mean.

The TV frameline is clearly defined. So, even as you shoot the raw stuff, the end is always in sight. That means shooting remains under control in the fastest-moving circumstances. And you're on the air sooner, with less editing or wasted footage.

The reflex viewfinder is offset to the side of the camera body, and the view through it is now brighter than ever. An all-matte screen makes for faster focusing anywhere in the frame, and also lets you check out multiple focusing points in advance, for faster and more accurate zooming once the action starts.

The eyepiece can be closed to prevent light backflow from altering your readings, and to maintain perfect exposures. The eyepiece is also optically adjustable, so you can work without eyeglasses, if you wish.

A servo-controlled automatic exposure system (ASA 20 to 640) frees you for fast-changing situations, especially where light varies unavoidably and unexpectedly. But you can still work your exposures manually when you prefer. And you see your T-stop in the finder, along with under- and over-exposure warnings. So you know where you are at all times.

The new built-in battery system helps to keep you going, too — through 1600 feet of film at 24 frames per second on a single charge! The 12-volt NiCd is fully rechargeable in about 3½ hours, and external power supplies can also be used .

Filming speeds now include single frame as well as a range of 16 to 64 frames per second, bringing with them the potential for imaginative special effects — plus the ability to handle rough-motion filming without losing projection quality.

The Scoopic 16M comes with a fast new f:1.8 Canon Macro Zoom lens. In addition to Canon's unsurpassed reputation for sharpness, contrast and color accuracy, it has built-in macro capability. Focusing begins at 3½ inches from the front of the lens, and goes from here—to eternity. Focal length ranges from 12.5 to 75mm, so you'll go in and out of the action with unparalleled smoothness at a zoom ratio of 6 to 1.

Working professional or serious filmmaker, you'll find the new Scoopic 16M a rugged, versatile, utterly dependable camera of high precision. It's the sweet 16, now sweeter.

See your local authorized Canon dealer for a demonstration, or write directly to Canon for more information.

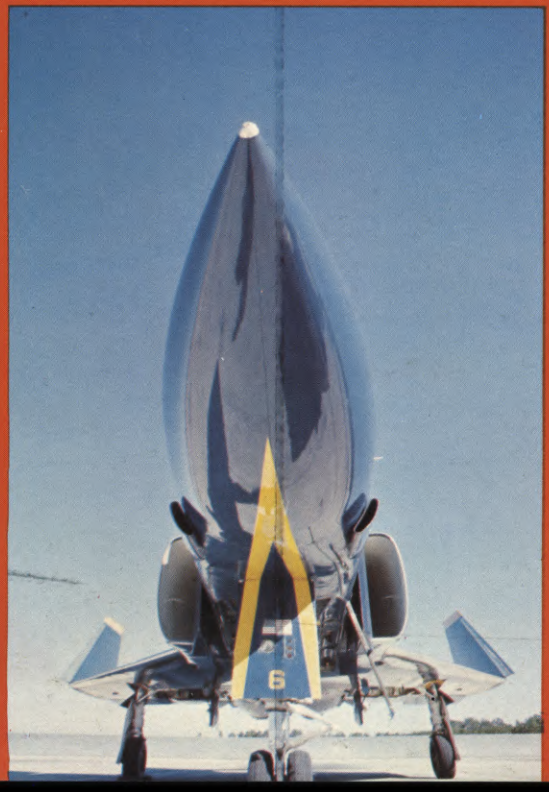
Canon®

Canon USA, Inc., 10 Nevada Drive, Lake Success, New York 11040
Canon USA, Inc., 457 Fullerton Avenue, Elmhurst, Illinois 60126
Canon Optics & Business Machines Co., Inc., 123 East Paularino Avenue, Costa Mesa, California 92626
Mackenzie Equipment Co., Ltd., Saxony Building, 26 Duncan Street, Toronto 2B, Ontario, Canada


A dedicated two-man filming crew creates a stunning cinematic tribute to the "super-men" of the United States Naval Air Force Flight Demonstration Team

# THE FILMING OF THRESHOLD

## THE BLUE ANGELS EXPERIENCE




By PAUL MARLOW with SYLVIA LOVEGREN

Movies now have before them an especially rich opportunity to project a positive vision of human capability and capacity for growth. Films can directly express a firm belief that mankind is on the way up, not down, that we can all be more than we are now.

Though this may sound a bit altruistic, the premise is utterly practical in both a creative and a business sense. This positive intention, and attitude on the part of the film producers is likely to result in films which the paying customer *likes to see,* films which make him *feel good!* The overall result is directly translated into better word-of-mouth

Continued overleaf


**Frame blow-ups from 16mm "behind-the-scenes" footage of "THRESHOLD" filming show 6'4", 220-pound Director/Producer Paul Marlow slipping into a tight place, the back seat of the "slot", plane. Crewman repeats the ejection seat drill for the tenth time that day, the canopy closes and Marlow is off to another wild stint of filming "sculpture in the sky."**

advertising, more patrons and, ultimately, higher ticket sales. All of which leads to happier film-makers, who make happier films, and so forth, back to the customers.

The concept of the positive-outlook film really came home to us when we produced a theatrical feature called "THRESHOLD: THE BLUE ANGELS EXPERIENCE". It started out as a movie about the United States Navy Blue Angels Flight Demonstration Team. The whole thing—the superb airmanship, beautiful planes, and breathtaking maneuvers which few pilots in the world can match. In a word, they are the BEST. Where the movie-making finally led surprised not only us, the movie makers, but the six men in those magnificent aircraft, as well.

But first, let me back-track to the beginning of this production: My partner, Dave Gardner, and I operated a small, comfortable film production house in Seattle. We worked primarily on TV commercials, industrials, documentaries, and optical special effects. Between us we had about thirty years of corporate and free-lance film experience, and a great love for the medium and its potential. We knew that we could continue turning out commercial product in the Pacific Northwest, expanding on our solid reputation, and making a good and decidedly relaxed living. We also knew that there was something else out there . . . the whole fascinating world of "Real Movies" . . . theater release features!

Lots of films are made every year . . . high budget and low, dramatic and documentary, but they all have one particularly interesting thing in common: Tickets to a really low-budget adventure documentary sell for the same price as tickets to a multi-million-dollar extravaganza. The prime difference is that the producer of low-budget product is much, much closer to recovery of negative costs, and, hopefully, much closer to his profits.

Dave and I saw that there wasn't nearly enough G-rated product being produced. For some reason, many producers chose to appeal to the 16 million people who go to movies each week,

*(EDITOR'S NOTE: On July 26, 1973, while the Blue Angels Flight Demonstration Team was practicing a maneuver en route to an air show at Lakehurst, N.J., a mid-air accident occurred. Killed as a result of that accident were two Blue Angels, USMC Capt. Mike Murphy and Lt. Cmdr. Skip Umstead, and Crew Chief PO1C Ronald Thomas.*

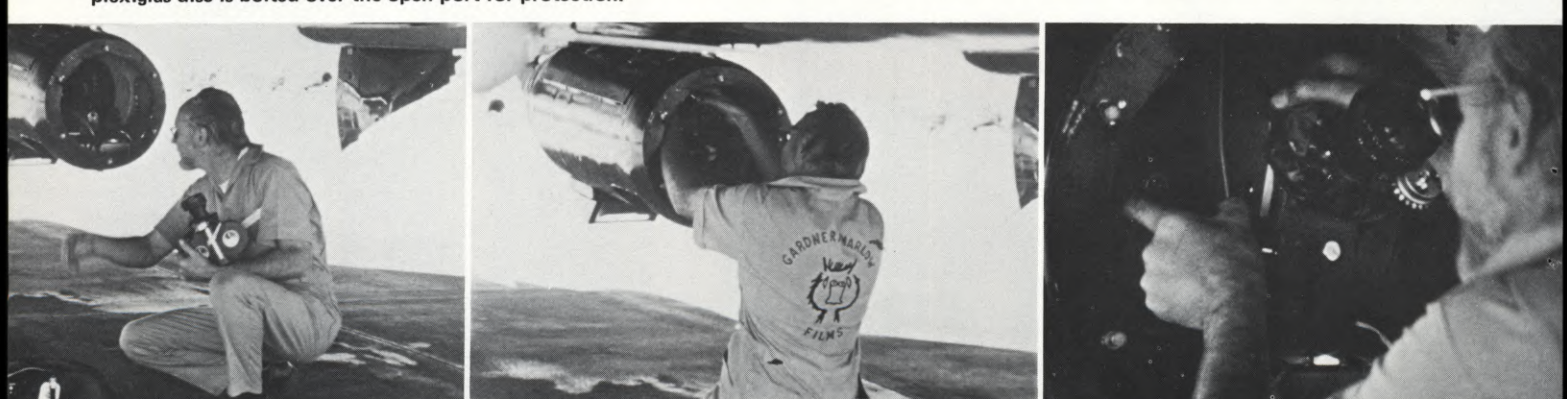
*Mike Murphy had flown 300 missions in Vietnam and had been awarded three Distinguished Flying Crosses, 23 Air Medals, the Combat Action Ribbon, the Vietnamese Cross of Gallantry and the Vietnam Service and Campaign Medals.*

*Skip Umstead had flown 202 missions in Vietnam and had been awarded 13 Air Medals, the Navy Commendation Medal with Combat "V", the Vietnamese Cross of Gallantry, the Navy Unit Citation, the Meritorious Unit Commendation and the Vietnam Service and Campaign Medals.*

*I had the privilege of meeting Capt. Murphy and Cmdr. Umstead when I went on location with Paul Marlow and Dave Gardner during the shooting of sequences for "THRESHOLD" at Pt. Mugu, California. Although I knew them for only a brief moment in time, it was an encounter which I shall always remember. They were "super-men" in the most literal sense of the term. To them, and to the eight other Blue Angels who have met death in pursuit of the ultimate peak of perfection, this issue of AMERICAN CINEMATOGRAPHER is respectfully—and affectionately—dedicated.*

*HERB A. LIGHTMAN, Editor)*

**Director of Photography/Associate Producer Dave Gardner installs aft-looking Bell & Howell 70-DR camera in pod mounted to the belly of the lead aircraft. Ultra-wide-angle 5.7mm lens makes possible a shot looking back at all of the planes in the diamond formation. After camera is mounted, a plexiglas disc is bolted over the open port for protection.**



**Marlow and Blue Angels crewman check exterior camera mount high on the tail of the F-4 Phantom. A number of exotic rigs mounted in "impossible" places on the aircraft made possible some of the most uniquely stunning aerial action ever recorded on film. Light-weight, compact 16mm equipment made the picture feasible. It could never have been made with 35mm equipment.**

rather than the 200 million who stay away! Even more interesting was the surprisingly high box office levels being reached by a few of the more interesting low-budget adventure films. Granted, a majority of such films never see the light of day, and most of the rest are short-lived, but nevertheless, every once in a while, someone manages to grab the gold ring . . . so, why not us? For, in the final analysis, box office comes down to one thing: ENTERTAINMENT VALUE . . . helping the ticket buyer to enjoy . . . enjoy!

So, there we were, on the lookout for a subject for a low-budget, G-rated film that combined excitement, true-life adventure, intelligent approach, and high quality. But most importantly, it had to be as interesting for adults as for younger people. Obviously, the then-fashionable trends of excess sex and violence were not where we wanted to expend our energies. Besides, there were more than enough "wildlife" films on the market already. We would just have to wait for an appropriate brainstorm.

Then came THE DAY! It started as a casual afternoon picnic with friends at an air show, and, half-way through the day of potato salad, sunburn, screaming kids, and buzzing airplanes came the Big Act! Up in the sky, there was the most fantastic combination of visual beauty, emotional power, and just plain old hairy-chested, ground-shaking, razzle-dazzle, howling, bellowing delight . . . The Blue Angels Aerobatics Show! Six magnificent Blue and Gold jets flown mere inches apart . . . the collective intake of breath at a dramatic moment, and thousands of people yelling, clapping, and cheering. This seething amalgam of international jet-set, circus act, Russian Roulette, and Grand Ballet, was pure theater . . . pure excitement. *Here* at last was something worth recording, worth understanding.

And what about the pilots? There they were, climbing down from those fantastic planes, soaked with nervous sweat and trembling with fatigue, but smiling and confident, talking easily with kids and adults who were straining forward for a word or an autograph. What made these guys tick? What was it like to live right up against the edge of survival? What was the *real* drama, hardship, and effort these men lived? And most importantly, how is it that these six humans . . . no more, no less . . . could extend themselves to such an extraordinary performance? From what desire, what sight of the unknown surged that desire for perfection?

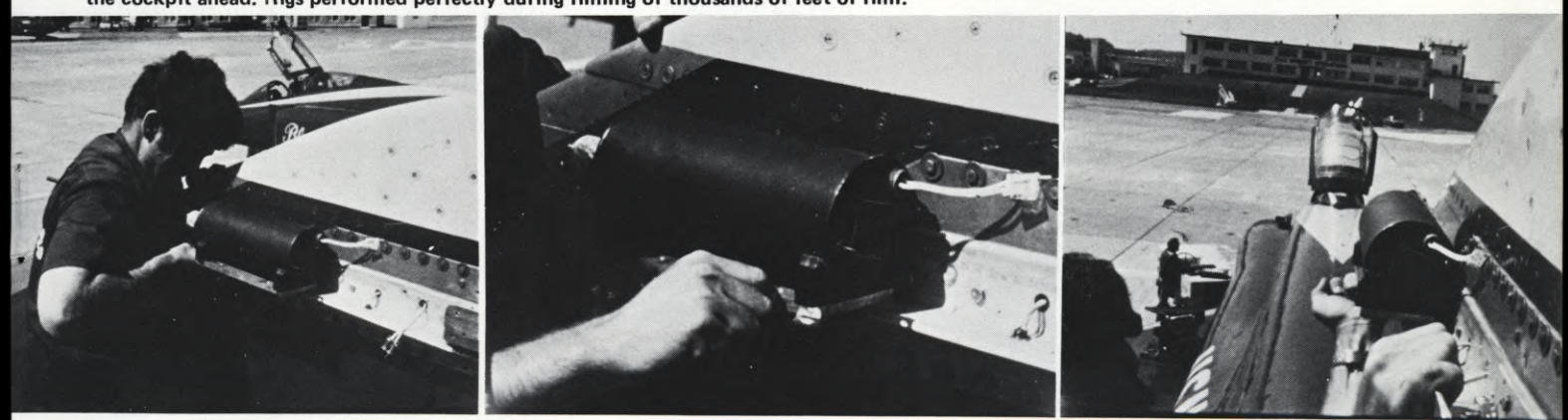
The next day Dave and I arrived with a truckload of equipment and started setting up. We had come to capture the flowing liquid beauty of this, the most unique art form in existence.

"Ready when you are C.B. . . ." It took about three minutes to figure out that six F-4s moving at around 600 miles per hour in six different directions are just not easy to shoot. The "stage" for the show was a chunk of sky six miles long, six miles wide, and three miles high. Problems of camera placement to capture the near-sonic-speed movements within such large areas were formidable.

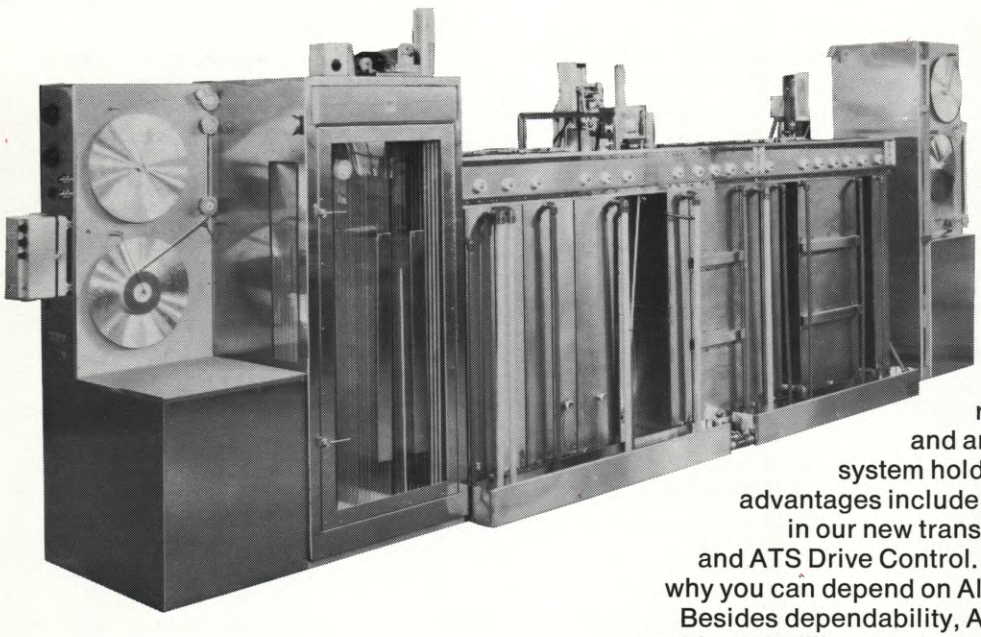
The four-plane "diamond" formation flashes in, does a mile-high giant loop, and then flashes away. Then the two solo planes hurtle at each other with a closing speed of over a thousand miles an hour . . . a blink of an eye and they have traveled a mile. Just try to get that dramatic split-second when the planes

**Continued on Page 1321**

**A Bell & Howell movement is installed in a pressure-proof tube mounted on a bracket which bolts into a space normally covered by an access port. The exterior camera is sighted in such a way that when the plane is filming a formation it will see all four planes of the diamond in the small area of the cockpit ahead. Rigs performed perfectly during filming of thousands of feet of film.**



# depend ability



Dependability – we build it into each one of our 19 different color film processing models – a fact that has already been discovered by dozens of motion picture laboratories which now rely on Allen equipment. Their confidence is well placed. "Added value" features like rugged stainless steel construction and an automatic filtration/recirculation system hold maintenance to a minimum. Other advantages include such technological advancements in our new transport system as Tender Touch Tires and ATS Drive Control. These are just a few of the reasons why you can depend on Allen Processors to get the job done. Besides dependability, Allen also has a reputation for being capable and willing to adapt existing models or design new ones to meet your specific requirements. This flexibility assures the laboratory of a proper balance between capacity and machine costs. But let's not overlook the quality of the photographic processing – it's superb and our prices are competitive too.

To find out more about Allen's ability in the color processing field, send for literature or talk with an Allen Products' Representative.

**The Allen Products Company** **180 Wampus Lane, Milford, Conn. 06460 Tel: 203 874 2563**

# "Scoopic 16 shoots the news faster than any other camera available."


*WXII TV, Winston Salem, North Carolina*

Canon's Scoopic 16. Made for fast-breaking news events. Because it shoots them faster than any hand camera around. That's a large claim for an under 7 pounder.

Uniquely designed hand-grip. Fully automatic exposure control with manual override. A built-in zoom lens. Motor drive and auto threading. All adding up to a perfect shot. Every time.

Close-ups, medium and long shots, zooms, telephotos, wide angles. Even "follow" shots. Instantly focused. Indoors and out. Filming...not fumbling. Because your eye never leaves the view finder. You're always in focus for that great newsmaking moment.

Canon Scoopic '16' Camera Complete Set . . . . . (List Price) **$1,410.00**

Includes: 1-Scoopic '16' Body with 13-76mm zoom lens
1-Rechargeable 12 volt NiCd battery
1-Battery charger
1-Lens cap and lens hood
1-Metal carrying case
3-Filters (UV, CCA, SKY)

Full focusing Ground Glass for Scoopic '16' . . . . . **$ 42.00**

**Total List Price $1,452.00**

## *Special Price While Present Inventory Lasts $995.00*

**Standard Theatre Supply Co.**
125 Higgins Street, P.O. Box 20660
Greensboro, N.C. 27420 Phone (919) 272-6165

# SAMCINE
## RIGIDISED CASES

## NOW AVAILABLE TAILOR MADE TO FIT YOUR EQUIPMENT

**DOUBLE-LIPPED DUST TRAP** is a feature of all **SAMCINE CASES.**

**RECESSED HANDLES** are available at a small extra charge.

**ETHAFOAM OR POLYESTER FILLING OR LINING.**

These materials can be easily cut to accomadate the shape of your own equipment useing an ordinary kitchen knife.

Today's **SAMCINE RIGIDISED CASES** combine toughness with a weight to strength ratio that was previously thought impossible to attain. **SAMCINE** cases are manufactured to individual orders of any size or dimension with customizing variations that are usually only available where you are prepared to place large orders (i.e. 'economical' to the supplier but not to you since you probably only want one or two of a given size). With **SAMCINE** you can order one only or have ten cases and every one a different size.

Ordering is simple, just follow the formula given below. You can work out the EXACT COST **before you order.**

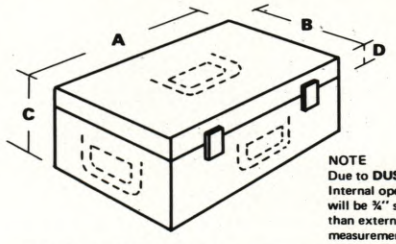
We will be pleased to send you free samples of rigidised aluminium, Ethafoam, and Polyester.

**TO CALCULATE BASIC COSTS:–**

Using the handy diagram on the right insert the overall length (A), the width (B) and depth (C) in inches. Simply add the three figures together and multiply by $1. 50 and that's the price in pounds sterling. State if you require the cases made of 14 guage for maximum strength or 16 guage for minimum weight.

For this you will receive a handsome standard **SAMCINE RIGIDISED CASE** to the dimensions that you have specified, fitted with a handle, catches and special opening rest.

Please indicate position of handles you require on diagram showing Standard Handle thus ..... ⊔
Also indicate lid depth (D) if other than standard 1½" depth.




NOTE
Due to **DUST TRAP** Internal opening will be ¾" smaller than external measurement

| | | |
|---|---|---|
| **CALCULATED COST–STANDARD CASE** A+B+C at $1.50 per inch Minimum unit charge $50.00 | | |
| **OPTIONAL EXTRAS** | | |
| **RECESSED HANDLES** Recessed handles add $2.50 per handle and indicate on diagram thus ..... ⊔ | | |
| **LOCKING CATCHES** Locking catches add 75c for each one and indicate on diagram thus ..... ⊞ | | |
| **ETHAFOAM LINING** ¼" thick lining throughout at 75c sq.ft. = ½" thick lining throughout at $1.00 sq.ft. = | | |
| **ETHAFOAM FILLING** Available in layers 1", 1½" and/ or 2" thick $12.50 per cu.ft. State thickness required | | |
| **POLYESTER FILLING** Supplied in layers as above, calculate at $7.50 per cubic foot | | |
| **BASIC TOTAL** | | |
| Add VAT at standard rate U.K. only | | |
| I enclose my cheque for the sum of $ | | |

All prices carriage forward. All cases made and sold CASH WITH ORDER ONLY

Note: We will be pleased to quote for special shapes, metal partitions, and colour finishes as required.

NAME _____

ADDRESS _____

_____

_____

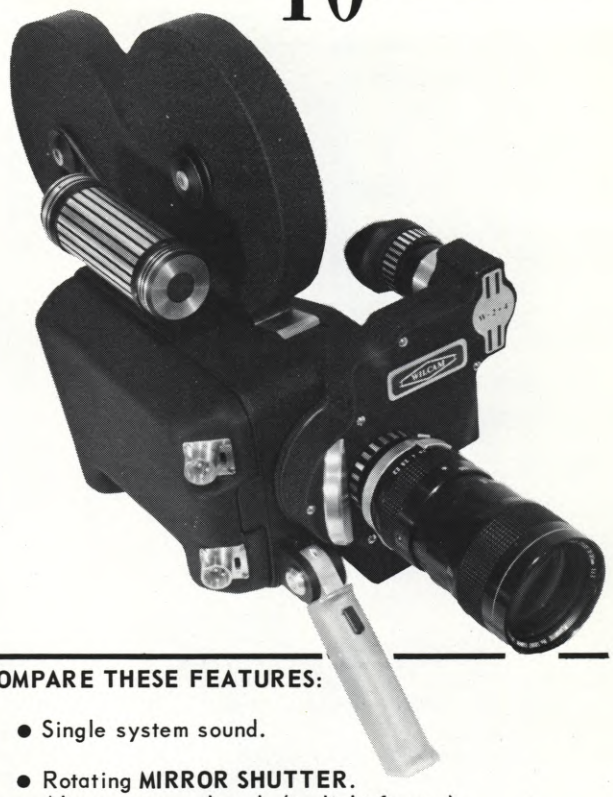
Telephone _____

*SAMCINE SALES LTD*

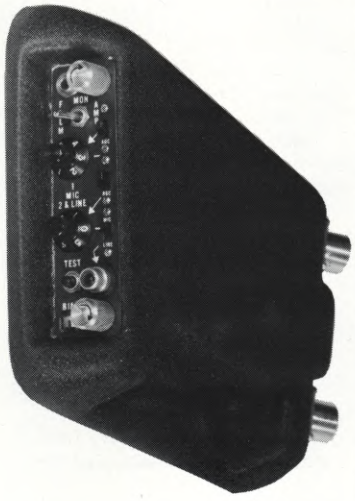
303-305 Cricklewood Broadway
London NW2 6PQ
Telephone: 01-452 8090
Telex: 21430
Cables: Samcine London

# WILCAM NOW GOES 16 mm

## WITH THE WILCAM MODEL W-2+4 *REFLEX* A NEW CONCEPT IN CAMERA DESIGN



with detachable 2 channel AGC AMPLIFIER that becomes an integral part of the camera, no cable.



**COMPARE THESE FEATURES:**

- Single system sound.
- Rotating **MIRROR SHUTTER.** Always stops closed. (no light frames)
- Single frame **INCHING CONTROL.**
- Built in **T.T.L. LIGHT METER** - - - - in Viewfinder
- Audio level **VU METER** - - - - - - - - - in Viewfinder
- **FOOTAGE COUNTER** - - - - - - - - - - in Viewfinder
- **CRYSTAL CONTROLLED** 24/25 FPS plus 36 FPS.
- Takes Mitchell type magazines 400 ft. and 1200 ft. **WILCAM** 200 ft. Magazine also available.
- Bayonet type lens mount.
- Fingertip controlled 4 position internal **FILTER WHEEL.**
- One hour battery recharge.
- **PRICE:** - no higher than current 16mm sound on film cameras with less features.

OTHER 16 mm PRODUCTS:

200 ft. Mitchell fitting magazine with self contained footage counter.

$ 160.00

Record/playback amplifier single & 3 channel - various models.

Magnetic head units - - re-built all types - AURICON - CINEMA PRODUCTS - BLUE RIBBON etc.

$ 185.00

WILCAM PHOTO RESEARCH, INC.

(213) 885-9974

8619 YOLANDA AVENUE
NORTHRIDGE, CALIF. 91324

East Coast:
MOBIUS CINE LTD.
565 Fifth Avenue
New York, N.Y. 10017
(212) 697-8620

Canada:
PHOTOGRAPHIC ANALYSIS LTD.
8 Brian Cliff Drive
Don Mills, Ontario
(416) 445-6410

# RADIO ROCKET BOY T.M.

# AND HOW IT WAS FILMED

**Just-for-fun movie by professional film-makers turns out to be an exercise in sophisticated filming techniques and intricate special effects**

**By JOHN MAYER**

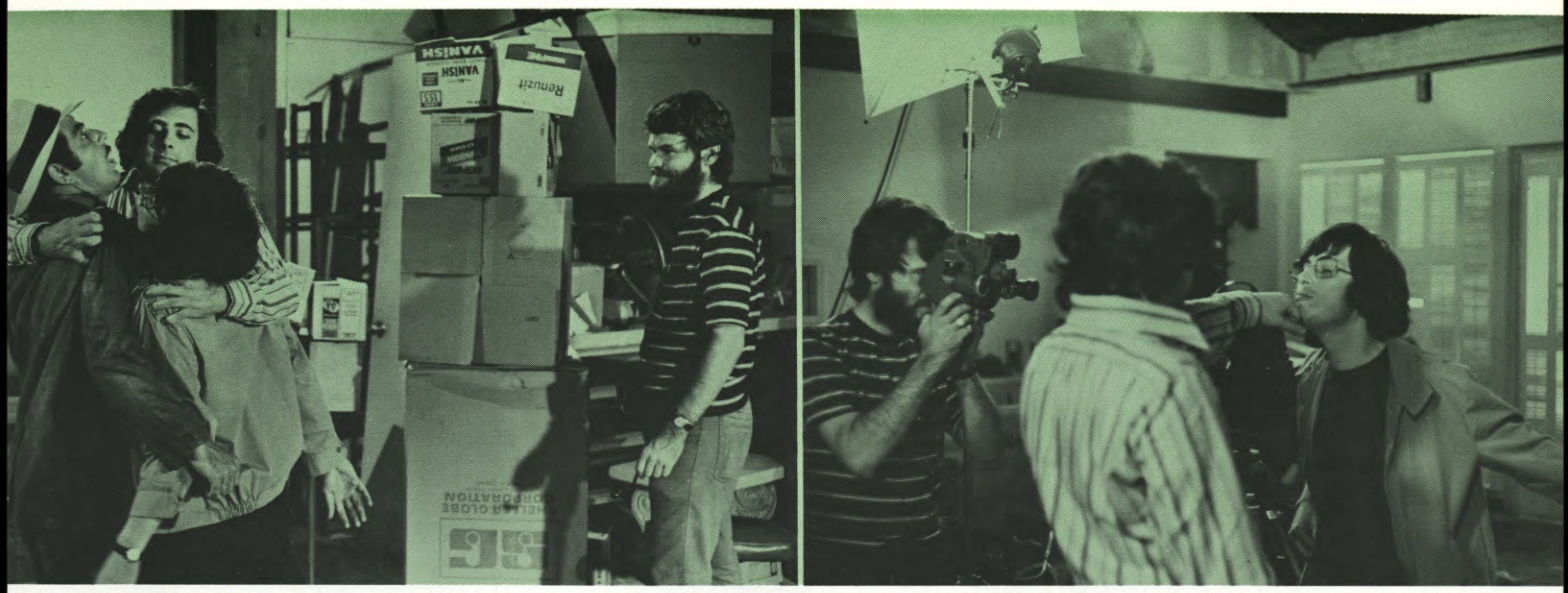
*(RADIO ROCKET BOY is a 28-minute comedy short film in black-and-white. It was made by two Los Angeles film-makers. Without backing or sponsorship, Bob Swarthe and John Mayer enlisted the help of their friends and associates to make the kind of picture they had wanted to make for some time.*

*RADIO ROCKET BOY was inspired by the style of Republic Serials and "B" pictures of the '40's. It is the story of a young man from Outer Space who is sent to present-day Earth to study the ways and customs of our planet. Los Angeles was chosen as his initial landing point, because it was felt that the crowds of this city could successfully hide a visitor from Outer Space, should his initial appearance or uncertain manner tend to give him away. Despite his advanced training, he gets into trouble soon after he lands. Through a strange series of events, his presence becomes known to a gang of ruthless villains. Our hero and an Earth girl he has befriended are cornered in an empty warehouse. He has to fight his way out in order to save himself and the girl. This is followed by a frantic car chase through Los Angeles. The conclusion of the film finds our hero in a dilemma as to whether he should return to his home planet or remain on Earth with the girl.)*

In a way it all began around ten years ago when many of the people involved with the production of RADIO ROCKET BOY were studying in the film department at UCLA.

*A bunch of us would get together and talk about making a film. A feature was not practical so we would talk about shorts. We knew that they rarely made back their cost, but we still wanted to do them. The discussion usually*

**(LEFT) Two-man crew. John Mayer records sound while Bob Swarthe operates blimped Arri rented from Tech-Camera Rentals. Actor Michael Scott gives off-camera lines to Jim Tartan. (RIGHT) Bob Swarthe sets up shot of Ivan Metev in vintage Bentley automobile. ColorTran Mini-Pro is fill light. Black card from matte box of Arriflex to roof of car shields glare from lens.**



**(LEFT) Jim Tartan, Paul Koester and Michael Scott rehearse part of the fight scene while John Mayer looks on. (RIGHT) John Mayer shoots fight closeups with hand-held Eyemo camera. ColorTran Dual 1000-watt light on Reflectasol umbrella is fill light.**

*ended when nobody could come up with a script.*

RADIO ROCKET BOY started simply. There was still the desire to make a short film, and now most of us had ten years of professional experience in the film industry.

*I guess we started the way we always said we shouldn't—shooting tests. We thought about a story of a young man from space visiting the Earth and blocked out a few simple situations.*

*That's right, but it wasn't long before we realized that we shouldn't proceed too far without a good script. TEENAGERS FROM OUTER SPACE was on television one afternoon. It was enough to convince us of what not to make.*

*The idea we had seemed good, but it wasn't enough in itself. We had to get away from the idea of funny space people and campy stylistic gimmicks and try to get a good story to fit our situation. We realized that things here in Los Angeles would be weird enough for any stranger and we decided to keep our spaceman quite normal and sympathetic.*

We really didn't get started shooting until our script was finished, revised, re-written and broken down into shooting days. In comedy, it is often a temptation to improvise from a simple outline or sketchy script, especially in a short film, but since we rarely had the opportunity to shoot in sequence, we really had to have every story point down in detail. We did embellish things here and there and let the actors contribute ideas, but all within the context of the script.

*Paul Koester was right for the part of the spaceman from the beginning. We had both known him since the UCLA days. His older brother Tom (our sound recordist) was at UCLA and Paul had roomed with him for a while and had appeared in a couple of student films. He has a great sense of humor, but is also a good serious actor.*

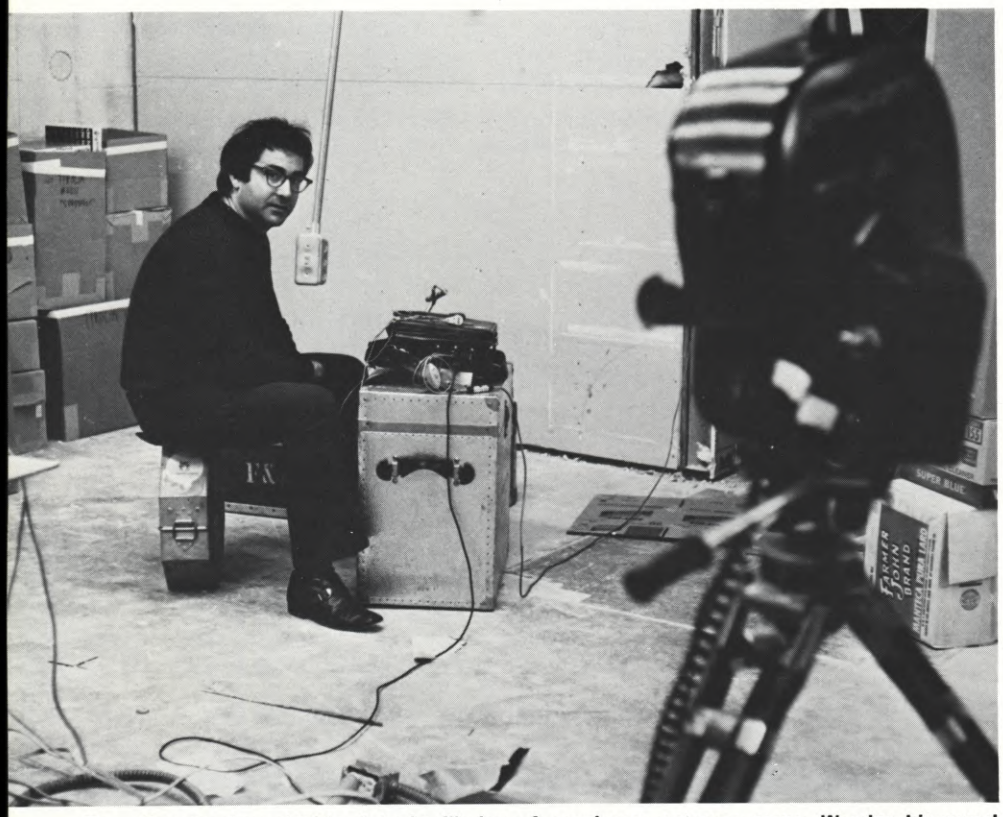
The rest of the cast, for the most part, was chosen from friends, many of whom had been at UCLA.

*Ivan Metev was a colorful character both on camera and off, but it wasn't until he read the part of Cook that we realized how much character he was able to add to an otherwise sketchy and small part.*

*The same goes for Jim Tartan. We knew he was a very professional actor, but we had only seen him do serious parts. As Taylor, he*

**Lighting the warehouse. John Mayer adjusts Colortran Dual 1000 on Reflectasol umbrella for use as fill light. Visible in background are two Cine-Queen lights used as backlights.**

**Frame blow-ups of composite scenes showing beginning and ending of flying saucer landing sequence. The saucer photograph used in compositing was flat lighted to match overcast daylight quality of the live action scene on which it is superimposed. The saucer movement was planned to coincide with live action camera tilt-down.**



**Tom Koester does double duty in filming of warehouse entrance scene. Wearing his sound recordist hat, he waits for the call to "roll it". As electrician's helper, he sits by the light switch to make a light change. Swarthe and Mayer bravely tackled "RADIO ROCKET BOY" without benefit of backing or sponsorship. They enlisted the help of their friends and associates to make the kind of picture they had wanted to make for some time. Despite its whimsical content, it was technically a most intricate film to produce.**

*added so much to the part that we combined two characters into one for him to play. It worked beautifully and helped the story too.*

*Don MacDonald is now a documentary film-maker whom we got to return to acting for the role of Vivitar. It was his first time in front of a 35mm camera in ten years, and he said it was fun. The kid from THE KENTUCKIAN and Disney's Hardy Boys series looks different today, but he's just as good . . .*

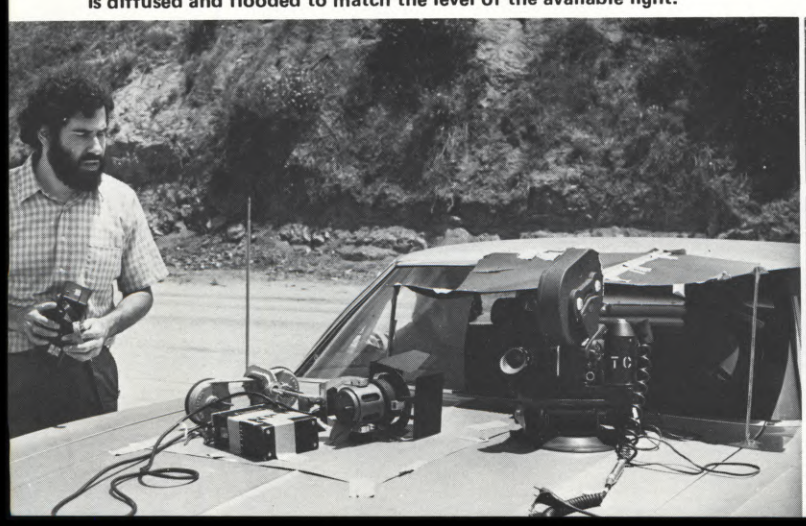
*We had trouble at first finding the right girl for the part of Mary. We thought of a few, but kept rejecting them for one reason or another. We remembered Lynne Stewart from a commercial which Bob directed the year before. She came in for an interview and without having her read a line, we realized she was right for the part.*

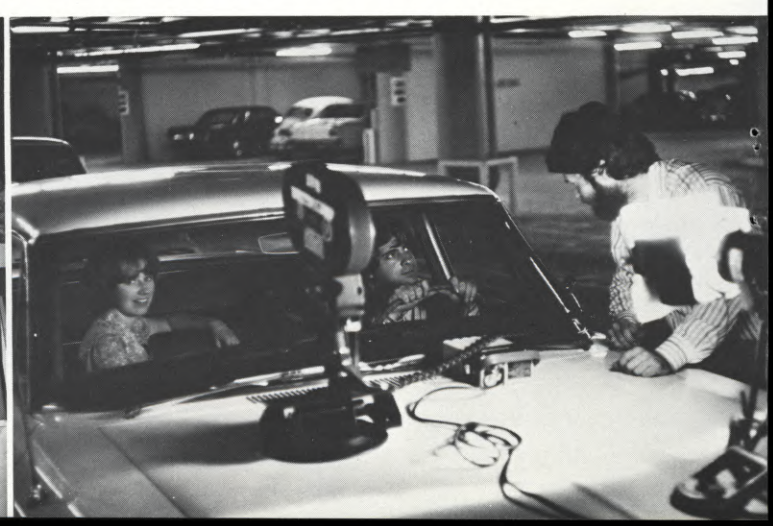
*The others, Holly Irving, Ray Gideon, Mike Scott, John Crofton and Ken Clark were all great. They're all pros and did it as a favor and because they liked the picture. We were very lucky to have them.*

## PRODUCTION PLANNING

It was essential from the start to be

**(LEFT) Swarthe sets up driving shot. Arriflex is on flatbed motor mount and Super-Grip car mount. ColorTran Mini-Pro is fill light. Cardboard sunshade later proved impractical in wind currents while car was moving. It was replaced by a black cloth and pipe stands. (RIGHT) John Mayer explains action to Paul Koester and Lynne Stewart in basement garage driving scene. Arriflex is on hi-hat and Super-Grip mount. ColorTran mini-pro is diffused and flooded to match the level of the available light.**





careful in the area of production planning. RADIO ROCKET BOY was written for a fairly large cast and had many locations. We not only had to solve the normal problems in logistics with cast, crew, equipment and locations, but we also had to consider a few others. First, we had many of the actors for only short periods of time. We were shooting in the summer and two of the principal players were leaving for vacations. Others worked hours that would only permit certain days for filming. Paul Koester lived and worked in San Francisco and had to come down to Los Angeles during his vacation.

We also had to consider cost factors like equipment rental. We had access to cameras for silent filming all of the time. This meant we could go out and do pick-up shots, establishing shots, car chase scenes, etc., but for sync sound we had to rent a blimp or entire blimped camera. Naturally we wanted to be able to shoot as much sync sound as possible at the times we had the blimped camera.

