

American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

FOURTH OF JULY 1976/ONE DOLLAR



THREE FILMS FOR THE AMERICAN BICENTENNIAL

F&B/Ceco says: “Don't buy a new camera now.”

Here's how inflation has hit this market:

	1970	1972	1976	1970-1976
ARRIFLEX 35IIC	\$5908.	\$6370.	\$10,381.	+ 76%
ARRIFLEX 16BL	8390.	9426.	14,988.	+ 79%
ARRIFLEX 16 'S'	5543.	5883.	9790.	+ 77%
ECLAIR 16NPR	7830.	10,524.	15,900.	+ 103%
ANGENIEUX 12-120 ZOOM	895.	1140.	2520.	+ 181%
ANGENIEUX 25-250 ZOOM	2645.	3410.	7305.	+ 176%

If you want to beat this ridiculous inflation, you'll keep your present camera running longer and avoid the high cost of a new purchase. F&B/Ceco wants to help you fight these high costs. That's why we're offering a complete repair and service program.

Here's what we will do:

PREVENTIVE MAINTENANCE

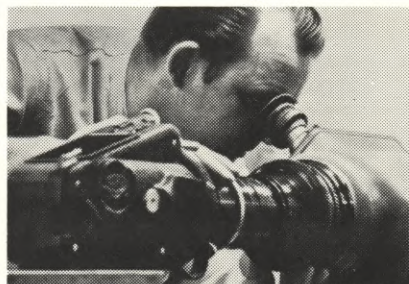
- Check, clean and lubricate camera.
- Measure flange focal distance.
- Check ground glass depth.
- Check optical system.
- Inspect rollers.
- Clean film gate.
- Check lenses on collimator.
- Check motors for speed.
- Test batteries and cables.
- Test sync generator and cable.
- Clean and inspect magazine.
- Lubricate magazine rollers
- Set clutches.
- Check footage counters.

PLUS — our recommendations for necessary repairs, adjustments or replacement of parts.

COMPLETE OVERHAUL

- Completely disassemble camera and inspect each part for wear or defect.
- Replace worn parts.
- Clean and lubricate totally.

- Reassemble camera to factory specifications.
- Adjust flange focal distance.
- Adjust ground glass depth.
- Adjust film gate.
- Set pressure plate.
- Align optical system.
- Set motors for proper speed.
- Check sync generator.
- Guarantee: Same as Manufacturers new camera guarantee.



Here's what it will cost:

	PREVENTIVE MAINTENANCE*	OVERHAUL**
16MM ARRI 'S'	\$45.00	\$210.00
16MM ECLAIR NPR	90.00	300.00
16MM SINGLE SYSTEM NEWS CAMERA	45.00	180.00
35MM ARRI	45.00	210.00
BNC REFLEX	120.00	750.00

*Includes Camera Body, 1 Magazine and Lenses in Turret.

**Includes Camera Body Only.

Contact us for repair and maintenance rates on other cameras or we will be happy to give you a repair estimate for a nominal charge of \$30.00 deductible from the cost of your repair.

Here's the Clincher:

We'll also rent you the same equipment at a 50% discount off our regular rental rates while your gear is being repaired. We can do it because F&B/Ceco maintains a \$6,000,000 inventory of motion picture production equipment.

And we rent and repair everything. Cameras, lights, tripods, sound readers, editors, and all accessories.

So we can put the identical equipment in your hands during the repair — and save you half the rental cost.

Bring or ship your camera in today. You'll save money and help fight inflation at the same time.

For more anti-inflation information call or write:

Repair and Maintenance Specialists

F&B CECO
THE RENTAL SPECIALISTS

SALES — SOS DIVISION

315 West 43 St., New York, N.Y. 10036
(212) 586-1420 • 7051 Santa Monica Blvd.,
Hollywood, Calif. 90038 / (213) 466-9361
Phone Toll Free (800) 223-5829. In New York State
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**WE MAY ALREADY HAVE THE
SOLUTION TO A PROBLEM YOU DON'T
EVEN KNOW YOU HAVE YET...**



We run into so many unusual situations when we rent equipment, that we can now offer you a selection of solutions to other people's problems.


We've modified, adapted, and in some cases, designed individual equipment for specific jobs.

With a complete selection of 16mm and 35mm cameras and lighting equipment, we have just about everything you might need- (including three modern stages).

And a staff of professionals who are ready to help you anytime, anywhere.

So, if you've got a problem, call us.

We may already have the answer.

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camera
corporation** 

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Most flatbed editors can't do all the things that this one can. But, on the other hand, they cost more.

Take the world's finest 16mm flatbed editors, compare them feature by feature with ours, and you'd be hard pressed to find one that matches Showchron.

Then, when you compare their price tags, you'll discover that American-made Showchron at under \$8,500 is a pile of money less than anyone else.

Showchron is manufactured by Honeywell and sold only through authorized dealers with factory trained service technicians.

It has a patented single sprocket drive that significantly reduces the danger of film scratching. The core spindles incorporate a clutch which prevents friction damage to the film emulsion during instant braking at high speeds through the sprockets or during rewind. Showchron has a direct interlock drive system, a torque motor for each of its turntables and electromechanical brakes.

Each sprocket has an inching knob

for manually locating frame-to-frame viewing, for marking, and for precise threading of start marks.

The sound track may be shifted forward or back for precise sync while film is in motion. The sound track may also be advanced or retarded, independent of film, at high speed.

Control functions for all film movement are consolidated in a master

control knob which permits instant start and stop of film, controls film speed and allows instant switching from forward to reverse or reverse to forward without stopping the film.

The digital counter displays not only feet/frames but minute/seconds and has a separate display indicating the number of frames which the sound has been displaced relative to picture by the use of the advance/retard feature.

Showchron is more functional than anything in its class, but allow us to mention its most obvious but least important feature.

It sure is beautiful, isn't it?

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Dallas, Tex. 75206
(214) 369-1165

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Detroit, Mich. 48213
(313) 371-4920

American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

The American Society of Cinematographers is not a labor union or a guild, but is an educational, cultural and professional organization. Membership is by invitation to those who are actively engaged as Directors of Photography and have demonstrated outstanding ability. Not all cinematographers can place the initials A.S.C. after their names. A.S.C. membership has become one of the highest honors that can be bestowed upon a professional cinematographer, a mark of prestige and distinction.

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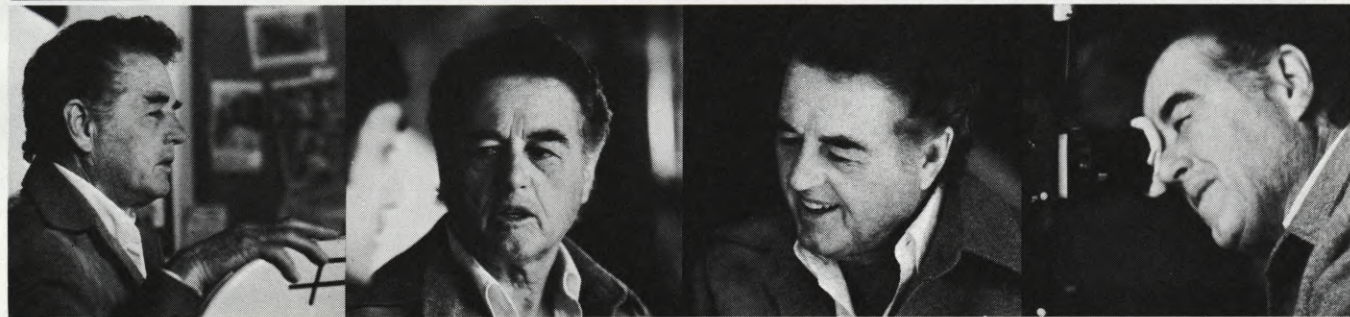
734 The Bookshelf

ON THE COVER: Greg MacGillivray and Jim Freeman, of MacGillivray/Freeman Films, Laguna Beach, California, man the cameras to shoot a balloon ascension for the opening scene of "TO FLY", a film celebrating the American Bicentennial and filmed in IMAX, the world's largest motion picture format. Beginning in July, "TO FLY" will be shown exclusively in the new, specially designed theater of the National Air and Space Museum in Washington, D.C. Cover design by HERB A. LIGHTMAN.

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BALLARD



Lucien Ballard is one of the most respected as well as one of the busiest Directors of Photography. This interview was recorded between takes on the set of "St. Ives." His long list of credits include "The Wild Bunch," "The Getaway," "From Noon to Three," and "True Grit."

"Recently, a talented young director remarked: 'It's more than letting the camera tell the story. It's letting the story tell the camera.' I remember Henry Hathaway saying, 'The subject matter itself will suggest the cinematic style. Trick photography has destroyed more movies than it has helped. It should be used only for an effect.'

"There are many pictorial ways to enhance the look of a movie. Before shooting 'The Wild Bunch' Sam Peckinpah and I did a lot of research on the Mexican Revolution. Looking at movies and stills, we were both taken by the shallow flat effect of the images. This was the look we tried to duplicate in the film.

"Each film has its own visual style but for me, as cinematographer, there is one constant. I have to

deliver a good negative. That's why I like Eastman color negative II film 5247. It's got good resolution and a finer grain.

"Once you've got a good negative you can do your magic on the optical bench. Diffuse it, soften it, fog it, do whatever you want with it. On the other hand, if you shoot it soft, you're stuck with it that way.

"Different directors, different styles. I've had the good fortune to work with many of the finest directors in the business. And every one has a different way of working. Peckinpah uses you as both his eyes and his sounding board. He'll bounce ideas off you and will also listen to your suggestions.

"I once had a big fight with Henry Hathaway. Great director, very famous, toughest director in town. We did 'True Grit' and a number of other films together. If he said he wanted the camera right there, he meant right there.

"If I thought I could improve the shot, I would quietly move the camera over a little, making sure I erased the old position marks. But nothing and no one on the set was supposed to move without his say-so.

"One day I did something he really got upset about. He just raised hell. I mean, he chewed me up and down for about five minutes. Just when I figured he was finished, he yelled: 'And don't think I don't know you move the camera on me all the time!' He turned and walked a short distance away, looked back and said: 'But I know you make it better.'"

Just as a good negative is the constant for Lucien Ballard—a quality product that the industry can rely on is the constant for Eastman Kodak Company. Each improvement, each development in films for the industry is tested and retested to be sure that it can provide total, maximum quality, capability, and reliability.

For a copy of this and other interviews, send for our free booklet.

Write Eastman Kodak Company, Dept. 640-D, Rochester, NY 14650.



EASTMAN KODAK COMPANY
Atlanta: 404/351-6510/Chicago: 312/654-5300
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WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE

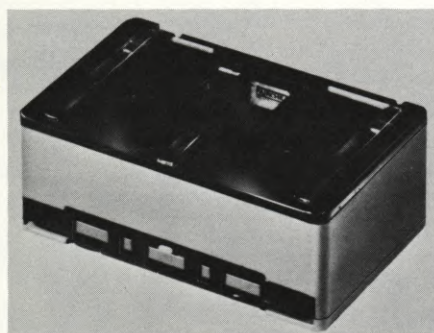
DIRECTORY FOR FILMING IN WASHINGTON, D.C. TO BE AVAILABLE

A free directory of information for filming in the Washington D.C. area will be published by the Washington Area Filmmakers League. The 100-page-plus booklet will contain references and resumes of qualified area-support and filmmaking personnel, a comprehensive listing of film-related services in the area along with sample evaluations by filmmakers who have used them, a guide to what you as a filmmaker can and cannot expect to find in Washington, advice on permits, park regulations etc.

Of special interest in this bicentennial and election year, copies may be had through the Washington Area Filmmakers League, Box 6475, Washington, D.C. 20009. One dollar covers postage and handling.

The Washington Area Filmmakers League is a newly formed non-profit corporation providing a forum for ideas and professional contact among area filmmakers. It recently held the first Washington area film festival, running two weeks in local theaters.

If you have any questions concerning the directory or WAFL, please do not hesitate to contact: Greg Epler 202-387-5239, editor; John Allee 202-363-5625, distribution manager.



HOLMES LABS ANNOUNCES NEW FAIRCHILD SYNCHROMATIC FILMSTRIP PRINTING SYSTEM

Frank Holmes Laboratories, Inc. has installed a new printing and processing system to handle the recently-introduced Fairchild Synchronomatic 110 filmstrip cassette system, it has been announced by Gordon Settle, Holmes's executive vice president.

According to Settle, the installation of the system will make Holmes the

only laboratory west of the Mississippi capable of processing Synchronomatic filmstrips, and the only laboratory in the United States that optically reduces film for the system.

Since the 110 film format requires a change in laboratory film handling equipment to produce the 110 master negatives, Holmes Laboratories has re-designed some of its existing cameras and installed other, new equipment to produce the "Synchro-Pak" filmstrip prints, Settle stated.

Eastman Kodak's 110 format film (the same used in Kodak Instamatic cameras) is used in the system. The 110 film is 16mm wide, with perforations on one side. Spacing between perforations is one inch. Since picture orientation is horizontal as in double frame, and not vertical as with 35mm filmstrips, the film runs horizontally during projection.

The Synchronomatic system achieves positive synchronization between sound and picture by taking advantage of the 110 film format. An 8-bit straight binary optical code is injected between picture areas which, when cross-checked electronically with the sound tape inaudible, 1000 Hz signal, provides total filmstrip control at all times. Fairchild's Synchro-Pak cassette contains both the sound and picture elements to achieve this total synchronization. The cassette capacity is standard C-60.

An especially important feature of the 110 system is its ability to simulate animation. This can be achieved due to the rapid frame-advance rate of three frames per second. Thus, dramatic film sequences explaining difficult subject matter can be economically produced without the use of expensive animation techniques and equipment.

In addition to its horizontal tracking and positive synchronization capabilities, other key features of the 110 format system are: more picture visuals — from 10 to 200 frames per cassette; immediate location of a particular frame — tape search speed is ten times play-speed; usable picture frame area of 902% more than Super 8mm, 271% more than 16mm and only 53% less than 35mm film; simple operation — no threading or manual rewinding necessary; and inexpensive, low silhouette cassettes that keep film and tape dust and damage free.

Complete information and

production price lists on the new Synchronomatic 110 system are available from Frank Holmes Laboratories, Inc., 1947 First Street, San Fernando, CA 91340; phone (213) 365-4501.

U.S. MARKET ANALYSIS OF CLOSED CIRCUIT VIDEO SYSTEMS

Closed Circuit Video Systems: A U.S. Market Analysis (1976-1981) will be the subject of ComQuest Corporation's latest major multiclient study.

U.S. industry is now spending more than \$300 million annually for private television equipment, software, and services, and this market will grow at an average annual rate of more than 30 per cent over the next ten years.

ComQuest, an independent information services firm, will analyze and forecast the opportunities for growth in both closed circuit video equipment and services in the domestic markets for the 1975-1981 period.

Video techniques for record and reference material storage and retrieval will substantially impact current archival procedures. Applications to be researched include the following usage categories: Security surveillance; education; process monitoring; teleconferencing; information display, entertainment systems, and the video-telephone, which will finally become a useful instrument of interpersonal communications.

ComQuest will analyze and forecast markets for the following equipment categories: Video cameras; video recorders; video monitors; videotape editing and duplication equipment, and accessories. Equipment sales projections will show units, average price, and total dollars. Projected revenues from applicable services opportunities will also be shown on an annual basis.

The market impact of new technologies will be evaluated in this multiclient study and application advantages explored. Special emphasis will be given to the following media technologies: coaxial cable; fiber optics; wave guides; satellites; microwave, and others.

The study will delineate opportunities for market entry and/or expansion by manufacturers of appropriate equipment models. Strategies for market penetration will be evaluated. The analysis will include a description of industry structure and identification and analyses of present, and probable future competitors.

Details about this study are available from ComQuest Corporation, 1000 Elwell Court, Palo Alto, California 94303. Telephone (415) 969-4040. ■

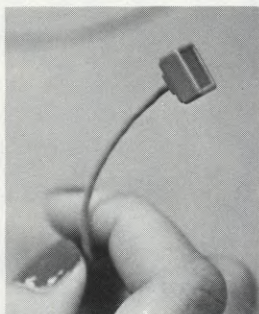
A SOUND INVESTMENT

Alan Gordon Enterprises Inc. features one of the most complete sound departments in the industry. No matter what your sound requirements are, be sure to check with AGE Inc. first. Most pros do. Here are just a few of the items we carry in stock!



Sound Genie Headset and Microphone

The Sound Genie line of noise cancelling electret microphone and microphone/headsets is extremely lightweight and comfortable, yet rugged and field-repairable should the need arise. Virtually all sound coming from more than one or two inches from the microphone is not picked up, which is just one of the outstanding noise-cancelling characteristics of the Sound Genie. Applications include communication in high ambient noise fields and recording dialog in noisy surroundings. Prices: Model HS-1A, noise cancelling mike and headband, \$136.00. Model HS-2A, noise cancelling mike, earphone and headband, \$150.00.



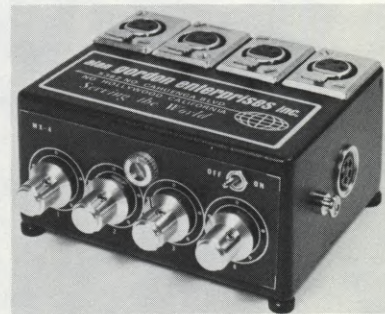
Mini Mic Microphone

The Mini Mic is a subminiature microphone that incorporates the latest advances in electret and transistor technology. Its unique design uses an extremely low current field effect transistor actually deposited inside the capsule. The frequency response is selected to perform ideally as a lavalier microphone, but is not so radically adjusted so as to compromise its use as a "hidden" microphone in motion pictures, nor is it "peaky", which could prevent its use in music recording. Prices start at \$110.00.



Q-Master Induction Receiver

The Q-Master is a miniature receiver so small that it fits inside the ear and is invisible from any distance greater than a few feet. Its applications are endless. Some motion picture and TV uses include allowing the talent to listen to playback of pre-recorded material and perform without the problems of loudspeakers leaking into the recording. On stage and in theaters it is ideal to cue actors. TV floor managers can hear the "PL" (intercom) without the bother of connecting wires. Paging and intercoms may be linked so only key people wearing Q-Masters will hear the page. Model R-1, which fits behind the ear and has a volume control, sells for \$170.00. Model R-2, which is completely self-contained in-the-ear receiver, sells for \$250.00.



Mini Mic Mixer

The new MX-4NVF Mini Mic Mixer is wireless microphone compatible, weighs only 1 1/2 pounds and is 5 1/4" wide, 4 3/8" high and 2 3/8" deep, making it extremely compact and lightweight. It features all integrated circuits, die-cast aluminum body with black wrinkle finish. The mixer has four female low impedance microphone inputs XLR-3-31, controlled by Alan Bradley pots, audio lever meter with sensitivity control and a monitor headphone jack. Power is from a built-in battery. The mixer comes with battery, neck-strap and connecting cable to Nagra recorder. Leather case is available. Price, \$395.00.



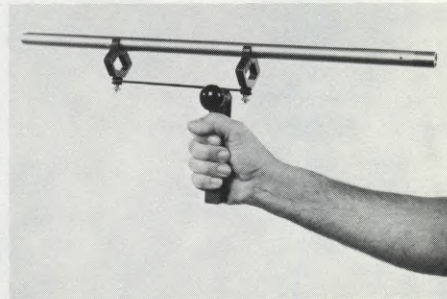
Zeppelin Wind Screen

The Zeppelin insures perfect sound recording in all conditions where wind or air movement is present. Its aero-dynamic design screens the microphone from wind velocities up to 60 knots but lets sound in. The low-contrast blue color of the Zeppelin minimizes reflection problems. The Zeppelin weighs only eight ounces but is virtually indestructible, and features a rotatable end-cap for easy cable positioning with minimum strain. The Zeppelin can be handheld or boom-mounted and comes in two models, Z815 for Sennheiser 815 and similar microphones, \$100.00, and Z415, for Sennheiser 415 and similar microphones, \$85.00.



Fishpole Microphone Boom

Lightweight but extremely durable, the AGE Fishpole Microphone Boom is an ideal accessory for filming on location or in tight quarters. Made of black anodized aluminum, the boom extends from a minimum of five feet to a maximum of twelve feet in three telescope-adjustable interlocking sections. Supplied with a built-in microphone cable that is secured to prevent cable noise. Price, \$89.50.



A-R Anti-Rumble Shock Mount

The new A-R Shock Mount, selected after a six month test program evaluating four competitive and twelve new prototype designs, was the only one judged virtually free of boom rumble without low end equalization. Adjustment for weight load in different microphone positions is easily made. This is an exclusive A-R feature. Model AR815, for Sennheiser and similar microphones is \$55.00. Model AR415, for Sennheiser 415 and similar microphones is \$50.00. Both models can be used with Zeppelin windscreens or as separate units.



Swintek Cordless Microphone Systems

There is a Swintek system to fit every recording need. The Mark 750 UHF offers a choice of licensable UHF frequencies with broadcast quality audio and a hi-gain antenna system to minimize static, dead spots and interference. The Mark 450 AC-DC unit meets the most exacting requirements of the professional cinematographer at a price to fit even the most stringent budget. The Mark 650 or "Hitchhiker" is designed to ride on the side of most professional single system cameras, including the CP-16A, General and Frezzolini, draws its power from camera or Nagra and weighs only 15 1/2 ounces. All Swintek systems guarantee the best quality sound available. Prices start at \$1020.00. For more information on the complete Swintek line, call Frank Kelly, manager of our Sound Department.

AGE Inc. carries a complete line of sound equipment, including Sennheiser, AKG, Sony and ElectroVoice microphones, Nagra tape recorders and much more. All items also are available for rental. Call or write for additional information.

SERVING THE WORLD

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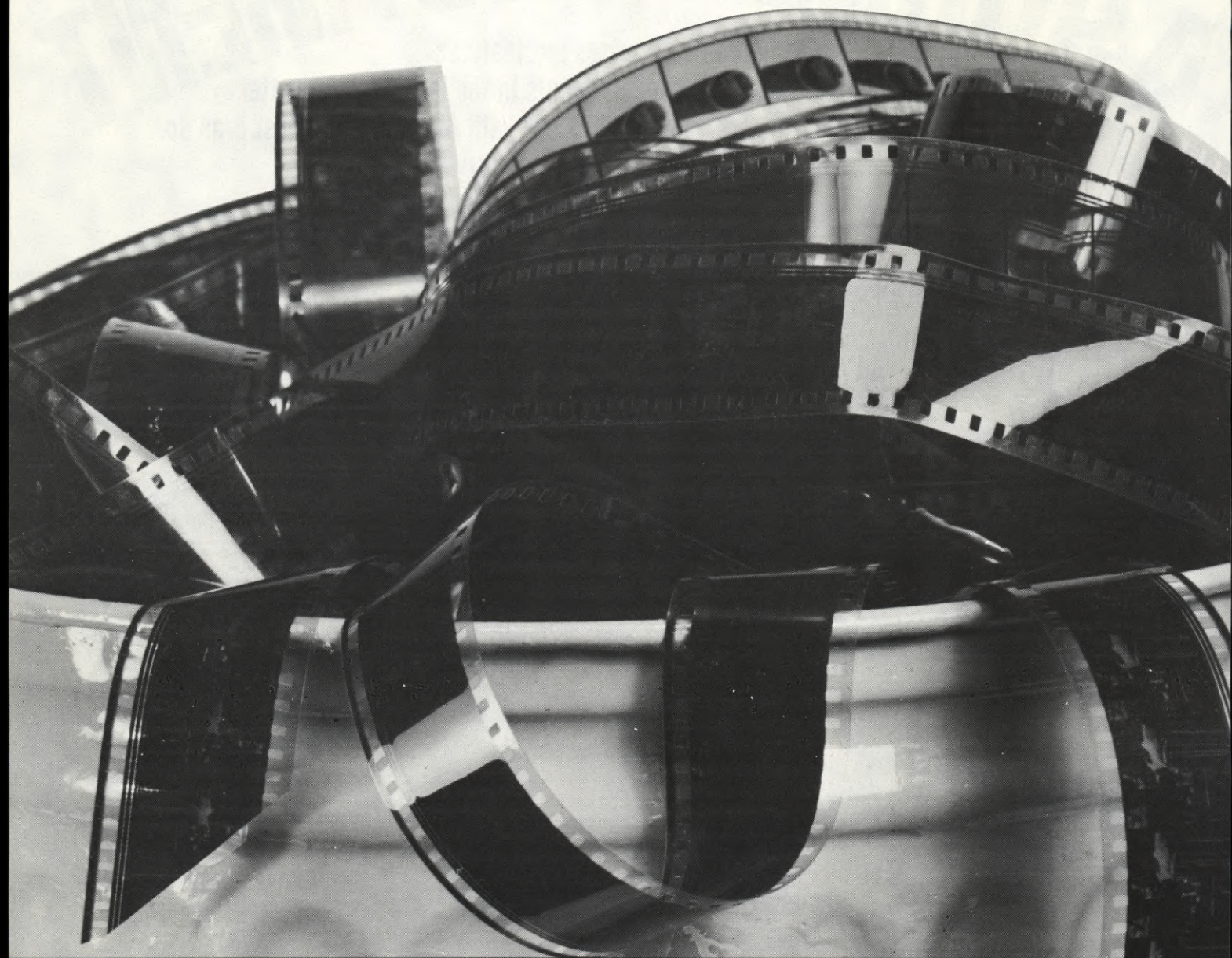


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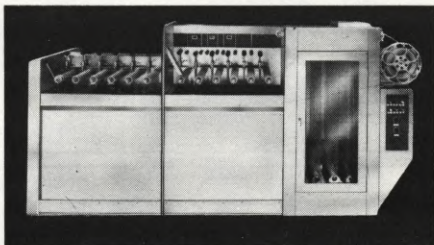
If you don't care what develops,



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century. And it's still working today.

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ARRI

NEWS UPDATE

PUBLISHED PERIODICALLY BY ARRIFLEX COMPANY OF AMERICA • WOODSIDE, N.Y. 11377 • JULY 1976

To Our Friends and Customers,

We hope you like ARRI News Update, our new approach to improved communications with you.

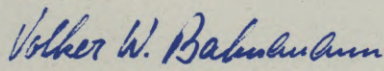
For a long time we've felt the need to keep in touch with you in a manner other than the usual advertising pages. We trust ARRI News Update will fill this need.

It will be published whenever there are important new Arriflex matters which we think you, the working professional, would quickly want to learn about.

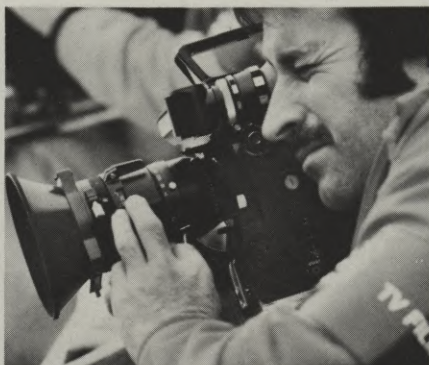
It will tell you about new Arri products and services, tools and techniques as well as interesting applications reported to us by Arri users from which others can benefit.

We hope that ARRI News Update will serve you well and we invite your comments and participation.

Cordially,



Volker W. Bahnemann



V.B. using 16SR Arriflex at Olympic Games in Innsbruck, '76.



THE 16MM ZEISS SUPER SPEED'S ARE HERE

If you have a 16mm assignment coming up and you wish you had a set of new Zeiss lenses comparable to the Super Speed's on the 35BL, you can stop wishing. They're here and we have them.

Designed for maximum performance at all light levels, and as an integral part of the new 16SR camera system, the new generation 16mm Super Speed Zeiss lenses are now available.

Embodying the same design philosophy as the 35BL Arriflex Super Speed lenses and built to the most advanced design parameters, Zeiss has created a new standard of performance for 16mm fixed focal-length motion picture camera lenses that will stand for years to come.

Focal-lengths in the new Super Speed matched series, are:

12mm Distagon F1.2/T1.3
16mm Distagon F1.2/T1.3
25mm Distagon F1.2/T1.3

These lenses are multi-coated to reduce flare to an absolute minimum. They are mounted in a new, close-focusing, steel-bayonet-mount to assure long-lasting precision focus even at the largest apertures.

Although the 16mm Super Speeds are standard for the 16SR Arriflex cameras, they can be purchased to update all earlier 16mm Arriflexes with steel-mount turrets.

For additional information on these new focal lengths, and comprehensive technical data, contact our office, or your Arriflex dealer.



Director Mel London of Vision Associates standing in front of construction site of a new coal-fired power plant in Emory, Utah.

ON LOCATION WITH THE 16SR ARRI

Although we at Arriflex have always preferred to let our products "speak for themselves", we feel you would like to know how film-makers are reacting to our 16SR camera. Vision Associates Jon Fauer sent Camera Mart's Chick Hyman a three page letter after working with the camera. Here it is, thanks to Chick, slightly shortened because of space limitations:

Dear Chick:

Above all, I want to thank you for renting to us your Arriflex SR for the past two weeks.

Our job was a two week documentary about Coal Energy for Electric Power. We travelled across the entire country, from New York to Madison, Wisconsin, to Salt Lake City to Dallas to the Grand Canyon to California.

We filmed from helicopters, light aircraft, to deep inside coal mines, inside generators, power plants, control rooms, strip mines.

Temperatures ranged from 30 below zero to 75 above, from very dry to extremely humid conditions.

Having stated the conditions under which the camera was used, I can unequivocally say that the Arri SR is a dream camera which is a breakthrough in our 16mm documentary field.

The features we appreciated most were: light weight, easy to carry, fantastic for hand-holding.

Fibre-optic viewing system is excellent—bright and easy to focus.

The orientable viewfinder enabled us to get a multitude of angles previously unheard of: low shots at floor level, moving shots through control panels and along the inside of turbine generators. The director also appreciated the viewfinder—he could view the

scene while standing on camera right by flipping the eyepiece over.

The flat bottom is very convenient, both for setting the camera down, and for shooting from desks, chairs, walls, etc. when a tripod is not available.

The magazines are easy to thread, and the coaxial configuration very good—each side can be cleaned after each roll, which is very important when shooting with 7247. Changing magazines is a snap, and removing the magazine to check the gate for dust and dirt is easy.

The APEC, once we got used to its simplicity, and were convinced of its accuracy, was very helpful, and speeded up the process from set-up to shooting.

The whole camera is beautifully engineered and manufactured. We had not a single problem, not a single faulty part. The footage that has come back—about 12,000'—is very sharp, without a scratch, and very clean.

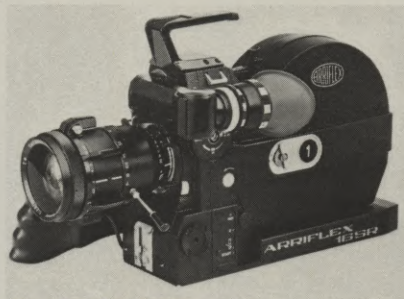
It was a pleasure to have worked with the SR, and we look forward to purchasing one soon.

Again, many thanks for all your help.

Sincerely yours,

Jon Fauer

This letter is typical of reports coming into us from cinematographers and film producers working with the 16SR Arriflex, all over the world.



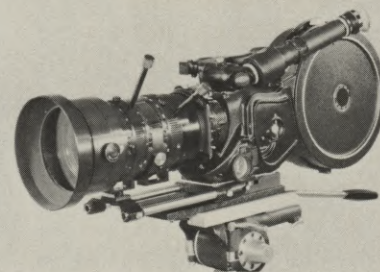
New Arriflex 16SR camera.

Over twenty-five (25) 16SR's were used to cover the recent Olympics at Innsbruck, Austria, without a single camera problem during the entire event, in spite of the sometimes rather rough handling and the extremely cold temperatures.

Currently, 16SR's are in wide use in Europe and are starting to be delivered in the United States as well. A number of 16SR

cameras are in major U.S. rental organizations, and we have already delivered many additional 16SR's to film production companies who have purchased them.

WQED-TV's Roy Brubaker and cameraman Norris Brock selected two Arriflex 16SR's for the filming of a National Geographic documentary tracing the migration of the Polynesian Islands, sailing on a tiny double (catamaran type) canoe. We'll bring you a report on this very interesting assignment as soon as the crew and equipment are safely back on land.



35BL with Zoom housing, finder extender and 1000 ft. magazine.

NEW ZOOM LENS HOUSINGS FOR THE 35BL

This new accessory extends the use of the 35BL Arriflex, equipped with a zoom lens, into extremely critical, synch-sound applications.

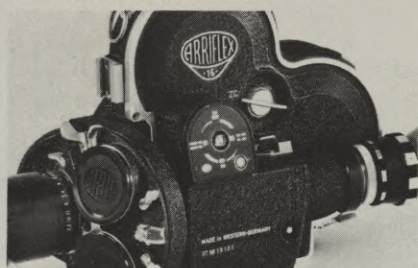
There are two housings designed for both the 25-250mm and the 20-120mm Angenieux zoom lenses, each new lens housing is precision built to couple zoom, focus and iris adjustments to external controls.

Lenses can be mounted in the zoom housings quickly and easily, and without tools.

Price and delivery information can be obtained from our office, or any Arriflex dealer. Don't forget other important and useful recent additions to the 35BL, such as the 9" Finder Extender, the Variable Speed Accessory and the new "High Torque" 14.4 volt HVA Batteries.

APEC FOR 16S CAMERAS

ARRI Precision Exposure Control, originally available only in the 16BL Arriflex cameras, can now be supplied as a factory installed option on new 16S/B cameras. APEC is also available for earlier 16S Arriflexes (serial numbers 12001 or higher), as a complete door assembly, for installation by Arriflex in the United States.



The 16S APEC, like the 16BL's, provides continuous exposure information in the view-finder area. Displayed next to the ground-glass on an expanded scale, APEC indicates optimum exposure, and up to two stops above and below. ASA film speed indexes range up to 1000 ASA.

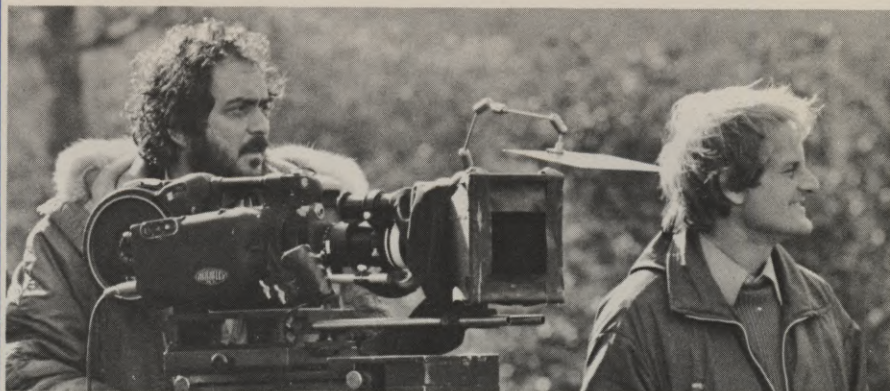
Built into the reflex view-finder, APEC provides true behind-the-lens measurements and automatically compensates for variations in lens transmission, lens and filter factors.