An example of our condensed shooting schedules is the one day we filmed all of Ivan Metev's scenes. First we took him to the warehouse location. It was a large storage room at a TV commercial production company (The Haboush Co.). We lit one corner of the room and Ivan made his entrance and spoke to Paul who was not actually there. Paul's side of the conversation was filmed a few days later. Next—we filmed an insert of Ivan making a quick exit from another corner of the room. We then moved across town to a furniture showroom where we filmed Ivan's office scenes. Ivan changed costumes and we shot all of his phone conversations (for two scenes) in various angles. Next, Ivan changed back into his other suit and we rushed off to a parking lot where we filmed him behind the wheel of a car. We had to shoot scenes here which would intercut with driving shots for the car chase covering about six different locations. As an aside, we were aided tremendously by the medium of black & white photography. It was much easier to match various locations shot on different days with different lighting conditions than it would have been in color.

Jim Tartan, an experienced director as well as actor, was amazed when he saw himself in the rough cut of the film. He had worked one full day and two other partial days of three hours each and had ended up with the second largest role in the film in terms of screen time. In fact, one series of shots we made of him in about twenty minutes of shooting ended up being intercut with six widespread locations. He suggested we write an article about the shooting of the film entitled "An Encyclopedia of Cheating." Many members of the cast never met the people with whom they had been acting until the night we screened the finished film for the entire cast.

I suppose the most widespread use we made of combined locations was the part of the film where Paul and Lynne go into a photo booth. They are being followed by Jim. The scene begins with a long shot on Santa Monica Pier, cuts to a medium shot matching their entrance to a photo booth shot at a Hollywood drugstore. Next, a medium shot of them looking at the photo taken in Bob's backyard in Beverly Hills, an insert close-up of the photo taken a month later when we had a macro lens for the day and, finally, Jim Tartan picking up the photo they discarded (shot behind a store in West Los Angeles)—a smooth continuity scene shot over a six-week period covering about fifteen miles of area.

One advantage film-makers have today is the availability of lightweight and portable equipment. Both of us have experience in documentary filming. This came in handy because we often had to shoot scenes for RADIO ROCKET BOY as a two-man crew. The method was documentary, but the look of the film was theatrical. A Cine 60 Blimp and Linhof tripod with a Miller head, the Nagra recorder and 30V Mini-Pro Light were all small and light enough to carry along with the cast in a car. But shooting methods were not approached like a *cinema verité* or news shoot with hand-held shots and lots of zooms.

**Continued on Page 1304**

**(TOP) A rough drawing of the proposed flying saucer. (CENTER) Swarthe works on modeling of miniature flying saucer, which is constructed of styrofoam and modeling paste. (BOTTOM) Applying the finishing touches.**

**(LEFT) Swarthe and Mayer line up shot of Jim Tartan in the phone booth. (RIGHT) Unblimped Arriflex with constant speed motor and sync generator in base is used to record dialogue of Tartan in booth. Glass successfully blimped camera noise. Fill light is Mini-Pro, with diffusion. Tripod is Linhof with Miller Fluid Head.**

# SHOOTING "E FORCE ONE" IN AUSTRALIA AND SOUTHEAST ASIA

**American production personnel and Australian technicians establish close rapport in filming a complex action feature on a very short shooting schedule**

A surviving Nazi war criminal, nerve gas, a time bomb and some exotic Eastern locations are the principal elements in ". . . AND MILLIONS WILL DIE!" a suspense-laden drama filmed in Sydney, Singapore and Hong Kong under the working title "E FORCE ONE", which will also be the title of the forthcoming spin-off TV series. E Force One is the title of a fictional global environmental authority based in Sydney, Australia, to control the spread of pollution. In this instance, a deranged Nazi war criminal has concealed a quantity of nerve gas linked to a time bomb in a Hong Kong sewer. If he does not return from a "business engagement" within a specified time the deadly gas will automatically be released . . .

"E FORCE ONE" is the first of what will, hopefully, be a series of top-quality feature-length films produced by APA Leisure Time International Ltd., a large Sydney production house. APA, with the collaboration of Mende Brown, a New Yorker, was responsible for the successful TV series "THE EVIL TOUCH", which guest-starred American actors and was made expressly for the American market.

Mende Brown directed most of the episoses of "THE EVIL TOUCH" himself, using an Australian Crew, including Paul Onorato as cinematographer. Paul, who is only 26, was given the opportunity to shoot "E FORCE ONE" when the decision was made to branch out into feature production and the project was mooted and he accepted the challenging assignment with enthusiasm. Mende Brown assumed the role of producer and hired Leslie Martinson ("PT 109", "FATHOM", "MRS. POLLIFAX, SPY"), to direct. With a limited budget, a filming schedule of 19 shooting days including a week each in Singapore and Hong Kong, "E FORCE ONE" was an ambitious undertaking for all concerned. The shooting, in fact, paralleled the race-against-time situation depicted in the script and was a continual process of rationalization and compromise.

Although "E FORCE ONE" was produced primarily as a feature-length film for U.S. television, it will be shown in cinemas elsewhere. Following the practice of using American actors in the major roles, Richard Basehart was cast as Dr. Pruitt, head of the E Force One organization, with Susan Strasberg, Leslie Nielsen and Australians Peter Sumner, Tony Wager and Alwyn Kurts in supporting roles.

Whereas "E FORCE ONE" would be a routine production in the U.S., in Australia it takes on a greater importance. Many feature films have been made here recently, such as "NED KELLY", "OUTBACK", "WALKABOUT" and "DON QUIXOTE", but normally the directors concerned bring key technicians with them, especially cinematographers. The use of Paul Onorato, an employee of APA, to shoot "E FORCE ONE", and, indeed, a crew consisting entirely of local technicians has given them a chance to prove themselves and generally acted as a morale booster for the industry in Australia—a situation for which Mende Brown and Les Martinson are to be commended.

Martinson, a director with a traditional Hollywood background, confessed that initially he was apprehensive: "I'd seen Paul's work; I ran a number of the teleplays that he'd done—I wasn't apprehensive from the point of view that Paul was capable, but because he hadn't seen the locations." Paul had, in fact, arrived back from shooting commercials in Germany only three days before shooting commenced. "We'd been to Hong Kong; we had day-for-night work to do—maybe problems, and it's rather a lonely feeling for a director to be scouting locations of better than a week in Singapore and a week in Hong Kong, as well as all the local locations, and not have your cinematographer there," commented Martinson.

Paul was equally nervous, meeting

**(LEFT) The crew of "E FORCE ONE" shooting a sequence in the cramped quarters of a hospital laboratory. Mini-Brute luminaires worked well in providing the soft light complementary to the cinematic style which had been established. (RIGHT) Using Mini-Brutes as exterior fill, a scene is shot near Sydney to intercut with Singapore sequence.**

the director only three days before the shooting began. Luckily, they achieved an ideal working relationship within a very short time and were in complete accord regarding the shooting style; a four-week schedule leaves little time for clashes of temperament and ego-tripping. Early into the shooting any final misgivings the director had were quickly dispelled. "I was apprehensive when I first went out, too, and I saw the size of the crew, but at the end of the first hour or two I knew there was no problem. I can't tell you how impressed I am," said Martinson.

Initially Paul had to make some major decisions: One was to use Arriflex cameras throughout the production. Another was to use a predominantly flat lighting style. "Soft lighting is so much in vogue now that it's almost becoming the norm, but I went for this mainly because it's a little kinder to the actors. It's less restricting for them, giving freer play areas, and, of course, it gives results which simply can't be obtained with hard lighting—unless you start using lens diffusion, which becomes fiddly with a zoom lens and the final result isn't very nice anyway, unless you're going for a specific effect," was Paul's philosophy.

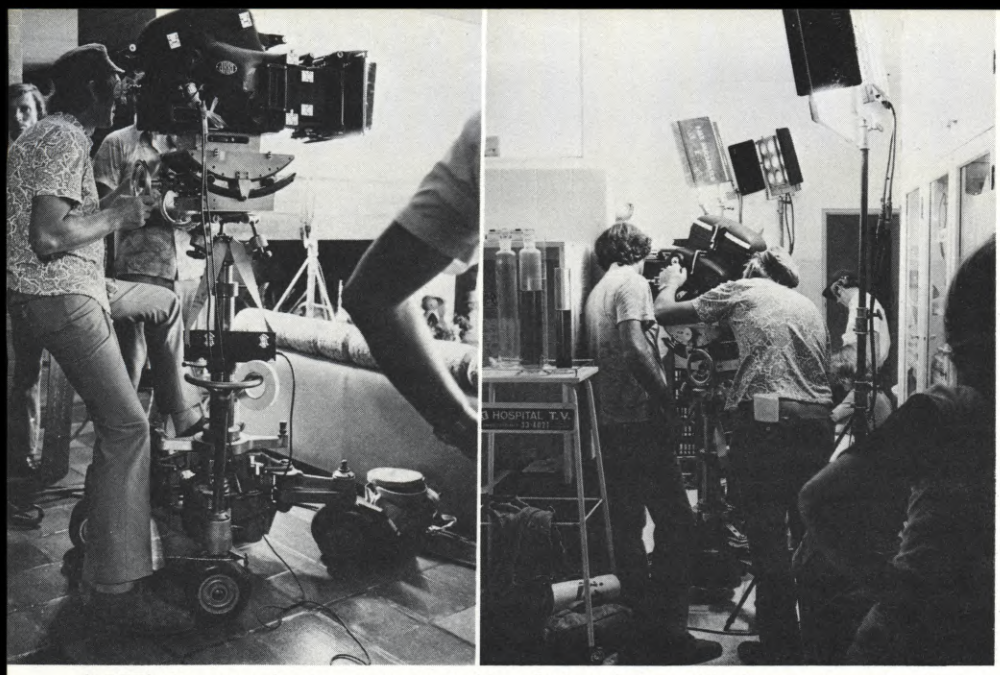
This lighting style helped Paul in certain situations; it helped him avoid extremely contrasty scenes, bearing in mind the film would be screened on TV, and it meant he needed to make no particular concessions in his lighting of Susan Strasberg.

He also explained his decision to standardise on Arriflexes. "In this country we are mainly using Arriflex equipment and it's useful because we have freedom to use any lenses on the cameras; we're not tied down to using a non-standard camera, or what is to us a non-standard camera—if we were using a Mitchell as a master camera, for example. Secondly, although we own a BNC, it's not a reflex, and while we are considering getting this done there really wasn't the time; so we decided on an Arriflex with a 120S blimp and we find it's doing the job very well." Three identical camera bodies were used, and the Arriflex parts interchangeability factor was an important point in its favor.

On the question of lenses, Paul stressed the necessity for a reflex camera, as most of the film was shot with a zoom lens. He admitted his reaction to zoom lenses was ambivalent: "The only way to shoot this picture is with a zoom lens—this is in keeping with the current style in this type of film", he explained early in the shooting, "There's far less time lost in changing lenses and you have far more artistic creativity available to you, if necessary—because you can


**26-year-old Australian Director of Photography Paul Onorato (left) stands by while American director Les Martinson checks set-up through viewfinder of Arriflex camera, which was used to shoot the entire feature. Onorato and Martinson, though differing greatly in background and experience, quickly established a close working rapport that carried them smoothly through the short shooting schedule.**

**Colortran PAR-64 lamps, mounted on hood of Mercedes 600 by means of limpets, served as fill light for shooting interiors of the car. Side-mounting camera rigs, previously arranged, could not be used, because the director preferred a more frontal shot. Sequence was finally photographed using a 28mm lens and with the Arriflex, in Cine 60 blimp, mounted on the front seat.**



**(LEFT) The crew shoots a sequence inside a Sydney home, with the camera mounted on an Elemack dolly. (RIGHT) Cramped quarters inside the hospital laboratory presented a challenge, but failed to daunt the efficient and adaptable crew. Film was completed on a 19-day shooting schedule, including one week each in Singapore and Hong Kong locations.**

vary the shot infinitely. There is just no other way to do it if you want to work fast. But I also have reservations about zoom lenses. This particular lens was hand-picked and it's probably the best Angenieux 25-250mm lens that I've seen. At full aperture the quality may not be as good as some of the smaller-range zoom lenses, but it's more than acceptable and we still have the versatility of the 10:1 zoom range".

With the experience gained in shooting "THE EVIL TOUCH", Paul was adept at working quickly and precisely, mixing conventional and more unusual techniques with complete assurance. For example, although he used Eastman color negative (5254) generally rated normally, with an increase in speed only in certain conditions, his method of balancing interior to exterior lighting was more unusual, the product of obtaining maximum lighting from the least number of lighting units without opting for a major rig or utilising 85 filtering over the windows. This meant the use of ½ blue filters over the lights, complemented by ½ tungsten correction on the camera lens which rendered flesh tones correctly, but left the exterior partially, but acceptably, uncorrected and, more important under the circumstances, gave a considerable increase in the available light level.

At one stage, while shooting in a large Sydney home, Paul and his efficient camera crew—operator Bill Grimmond, assistant Bob Thompson and gaffer Warren Mearns—fought a winning battle against the rapidly failing afternoon light. By shooting against the large bay window of the living room first, and doing reverse angles later, the sequence was filmed—but only just. "Balance is the key to lighting," Paul confided between set-ups, "the problem is to get people to realize that they have to move fast in this sort of situation."

He used Mini-Brutes throughout the film, supplemented by reflectors on exteriors and 1K Masterlites and Sun-Guns on interiors. "We were carrying three Brutes and a 1000-amp generator, more as insurance than anything else, but because we had only a small electrics crew we tried to avoid using them. Brutes are tremendous for large night-for-night exterior shots, but for the Sydney locations we didn't need them. We would have liked to have had them in Singapore and Hong Kong but they just weren't available to us there," explained Paul on his return to Sydney.

Another troublesome interior was a Sydney stormwater drain which represented a Hong Kong sewer where the nerve gas was hidden. Here, the crew was working in water up to their knees to rig the necessary lights. In fact there was no existing lighting, so in order to produce a legitimate source of light for the sequence, Paul had some practical lights inside wire cages strung along the tunnel. This provided an obvious source of light for the scene, permitting Paul to supplement it as required, and it made the location more interesting visually.

When the company flew to Singapore, there were more problems. There was a considerable number of dialogue sequences shot inside moving cars. Because the actors involved had other commitments there was no opportunity for looping after shooting was completed, so a reasonable sound track had to be obtained during the shooting. For once the restriction was not due to the tight budget, but that made the problem no easier to solve. To make these shots Paul asked for, and got, the car that he wanted, a Mercedes 600, which has a fairly high roof. The problem was compounded when he discovered that the side-mounting camera rigs he had organized would be useless; the director preferred a more frontal shot which could only be obtained from inside the car. These sequences were finally shot with 28 and 75mm lenses on the 35 Arri in a Cine 60 blimp, which was mounted on the front seat.

The lights arranged for use in Singapore were not available, so the car boot had to be filled up with batteries and Colortran PAR 64 lamps were mounted on the hood using limpets. With Paul operating, plus the actors, the director,

**Continued on Page 1336**

**Shooting on a rural Sydney location doubling as Singapore. Director Martinson (walking toward camera) worked with one-third the amount of personnel he had been accustomed to use in shooting a "MANNIX" episode, but found it "inspirational" to work with such an efficient and dedicated crew.**

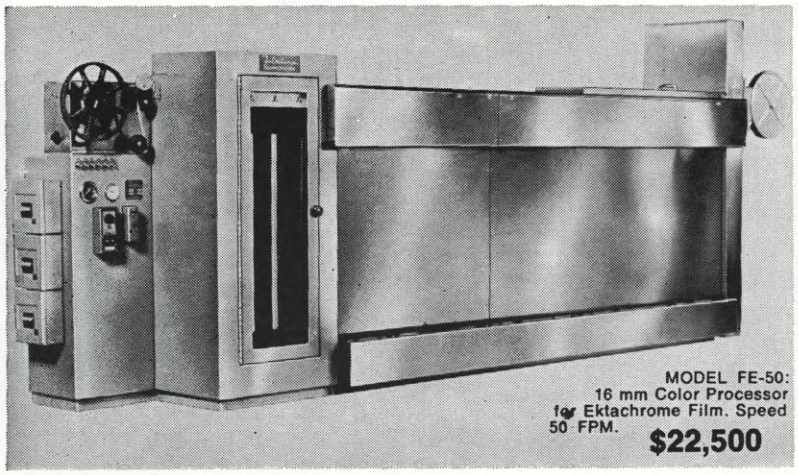
# The Money-Makers

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

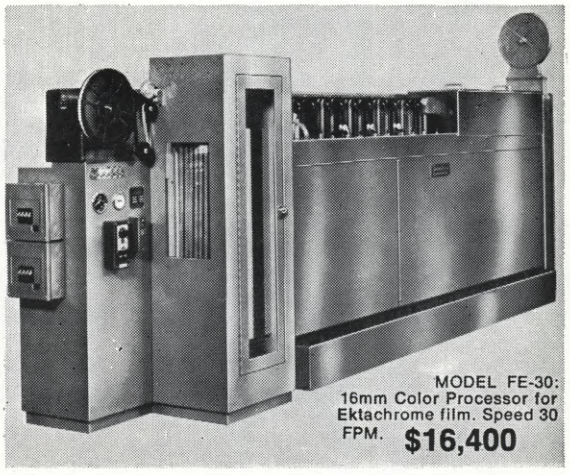
The Filmline Models FE-30 and FE-50 are fast, foolproof, troublefree and long-lasting. They turn out consistently superior work. The design is backed by Filmline's reputation as the world's leading manufacturer of film processors for the motion picture laboratory industry.

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.

Filmline CORPORATION
MILFORD, CONNECTICUT

Dept. AC10

Send for Literature.

Time & Lease Plans Available.

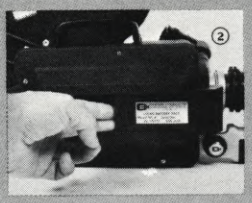
**"When you buy quality Filmline Costs Less"**

**(203) TR 8-2433**

# Eat your heart out.

If you're not using the CP-16 or CP-16/A for your TV news or documentary filmaking, you have every reason to feel sorry for yourself.

A look at just some of the outstanding features of the CP-16 16mm camera system will show you why:


① Freedom of movement not available with any other news camera. Ideal for action filming.

② No heavy power supply to weigh you down. Light Nicad battery fits into camera body, drives up to 4000′ of film on one charge. Extra battery comes with camera, fits in shirt pocket.

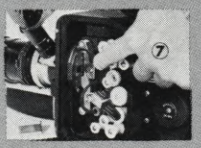
③ Cameras are lightweight even when fully equipped with battery pack, loaded 400′ magazine, 12-120mm Angenieux zoom lens: CP-16, 15 lbs. 13 oz.; CP-16/A (with Crystasound record/playback head and built-in amplifier), 16 lbs. 13 oz.

④ Despite light weight, cameras are extremely rugged and completely reliable.

⑤ Silent operation allows for uninhibited candid cinematography.

⑥ No need for a tripod when speed and camera angle make the difference in getting a shot.

⑦ Crystal controlled motor allows for single or double system wireless recording.



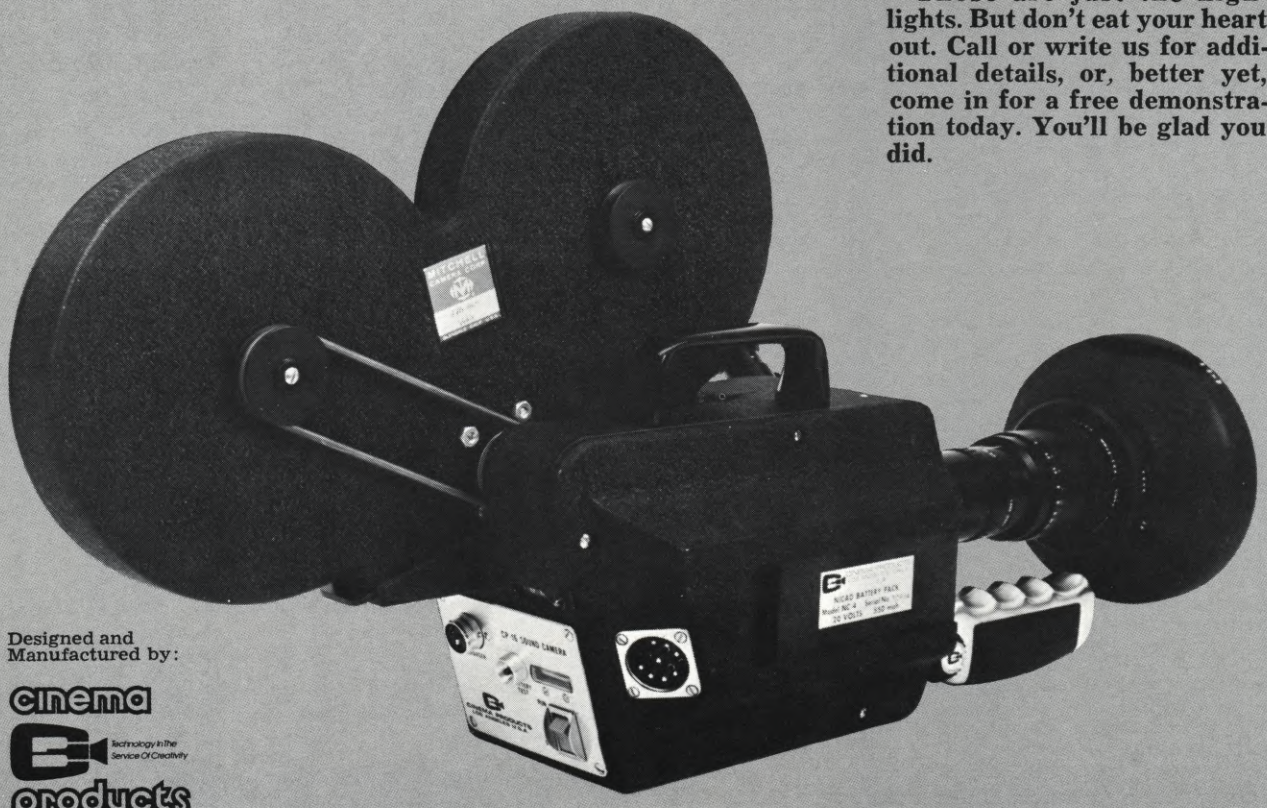

⑧ Cameras perform equally well in all types of weather, from extreme heat to extreme cold.


⑨ Standard Mitchell-type 400′ or 1200′ magazines can instantly be snapped on or off camera with unique quick-release button.

⑩ CP-16/A features built-in Crystasound amplifier which draws its power from the same battery pack that drives the camera.


⑪ CP-16 camera system is all-American made.

Those are just the highlights. But don't eat your heart out. Call or write us for additional details, or, better yet, come in for a free demonstration today. You'll be glad you did.



Designed and Manufactured by:

cinema products CORPORATION
Technology In The Service Of Creativity

Available From:

**THE CAMERA MART INC.**
456 W. 55th Street, New York, N.Y. 10019
(212) 757-6977

**VICTOR DUNCAN, INC.**
11043 Gratiot, Detroit, Michigan 48213 • (313) 371-4920
676 St. Clair, Chicago, Illinois 60611 • (312) 321-9406
2659 Fondren, Dallas, Texas 75206 • (214) 369-1165

**ALAN GORDON ENTERPRISES INC.**
1430 N. Cahuenga Blvd., Hollywood, Calif. 90028
(213) 985-5500 / (213) 466-3561

# If you have a little money to spare you can buy a kid breakfast for a year.

# If you have a lot of money to spare you can buy him a home.

For 17 years, WAIF, the Children's Division of International Social Service, has been providing homes for homeless children throughout the world.

We've arranged for their adoption and foster care, settled custody or guardianship problems and reunited many with their families after long periods of separation.

We want to continue doing this. And we can. With a little help from you.

Just $10 can buy breakfast for 8 months for a pre-schooler in Venezuela.

$25 will provide English language lessons and counseling for a refugee child coming to the U.S. from Hong Kong.

$150 will reunite a Mexican-American family separated by immigration problems.

$240 will pay for a year's foster care for a Vietnamese baby.

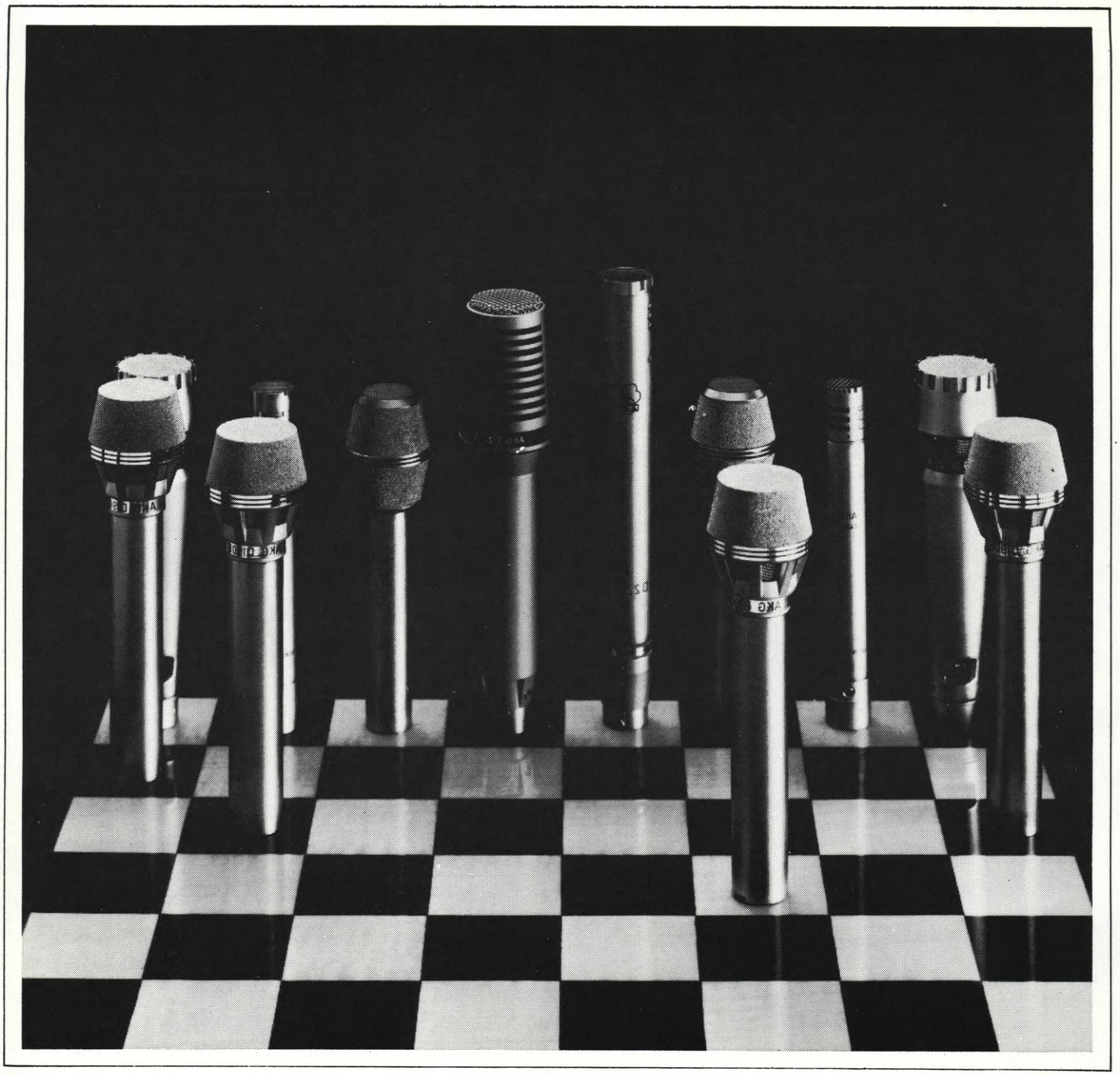
And $500 will find a home in the U.S. for a rejected Korean child.

Your contribution, no matter what its size, will help make life a whole lot happier for one of these children somewhere in the world.

Send your donations to *WAIF, Box 2004, N. Y., N. Y. 10017.*

All gifts are deductible from U.S. income tax.

WAIF



AKG-33

# STOP & THINK...
## BEFORE MAKING YOUR MOVE, ADVANCE TO **AKG** AND CAPTURE A NEW DIMENSION IN **PERFORMANCE!**

Check with your local Professional Equipment Dealer or write us:

**AKG MICROPHONES · HEADPHONES**

DISTRIBUTED BY
NORTH AMERICAN PHILIPS CORPORATION
100 EAST 42nd STREET, NEW YORK, NEW YORK 10017
TEL: (212) 697-3600 TWX: 212 867-5624

# More post-production perfection from Kingsway.

## The P.A.G. Mini-Rack.

P.A.G. has combined fine, superior quality equipment with space-saving design.

Now from P.A.G. comes a totally new recorder mixer in modular form to interlock and build up units as you need them. They can be interfaced with all standard systems, have a frequency of 30 Hz to 15 KHz, ± 2dB; signal to noise of —65dB; a wow and flutter of 0.09%.

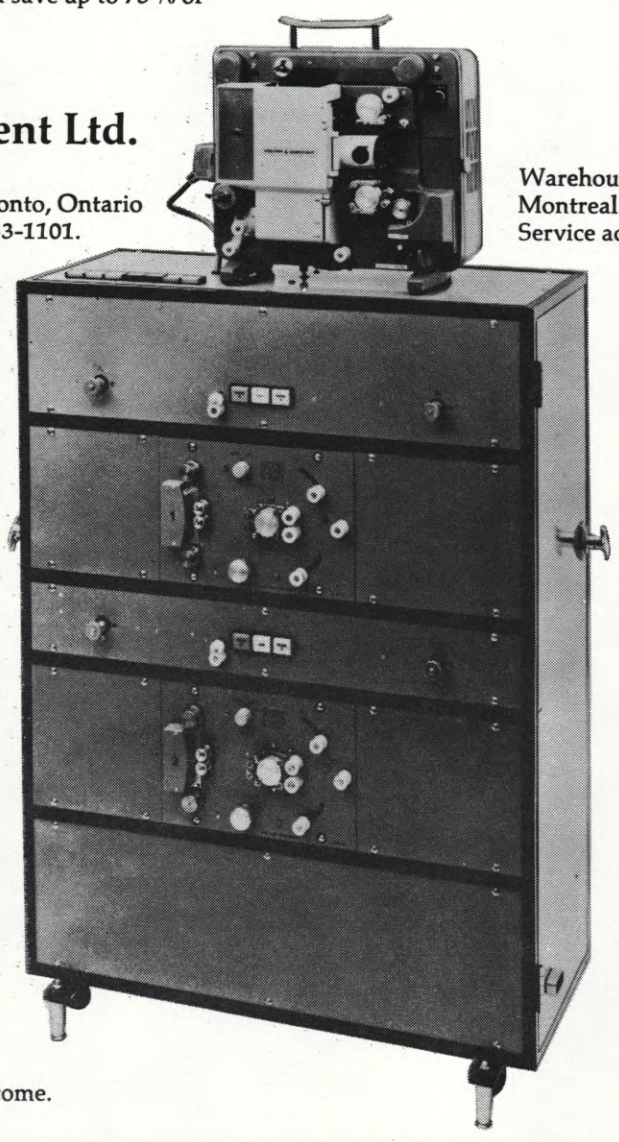
With the P.A.G. Mini-Rack, schools and recording studios can save up to 75% of the space normally required. The Mini-Rack can incorporate up to eight 16 mm magnetic film transports, interlocked mechanically with a projector. And the system is entirely modular for expansion as required.

Write us for more information about the P.A.G. Mini-Rack modular Recorder Mixer. Kingsway is agent for P.A.G. — and many other fine lines of post-production equipment.

**Kingsway Film Equipment Ltd.**

(For Professionals.)
821 Kipling Avenue, Toronto, Ontario
M8Z 5G8 Phone (416) 233-1101.

Warehouses in Toronto, Montreal and Vancouver. Service across the country.



U.S. Dealer inquiries welcome.

# FILM-MAKING IN THE LONE STAR STATE

## Deep in the heart of Texas, a surprising number of production organizations busy themselves with all types of film-making

By LEONARD F. COLEMAN

*Regional Sales Manager, Motion Picture and Education Markets Division, Eastman Kodak Company, Dallas, Texas*

First it was cattle, then oil. More recently, electronics. But now movie-making has captured the attention and imagination of Texas businessmen. And Texans rarely develop a new interest in a small way.

In 1972 there were 22 feature films made on location in Texas for release to theaters and television. That isn't Hollywood—not yet. But the Texas Film Commission reports that it expects more than 35 feature films to complete production in Texas this year.

What's more, activity is broad-based. Last year's crop of feature films included such major studio productions as Sam Peckinpah's "THE GETAWAY", made for Universal Studios. The story was written by a former Texas newspaperman who geared it to Texas locations.

There also were several movies made for television, including "HERNANDEZ" and "ROAD COMPANY". Considered good prospects for series in 1974, both are topical police dramas geared to fast and realistic location filming.

Balancing the activity of outside producers working in Texas is the rise of such local companies as Wynne, Century, and Presidio. While their names don't yet rank with MGM, Paramount, Disney, and other such studios, they are using Texas talent, money and, increasingly, laboratories and other technical facilities to produce more movies every year.

Richard Zanuck started off 1973 on the right foot for the Texas film industry in January when he went on location with "SUGARLAND EXPRESS" in San Antonio, Houston, and Austin. By March, film crews working on theatrical and television features, as well as hundreds of commercials and business films, were traveling all over the state.

Texas offers large areas blessed with mild weather throughout the year, and a wide choice of locations, from deserts to snow-covered mountains, from modern big cities to period-style small towns that haven't changed in appearance for decades. This combination of circumstances has drawn film-makers to the state almost since George Eastman started selling motion-picture film.

The earliest were W. Hope Tilley and his brother Paul. They came to Houston in 1910 to produce and sell "newsreels." The following year, they moved to San Antonio, and organized the Satex Film Company to produce one-reel dramas. These usually were shown evenings on a screen set up in front of the Alamo.

In 1913, the Tilleys took their company to Austin, where they filmed a three-reeler entitled, "THEIR LIVES BY A SLENDER THREAD". The movie was distributed nationwide by another pioneer movie organization, the Warner Company.

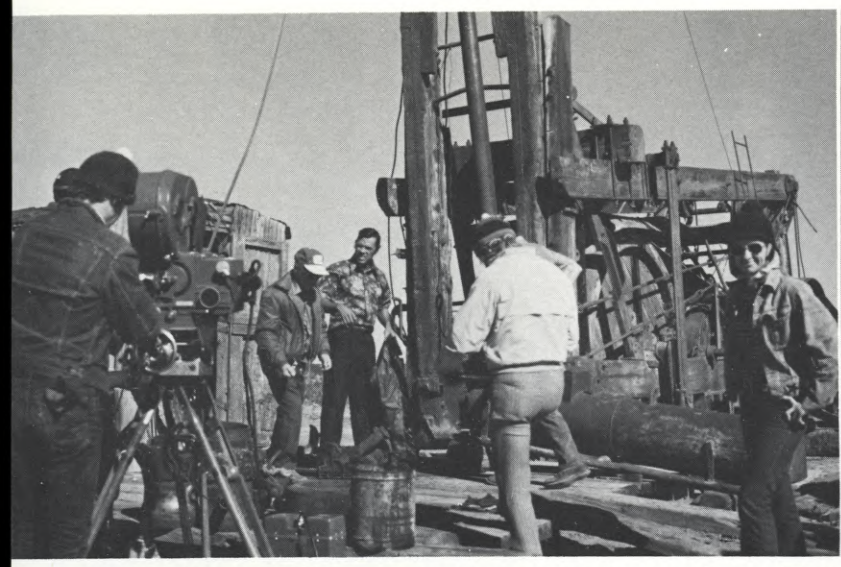
The Tilleys eventually dropped from sight, but they clearly were forerunners of things to come. In 1916, Hugh Jamieson, Sr., organized in Dallas the oldest continuing film company in the Southwest, and one of the oldest in the nation.

The Jamieson Company pioneered in non-theatrical film production and later made major contributions by designing, operating, and selling 16mm film processors.

But Jamieson wasn't the only early film-maker with eyes for Texas. The Fox Company filmed the exteriors for "THE WARRENS OF VIRGINIA" in and around Austin in 1923. Trade publications of that period recited mild weather and natural scenery as the major attractions, and others heeded the call.

In 1924, Paramount filmed "NORTH OF THE 36TH" in Houston, and King Vidor's screen classic, "THE BIG PARADE", in San Antonio. During the next several years, location footage for "WINGS" and "THE ROUGH RIDERS" was exposed at various Army bases in Texas.

**(LEFT) A Mulberry Square production crew sets up to produce a 16mm color commercial with "a 35mm look." (RIGHT) Joe Pope, vice president of Film Production Services, left, a Dallas-based company specializing in packaging for outside producers, checks 35mm camera rental equipment at Victor Duncan. He meets with Sales Manager Virginia Hart and Rental and Service Manager Bob Sanmartin.**



**(LEFT) "FOX STYLE" was produced on location at various places in Texas by an all-Texas crew and cast by Presidio Productions, Inc., a Texas company. (RIGHT) Bill Stokes is seen on his 6,500-square-foot sound stage in Dallas, where most of the interiors for "BONNIE AND CLYDE" were filmed.**

The list goes on. There was the original "FALL OF THE ALAMO", made by Vitaphone; "THE BIG SHOW", starring Gene Autry and Roy Rogers, and others made during the 1930s and 1940s.

The state got its first permanent set in 1950 when the town of Brackettville, hard hit by drought and the closing of nearby Fort Clark, made a strong pitch to Western movie-makers. Paramount responded by filming "ARROWHEAD" there in 1952 and Republic followed three years later with "THE LAST COMMAND".

Segments of old San Antonio, including a facsimile of the Alamo, were reconstructed at Brackettville in 1959 for John Wayne's blockbuster, "THE ALAMO". This helped establish the town as a location for many movies, TV series, and commercials, in addition to turning it into an important tourist attraction.

The Brackettville story is being repeated in varying degrees all across the state. Warren Skaaren, executive director of the Texas Film Commission, explains why:

"Movie-making is an industry that creates jobs, attracts money and tourists, and provides generally favorable exposure that just can't be bought. Once people realized all of this, we were able to launch a strenuous effort to build the industry."

Skaaren, a native of Rochester, Minnesota, was graduated from Rice University, Houston, in 1969. He first worked for the governor's office on a number of assignments that gave him an opportunity to see and learn more about the state.

He organized the Texas Film Commission in mid-1971, under the auspices of the governor's office, and saw its role as two-fold:

- ★ To attract outside producers of all types of films to work in Texas and, as much as possible, to use local talent and services.
- ★ To help local producers build their business.

Starting with a three-member staff including Skaaren, the commission has tackled an ambitious, multi-faceted assignment with enthusiasm. And because it is a part of the governor's office, it has the necessary influence and authority to help film-makers when bureaucratic red tape, simple inertia, or other problems slow production.

There was the day, for example, when a producer scheduled to film at the Alamo, found the flags flying at half-staff out of respect to the recently deceased Presidents Harry Truman and Lyndon Johnson. Meaning no disrespect, the producer needed the flags all the way up for the sequence.

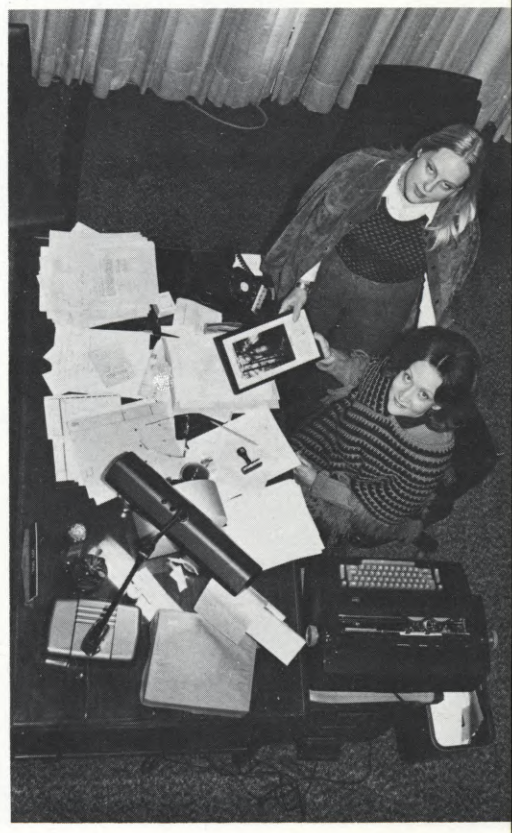
The Daughters of the Texas Revolution, however, who operate the monument, were ready to defend the position of the flags with as much courage and energy as Davey Crockett and Jim Bowie showed during General Santa Ana's attack. But a quick call to Diane Booker at the commission's office in Austin resolved the impasse.

This isolated incident also illustrates the important fact that the commission makes it possible for producers to resolve most of their location problems through one source. The use of public facilities and streets, and liaison with other governmental agencies and the private sector all can be arranged through the commission.

In addition, the commission has collected and cataloged a story and script library that contains the seeds of some 75 yet-unmade movies based on the state history. This material is available to any producer seeking properties for filming in Texas.

The commission also has documented the topography, architecture, and general physical characteristics of hundreds of locations all over the state.

**Diane Booker, left, program coordinator for the Texas Film Commission, checks the proof for an ad layout with a secretary in the governor's office at Austin.**



This can be used by any producer who wants to save time in scouting locations.

Another commission service is the publication of a directory listing all facilities available to producers working in Texas. These range from film laboratories and special effects services, to sound stages, recording studios, editing facilities, rental equipment, prop houses, animal trainers, and antique car clubs.