There is an unlimited variety of applications for APEC, and you will find it particularly valuable for extreme close-ups, macro and micro-cinematography, extreme telephoto and aerial filming.



SKY'S THE LIMIT, ARRI-RENTAL, MUNICH

It's up, up and away in ARRI's Munich rental department's latest acquisition, a Bell Jet Ranger.



Stanley Kubrick, the 35 BL Arriflex, and Director of Photography John Alcott on the "Barry Lyndon" production.

"A CAMERAMAN'S CAMERA" —JOHN ALCOTT

The American Cinematographer Magazine recently contained an interview with Director of Photography John Alcott, whose superb cinematography in *Barry Lyndon* won him an Academy award.

ARRI's new helicopter is equipped with Continental camera-mounts and an experienced staff camera-pilot, to provide film-makers using the Munich Rental facility with the finest aerial-filming support.

Being able to supply it's own aircraft and staff pilot emphasizes the rental division's capability to totally equip a motion picture production.

Producers filming abroad agree ARRI's rental department is one of the largest and best maintained in Europe, and this coupled with ARRI factory back-up is a winning combination, hard to beat.

If you anticipate filming in Europe, write for the ARRI rental catalog. It can be obtained at either of the following addresses:

ARNOLD & RICHTER KG/RENTAL
DEPARTMENT
CONTACT: HEINZ FELDHAUS
8 MUNICH 40 WEST GERMANY,
TURKENSTRASSE 89
OR
ARRIFLEX COMPANY OF AMERICA
PO Box 1102
WOODSIDE, NEW YORK 11377

During the course of this interview, Alcott is quoted as saying, "Incidentally, we used the Arriflex 35BL all the way through the picture." And when Alcott was then asked to give his impression of that camera his answer was, "I think it's a fantastic camera. To me, it's a cameraman's camera . . .".

After all the years of design and development and testing that went into the 35BL, we are pleased to read reports like this. We think you would like to know that Alcott's opinion of the 35BL is shared by cinematographers all over the world.

The 35BL Arriflex was introduced only a little over four years ago, yet nearly as many 35BLs are already on film productions as the total number of Mitchell BNC cameras ever manufactured. The BNC first became available in the late 1920's.

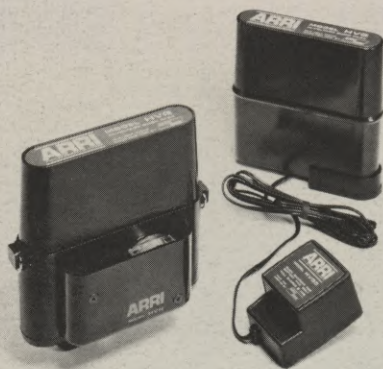
A NOTE TO USED OR NEW EQUIPMENT BUYERS:

Before purchasing a new or used Arriflex camera from a private party you have not dealt with before, it pays to check with our New York sales office to verify its legitimacy.

Be sure the equipment has been properly imported through us and all applicable duties have been paid. Only if the camera is registered with us, are you protected for warranty service.

We also carry a central file on all equipment that have been reported stolen over the years.

So, protect yourself by making just one phone call to (212)-932-3403, Arriflex, New York.



NEW LINE OF ARRI HI-TORQUE NI-CAD BATTERIES

Representing the latest in advanced nickel-cadmium battery technology, the HVQ and 8/16Q hi-torque batteries were designed especially for Arriflex cameras. They employ the latest G.E. premium gold-top C/3 heavy duty, high temperature cells to assure maximum power reliability in a wide range of environmental and temperature conditions.

All cells are spot welded together and mounted onto a printed circuit contact plate. All contacts are silver coated for lowest resistance and against corrosion. The entire cell and contact block is encased in a slim, high-impact lexan case which is virtually indestructible under normal use.

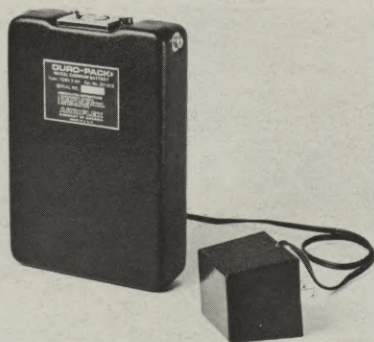
Both batteries can be fully recharged in 5 hours without being sensitive to over-charging.

HVQ Battery 14.4V: This battery, measuring only 1½" x 5½" x 5", was specifically designed for use with the Arri 35BL and 16BL cameras. It delivers about 20% more voltage than conventional 12V batteries of two or four times its size, thus increasing motor torque significantly. This is especially important in low temperature environments or when large capacity magazines are being used.

8/16Q Battery: The new 8/16Q battery, designed the same way as the HVQ, is the smallest, lightest, and most portable power supply for both

the Arriflex 35IIC and Arriflex 16/S-M camera systems. It delivers either 8V or 16V at the flick of a switch and can be recharged in the same quick 5 hours as the HVQ.

Both batteries have "charge-condition-indicators" in their respective holders as well as charge indicator lights in their chargers which operate from 110-120 and 220-240 volts 50/60 Hz power lines.



ARRI DURO-PACK 8/12V N/C BATTERIES SPECIAL SALE

Prior to the availability of the new high performance Q series batteries described above, our Duro-Pack batteries were top-of-the-line.

They are one generation earlier, in our continually advancing technology, but still an excellent product. These Duro-Pack batteries were designed to supply 8 or 12 volts, giving them an extra advantage, and they are compatible with most 16mm and 35mm Arriflex cameras.

We have a limited amount of these fine batteries left in stock, available at greatly reduced prices. This is an excellent opportunity to pick up some spares at an excellent saving.

8/12 VOLT BATTERY ELIMINATOR



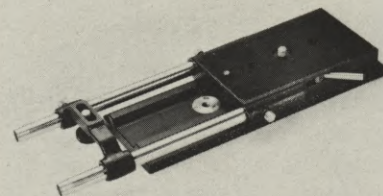
The Duro-Pack power supply offers a convenient way to operate Arriflex cameras from an AC

power line, on interior locations or other similar situations, eliminating the need for batteries. It is solidly built, mechanically and electrically, and will perform reliably under hard production use.

DC output is ripple free and well regulated. Voltage will not be significantly affected by variations in camera load or power line changes. At \$350.00, this is a very useful item.

NEW MULTI-PURPOSE BRIDGE PLATE

This new Arriflex bridge plate is a highly functional accessory, invaluable in all camera set-ups that involve long or heavy lenses, extra large magazines, or large studio-type matte-boxes.



It accommodates any flat-bed Arriflex camera including the 35BL with a zoom lens and 1000-foot magazine.

FILMING ABROAD?

Before leaving for a filming assignment abroad, check with us for the address of the Arriflex agent closest to your projected location. He probably can save you time and frustration in the event you run into additional equipment requirements or production problems.

The ARRI News Update is published periodically by the Arriflex Company of America. All inquiries for comprehensive technical information or additional copies of News Update should be directed to:

ARRI

Arriflex Company of America

25-20 Brooklyn-Queens Expressway West
Woodside, N.Y. 11377 (212) 932-3403

OR:

1011 Chestnut Street
Burbank, California 91502 (213) 845-7687

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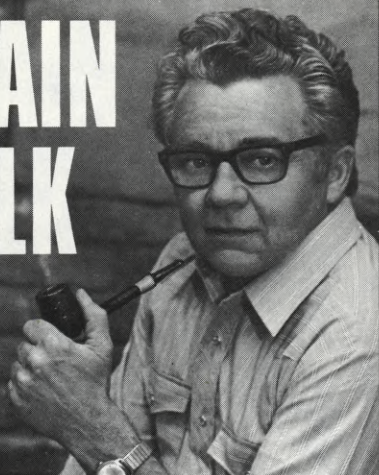
importance because of its attention to detail and devoted customer service. All camera originals—whether Eastman Kodak or Fuji—preflashing, postflashing, forced developing, dailies, release printing, CRI liquid gate blowups—whatever your processing need—Movielab can do it.

If you want special handling for your special footage, don't gamble, pick a winner. Send it to Movielab. We'll treat it right.



It's all the little things we do that make us big.

PLAIN TALK



by *J. Carl Treise*

**"Modular design works
fine... if everything
else is right"**

We're hearing a lot these days about "modular design."

It's a good concept. The manufacturer creates a basic "building block" and then repeats it as often as needed to get the desired result.

Modular design is ideal, because it's flexible. But, to work properly, it must have an equally flexible support system.

For example, if you want a processor with more film capacity, you add more tanks, right? — But that's not enough. In order for the unit to work properly, you must also lengthen the drive train, enlarge the drying capacity, add more power, etc.

Get the picture?

In other words, whenever a processor manufacturer changes the number or arrangement of modules, he has to change the support system itself to provide the proper base. If his system is flexible and designed so that parts can be added or removed without losing efficiency, you're in clover.

Otherwise, you'll pay through the nose for a good concept, but a lousy operating unit.

QUESTIONS & ANSWERS

Conducted by CHARLES G. CLARKE, ASC.
and WINTON HOCH, ASC.

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



Q I would like to record on film a portion of a television program to be used in a picture I am making. I have seen this done many times in the movies and thought I would like to copy the idea in our school film project; how is this done?

A This particular problem is covered very nicely in our AMERICAN CINEMATOGRAPHER MANUAL in a rather comprehensive article written by Eliot Bliss. The following paragraphs are taken from that article but do not begin to cover all the variables necessary to understand your task.

"Since standard broadcast TV pictures occur at a rate of 30 frames per second and standard sound on film pictures occurs at a rate of 24 frames per second, it is obvious that the rate at which the TV pictures occur must be converted to "fit" the film system. Note that 24 is equal to 4/5 of 30. This is the basis of the methods of conversion employed. Remember that a single field consists of every other scanned line from top to bottom of the picture. Therefore, one TV frame (two fields) out of every five TV frames (ten fields) must be thrown away (not photographed) with the result that for every five TV frames, four motion picture frames will be recorded.

"Because of the conversion from 30 TV pictures to 24 film pictures per second, a splice may occur in the middle of every other film frame. The splice results from using the top half portion of one field to mate with the bottom half portion of a later field to make one complete field on that particular film frame. Systems which record all 30 frames and skip print the negative to obtain 24 frames, or cameras which will pull down in blanking time and throw away (do not photograph) every fifth TV frame — avoid this problem. Skip printing, however, has an economic factor to be weighed because optical printing is considerably more expensive than continuous contact printing."

Q I see the term "flashing" used in articles from time to time and I

would like to know what it is and why it is used?

A "Flashing" is done to control contrast in-the-negative. "Flashing" is providing an additional amount of overall exposure to the negative, either by pre-exposing it to a controlled amount of light before exposure or post-exposing it after exposure. This process is analogous to adjusting lighting ratio by the addition of fill light, where the addition of the fill does not change the basic exposure of the scene, but changes the brightness ratio between the lighter and darker areas to a more manageable or desirable one. In addition, flashing tends to make all the colors more pastel, as it adds an overall white light to all areas, thus lightening the values of all of the colors.

Q What splicing system would you recommend to give the least possible problems when using 16mm Ektachrome with magnetic stripe applied prior to developing?

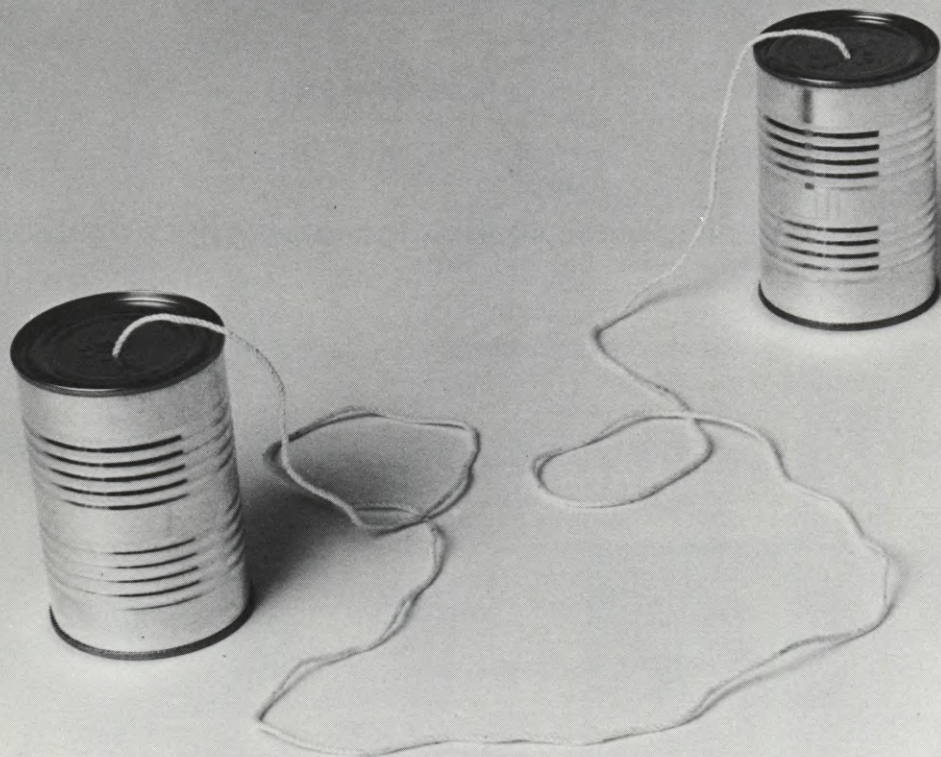
A The correct professional method of splicing pre-stripped 16mm Ektachrome Film is to use a Bell and Howell foot splicer (or equivalent) equipped with blades that not only permit scraping the emulsion from the film held in the left side but also the base side of the film which is clamped in the right side. The magnetic stripe is on the base and must be removed by scraping to permit a secure bond to be effected by the solvents which constitute the film "cement".

In the absence of a splicing machine equipped with appropriate blades on the right side as described above, it is possible to scrape the base side of the right-hand film by temporarily placing it emulsion down in the left-hand side of the splicing machine. It would be well to practice this technique under white light illumination with waste film before attempting to splice undeveloped film in the dark. (This question and answer has been repeated in this column due to repeated telephonic questions in the past few months.)

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WIDENING THE GAP IN SOUND TECHNOLOGY.

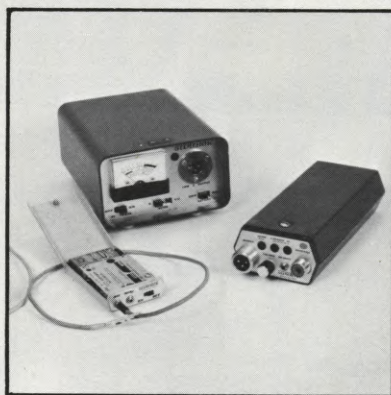


The Swintek Wireless Microphone Systems are putting a lot of distance between transmitter and receiver these days . . . up to 1/4 mile on a clear channel. And all with the utmost in dependability and quality sound reproduction.

Employing state-of-the-art solid state, circuitry, Swintek has developed three new systems for versatility and adaptability — The Mark 6 Hitchiker, the Mark 3H (self-contained), and the new, broadcast-licensable Mark 7. All three systems feature a mini-sized transmitter weighing only five ounces which is capable of being concealed anywhere. The transmitter will accept any microphone and can phantom power the new electret condenser mikes. The receivers can be installed on a variety of

cameras, recorders and video back packs. Audio modulation, field strength and battery condition are prominently displayed on an LED front panel.

The typical signal-to-noise ratio with the Swintek systems is over 60dB. And with a choice of Hi-band frequencies from 150 to 220Mhz, they are virtually free of static, dead spots and interference. Swintek also offers an exclusive crystal front-end, limiting interference and allowing the use of two or more units within 50Khz and within close proximity. So if you find yourself bridging the sound gap a little too often, look into the Swintek Wireless Microphone Systems at one of these exclusive distributors. For pure sound and portability, you can't beat Swintek.



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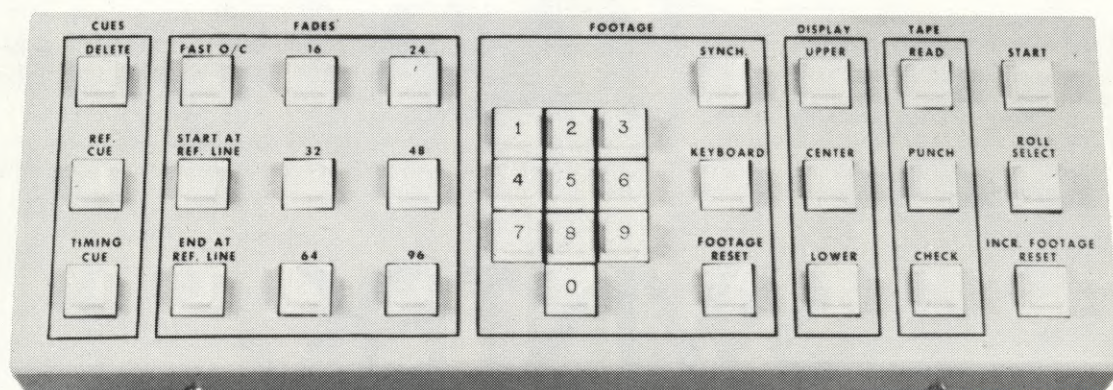
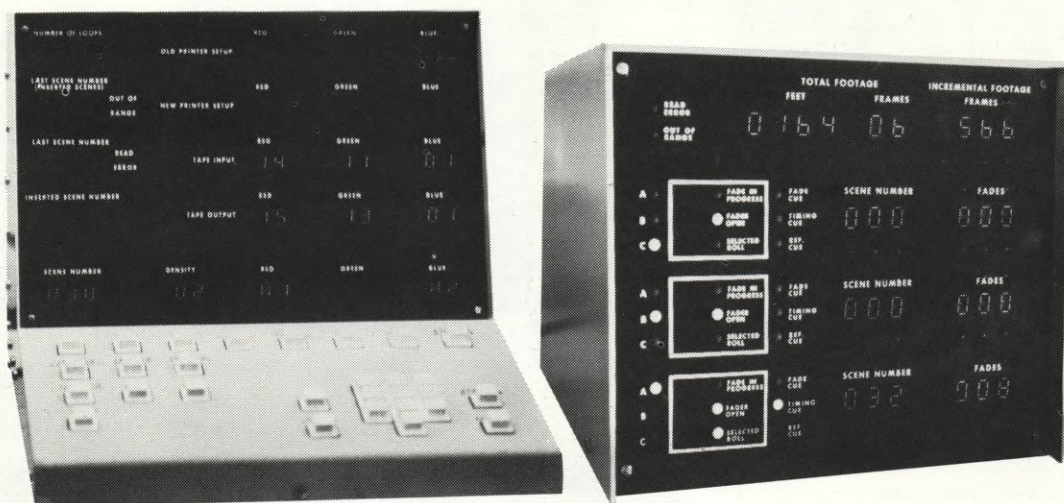
No Notches...No Metallic Tabs...Nothing touches your negative.

The proof is in the spotless condition of the answer print. But don't just take our word for it. Try it! You'll agree, there's nothing in the industry like it. Call Bob Smith for further information.

*Pat. Pending



the CLEAN way to 7247 answer prints

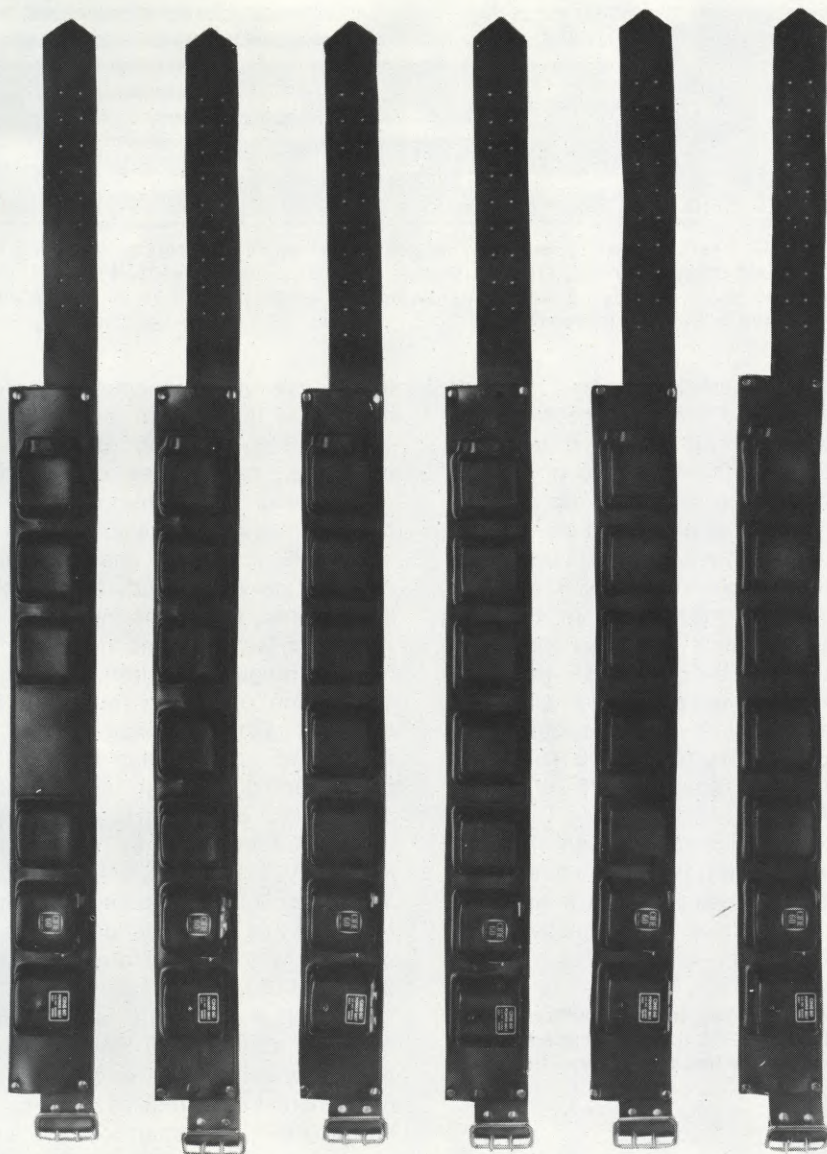


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CINEMA WORKSHOP



By ANTON WILSON

SOUND BASICS

Some time ago we discussed the practical aspects of sound recording, including tape recorder alignment, microphone selection, bias adjustment, et cetera. Since that time I have received requests for a discussion of sound theory basics. A good understanding of audio fundamentals will undoubtedly improve the quality of recordings, as well as suggested solutions to specific problems that crop up on location.

The most often mentioned audio specification must be "frequency response". Whether it be an audio amplifier, speaker, or tape recorder, the question of frequency response will most probably be posed first. This specification alludes to the range of frequencies from the lowest notes to the highest that the piece of equipment or tape/track can handle. This specification has little meaning if deviation limits are not given. For example, in FIGURE 1, both manufacturers claim 20-20,000 Hz. frequency response, which is excellent and, for all practical purposes, the ultimate frequency range. Most adults can't even hear frequencies as high as 20,000 Hz. and a range of 20-16,000 Hz. is in most cases

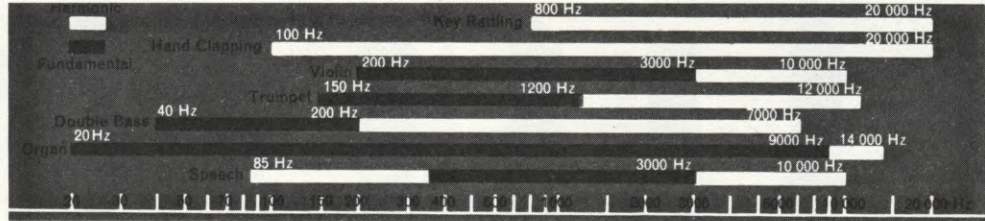


FIGURE 2 — Chart illustrating frequency ranges of various sound sources, including Key Rattling, Hand Clapping, Violin, Trumpet, Double Bass, Organ and Speech. While the range of 20-20,000 Hz. is considered the full human hearing range, most important audio information occurs in the lower frequencies.

considered perfect. However, a closer look at FIGURE 1 reveals that the curve for item B rolls off severely at the upper and lower ends of the frequency range. At 20 Hz. and at 20,000 Hz. the response is down almost 10 db. Item A, on the other hand, exhibits a very "flat" response curve. When response limits are quoted, the difference between these two items becomes apparent. Most often the response limits of professional equipment are ± 1 or ± 2 dB. With limits of ± 1 dB. deviation, item B becomes only 100-10,000 Hz. ± 1 dB, while item A remains at 20-20,000 Hz. ± 1 dB.

The specifications of an item indicate only its maximum capabilities. There are cases in which a wide frequency response is not necessary or

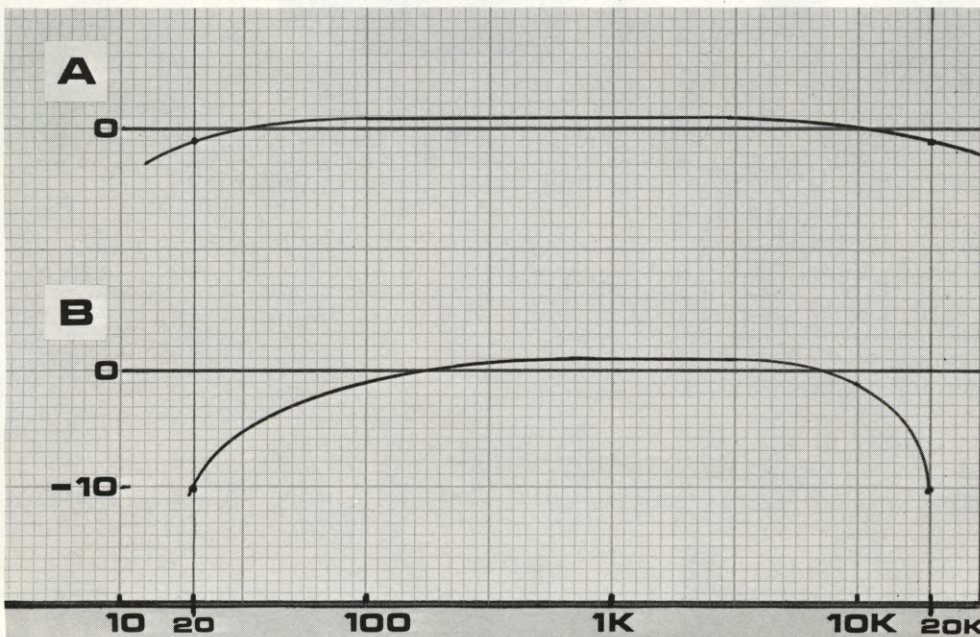
even desirable. The sound recordist must know the frequency range of the subject he is recording, as well as the frequency capabilities of the final product such as a 16mm optical track or a 35mm magnetic track, et cetera.

FIGURE 2 shows the frequency range of several sounds and musical instruments. While the range of 20-20,000 Hz. is considered the full human hearing range, most important audio information occurs in the lower frequencies. With the exception of the organ and several deep bass instruments, most musical fundamentals occur in the 50-5,000 Hz. range. Even the violin, considered by most a "high frequency" instrument, only extends to 3,000 Hz. in the fundamental range. Note also that speech fundamentals fall within a very limited range of about 300-to-3,000 Hz.

With few exceptions, the frequencies above 5,000 Hz. are essentially harmonics or "overtones" of the fundamental frequencies. I am not implying that these harmonics are unimportant. The entire high-fidelity industry is based on preserving and reproducing these harmonics to the limits of audibility. These harmonics add to the unique "sound" of each particular instrument. A "low-fidelity" system that did not reproduce high-frequency harmonics would sound relatively dull and flat. However, these harmonics are usually very low-energy signals compared with the fundamental notes and, thus, comprise only a small portion of the overall signal for most instruments (usually only 5% to 20%). While the loss of the high-frequency components of the signal will undoubtedly knock some of the "bril-

Continued on Page 818

FIGURE 1 — Both A and B claim 20-20,000 Hz. frequency response. However, with ± 1 db tolerance, A remains at 20-20,000 Hz., while B is actually 100-10,000 Hz. This diagram reveals that item B rolls off severely at the upper and lower ends of the frequency range. Item A, on the other hand, exhibits a very "flat" response curve.



INTRODUCING THE CANON ULTRA-FAST ASPHERIC PRIME LENSES FOR 35MM CINEMATOGRAPHY

Specifically designed for professional cinematography, these exciting new lenses are the result of an extensive and painstaking research program jointly undertaken by Canon Inc. and Cinema Products Corporation, in cooperation with the Research Center of the Association of Motion Picture and Television Producers.

Naturally, these lenses incorporate all the latest advances in modern lens technology, including multiple anti-reflective coatings on all elements, floating elements wherever required, etc.

But it is the *aspheric* property of these lenses that makes them so extraordinary — because aspheric lens design is inherently superior to conventional lens design since it permits the best possible use of all available light.

And, unlike any other series of high speed lenses currently available for motion picture use, every lens in the Canon series is aspheric.

The technological breakthrough

While the theory for the design of aspheric lenses has been known for quite some time[†], it was not until the advent of modern computer technology and the development of computer-controlled automated machinery that it became possible to design and grind aspheric lenses in such a way as to permit *consistent high quality manufacture at a reasonable cost.*

Which is what prompted Canon and Cinema Products to launch a development program for a series of ultra-high-speed aspheric prime lenses, all supplied with BNCR-type mounts, and covering the range of focal lengths most used in professional cinematography: 24mm, 35mm, 55mm and 85mm.

A great deal of money, time and effort went into this program. The final results are more than well worth it.

Aspherics — ideal for filming at all light levels

By causing the marginal rays to be in sharp focus, and, at the same time, rejecting random or spurious rays, the Canon aspheric lenses improve definition and sharpness at the edges and reduce flare when the lens is *wide open.*

Shooting night-for-night with available light — the aspheric lens wide open — at 25 footcandles and even



24mm (T1.6)



35mm (T1.4)



55mm (T1.4)



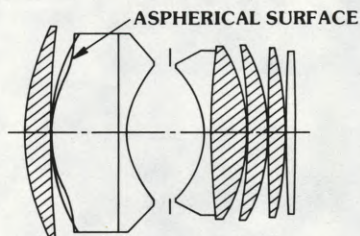
85mm (T1.4)

lower, with nothing but neon signs and street lamps for illumination, there's virtually no halation. The Canon aspherics just take the light in: penetrating the scene, holding all the detail.

The Canon aspheric lenses minimize uncontrollable flare (with its concomitant loss in contrast and resolution) and improve the definition and contrast of the scene *regardless of variation of light levels within the scene.* Even at the highest levels of illumination.

The result on film is photography that is remarkably clear and sharp, well defined and well balanced, with good color rendition and saturation, especially with regard to flesh tones.

Which makes the Canon aspheric lenses ideal for filming under any and all light conditions. Night-for-night with available light, as well as in broad daylight, or on a well lit sound stage.



Arrow points to aspherical surface. The deviation from the normal spherical curve is exaggerated for illustrative purposes.

Let your eyes convince you

Ask your dealer (or call Cinema Products) to arrange for a screening of our dramatic 35mm test reel comparing the Canon aspherics with other high speed lenses for motion picture use.

Before you start on your next film project, shoot some test film of your own.

Your eyes will convince you. The Canon aspheric prime lenses are superior to any other high speed lenses currently available for 35mm cinematography.



XR35
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Studio Camera with
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[†]Descartes, the French philosopher and mathematician, had already suggested that the use of non-spherical surfaces might reduce optical aberration. That was way back in 1638.

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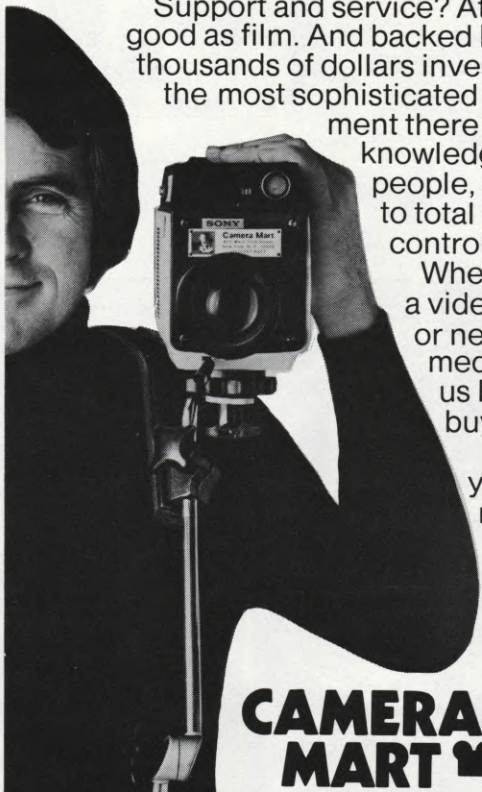
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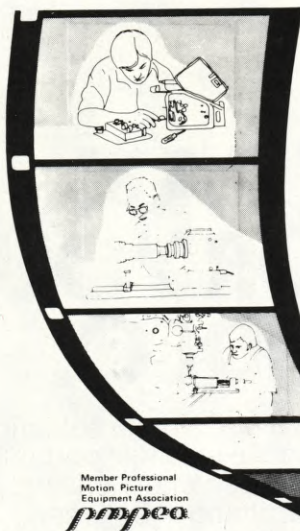
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THE BOOKSHELF

By GEORGE L. GEORGE

TECHNIQUES AND REFERENCES

In awareness of the methods that hold the attention of movie audiences, INTO FILM authors Lawrence Goldstein and Jay Kaufman range widely among the various elements of production. Their exploration stresses two particular stages, photography and editing, the key areas of creativity where the artistic imagination of the craftsman can reach its fullest scope. It is the authors' thorough understanding of film mechanics and esthetics that makes their book both useful and stimulating. (Dutton \$19.95)

Charles Spencer's study, CECIL BEATON: STAGE AND SCREEN DESIGNS, happily combines an appreciation of the artist's work with a number of magnificently reproduced samples. Whether in subtle b&w or exquisite color, such successful creations as the costumes and sets for the films *Gigi* and *My Fair Lady* testify to Beaton's masterful touch. (St. Martin's \$17.50)

The American Film Institute has just issued the second 2-vol. segment of its Catalog, an ambitious project to compile a definitive record of U.S. cinema history since 1893. FEATURE FILMS 1961-1970 covers some 5800 movies produced or released in our country during that period, with full cast-&-credits, production and release data, literary origin, genre, and a plot synopsis. This scholarly work is an indispensable and unequalled source for research and reference. (Bowker \$90.)