For investment-minded Texans, the commission has prepared a guide to economic opportunities in the film industry. It explains how to invest in a movie, and outlines the information that investors should have before making decisions.

The commission also works closely with the 16 colleges and universities in the state that offer degrees in film-making or related fields. The objective is to provide educators with the feedback needed to shape curricula to match future job markets and job requirements.

Many graduates go to work for local TV stations, and non-theatrical movie producers. Texas has 49 commercial TV stations, more than any other state. The majority of these originate and process their own newsfilm, documentaries, and some commercials on 16mm film. As a result, the newcomers have an excellent opportunity to gain practical experience in directing, shooting, editing, and processing film.

There also are many opportunities to work with independent companies specializing in making commercials and non-theatrical films. In Dallas alone, the Yellow Pages list 54.

We at Kodak also like to think our company has contributed to the surge of film-making in the Lone Star State. Most local TV station programs originate on Kodak Ektachrome EF film; production houses use Eastman Ektachrome commercial film for most of their work.

We have an engineering service staff, supported by a technical laboratory and a warehouse and distribution center in Dallas.

**A punched control tape produced with information derived from an Eastman video color analyzer, model 1635, automates the operation of printers at a Texas film laboratory. Texas laboratories have refined their 16mm film processing and printing technologies to serve a burgeoning commercial film industry.**

This allows us to provide producers working anyplace in the Southwest with the same fast response to supply and service needs that their brethren in Los Angeles, Chicago, and New York take for granted. It also allows us to work closely with Texas film laboratories, which have contributed so much to the state's emerging reputation as a high-quality and low-cost production center.

In this context, much of the rapidly growing film-making got its impetus in the mid-to-late 1960s, when advertising agencies and sponsors began to look toward Texas. Most local producers are now frank to admit that, at the start, this commercial business was based solely on lower prices.

To capitalize on this opportunity, many producers and laboratories refined their methods of shooting 16mm color film commercials. As they gained experience, many were able to do more than trim production costs for agencies and sponsors. They also began to pitch successfully for national accounts on the basic of creative and technical skills.

As the commercial business grew, many new companies opened. One Dallas company that has thrived in this competitive atmosphere is Mulberry Square Productions, founded in January, 1971, by Joe Camp and Ben Vaughn.

"We started with a very simple philosophy," Camp explains. "We believe that if your release medium is going to be 16mm color prints, it is possible to trim 30 to 50 percent from production costs by originating on Ektachrome commercial film, without sacrificing quality.

"This often lets the sponsor and agency enjoy the realism of filming on location—something most feel they can't afford. Other times, we simply urge them to commit more of their budget to buying time or hiring talent."

The philosophy now sounds obvious. But it took the fledgling company six months to land its first assignment, a 16mm color film for a regional airline. After that, business grew quickly.

"We had built a better mousetrap," says Camp, "and agencies and sponsors from all over came to us. We explained to each that the major qualitative differences between 16mm and 35mm film are that the larger format reaps better resolution, latitude and, for television release, color saturation. But we had learned how to closely simulate the 35mm look while starting with a 16mm original."

The technique, he explains, calls for a strong combination of lighting and directing skills to optimize resolution and latitude, careful choice of color

backgrounds and costumes, the proper use of polarizing and diffusion filters to lessen color contrast and, finally, painstaking care and control by a highly qualified laboratory.

As a rule, Mulberry Square produces its 16mm commercials with soft, indirect lighting. When possible, it relies primarily on backlighting. Even when this isn't feasible, Camp states, careful monitoring of colors on the set and the proper use of filters can help to create the softer "35mm look" of more expensive commercials.

There are at least half a dozen laboratories in Texas equipped to provide producers with 16mm color dailies. Most are equipped to make internegatives and release prints, as well as process originals. All work closely with our Kodak Engineering Service Representatives to maintain stringent quality-control standards.

The introduction of an improved Eastman color internegative film stock several years ago was a timely innovation for Texas producers. It allowed them to go from original to internegative to release print, eliminating the printing masters that previously had to be made in order to release 16mm copies of originals.

Another independent producer with a growing reputation for making high-quality color commercials on a 16mm budget is David Orr, who organized David Orr Productions in Dallas in early 1972. No newcomer to filmmaking, Orr started in the business as a teen-ager working for a TV station in Little Rock, Arkansas, and started his own production studio there on his 21st birthday. He did well enough to attract the attention of management at Jamieson, which brought him to Dallas in 1959.

Orr says that, while his company is busy making commercials, he is aiming at broader horizons: cable and pay television and film cassettes. He tells me that he believes Texas can become a major production center for these promising markets.

But I don't want to give the impression that Texas is strictly a 16mm state. This once may have been true, but, with the surge of entertainment and television film-making, there has been a great increase in the use of 35mm Eastman color negative film. In fact, with the exception of location footage made for "THE LAST PICTURE SHOW", which was black-and-white, every other theatrical and television movie made here in recent years has been originated on 35mm color negative film.

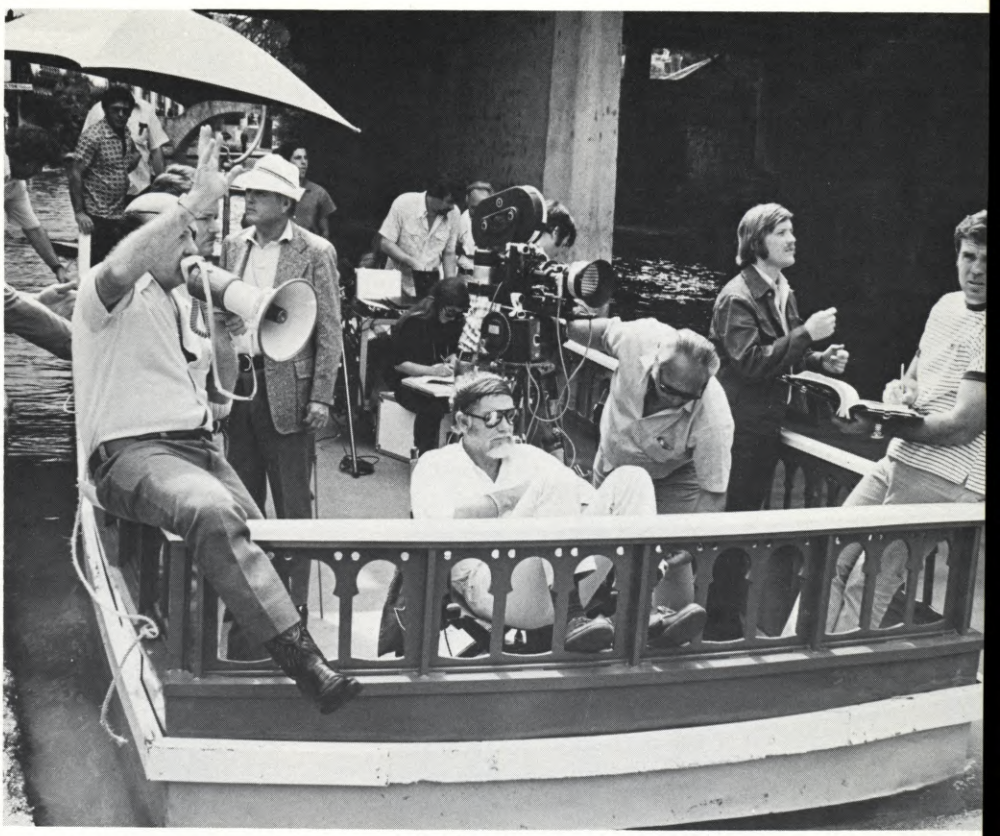
With jets linking us to major laboratories in Chicago, New York, and Los Angeles, producers have been able to see their dailies usually within a day or so of origination. Now, even that small inconvenience is about to end. One laboratory, PSI in Dallas, has announced that it will install a processor for color negative film next fall when Eastman color negative film 5247/7247 is marketed.

PSI is one of the many full-service, 16mm labs (others are Southwest Film Lab, Inc., Jamieson, Independent Photo Processors, AV Corporation, AIE Studios, Photographic Labs) and 8mm labs in Texas that provide complete sound recording and mixing services, in addition to processing Ektachrome films, and doing opticals, animation, and release printing.

PSI president R. G. Redd believes that the new negative film will accelerate the trend toward the reality and economies of location film-making. If this is the case, he stresses, the Texas film industry is bound to benefit. He says that the finer grain characteristics of the new film will also encourage producers to think more about wide-screen presentations originated from 35mm negatives.

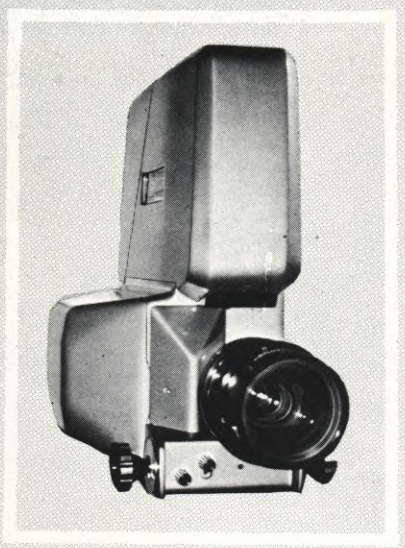
And he expects that the improved negative will encourage some producers

**Continued on Page 1332**



**Film crew shooting "THE GETAWAY" at the river walk in San Antonio, Texas. (Far left, with horn:) 1st Assistant Director Newt Arnold. (Behind him, with hat:) Director of Photography Lucien Ballard, ASC. (Center, seated:) Director Sam Peckinpah.**

**Eastman Kodak Company's Frank R. Reinking, right, checks a quality-control flow chart with Bob Redd, PSI film laboratory president.**



# the Professionals

Pros insist on professional motion picture equipment. So does Birns & Sawyer.

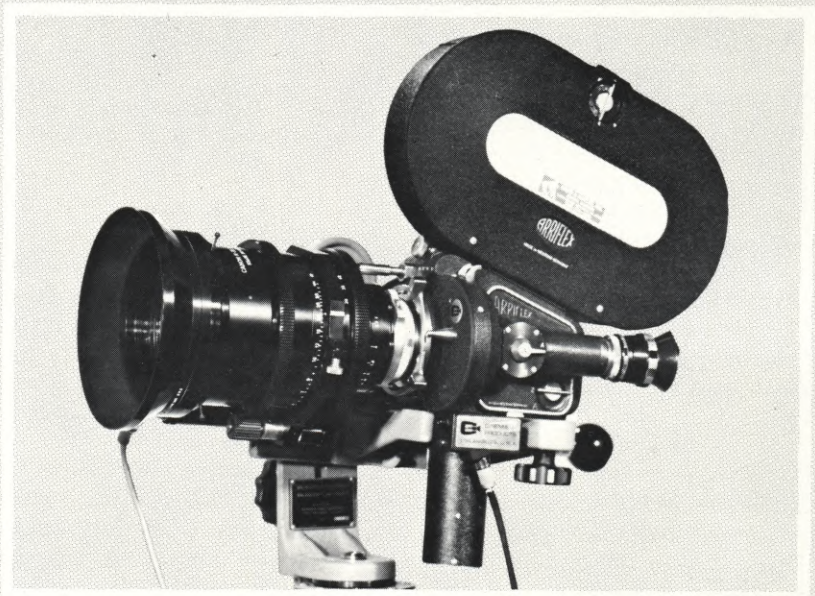
Pros insist that rental equipment be updated as newer and better items become available. So does Birns & Sawyer.

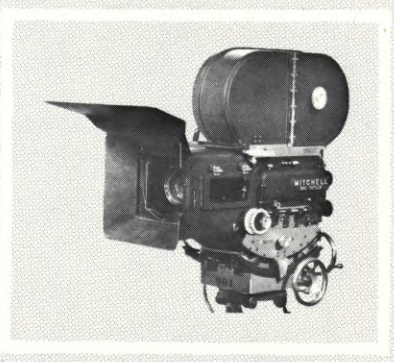
Pros insist that rental equipment be maintained by the best technicians around. So does Birns & Sawyer.

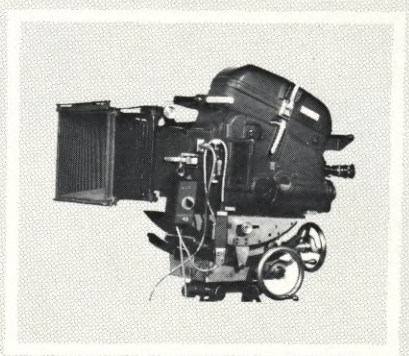
Pros insist on competitive prices. So does Birns & Sawyer.

Pros insist upon service. So does Birns & Sawyer.

Because of our dominance in the documentary field, you may have forgotten that we pioneered many new professional motion picture equipment items, such as the Arriflex 35mm camera, the first major breakthrough in lightweight motion picture equipment in 50 years. Keeping pace with changing times, B & S has continuously added to its huge rental inventory, the newest and latest equipment for modest to major productions. We have, not only the BNCR and Super Blimp, but also Arri "Hard Fronts," and the new Cinema Products XR-35 camera. Packaged with our new lightweight grip and lighting equipment, our grip and generator trucks B & S offers the pros what they want. The Professionals!



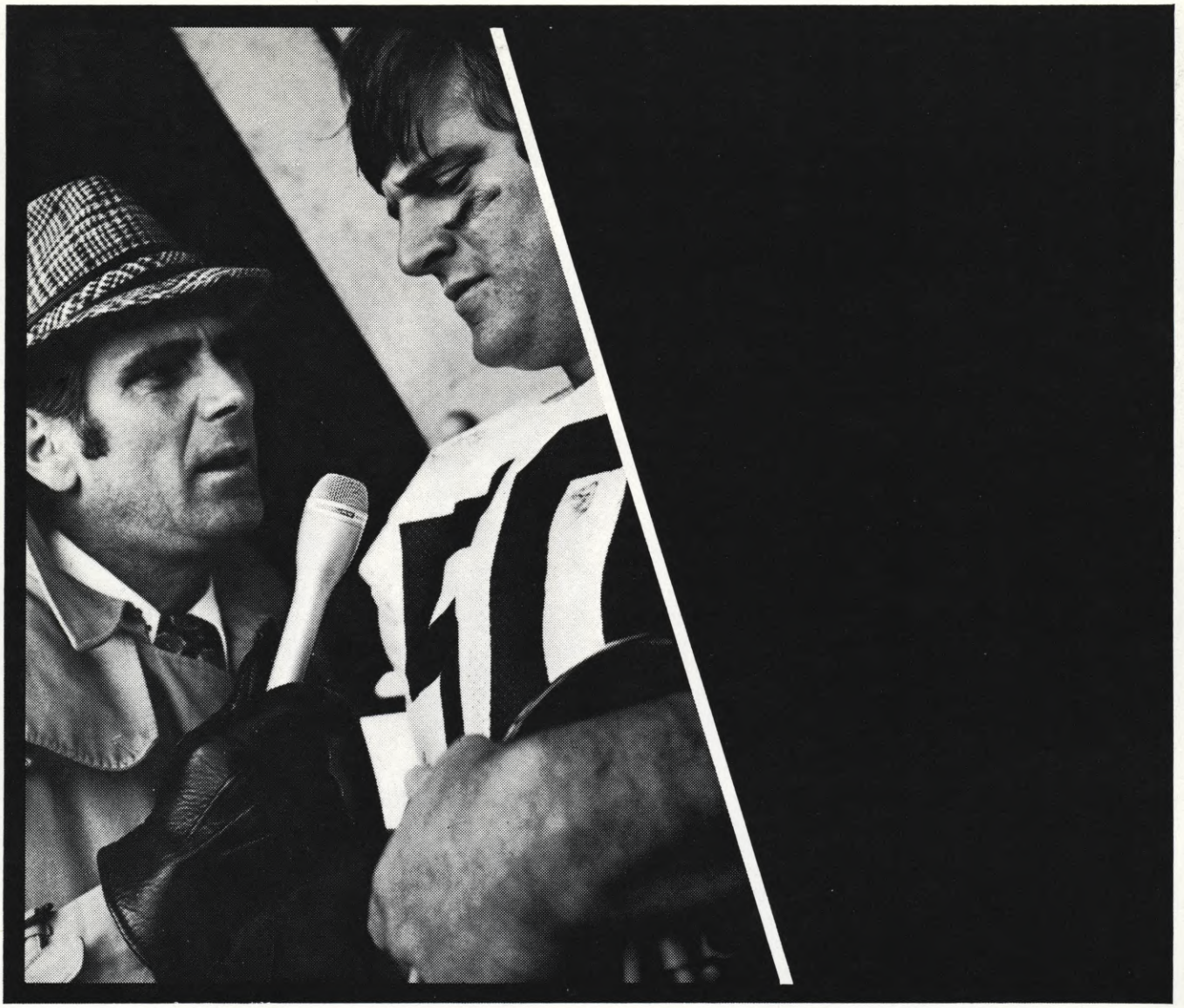



**BIRNS & SAWYER, INC.**

1026 N. HIGHLAND AVENUE LOS ANGELES, CALIFORNIA 90038 • (213) 466-8211

CABLE: BIRNSAW-HOLLYWOOD TELEX: 673280

Hollywood Jerusalem London Sydney Hong Kong



# The Quiet One...

**Time was when hand-held microphones could mean a handful of problems. Now, the Shure SM61 professional omnidirectional dynamic microphone combines sleek good looks with *extraordinary* reduction in cable and handling noises. The SM61 is built around a shock mount that *effectively reduces cable, handling and mechanical noises to insignificant levels.* A super-efficient "Blast Barrier" cuts wind and breath noise to a negligible minimum. Smooth, wide-range response produces an extremely natural, coloration-free sound that does great things for speech, vocal music and instrumental pickup. The SM61 is beautiful to look at, a delight to work, a pleasure to hear. Write for a complete data sheet to:**

**Shure Brothers Inc.**
**222 Hartrey Ave., Evanston, Ill. 60204**
In Canada: A. C. Simmonds & Sons Ltd.

SHURE

# COMPUTERIZED COLOR BALANCING AT CFI

**After more than a year in operation, an up-to-date report on the success of the Academy Award-winning Computerized Light Valve Monitoring System**

By SIDNEY P. SOLOW, *President*
*Consolidated Film Industries, Hollywood*

Accurate reproduction of color has for many years been a preoccupation of both the motion picture and television broadcast industries. Here at Consolidated Film Industries, we have taken great pride and satisfaction in our ability to deliver quality prints to our "viewers," our customers who are in the motion picture and television production industries.

Our industry has refined the processing and printing of motion picture film into a science over the past 40 years. And at CFI, we have achieved better than ninety-nine percent error-free printing.

But the remaining fraction of one percent always bothered us. This was the footage of print film that we had to scrap due to a printing machine problem or malfunction that, unfortunately, could not be detected until a particular segment of printing was finished and the product viewed. Even after it was detected, the nature of the malfunction could not be diagnosed.

In an industry as competitive as ours, the expense of waste has been important, of course. But more important than the wasted film or the cost of reprinting was the loss of consistent quality—however small the percentage—in the work we did for our customers.

Reprinting takes time—and time is so often critical to our customers, particularly in the rushed and seasonal television industry. If, due to a printing error, a customer cannot view his first print on schedule, it becomes traumatic for all concerned. A single scene with inaccurate color—among thousands of feet of "good" film—can spoil the whole show for our customers.

As one of the largest processors of original motion picture and television film footage in Hollywood, it seemed to us, a few years ago, that we should be able to devise a way to eliminate or dramatically reduce the color error caused by malfunctioning light valves. Surely, if computers could quickly detect and correct errors in a manned space vehicle thousands of miles away, a computer could be integrated into our printing procedures to detect, in "real time," light valve errors that can and do occur.

We were already accustomed to using computers in our business office. So when Edward H. Reichard, chief engineer and CFI vice president, viewed a demonstration of IBM's System/7, then relatively new, he returned with the conviction that the computer could help us. The on-line sensor-based System/7, he reasoned, could help us reduce the amount of waste, and consequently improve the reliability of our color printing.

Mr. Reichard and Howard T. LaZare, an electronics engineer at CFI, assisted by Edward Efron, an IBM systems engineer, developed a method for using the IBM System/7 to detect, instantly, a malfunction in any of the three light valves in each of our 32 printing machines. The System/7, installed in July of 1972, was fully operational two months later. It serves as the center of our Computerized Light Valve Monitoring System for Motion Picture Printing.

The IBM System/7 now monitors our 32 printing machines simultaneously. If a minor malfunction occurs in any printer, a red light on the printer flashes, warning the operator of a problem. If the degree of the malfunction would cause a color error beyond the very strict limitations we impose, the System/7 instantly shuts off the printing machine and types a report telling us which printer is out of balance, the scene number being printed, the particular light valve (red, green or blue) that is malfunctioning, the degree of color error (plus or minus) and the clock time that the error occurred.

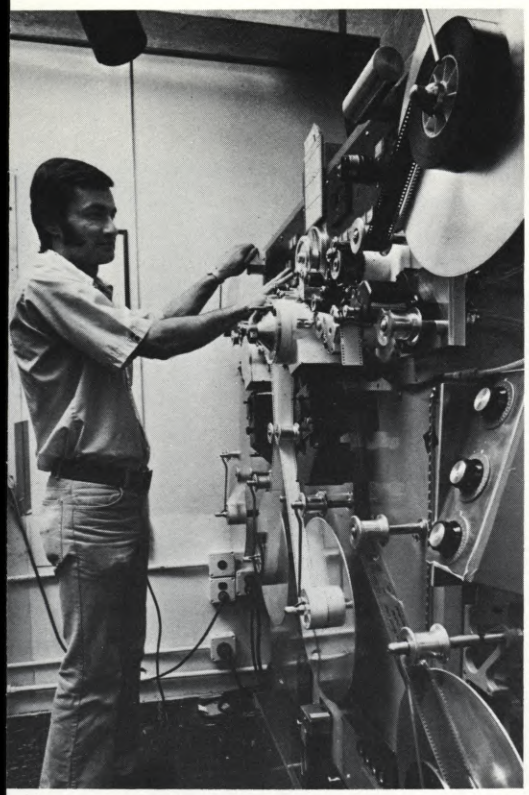
The light valve can then be adjusted or replaced. In any case, we can take remedial action, and avoid the problem of printing thousands more feet of film without knowing—until we physically viewed the print—that anything had gone wrong.

We not only avoid wasting film, we also save precious time in preparing a first print. And in periods of rushed activity, we're spared the embarrassment (infrequent, but real as it was) of seeing a printing error, for the first time, at the same time our customer sees it!

We feel we have achieved for our industry a new level of color accuracy. Since the development of our Computerized Light Valve Monitoring System, we have been able to detect incipient errors before they became serious.

**IBM's online sensor-based System/7 computer is the "heart" of the Computerized Light Valve Monitoring System, developed by Edward H. Reichard and Howard T. LaZare of Consolidated Film Industries and Edward Efron, a systems engineer with the IBM Corporation. The System detects instantly a malfunction in any of the three light valves in each of CFI's 32 printing machines.**

*(EDITOR'S NOTE: The Computerized Light Valve Monitoring System described in the accompanying article earned a Class II Technical Award from the Academy of Motion Picture Arts and Sciences in March, 1973, for its developers—Edward H. Reichard and Howard T. LaZare of Consolidated Film Industries (CFI) and Edward Efron, a systems engineer with IBM Corporation.)*



**Color balance judgments of timers, scene-by-scene, are punched onto a paper tape which actuates vanes of color valves when film is printed.**

A secondary but important use of the System/7 is in bench testing and recalibrating malfunctioning light valves. In the past, we overhauled each light valve once a month whether it malfunctioned or not. This was our preventive maintenance program, an expensive one, but our only insurance against failure.

Now, we leave "good" light valves alone; so long as they function properly —within the tolerances we program into the IBM system—we don't tamper with them. With our new ability to detect malfunctions as they happen, there is no need to disturb equipment that is working smoothly.

Interestingly, the System/7 and Computerized Light Valve Monitoring System serve to ensure that our printing machines respond to the judgments of our technicians. These are our highly proficient timers, who sit in their darkened work areas and view scene after scene of original film—in positive images—as the film negative passes through electronic video analyzers.

Constantly glancing at a color-balanced reference picture, each timer determines the amount of red, green and blue light that should be applied to each scene to achieve color uniformity and balance. As he views each scene, he adjusts three calibrated knobs with a range of zero to 50—one for each color—until he obtains optimum color balance. Then he records these numerical values. The numbers are punched onto a paper tape that actuates the vanes within the color valves when the film is actually printed.

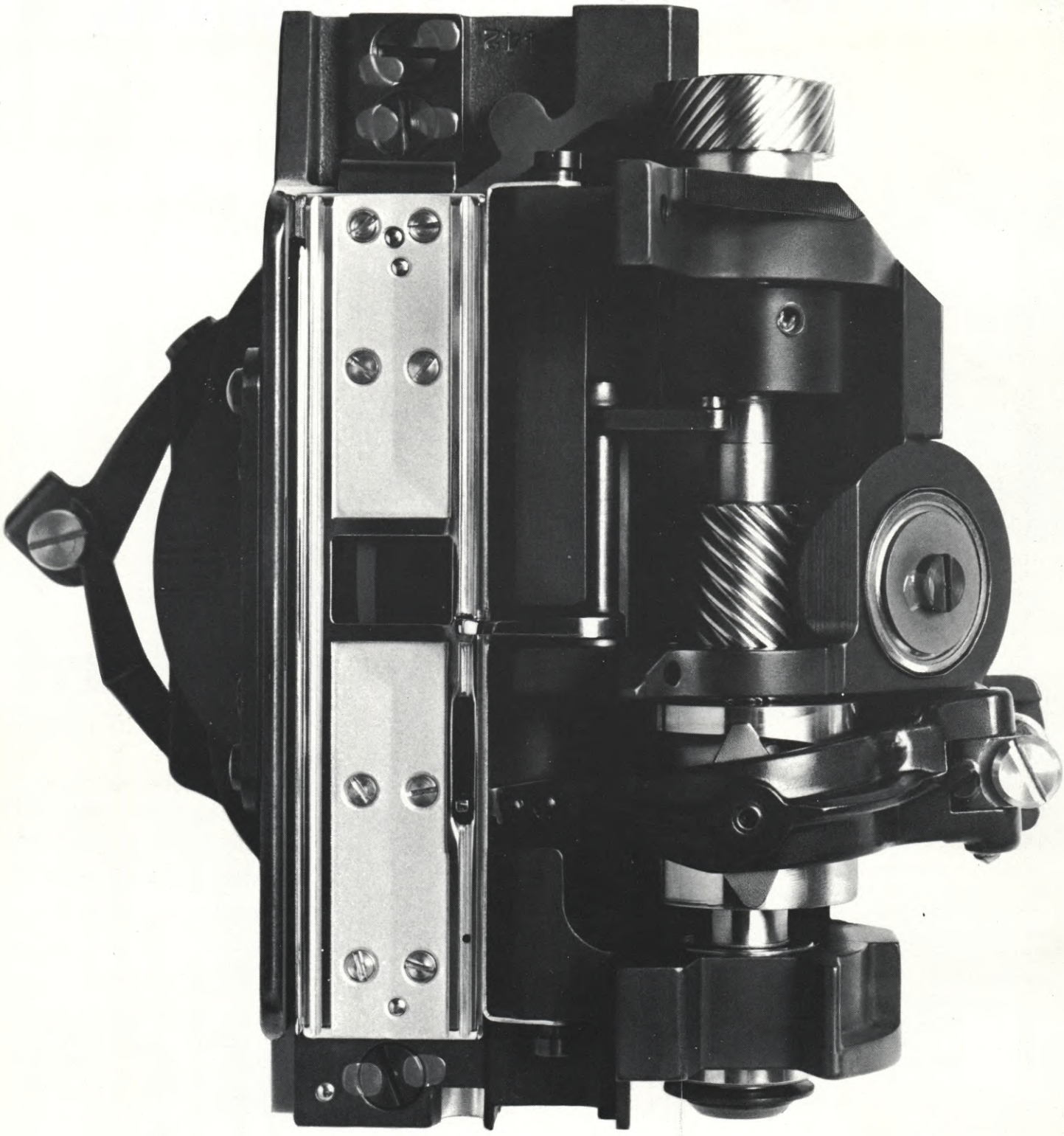
The amounts of red, green and blue needed for each scene will vary, since the scenes are shot under differing lighting conditions. Some scenes are shot indoors, others are filmed outside. Some are done on stages, others on location. Shooting can occur at all times of day and night, and various kinds of artificial lighting are used, often in combination with natural lighting. Color balance depends ultimately upon the timer and the accuracy with which the printing machines execute his instructions which they receive via the punched paper tape.

The vanes in the printing machine's light valves open and close varying amounts, in response to the punched tape, to control the amount of red, green and blue light reaching the print. The delicate vanes move in increments of 1/1000 of an inch and if a single vane does not function correctly, the total color effect can be thrown out of balance and the scene must be reprinted. Our allowable tolerances are very precise, so even if the color error is very slight, we reprint. With as many as 100 scenes on a single reel, a total of up to 300 individual vane movements can be required for each reel we print.

Sensor devices on each light valve vane determine the vane's angular position as it opens and closes for each scene. When this sensor information reaches the System/7, the computer compares the measurement with a "standard" that is stored in its memory. Any deviation between the actual vane opening and the "standard," or desired, vane opening is recorded by the computer. Depending on the amount of deviation, the computer will either activate a warning light on the printer or shut the machine off entirely. The pertinent information on the deviation is automatically provided by the computer printout.

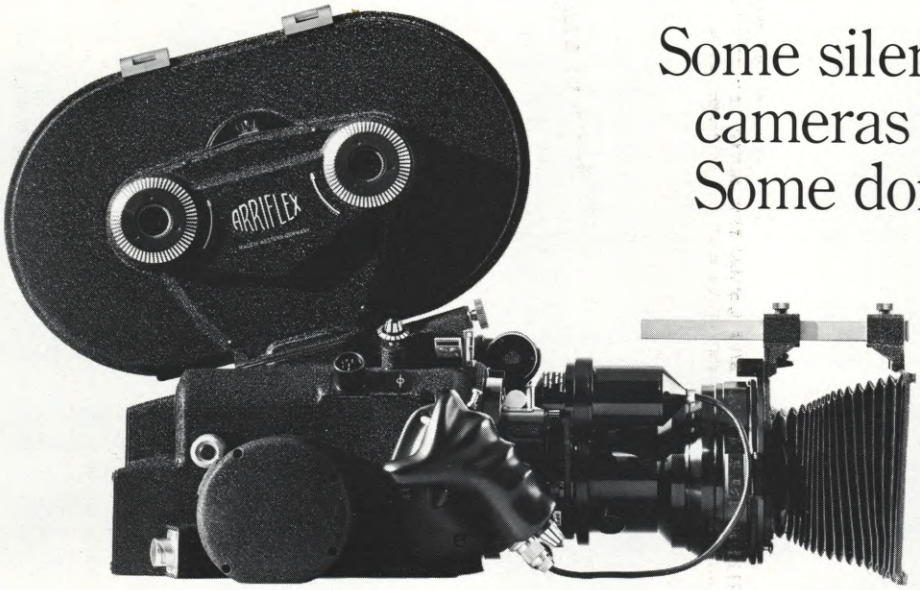
While introduction of the System/7 into our printing operation has enhanced and advanced our art, the integration of a complete computer system into our laboratory certainly cannot be considered unexpected at this stage of technology. We are now working with the System/7 to reduce waste in many other areas of the film processing procedure.

The motion picture industry has come a long way in the last few decades. We must and will go further, so long as we seek to improve our own technology, and try to utilize the technologies of other industries, and so long as we are dedicated to pursuing excellence. ■



# The Arriflex 16mm movement

# Above all, you can depend on it.




## Some silent-running cameras *stay* silent. Some don't. Why?

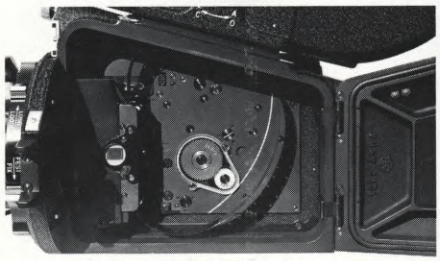
The most awkward aspect of designing cameras is film. The manufacturers do a superlative job.

But it's still a strip of coated plastic with holes in it. The base can shrink and curl. Some emulsions swell and get sticky in hot weather.

**The only *reliable* way to deal with these variables, is to use a cam-driven claw and a completely independent cam-driven registration-pin. Plus a long, straight film path, to keep the film flat in the gate.**

### Self-Blimped

That's how we do it in the 16S, the 16M and the 16BL. Of course, to make the 16BL silent-running, we have to encase it in a sound-proof casting. But that means the 16BL stays as silent after *years* of use, as on the day you bought it.



LONG LOOPS MINIMIZE FILM CURL IN THE GATE

### Reliability First

Our design philosophy is: First build a reliable movement. *Then* make the camera silent. Some other designs build silence into their movements *at the expense of reliability.* And movements tend to grow more noisy with age.

### Which Rawstock?

**One of those designs has a *spring-loaded* claw and registration-pin that are *not* independent. This movement must be adjusted to match different rawstocks—and even then, it needs repeated tuning. You can set it for silence *or* for reliability. The two considerations *compete* with each other.**

### Indispensable

All designs are compromises, including ours, of course. You don't buy a Maserati for the same reasons you buy a Rolls Royce. With cameras, we think that reliability is the *one* feature that is indispensable.

ARRI

**ARRI**

ARRIFLEX COMPANY OF AMERICA

FOR FREE BROCHURES ON OUR 16MM AND 35MM CAMERAS, WRITE TO ARRIFLEX COMPANY AT P.O. BOX 1050, WOODSIDE, N.Y. 11377; OR AT 1011 CHESTNUT ST., BURBANK, CALIF. 91502.

**BACKED BY SERVICE**

# MAKING A SCIENCE-FICTION EDUCATIONAL FILM

**The new trend in educational films is toward more sophisticated efforts which, at their best, compare quite favorably with other types of production**

By BERNARD WILETS

The quality of educational films has improved sharply over the years. Unfortunately, the stereotype opinion people have of them has not. Educational motion pictures are still considered by many, if not most people, as uniformly dull, pompous and technically inept.

I believe such an attitude is unrealistic. While not all educational films are masterpieces by any means, the trend has been in the direciton of increasingly sophisticated efforts which, at their best, compare favorably with anything being done in other types of production.

The impetus for improving quality has come from several sources. Perhaps the most important of these is a steadily more discerning audience. No part of America is so remote or insulated that children and evaluating committees of teachers are unacquainted with what good films should be. Consequently, they demand the technical proficiency and production value to which they have become accustomed. Also, educational films play a much greater role in the classroom than they did twenty years ago. I can remember the very occasional use of films in schools. Now use is frequent, even intensive. This combination of sophisticated viewers and large markets has drawn competent, highly professional film-makers into the field.

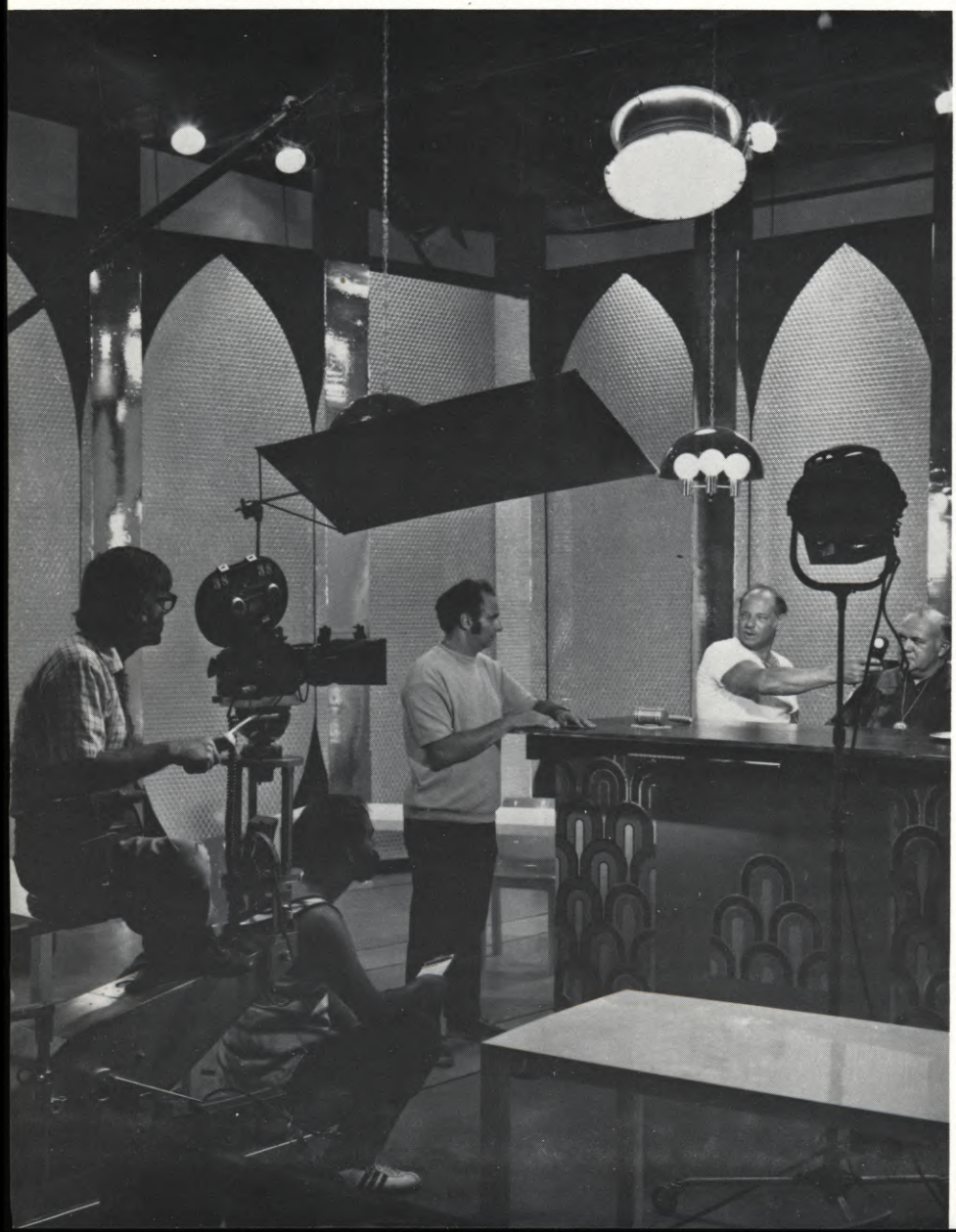
Another attraction to the talented film-maker is that the marketplace has become discriminating enough to allow the educational film to break away from the straitjacket of the strictly pedagogical format, with its often unctuous off-screen narration and insipidly simple structure. A more supple visual and dramatic vocabulary is now not only possible but commercially desirable. A large company such as BFA Educational Media, for whom I make my films, has a wide range of non-narrated or dramatic films in social studies and language arts areas that even a decade ago would not have found a place in the classroom.

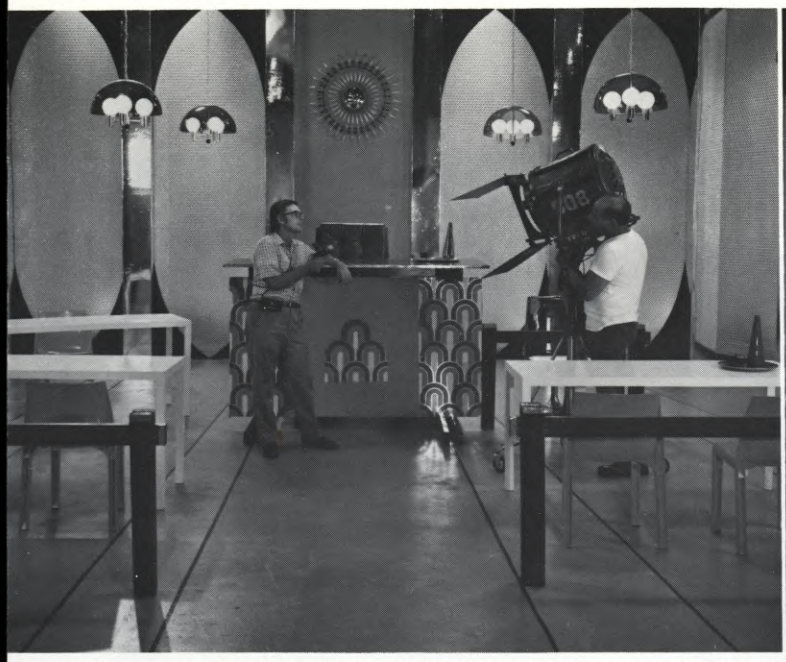
It is against such a background that my crews and I work. We try very hard to make sophisticated films, and our approach is the same as would be used in theatrical features. If anything, the pre-production planning must be even more rigorous because of the budget limitations. The shooting schedule is compressed into five days or less, and major reshooting would be a catastrophe because of the financial parameters.

Recently we shot a film on the Fifth Amendment aspect of the Bill of Rights. This is part of an ongoing series of "BILL OF RIGHTS IN ACTION" 16mm films I've been producing and directing for BFA Educational Media. This particular film was set in the future, and this science-fiction element posed several interesting problems—problems made more challenging because they had to be solved within the stringent confines of our budget.

The preliminary meetings were basically between myself; the production designer, Robin Royce; the photographer, Austin McKinney and the sound man Lee Strosnider. To my mind, it is important that sound be involved early so that we can anticipate possible audio problems relating to the configurations of the sets and the limitations of the actors (or non-actors, since real lawyers figured prominently in the production). Also we have to determine what style of sound we want—realistic sound with a sense of depth corresponding to camera position or an idealized approach with the microphone up close throughout. (In this case, we opted for realism.)

**Lining up a scene for "THE BILL OF RIGHTS IN ACTION: THE PRIVILEGE AGAINST SELF-INCRIMINATION". Produced by BFA Educational Media, the film departs widely from the conventional mold of teaching films. Its producers feel that a more supple visual and dramatic vocabulary is now not only possible, but commercially desirable.**





**Since the action of the film takes place in the future, a futuristic courtroom served as the main setting. Inexpensive but visually effective materials were used in set construction. In this case, the walls were finished with a plastic "bubble" material, commonly used for packing items to be transported by air. Careful back-lighting helped to bring out its interesting texture. Costuming was another area in which a great deal of improvising was done. As a basic stylization, all of the actors wore turtlenecks.**

We decided to use a bubble or air-pack material for the main set—a futuristic courtroom. This was a typical solution for us in that we habitually utilize materials that are inexpensive and were intended for other purposes, in this case, packing material. Royce, the production designer, provided the photographer, McKinney, with a sample of the material so that he could determine the best method of back-lighting it in order to make it bright enough and to bring out its texture. We also used inexpensive contact papers to create symbols and decals and mylar to impart a metallic look to wooden columns.

Costuming was another area in which a good deal of improvising was done. The costume consultant, Connie Edney, recommended that the tabards worn by our policemen of the future (a major costuming element in the film) be made out of an inexpensive vinyl material rather than costly genuine leather. To get the feel of another, future time, we used a very simple kind of stylization—everyone wore turtlenecks, including lawyers and the judge under his robe. The insignias that identified professions, such as lawyers, were from the bargain basement and added visual interest to the color-keyed turtlenecks. As a last resort, we rent costumes, but this is expensive. We make everything we can. In an earlier film on Machiavelli, where we wanted to suggest wealth and opulence, we used massive jewelry, furs, and rich fabrics, but only above the waist and especially around the shoulders where it would be seen in close-ups. This emphasis on sumptuous detail only where it will be clearly visible, doing the rest of the body in the simplest and cheapest fashion, can save substantial amounts of money.

The script posed two major design-photographic problems: a laser beam effect (a woman is gunned down by a laser weapon), and a series of viewscreen effects (a simulated two-way emergency communication channel in which action is seen live and is simultaneously monitored by the person watching the viewscreen).

The obvious option on the laser effect was to do it optically or with an A and B roll superimposure, but we felt that both presented alignment and registration problems. As a result, we decided to achieve the effect in the camera. McKinney set up a partial mirror at a 45° angle to the camera lens. At the side of the camera, and reflected through the mirror, a laser beam was contrived by placing red gel material over a slit in black paper. In front of the camera, and visible through the partial mirror, stood the man holding the weapon. The camera was placed upside-down so that the action would run backwards. This allowed us to achieve the critical alignment of gun to beam at the beginning of our shot. When the alignment was close, the camera was turned on. A beat after the alignment was achieved, the beam was turned off, and the actor lowered his weapon. The way the shot plays in the film is exactly the opposite. The actor raises the gun, and out of the end of it, in satisfactory alignment, comes the beam.

The viewscreen problem was solved by the use of scotchlight front-projection material on a 2-foot-by-3-foot screen. We had to structure the shooting schedule so that the film which had to be projected was shot first. A 16mm projector was used. Since actors never appeared in front of the screen, absolute alignment between camera and projector lens axis was not necessary, as is normally the case. But in order for the projected image to appear bright, these axes still had to be as close as possible. This was achieved by projecting the image against a front-surface mirror placed close to the camera lens and from there onto the screen.

Another item we used that might be of interest was the Dexter dolly, designed by cameraman Ron Dexter. This device was utilized on location at California State University, Long Beach. The dolly tracks are made out of aluminum held together by wooden ties. They are very light and quick to set up. The dolly itself is a plywood board with four pairs of rubber wheels for rolling and guiding. The tracks are joined by easily-coupled metal links.

While we used a large sound stage and an insert stage, sets, actors, costuming, make-up, six exteriors, night-for-night shooting, a crew of 9, and episodes of such production value as a helicopter pursuit of a fleeing suspect—in short, the full panoply of theatrical features—there was one very conspicuous difference. We shot on 16mm film. And this imposed certain restrictions.

From the visual standpoint, and

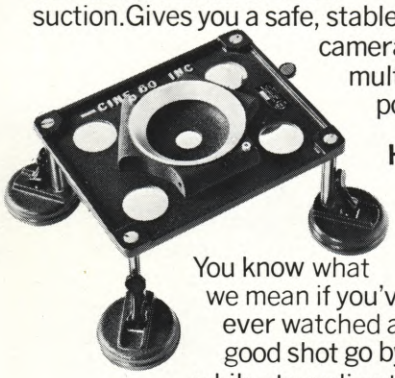
**Continued on Page 1345**

# WE HELP YOU LOOK GOOD FOR LESS.

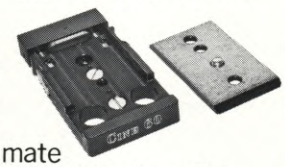
When it comes to film, a little ingenuity can go a long way. For us, it's created a reputation of achieving the difficult with less weight, in less space, and often at far less cost. Some of the reasons why are illustrated below.

**How low (or high) can you go?** All you need is a smooth surface, and our Vacu-Platform does the rest. This rugged suction-actuated device is available with flat plate or mating fitting for standard tripod heads.

Or use the Cine 60 Vacu-Car-Mount. Hooks over window, roof or luggage rack and attaches to the side of the vehicle with suction. Gives you a safe, stable camera platform, and a multitude of interesting possibilities.




**How much is 30 seconds worth?** Could be thousands of dollars.



You know what we mean if you've ever watched a good shot go by while struggling to mate camera and tripod. Our Snaplok solves the problem instantly, with pushbutton speed and rugged precision. Click—camera and tripod are together; click, they're apart!

**Power and Mobility** For the best of both, it's our famous Cine 60 Power Belt. From 8 up to 30 volts of the industry's longest-lasting power nicely balanced around your waist. With rechargeable nicads, sealed design and automatic overload protection. Built-in standard 110 or switchable 110/220 V charger and plug-in coiled power cable. Available in models to fit all professional cameras and "sun guns."

**Painless Motor Zoom** If you own one of the fine Angenieux lenses, we can give you smoother, more consistent zooming. Our compact, nicad-rechargeable units mate directly with popular 9.5-57, 9.5-95, 12-120, 12-240 and 25-250mm sizes. Handy switch and transistor-regulated zoom control provide variable-speed zooming at the touch of a button. Models available for Zeiss and Canon lenses too!

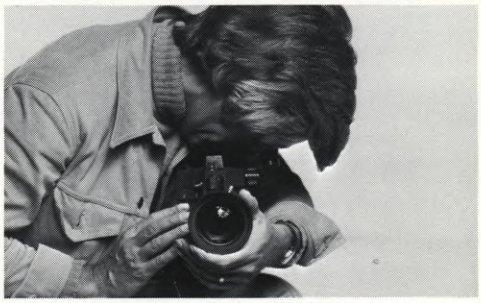
**Help yourself look good for free**

For more information about these or other exclusive professional accessories, call or write us. We'll also tell you about our rental and repair services—and throw in some free advice, if you need it. After all, the better we make you look, the better we'll look.

CINE 60 I
INCORPORATED

Film Center Building, 630 Ninth Avenue, New York 10036 Telephone (212) 586-8782


# DOCUMENTARY NEWS DYNAMITE



"Feature oriented" to the essence of documentary/newsfilm requirements . . . the "News 16" has caused quite a powerful reaction among the number of "professionals" who now use them in their work. Right at your fingertips are just **the** features needed to capture authenticity and impact in the filming of a documentary/news event.

**MIRROR REFLEX VIEWING (The viewfinder image is extremely LARGE and incredibly BRIGHT)**

**VARIABLE SPEED OPERATION (12–40 f.p.s.)**

**SINGLE/DOUBLE SYSTEM SOUND CAPABILITIES**

**AUTOMATIC BEHIND-THE-LENS EXPOSURE CONTROL (With Manual Override)**

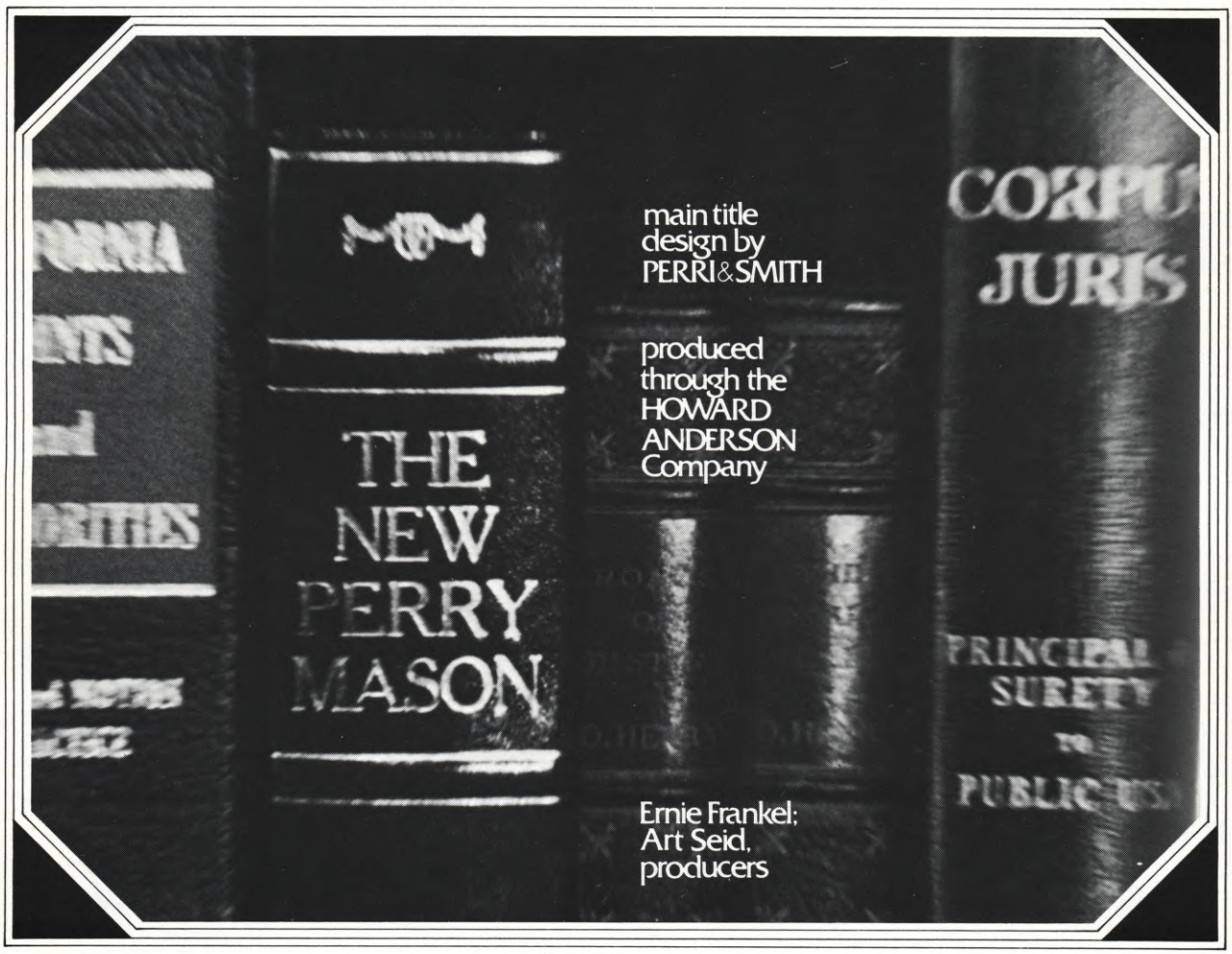
Ruggedly built and remarkably easy-to-handle due to its design and weight factors, the camera also provides lens interchangeability (C-mount); built-in automatic power zoom (with manual override); automatic pre-focus control; and automatic/semi-automatic film threading. PLUS . . . a modular construction which permits instant changing of key parts, such as power supplies, lenses, sound modules . . . a real "time saver" since no tools are required.

For full technical information on the Beaulieu "News 16" write to:

Hervic CORPORATION

**Technical Products Division**
**14225 Ventura Boulevard**
**Sherman Oaks, California 91403**

**BEAULIEU'S "NEWS 16" – DON'T SETTLE FOR LESS!**




PERRI & SMITH
FILM AND GRAPHIC DESIGN
(213) 463-2367

# The movie camera to end all movie cameras.


Anything you ever needed a movie camera to do, this Braun Nizo Super 8 does. And a lot of things you never thought you could do without a special-effects lab, this one does. It probably won't be the first Super 8 camera you'll buy. But it probably will be the last.

**It's what's up front that counts.**

No matter what visual effects a camera builds in, it's only as good as its lens.

And that means there's no camera better than this one. Because no camera near the price has a Schneider Variogon out front, bringing in clear, crisp, incredibly true images. It's the lens other Super 8s wish they had, but don't.

Something else other Super 8s wish they had: the Braun Nizo metering system. You can override it whenever you want, but most of the time you'll use it to get clear, beautifully accurate footage.

Braun builds Nizo Super 8s in Munich, Germany. And they build them right.

**Wide today, long in a second.**

It zooms like whipped cream from 7mm to 80. That makes it one of the longest zooms you can buy in Super 8. As a matter of fact, it's probably more zoom than you'll use, most of the time. But once in a while, you won't want to settle for anything less.

**"Dissolve from the flower to Mary."**

If you work in Hollywood, you get your lap dissolves from a lab. But if you work with a Nizo, you get perfect lap dissolves from a button marked "R", automatically. (There's even a little window that shows you you're in the middle of a dissolve.)

So you can go smoothly from flower in your garden to flower in your life; from monkey at the zoo to happy little boy's face; from mint 1934 Rolls to dragster. Maybe nothing's more professional than a clean, sure lap dissolve. And for certain no lap dissolve is cleaner and surer than a Nizo lap dissolve.

**Go to black.**

Another effect pros go to the lab for is a fade, whether it's out or in.

And that's another effect you simply go to your Nizo Super 8 for. One button does it, beautifully.

**The button you think you'll never use, until you use it once.**

Maybe you don't think you'll ever do any time-lapse photography: showing flowers blooming, or cities getting ready for night.

Maybe you think you'll never try animation.

The switch that activates our Intervalometer is a switch a lot of people don't make, for a while.

But once they try it, they hate to let go.

You can shoot up a lot of film, one frame at a time. And you'll find it's some of the greatest you ever shot.

**Slow motion, fast.**

Your little boy is scampering next to his big ole dawg. Dawg herds boy; boy flops over dawg.

You don't want the whole thing in slow-mo, just the flop. So with this one, you push a little button, and presto, you're in 54-frames per.

Or you can shoot in 24 frames a second, or 54, just by twisting a little knob.

It's another feature you won't use a lot of. But what you do use will help make great movies for you.

**The invisible man, unveiled.**

Fifty years from now, will they see your skill, your taste—but not your face?

You can set up your Nizo Super 8 so that any idiot can get perfectly exposed film out of it. Which means you can get in front of the camera, once in a while.

We think every great cameraman deserves a chance to be a star once in a while.

**There's more?**

A lot more. Like lipsynch sound capability and time exposures. And a tough two-year guarantee.*

And the whole point of all this is simply to make sure you look at one of the Nizo line of Super 8s, if you're looking at any Super 8 beyond your first one.

Ask your dealer. He won't have to sell you.

Just show you.

**BRAUN Nizo SUPER 8**

*If within two years from date of purchase a Nizo S-480, S-560 or S-800 movie camera fails to function because of defects in materials or workmanship and the unit is returned to an authorized service center, Braun North America will, at its option, repair or replace the unit without additional charge. Batteries, misuse or tampering excluded.


Braun North America, A Division of The Gillette Company, Cambridge Parkway, Cambridge, Mass. 02142.
In Canada: Braun Electric Canada, Ltd., Mississauga, Ontario.

# THE CINE-8 HI-SPEED/PULSE SUPER-8 CAMERA—MODEL SP-1

**An extraordinary new Super-8 cartridge camera with pin-registration, variable shutter, filming speeds up to 250 frames per second—plus quick conversion to time-lapse mode, with built-in intervalometer**

Ever since the Super-8 format was introduced, camera manufacturers have had a field day in designing extremely advanced features to fit into this compact equipment. As a result (and rather ironically) some of the Super-8 cameras which are available would seem to be, in certain respects, far more sophisticated and versatile than any currently produced 16mm or 35mm cine cameras.

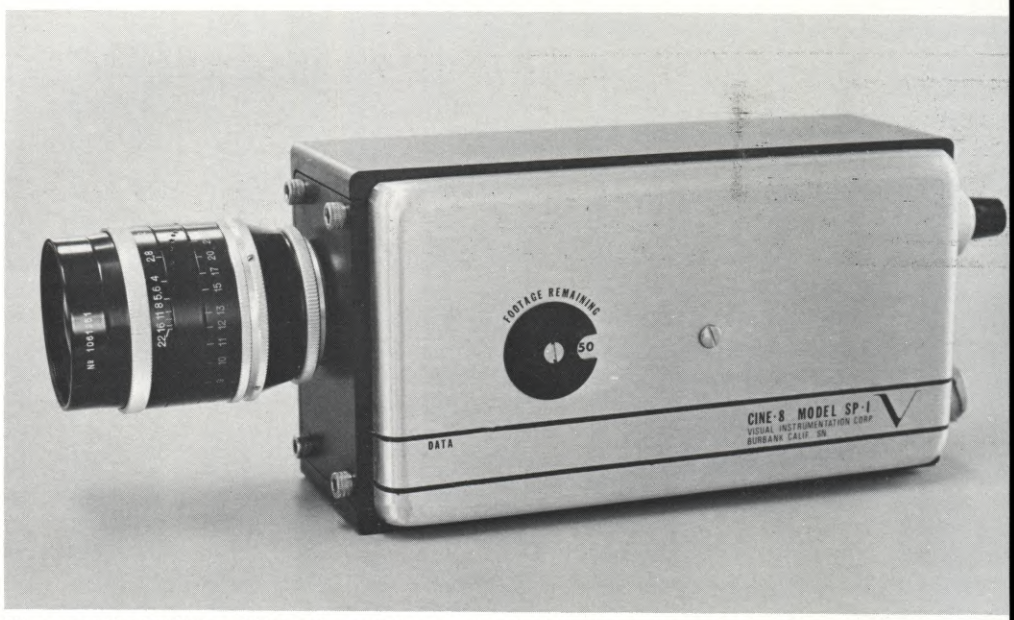
A case in point is the new Cine-8 Hi-Speed/Pulse Motion Picture Camera, Model SP-1. Here is a very compact, ruggedly-built, thoroughly professional Super-8 camera which accepts standard Super-8 cartridges, but threads a loop from that cartridge through a *pin-registered* movement that produces sharp, rock-steady pictures at any variable speed from time-lapse pulse to *250 FRAMES PER SECOND.* All this and a variable shutter, too.

The Cine-8 Hi-Speed/Pulse Camera was jointly designed by Mekel Engineering Company and Visual Instrumentation Corporation. Mekel does the manufacturing and Visual Instrumentation handles the distribution. The camera itself is a high-precision electronic instrument, as different from the "home movies" Super-8 cameras as it can possibly be. Thoroughly professional, it is very compact, but rugged enough for the tough handling of military, aerospace and industrial applications. Its versatility makes it an excellent instrument for a wide range of sports, documentary and educational purposes.

The Cine-8 was very deliberately designed around the standard Super-8 cartridge because these are available universally and can be processed anywhere in the world.

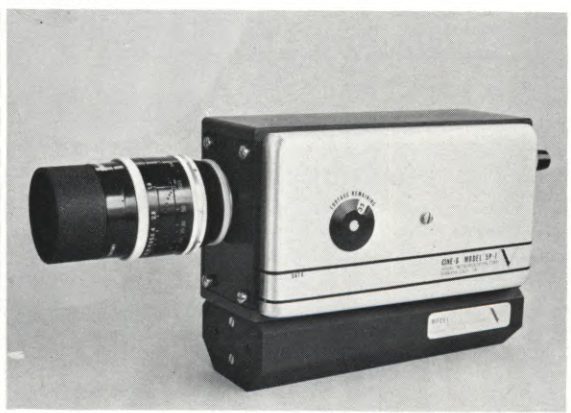
Conversion from the standard frame rate/high-speed mode to a time-lapse mode (with built-in intervalometer) is accomplished by means of a quick and simple switch of plug-in printed circuit boards.

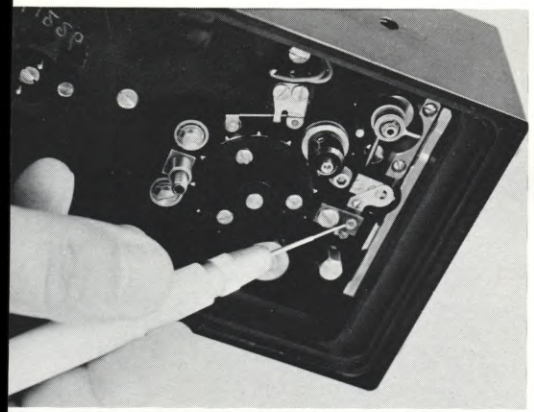
The Cine-8 High Speed Motion Picture Camera is designed to utilize the advantages offered by the Super-8 film format and to open up a new range of applications. Introduction of this camera allows the new economies of Super-8 technology to be applied in




**The new Cine-8 Hi-Speed/Pulse Super-8 Camera, Model SP-1 is a very compact, highly-sophisticated, surprisingly rugged camera which has been designed and manufactured with the precision of a Swiss watch. It embodies all of the engineering features normally associated with instrumentation cameras of larger formats. Using the standard Super-8 cartridge with loop theaded through a pin-registration movement, it provides rock-steady pictures up to 250 frames per second. It is quickly converted to a time-lapse camera and features a variable shutter and built-in film chamber heater.**

**(LEFT) The Cine-8, Model SP-1, shown fitted with the Model R-10 Reflex Viewfinder, a complete through-the-lens system that provides parallax-free viewing while filming. (CENTER) Camera shown with accessory B-24P battery pack flush-mounted to its base. (RIGHT) The Cine-8, shown complete with Model R-10 Reflex Viewfinder, B-24P Battery Pack, pistol-grip and trigger assembly. The basic camera weighs three pounds and is easily hand-held for shooting in standard cine mode.**





**For boresighting, sometimes required for instrumentation filming, an optional boresight prism (with 10X eyepiece) is easily installed.**

instrumentation photography.

Advantages of the Super-8 cartridge include the concept of film supply and takeup in a single sealed package with the resultant elimination of edge fogging. The traditional problems of missing takeup cores, bent reels, and lost adapters have been eliminated. Logistical considerations of film supply and processing services are minimal with the widespread acceptance of Super-8 at the consumer level.

The Cine-8 embodies the usual engineering features normally associated with instrumentation cameras of larger formats. Key elements responsible for the camera's performance are a drift-free servo speed control and a precision film transport system. Film stability and resultant image sharpness are insured by a fixed register pin which is full-fitting in the direction of film travel. The regular Type "C" lens mount is standard and enables many users to draw upon their existing lens inventory.

FILM CARTRIDGE

Standard Super-8mm cartridges are loaded and sealed by the film manufacturer and are designed for one-time use. Their design involves only two moving parts, the takeup core and one bearing. This makes for an exceptionally reliable film container.

SHUTTER

A variable opening shutter is used as standard, with effective openings from 10° to 160°. Since the shutter is a double-opening type and rotates at one-half the camera speed, the angular openings are actually one-half the engraved angles. Effective openings of 160, 120, 80, 40, 20 and 10 degrees are engraved on the inner disc.

MOUNTING PROVISION

Three tapped holes 1/4" dia. x 20 threads per inch (1/4" -20) are provided in the underside of the camera body for mounting purposes. There is also sufficient material thickness in the camera body's upper side for top mounting should it be desired.

The camera may also be mounted by the four No. 8-32 lens plate screws for such applications as cathode ray tube recording.

SERVO SPEED CONTROL SYSTEM

An essentially drift-free system operates by controlling the width of a constant-frequency pulse supplied to the permanent magnet DC motor. A tachometer driven by the film transport mechanism provides the servo reference.

Access to the single plug-in P.C. board is obtained by removing the center screw from the left side cover plate. Upper half of the board carries the servo circuit, while the lower half is used for the optional light emitting diode (LED) driver.

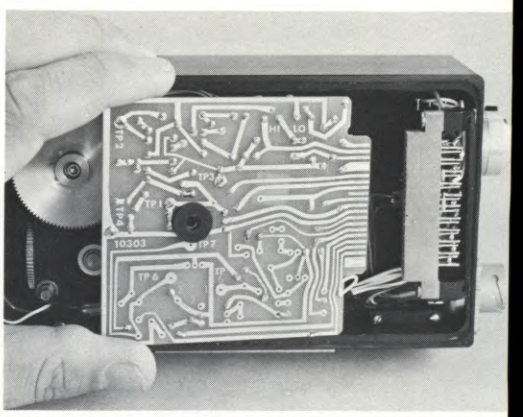
Test points on the board, identified as TP-1, etc., permit circuit checking which can be performed with power applied and the camera running.

CINE MODE

Any speed between 10 and 250 frames per second may be selected in one-frame increments using a multi-turn control knob on the rear of the camera body. Camera speed is indicated by the 3-wheel digital display dial above the control knob. Each full turn of the knob represents 100 frames change in camera speed. A lock is located directly beneath the speed control knob. To lock the control, swing the locking lever to the right. To unlock, enabling a change in speed setting, move the lever to its full left position. Mechanical stops are set at zero and 300 frames, even though the design range is 10 to 250 frames per second.

PULSE MODE

The speed selector dial is also used to control the pulse rate when the camera is equipped with an optional pulse kit with built-in intervalometer. In pulse mode the dial scale is expanded by a factor of ten; the 10-frame position provides one pulse per second, and the 200-frame dial position provides 20 pulses per second.



**A simple exchange of printed-circuit boards converts camera quickly and easily from high-speed to time-lapse mode, with built-in intervalometer.**

REFLEX VIEWFINDER

A Reflex View Finder is available for the Cine-8 Hi-speed/Pulse Super-8mm Camera. The Model R-10 View Finder is a complete through-the-lens system that provides parallax-free viewing while filming.

A precision beam splitter is placed behind the lens, but ahead of the shutter, allowing continuous viewing without shutter flicker. An adjustable eyepiece with crosshair is provided in the optical system to assist in framing and focusing. The View Finder design permits the use of interchangeable "C" mount lenses.

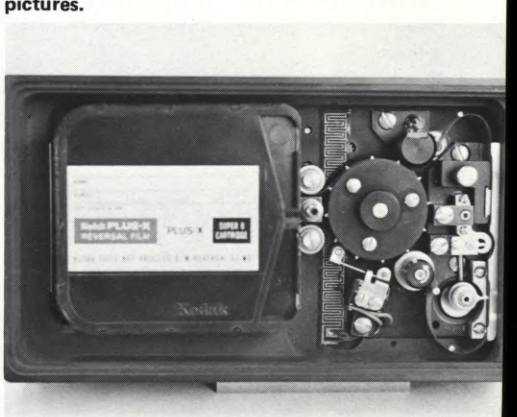
The Cine-8's versatility is thus expanded to documentary, sports and other situations where through the lens viewing is required. Specify the Model SP-1R when ordering new Cine-8s with the Reflex View Finder.

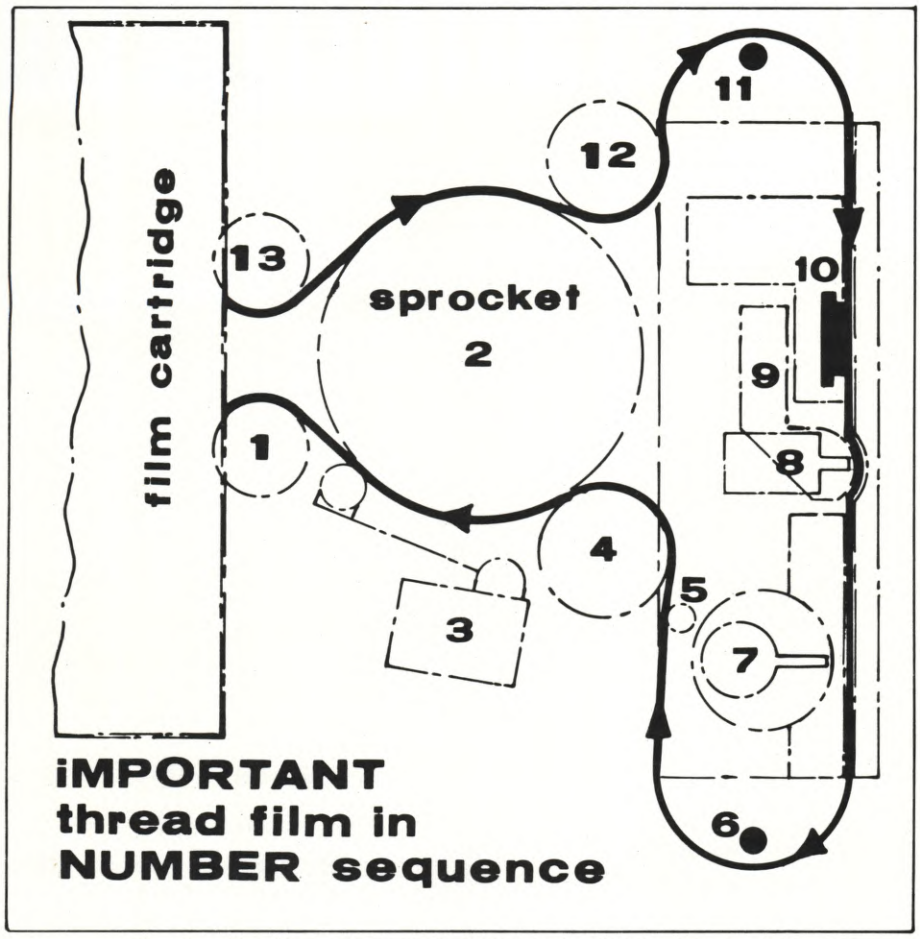
ELECTRICAL DRIVE AND POWER REQUIREMENTS

The camera is designed to operate from a low-impedance 24-to-32-volt DC source. Design of the servo system

**Camera speed (10 to 250 fps) is indicated by 3-wheel digital display dial directly above control knob used to select the desired frame-rate.**

**Film loop formed from a standard Super-8 cartridge is threaded through a pin-registration movement, which results in rock-steady pictures.**






**Film threading diagram is conveniently located on inside of camera door.**

requires a continuous and stable source of DC power, such as a battery. Any constant voltage supply which has an impedance of approximately 1/2 ohm or less is capable of satisfying the servo system requirements.

Two connectors are installed on the camera and power can be supplied through either one. A 12-pin connector on the rear of the camera body carries all electrical functions including: timing signal(s), heater, shutter correlation pulse, and camera power. When using *this connector,* input camera power can be applied without regard for polarity.

A flush-mounted connector installed in the camera base is used to supply motor power only from the accessory B-24P battery pack. Connectors are mated when the battery and camera are joined.

PULSE OPERATION

The Cine-8 camera converts from cine to pulse mode operation, and vice versa, by exchanging printed circuit boards. Cameras are pre-wired during manufacturing to accept all pulse kit components.

Pulse system operation is as follows:

1. An input pulse triggers 28V D.C. power to the camera motor.
2. The motor drives the film transport mechanism.
3. At a predetermined point the shutter correlation pulse generator supplies a stop pulse.

Two optional pulse kits are available, as described in sections 4.8 and 4.9. The Model P-20 operates only from an externally supplied pulse, while the Model P-21 operates either from an externally supplied pulse source or a built-in intervalometer. Maximum pulse rate of the camera is 20 pulses per second. The intervalometer range is from one to 20 pulses per second; this rate is controlled by the camera speed selector as described in 2.6. Both kits employ the C-15 shutter correlation output generator as described above for the pulse mode function.

B-24P BATTERY PACK

The B-24P assembly contains a nickel-cadmium battery pack, a pistol grip and trigger switch. The unit attaches to the Cine-8 camera base and at the same time mates the 2-pin connector into the camera's flush-mounted receptacle.

Controls on the rear of the pack are: (1) a toggle switch for mode control, (2) a voltage indicator, (3) push-button battery test switch. Toggle switch is a three-position type, with center OFF position. Upper TRIGGER position activates the pistol grip trigger switch. Lower RUN/CHARGER position will either run the camera; or in charging mode, the switch closes circuit between batteries and the camera/charge connector.

C-30 BATTERY CHARGER

This unit is designed to re-charge the B-24P nickel cadmium battery pack. It is a constant current type that will fully re-charge the battery from 26 volts in 10 hours. When the battery reaches 95% of full charge the charger automatically switches to a trickle rate. The battery may be left connected to the charger for up to 72 hours without damage to the battery.

C-25 POWER CONVERTER

The C-25 Power Converter is designed to operate the Cine-8 camera from regular 117V. AC 50/60 Hz. line

**Continued on Page 1337**

**STANDARD SPECIFICATIONS:**

**MODEL SP-1**

| | |
|---|---|
| Film Movement | Intermittent type with full fitting register pin to lock the film stationary during exposure |
| Registration Accuracy | ± .0002" standard deviation frame to frame |
| Film Type | Super-8mm ASA PH. 22.157 |
| Film Capacity | 50' or 100' in standard Kodak Super-8 Cartridge |
| Cine Speeds | 10 to 250 frames per second, continuously variable with direct reading lockable dial |
| Speed Stability | ± 2% or 1 frame whichever is greater |
| Shutter | Variable, 10° to 160° |
| Shutter Speeds | 1/20 second to 1/9,000 second |
| Power Requirements | 28V. DC± 4 volts with built in polarity protection |
| Current Consumption | 1.0 amp nominal |
| Cut-off Switch | Stops camera at end of film |
| Footage Indicator | Re-settable direct readout, indicates footage remaining. |
| Lens Mount | "C" type 1" - 32, dimension to film plane is .690" |
| Weight | Three lbs. |
| Mounting Provision | Three 1/4-20 tapped holes on bottom surface |
| Connectors | Amphenol 12 pin and 2 pin for battery pack. |

**OPTIONAL ACCESSORIES:**

Boresight Kit with 10X Eyepiece
Dual Timing Lights LEDS's with built-in Driver
28V. DC Heater, 50 watt, thermostatically controlled
Shutter Correlation Output Pulse Generator, 10V Constant Output Pulse
Pulse Kits: with Plug-in internal intervalometer 1 to 20 pps, or from external source up to 20 pps
Lens Plates for other than "C" Mount
Pistol Grip with Trigger Assembly
28V. Battery Pack with Automatic Charger
115V AC Power Converter
RFI Filter
8 to 64mm f/1.9 Zoom Lens for Super-8 Format
Carrying Case for Camera and Accessories

# MODEL 1000 SUPER-8 ANIMATION STAND

**A piece of equipment sufficiently sophisticated and versatile to be useful for a wide range of professional applications, but simple enough to be operated by hobbiests and student film-makers**

Animation Sciences Corporation of Lodi, New Jersey, have announced the availability of their new MODEL 1000 Super-8 Animation Stand, a piece of equipment sufficiently sophisticated and versatile to be useful for a wide range of professional applications, yet simple enough to be operated by hobbyist and student film-makers. The manufacturer describes the MODEL 1000 as "the first animation stand to provide the professional, the student and the hobbyist with a Super-8 animation capability at a modest cost."

The MODEL 1000 permits the user an extended method of expression in the technique of the motion picture. He can turn paper cut-outs into moving animated characters, pan and zoom onto still pictures and illustrations clipped from books and magazines, and can give animated movement to titles or original artwork. The equipment also provides an inexpensive method for testing ideas and effects for TV commercials.

It is designed to provide the filmmaker with a practical tool with which to learn and develop the techniques of motion picture animation. The Model 1000 has been tested by students and instructors. Five-year-olds of kindergarten level have made their own cartoons from cutouts and drawings to learn and understand how TV cartoon shows are made. Older students have found a new art form with which to express themselves in a present-day medium, and film instructors in universities have a tool which operates in a similar manner to expensive professional 16mm and 35mm animation stands.

The stand incorporates many features usually found only on professional equipment. The table-top moves by hand controls and with repeatability. Snap-out pegs are provided for cel animation. Scales are similar to the professional drawing disc. A full-size pantograph simplifies panning. Zooms are accomplished with the camera's zoom lens. Two skillfully engineered quartz lights (3200 K rating) are provided, each having its own cooling fan and heat-absorbent glass. A heat shield surrounds each lamp. The outside of each lamp is only warm—even after long hours of use. All the wiring is internal. This is the only animation stand engineered to consider safety for the student or hobbyist.

Most of the techniques described in text books on animation can be applied in the use of this equipment. The manual table-top controls for north-south, east-west, and rotation are in scales of 20ths of an inch to allow repeatability and pre-planning from animation guides (field guides) or drawing discs. (If you are a professional you can test your animation on inexpensive Super-8 before shooting on your 16mm or 35mm stand.)

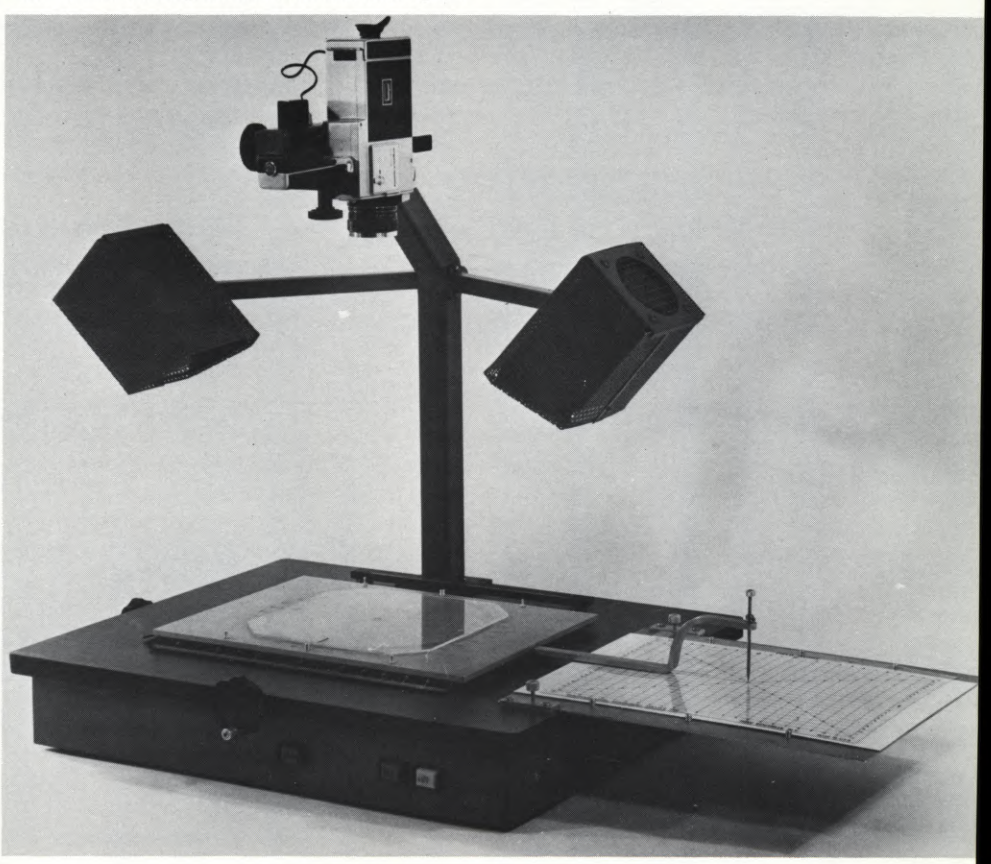
A solenoid-operated camera, included in the price, can be stop-motioned or run continuously from the push-button on the control panel or by foot switch. An optional underlite unit is available for pencil test work, transparency work or title burn-in. Floating pegs provide a means to hold a title or artwork on a cel over a moving background on the table top. When the stand is turned 90°, a puppet stage may be fastened to the table and the entire stage panned from the table controls. When in this position, the bottom of the stand becomes a screen for your projector.

The MODEL 1000 is 29 inches wide, 20 inches deep and 25 inches high. It is ruggedly built to take the abuse of the pre-teenager or give the stability required by the professional. The stand is available with the option of several cameras. Mounting brackets will be available for some of the more popular suitable Super-8 cameras. (NOTE: Closeup lens attachments and single frame capability are essential for animation use.)

Additional information with prices and delivery can be obtained by writing to:

Animation Sciences Corporation; 256 Garibaldi Avenue; Lodi, New Jersey 07644; Telephone: 201-778-9800. ■

**The Model 1000 Super-8 Animation Stand incorporates many features usually found only on professional equipment. The table-top moves by hand controls and with repeatability. Snap-out pegs are provided for cel animation. Scales are similar to the professional drawing disc. A full-size pantograph simplifies panning. Two skillfully engineered 3200K quartz lights are provided, each with its own cooling fan and heat-absorbent glass.**



# OURS

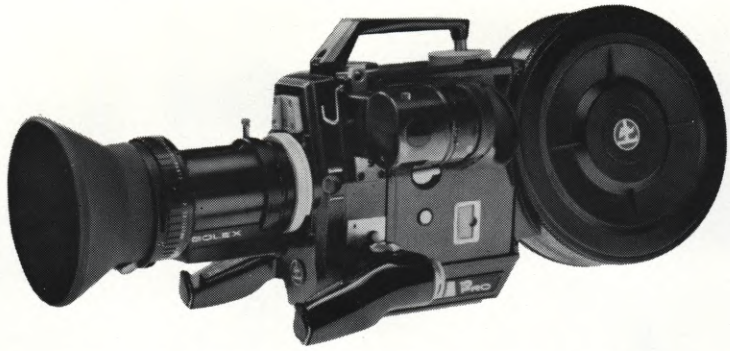
When our RF circuit brought condenser microphones out of the recording studio and into the world, even we had no idea of the many applications you'd put them to. But what our technology made possible, your ingenuity extended in many different directions. What was once a fragile luxury, you made a necessity in location filming, audience participation shows, press conferences,

rock concerts, opera, cinema verite . . . the list grows daily in recording, broadcasting, filmmaking, education and technology. We have not rested on achievements either. Creating and improving condenser microphones with new features, new capabilities. And happily, you adopted them to an extent that has made us the industry standard. Perhaps though, you are unaware just how large the "first family" of professional condenser microphones and accessories has become. For the latest information, please write or call us.