In the 1975-76 edition of F. Maurice Speed's annual chronicle, FILM REVIEW, a comprehensive appraisal of the world's production is offered in detailed articles, extended statistics and superb stills. (Transatlantic Arts \$12.50)

* * *

THE DIRECTORS' CRAFT

Admittedly the most original and the most unconventional among great contemporary directors, LUIS BUNUEL is discussed in a sensitive in-depth critical biography by Francisco Aranda. The Bunuelian concepts of violence, religion, sexual aberration and surrealist imagery, recurrent in his films, are extensively analyzed in this classic study, now at last translated from the Spanish. (Da Capo \$4.95)

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A perceptive appraisal of *Nashville's* director by Michael Wood appears in *AMERICAN REVIEW* 24. Entitled "The Two Altmans," the article cleverly contrasts the duality of the director's presentation of the social reality of our country: its alternating lightheartedness and gloom. (Bantam \$2.45)

Joshua Logan, whose films (*Picnic*, *Bus Stop*, *Camelot*) and plays (*South Pacific*, *The World of Susie Wong*) have made him one of our more versatile directors, has written a frankly personal autobiography, *JOSH: MY UP AND DOWN, IN AND OUT LIFE*. His public acclaim and his private torment — a manic depressive disorder — make his memoir an extraordinarily moving document. (Delacorte \$10.)

* * *

PERSONALITIES PLUS

Some of the late Howard Hughes' peculiarities — in this instance a mild form of paranoia — are revealed in *I CAUGHT FLIES FOR HOWARD HUGHES* by Ron Kistler, his bodyguard and general factotum for many years. The book is truly astounding in its revelations of the billionaire's public behavior and private habits, some of them hardly fit to print, but certainly worth reading about no matter how incredible they may seem. (Playboy \$7.95)

Novelist James Baldwin also seems to have quite a few private demons to exorcise. In *THE DEVIL FINDS WORK*, he airs the deep traumas that plagued his youth, inflicted in the main by the racist slant of the movies he saw during his formative years, and the films he later became involved in during his brief Hollywood stint. Eloquent and denunciatory, the book reveals the anguish of a troubled soul. (Dial \$6.95)

The happy and immensely successful career and private lives of a celebrated movie couple (*not* married to each other) is told in *THE FILMS OF JEANETTE MacDONALD AND NELSON EDDY* by Eleanor Knowles.

This impressive and engaging volume, abundantly illustrated, follows the singers' respective lives in elaborate detail, with full data on the 40 films in which they appeared. (Barnes \$25.)

Mary Martin, who grew up as a Texas tomboy and became a highly acclaimed stage and screen musical star, has written an autobiography, *MY HEART BELONGS*, in which she reminisces about her career and her family life with delightful warmth and a touch of nostalgia. (Morrow \$8.95)

An enthusiastic admirer of Bing Crosby, freelance journalist Charles Thompson offers in *BING* an entertaining biography of the crooner celebrating 50 years of his hero's popular career. Numerous pictures add to the book's appeal. (McKay \$8.95)

In *THE LIFE AND LOVES OF GABLE*, Jack Scagnetti gives a personalized account of the professional and romantic life of the star. Gable's 61 movies grossed \$750-million, and his affairs of the heart afford even better copy, as the author makes abundantly clear. A big book, well illustrated, and easy to read. (Jonathan David \$12.50)

* * *

MARILYN MYTHOLOGY (CONT'D)

Legends need the element of speculation to sustain the worshippers' faith, and Marilyn Monroe, the legend, is no exception.

Her first husband James E. Daugherty, an ex-L.A. cop she married in 1942 at age 16 and divorced 4 years later, wonders in print whether they would still be together had fame not overtaken her. His simplistically sentimental memoir, *THE SECRET HAPPINESS OF MARILYN MONROE*, offers genuine insights into their life together. (Playboy \$1.95)

Was Joe DiMaggio flying back to Hollywood to remarry Marilyn at the time she was committing suicide? Such is another speculative theory that Maury Allen embroiders upon in his lively *WHERE HAVE YOU GONE, JOE DiMAGGIO?* The story of Joe's courtship of the star and their bittersweet ménage are evoked with an understanding tinged by unabashed hero worship. (Signet \$1.50)

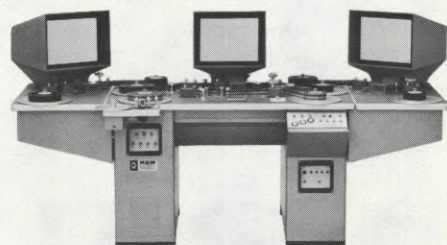
Despite new revelations appearing almost daily in the press, Tony Sciacca raised a legitimate question in *WHO KILLED MARILYN?* Names of high placed politicians are bandied about freely with enough evidence at hand to warrant the many conjectures put forward in this professionally-written volume. (Manor \$1.75)

To Classified Advertisers

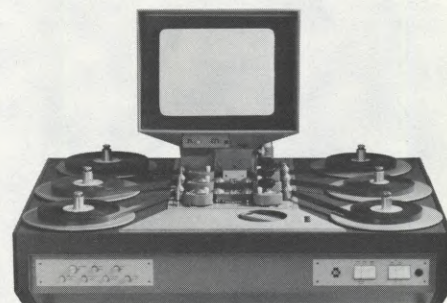
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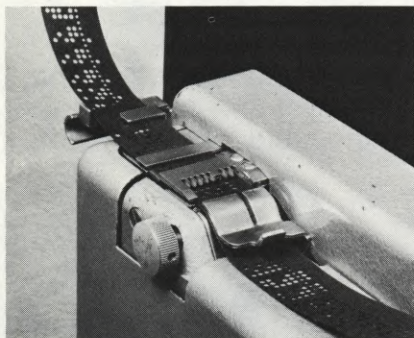
Every function—sensitometric, chemical, chromatic, mechanical, electronic and optical—must be fine-tuned to work best with the others. At CFI, there's a department that does nothing but monitor the whole system, *continually*.

Consistency

A blowup made at CFI benefits from this in two important ways. Benefit One: since it all goes through the one tuned system, quality is *consistently* the best possible.

One Light

For example—nine out of ten CFI blowups can be printed one light. For us, that means the system's working smoothly. For you, it means the job's ready sooner.



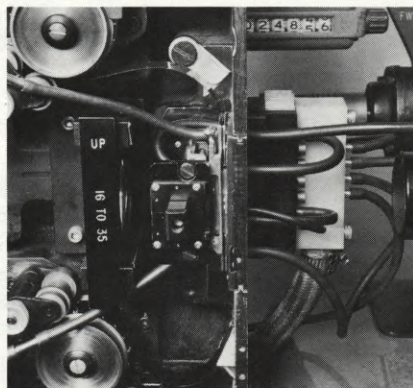
Computer punched tape automatically controls lamphouse timing settings during blowup.

Save Time

Benefit Two: faster service. Because it's all in-house, we can schedule every step whenever we choose—day or night. And our blowup machines are used *only* for blowups (not for titles, etc.). So they're always set up, ready to go.

Liquid Gate

Hiding scratches: some blowup machines coat each frame with liquid just



Rubber tubes pressurize liquid in glass gate. Film is fully immersed during entire exposure.

before it enters the gate. That works well, if the abrasions aren't too deep... At CFI, the film is *completely immersed* in a pressurized, glass-enclosed liquid gate.

Programmed

After timing the original on an electronic video analyzer, we make a 16mm first trial, which the timer corrects. A computer tape of his corrected timing is then fed into the blowup printer's program input.

Academy Award

The printer combines a standard additive-head lamphouse with a patented multicellular optical system. For this combination, (plus the liquid gate and programmed timing), the machine won an Academy Award. Here's why:

Subtle Control

This optical system transmits a great deal of light. That lets us take advantage of the additive head's subtlety (*fifty* timing settings for each of the three primary colors). And it lets us use a slow-speed finegrain internegative—and *still* make a 10 minute blowup from A and B rolls in 2½ hours.

More Awards

Three of this year's films nominated for Academy Awards were blown

up at CFI. A fictional short subject and two documentary features: *Dawn Flight*, *California Reich* and *The Incredible Machine*.

Deadline

"The Academy's delivery deadline was Tuesday at 6 PM. We arrived at CFI on *Monday* morning, with 58 minutes of A/B rolls," says Walter Parkes, who co-produced *California Reich* with Keith Critchlow.

Next Day

"At 5:30 PM the next day," says Mr. Parkes, "We picked up a 5,000 foot one-light 35mm print—and that's what the Academy projected!"

One Roof

Irwin Rosten produced *The Incredible Machine*. "I had the blowup made at CFI because they'd done the 16mm work," he says. "The quality is very, very good."

Service

"We came in with a 750 foot workprint and uncut negative," says Lawrence Lansburgh, who produced *Dawn Flight* with Claire Wiles. "But you'd think we were CFI's biggest customer."

Madman

"Everybody was *enthusiastic*," says Mr. Lansburgh. "The timer kept polishing until I couldn't *see* his changes. A real madman. And the blowup print actually looks better than one made from the camera original!"

CFI

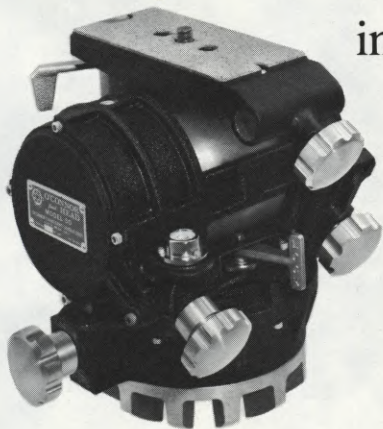
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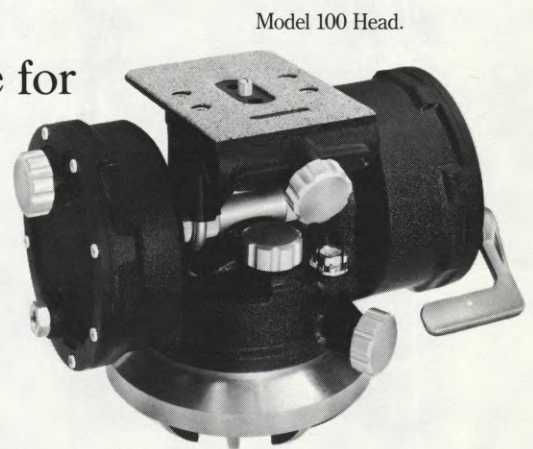
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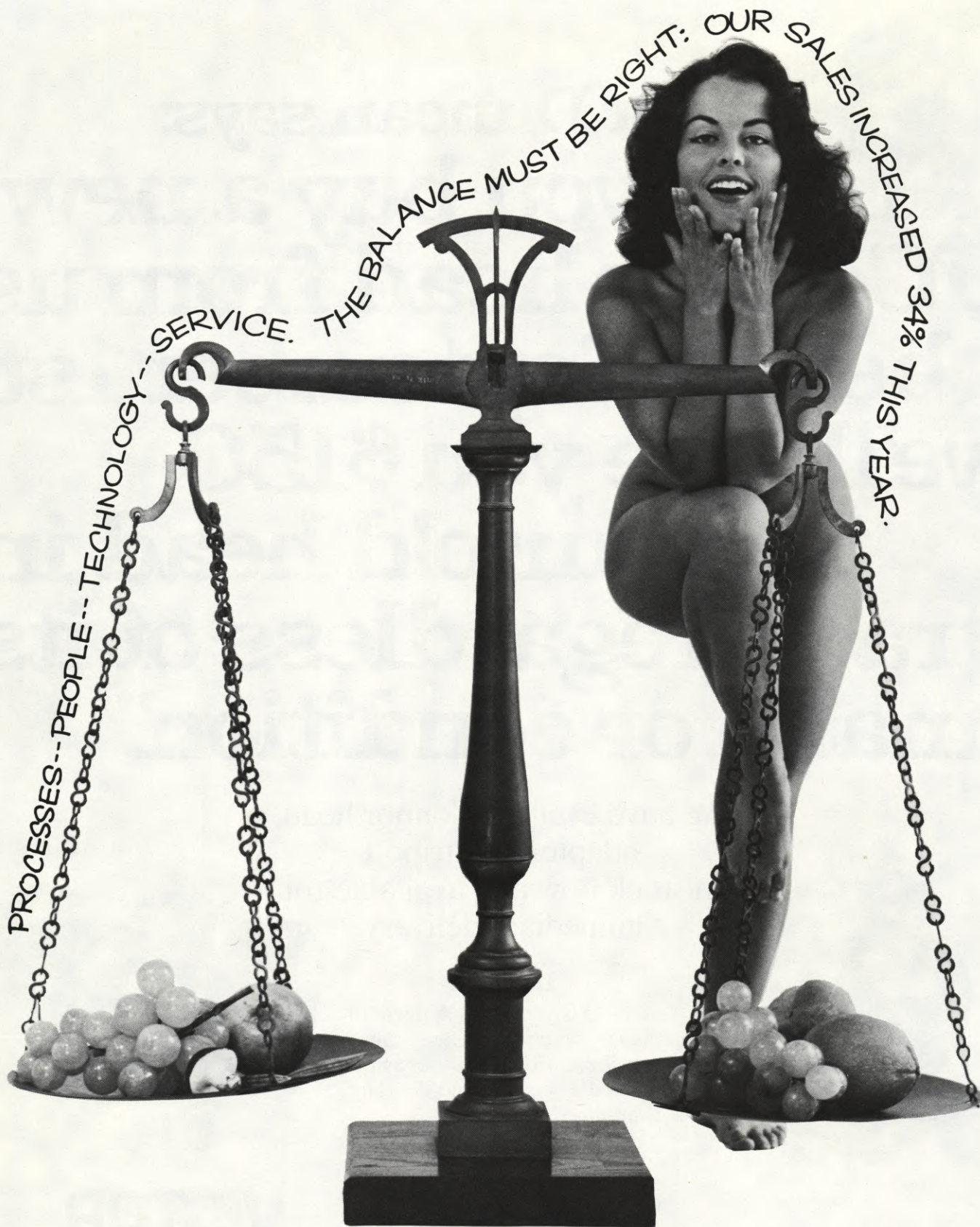
Model 100 Head.

“We’ve tested every brand you can buy,” says Victor Duncan. “In our judgement, the balanced, spring-loaded O’Connor fluid head is unequivocally the best.”

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New ease of assembly

If you're familiar with the Vari-flector, you already know it unrolls like a roll-top desk, becoming rigid by attaching two side channels and a cross bar. But now, the side channels open wide, making the reflector a cinch to insert.



New ruggedness

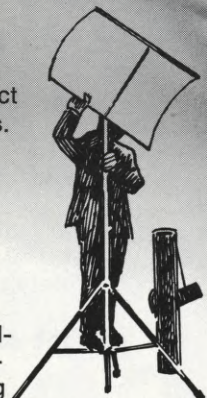
The Vari-flector's channels now clamp shut like a vise. Which, with the added protection of a new cross bar locking lever, increases structural integrity... even in high winds.

As compact as ever

The large Vari-flector II (model 404) and stand fit into a 42 x 7" case. And the smaller unit without stand (model 202) fits into a case only 24 x 4 1/2". Both units are compact enough to take to the most remote locations.

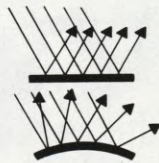
Superior stand-mounting

Rugged, lightweight Vari-flector stand (model VS) assures positive tilting, panning and height adjustment, providing horizontal, vertical and diagonal reflection and flooding. Center spike can be forced into soft ground for added wind stability. Extendable leg levels stand on uneven ground. (Incidentally, many gaffers have taken to using our VS stand for large lights, cutters, etc.)



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Vari-flector's brilliant, extremely even light pattern can be instantly softened and spread out (as much as 3:1) with its finger-operated cam lever.



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Choose from two sizes

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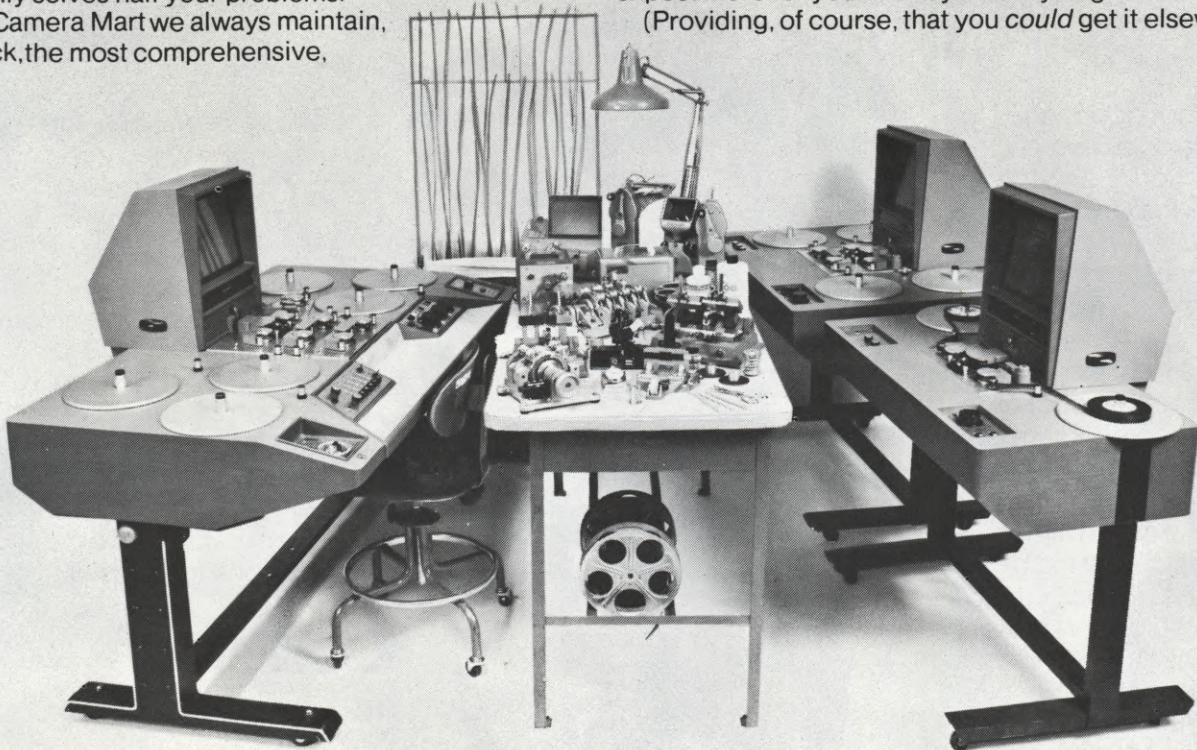
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answer to all these vital considerations is an emphatic yes. What's more, we never let a piece of equipment out of the house unless and until it's been thoroughly checked and re-checked. *Even if it's factory fresh.* Because the best piece of equipment in the world isn't going to do you a bit of good unless it's ready to do the job when it gets to the job. So the next time you come up with an editing problem, come up to Camera Mart. We promise you'll go out the door with a solution.