**SENNHEISER**
ELECTRONIC CORPORATION
10 West 37th Street, New York 10018 (212) 239-0190

Manufacturing Plant: Bissendorf, Hannover, West Germany

cut along dotted line



# How much do you want to know about BOLEX 16 PRO?

**I'd like to know more about:**

**THE MAGAZINE**

- ☐ Coaxial for 400′ reels or cores.
- ☐ Compact light and inexpensive
- ☐ Sprocketless design for quick loading
- ☐ Footage counters for each chamber
- ☐ Rear-mounted for optimum mobility

**FILM THREADING**

- ☐ Fully automatically in 3 seconds
- ☐ Fully automatic film take-up in 400′ magazine
- ☐ Signal light tells when camera is ready to shoot
- ☐ Light signals when empty
- ☐ Built-in cutter for removing partially exposed film

**MOTOR DRIVE**

- ☐ Crystal controlled for sync sound filming
- ☐ One electronically controlled motor for all filming needs
- ☐ Variable speeds 16 to 50 fps; 16-100 fps models available
- ☐ Forward and reverse
- ☐ Single frame filming
- ☐ Instant start and stop—no blank frames between scenes

**SOUND**

- ☐ Double system at 24 or 25 fps
- ☐ Super quiet—no blimp needed
- ☐ Wireless synch sound shooting with accuracy ±1 frame per 1,000 feet
- ☐ Automatic slating lamp
- ☐ Single system sound model available

**FILMING AUTOMATION**

- ☐ Fully automatic exposure control
- ☐ Variable speed power zooming
- ☐ Variable speed power focusing
- ☐ All controls built into handgrips
- ☐ Manual over-rides on all controls
- ☐ Remote control possible for all functions

**EXPOSURE CONTROL**

- ☐ Automatic, through-the-lens
- ☐ Manual over-ride
- ☐ Film speeds of 12 to 1600 ASA
- ☐ Meter coupled to camera speed control
- ☐ f-number visible in viewfinder
- ☐ Audible signal when insufficient light

**LENSES**

- ☐ Wide range of zoom lenses
- ☐ Extreme wide angle lens
- ☐ Rugged bayonet mount
- ☐ Lens controls coupled to servo motor
- ☐ Silent operation of powered lens controls
- ☐ Shock-absorbing rubber lens shade

**VIEWFINDER**

- ☐ Practically flickerless mirror shutter reflex viewing
- ☐ Camera stops without mirror blackout
- ☐ Possibility of right or left-eye viewing
- ☐ 20X magnification
- ☐ Instant change from ground glass to clear glass
- ☐ TV and 16mm frame markings
- ☐ Can be rotated 45, 90, and 180 degrees
- ☐ Indicates f-stops
- ☐ Remote viewing possibility

**FILM TRANSPORT**

- ☐ Very low pressure required at pressure plate
- ☐ High-precision single tip claw transports and registers film
- ☐ Superb picture steadiness better than 0.1%

**POWER PACK**

- ☐ 12V rechargeable battery
- ☐ Plug-in electronic modules
- ☐ Plug-in crystal synch controls
- ☐ Outlets for connecting tape recorder, time lapse units and other accessories
- ☐ Choice of powerbelt or powerpack
- ☐ Signal light on camera shows condition of battery
- ☐ All of the above

**BOLEX 16 PRO**

If, in addition to information, you'd like a demonstration of the Bolex 16 PRO, write Paillard Incorporated, 1900 Lower Road, Linden, New Jersey 07036. We'll notify you when we'll be in your neighborhood.

NAME_____

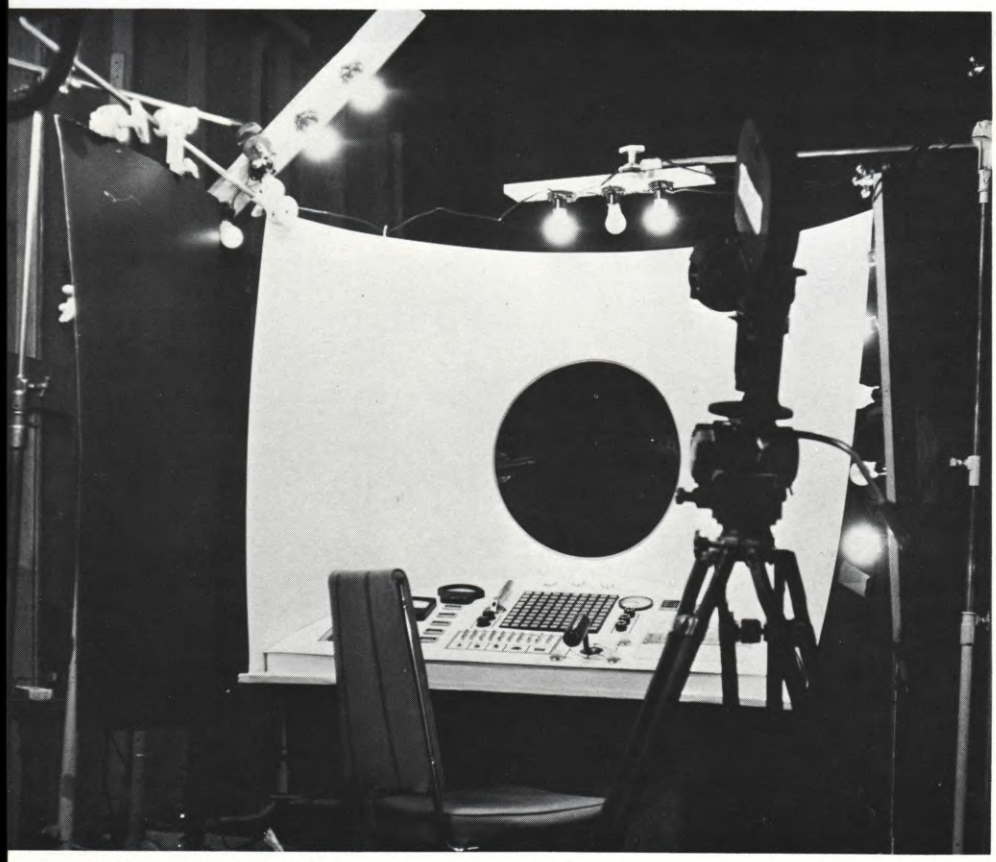
AFFILIATION _____

STREET_____

CITY_____ STATE_____ ZIP_____

For countries outside the U.S.A., write Bolex International S.A., 1450 Ste. Croix, Switzerland

cut along dotted line



**Flying saucer interior "set" was lit primarily by means of twelve 40-watt refrigerator bulbs with flashers. The flash pattern was totally random, but exposureable light averaged F/2.8. Since film was shot in 35mm black and white, a relatively low light level could be used.**

**Frame blow-up showing the Earth matted into the saucer's window. Black backing was hung outside the window which was made of plexiglass. Paul was lit from outside the window to make his reflection visible. The entire scene was composited on the Oxberry animation camera stand.**

## "RADIO ROCKET BOY"

**Continued from Page 1273**

RADIO ROCKET BOY is a mixture of styles. The story takes place today, but the style is a combination of Republic Serials and 40's "B" pictures.

*We knew we wanted to do something as professional looking as we could. By satirizing what was the lowest budgeted of the low budget films, we were getting off to a pretty good start. But even the cheapest of the serials were shot by accomplished people with fair-sized crews and good equipment, so we couldn't have bad looking footage.*

The choice of shooting the picture in black & white might hurt distribution chances, but it was the rule for the films whose style was being imitated. Of course, it was much cheaper than shooting in color and was easier to work in many situations.

*One of the first things we did was run bracketed exposure tests of situations in bright sun, open shade and artificial light. We found that the contrast and gradation we liked best was obtained by slight overexposure.*

Double-X Negative Type 5222 was used for the entire production because of its good contrast and its high ASA index—thereby requiring fewer lights when we went indoors.

Another factor in keeping the style consistent with the old films was composing for Standard Academy Aperture (1:33 to 1).

*Everything was shot so that it could be shown in a wider format but we always composed for the Academy frame. We always insist that the film be shown that way. Once we previewed it for an exhibitor in a theater that was set up for 1:85. The picture lost a lot of the feel of the period. The beginning of the film, which takes place on another planet, looked very modern and like a contemporary space film . . . almost too good for a serial.*

Lighting was also important to preserve the period feeling. There were some compromises made from the beginning, as the crew had to be small, the equipment light and minimal and the filming done on locations rather than on sets.

*We originally thought of lots of the photographic devices used in old films like shadow devices on all the walls (cukaloris patterns or strong venetian blind slats) but we couldn't do this too often, so we*

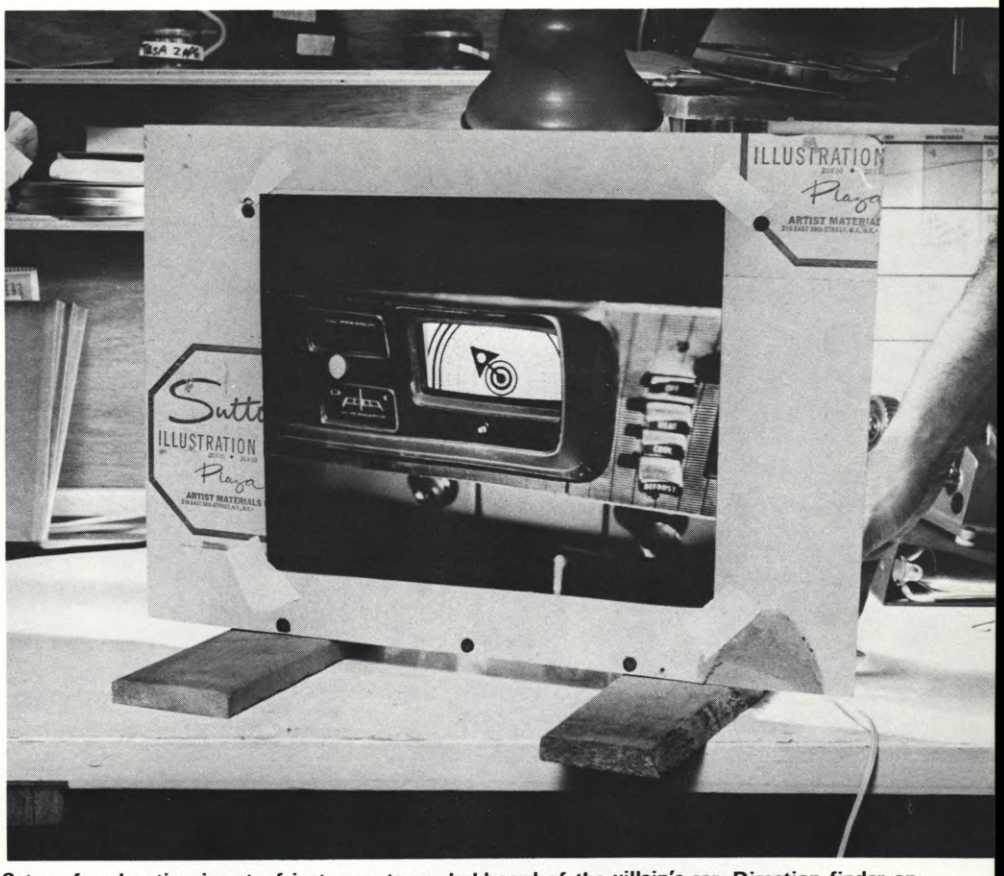
*just concentrated on trying for good contrast in the lighting, for modeling and separation and definition.*

*It's easy to get into some lazy patterns from shooting a lot of color, like flat lighting where color contrast and tones are the strongest things in the scenes. Maintaining contrast and shading in black and white was the challenge, and we usually did pretty well, considering the minimal equipment, personnel and time.*

Our script called for an old-fashioned fight in an abandoned warehouse. Tom Koester was finishing a short film about stuntmen and brought in Greg Anderson, a real pro. Greg set up a great comic fight scene with two other stuntmen, Mike Johnson and Lance Fremin, that really came off well.

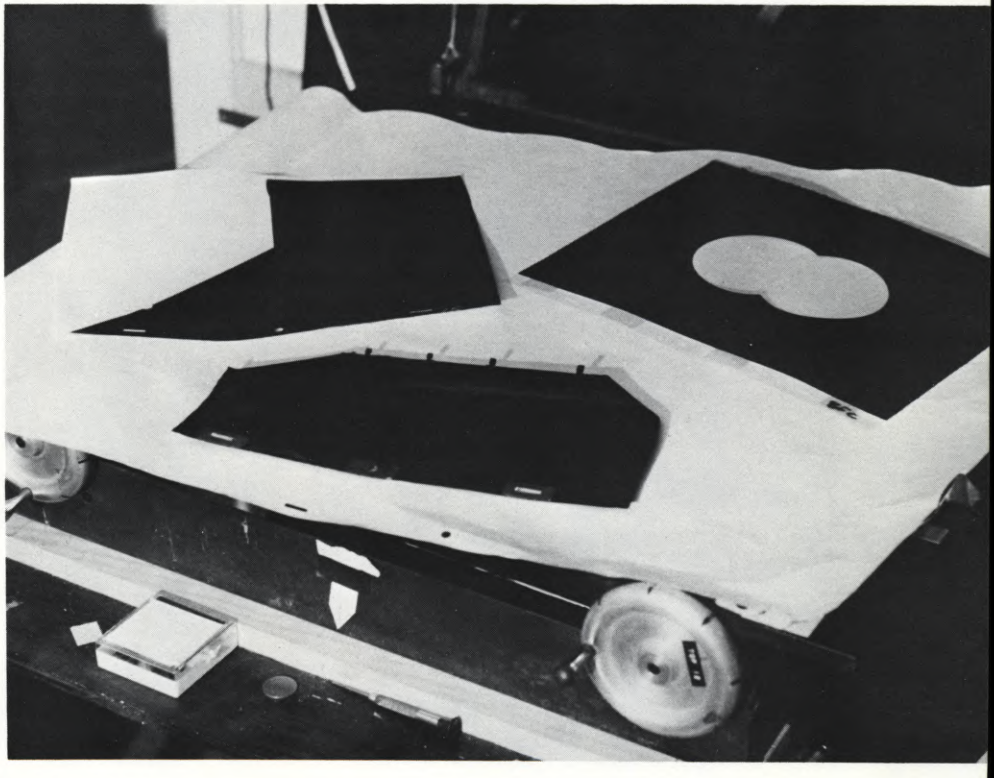
The fight was simultaneously filmed and videotaped. Leni Goldberg, who videotaped TV screen readouts and communication scenes, was there to videotape the action while we shot the master scene of the fight. When we were ready to shoot close-ups of the fight with our actors, we played the videotape. Allowing the actors to see what their doubles had done was invaluable and all action matched perfectly. Jim Tartan, after seeing the edited sequence, said he had trouble telling when the character on the screen was Greg or himself!

A car chase climaxes the film. We knew that in this age of spectacular car chases in films we had to have a chase that would be exciting as well as funny. We took a long time planning the chase, working out many gags, putting them in order and trying to use as many interesting Los Angeles locations as we could. The cars chase through busy downtown streets, a basement garage (a combination of three locations), the freeway (about five different spots), a carwash and winding roads in the North Hollywood Hills, including areas on Mulholland Drive (which were favorite spots in the old serials), finally ending up in a spot which would match a stock shot of a car going over a cliff. The chase took the longest time to shoot and contained material filmed on our first and last shooting days. Access to a silent camera throughout the entire shooting period enabled us to go out and pick up additional footage to beef up the scenes as we went along. We used hand-held shots of the interiors of the cars, car-to-car footage and point-of-view material filmed with the aid of the Super-Grip mount. Most of the pass-by shots were taken at 10 fps for safety and the illusion of speed. At one point we even




**Set-up for shooting insert of instruments on dashboard of the villain's car. Direction finder on dashboard was actually a still photo with cut-out mechanical pointer and flashing light.**

**Various mattes used for special effects scenes. (Upper left) A clock wipe 2/3 complete (Upper right) A binocular matte (Center) Warehouse silhouette matte used to add daylight sky to night scene.**





**(LEFT) The movement of the flying saucer relative to the live-action background is planned on the Oxberry animation stand using Rotoscope projection. A silhouette of the saucer is used here to determine the proper size and placement. (CENTER) Bob Swarthe with the bi-pack magazine used to combine live-action and animation scenes. Photography of effects scenes was done at Dickson/Vasu Animation Camera Service. (RIGHT) Swarthe preparing to print the live-action background. The black silhouette of the saucer holds back exposure in this area. The white card acts as a printing light for the live action scene in the bi-pack magazine.**

skip-framed a scene on an optical printer for added speed. Another day was spent with a Nagra recorder to get good car sound effects to give the scenes added dimension. Sometimes the sound effects make the footage look more exciting than they really are.

## EQUIPMENT

The equipment was basically an Arriflex IIB and an Eyemo. We had access to these cameras, thanks to the NARMPU U-1 unit of the Naval Air Reserve at Los Alamitos. For sync scenes another Arriflex was rented with a Cine 60 Blimp. It was either equipped with a constant speed motor with sync-pulse generator or a crystal-controlled motor, depending on which model Nagra recorder was available.

Lights were usually one Colortran Mini-Pro Kit, two Colortran Cine Queen lights (1000-watt sealed beam heads with intense concentrated beams, which were usually used as bounce lights or to light large areas like the warehouse) a Larson Reflectasol umbrella for a fill light and as an outdoor reflector, and a 150-watt flood on a clip light.

The Mini-Pros were handy, as they were light and fit into a small case and could usually do the basic lighting indoors. In car scenes, they were converted to DC use by changing the bulb to a 30-watt type and using a battery pack. For the daylight car scenes showing the passengers through the window of the car, a Mini-Pro would be taped to the hood of the car or mounted on a suction cup bracket and diffused with spun glass clipped to the barn doors with stationers' clamps.

*Shading the windshield was a problem. We had to do it in order to see in the car without getting a reflection from the usually smoggy white skies. Our first set-up was a crude rig with black cardboard and wooden struts held together with gaffer tape. After the wind blew this away a few times, we switched to a black cloth attached to Century stand arms which were held to the top of the car with suction cup light brackets.*

Interior car shots in a basement garage of a shopping center were shot in available light. These were all the long shots, car-to-car, pass-by's, etc. The available light level was good for an F/2.8 exposure. Returning a few weeks later, the shots of the passengers were accomplished by mounting the camera on the hood, shooting through the windshield and adjusting the Mini-Pro fill light for an F/2.8 setting. The windshield was not shaded, as the ceiling was dark and the passing reflections from the fluorescent fixtures overhead added to the effect of movement.

*That was fine for the shots of Paul and Lynne driving in the garage, but with Ivan we had some problems. We only had time to shoot him in an outdoor parking lot where we shot his exterior driving closeups. Since Ivan doesn't drive, we had to use close angles and shake the car. For the*

**The photo of the flying saucer in position for the final step in composite photography. Black masking around photo prevents double exposure of live-action area.**

*garage scene, we darkened the windows with black cards and opened the sun roof and one side window and waved a DC Mini-Pro past his face in various directions. This gave the illusion that he was in motion. It worked perfectly.*

All of the shots through the windshield, the car-to-car shots, and the point-of-view driving shots were accomplished with a Super-Grip, a very handy suction-cup mount with a large single cup and an angle bracket that permitted shooting in any direction. The tripod used for much of the shooting was a lightweight Linhof aluminum tripod that Bob Swarthe had adapted for use with his Bolex by adding a lightweight Miller fluid head. We knew it would work well with the Eyemo, which it did. We later tried it with the Arri and found that it worked fine for all setups, even with a 25-to-250 Angenieux Zoom lens, and if the moves were not too complex, it would even support the Cine 60 Blimp. This meant that we had a tripod that weighed far less and took less space than a conventional Pro Junior or larger tripod.

The Eyemo was mainly used for quick hand-held shots like the closeups in the fight scene. But it was also valuable where inconspicuous shooting was essential.

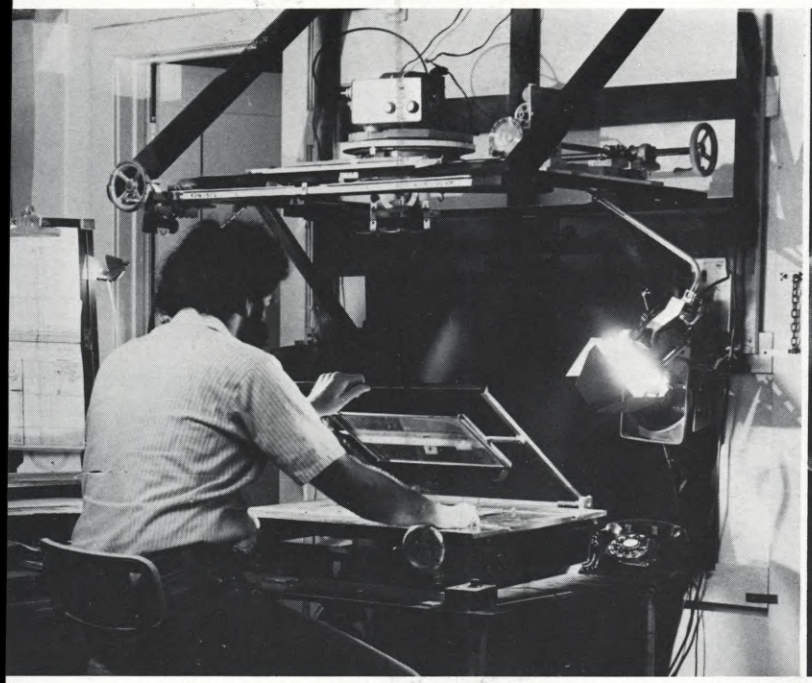
*We took the Eyemo out when we wanted to shoot in a public place and not attract attention. Most people think it's a 16mm camera and leave you alone. We did a whole sync scene in a public park with Paul and Lynne by shooting the walk up and master shot position with the Eyemo and then shooting the closeups in an isolated spot with the blimped Arri.*

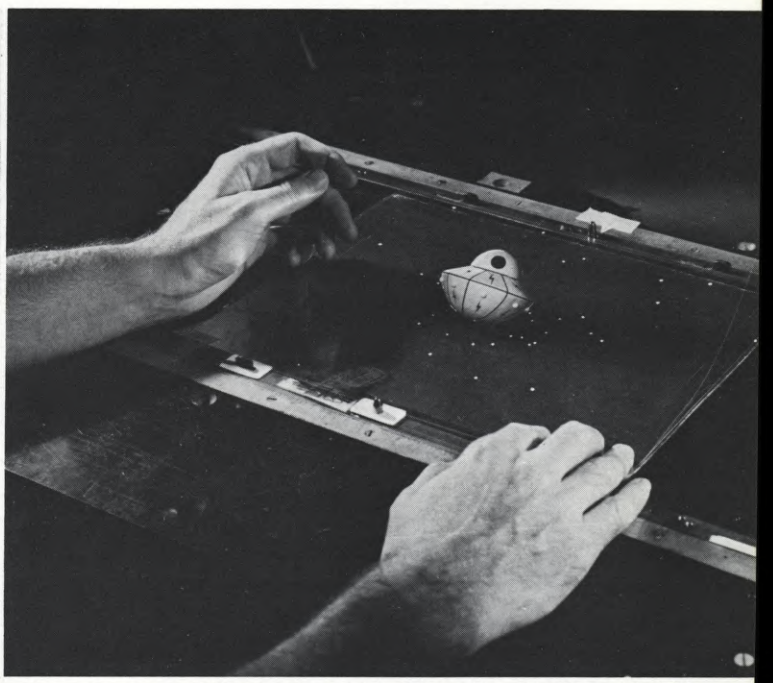
*We finally got to the point where we were shooting silent scenes on crowded streets like Hollywood Boulevard at noon with the Arri and a zoom lens. Nobody so much as batted an eye. I guess there are so many movie crews on the streets of Los Angeles today that the crowds have become blasé.*

At one point the action called for Jim Tartan to make several phone calls from a phonebooth. The booth we used was isolated enough from traffic and passersby that the camera was set up unblimped outside. Neutral density gels were taped to two sides of the booth and the microphone was hidden below the phone.

*Again, it was a two-man crew,*

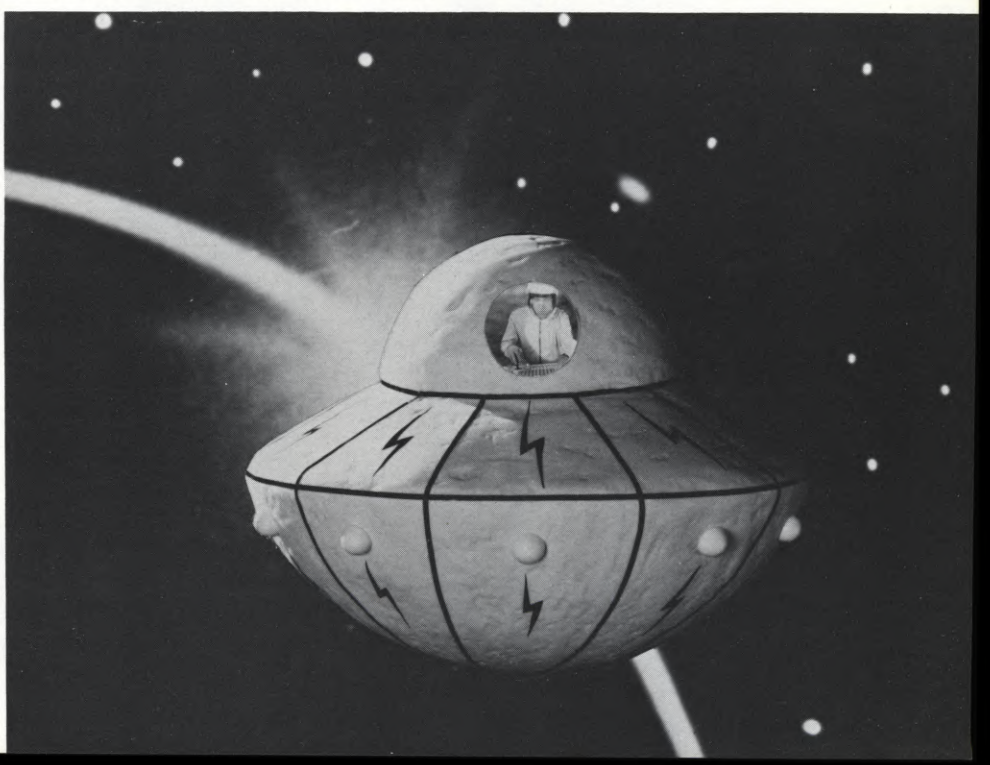
**Continued on Page 1338**





**(LEFT) Swarthe photographs flying saucer on his home-built 16mm animation camera stand. Scenes photographed here were used to create TV displays when re-photographed from a TV monitor. (RIGHT) A closer view of the 16mm stand showing a cut-out Polaroid photo of the saucer being placed over animated star background. The 16mm film was spliced into a loop for continuous projection, displayed on a TV monitor and re-photographed in 35mm.**

**Flying saucer travelling through space. This scene was composed of miniature saucer photo, 35mm transparency of a solar eclipse and hand painted stars. The image of Paul Koester at the controls is a still photo enlarged from a frame of motion picture film.**



# AMERICAN SOCIETY OF CINEMATOGRAPHERS

## ROSTER • OCTOBER, 1973

### Active Members

L. B. Abbott
David Abel
Lloyd Ahern
Norman Alley
Herbert Alpert
John A. Alonzo
Murray Alvey
Gert J. Andersen
Howard A. Anderson, Jr.
Lucien Andriot
Arthur Arling
Monroe Askins
Charles Austin
Lucien Ballard
Manuel J. Berenguer
Carl Berger
Joseph Biroc
Haskell Boggs
Lamar Boren
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
Stanley Cortez
Floyd D. Crosby
Art Cruickshank
Russell Cully
Mark H. Davis
Dale Deverman
Drummond Drury
Victor Duncan
Linwood G. Dunn
Alric Edens
A. Farciot Edouart
Russell Ervin
Daniel L. Fapp
Ray Fernstrom
Gerald Finnerman
George J. Folsey
William A. Fraker
A. C. Francis
Ellsworth Fredricks
Henry Freulich
Lee Garmes
Frederick Gately
Maury Gertsman
Donald C. Glouner
Robert Gough
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
Michel Hugo
Andrew Jackson
Torben Johnke
Boris Kaufman
Richard A. Kelley
W. Wallace Kelley
Victor Kemper
Glenn Kershner
Jess Kizis
Benj. H. Kline
Richard Kline
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
Harold Lipstein
Jack MacKenzie
Glen MacWilliams
Don Malkames
Karl Malkames
Fred Mandl
William Margulies
Brick Marquard
Jacques Marquette
Enzo A. Martinelli
Joseph V. Mascelli
Ted McCord
Ray Mercer
Russell L. Metty
Virgil Miller
David Millin
Hal Mohr
Robert C. Moreno
Nick Musuraca
John M. Nickolaus
Meredith M. Nicholson
Louis Page
Ted Pahle
J. F. Painter
Ernest Palmer
Kenneth Peach
Harry Perry
Frank Phillips
R. W. Pittack
Clifford Poland
Ray Rennahan
Gayne Rescher
Irmin Roberts
Charles Rosher
Harold Rosson
Giuseppe Rotunno
Joseph Ruttenberg
Robert Sable
Ted Saizis
Vincent Saizis
Charles Salerno, Jr.
David Savitt
Howard Schwartz
James Seeley
John Seitz
Leon Shamroy
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
Harry Stradling, Jr.
E. Charles Straumer
Walter Strenge
Karl Struss
Robert L. Surtees
Jack Swain
Philip Tannura
Ellis Thackery
Thomas E. Tutwiler
Charles Van Enger
James C. Van Trees
Zoli Vidor
Paul C. Vogel
Ted Voigtlander
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
Harry L. Wolf
Ralph Woolsey
Lothrop Worth
Frank C. Zucker

### Associate Members

Mark Armistead
L. J. Baker
Haworth B. Belford
Edgar Bergen
James Branch
Gerald D. Brodersen
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
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
Neal Keehn
John J. Kowalak
Herb A. Lightman
Grant Loucks
Lewis Mansfield
Kenneth M. Mason
John H. Maynard
Victor Milner, Jr.
George J. Mitchell
Thomas M. Mitchell
Kemp Niver
Capt. Don Norwood
Otto Paoloni
Warren Parker
John Pistor
Edward H. Reichard
Loren Ryder
Vaughn C. Shaner
Norwood L. Simmons
Sidney P. Solow
Abbott Sydney
Harry Teitelbaum
Lou Vincent
William J. Wade
Jack Webb
E. M. Whiting, Jr.
Ralph D. Whitmore, Jr.
Ted Winchester
Michael Zois

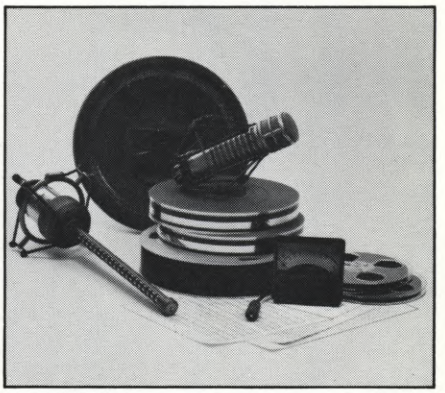
### Honorary Members

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

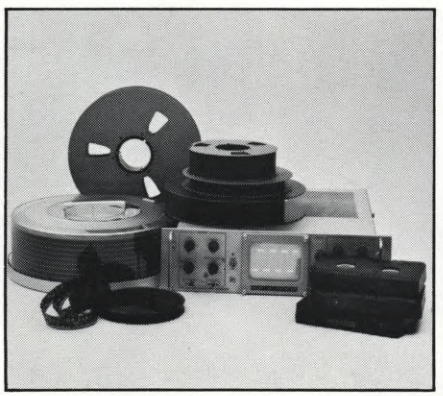
# for total capabilities

**film processing**

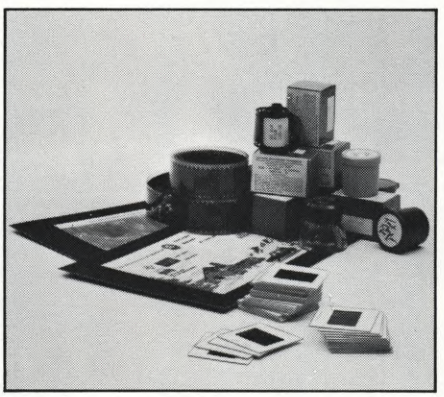
**titles & opticals**



**Glen Glenn Sound Co.**



**video tape**



**filmstrips & slides**

# think CFI

We offer every post-production service that a customer may require . . . *laboratory services . . . title & optical services for both film and video tape . . . film strip and slide service . . . video tape to film transfers . . . video tape duplication . . . video cassette duplication . . . on-line and off-line CMX computerized editing facilities . . . the modern and complex sound facilities of the famed Glen Glenn sound organization.*

This is backed up by continuous research and development that has won for CFI more academy technical awards than any other laboratory in the world. Add to this the many advantages that come from having all these various facilities concentrated at one location, and you can see that CFI truly offers "state of the art" quality.

Perhaps the single factor that has contributed most to our growth and expansion over the past half-century has been our sense of direction and involvement with our industry—our philosophy. It is that every job we process is important—that every job we do for our clients, whether it is big or small, deserves and receives the personal attention of a large, professional and dedicated staff backed by the finest technical resources available.

At CFI you can rest assured that your work will receive the highest level of professional attention. And that we have the *total capabilities* to do whatever is necessary to make the results turn out right.

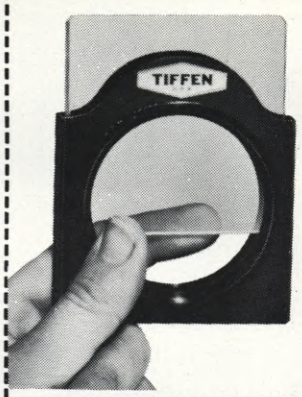
## CONSOLIDATED FILM INDUSTRIES

**HOME OFFICE:**
959 Seward Street
Hollywood, California 90038
(213) HO 2-3161

**NEW YORK OFFICE:**
15 Columbus Circle
New York, New York 10023
(212) LT 1-1090

**MID-WEST OFFICE:**
333 North Michigan Avenue, Suite 312
Chicago, Illinois 60601
(312) MI 1-0028

# TIFFEN
## FINEST FILTERS AVAILABLE TODAY




### PROFESSIONAL FILTER HOLDER

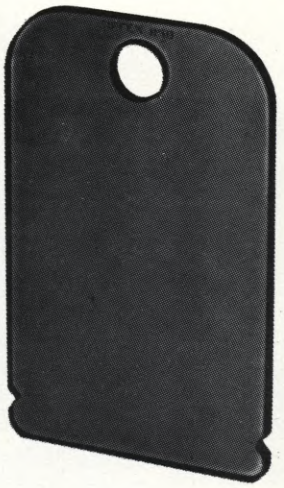
Holds your square glass and gelatin filters as well as round series-size glass filters, separately or together—and permits you to align oblong or square sunshades accurately, too. Available for 3-inch square and Series 8 or 9 round filters, or for 4x4-inch. Both holder sizes mount on your lens with standard adapter rings.

### VIEWING FILTER

Permits the visual interpretation of shadow and highlighted details corresponding to the films emulsion. Interchangeable filters available. With neck chain and pocket case. Please use stock numbers when ordering.
#1—B&W Viewing Filter 90-50
#2—Color Viewing Filter ND 2-0
#3—Color Viewing Filter (High Speed Film)


### SPLIT FIELD LENSES

Breathtaking close-ups . . . with sharp distant detail . . . with Tiffen split field lenses that fit like a filter. Available in +½, 1, 2, 3 diopters in series sizes 5-9 and 4½" diameter too!



### RECTANGULAR FILTERS

for Arri 16 matte box. Available in all colors and neutral densities 0.1-1.0.

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

---

# THE NEW STANDARD NOW AVAILABLE


only 7 lbs

## DIRECT FROM

SENTRA CEL LABORATORY
1033 N. Third St.
MILWAUKEE, WIS. 53203
(414) 272-0606

ONLY $149.00 FOB PLANT

YOUR CAMERA MOTOR NEVER HAD IT SO GOOD!
*(12, 16 and 30 Volt DC Cels Soon Also!)*

# WHY

**SENTRA CEL** COMPLETELY SEALED UNIT: has no liquids; drier than "dry cells"; exclusive electrolytic leak-free construction. Use, charge in any position. Worry free, simple.

**SENTRA CEL** EXTENDED STORAGE LIFE: loses 2-3% per month, stored, compared to nickel-cadmium 20-40% under similar conditions. Dependability, just when you need it most. Minimum care too.

**SENTRA CEL** ARCTIC TO EQUATOR USE: fully charged unit works from 76 below Zero to 140 above; or -60 to +60 Centigrade. 216 degree F. range!

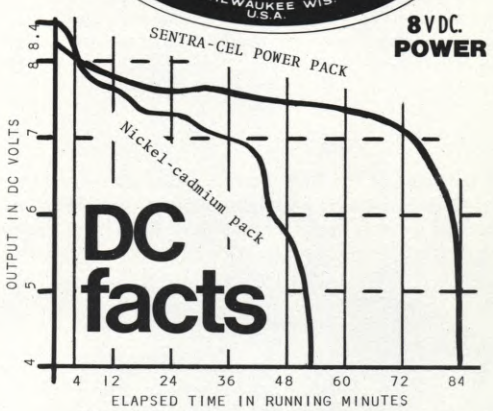
**SENTRA CEL** NO "REVERSAL" DANGER: will recharge regardless of depth of discharge. No cell damage, no permanent reversal to plague you.

**SENTRA CEL** NO "CELL MEMORY" FAILURE: supplies the power you require, when and where needed: short, repeated, long, light, heavy, intermixed film runs.

**SENTRA CEL** HANDY, PRACTICAL UNIT: is cushion-mounted, insulated, completely wired, sealed, virtually trouble-free. Charge anywhere with ordinary 110 volt AC. Input and power charge monitor lights; coded 8 volt DC output plug. Sturdy, riveted, "tuf-fiber" case with protective, shielding cover; no plastic. Hang on your shoulder, snap around your belt with adjustable, web carrying strap and all brass hardware. (Hang on your tripod? That too!)

## THE NEW SENTRA CEL
MILWAUKEE WIS. U.S.A.

8 VDC. POWER




(ACTUAL TEST: ARRIFLEX M, 400 FT. MAGAZINE, RUN 24 FPS, CONTINUOUS EXCEPT MAGAZINE CHANGE; BOTH BATTERIES FULLY CHARGED, IN GOOD CONDITION, ROOM TEMPERATURE OPERATION.)

**SENTRA CEL** FULLY SELF-CONTAINED: pilot signal lamps, charging cord, full instructions are all right under the protective cover. Great for rental-camera: simple, reliable power.

**SENTRA CEL** FULL FACTORY WARRANTY: is guaranteed for one full year from purchase date. We stand behind the pack. You'll rely on it. Turn-around service for you too, should you need it.

**Save Time and Money!**

# THE BEAULIEU STORY

**Editor travels to a picturesque French town to accept an invitation and observe how fine cameras are built**

by HERB A. LIGHTMAN

**At the Beaulieu Camera plant in Romorantin, France, Beaulieu motion picture cameras and accessories are packed with loving care and sent on their way to markets around the world.**

*ROMORANTIN, FRANCE*

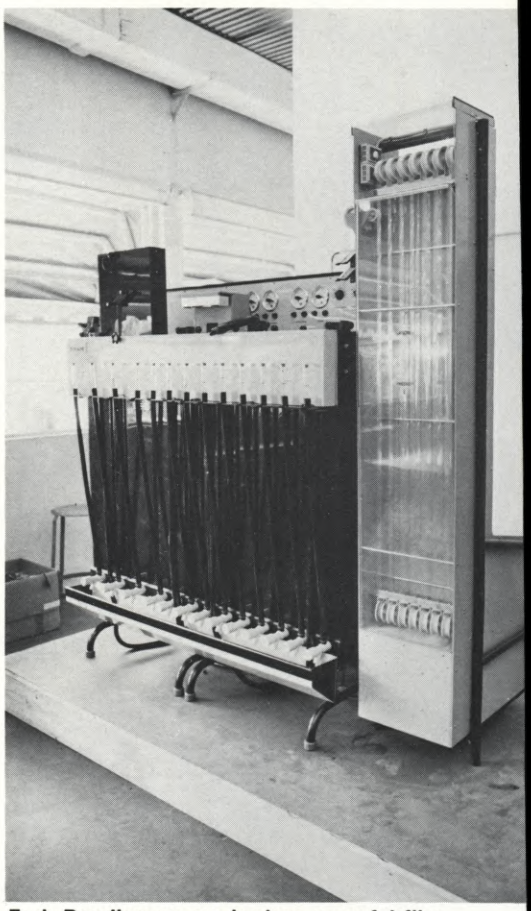
At Orly Airport in Paris, as I get off the plane, I spy a familiar smiling face. It belongs to Antoine Gallozzi, genial Marketing Manager of Maison Brandt Frères, European distributor for Beaulieu cameras.

We had met before in Hollywood a couple of years ago when he came to my office with Mr. Marcel Beaulieu, founder and Chairman of the Board of Beaulieu Camera Co., to show me the prototype of the handsome *BEAULIEU "NEWS 16"* camera.

Now he has very kindly come to meet me and drive me to the town of Romorantin, location of the Beaulieu plant, to keep a *rendezvous* long overdue. Just a couple of months before, at the Hollywood home of William Herscovic, President of Hervic Corporation, I had enjoyed a warm reunion with Mr. Beaulieu and his charming wife, and they had repeated their often-extended invitation for me to visit them at Romorantin. Now, finally, it is about to happen.

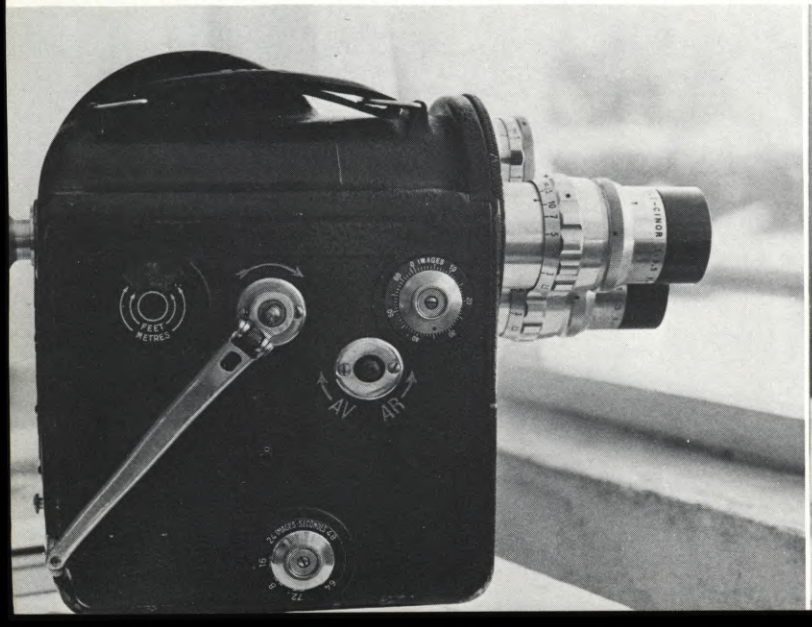
Mr. Gallozzi threads his way expertly through the Sunday traffic of the Paris suburbs, heading south into the countryside. We drive for a couple of hours through flat, lush farmland. We pass the city of Orleans, with its majestic cathedral—a place linked forever in history to the radiance of Joan of Arc. Crossing

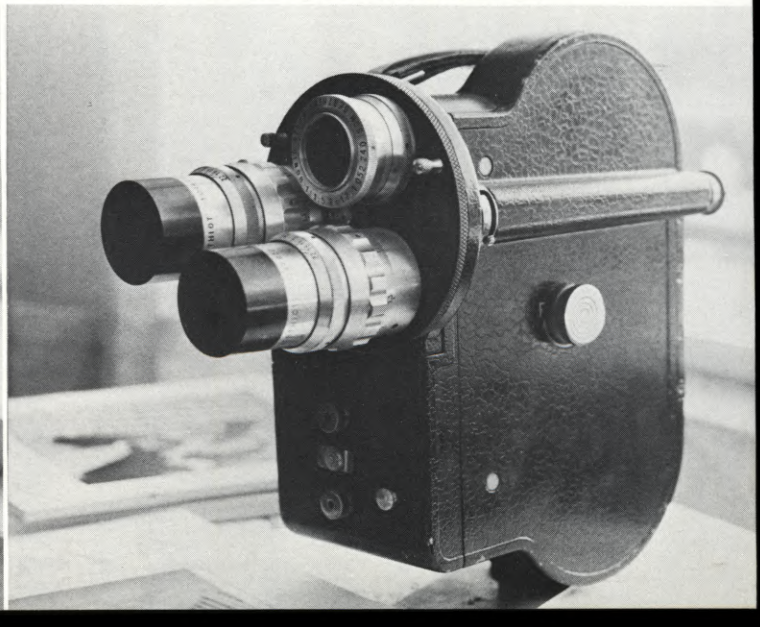
**Continued overleaf**



**Each Beaulieu camera is given a careful film test before being approved and the film shot is developed in this processing machine which is installed at the plant.**

**Two views of the first motion picture camera to bear the Beaulieu name. This Model M16 was a simple 16mm camera developed in 1951 for the amateur market. It gradually evolved until 1958, when automatic exposure control and other advanced features were incorporated into the design. At that point it became much in demand by professionals—a forerunner of the highly-sophisticated Beaulieu R16B(PZ) camera of today.**



(LEFT) Jacques Beaulieu confers with his father, Marcel Beaulieu, founder and Chairman of the Board of Beaulieu Camera Corp. in executive office of plant in Romorantin, France. (CENTER) Mr. Beaulieu prepares to drive home in silver Citroen-Maserati. (RIGHT) Lunch conference with aides at Grand Hotel du Lion D'or in Romorantin. (BELOW LEFT and CENTER) Views of "Bois Chavant", Beaulieu country estate outside Romorantin. Sumptuous hunting lodge is surrounded by beautiful gardens and 260-acre hunting preserve. (RIGHT) The perfect host, Mr. Beaulieu pours champagne, while his charming wife looks on.

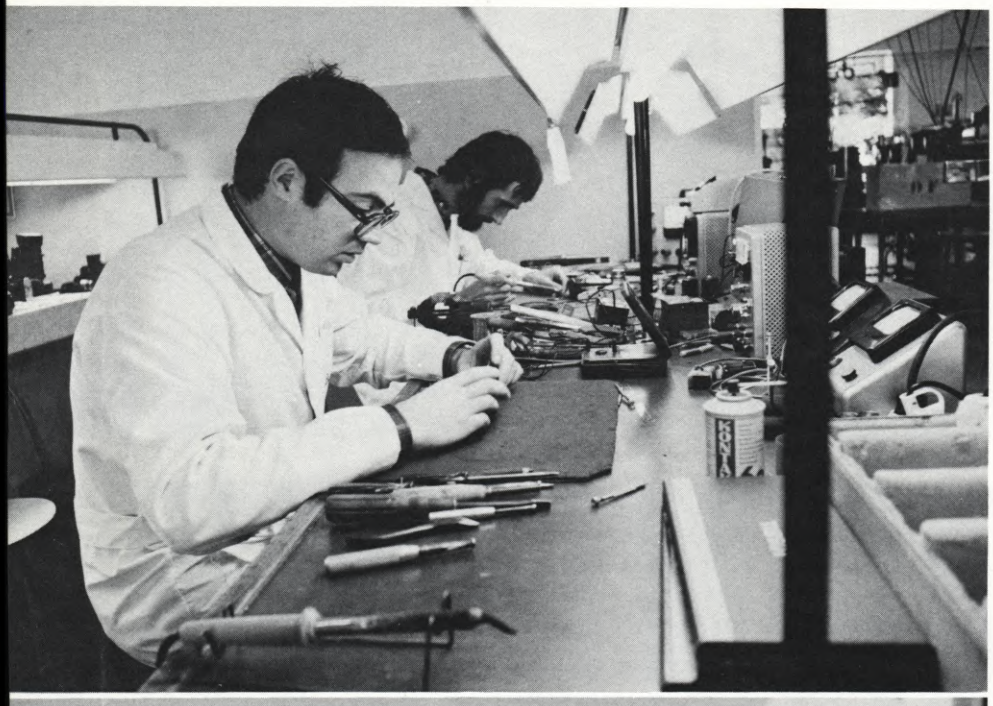
(LEFT) Front facade of Beaulieu plant in Romorantin, a picturesque town of 20,000 inhabitants located in the "chateaux country" south of the Loire River. Shown here is original "old building", which has been extended by modern plant added in rear. (RIGHT) Huge machines turn out tiny precision parts for the Beaulieu cameras. (BELOW LEFT) Mr. Beaulieu confers with technicians in machine shop. (RIGHT) Ultra-modern section of plant where Beaulieu Super-8 and 16mm cameras are assembled. 240 employees turn out monthly production of 1,000 Super-8 cameras, 200 16mm cameras and 30 "News 16" sound cameras.

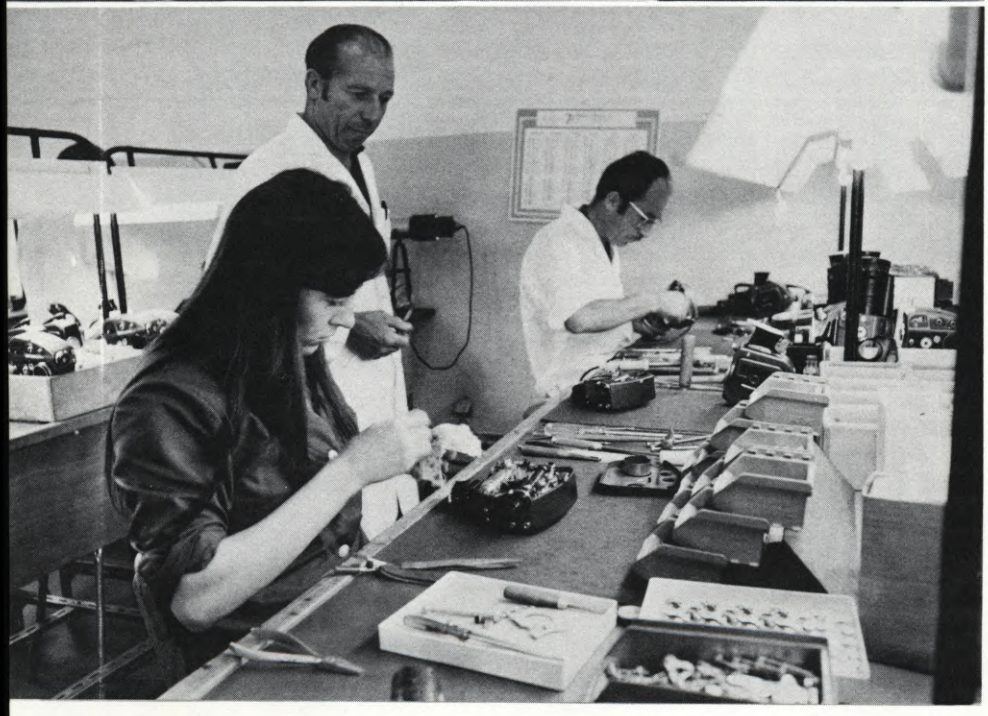
the Loire River, we are in that region of France known as the "chateaux country", an area of feudal manors and mini-castles which bear heraldic witness to the glories of a medieval past.

Then we are in Romorantin, winding our way through the streets of this tranquil town of 20,000 inhabitants. A few miles outside of the town we turn into the gateway of a private road marked with a sign that reads: *"BOIS CHAVANT".* At the end of the road is a magnificent manor house of native stone—former farm buildings (I am later told), that have been converted, with exquisite taste, into a classic hunting lodge. The house is surrounded by beautiful landscaping, with flowers everywhere and a pond set like a gem in the rolling greenery. It is the kind of place one usually sees only in dreams.

There is the warmest of welcomes from the Beaulieus, two quite extraordinary people. Monsieur Beaulieu, a very handsome and distinguished-looking gentleman, with merry blue eyes that express his sense of humor, possesses the kind of natural elegance that cannot be acquired. Madame Beaulieu is a vivacious lady who radiates great human warmth and has the ability to make a guest feel instantly at home. They are utterly without pretension—two of the most down-to-earth, most genuine people I have ever met.

Soon we are joined by their son, Jacques (known familiarly as "Beaulieu, Jr."), his wife and their two lively young boys, Christophe and Nicolas, 10 and 6 years old, respectively. They're wonderful kids—a combination of beautiful manners and the rough-and-tumble exuberance typical of red-blooded boys the world over. The "Beaulieu, Jrs." live in their own very attractive house nearby on the 260-acre estate, and Jacques is his father's right-hand-man at the Beaulieu plant.





We spend a lazy and most pleasant Sunday *en famille*—browsing through the lovely woods, hunting the tasty local yellow mushrooms, jaunting about in a bright green jeep-like vehicle, while pheasants scurry in all directions, later sipping champagne on the terrace as the sun goes down.

The next morning, we ride into Romorantin in Mr. Beaulieu's sleek silver Citroen-Maserati, which he parks at the plant next to Jacques' Mustang Mach 1.

My "grand tour" of the plant begins in his office, where he shows me a progression of Beaulieu cameras dating back to the first 16mm model, produced in 1951. It was, he tells me, intended to be strictly an amateur camera and the first models were quite simple. However, by 1958 he had reflexed the camera and added several other sophisticated features to it. He was most surprised to find that the professionals were asking for the camera and had begun to use it in their work. They obviously liked the idea of a camera that had professional features, hut handled as easily as an amateur camera. As time went by, the professionals asked for and suggested several other sophisticated features. These were incorporated and the final result was the Beaulieu R16B(PZ) camera which is so popular today.

In 1964, when Eastman Kodak introduced its revolutionary new Super-8 cartridge, Mr. Beaulieu and his top engineers journeyed to Rochester to find out first-hand from the Kodak people everything possible about the new format. They were told that the Super-8 cartridge had been designed specifically to service the simplest of amateur home-movie cameras—a product strictly for the mass market.

Mr. Beaulieu reasoned that if he had to limit his scope to this concept, and produce the same sort of simple camera that all of his competitors were working on, it wouldn't be worth the effort.

He had been developing plans for a highly sophisticated Double-8 camera—a completely electric-electronic model with automatic exposure control and several other unique features. He decid-

ed to take the big gamble and incorporate all of this sophistication into a camera built around the new Super-8 cartridge. He even dared to believe that such a camera could be made to run at speeds up to 50 frames per second—something which even the Kodak people considered to be impossible.

He set to work at top speed to make this "dream camera" a reality and, a short nine months later, arrived at a big photographic trade show in New York with three working prototypes of what was later to be marketed as the Beaulieu 2008S Super-8 camera. Caught short by the new format, most of the other manufacturers had only wooden mock-ups or drawings of their proposed cameras. They all flocked around the Beaulieu booth to see a Super-8 camera that would actually work. The reporters asked Mr. Beaulieu to run some film through his cameras. Knowing that prototypes have an obstinate way of fouling up at just the wrong times, he held his breath—but the film ran through the cameras perfectly.

The sleek "space-age" Beaulieu 2008S Super-8 camera, boasting features more advanced that those found in any professional 16mm or 35mm cameras, was introduced to the market. Called "the Rolls-Royce of Super-8 cameras" and with a price tag higher than that of any other camera in the format, it was eagerly embraced, not only by well-to-do amateurs, but by those who had discovered that Super-8 had potentials of becoming an important professional format for certain applications.

And what of the Beaulieu "NEWS 16" camera? Mr. Beaulieu explains the reasoning that resulted in the development of this handsome new camera. He had observed that existing 16mm cameras fell into two basic categories. The first category included such cameras as the Bolex, the Canon Scoopic and the Beaulieu R16—relatively low-priced cameras which had not been specifically designed for sound filming. The category at the other end of the scale included such top professional instruments as the Arriflex, the Eclair and the Auricon.

Mr. Beaulieu had no wish to compete with the latter range of high-priced professional cameras, but he felt that there might be a place between the two categories for a compact, highly-sophisticated, hand-held sound camera (preferably single-system), designed primarily for newsreel and documentary shooting and existing in a medium-priced range. The result was the Beaulieu "NEWS 16".

As I tour the Beaulieu plant I am told that in the beginning the camera manufacturing facilities were located in a suburb of Paris and Mr. Beaulieu used to commute from his home in Romorantin to Paris three times a week. He was later able to acquire a factory building in Romorantin. It was small and old, but he had it rebuilt completely into a greatly extended and thoroughly modernized facility. At first, only a small staff worked there, but today there are 240 people employed on the premises and each month they turn out 200 16mm cameras, 1,000 Super-8 cameras and 30 Beaulieu "NEWS 16" cameras.

The Beaulieu plant boasts the most modern manufacturing and testing equipment, but I'm happy to note that there is about the place the atmosphere of the *atelier.* It is a place where beautiful machines are lovingly handcrafted by people who seem to care very much about the product they are creating.

To Mr. Beaulieu, having the plant located in Romorantin is a very pleasant fact. Not only is it a lovely area, geographically, but it is the region where his parents were born and, to him, it is "home".

We take lunch in town at the charming Grand Hotel du Lion D'or and the talk turns to other things besides cameras, but back at the plant my tour of

**Continued on Page 1344**

# ON LOCATION IN ISRAEL '73

**A visit to location sites of various films shooting in Israel produces evidence of burgeoning production activity and a heightened degree of know-how on the part of local technicians**

By DAVID and GAIL SAMUELSON

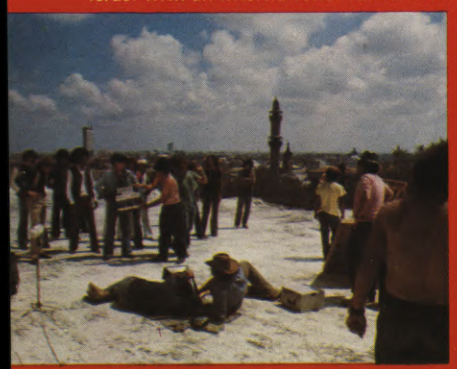
The number of films made in Israel grows year by year. Local productions are becoming more ambitious and more and more foreign companies are using Israel's wide variety of scenic backgrounds—not only for location shooting, but also for their entire productions. In 1972, 29 features were filmed in Israel, eight of them by international companies. The amount of money spent locally on film production has increased from less than $1,500,000 in 1969, to $6,000.000 in 1972. This reflects foreign producers' growing confidence in Israel, its film production facilities and, very often, its local technicians, whose standards have risen—and are still rising—as Israeli experience in the art of film-making increases.

During a recent eight-day trip to Israel, we visited three different film locations.

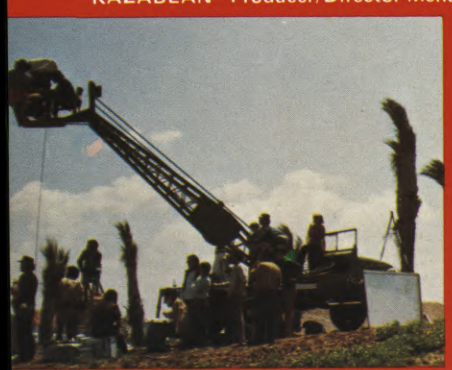
The first was that of "KAZABLAN" (based on a successful Israeli stage musical of the same name), an Israeli-style "WEST SIDE STORY" which takes place in the old cities of Jaffa and Jerusalem, with an all-local cast of over 100 and 12 production numbers. With a budget of $500,000 it is the most ambitious locally-financed picture to date. It is estimated that every cinema-going Israeli would have to see the picture twice in order to cover the negative costs, so successful overseas distribution is vital.

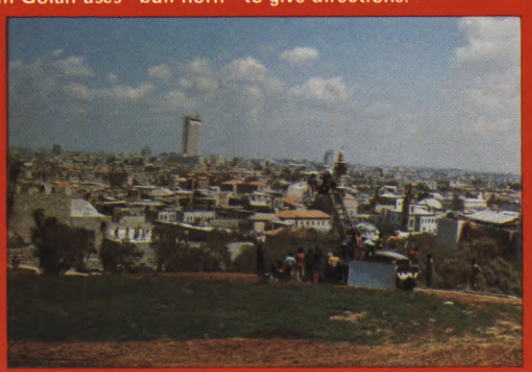
For this reason, the film is being made simultaneously in Hebrew and English (all artists and members of the

(LEFT) Israeli film crew on Jaffa rooftop prepares to shoot musical number for ambitious local production, "KAZABLAN". Modern tower and ancient minaret in background provide striking contrast. (CENTER) Assistant Cameraman Mike Brandt blows dust from the camera. (RIGHT) Wearing Arab "kafiya", American director Tom Gries uses one of the prop guns to cue Bedouin hunting sequence for "Q.B. VII", feature shooting in Israel with an international cast and crew.

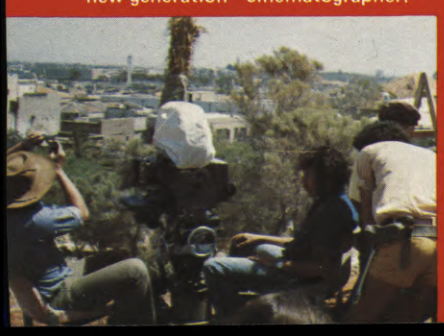


(LEFT) Giant crane, originally built for Otto Preminger's "EXODUS", is pressed into service for filming of "KAZABLAN". (CENTER) "KAZABLAN", based on a successful Israeli stage musical, employs an all-local cast of more than 100 artists performing 12 musical numbers. Budgeted at $500,000, it is the most ambitious locally-financed picture to date and is being shot in Hebrew and English versions. (RIGHT) "KAZABLAN" Producer/Director Menachem Golan uses "bull-horn" to give directions.





(LEFT) "Checking the gate"—almost a religion in Israel. (CENTER) Bi-lingual slate adds an exotic touch to the set. (RIGHT) "KAZABLAN" Director of Photography, David Gurfinkle, checks composition through viewfinder of Panavision Silent Reflex camera. Though many visiting crews have employed Panavision equipment, this marks its first usage by a local crew. Gurfinkle, a highly talented technician, is Israel's most experienced "new generation" cinematographer.





(LEFT) A "genuine" Bedouin encampment serves as one of the atmospheric sets for "Q.B. VII". (CENTER) Cast and crew eat lunch in commissary tent on location. (RIGHT) Eminent British Director of Photography Paul Beeson, BSC, (current President of the British Society of Cinematographers) and Assistant Cameraman David Worley on "Q.B. VII" location.

(LEFT) Actor Anthony Hopkins, precariously perched on top of a camel, asks: "What's the Arabic word for *stop*?" (CENTER) Shooting in a Jaffa marketplace with a Panavision T/1.4 ultra-high-speed lens. (RIGHT) Co-author Gail Samuelson talks to Jeanette, Israel's most experienced script girl. Working with top foreign technicians on location in Israel has given local crews valuable experience and raised their standards of proficiency.

crew are bi-lingual). Producer/Director Menachem Golan shoots the Hebrew version first, making an average of eight takes until he has both a perfect and a safety take to his satisfaction. He then starts on the English version and repeats the process. The dailies of at least one take of each version are printed in colour.

Until "JESUS CHRIST–SUPERSTAR" (directed by Norman Jewison who intends to make another picture out there) was shot in Israel last year, there had been little or no local experience in the problems of shooting a musical (this is Golan's first), but since "SUPERSTAR", there is a supply of expertise and a corps of 'home-grown' young dancers.

Because of this lack of prior experience in making a musical, the shooting schedule for Kazablan was greatly underestimated and will overrun four to six weeks on an originally planned 10 weeks. Nevertheless, by editing simultaneously with shooting, the local version is still expected to open in Tel Aviv no later than one month after the last scene is in the can.

The Director of Photography is David Gurfinkle, Israel's most experienced "new generation" cinematographer. To have the opportunity to photograph a musical spectacular in the anamorphic format is one which these days, unfortunately, comes to all too few cinematographers, and David has grabbed it with both hands. His dailies and the rough-cut of the Hebrew version to date look very exciting and impressive.

Although many visiting film units have used a Panavision Silent Reflex camera in Israel, this is the first time that one of these cameras has been used by a local crew and for them it is somewhat of a "graduation".

The 1st assistant cameraman, Mike Brandt, spent 10 days in London before shooting started in order to familiarize himself with the equipment and to check it out. He accompoanied it back to Israel and has rarely let it out of his sight ever since. He treats it as a mother cares for her baby, although it is doubtful if even a baby would need as much protection from dust and sand as do the cameras on "KAZABLAN".

The lighting and the grip equipment has been supplied locally, including a crane which was originally built for "EXODUS" and which has since been used on almost every major production shot in Israel. (Otto Preminger, too, is planning to make another film in Israel in the near future.)

Much of the production is being shot with a 50mm-95mm Panafocal lens, which is being used more as a variable-fixed-focal-length lens than a zoom. They also have a 50mm-500mm Panazoom, a 35mm wide-angle and a 55mm F/1.4 wide-aperture lens. The latter has proved to be particularly useful for shooting in the dark alleys and markets of Jerusalem and Jaffa, and for the large number of dawn and dusk scenes which are called for in the script.

The film is being processed at Berkey Pathe Humphries laboratory in Tel Aviv which, in the two or three years of its existence, has built up an enviable reputation. It is now not unusual for them to be servicing six features simultaneously—including pictures of the magnitude of "SUPERSTAR".

To squeeze what is, in some ways, two separate pictures (and musicals, at that), into a budget of $500,000 has inevitably meant making compromises. For instance, a helicopter and a Tyler Mount had been scheduled for the final scene which starts close-up on a family celebrating around an eight-day-old baby boy. The camera pulls away to reveal that the whole neighborhood has been renovated and in modern jargon, is now "environmentally attractive".

As production costs escalated, plans to charter a helicopter and ship a mount out from London had to be abandoned. The help of the local fire department was enlisted and the final scene was shot from the top of Israel's tallest fire escape ladder using the 10-to-1 Panazoom lens.

If the crew of "KAZABLAN" had problems with the dust and sand of Jaffa near the Mediterranean shore, they were minimal compared with those of

the crew of "Q.B. VII" out in the Judean desert just south of Jericho, near the Dead Sea. They even brought Morris Arnold (Ossie Morris' camera 1st assistant) over from England for the sole purpose of looking after the camera and checking it out every night.

In contrast, "Q.B. VII" is a truly international picture, with an American director, a British crew, locations all over Europe, and starring Leslie Caron, Ben Gazzara, Anthony Hopkins, Anthony Quayle, Lee Remick and Robert Stern.

The story is about a Polish doctor (played by Anthony Hopkins of B.B.C. "WAR AND PEACE" fame) who, having carried out barbaric experiments on human beings in Nazi concentration camps, escaped capture after the war and was eventually discovered practising respectably in Harley Street (London's doctors' row) where he was arrested and subsequently tried for war crimes.

During part of his career, the doctor worked among Nomad tribes in Kuwait and it is this part of the film which was shot during a 10-day location in Israel, among genuine Bedouins.

When the Director, Tom Gries, and the Director of Photography, Paul Beeson (the current President of the B.S.C.) arrived at Lod airport with all the company and equipment, they immediately had their first glimpse of how Israel is doing everything possible to encourage film producers and convenience them in every way they can.

A helicopter was waiting for them near the passenger building and, while the rest of the unit was still filing through immigration, they were already on their way to the desert to check out suitable locations.

This picture is in the spherical format; and again, almost the entire film is being shot on a single short-range zoom lens, which Paul Beeson claims is giving him better quality than he has had with many fixed-focal-length lenses. He says that the most noticeable difference between this zoom and others is the remarkably good definition at the wide-angle end of the range.

Paul Beeson's comments on shooting in Israel? The food is the best location catering he has ever tasted, but, after being out in the desert all day, he is sound asleep by nine o'clock every night.

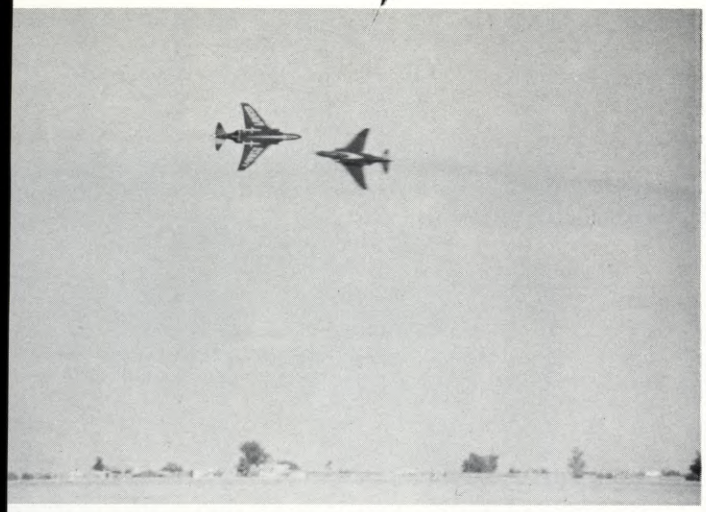
Tom Gries' reactions? He hates the air conditioning in the hotel but was very happy to wear an Arab "kafiya" while working under the hot Israeli sun.

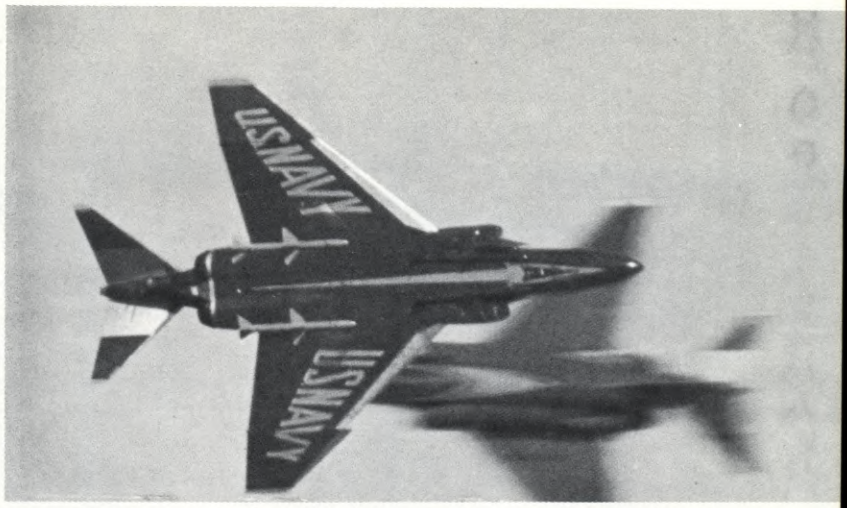
And the last word from Anthony Hopkins, precariously perched on top of a camel: "What is the Arabic word for *stop?*"

On our way back from Jericho, we were approaching our hotel in Tel Aviv, when we came across an all-too-familiar sight . . . There, right on our doorstep, was yet another film unit, this time a small local production called "THE PERSUADER". The film stars the Israeli actor Reuven Bar Yotam, whom we met five years ago when he was filming "HELL BOATS" in Malta, where our family also happened to be on vacation (another busman's holiday). On that occasion, again, Paul Beeson was the cameraman.

It's a small world—full of film-makers. ■

**(LEFT) Stuntman jumps off platform during shooting of stunt insert for "KAZABLAN". (RIGHT) Crew sets up Panavision camera for filming of street scenes in Jaffa, ancient city on the outskirts of modern Tel Aviv. Israel boasts a wide variety of scenic locations suitable for motion picture backgrounds.**






**The spectacular "Knife Edge Pass", in which two Blue Angels Phantoms roar directly toward each other and flip vertically just before they pass, with only a few feet between planes. They are closing at a rate of 1600 feet per second and if each is off in timing by only one second, they will miss the contact point by four city blocks.**

## BLUE ANGELS EXPERIENCE

**Continued from Page 1265**

cross head-on, only a few feet apart. Camera ready and aimed at the proposed point of crossing . . . but if one plane is one second late, and the other is one second early, the cross could be displaced by 1600 feet. It was starkly obvious that there was to be a lot more time needed for shooting before we could get the whole story. The Blues certainly put on a delightful show to see and enjoy, but it is a far different thing to capture it professionally on film.

The main hurdle to cross, however, had nothing to do with the technical aspects of the shooting, but concerned the pilots themselves. Of course, they were very polite—that's their job—but they were definitely distant. They had seen innumerable cameramen come and go, all professing to be making *the* film on the Blue Angels. They had no particular reason to believe that these two North woods cowboy types would produce any different results. But when we began showing up time after time at air shows all over the Northwest, and then further to the Middle West, and then to the East Coast, they realized that we just might be serious. We had increased our learning curve on shooting the show and were able to bring back some truly startling footage. By this time we had all mutually "adopted" each other.

As we followed the team all over the U.S., Canada, and into Central America, and South America we got closer to the Blues, and also their crack ground crew . . . the men who keep those planes flying. This good relationship proved to be a most important factor in the production. Crew members were constantly getting us in and out of places usually closed to the public, helping us with balky, heavy equipment, and smoothing our way in general. We were even allowed to plug our Nagra recorder into the plane-to-plane intercom system, something which had never been done before, and which added a fantastic dimension of realism to the film. As we listened to the pilots' strained talking back and forth between the cockpits, and watched the show in light of what we were hearing, we realized what great difficulty was involved in keeping that formation looking so smooth and close. The impossibly difficult made to look smooth and routine. But that added dimension was starkly real . . . you can't mistake the tone of the voice when things start getting rough. All these elements were recorded for incorporation into the fabric of the true-to-life drama.

We also began to understand something of the delicate balance that exists on the team; six pilots depending on each other for their lives and safety have to work in complete harmony and, in turn, have to depend upon the ground crew for perfect maintenance of the planes. Our role had to be, at the least, unobtrusive, in order not to disturb that delicate balance. The team had to come first at all times, before any photographic demands. I think this attitude, more than anything else, convinced the Blues to eventually let us put cameras in the aircraft themselves, in order to provide a series of shots never before seen—to capture the feel of all those planes so very close to each other and to the ground. When this kind of drama plays itself out at the outermost limits of the ground-based camera's vision, you want to get closer, you want to see more, *feel* more.

We wanted to look directly into the pilots' faces during the toughest maneuvers, to graphically show the starkness of the high physical and emotional strain they went through during the flight. Indeed, some of the footage turned out to be so compelling, that we literally used every frame of certain scenes. These were wholly unforgettable shots that stress again to the audience, that it is *man*—the ordinary human—that can accomplish these marvelous things.

**Continued overleaf**

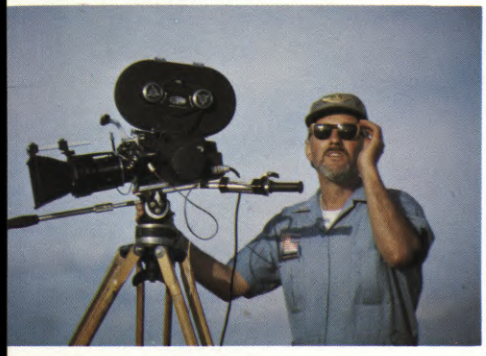
**After a wild filming flight, Marlow catches his breath, waits for the canopy to open and starts handing down the three to six cameras carried on each flight. Shown here is a Bolex with 3.5mm lens (supported for extra strength by a steel plate). Marlow was repeatedly subjected to crushing force of six and seven G's while shooting.**

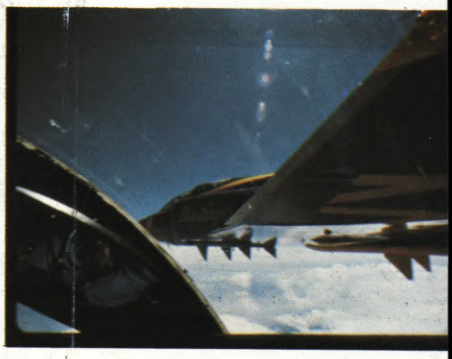
(LEFT) Paul Marlow and Dave Gardner set up to shoot aerial scene with the camera mounted on a Miller Pro tripod head. (CENTER) Sync-sound shooting of the Blue Angels debriefing on the beach at Waikiki, after spectacular air show in Hawaii which brought most of Oahu's population out to watch. (RIGHT) The Blue Angels roar in for a "Diamond" landing.




(LEFT) Shooting sync-sound sequence of a briefing before the Blues climb into their planes to do an air show. (CENTER) The Phantoms, in diamond formation, fly past "Fat Albert", the Blue Angels U.S. Marine Corps Lockheed KC-130F Hercules transport plane, which carries personnel and equipment to support the team. (RIGHT) Shooting from "Fat Albert's" wing, as planes taxi out to start show.

(LEFT) Dave Gardner, wearing Ecuadorean Air Force hat, lines up a shot. (CENTER) Marlow prepares to climb into back seat of Blue Angels Phantom to shoot scenes from the air. Navy's acceptance of two-man crew made possible air-to-air shots of a type never before filmed. (RIGHT) Planes move into position for dramatic in-the-air refueling sequence. Because of Phantoms' limited range, it was necessary to refuel twice in the air en route to Hawaii.

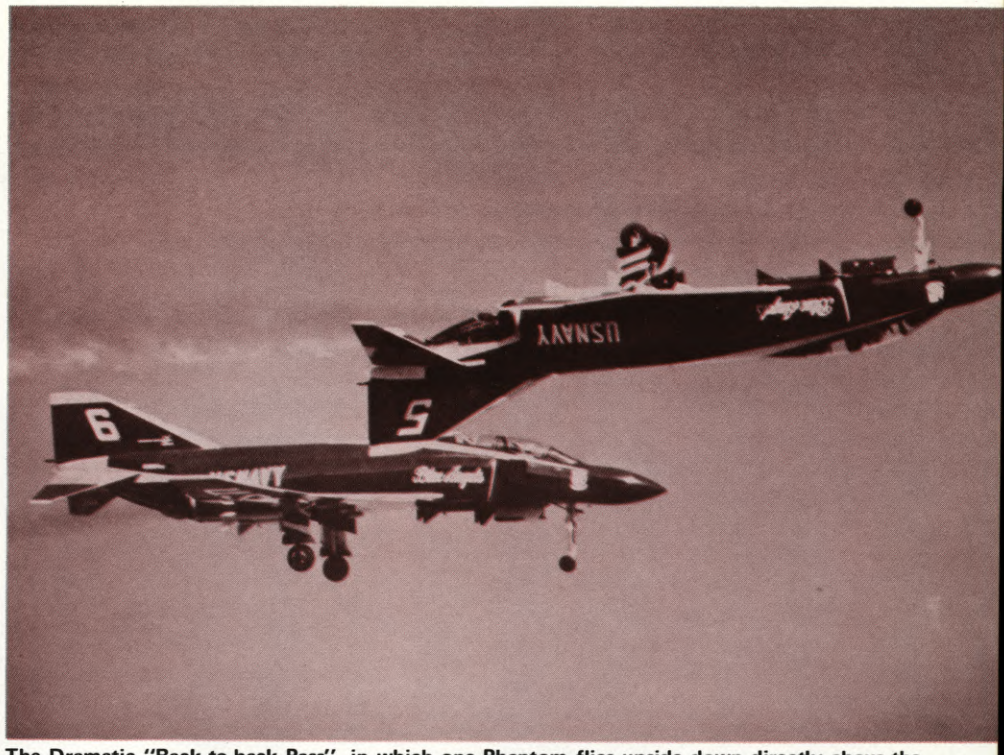




(LEFT) Marlow and Gardner ponder a cut during rough editing of footage on Magnasync/Moviola flat-bed editing console. (CENTER) The Blue Angels, having just taxied in from an air show, prepare to meet enthusiastic crowd of spectators. Though exhausted following a show, they good-naturedly spend hours signing autographs. (RIGHT) A pilot's-eye-view of cockpit-mounted GSAP camera with 10mm lens, battery pack in rear seat.


On the ground, we had been primarily using an Arriflex BL, two Bolexes, a Canon Scoopic and various Bell & Howells, plus high-speed, and other special application cameras. The cockpit of an F-4 Phantom, however, is a particularly cramped place when it comes to installing cameras. A place for everything, and everything in its place—but, unfortunately, all the places were already taken. We had to find cameras that were sufficiently small to fit into the few nooks and crannies available. After a lot of looking, we finally settled on the old standby GSAP gun camera. Since it was small and simple, and since film for it was available in the same stock we had been using on the ground (Ektachrome Commercial), it looked like a good choice. The gun cameras were modified to take C-mount lenses, and Dave specially built some high-torque motors to keep the 24 frames-per-second going, even in the 6 and 7 G-force environment the cameras were subjected to.

The problems of this type of installation cover a lot of space limitations and safety considerations. Since the instrument panel is only 18-or-so inches in front of the pilot, and the sleek, raked-back windshield has such a low profile, we had to build special metal mounts that bolted directly through existing holes in the instrument panel, right into structural support members. The camera then sat compactly tucked up under the glare shield with a Century Precision 3.5mm or a Kinoptic Tegea 5.7mm lens peering out. The wide-angle lens allowed a full-face view of the pilot, with the reflections of the other planes and the spinning ground in the gold face shield of his helmet. The cameras also picked up the wingtips of the planes on either side, hovering mere inches above the pilot's head. Despite the wide lens, the "fisheye" effect was minimal, and a high-quality image resulted. For closer shots of the pilot's face, a sturdy bracket was built extending from the windshield frame to the dashboard. The narrow camera fit perfectly into the "blind spot" of the windshield frame and did not block the pilot's vision at all.

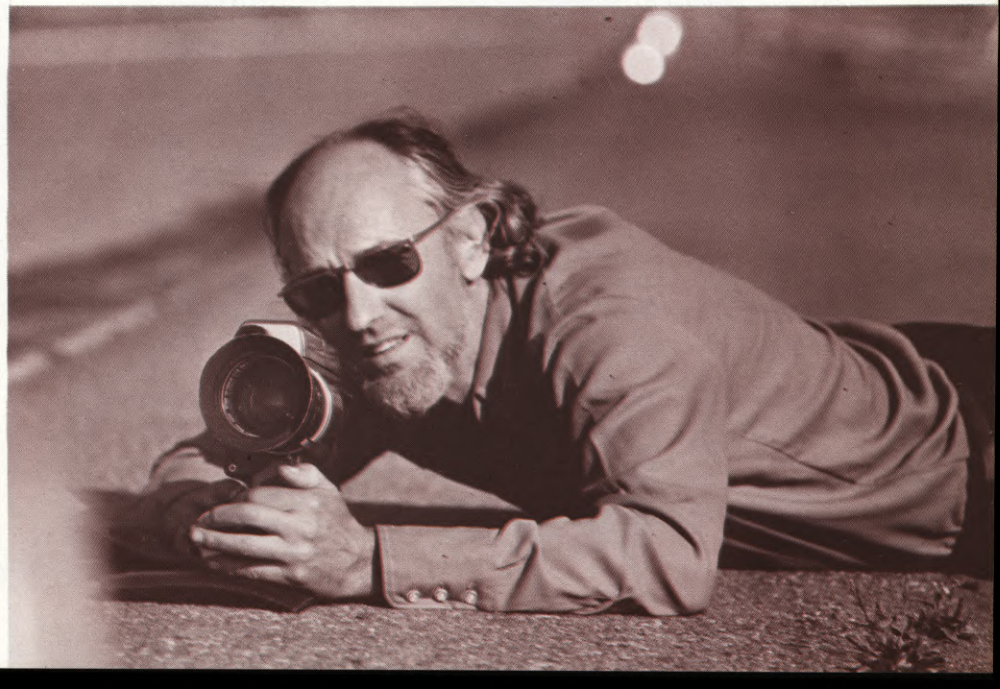



**The Dramatic "Back-to-back Pass", in which one Phantom flies upside down directly above the other, maintaining separation of only a few feet between planes. Such precise maneuvers require the most intense concentration—and there is no margin for error.**

In the back seat of the plane, which is empty during the shows, we were able to mount bigger cameras for shots at the adjacent (two-feet apart!) aircraft. We used motorized Bolexes, as well as anything else not being used on the ground.