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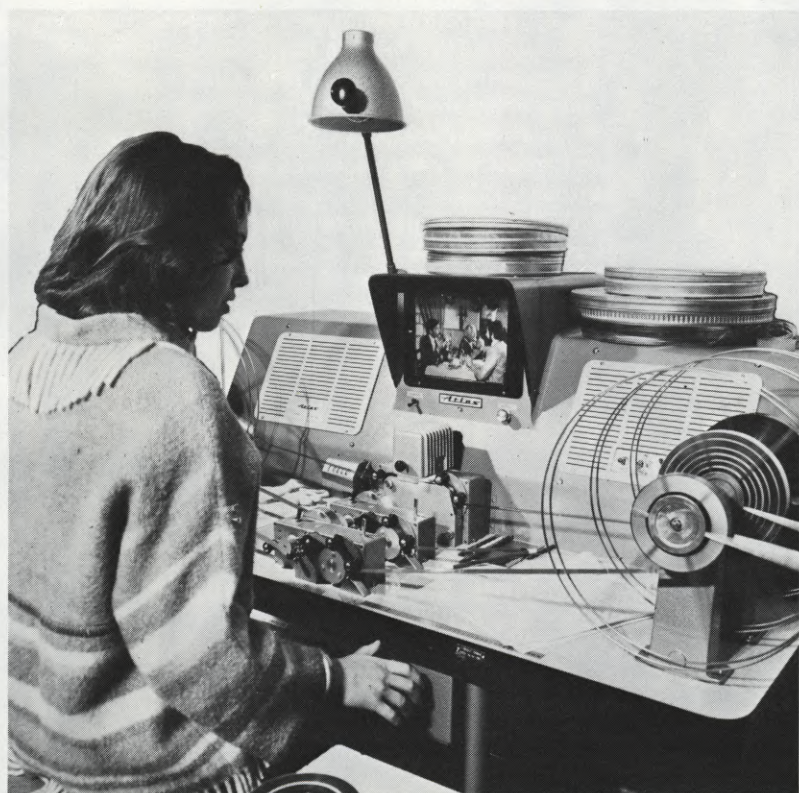
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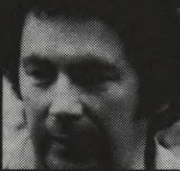
This issue features: PORTRAIT OF FRENCH CANADIAN FILMMAKERS



Monique Champagne



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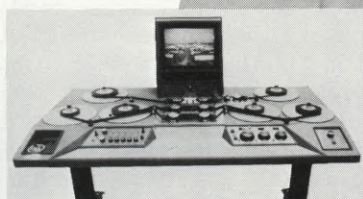
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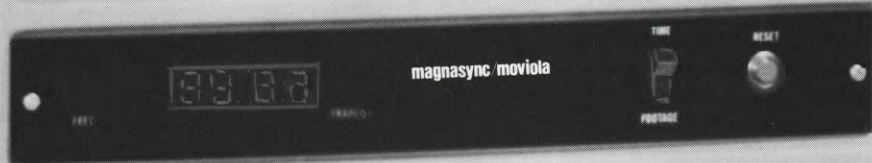


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PHOTOGRAPHING "INDEPENDENCE" WHERE IT HAPPENED



By **OWEN ROIZMAN, ASC**
Director of Photography

It was some time last spring that I received a letter from the Department of the Interior and another letter from John Huston asking me to photograph "INDEPENDENCE", a half-hour picture to commemorate the American Bicentennial. Everybody engaged for the production would be working for union scale and the aim was to get together a very highly qualified cast and crew. Naturally, I accepted, because I loved the idea of working with John Huston (whom I'd never met), plus the fact that I felt it was an opportunity to do something for my country, as we all did.

I met with Huston once and we scouted locations in Philadelphia, mainly around Independence Hall. John said to me: "Come up with some unique photographic style for the picture."

I wracked my brain to try to think of something that would be new and different, but it seemed like everything had been done before. I experimented with different filters to get ghostly effects, because the characters to be represented in the picture — Benjamin Franklin, Thomas Jefferson and George Washington, among others — were to appear somewhat mystically. For this reason, we didn't want them to look contemporary at all. Keeping that

in mind, I made tests and came up with dozens of different things, none of which seemed to be very exciting.

John Huston arrived the night before we were to begin shooting, having been heavily involved in editing "THE MAN WHO WOULD BE KING", and we had another meeting at which he decided to shoot everything before sun-up or after sundown. When the people from the Production Department heard that they came apart. Their mouths fell open, and their wallets, as well. A quick meeting was held about the feasibility of doing the project that way and it was decided that it was absolutely not possible financially. So John said to me: "Well, come up with something, Owen. See you in the morning."

I spent the night thinking about it. The next morning I took a combination of filters I'd experimented with, plus some others, and looked at them by eye. Then, as so often happens on the spot, I made a decision about what to use. I decided on a certain combination of filters and then, as we proceeded into the project and saw dailies, I became bolder and went even heavier with the filtration. I finally hit on one combination that through the lens looked like mush. You couldn't see anything. But on the screen it was just

right, so we continued along those lines.

I did vary the filters from scene to scene, depending upon the situation, but I stuck with basically three combinations. I used all Harrison filters, starting off with a combination of a #2 Low Contrast and #4 Diffusion. Then, when I wanted to go a little bit softer later on, I went to a #2 Low Contrast plus a #5 Diffusion, but the combination that I used the most throughout the filming consisted of a #2 Low Contrast, a #2 Fog and a #4 Diffusion. While I decided on this combination strictly by eye, I knew what the filters would do because of the tests I'd made up front. These were the ones that pleased me the most.

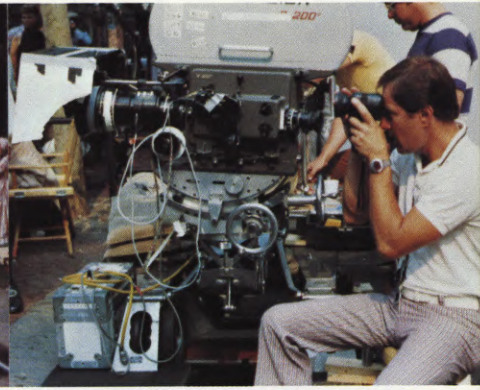
The filter pack varied somewhat depending upon whether it was a cloudy day or a sunny day, whether we were shooting in backlight or overhead light (which was the case very often, because it was summertime and we had straight-down sunlight) or whether it was an interior and windows were involved or not involved.

We had decided at the start to use smoke outside and for certain scenes inside, as well. Of course, when you work with smoke you have to worry about wind and it seemed that we always had wind. Not only that, but the wind seemed to change directions constantly in the Independence Hall area. We'd have a special effects man with a smoke machine really inundate the background with smoke and just when we were ready to go the wind would come up and blow it right out of the scene. Or he would spot the smoke at a certain distance, figuring that it would blow directly into the shot at the right time. Very often that worked, but sometimes, just as the smoke started to drift into the shot, the wind would blow it out again. Consequently, because it was a low-budget project and we couldn't wait for the right light or the right density of smoke all the time, we often had to live with what we were able to get. Under such conditions there was inevitably a problem of matching. However, the nature of the piece dictated that matching wasn't that critical, so we didn't worry about it that much.

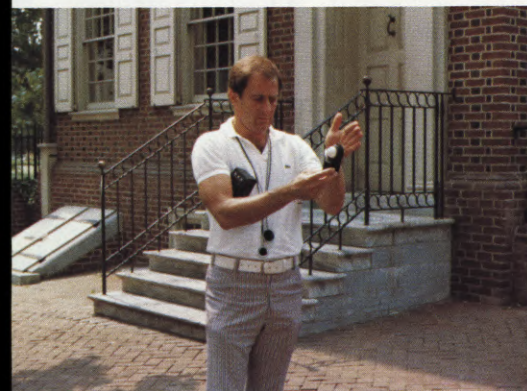
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Lining up for a close shot in Philadelphia's Independence Square, a site alive with American Revolutionary history. The film "INDEPENDENCE" was funded by 20th Century-Fox as the company's tribute to the Bicentennial. It will be shown only in a special small theater at Independence Hall and, being timeless, is expected to be presented for the next 20 years.





(LEFT) Director of Photography Owen Roizman, ASC, cinematographer on such top features as "THE FRENCH CONNECTION" and "THE EXORCIST", confers on the set with the film's famed director, John Huston. (CENTER) One of the many dolly set-ups used to maintain a "fluid" camera. Note wet cement in foreground. It was necessary to wet the cement down before every shot in order to make the mist more realistic. (RIGHT) Checking exposure with Minolta Spot Meter.



(LEFT) Since there were constant changes of light, ranging from full overhead sunlight to heavy overcast, Roizman had to check his exposure constantly. He boldly used an extremely heavy combination of low contrast, fog and diffusion filters, together with smoke, in order to achieve the "mystical" effect that Director Huston wanted. (CENTER) Setting up a long dolly shot. (RIGHT) Director and cinematographer worked together very closely to give the film its unique and effective visual style.

(LEFT) Because of the uncertain weather conditions and constantly changing light, careful pre-planning was required to shoot various scenes at the optimum time of day. Huston would have preferred to shoot everything before dawn or after sunset, but economic considerations made this impossible. (CENTER) Huston explaining essentials of scene to Roizman, while Producer Lloyd Ritter listens. (RIGHT) Roizman checks the light balance for a low camera angle.



(LEFT) Rehearsing one of the long and intricate dolly shots for "INDEPENDENCE". Note the 12 x 12-foot white muslin scrim used to bounce arc light into the scene for fill light. (CENTER) A crew of top actors and technicians worked hard on a very short schedule to shoot the picture, but it was an enjoyable experience for all of them. (RIGHT) Roizman takes a light reading next to Eli Wallach, who plays the role of Benjamin Franklin in the film.



PRODUCING THE IMAX MOTION PICTURE: "TO FLY"



To achieve the greatest possible impact in cinematic celebration of the American Bicentennial, IMAX, the world's largest film format, captures the sweep of the nation's history up to its 200th Birthday

By **GREG MacGILLIVRAY and JIM FREEMAN**

Producers-Directors-Photographers

MacGillivray/Freeman Films, Laguna Beach, Calif.

Several years ago, the Smithsonian Institution envisioned a beautiful theatre for their new National Air and Space Museum located on the mall in Washington, D.C. They wanted this theatre to be an experience of visual and aural effects that would go far beyond normal movie viewing. In order to achieve this goal, they decided on the IMAX system using 70mm film run horizontally through camera and projector. The huge IMAX frame size, equal to nine 35mm frames, provides the sharpest, most steady motion picture image. This incredibly sharp image, projected on a screen the size of a five-story building, combined with a 6-track sound system emanating from 11 different strategically placed speakers, more than fulfills the original vision of the most awe-inspiring motion picture experience.

On July 1, 1976, the motion picture, "TO FLY", opens to the public. It presents one of the most uniquely told stories of the American Bicentennial.

The film is not so much an historic epic as it is a visual, aural experience. In order to produce such a motion picture, Francis Thompson Inc. of New York selected our company of Laguna Beach to produce, direct, photograph, edit and co-script this philosophical story of America. After months of pre-production meetings in New York City with the Thompson organization, Continental Oil Company (the financial benefactor), and the Smithsonian Insti-

tution, the guidelines and story were conceived which would take our company on a year-and-a-half pilgrimage through the vertical and horizontal dimensions of the American experience.

THE STORY

It is significant that IMAX, a com-

pletely new way of experiencing film, should be chosen as the format for the story found in "TO FLY", for its theme is also that of a new way of seeing. This unique film relates how we as Americans have come to have a fresh perspective on ourselves from our various stages in casting off gravity's tight bonds.



(ABOVE RIGHT) Often two IMAX cameras were used in filming "TO FLY", each photographing a different angle or with a different lens, in order to minimize the expense of many takes — one reason the film came in on schedule and under budget. (BELOW LEFT) The film opens with the image occupying only 1/6th of the huge IMAX screen, as a balloonist in 1831 prepares to ascend and float above early America. As he lifts off, the screen opens up to its full size in an explosion of color and movement. (RIGHT) The balloonist launches himself into the sky, as Jim Freeman photographs the scene.



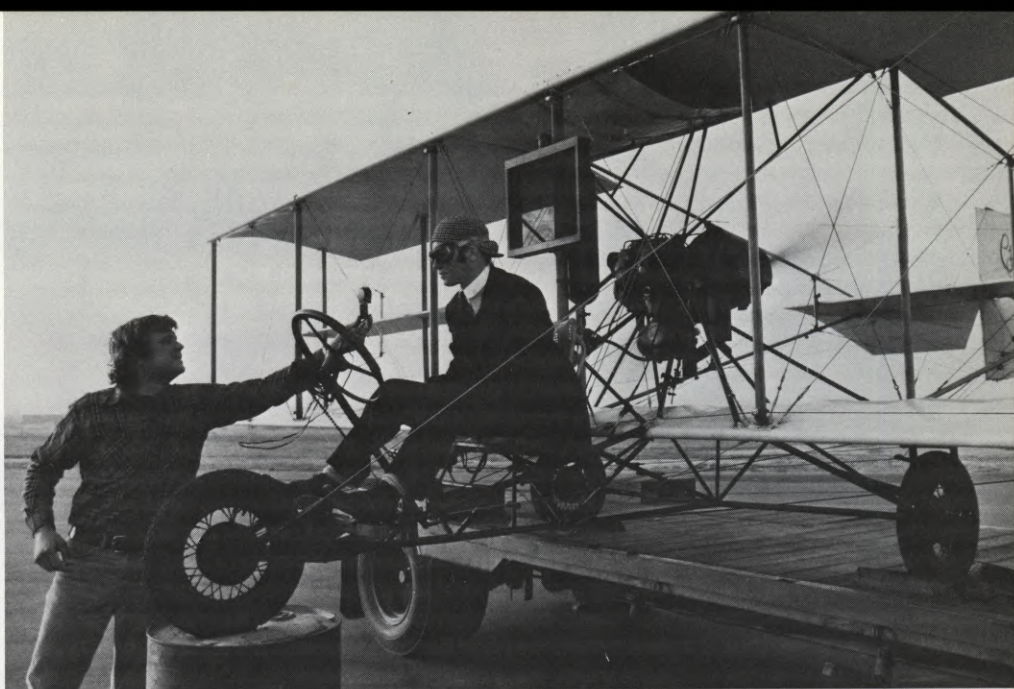
The film begins in 1831 as one of America's first aeronauts prepares to ascend in a gas balloon, float free of earth's gravity and explore the country from a completely novel vantage point. In order to give this early airborne venture from earth its just dramatic impact, the film opens with a limited, confined viewpoint, utilizing only 1/6th of the huge screen's surface. Then, once the aeronaut rises into the sky, the screen opens to its full size, exploding with color and movement, as we, too, experience the unfolding of a new way of seeing: "It was like the opening of a new eye." The balloonist views a world of expanded horizons, a world completely transformed. Our world in the theatre has also expanded, as our senses are aesthetically assaulted by a richness of image and sound never before experienced.

The film's story continues in the full IMAX format, swiftly following the American journey across the wilderness in a Conestoga wagon, stagecoach, train and automobile: knowledge constantly expanding, concepts of distance and time shrinking. However, not until the arrival of the airplane do time and space telescope as never before, drawing the whole world closer. The 28 minutes of "TO FLY" end with our venture into space, where we have finally severed our earthly ties and accepted a new vision, permitting us totally different perceptions of ourselves.

In these vast deeps we may learn a new tenderness for our tiny and fragile earth, and gain the deepest and most valuable knowledge . . . the light we may bring back from the stars.