Throughout the entire operation absolutely rigid "safety-of-flight" precautions were exercised. This was essential. A loose screw, or shaky camera mount, or misplaced tool flying about the cockpit in the rapidly reversing G-forces could spell disaster. So it was check and recheck, then have someone else check again. We spent hours setting up the cameras for the mere minute-and-a-half of film that each camera holds. Metal-to-metal bolts, safety wires through

**Dave Gardner plays it safe by lying flat on the runway to get a low-angle shot of the planes. In a previous stint, while standing up to get a shot of the Blue Angels taking off directly over his head, he and his equipment were knocked flat by the blast.**



each nut and bolt, then nylon filament tape covering the entire installation. And finally, yet another expert ground crewman would recheck the rechecking. The time and effort was, of course, worth it. The footage we got back was so totally unusual that even the Blues had never seen this particular view of what they were doing.

To get shots of the ground flashing by, and the three planes below and to either side of the lead plane, we wanted to fit a camera to the belly of the plane with a clear view forward or aft. We acquired an unusual camera designed for use in aircraft wind tunnel tests. It consisted of an electrically operated Bell & Howell movement which slides into a steel tube about five inches in diameter and twelve inches long. It holds 100 feet of film and is rated at 100 psi direct pressure. To further protect the movement, the camera was slipped into a teardrop-shaped belly pod which fastened firmly to the airplane's "hardpoints" (to which the long-distance fuel tanks are normally attached for cross-country trips). The camera could then be activated by either a solid-state timer, or the pilot could choose to override the timer with his own switch. So we were getting shots in the cockpit, and from the belly of the plane, while the shooting from the ground proceeded.

By this time Dave, who was doing the shooting chores on the ground had evolved a unique shooting style to catch the jets at work. The cameraman must be able to follow a fully three-dimensional plane move through a 360-degree circle smoothly from beginning to end. That's the trick, *smoothly.* A beautiful shot that bobbles just can't capture the flow and rhythm the Blues are famous for. And when the camera describes a full arc from level to far right, to straight up, to far left, to level, to far right in a single shot, it requires a lot of practice to do it right. Dave modified the Miller tripods we were using, adding a camera switch on the handgrip, and building a second, but counter-balanced, handle sticking out in front of the camera for greater leverage and balance. So the camera set up on a see-saw-like affair which allowed for the extremely sensitive circular camera movements. We used this system every time we did ground-to-air shooting.

Back in Seattle, other matters were rapidly coming to a head. Our formerly well-run business was suffering from neglect, and our skimpy financial resources were rapidly running out. We had to make the decision to either devote full time and energy to raising money for the film and completing the

shooting, or postpone the project and concentrate on our usual business. We opted for the Blue Angels and the "Big Movie". We would keep shooting, trying to fill the gaps in resources with an occasional commercial or small documentary . . . just enough to keep the doors open, and just enough to keep going. This period was particularly frustrating, because we constantly encountered "experts" who told us the film couldn't be done, and erstwhile entrepreneurs poured out of the woodwork wanting to make deals in which they got everything, and we got what was left. Fortunately, we were too busy chasing the team over two-and-a-half continents, trying to figure out how to get us and our 1,200 pounds of equipment to "West Rabbit Ear," where the next show was going on, to pay much attention to the "advice". By this time we *knew* we could do it, because, indeed, we *were* doing it.

The great experiences we had with the team more than made up for the hassles on the home front. I had the once-in-a-lifetime experience of flying in the back seat of several of the Blue Angels' planes, in order to get the detailed air-to-air shots which the remote-control cameras could not get. It's a perverse kind of "fun", because the physical pressures on the photographer are absolutely punishing. The planes slam around at up to six and seven G's, and the light hand-held camera, becomes as heavy as an anvil. You sink into the restraining straps, and try to focus through the yellow haze as the blood rushes from your head. Then grey and, finally, total blackout. Somehow, shot after shot from the "wish list" was put in the can and, most of the time, they turned out to be surprisingly steady. The remarkable thing is that the Blue Angels themselves do *not* wear any G-Suits. They just train themselves to take the crunch. The poor photographer, however, is always subject to G-force "information" jammed against his body, while his eyes gives him picture information through the viewfinder. Total confusion attacks the middle ear and nervous system, and the body in its confusion punches the airsick button. The mind says "Let's get the shot," and the body screams, "Hey, stupid, have you ever considered doing baby portraits?" (The photographer was the guy in the green flight suit with the color-coordinated green face.)

Most of the air-to-air photography was done with a Canon Scoopic, after constant jamming problems occurred with several other high-grade cameras. The Scoopic was light, easy to handle, fairly fast to load, and normally did not

jam under the crushing G-loads. Generally, on each fifty-minute flight the yield in film was fifteen to twenty minutes of raw footage . . . some shaky, but what was good was worth all the strain and effort that went into it.

Meanwhile, Dave was learning about the power of the F-4 in an entirely different way. He had set up his Arri BL and a tripod-mounted 1600mm lens at the end of a short runway to get a spectacular shot right down the center of a four-plane take-off. The planes came out of nowhere, taxied through the shimmering heat waves, "afterburners on", and then came the ground-shaking takeoff with the "burners" tossing up big chunks of the runway. Closer, closer, and then the rotation, with the planes passing so low that you can count the rivets on their bellies. Dave was so intent upon getting what turned out to be one of the most beautiful scenes in the movie, that he completely forgot what happens when four F-4s with 36,000 pounds of thrust each, take off right over your head. The jet blast knocked him and the equipment right off the apron. Fortunately the superb construction of the Arri BL kept it from being damaged, but the cameraman was considerably shaken up. Although unhurt, Dave claims his body still involuntarily cringes at the sound of an F-4 taking off.

By this time, we had put over twenty-eight hours of top-notch footage "in the can", and more than thirty hours of recorded aircraft intercom, and pilot and crew narration. We had become very selective in our shooting, and often spent an entire day in getting just one particular shot, adding one more finishing touch. But by this time, our every financial resource was totally exhausted, every avenue seemed closed, and we had an awful lot of post-production work to do before we could release the film. The fortunate thing, though, was that we had the show in the can, and could *show* people what we were talking about, rather than have to explain it via "arm-waving", or flip charts. We cut together a half-hour sample reel of good footage, and proceeded to knock on doors.

At this point we were also back into doing commercial work again in order to keep the company moving. Mike Maes, who at that time was president of a company which was one of our prospective customers for an industrial film, got very interested in the full scope of our film projects, and particularly in the "THRESHOLD" project. We put our heads together and decided to throw in all our chips and make the Blues film really happen. Mike left the

company he was with and we formed a partnership to finance the film. By using the Blue Angels sample film as a sales tool we finally raised the capital needed to go into post-production. It was still a low-budget film but we could, at least, get the major services we needed.

We chose to put a majority of the total budget into the post-production stage. Throughout the shooting stage of "THRESHOLD" we had attempted to maintain the highest quality the circumstances would allow, and we knew that the final stages would also have to reflect the same care.

We completed the first cut of sound and picture tracks at our studio facility in Seattle. When it came time to do the final cut, extensive sound effects, music scoring, and final mixing, we moved the entire operation to the Samuel Goldwyn lot in Hollywood.

As opposed to the runaway producer taking "Hollywood" money and spending it elsewhere, we brought outside dollars into the Hollywood economy.

Just as the Blue Angels are the best at that they do, we found that Hollywood technicians are also the best. We managed to assembly a truly expert post-production crew. Tony Magro, working as editor and creative consultant, brought a great sensitivity into the handling of the Blues pilots as individuals. John H. Newman, possibly one of the most experienced sound effects editors in the world, brought out sound effects of both great impact and subtlety, which added immeasurably to the overall "presence" of the film.

Frank Herbert, the author of the novels (among others) *"Dune", "Dune Messiah",* and *"Soul Catcher",* was a good friend of the project. His movingly written narrative helps to put this human achievement into broader terms, more applicable to all people who have seen the Blues in person, and those who will view the extraordinary proceedings via the camera's eye. Frank also was instrumental in putting together a book on the film, "THRESHOLD: THE BLUE ANGELS EXPERIENCE", which has been published by Ballantine Books, and presently available.

Besides the spoken narrative by the pilots themselves, another view is provided by Frank's narrative, as spoken by Leslie Nielsen.

The music, one of the most important aspects of any movie, was composed by Fred Myrow. Right from the beginning Fred seemed to understand the direction "THRESHOLD" was taking, and his exciting and imaginative score added even more to the project than we had hoped. So, Fred added another fine music score to his already

impressive list for 1973 . . . "SOYLENT GREEN", "THE LOLLY MADONNA WAR", and "SCARECROW".

As music editor, we were fortunate enough to retain Ted Seebern, who had, at that time, just finished "MAN OF LA MANCHA". We were lucky because Ted had intended to retire about that time and he consented to do "just one more" and "THRESHOLD" was it.

By this time the sound tracks consisted of about 18 elements for each of the 12 reels. The final dubbing of all this material took place at Samuel Goldwyn Studios. Dick Portman, Curley Thirlwell, Bill Varney and Don McDougal did the re-recording down to the final 3-stripe.

The degree of cooperation, expertise, dedication, and ingenuity displayed by everyone involved was truly amazing. The post-production crew, just as the pilots themselves, crossed many personal and artistic "thresholds" during the time we were together.

All in all, nearly 75% of our overall budget went into post-production in Hollywood. We put the money where it could be seen and heard . . . right up there on the screen. And most certainly, the result was worth every dollar invested.

**A FEW FINAL NOTES:**

"THRESHOLD" was shot entirely in 16mm, for the simple reason that it could not have been done in any other way. If we had to do it again and had ample budget, we still would go 16mm. The light-weight equipment and small size of the special cameras was essential to the project. In fact, at times, even the 16mm stuff proved to be almost too much to handle. As it was, the total equipment package which we dragged almost fifty thousand miles weighed well over a thousand pounds and took up twenty five carrying cases.

We used ECO throughout the shooting and, again, the 16mm was important. The smaller size and weight of the stock was essential because we were often on the road for two months at a time, and we carried most of the stock we intended to use with us. This allowed us to gain even further film consistency by sticking to a single batch of emulsion, and having it all processed at one time. At one point we had apparently depleted the entire supply of ECO magazines (for the GSAP cameras) on the entire West Coast. In the emergency we got a few Kodachrome II mags. We used them on certain sequences over the stark moonscape terrain of the California desert at the Blues' Winter Training Grounds. We found that by selective filtering, the high contrast

of the Kodachrome II enhanced the spooky "outer space" type of effects which resulted. Even these helped to increase the overall surrealistic atmosphere of the sequences. The problem became an opportunity, yet again.

All the footage was processed at Alpha Cine Labs in Seattle and at Consolidated Film Industries in Hollywood. The negative cutting and blow-up to 35mm for theatrical release was also done at CFI.

Our small, two-man crew also proved out to be the best way to shoot this particular film. We had to be ready to pack up and move at a moment's notice, with no time for verbal direction or instructions. Each of us just had to *be* there, getting the footage and anticipating the other cameraman's problems. The working relationship which developed with the pilots and ground crew of the team also demanded a small, unobtrusive unit. We had become close friends, while intruding into their lives and work as little as possible. A filming unit even one man larger would have upset this delicate balance and would have minimized the possibilities for getting the exciting and intimate footage that we got.

"THRESHOLD" is not just the title of a film but a reflection of our own feelings and experiences in producing it, as well. It's about the six men in those blue planes, and about the super-being called a "team" they created. It's about how humans change when they approach incomparable perfection in whatever they do. It's about what we all learn when we stretch our limits. The movie-makers also learned. Every time we reached the absolute limit of our endurance—physical, emotional, and financial—we had to take one more step to see if we could really do it, to see if we could produce a beautiful, exciting, and professional film with guts, hope, and hard work instead of financial resources.

The making of "THRESHOLD: THE BLUE ANGELS EXPERIENCE" took much more than we had ever imagined—in pain, time, money, frustration, and constant setbacks and delays. But, in the end, it was totally satisfying. Not just "climbing the mountain" but the entire effort. The creating of something new, with just a few of us molding it from the beginning.

But *if* we had to do it over again, Dave and I would be heading out to the next air show, bleary-eyed and reeling from the noise, ready for those monster birds to thunder by on their next pass. For that is joy, and, after all, that's what life means—and that's what films are for! ■

## MAN WHO NEVER SHOOTS

**Continued from Page 1260**

were traveling at the speed of a raft negotiating the same shoals. And the editor cut to a real raft, doing it.

You have to fly in *between* and *around* things, to indicate their size and their spatial relationship to other things nearby. For example, on a show about immigrants to the U.S., I started with a close-up of the torch that Liberty holds in her hand. Then we spiralled around the statue, and down—and then pulled back to show that Liberty is next to Ellis Island, with Manhattan in the background—so near and yet so far.

Some of the assignments are very vague, which is a challenge, or something. "Shoot Boston," was one. Another: "Shoot the contour farms." Stationary objects. And, of course, the camera sees with only one eye, so it has no sense of depth. And it doesn't know whether it's looking up, down, or level.

Using a wide-angle lens, though, and the flying dolly, what you can try to capture is the sense of flying *into* the frame. That turns stationary objects into helps, not hindrances. You can skim along at 60 miles an hour, as though you're in a car, except that you're directly over the plowed fields —no road. The furrows approach and slide past the wide—angle lens in a repeat pattern that almost gives you the impression of three dimensions. Then up for the bird's eye panorama.

As in underwater shooting, the wide-angle perspective helps to open up the small TV screen. I use the Angenieux 12-120 zoom on the Arri 16M with a 400-foot load, for work inside the helicopter. With a Tyler mount, to minimize vibrations. But the wide-angle lens also helps damp down the vibrations, on scenes where they would be most noticeable.

Weight and bulk are important considerations in the helicopter. So is trimming the craft. The Arri M is about the best choice for this job, I find. It's lighter in weight than the silent-running cameras, and well balanced. I don't need sync sound or silence up there, of course—but I sure as hell *do* need reliability. If I don't come back with the footage after spending all that time and money, I'm done for. I've run nearly 450,000 16mm feet through Arris up in helicopters, without a lost frame yet—so I'm still eating regularly.

The expensive and remote locations are one feature that helicopter shooting shares with underwater. Another is the fact that you're trying, in both cases, to put the viewer in a place where he'd never normally be. Whereas the man on

the ground with a tripod is frequently attempting to re-create recognizable reality. The familiar setting makes the drama more believable.

But up there and down there, it's an exotic point of view. I shot Niagara Falls deliberately as though going over the edge in a barrel, for example. And in the air, as well as underwater, it's a moving shot, inevitably. The pilot can never repeat the same flight pattern. You always have to adapt the shot to suit the flow. Winds blow you off the set, just as water surges do.

Inside the helicopter bubble, as I said, I use the Arri M. But some of the most spectacular effects I've gotten so far have been with an Arri S mounted *under* the helicopter. Shooting the rapids was one.

Several of my jobs lately have been location shots for a series of documentary Specials called "THE AMERICAN IDEA", produced by Alan Landsburg for ABC-TV. One of the assignments was to shoot an establishing shot for a sequence on the Grand Canyon. When we got there, it rained for three days.

I had earlier bought an old World War Two military camera mount for about $5.00, not really knowing what I'd ever use it for. So I now spent some of the rained-out time using the mount to attach the Arri S under the helicopter's belly, facing forward. That put its lens about two inches above the helicopter's skids—six feet lower than a camera on the Tyler mount inside the bubble.

When the water cleared, the Park Rangers wouldn't let us fly over the tourists at their favorite scenic lookout point and then climb to show the view spread out, as we had planned. They said we'd spoil it for the tourists, and they were probably right. So we had to come up with another way to suggest the fantastic dimensions of the Canyon. *One* establishing shot, to introduce a subject that's a mile deep, 15 miles wide and 200 miles long.

The belly-mount camera turned out to be the answer. We flew at about 70 miles an hour just above the tops of some fir trees near the Canyon's edge. The 5.9mm lens on the Arri made the tree tops really whip past. Looking at it later on the screen, you were convinced the trees were going to hit you—and you ducked. Frenzy.

Then suddenly, we were past the cliff edge, out over the Canyon. Total stillness. Instead of being two feet above the treetops, we were now nearly a mile above the Canyon floor. The cliffs opposite were over ten miles away. The Colorado River was a tiny thread, far below.

It's Grand, all right! ■

## LONE STAR STATE

**Continued from Page 1285**

—particularly those already working in 16mm—to expand into feature film-making by exposing 16mm negative for 35mm blowup. In addition, he anticipates the production of more feature films by younger, local companies.

Redd's contentions are seconded by another Texan, Bob Jessup, who helped organize Film Production Services, a Dallas company that provides a wide range of packaging services for film-makers working on location in Southwestern states. Jessup is, in many ways, typical of our home-grown talent. He received his first motion-picture training in the military, was employed at a TV station, and worked his way up from grip to head of the camera department at Jamieson, before striking out on his own as a Director of Photography. Jessup filmed some commercials and industrial films before going to Hollywood, where he looked for work for three months before returning to Dallas.

During the past three years, he has been Director of Photography for four feature films produced by Texas companies. The one that gave him the greatest satisfaction, he recalls, was "THE REBEL JESUS", a Techniscope film made mostly on location in Tunisia for Larry Buchanan Productions.

"We shot some of our interiors on a sound stage in Hollywood," he says. "It was quite a feeling—bringing an all-Texas crew onto a sound stage that I had practically been run off of just a few years earlier."

Along with Don Reddy, Phil Pfieffer, and Ed Pope, Jessup organized FPS to fill what they saw as a gap in outside producers' familiarity with the state. Their idea was that, with a single phone call, a producer would be able to hire local talent and/or crews, select locations, arrange for housing and meals, rent production equipment, hire special effects technicians and artists, and line up sound stages, editing rooms, and similar facilities.

FPS has outfitted a mobile film van that it rents, and it is a Mole-Richardson rental dealer. For other equipment and facilities, it makes arrangements on a cost-plus basis. A wide selection (enough to keep at least three theatrical film crews working) of cameras and related rental equipment is available at Victor Duncan's and Gordon Yoder's facilities in Dallas.

There also are three sound stages and seven well-equipped editing rooms for rent in Dallas alone. The best-known is the 6,500-square-foot sound stage operated by Bill Stokes Associates, Inc.,

where most of the interiors for "BONNIE AND CLYDE" were filmed.

Stokes, a former teacher who broke into the film industry at Jamieson, is among the nation's leading multi-media producers. He also rents facilities at his studio to other producers. In addition to the giant sound stage, there is an Oxberry animation camera and stand, and sophisticated equipment to record and mix sound for 16mm or 35mm productions.

"We aren't a union," Jessup stresses, "nor agents for people looking for work. We sell knowledge of what and who is available, and do legwork needed to package a production. How many producers who haven't worked here before, for example, would know that they can rent a 15-foot camera crane in Houston? Or how many would know that another Houston company specializes in making artificial fog, wind, and rain?"

Small factors, but under the pressure of location production, the lack of this information can be disastrous. Jessup recalls the visiting producer who had counted on his home studio to create an instant hailstorm during a warm summer night in Houston. Somehow, signals got crossed, and the cast and crew waited in vain on location for the hailstorm.

An emergency call was made to Jack Bennett at Creative Imagineering, who obtained a high-pressure hose, a powerful industrial vacuum cleaner, and what may have been all the miniature marshmallows in Houston. With these, he created a convincing hailstorm minutes after arriving on location.

No story about Texas film-making could be complete without examining at least one of the locally owned and controlled production companies concentrating on feature films. Presidio Productions in Dallas is typical of these new comapnies flourishing in Texas. It was formed three years ago by five Texas businessmen and lawyers.

"None of us had film-making experience," admits Presidio president R. B. "Roscoe" McGowen, Jr., "but we all knew how to make money. We simply noted the drift away from the Hollywood sound stages toward location productions, measured the fast-changing public appetite for more reality, and determined what was available to take advantage of these developments."

They found that such technological developments as Eastman color negative film 5254, supported by lighter, more mobile cameras and lights, were changing the rules for what could be produced on location and at what cost, McGowen states. They also decided that the same conditions that attracted pio-

neers such as Tilley and Jamieson to Texas still prevailed. Finally, there was one additional critical ingredient: an abundance of talent, crews, and technical facilities, and a strong promise that all of these resources were multiplying and improving.

"We saw in all of this an opportunity to get in on the ground floor, so we grabbed it." McGowen continues, "We knew that the key to success was going to be our ability to keep costs down, while working with local talent and crews who could learn along with us."

Their first film, "MARK OF THE WITCH", was designed to take advantage of growing public interest in the occult. It was produced at various Texas locations for less than $300,000, and was released through regional distributors. The film still is making money.

Next came "QUADROON", a mid-19th Century period film set in New Orleans but made in Texas. Again, the budget was successfully held to about $250,000, which provided a reasonable profit.

The third effort is a movie entitled "FOX STYLE", staged in contemporary times. For this film, Presidio added an important member to its production team: Producer Paul Picard. A former actor with the American Theater Wing, Picard rose through the production ranks at ABC-TV. He was head of West Coast evening programming for the network when he left to become vice president in charge of TV production at MGM.

"I originally visited Texas," Picard says, "because I wanted to see some land I owned. Once I arrived, however, I was caught up in the growing enthusiasm and excitement. The thing that struck me was that I had just finished a low-budget movie in Hollywood, where everyone was thrilled because we brought it in for approximately $1.8 million. Here were people making comparable entertainment for 15 to 20 percent of that cost.

"You can make a movie here on its merits, and not have to throw in nude scenes just to build audiences. In a sense, it is like getting back to the basics of film-making—only playing by the new rules permitted by fast color negative film and compatible production equipment."

Consider "FOX STYLE", Picard suggests. It is a simple story about a black boy from a backwoods community who makes it in the big city. He becomes the owner and operator of a chain of highly successful nightclubs. Then a problem develops in his almost forgotten home community. He hears the call and answers it.

"OK, so it's an old story that everyone recognizes," Picard admits. "But that's the point—it is good entertainment and it works. That's essentially what people have been going to the movies to see for 50 years. And then there is the fact that our story and production techniques are modern and realistic in every way."

Production scenes staged in Dallas on the streets, in a drive-in restaurant, and at the airport could have fooled anyone about the location, Picard says. And the next day the same film crew was shooting at a nearby small town that served as the Louisiana birthplace of the main character.

The best scene for Picard, however, was a fight staged in an apartment normally occupied by a "wino" the production manager found wandering near the set. The apartment was so crowded that the camera had to be set up on the fire escape.

"It's a great action scene," Picard concludes, "that, only a few years ago, probably would have been done on a sound stage, where the cost would have been at least 10 times higher and the feeling not nearly as real."

That, in summary, is what filmmaking in Texas is all about: economy and dramatic impact. ■

## SHOOTING "E FORCE ONE"

**Continued from Page 1276**

the driver, electrician and soundman packed into the car, care had to be taken to allow a clear path for the lamps through the rear seat. This was the only occasion where Paul employed full color correction for the interior/exterior balance.

On arrival in Hong Kong, the crew found that none of the lighting equipment promised them was available there either. Scheduled for the next day was a major exterior dialogue sequence. Paul's comment: "This was nerve-wracking to say the least, because we had to rely very much on the weather here. We were fortunate inasmuch as we had about 50% cloud cover on the day and, by insisting that we wait for at least partial cloud cover, we were able to get quite a nice look about the sequence". Generally speaking Paul was disappointed at the availability of equipment in Singapore and Hong Kong. "It was immensely frustrating and really taxed our ability to improvise and our patience to the limit. You either have to be very sure of what's available or simply take everything with you."

An important sequence, also filmed in Hong Kong, was the inevitable chase (this time on foot) between Richard Basehart and Leslie Nielsen. Where possible, two cameras were used but two extra camera-crew men hired in Hong Kong spoke very little English and this was a definite limitation. Naturally, the sequence was built up on the spot and was dependent on the actual locality—the Aberdeen area of Hong Kong with its tremendous sampan population. It was originally intended to have the chase end up on one of the sampans, but permission for this was not forthcoming, although Paul said that the people in the area were very cooperative. Nor was permission given for the unit to shoot inside the Hong Kong air terminal, and the crew had to literally grab a shot of Richard Basehart leaving the terminal unofficially.

In spite of the problems encountered on this film, Paul Onorato has high hopes that it is merely the beginning, and director Les Martinson certainly seemed to think so: "It's really amazing, because we were working with one-third of the personnel that I'd use to make a 'MANNIX' episode, but the technical know-how is here and the equipment is here. And the mileage that the crew get out of the equipment that they have—little Mini-Brutes—and the way they're able to light big scenes in a minimum amount of time and get the quality I've seen—it's truly inspirational!" ■

## CINE-8 HI-SPEED CAMERA

**Continued from Page 1300**

power. It provides a constant voltage low-impedance power source of approximately 1.5 AMPS. average current.

A 3-conductor input power cord with safety grounding pin is permanently attached to the rear of the unit. A 2-pin connector is located on the front panel and is labeled OUTPUT. Pin No. 1 is −28V. DC and Pin No. 2 is +28V. DC. An Amphenol mating connector is provided (P/N 80-MC2M).

H-50 HEATER

A 50-Watt Kapton Heater is located in the film chamber on the center rib between the film cartridge and the drive sprocket. The thermoswitch is positioned near the aperture to sense temperature at or near the film plane and is set to switch the heater ON at 50° F. and OFF at 65° F. This arrangement provides ample heat dissipation throughout the camera at temperatures to −65° F.

P-21 PULSE KIT

The P-21 kit includes all the features and components of the P-20 kit, plus a built-in intervalometer on the circuit board. When equipped with the intervalometer the circuit board is designated the S-5A. The intervalometer has an operating range between one and 20 pulses per second, and is controlled by the speed selector knob.

FILTER PROVISION

A filter slot is machined into the camera housing at the film gate area. This allows the insertion of gelatin filters behind the lens.

Beginning with camera S/N 1239, a filter holder is furnished with the camera. The user has only to cut the desired filter to the size and outline of the holder, then insert the filter in the holder and slide the holder/filter pack into the slot in the camera.

For further information about the Cine-8 Hi-Speed/Pulse Motion Picture Camera, contact: VISUAL INSTRUMENTATION CORP., 239 W. Olive Ave., Burbank, California 91502. ■

## "RADIO ROCKET BOY"

**Continued from Page 1307**

*with Jim doing his own slates from within the "Phonebooth Blimp." It was a very reasonable location too . . . ten cents for the first three minutes . . . .* ■

## CREATING SPECIAL VISUAL EFFECTS FOR "RADIO ROCKET BOY"

**By ROBERT SWARTHE**

One area of production which could have run the budget higher than we wanted was visual effects. The script called for scenes of a flying saucer traveling through space and landing on Earth and views of the Earth and stars as seen from within the saucer. Strict realism was not called for, since the film is a comedy. The design of the saucer has been likened to a "flying Matzo ball" by a well known cinematographer/journalist.

The saucer was constructed in miniature for the long shots. A full-size section was built for the spaceman to ride in. Assorted dials, switches and controls were purchased from surplus electronic stores and assembled on white plastic to make the control panel. Lights on the panel, operated from off-camera, could flash on and off at appropriate moments. There were other flashing lights placed out of camera range to cause reflections in the spaceman's helmet.

A sheet of plastic with a circular hole cut in it served as the window of the saucer. We could shoot through the window toward the spaceman within or shoot over his shoulder towards the window. For these views, scenes of space were matted into the window area. Space flight was simulated with animation of star patterns, comets and meteors.

After making some preliminary tests, I realized that I could combine most of the live and animated effects using an Oxberry animation camera stand and bi-pack printing. I have used this technique in many animated films and commercials. The major drawback to using it in live-action work is the difficulty in getting correct color. You can't use normal color duplicating stocks because they require more exposure than the animation camera can give. It can be done using registered color positive prints and Eastman Color Negative Type 5254 if there are no close-up flesh tones or subtle colors which must match other scenes. The results look a bit green and muddy. We did not have this problem because our film is in black and white. We used Plus-X Negative Type 5231 as a

duplicating stock. Optical quality was very close to that of the normal scenes in the picture.

The following example describes how the scene of the flying saucer landing on Earth was accomplished:

First I designed the saucer and planned the kind of live-action scenes in which it would appear. In this example, the camera pans down from the sky following the saucer toward a clearing in the woods. The live-action part of the scene was photographed first. The camera operator had to imagine the saucer approaching and move the camera accordingly. The movement has to be smooth because any unsteadiness would create jiggling motions between the miniature saucer and the background.

The miniature was constructed from styrofoam and modeling paste, then adorned with detail to give it an old-fashioned look. No motion pictures were made of it. Instead, still photos were taken with lighting to emphasize its three-dimensional shape and to suggest lighting conditions in space and on Earth. For this scene it was an overcast day.

A paper print was made of the selected photo and it was pasted on a punched animation cel. A black mask was drawn around the saucer to block out everything else. On a separate cel, an exact silhouette of the saucer was traced and filled in solid black. These two cels were all we needed to matte the saucer over the live-action scene.

Now it was time to plan the movement of the saucer relative to the live-action. The Oxberry animation camera is equipped with a device called a Rotoscope lamphouse. This turns the camera into a kind of slide projector which allows you to project frames of motion picture film down onto the bed of the stand. The saucer photo was placed on the bed. A print of the live-action scene was threaded into the camera aperture and projected down onto the saucer photo. By moving the camera toward or away from the bed, we could vary the size of the projected image. When the size and placement of the saucer looked correct relative to the background, the camera position was noted on animation exposure sheets. The live-action scene was advanced in the camera until it reached the point at which the saucer was to land. The final position was noted. All of the intermediate positions were figured out mathematically and filled in on the exposure sheet.

Now we proceeded to composite photography. The key element that permitted us to combine animation and live-action on the animation stand was

the bi-pack magazine. It has four chambers. Two hold the raw stock feed and take-up. The other two hold a positive print. The two films were threaded into the camera aperture with the print between the raw stock and the lens. The black silhouette of the saucer was placed on the bed with a white card behind it. We photographed this set-up, making all of the camera moves we had plotted. The white card acted as a printing light for the live-action scene in the bi-pack magazine. The saucer area was unexposed because of the black silhouette. After this step was completed, the live-action scene was removed from the magazine. The raw stock was rewound to the beginning. The silhouette was replaced by the still photo of the saucer against a black background. Now we repeated the same camera moves as before. This put the saucer into the area previously left unexposed without harming the live-action background. This completed photography of the effect.

The animation camera is not generally a substitute for the optical printer. However, the time needed to composite the scenes is only slightly longer than that necessary to photograph the mattes and saucer separately for use on an optical printer. We saved ourselves the cost of optical printing and were able to incorporate a number of animation effects which would not have been possible at the same cost.

In another scene we wanted to show an abandoned warehouse being blown up. We found a great scene in a stock library. It was a night scene and we needed day. I had the scene printed on light one. This made the building look bright enough, but the sky remained dark. Using the Rotoscope, I made a tracing of the roofline. I then made a sky background and matted the day sky over the night sky using the bi-pack technique. Later, we found a warehouse building similar to the stock shot and filmed preliminary scenes with our actors there. The two buildings look enough alike to make the illusion convincing.

One of the stylistic devices borrowed from the old films is the use of "wipes" as scene-to-scene transitions. Usually the new scene comes in from the left or right side of the screen. We also used a clock wipe and a binocular matte, as well as some dissolves. All of these were done on the animation camera.

There are some scenes which had to be done on an optical printer: a flip-over, skip-framing and repositioning. These are beyond the scope of the animation camera.

Approximately 800 feet of scenes

requiring wipes and dissolves were printed on the animation camera: 55 wipes, 15 dissolves and 8 fades. Fine grain prints of the scenes were spliced into "A" & "B" rolls as if they were being set up for laboratory printing. The direction of each wipe and its length in frames as well as other technical information was charted on exposure sheets. The "A" roll was threaded into the bi-pack magazine with the raw stock. A white card was placed on the bed. Scene One was printed frame by frame until the wipe was to begin. At this point, a black card was panned across until the white card had been covered up. The camera shutter was closed and the film advanced to the first frame of Scene Three. The shutter was opened and the black card was panned away to reveal the white card "printing light." This process was repeated until the end of the roll. The raw stock was rewound and the "B" roll (with Scene Two, Four, etc.) was printed in the same manner to fill in the alternate scenes. A soft edge was given to most of the wipes by throwing the lens of the camera slightly out of focus to blur the edge of the black card.

This process turned out to be rather time-consuming because the animation camera shoots very slowly. The actual effects do not take long to shoot, but it takes a long time to run the camera down to the next scene. This method for producing wipes and dissolves is common in animated cartoons but is not practical for normal color live-action scenes. However, spectacular color effects can be achieved in live-action special effects using variations on this basic technique.

Another use of the bi-pack animation technique was to create the illusion of large screen television displays. In one scene, two aliens are watching our spaceman's saucer flying through space. The actors were filmed on the soundstage looking and reacting to a blank wall. They were positioned to the left side of the frame.

The saucer was photographed on my homemade animation camera stand with a 16mm Bolex camera. A Polaroid snapshot of the saucer was cut out and pasted on an animation cel with a 48-drawing animated star pattern behind it. A loop was made of the film and projected continuously on a screen. A TV camera was focused on the screen and the image displayed on a monitor. We photographed it with a 35mm Arriflex, framing the image in the upper right corner. We did not attempt to minimize the scan lines because we wanted an exaggerated TV effect. The two scenes were composited together on

the animation camera stand with one mask to matte out the TV image while printing the live actors and another to do the same for the TV picture.

The same technique was used in another scene in which our spaceman watches a TV film about the Planet Earth in his space headquarters.

In all there were thirteen separate scenes combining live-action with animation or live-action with live-action.

In addition to the animation techniques we used a few other visual tricks. There's a scene where two villains in a car are following a radio signal. On the dashboard is a flashing light and illuminated dial indicating the direction of the signal. It would have been difficult to build the device on the dashboard and even more difficult to photograph it without pulling out the front seats. Instead, we took a still photo of the dashboard and had an 11 x 14 print made of it. We mounted it on a heavy card and installed a small flashing light and a translucent piece of plastic with etched lines and a pointer which could be turned by hand. We lit the photo from the front and illuminated the device from behind. Then we shot it on motion picture film, gently moving the camera to simulate filming in a moving car, while flashing the light and turning the pointer.

During a fight sequence in an abandoned warehouse, we kept cutting to the heroine all tied up right next to a box of explosives with a burning fuse. We didn't know how to make a convincing fuse. After a few hours of phone calls to fireworks and pyrotechnic suppliers I learned that we could not buy one without a permit from the fire department. Besides that, the kinds of fuses they usually supply are 75 feet long, burn slowly and do not give off much smoke. We needed something that burned fast and gave off lots of smoke. We finally got the idea of trying an ordinary fireworks sparkler. We had some old ones in the house from a long-ago Fourth of July. It took half a dozen matches to get it going. Instead of big flashing sparkles, it gave off modest flashes, good smoke and burned fast. Together with a length of rolled up gaffer tape, we disguised it as the end of a long fuse, kept a bucket of water off-camera and our problem was solved.

One scene in the film was beyond our financial resources—our villain's car crashing through a guard rail and over a cliff to climax a comedy car chase. We thought it would be easy to find a stock shot of an old black sedan going over a cliff. It wasn't. Most of the cars were not black and were recent models. However, at one library they pulled a scene from a 1944 gangster picture. It showed a black sedan rolling backward over a cliff followed by a huge pile of logs crashing down on top of it. In the context of our film, this scene was funnier than our original idea. We found a location similar to the one in the stock shot and filmed the scenes leading up to the crash with our black car rolling backward out of control. This was one of many chance occurrences which suggested funnier visual ideas than originally planned. It gave us an appreciation of the difficulty in creating and planning visual gags in advance of filming.

RADIO ROCKET BOY was a unique opportunity for me to apply a number of techniques I have previously used in TV commercials and animation work to a pure entertainment live-action film. And I learned a lot of new tricks as well. ■

## ABOUT THE FILM-MAKERS

### *ROBERT SWARTHE*

*A native of Los Angeles, ROBERT SWARTHE became interested in film-making in his early youth. His first efforts in 8mm tended to favor trick photography and animation. By the time he enrolled in the film department at UCLA (M.A. 1966) he had already completed a number of short films. Of those made at UCLA, the best remembered is THE UNICYCLE RACE. Additionally, he photographed Donald MacDonald's documentary about Christmas in Southern California, THE SEASON.*

*Bob began his professional career in animation at Graphic Films, later joining The Haboush Company as a live-action and animation TV commercial director. During his four years there, he co-directed the award-winning cartoon short K-9000: A SPACE ODDITY.*

*His short films and commercials have been shown at many national and international film festivals and museums including The Los Angeles County Museum of Art, International Tournee of Animation, The Whitney Museum of American Art, First Los Angeles Film Exposition, San Francisco Film Festival, Chicago Film Festival, West German International Film Festival (Oberhausen), Edinburgh International Film Festival, All-Japan Radio & Television Council, among others.*

### *JOHN MAYER*

*JOHN MAYER'S first contact with the world of motion pictures came at age 10 when a guard threw him off the Republic Pictures lot in Studio City and warned him never to climb the back fence again. He began working in film while attending UCLA. He earned an M.A. there in 1966. With the exception of two years with the Navy Office of Information in Washington, D.C. and a brief period with a teaching machine company in Chicago, he has been employed in Los Angeles as a free-lance film-maker producing and directing educational films and television commercials. He has also worked as a free-lance cinematographer and film editor. Companies and clients include Knott's Berry Farm, KEZY Radio, Wolper Productions, KCET Television, CBS News and NPACT.*

*John, whose voice has been used in radio and television commercials, is the narrator of RADIO ROCKET BOY.* ■

## CINEMA WORKSHOP

**Continued from Page 1240**

A.C. signal from the socket and reduces it to approximately one volt 60-cycle A.C., the proper level for the pilotone input of the recorder.

Most recorder manufacturers make such an accessory (e.g. Model #ATM for the Nagra). The step-down transformer is plugged into the wall socket and its output is plugged into the normal pilotone input of the recorder. The tape is resolved in the normal fashion and there is *no* need to tell the transfer house that the tape was recorded with a 60-cycle mains signal, as opposed to a signal from the camera. It should be obvious why this system works. It is identical to the pilotone system, only backwards. The 60-cycle that is being recorded is also powering all the cameras (and is thus "geared" to the cameras). Thus, it is as if the 60-cycle were coming from a pilotone generator geared to the camera.

Keep in mind that both sound and picture from single-system synchronous cameras can also be mixed and matched, assuming all cameras are powered from the same mains.

Crystal servo motors are rapidly replacing the synchronous motor for most double-system applications. These motors will be our next subject. ■





# MOVING?

PLEASE NOTIFY US
6 WEEKS IN ADVANCE

Miss/Mrs./Mr.
Name (please print)

New Address Apt. No.

City State Zip

**MAIL TO**
**AMERICAN**
**CINEMATOGRAPHER**
P.O. Box 2230
Hollywood, Ca.
90028

ATTACH LABEL HERE for address change or inquiry. If you are receiving duplicate copies of AMERICAN CINEMATOGRAPHER, please send both labels. If moving, list **new** address above.

## THE BEAULIEU STORY

Continued from Page 1317

the facilities continues. I notice that in one corner of the plant there is a full-scale film processing facility. It is explained to me that each Beaulieu camera, before being shipped, is carefully field-tested with film and that the film is processed and viewed right on the premises.

In my tour of the plant there is only one area which is by-passed and that is the large room in which design engineers are hard at work at their drawing boards. Later, when I ask Mr. Beaulieu if he can tell me about some of the company's upcoming developments for the near future, he replies, apologetically—but with a twinkle in his eye—that since the company is now a public corporation and he is "only" the Chairman of the Board, there are certain facts which he is required to hold secret just now.

He does, however, tell me that Super-8 sound is an area in which he feels there is great interest. He believes that even the amateurs will soon want to have sound with their Super-8 films.

"If that comes about, we will, of course, have to be ready for it," he tells me. "We have already built some prototypes for Super-8 with single-system and crystal-system sound devices. However, with such cameras, it is not only a matter of shooting film. One must also be concerned about processing and the machines for editing and projection. We are in a period of research and investigation. Basically, we are also dependent upon what Kodak does."

I am told that some work has been done on a Super-8 interlock projector and that French television is now testing a prototype Super-8 sound camera equipped with an adapted Angenieux 12mm-120mm zoom lens of the type originally developed for 16mm cameras.

Whatever happens, Beaulieu has its ear to the ground. After all, I am told, in France a decade ago there were 10 or 12 camera manufacturers. Now there are only two: Pathé and Beaulieu. One has to keep up with the times.

My pleasant visit to Romorantin has come to an end, and Mr. Gallozzi is waiting to drive me back to Paris. As I bid a fond farewell to the Beaulieus, *pere* and *fils,* I notice that Mr. Beaulieu, *pere,* is wearing in his lapel the ribbon of the Legion of Honor. It is the highest accolade that France bestows and is awarded only for extraordinary achievement.

It suits the gentleman—very well indeed! ■

## EDUCATIONAL FILM

**Continued from Page 1293**

apart from the inherently slow ASA rating of 7252, is the aspect ratio universally used in schools, the 3-by-4 format. This lack of a wide screen I often find an unhappy factor. Another galling limitation is the shortcomings of 16mm optical tracks, with their distortions and compressions. Not only are highs and lows lost, but true dynamic climaxes are impossible to achieve because of the tendency of the sound to break up.

Furthermore, it must be kept in mind that small projectors will be used in the classrooms, and that, generally, the noisy projectors will be in the same rooms as the students. To say the least, subtleties will be lost. Another practical consideration is that classrooms are seldom truly dark during projection, which makes it difficult to see low-keyed photography.

Another limitation is that of time. The film we've been discussing was truly open-ended—a fact situation was dramatized, the case it engendered was argued in court by lawyers, the judge delivered a summation, and then the off-screen narrator asked the viewer, 'How would you decide this case?' With this type of film, in a junior or senior high school period of perhaps 45 minutes, time must be left for preparation by the teacher and especially for discussion afterwards. Without this discussion, use of the film is pointless. Therefore, I feel that I can't go beyond 22 minutes in length. Since approximately half of the film is devoted to the arguments of the lawyers, this leaves little time for developing character, mood and drama in the first half.

To summarize, in response to an increasingly discriminating market, educational film companies such as BFA Educational Media are trying to infuse their films with the kind of technical sophistication and structural freedom usually associated with theatrical features. Without question, talented filmmakers are being attracted into the field because of the magnitude of the market and the freedom they're afforded to experiment. There are, however, certain limitations in 16mm film and sound that must be borne in mind if, in a practical sense, the material is to work in the classroom. Hopefully, the negative stereotype carried by many people towards this type of film will be gradually broken down, and the educational film will be recognized for what it truly is—an economically important and creative facet of the motion picture industry. ■

## INDUSTRY ACTIVITIES

**Continued from Page 1252**

York from foreign countries.

The program will first of all explore the various new techniques and concepts of videotape production by first-hand observation at Teletronics International and Reeves Cinetel. There will be further visits to the film laboratory of Technicolor Inc., the optical house of Dick Swanek, the computer film production house of Computer Image-Dolphin, and to Jim Sant'Andrea Inc., the multi-media production house. Other visits will take in a leading advertising agency, and the studios and technical facilities of the National Broadcasting Company.

Seminars especially dedicated to audience testing and research will be held by Marketing Evaluations Inc., McCollum/Spielman Inc., and Gene Reilly. Moss Communications Inc. will discuss the audience-oriented film production, and computer-produced films will be discussed and demonstrated by Computer Visuals, Inc. and by Bell Laboratories.

A full day will be devoted to screenings of outstanding commercials and films entered in the Festival, and there will also be a visit to the film and visual services of the United Nations, preceded by a luncheon in the Delegates' Dining Room.

In addition, there will be a 4-1/2 hour tour of New York City, including a helicopter flight, a number of luncheon-receptions and cocktail parties, and then of course the Awards Presentation Banquet preceded by a cocktail reception on Friday, November 16.

The complete, detailed program and entry forms for film and TV productions can be obtained from the festival office, The International F.T.F. Corporation, 251 West 57th Street, New York, N.Y. 10019.

•

### SMPTE TO HOST INTERNATIONAL STANDARDS MEETING

For the first time since 1952, Technical Committee 36 on Cinematography of the International Standards Organization will hold its Plenary Meeting in the United States. The Eighth Plenary Meeting of ISO/TC 36 is scheduled to be held at the Cascades Conference Center in Colonial Williamsburg, Virginia, 10-17 December 1973, bringing together leading motion-picture engineers from 18 nations which are substantially concerned in the production of motion-picture films.

The SMPTE, as sponsor of national

motion-picture standardization, is assuming the role of host for the meeting and is also taking the initiative in organizing the USA Delegation to the meeting.

Both activities are under the direction of Alex E. Alden, SMPTE Staff Engineer, and anyone interested in participating should contact him at SMPTE Headquarters.

Technical Committee 36 today consists of 17 participating Member Bodies, 15 observer nations, and 9 other international organizations who review the committee activities as liaison members. The EBU (European Broadcasting Union) and the International Radio Consultative Committee of ITU (CCIR) are among this last group.

Roland J. Zavada of Eastman Kodak Company has been appointed the Leader of the USA Delegation. Some twenty-two specialists have indicated their willingness to participate as members of the Delegation, forming a strong working task force. These people include: C. C. Adams, C. Carroll Adams Enterprises; J. G. Baer, Century Projector Corporation; G. M. Berggren, Wil-Kin, Incorporated; A. Boudouris, Eprad, Incorporated; G. A. Chambers, Consultant; L. L. Endelman, Perkin-Elmer Corporation; R. A. Eynard, Agfa-Gevaert, Incorporated; E. Falkenberg, Eclair Corporation of America; H. E. Farmer, University of Southern California; R. S. Freeman, Holophane Company, R. A. Garth, Eastman Kodak Company; N. P. Goldberg, Goldberg Brothers; G. H. Gordon, Eastman Kodak Company; E. V. Knutsen, Eastman Kodak Company; Dr. F. J. Kolb, Jr., Eastman Kodak Company; R. C. Lovick, Eastman Kodak Company; D. W. McConnell, Eastman Kodak Company; G. W. Petersen, Eastman Kodak Company; F. J. Scobey, DeLuxe General, Incorporated; P. Vlahos, Association of Motion Picture & Television Producers, Incorporated; W. T. Wintringham, SMPTE Engineering Vice-President; D. M. Zwick, Eastman Kodak Company.

This response by industry to help in the development of documents which will bear directly on their business interests is very encouraging and gratifying. Standardization in the United States, contrary to European custom, is entirely voluntary; consequently, it is financed by private means. The Society assumes a large portion of this responsibility, but fortunately, many commercial organizations which understand the significance of international standardization, came forward to assist in defraying the expenses of the representatives, as well as donating the valuable time of the specialists themselves.

## WHAT'S NEW

Continued from Page 1232

it the ideal vehicle for heavy-duty operation in educational, industrial and commercial use.

For more information, contact Hank Herny at Plastic Reel Corporation of America, 640 S. Commercial Ave., Carlstadt, N.J. 07072, Telephone (201) 933-9125.

•

### REVISED AMERICAN NATIONAL STANDARD PHOTOGRAPHIC EXPOSURE GUIDE NOW AVAILABLE

Have you ever tried to determine the correct exposure for photographing a desert scene by moonlight? A fireworks display? A television image? The newly revised American National Standard Photographic Exposure Guide will help to quickly determine exposure settings for these and many other difficult situations.

Designated ANSI PH2.7-1973, the guide gives information about natural lighting under various conditions as well as tables of values and simple charts that indicate the correct exposures for daylight or moonlight photography in color or black-and-white. Also described are a means of predetermining correct exposures at given times and places within predictable limits and a method of applying ASA speed for computing camera settings when it is not feasible to measure the light.

The information in this new edition has been arranged in the order in which it is used for computations. In addition, the "Special Applications" section has been expanded. It now covers indoor photography by spotlight and floodlight, photography of television screens, and underwater photography. Still included is data that will assist in the photography of clouds, artificial satellites, rainbows, solar or lunar eclipses, sunsets, the aurora borealis, and numerous other subjects.

Measuring 4 X 7 inches, the American National Standard Photographic Exposure Guide slips conveniently into pocket or gadget bag. Copies are available at $3.00 each from the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

The American National Standards Institute (ANSI) is the clearinghouse and coordinating agency for voluntary standardization in the United States. It approves a standard when it receives evidence that all parties having a substantial interest in the scope and provisions of a particular standard have

been given an opportunity to cooperate in the standard's development or to comment on its provisions.

ANSI also represents the interests of the United States in international standardization work carried out by such nontreaty organizations as the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and the Pacific Area Standards Congress (PASC).

•

BAUER C5 XL Camera

## AIC PHOTO INTRODUCES THE BAUER C5XL SUPER-8 EXISTING-LIGHT MOTION PICTURE CAMERA

AIC Photo, Inc. introduces the Bauer C5XL, the first existing-light Super-8 motion picture camera equipped with a 5-to-1 power zoom lens.

This completely automatic, electronic-component camera is equipped with an extremely fast Neovaron f/1.2, 8-40mm lens, in combination with a pushbutton power zoom with a ratio of 5-to-1.

A 230-degree shutter, f/1.2 lens and automatic behind-the-lens exposure control make shooting possible in all light conditions, from dawn to dusk, indoors and out, with no movie light attachments needed.

The extremely precise exposure control system is handled by a CdS cell which reads available light and sets the correct f-stop automatically, in a full aperture range of f/1.2 to f/32. The Bauer C5XL accepts films up to 160 ASA and also offers full manual override capability of the exposure control system.

The 230-degree shutter delivers 40% more light than a conventional 165-degree shutter, equivalent to a ½ f-stop. In addition, a double-vane exposure control system allows all light from the subject to reach the film—of great importance for filming at low light conditions.

The Bauer is the only XL camera with through-the-lens reflex viewing and a 5X zoom capacity. For ease and maneuverability, all of the electronic,

automated camera controls for the C5XL are housed in a master control cockpit arrangement on top of the camera.

A huge and brilliant viewfinder with cross-hair focusing has an f-stop indicator with warning signal for extreme low light or bright light situations, a film-run, and film-end indicator, as well as battery charge light.

Users of this automatic Bauer C5XL have a choice of four filming speeds, 9, 18, 24 and a slow-motion 36 fps. There is also a single-frame provision.

Precision electronic components control all camera functions for the Bauer C5XL including light regulation, film transport, film speeds and the zoom motor.

An electro-magnetic "soft release" to insure completely steady picture-taking and a single-frame cable release socket for single-frame or continuous shooting is part of the new C5XL.

Additional features include a built-in type A filter for daylight correction, and adjustable eyepiece (plus or minus 5 diopters), automatic reset film counter when cartridges are removed, film-type indicator window and accessory shoe mount for movie bracket.

All camera operations, film-drive zoom motor and exposure control are powered by four #AA Penlight batteries. Power can be shut off to conserve life of the batteries, and all batteries are completely housed in the swingable pistol grip, which also houses two tripod sockets.

The Bauer C5XL, complete with lens hood, eye-cup, wrist strap and remote control is $449.50, suggested retail.

An optional soft leather pouch is available, which holds camera, film, and accessories, at a suggested retail of $24.63.

Further information regarding the Bauer C5XL and other Bauer Super-8 motion picture cameras is available by writing to AIC Photo, Inc., 168 Glen Cove Road, Carle Place, New York.

•

## NEW CANON SCOOPIC 16M HAS MACRO ZOOM, EXPANDED FPS RANGE

The new Canon Scoopic 16M professional 16mm motion picture camera with auto electric eye exposure control has a 12.5 to 75mm f/1.8 zoom that focuses all the way from infinity down to macro distances, according to Art Kramer, Sales Manager of the Canon U.S.A., Inc., Scoopic Division.

In the Macro range the Canon lens will focus down to 3½ in. between its front element and the subject. In addi-

tion, a number of other new features have been added to the successor of the Canon Scoopic 16, including a newly designed through-the-lens viewing system, expanded ASA scale and increased frames per second range. The finder, adapted from the current Canon Scoopic Sound 200, shows an extremely bright corner to corner image. The safe TV frame area is outlined on the finder's matte glass viewing screen. Also shown is a T-stop scale for the metering system as well as over and under exposure warning marks.

The locking eyepiece correction has a range of -2 to +4 diopters. ASA range of the auto electric eye system is 20 to 640. The electronically-governed FPS range is now 16 to 64 fps. Single-frame shooting has also been added. The film drive is powered by a built-in DC motor.

As with the previous Scoopic 16, film loading is semi-automatic. You simply insert the leader into the film guide, depress the shutter release and the film threads through the camera to the take-up spool. Film capacity is 100 ft.

In addition to the auto resetting footage counter, a frame counter meters film at the rate of 40 frames per rotation.

The Scoopic 16M is equipped with a 170° shutter and the claw mechanism has been moved down and behind the film for improved film steadiness.

Power for the Scoopic 16M film drive and metering system comes from a removable 12-volt Nickel Cadmium battery. Thus, exhausted batteries may be replaced in seconds for virtually uninterrupted shooting. Recharging time is 3.5 to 5 hours, depending on ambient temperature and humidity conditions. The camera will drive 1600 ft. of film per charge. In addition, external power sources may be used.

Other features include a shaped-to-fit hand grip, accessory shoe on top of the cameera body, film slack take-up knob, battery checker and shutter running lock.

Price of the new Canon Scoopic 16M is $1685.00. For additional information contact Canon U.S.A., Inc., 10 Nevada Drive, Lake Success, N.Y. 11040.

•

## NEW CAMERA APERTURE/TV CUT-OFF RETICLE AVAILABLE FROM ANGENIEUX

A new 16mm camera viewfinder reticle, which allows the camera operator to see more than the camera aperture, is now available from Angenieux Corporation of America.

This new reticle allows the camera-

man to see the subject before it enters the camera field, giving the operator advance notice of any approaching event so that he can maneuver either the camera or lens to adjust to the situation. The TV safe action area is also indicated on the reticle so that a view can be properly composed when filming for television.

This reticle is available directly from either Angenieux Corporation of America or Angenieux Service Corporation of California.

•

## NEW TELEZOOM FOR ECLAIR CAMERA

Birns & Sawyer, Inc. has introduced a new TeleZoom to double the focal length of lenses for the Eclair camera. The new TeleZoom for both 16mm and 35mm is a 5-element extender for CA-1 mounts, according to company executive vice president, Marvin Stern. A precision engineered optic, the Eclair TeleZoom converts the 12-120mm Angenieux to a 24-240mm, the 25-250mm to 50-500mm, the 9.5-95mm to 19-190mm, and also converts many other zoom and prime lenses with the CA-1 mount.

For additional information, call or write Birns & Sawyer, Inc., 1026 North Highland Avenue, Los Angeles, California 90038. Phone: (213) 466-8211.

•

## NEW FLUID HEAD FOR 20-LB. CAMERAS

A new fluid camera head for motion picture and television cameras weighing up to 20 lbs. is being introduced by O'Connor Engineering Laboratories, Inc. Designated the O'Connor Model 20, the new head employs an entirely new concept in fluid action that eliminates all static friction and provides smooth, fluid control. It is dynamically balanced in all positions, even when long telephoto lenses are used.

The new O'Connor Model 20 uses no springs. Torque on both pan and tilt is infinitely adjustable and repeatable with indicators. The handle is adjustable. Manufactured by O'Connor Engineering Laboratories, Inc., 100 Kalmus Drive, Costa Mesa, Calif. 92627. ■

# BUY — SELL — SWAP HERE

## STUDIO PRODUCTION EQUIP.

ECLAIR NPR—Perfectone Crystal motor, 2 magazines 9.5-95mm Angenieux zoom lens, belt battery, handgrip,#85 filter, Leopod, cases. Just factory overhauled, $6000. Miller PRO Fluid Head Tripod with case, $300. Spectra "Pro" light meter, $80. 3 Colortran Quartz lights with accessories and case, $150. A. BURKE, (213) 475-5129.

FAIRCHILD 126 recorder 14khz sync, $800. 14khz sync generator, $30. Fairchild sync disc lathe, Presto Amp., make offer. Nickerson, WBNR, Beacon, NY (914) 831-1260.

ECLAIR ACL, Angenieux 12-120, accessories, Halliburton. Like mint. Save thousands! KEN WHITMORE (213) 653-2029.

ECLAIR NPR complete outfit with perfect Nagra IV, $7000. (415) 642-3319.

3M SEPRATROM Film Processor, 16 & 35mm, negative film. 3-1200' magazines, new $295. Reg. $3100. (714) 968-7413.

ECLAIR NPR body and crystal motor (213) 454-9903.

ARRIFLEX 16S with 16-25-50 lenses, V.S. motor, 2 magazines, torque motor, case. Price $2495. Arriflex 35-11B 28-35-50-75 lenses, 2 magazines, V.S. motor, case $1195. SAWYERS RENTAL & SALES, 6820 Santa Monica Blvd., Hollywood. (213) 466-6113.

ARRIFLEX BL, 12-120 Angenieux, universal motor, 2 magazines, battery, case, excellent. HERMAN GALLI CAMERA SERVICE, 6804 Melrose Ave., Los Angeles, CA 90038, (213) 931-4111.

1-35mm UNIVERSAL Projector—interlock portable for sale call (weekdays) NYC (212) 581-6717.

ARRI-2C T-scope body $1,975. Arri-2B $1,800. DeBrie Super Parvo 35mm self-blimped reflex, $5,500. Wall-35 film-strip or motion picture outfit, $990. Eclair CM-3 16/35mm package, $2,900. Tegea 9.8mm lens, $550. Bolex 16-Pro Sepmag package, $7,700. Bolex-EBM, 12-120 lens, etc. $1,900. Bolex Rex-5 400' Reflex outfit, $1,600. Conversion 400' body shell w/motor, $350. Eclair NPR 4-yr. old outfit $5,900. Brand new Eclair NPR crystal package w/access. $12,500. Cine Special II w/access. $750. 200' chamber for Cine Special $275. Time lapse outfit for Cine Special, $250. Ang. 17-68mm, C-mt, finder $475. Ang. 12-120mm, C-mt, 10" finder, $1,250. Pan Cinor 20-60mm w/finder, $125. Nagra-III w/crystal, case $1200. Sennheiser 804, $250. More available, ask for Free list. Visit us at SMPTE New York, Oct. 14-19, 1973. COMQUIP, INC., 366 S. Maple Ave., Glen Rock, N.J. 07452. (201) 444-3800.

New 12-120 Pan Cinor zoom lens C-mount f/3.3 (reg. $749), $495. Like New Beaulieu RB 16 Angenieux 12-120 lens, $1995. Used Pathe 16 with two magazines and motor, $598. Used Siemens 16mm projector optical sound, $698. Used Siemens projector non-sync, model with speaker, $895. Used Bolex 16 Pro SEPMAG Camera Body, with Angenieux 12-120 lens, Electronics and charger, accumulator, crystal sync unit, crystal sync plug, camera cable, coiled pilot signal cable, 400' magazines, professional monopod, and aluminum case, $5400. Use Arriflex M Body with 400' magazine, Pan Cinor 17-85mm f/2.0 lens, constant speed motor, case, power cable, $3300. Used Eclair ACL with two 200' magazines, Nickel-Cad. battery, power cable, battery charger, handle, TV glass, $5800. BROOKS CAMERAS, 45 Kearny St., San Francisco CA 94108 (415) 392-1902. Most credit cards accepted.

## STUDIO PRODUCTION EQUIP.

PROTECT YOUR VALUABLE EQUIPMENT with new Brassalite identification plates. Self-stick. $1.50, six for $7.50. Three lines, 24 characters each. LANCE, LTD., 3 Sandia Ct., Edison, NJ 08817.

DISTRIBUTION WITH LOVE. Want a few top quality films that educate—16 or 35-color. Best deal. Best performance. MALIBU FILMS, INC., P.O. Box 428, Malibu, Ca 90265.

LIGHT Valve 0-11 "Westrex" for use in Wall 35 or complete variable area galvo for Wall. ROBERT M. DOMINIC, 1219 Scenic Way, Hayward, CA 94541. (415) 537-1887.

ARRI 35 Equip—400' color mags. $125. 1,000 mags. $75. V/S motor $90. 28mm lens, $100. Batteries, matte boxes, cases. 35mm Akeley sound camera with galvo & amplifier, $500. 35mm Wall camera, $400. Baby blimp for 35 Mitchell, $200. Eclair CM3 mags. 35mm x 100', $150. 16mm x 400' $175. Doiflex "16" outfit, $700. 16mm Filmo with 12 volt motor, 2—400' mags, 3—lenses, $400. Kodak K-100 with underwater blimp, $300. Bolex H-16M body, $100. 10mm Switar, $90. Switar REX lenses 10, 25 & 50mm, $325. set. Schneider Arri lenses 10mm, $185. 16mm, $165. Cine Special 100' mags. $75. Mitchell heavy duty legs, $40. other equipment. ROLF JOHNSON, 1291 Schenectady Ave., Brooklyn, NY 11203. (212) 375-0207.

35 Arri II C-V 28, 50, 75 Schneider variable speed, case, $2400. 50mm Schneider $150. 75mm Schneider $175. Constant speed, $150. Variable speed $140. National Cine fluid head, std., baby, hihat, $350. New barney, $85. Vicon 25, 250 zoom control and support, $250. RICHARD PRASE, 5841 Nagle Ave., Van Nuys, CA 91401 (213) 994-1055.

PRODUCTION aids for the creative filmmaker. Save time and money. Write for literature. CINEPHONICS, Box 534, Dept. AC, Del Mar, CA 92014.

CANON SCOOPIC demonstrator $795. Folding shoulder pods, new $55. GORDON YODER, INC., 2840 Reward Lane, Dallas, Texas 75220.

SYNC BEEP—¼-inch tape prerecorded with high-level 1000 hz. 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 prepaid packet containing 20 strips totaling 100 35mm frames. D. P. UPTON CO., P.O. Box 5052, Tucson, Arizona 85703.

CRYSTAL sync generator for Nagra or any sync recorder $100. Install it yourself and save. AUDIOFONICS, INC., 1101 Downtown Blvd., Raleigh, N.C. 27603.

ARRIFLEX 35mm 2C with sync generator, Cooke 25, 50, 75mm lenses, and Angenieux 18.5 WA lens, Halliburton lens case. All factory maintained. Excellent. $2,200. PHILIP DOSSICK (212) 429-4065.

CINEMA PRODUCTS' Arri 35 Crystal motor CLOSE-OUT SALE. We have two brand new Model CRA-2 motors still in stock. These CRA-2 motors (with built-in flat base) are **discontinued** models. They are designed specifically to be used in a Cine 60 blimp or on a tripod. These are extremely quiet motors which reduce the overall sound level of the Cine 60 blimp by 2 dB. Original Model CRA-2 list price was $1750. each. These two remaining CRA-2 motors are being closed out at $950. each. The new motor guarantee still applies. Call or write: CINEMA PRODUCTS CORPORATION, 2044 Cotner Ave., Los Angeles, CA 90025. (213) 478-0711.

## STUDIO PRODUCTION EQUIP.

ARRIFLEX BL 16mm, 12-120 Angenieux zoom, new constant speed motor. Also AC sync motor, battery, cables, etc. 4 magazines, 2 hammered-aluminum cases. All in A-1 condition. First $6,200. gets it. (504) 522-9141. 834-5211 Evenings.

PATHE BTL 16/17-85 Rank-T-Hobson zoom/BTL comp exp syst/black case/1-piece/strap, etc. Fine cond. (213) 666-5658. $800—offer.

FOOTBALL SPECIALS. B&H 70D open back, $275. B&H 16mm 400 mag. $69.50. A-H Houston Fearless machine $750. B&H 110V. motor $119.50. Cinespecial camera w/2 lenses $295. Cine special motor, $92.50. LLOYD'S CAMERA EXCHANGE, 1612 N. Cahuega Blvd., Hollywood, CA.

35mm Sacrifice sale. Must sell. 35mm Mitchell Std. outfit w/tripod 4-mags, lenses $1500. Arriflex IIB camera, 2 mags., 3 lenses $1500. JIM BERMAN, 261 S. Citrus Ave., L.A. (213) 934-7725.

BEAULIEU R16B, 12-120 lens, Auto light meter, 200' magazine aluminum case, filters, accessories. Like new. $1650. (703) 382-7951 evenings—Box 401, Blacksburg, VA 24060.

MITCHELL 16mm Camera complete with lenses, variable sync and hi-speed motors, blimp and cases. PERINO PRODUCTIONS, 79 Charles St., New York, NY 10014.

ALTEC Voice of the Theatre speaker $210. Altec 1567A mixer $100. Altec 1567A mixer w/case and accessories, $200. RCA Hi-Imp. mixer $30. Ampex 620 speaker-Amp. $70. RCA portable mixer BN6B $180. Mikes—RCA MI10006A condenser $75. AKG D202ES, $65. Neumann U67, $210. EV666 matched pair, $175. Altec 639B w/mount, $35. VISTA (212) 924-5303—(212) 375-0207.

BOLEX 400' EBM complete ensemble with POE-4 zoom lens, aluminum case, accessories. Literally brand new, with full guarantee. $2,200. PHILIP DOSSICK (212) 429-4065.

RETIRED photographer offers lens. Bargains. DRUCKER, 33 N. LaSalle, Chicago, Ill 60602.

HELIX USED MOVIOLA SALE All with reel arms UL-20S 1—16mm Picture Head, 1—16mm Sound Head, Footage Counter, Lite Well, Film Bag & Frame, $2,350. UD-20S As above but 35mm, $2,200. UL-20CS As above 16mm with Optical Composite Sound Head on Picture Head, $2,650. UD-20CS 35mm w/Composite Sound Head, $2,500. UL-20-2S 1—16mm Picture Head, 2—16mm Sound Heads, Footage Counter, Lite Well, Film Bag & Frame, $3,150. UD-20-2S As above but 35mm, $3,000. U2L-20-2S 2—16mm Picture Head, 2—16mm Sound Head, 2—Footage Counter, 1—Lite Well, 1—Film Bag & Frame, $4,700. U2D-20-2S As above but 35mm, $4,500. L20H 16mm Picture Head w/Footage Counter, $1,050. D20H 35mm as above, $950. SL20-H 16mm Sound Head, $575. SD-20H 35mm Sound Head, $500. CE 20 Cabinet Extension, $120. LS 20 16mm Composite Sound Head, $450. DS 20 35mm Composite Sound Head, $400. HELIX USED TRIPOD SALE NCE C Head with Handle, $325. NCE C Head with Legs, $425. NCE H Head with Handle, $375. NCE H Head with Legs, $475. NCE HS Head with Handle, $425. NCE HS Head with Legs, $525. NCE CGH Geared Head with Case, $975. NCE CGH Head with Legs, $1,075. O'Connor 100 with Handle, $695. O'Connor 100 with B&S VG300 Legs, $795. Birns & Sawyer VGM 200 Legs with Ball Adapter to Pro Jr. Base, $100. B&S VGM 200 Baby Legs with Ball Socket, $85. Write or call Roth Mui, HELIX LIMITED, 679-E N. Orleans, Chicago, Ill 60610. (312) 944-4400. Bank cards accepted.

RATES: Ads set in lightface type 40¢ per word. Minimum ad, $4.00. 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) $4.00 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.

## STUDIO PRODUCTION EQUIP.

BEAULIEU R16B auto and 12-120 Angenieux, grip, 1000 MA battery, charger, $1,450. Cooke 9mm C-mount, $325. Eclair ACL pilotone module and cable, $300. All perfect. (415) 993-5670.

BEAULIEU R16B—Angenieux 12-120, Cine 60 vari-speed zoom drive, 2-1000MA batteries, charger, 110V power supply 2-35mm lens adaptors, Moviscop viewer, Bolex splicer, pistol grip, mint condition, $1500. (312) 771-8964 evening.

N.C. MITCHELL rackover, complete, ready to convert. PERINO PRODUCTIONS, 79 Charles St., New York, NY 10014.

## SERVICES AVAILABLE

GORDON YODER, INC. gives 48-hour service on Filmo and Auricon filter slots. Also quick service on Auricon and Filmo repairs.

Buy or Sell your equipment thru GOLDEN EQUIPMENT EXCHANGE. We match buyers with sellers, and handle all details. No charge for listing. Small commission on sale. For information: 65-24 Utopia Pky., Flushing NY 11365.

GORDON YODER, INC. repairs all types of conversions.

BRITISH film company, newly established, will shoot for you, anywhere in Europe. Immediate service. Write: CAT Films, 46 Church Rd., London SW13 or call: 01-741-0333.

GORDON YODER, INC. builds a 15-oz. magnetic amplifier for Cine Voice.

Camera repairs and filter slotting 35 years experience. Filmos, Eyemos, converted Cinevoices. Reasonable, quick service. RALPH GONZALEZ, 248-45 Thebes Ave., Little Neck, NY 11362. FA 1-1989.

## WANTED

WANTED Cooke-Kinetal 12.5mm lens and 8 volt 18 fps governor controlled motor in mint condition for Arriflex 16S (213) 355-8958.

WANTED, Used Arri 2C-BV or 2C-B; 35mm, Cooke lenses; Elemack dollies, good used condition. P.O. Box 4143, Valley Village Station, North Hollywood, CA 91607.

FEATURE FILMS in 16mm or 35mm for collector's private use. Especially desired: John Ford films, "The Horse's Mouth" or nearly anything (602) 967-7835.

CASH waiting for your used film editing or projection equipment. What have you got to sell? Write, phone or stop in. LAUMIC CO., INC., 35 West 45th St., New York, NY 10036, Ask for Ted Powers. (212) 586-7666.

## MISCELLANEOUS

OFFICES for rent @ ANIMATION CENTER. Air Cond., janitor, utilities, parking included. Modern building in central Hollywood. All tenants in film industry. KIM BUEHRE—465-4117

$1000 reward for recovery of: 1-Arri 16BL camera and attachments, Ser. #BL-51514. Phone collect: (615) 269-6470 or write: IMAGEMAKER INC., 2415 Pierce Ave., Nashville, Tenn. 37212.

Buy-Sell-Trade used photographic equipment through Nationwide monthly shopper. Free Sample. SHUTTERBUG Ads, Box 730-M, Titusville, FL 32780.

MAJOR SOUND STUDIO complex—for sale or lease. All Westrex and Magnatech equipment, consisting of mixing consoles, dubbing heads, 35 & 16mm, pickup recorders 16 & 35mm, complete selsyn interlock systems, RCA optical recorders, Ampex scoring equipment, complete editing rooms, etc. Principals only. Box 1762, American Cinematographer.

## RENTALS

KEM rentals in Hollywood **HORIZONTAL** EDITING STUDIOS (213) 461-4643.

MOVIOLA console film editing machine. Day, week & monthly rentals. Lease-purchase plans available to fit your budget. LAUMIC CO., INC. 35 West 45th St., New York, NY 10036, Ask for Ted Powers. (212) 586-7666.

# MOVING?

PLEASE NOTIFY US
6 WEEKS IN ADVANCE

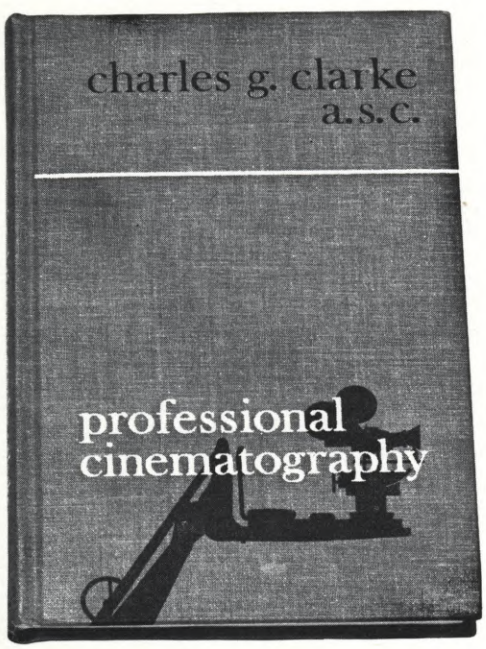
Miss/Mrs./Mr.
Name (please print)

New Address Apt. No.

City State Zip

**MAIL TO**
**AMERICAN**
**CINEMATOGRAPHER**
P.O. Box 2230
Hollywood, Ca.
90028

ATTACH LABEL HERE for address change or inquiry. If you are receiving duplicate copies of AMERICAN CINEMATOGRAPHER, please send both labels. If moving, list **new** address above.




# 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 . . . **$10.00**

**The American Cinematographer**
**P.O. Box 2230, Hollywood, California 90028**

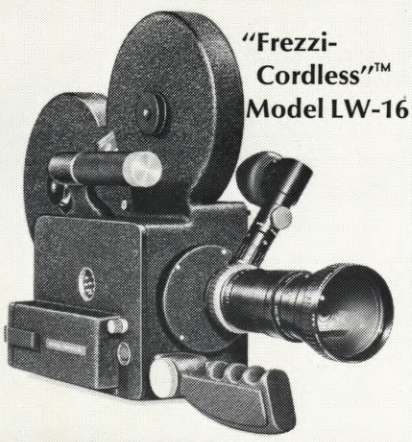
**Please send me .....copies of PROFESSIONAL CINEMATOGRAPHY @ $10.00 ea., postpaid. No C.O.D.'s. Single book orders will not be billed. Check or money order must accompany orders for single books.**

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.**

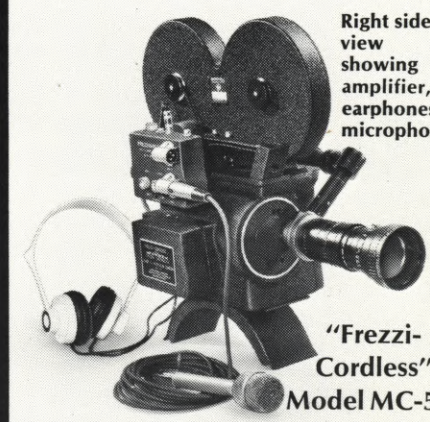
World's standard

# FREZZOLINI® builds the best documentary/tv newsfilm camera systems in the world.



"Frezzi-Cordless"™ Model LW-16

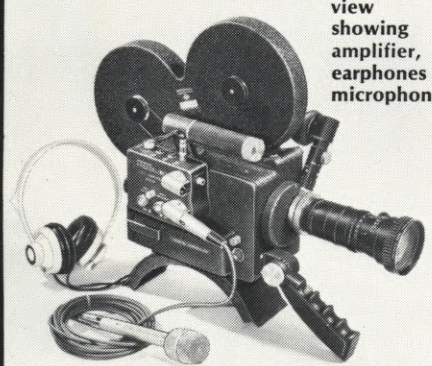
Featuring BACH AURICON movements. World-famous for reliability and serviceability.



Right side view showing amplifier, earphones & microphone.

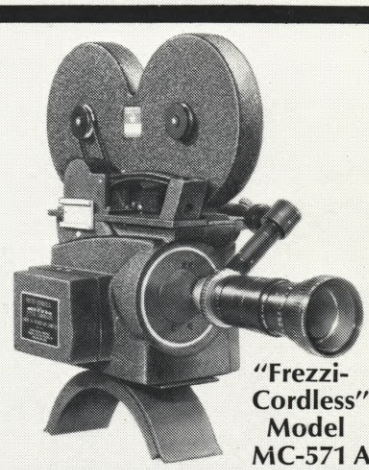
"Frezzi-Cordless"™ Model MC-571

"Frezzi-Cordless"™ Model MC-571 DC



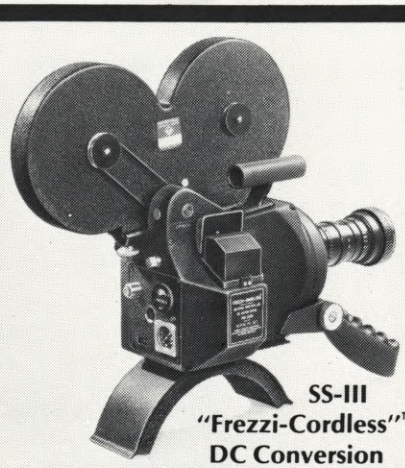
Right side view showing amplifier, earphones & microphone.

"Frezzi-Cordless"™ Model LW-16



"Frezzi-Cordless"™ Model MC-571 AC

All available with/without advanced automatic iris (shown) powered from camera.



SS-III "Frezzi-Cordless"™ DC Conversion

## BOOTHS 16-17 SMPTE

Perfectly balanced, our "Frezzi-Cordless™" Cameras have the newest Angénieux zoom lenses and viewfinders. OPTIONS: **A Special TV Newsfilm Package,** plus a wide variety of camera accessories, amplifiers, "Frezzi™" portable power packs, portable "Frezzi-Lites™", everything to customize a "Ready-To-Roll" Camera System for your needs. For camera demonstration or consultation write or phone James J. Crawford, V.P. Engineering.

Whatever your camera requirements are, match them up with the FREZZOLINI "Frezzi-Cordless"™ professional 16mm single/double system sound cameras shown here. In our plant we **(1)** manufacture completely new "Frezzi-Cordless"™ cameras; **(2)** revitalize existing cameras by making them "Frezzi-Cordless"™ for new, longer lives; **(3)** service these cameras and re-manufacture and service all other "Frezzi"™ chop-top-type cameras. For technical data, brochures and name of nearest professional dealer write or phone us.

**General Research Laboratories**

DIVISION OF
**Frezzolini Electronics Inc.**
7 Valley St., Hawthorne, N. J. 07506
PHONE: (201) 427-1160

MADE IN U.S.A.

PRINTED IN U.S.A.

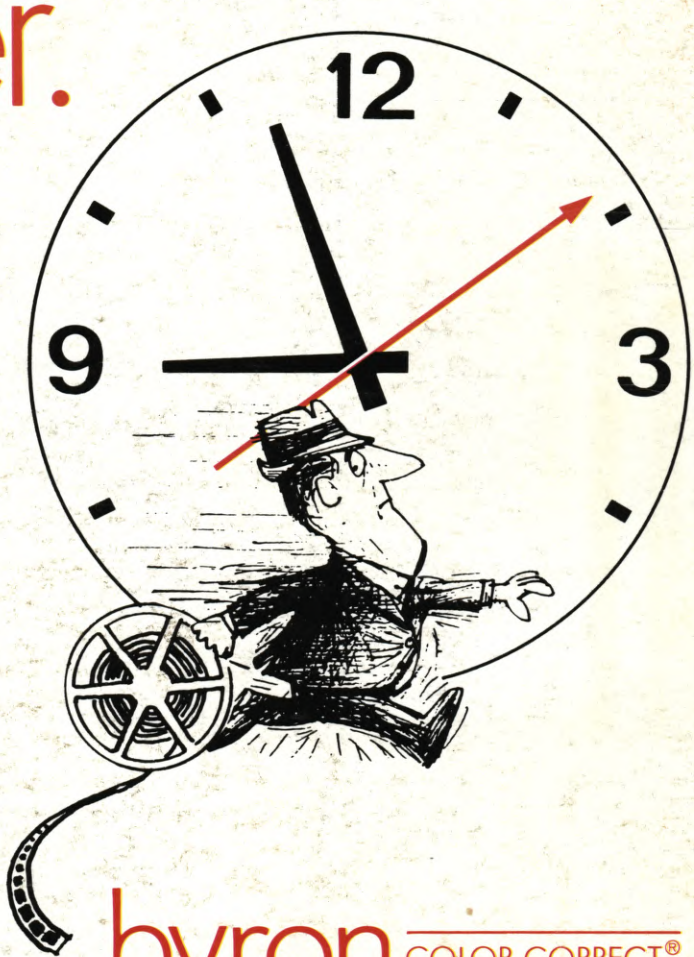
Same day service on Color-Correct® answer prints!

# The timing couldn't be better.

A & B rolls in one hand, mixed mag in the other, he rushed into the Byron facility at 8:30 A.M., full of understandable doubt. A timed print by 5:00? Of the same day? Not a usual lab procedure, but at Byron, "impossible" jobs are a matter of routine.

Byron is big. Byron is well-equipped, one of the best equipped labs anywhere in the country. But for all its bigness, Byron is personal. Our lab people know what a deadline can mean to a producer. So, our hurried friend screened and OK'd his answer print by 5:00 *the same day*. And he walked from our facility on a cloud to a hero's welcome at his client's office.

So, when time is tight, no matter what your production need—be it film, video, audio; in any combination—we'll make you look better when you come to Byron. Give us a call to find out how.




byron COLOR-CORRECT®

65 K Street, Northeast, Washington, D.C. 20002 202/783-2700
World's Most Sophisticated Video Tape and Film Laboratories

**If it's shown on a screen . . . motion picture or TV . . . Byron processes it better, faster and for less.**

- ☐ 16mm—35mm—SUPER 8mm—processing and printing
- ☐ Color negative—positive processing and prints
- ☐ Ektachrome processing and prints—all types
- ☐ Kodachrome prints
- ☐ Reversal intermediate negatives—CRI
- ☐ Modern color-additive electronic printers
- ☐ Hazeltine electronic color timing
- ☐ Black & white negative-positive processing and prints
- ☐ Black & white reversal processing and prints
- ☐ Liquid-gate and reduction printing
- ☐ A & B effects printing
- ☐ Reduction SUPER 8mm magnetic and silent prints
- ☐ Television film spots
- ☐ New 35mm slide and film strip department
- ☐ Complete modern sound dept.—2 studios, mixing theater
- ☐ Film editing and conforming
- ☐ New video tape department
- ☐ Rental studio, lights, sets and color cameras
- ☐ Special effects, switcher and audio console
- ☐ Film chain 16mm and 35mm
- ☐ Electronic computer video editing
- ☐ Video tape to film transfer, electron beam recorder
- ☐ Film to video tape transfer, 2", 1" & ½"
- ☐ Videotape dubbing, 2", 1" & ½"
- ☐ Hi-speed video tape duplications
- ☐ Music and sound effects library
- ☐ Screening rooms
- ☐ Edgenumbering—40 and 16 frames
- ☐ Magnetic sound stripping
- ☐ Ultra-sonic film cleaning
- ☐ Peerless film treatment
- ☐ Modern 60,000 square foot building
- ☐ Sony ¾" Video cassette duplicates

**all under one roof!**