A NEW WAY OF SEEING

Since the theme of "TO FLY" deals with a completely new way of seeing, the IMAX film format, with its own unique standards of visual aesthetics, becomes the most logical film format. Producing a film in IMAX is completely different from producing a film in any conventional format. It's a whole new way of making movies, because it's a whole new way of seeing movies. The screen at the new Smithsonian Institution is five stories high and 75 feet wide. The audience literally sits immersed in the screen as the "furthest" row from the immense canvas of image is only 75 feet away. Every seat in the theatre is placed to optimize this immediacy with the moving image. The rows of seats are steeply raked, giving each seat a totally unobstructed view of the huge screen. (Just imagine the head of the person in front of you now being on a level with your feet, exposing the whole



(ABOVE) Freeman takes a light reading in preparation for the shooting of a simulated flight of the 1907 classic Curtiss Pusher. The illusion of "in-flight" motion was created by shooting against the sky, with the plane's engine revving in the background and the camera moving in and out on a "rough" dolly. The shot was later intercut with actual flight scenes, in which the plane's owner, famed movie stunt pilot Frank Tallman, did the flying. (BELOW) In sharp contrast, Freeman prepares to lift off to shoot helicopter shots with the IMAX camera.



screen for your own private viewing world.)

The screen size is so enormous that a whole novel set of filming rules needed to be developed, while the old ingrained rules regarding film pacing, camera mobility, framing, the traditional long, medium and close-up shot combination, and other conventional camera techniques needed to be temporarily set aside.

IMAX forces development of at least four new cardinal rules of filmmaking. First, because of the extreme sharpness and size of the image, the

long shot (wide angle) normally used for audience orientation, can be framed even wider.

In IMAX, the extreme long shot is used as both traditional long-shot and medium-shot, and instead of progressing in the conventional fashion from long-shot to medium-shot to close-up, a condensed movement results from extreme long-shot to medium close-up.

Similarly, the wide-angle lens assumes a role of crucial importance, since the viewer has more room for eye travel to various positions of con-



(LEFT) Only by carefully storyboarding every scene could the producers anticipate problems and plan the tight shooting schedule. Here Greg MacGillivray completes a preliminary paste-up in the Laguna Beach studio. (CENTER) The colored storyboard elements were presented to the clients, so that no communication difficulties would emerge after shooting. (RIGHT) Jim Freeman films from the fast-moving camera car as a stagecoach traverses the countryside.

(LEFT) The New York City skyline at sunrise — a beautiful scene seldom appreciated. (CENTER) The Niagara observation needle. (RIGHT) The dazzling colored light show of Niagara Falls at night. "TO FLY" depicts the history and progress of America in a combination of scenes depicting the vitality and inventiveness of the American people and the scenic grandeur of the country that inspired them.



centration within the immense IMAX image, intensifying the viewer's involvement.

The second new rule of IMAX goes hand-in-hand with the first. Once again, because the viewer is able to scan the screen, isolating different portions for the focus of his attention, it becomes imperative that the pacing vary from the traditional standards. Each cut needs to be longer in IMAX to allow the audience to fully assimilate the vast image before it.

IMAX is *involvement* cinema and the third rule underlines the importance of the camera being in motion at all times. In "TO FLY" we used as many different subjective motions as possible. A partial list includes cherry pickers, dolly tracks, the side of a train, the wing-tip of Art Scholl's Chipmunk aerobic plane, beneath a helicopter, from the door of a helicopter, from the belly of a 747 and underneath a Blue Angels jet. The IMAX format is ideal for allowing the audience to intimately and viscerally identify with a moving, subjective point of view.

New considerations regarding framing complete the list of the four basic IMAX principles of photography. Because the audience sits lower in relation to the screen in an IMAX theatre, the new center lies approx-

imately one-third up from the bottom of the screen. Therefore, all scenes need to be framed with this in mind, but particularly the closeup. Plenty of headroom is needed in all closeups (in IMAX, the medium closeup) so the audience can establish comfortable eye-contact.

In order to use these new rules as a guideline for filming of the story, the preparation of an extremely well-detailed storyboard becomes crucial. Each scene needs to be planned out in terms of its length, positioning and movement, always bearing in mind the tremendous psychological effect of the enormous image that will eventually be on the IMAX screen.

PHOTOGRAPHIC STYLE AND TECHNIQUE

For the photographic style of the story, we decided on a straightforward, unfiltered, naturalistic look. We wanted the bright, contrasty colors, which we were able to achieve with the 65mm film stock 5254. We shot everything using a standard 85 filter, without using any other filters, such as diffusion, star or fog. In order to achieve a natural dramatic quality, especially important with wide vistas and outdoor shots, we used lighting which is either cross-back light or simply cross light.

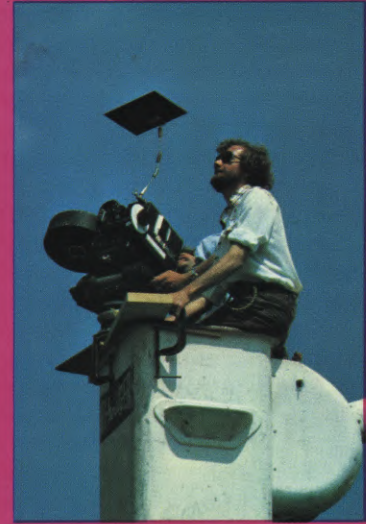
In this way, we were able to achieve an increased sense of depth, dimensionality and a greater sense of movement. We tried to avoid straight front light, since the lack of contrasty reference points in the frame diminishes the dramatic effects of the moving camera.

The lenses used ran all the way from a 30mm fish-eye through the 35mm, 40mm, 50mm, 80mm, 150mm, 250mm, 400mm, and 600mm lenses. The scenes over New York City, with the camera looking straight down upon the towering skyscrapers, were done with the 30mm lens. This lens caused a fascinating edge curvature and image distortion which gave this normally interesting scene incredible visual impact. Other closeup and wide-angle shots were done with the 35mm lens, which was developed specifically from a Pentax 6x5 lens by Century Optics' Steve Manios, to provide less distortion, while yielding nearly the same angle coverage as the 30mm lens. The other lenses were originally built for Hasselblad cameras, with the shutters removed and the lens mounts modified to fit the IMAX camera.

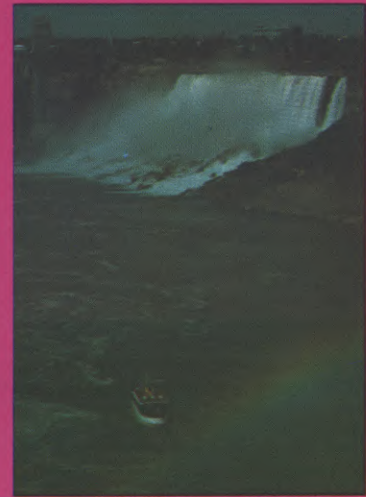
Because of the extreme weight and bulk of the IMAX camera, lenses and magazines, it was necessary to use a beefed-up, larger than normal tripod
Continued on Page 792



(LEFT) Assistant cameraman Philip Schwartz checks the 65mm negative for possible scratches. Because the film runs through the camera at 336 feet per minute, possibility of scratching was great, but not one foot of the 150,000 feet exposed during filming was damaged. (CENTER) Freeman lines up the 600mm lens on an approaching 747, which lifted from the ground 150 feet from the set-up. (RIGHT) Cherry pickers were used to support the basket of the balloon and also for the camera filming it.



(LEFT) Larry Barton of Tyler Camera Systems reads the communications modules so necessary to the successful filming of intricate air-to-air sequences. (CENTER) To simulate the POV of the balloonist narrowly missing a new England church steeple, the camera was moved alongside the steeple in a cherry picker. (RIGHT) Greg MacGillivray directs the scene, while Jim Freeman shoots. The team has proven over 15 years and more than 50 films and commercials a successful collaboration in which both partners contribute ideas and direction to their projects.



(ABOVE LEFT) The Saturn 1B rocket for the Apollo-Soyez link-up was filmed blasting off, for the first time in IMAX, through special permission granted MacGillivray/Freeman. (CENTER) The Statue of Liberty, as seen by the vibrationless under-helicopter camera developed for "TO FLY". (RIGHT) The aerial view of Niagara Falls, as seen by the balloonist. (BELOW LEFT) Actors rehearse for a dolly shot in the barn-raising sequence. (CENTER) "THE BLUE ANGELS", U.S. Navy aerobatic team, fly in formation, as the camera ship trails behind. (LEFT) Bob Wills, world's foremost hang-gliderist, soars along the Hawaiian coastline.



LASER ON IMAX—THE IMAGE FANTASTIC

Experimentation with effects for the space sequence of "TO FLY" results in the first use of a laser in any 65mm/70mm film format

By JIM PALMER

An Evolution

The Laser: A source of coherent light so powerful as to precisely cut alloy steel plates in milliseconds with paper-thin accuracy. Since its conception by Theodore Mainmon in 1960, the laser has, until recently, been confined to the realm of Buck Rogers, carefully locked away in laboratories or sealed behind doors with a top-secret industrial or military application.

Slowly, secrets leaked. As the phenomenon of coherent light became well understood, the mechanics and economics of lasers gained commercial attraction: CBS laboratories developed the first practical videotape-to-film transfer system. MCA developed a videodisc playback system for home use. Artistic possibilities emerged: Ivan Dryer still operates his highly-touted "Laserium" live light-show at the Griffith Observatory in Los Angeles and elsewhere. Small groups, working independently, mostly in Los Angeles and New York, made primitive efforts to combine laser images and film. Their efforts have been generally limited to 16mm educational or "underground" outlets.

The Revolution

Greg MacGillivray and Jim Freeman had been intrigued by the possibilities of harnessing a powerful laser light source and the gigantic 70mm IMAX film for use in the final space sequence of their film "TO FLY". Greg and Jim, along with myself and my good friend, Barney Kaelin, developed the first laser image-to-IMAX transfer system. This represents the first use of a laser with the IMAX or any other 65mm/70mm

film format. Barney, a laser expert, had done basic research utilizing the laser as a visual medium while Barney and I were still students at Loyola/Marymount University of Los Angeles. Barney's exclusive Viewsic® process modulates a laser beam by the use of a sophisticated acousto-optical transducer driven by proprietary electronic means. Viewsic, devised originally for live concert presentation, possesses the capability to generate complex visual laser images in precise synchronization with a musical program source.

Transfer to 65mm IMAX

A transfer of a modulated laser beam to a film surface presents an opportunity for simplicity: namely, the use of a kind of lensless photography. Since the beam is already precisely collimated, it is possible to write directly on the film with no lens or optical element required. (See FIGURE 1). Conventional practice would indicate the use of three-color separations or YCM's as an intermediate duping material. However, since we were filming in the IMAX format, we were faced with a rather unique problem: a step-contact or 1:1 optical printer to make IMAX-to-IMAX dupes does not exist. Therefore, we were forced to create all effects in the camera and to use the regular 65mm 5254 color negative emulsion, as it was the only stock available to us. Our first step was to expose a series of step wedges using Polaroid type 107 film and adjust the number of N.D. filters placed in front of the beam. We found that even with a small two-milliwatt Helium-Neon laser

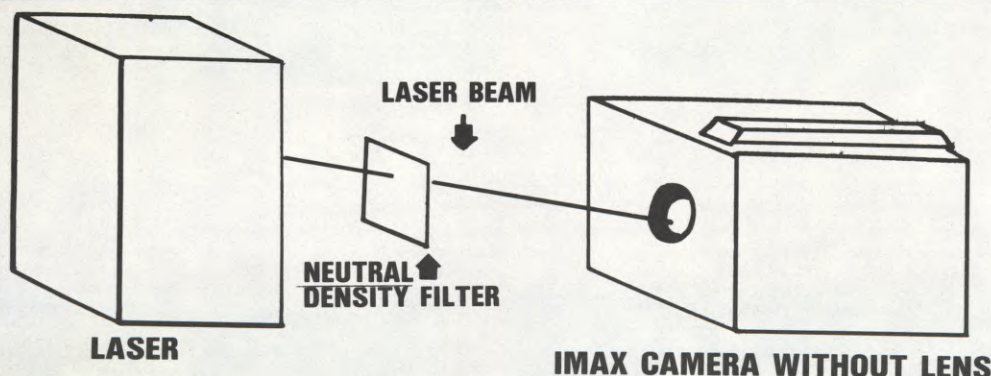
the beam was amazingly bright. Our basic exposure was a N.D. 3.2 at 1/25 sec on 5254 developed normally.

We were able to produce a veritable *potpourri* of patterns by making certain frequency adjustments in our electronic black box. We were able to generate shapes ranging from simple lissajous patterns to much more complex shapes, such as an inverted cornucopia. By shooting at 3 fps we were able to capture subtle changes of form only barely visible to the naked eye.

The Future

We look forward to the time when we will be able to develop more sophisticated equipment for laser-film transfer. The IMAX format has incredible potential. The screen is incredibly bright. By combining the excitement of the laser and the flexibility of film in the IMAX format it will be possible to create a whole world of images, as exciting as a live show, but infinitely more refined. We are but standing on a threshold. ■

FIGURE 1 — How laser patterns are recorded directly onto IMAX film without a lens.



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FILMING THE SPACE SEQUENCES FOR "TO FLY"

By JEFF BLYTH

Associate Producer, MacGillivray/Freeman Films

It was felt from the earliest conceptions of "TO FLY" that the film would be incomplete without a sequence depicting not only our present ventures into space, but portents of the future, as well. The whole motion picture represents an outward expansion from Early America and that motion had to continue through the rest of the film.

The space sequence was originally designed as a series of stills showing views of our solar system, galaxy and the universe. None of us ever thought that would really be acceptable and in our earliest pre-planning we decided that money saved on the other sequences would be earmarked for a more ambitious space sequence.

Unfortunately it is not possible to make a large-screen film on space without automatic comparisons to "2001". Needless to say we didn't have the millions of dollars necessary to equal or surpass "2001", but we still had the comparisons to live with, unfair or not. The volumes of material written about the production of that picture were a starting point in our research. We found that there were many things they had worked out by trial and error that we could incorporate or expand upon. For example, we were forewarned that our most difficult task would be the filming of starfields that looked correct both in 70mm IMAX and later in 35mm release. Many times our 35mm print-downs showed *no stars* whatsoever, while the corresponding IMAX negative looked normal. When the stars looked normal in our 35mm print-downs they looked like basketballs in IMAX. Obviously the answer was a compromise of very narrow limitations. This was a problem that plagued us

throughout the filming of the sequence.

The other major thing we learned from "2001" was the use of movement. Not only is there constant movement of spacecraft in that film, but the background starfields are constantly moving as well.

We had some very severe limitations in the manner in which we could shoot the space sequence. The most conventional full-screen optical effects

are not possible in IMAX, not even acceptable dupes. The camera would not single-frame or run in reverse which meant we couldn't use stop-motion photography of models or registered mattes, etc. All of our effects had to be accomplished on the original camera negative. We could, however, reliably film as slow as 3 fps., and we shot most of the scenes at 6 and 12 fps.

Another serious problem was light:
Continued on Page 796

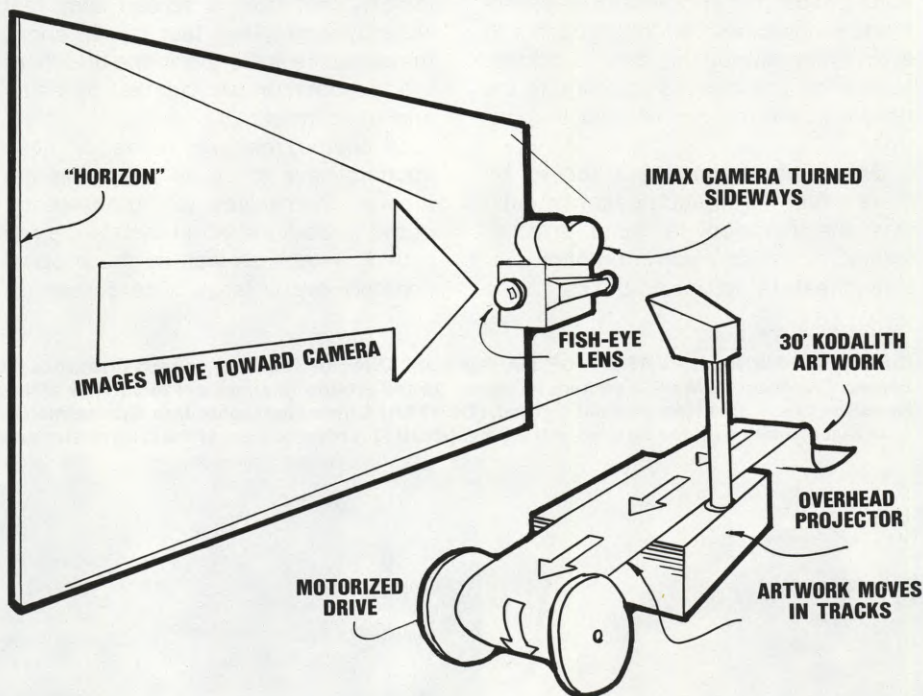
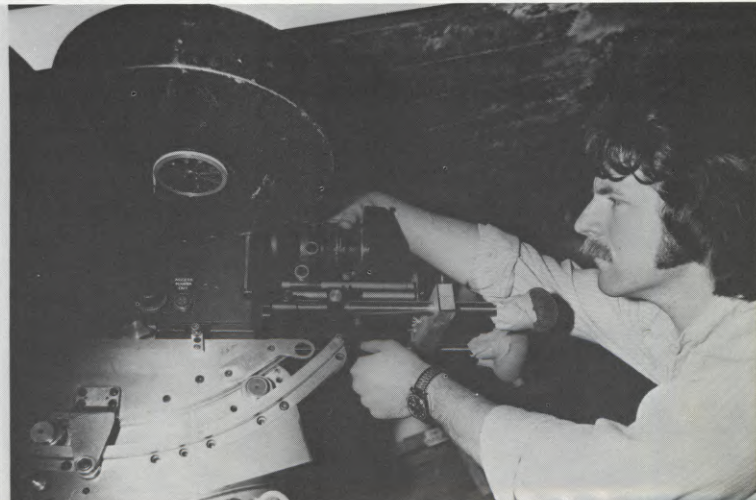
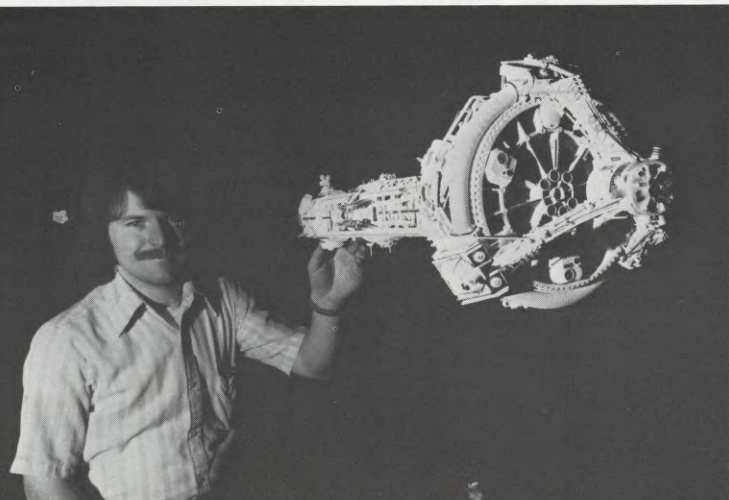


Diagram of the "Discount Slit-scan" rig used to create outer space effects for "TO FLY". Individual pieces of artwork photographed on Kodalith were matched to create an 8-inch by 30-foot piece of art. Using an overhead projector with a specially designed track, and motorized mechanism, the artwork was pulled very smoothly across the glass surface of the projector. The images were projected onto a very large reflective white card. The IMAX camera, with fish-eye lens, was set close to the edge of the card and perpendicular to the axis of the projector.

(LEFT) Associate producer Jeff Blyth, shown with the "Starship", which was designed, then approved by the Smithsonian Institution, then constructed by MacGillivray/Freeman Films from many model kits. (RIGHT) Blyth adjusts the bellowed closeup lens on the IMAX camera. The geared Worrall head was used for smooth motorized pans and tilts.



"VIRGINIA...PURSUIT OF HAPPINESS"



A great state celebrates America's 200th Birthday and its own prideful history with an exciting 12-minute film presented in 70mm wide-screen and six-channel stereophonic surround sound

By DANIEL GUNTZELMAN

One of the most successful players in the big money game of amusement park operation is Taft Broadcasting's Family Leisure Centers. With parks in Cincinnati (Kings Island), Richmond (Kings Dominion), and Charlotte (Carowinds), they possess a track record of steady profits and judicious growth. One of the hallmarks of their operations philosophy is constant reassessment, renewal, and addition. Each and every year something new is added, something unexpected appears, to the delight of the millions of returning patrons.

One such commitment (or to be more exact, three such commitments) was the decision to build special-format, audience-involving motion picture theaters in each park. These

theaters have 70mm projection systems with six-channel stereo surround sound, that is, six-channel systems with speaker placement altered from the customary five channels behind the screen and one surround channel to three channels behind the screen and three in the house. The seating area is from fifteen to forty feet from a screen sixty feet wide by twenty-five feet tall. In short, the audience is literally in the middle of the presentation, surrounded by visual and audio inputs.

Of course, the films made for these theaters have to be as unique as the theaters themselves, taking advantage of the three-hundred-and-sixty-degree sound system, as well as the proportionately overly large wide screen. In

addition, the length of the production cannot exceed fifteen minutes so that three showings per hour are possible. For the premier grand opening of Kings Dominion, this meant a tour de force presentation about the state of Virginia: past, present and future.

VIRGINIA . . . PURSUIT OF HAPPINESS began in concept as the midpoint between a patriotic Bicentennial product and a film loaded with visual thrills, where the audience gets to experience many varied points of view. Through early meetings with representatives of the F & M Bank (the sponsor of the film), Jack Rouse and Keith James of Kings Productions (producers of the film), and John Gunselman and myself of Alliance Pictures (in charge of production), a treatment and

(LEFT) "VIRGINIA . . . PURSUIT OF HAPPINESS" Director John Gunselman discusses the action with soon-to-take-off crop duster Bruce Stoehr. The Mitchell Mark II camera has been turned around to shoot a reverse view of the pilot's face, as he goes about his dangerous job. Needless to say, this view was not sighted. (CENTER) Cinematographer Dan Guntzelman and Director John Gunselman shoot a crop duster pass that seemed a bit too thrilling at the time. (RIGHT) A reverse view of the crop duster pass — only a little less hair-raising to film.



(LEFT) John Gunselman inspects his helicopter mount. The camera rides on a new cross-member bridging the struts of the copter. By being set as far as possible from the main body of the aircraft, vibration is minimized and the view is free. (CENTER) The Stindt dolly pauses during a rehearsal of one of the literally hundreds of camera moves used in the production. Many of these were only possible because of the small size and light weight of the Stindt dolly. (RIGHT) The Mitchell Mark II goes for a ride through the streets of Williamsburg.





(LEFT) Cinematographer Dan Guntzelman discovers the wrong way to go on a hayride. Sometimes the speed of production can be equated with muffler burns and saddle sores. (RIGHT) John Gungelman checks the composition of a shot that was part of the "bones" sequence, taking place on the deck of the "Marr Page", a small fishing boat.

general overview was gradually developed. This was concept development by committee, and all of us who had to go out and actually make it happen felt a little insecure.

Nevertheless, the composite treatment read well and promised a good result. What we had in mind was a Bicentennial film with more life and vigor than is normally found in such a subject. There would certainly be patriotic moments, but with an added edge of reality, humor, and honesty. The twelve-minute production would move with only sixty seconds of narration, held together by an original musical and vocal score based on the traditional folk hymn, "Simple Gifts". There would be good times, plain folks, and several interludes of strong visual drama. And all of this would crescendo in a promise-fulfilled look into the future. It was quite a treatment.

During the early pre-production scouting trips throughout Virginia, it became overwhelmingly clear that a lifetime could be spent capturing a representational view of the state on film. And of course, as with most exciting assignments, a lifetime was not available. To be sure, due to financial considerations, only twenty-five days were allotted for production and these, due to the contracted delivery date of the picture, had to be set in the month of October.

So my first problem as cinematographer was a question of logistics and stamina. We had a production schedule and a subject that called for great flexibility dictated by events happening pell mell within the state and, of course, the weather. Yet we had a severely limited amount of production time. To further complicate the situation, the finished product should not look as if it were shot only in autumn. Luckily, blue skies and the

natural fir greenery cooperated with tight composition in overcoming this seasonal obstacle.

As with our previous special-purpose films for Kings Productions, the overall visual quality had to be extremely high, for the eventual forum would be that huge screen in Kings Dominion. There was definitely no room for faulty camera moves and hesitant corrections. But unlike our previous special-purpose productions, VIRGINIA . . . PURSUIT OF HAPPINESS was documentary in nature. Where before we had shot from specific scripts, very much like theatrical production, we now faced an open treatment that called for real people doing real unstaged things. If ever a subject seemed totally wrong for

35mm production, especially 35mm production that is limited in time and money, this was the one.

The subjects of image sharpness and definition became sacred during this pre-production period and throughout production, with the eventual picture flow dictated completely by these considerations. A squeezed 5247 color negative was blown up first generation to a 70mm flat positive release print, bypassing the CRI step (a CRI was made for protection), producing the cleanest 70mm prints from a 35mm negative that I have ever seen. (At the dubbing session at Todd-AO, I continued to be startled at the ultra-fine image quality when a medium view of a fisherman came on the screen and it

Continued on Page 806

The Mark II rides again — this time on a ship loading crane in Norfolk's International Terminal. "VIRGINIA . . . PURSUIT OF HAPPINESS" began in concept as the midpoint between a patriotic Bicentennial production and a film loaded with visual thrills, during which the audience gets to experience many varied points of view.



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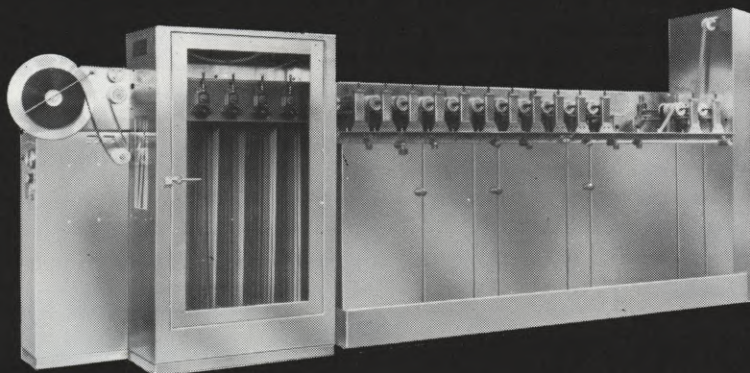
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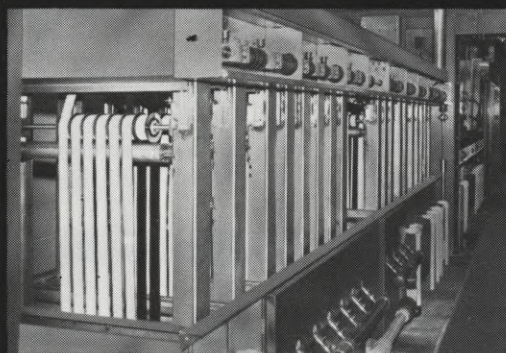


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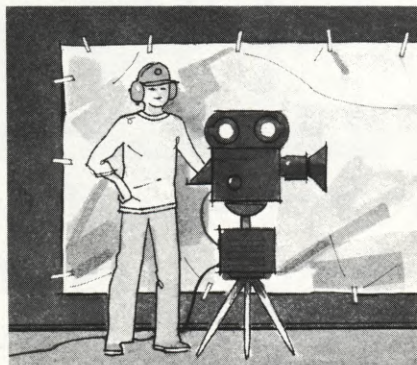
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featherflex

A lightweight solution to a heavyweight problem

This ultra-lightweight reflector is part of the ROSCOFLEX series of Light Control Media. Its unique properties put it in a class by itself, and make it a most useful tool either in the studio, or on location.

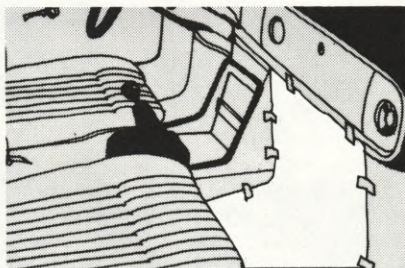


FEATHERFLEX was designed specifically for situations requiring a light, highly flexible yet efficient reflecting surface. It is not primarily a blanket, or a radar reflector, although it will satisfy both of those uses. As it comes from the roll, it has a slightly textured, bright silver appearance. For a more diffuse reflecting surface, crumple the material. Various degrees of "softness" can be achieved by varying the amount of crumpling. This action changes the texture without decreasing the basic reflecting properties of FEATHERFLEX.

Although extremely tough and tear resistant a full 100 sq. ft. roll weighs only a few ounces. The material may be put in place easily with gaffers tape, thumb-tacks or even ordinary cellophane tape. A reflecting surface can be placed anywhere that can be reached.

FEATHERFLEX will withstand rough handling, since the vacuum-deposited aluminum reflector is on tough polyester film. It can be washed, hosed down, scrubbed, cleaned, crumbled into a bag and straightened out again and again.

FEATHERFLEX is applied in any situation where it is useful to have a



reflecting surface for bounce light, especially in difficult and cramped quarters like automobile interiors. FEATHERFLEX can be taped to a sun visor to bounce-fill a performer's face from a light placed below the back of the front

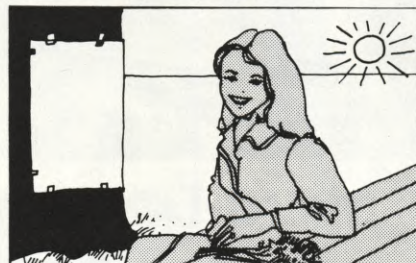


seat, or taped under the dashboard for creating that glow on the floorboards with a small hidden light.

Tape FEATHERFLEX to the ceiling-wall corner of a room, and back light actors from the front when it is impractical to place fixtures on the wall. Cover the entire ceiling and make the room into a "softlight" by bounce, lighting for general fill.

Since the roll is 56" wide an entire wall can easily be covered and turned into a reflector.

FEATHERFLEX is so light and compact you can take it anywhere—Once you have it with you, new uses seem to occur all the time, such as taping it to a gobo for a spot of light, or improvising a reflector for a light.



Small wonder FEATHERFLEX is becoming standard equipment for the cameraman.

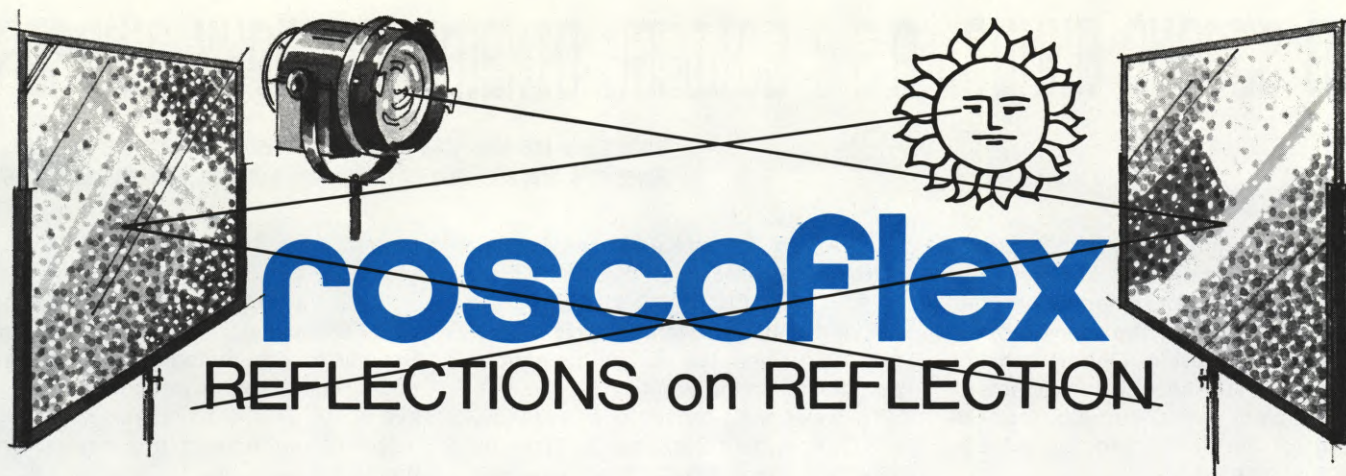


FEATHERFLEX is available in either 56 inch rolls or as F-PAK, in a 56"x48" sheet, large enough for a majority of the day to day applications, packed in a small handy plastic pouch.

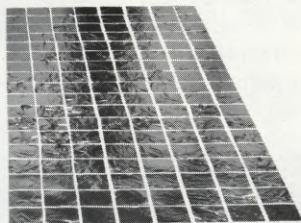
For additional information, data sheets, swatchbooks of the complete system and samples, contact your Rosco dealer, or write:

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The reflector board is one of the oldest lighting tools used by cinematographers. It allows the use of natural sunlight for exterior lighting, without power, noise or cables. The boards have traditionally been surfaced with paperbacked foil and sign painters leaf ("hard" and "soft" sides). Leaf application required skill, controlled conditions and much time. They are not durable surfaces, degrading very rapidly in salt air or high humidity, they cannot be dusted off or washed and need to be replaced every few days.



Rosco, in cooperation with leading cameramen, developed ROSCOFLEX in order to overcome these problems. The 'FLEXES are made up of a tough plastic backing and clear polyester facing, with a vacuum-deposited aluminum reflector sandwiched between them. The result is a rugged, tear-resistant, washable composite material, with stable and repeatable reflecting characteristics. These materials are not affected by environmental conditions. They can be dusted, scrubbed, hosed down and are not affected by salt air.

Mounting of the 'FLEXES is a simple operation which can be performed in the field, particularly if the new ROSCOBOND adhesive is used. This is a solvent-free, non-toxic, water-thinned adhesive system which does not require special ventilation during application. It is available in quarts and gallons.

ROSCOFLEX-H has the characteristics of the traditional "hard" side. It is used for long throws or situations requiring punch. ROSCOFLEX-S matches the "soft" side, offering wider coverage at shorter throws. In using reflectors, sometimes the sun is not in the right place for a shot relative to immovable scenic elements such as buildings and geographical features.

ROSCOFLEX-M, (Mirror) provides a mirror surface for relaying the sun into the reflector boards in such situations. It is also applicable as a longthrow reflector.

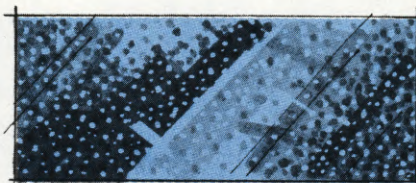
Some cameramen would never use the old type reflectors at all, feeling that even the "soft" side produced too harsh a look.

ROSCOFLEX-SS, (Super Soft) has become popular with many of these people due to the very soft character of the reflected light, and the extremely wide field it produces. It is about 1½ to 2 stops

lower reflection compared to the ROSCOFLEX-S. It allows the placement of the reflector board close to the action, where desirable. It's the reflection for the cinematographer who won't use a reflector.

These four basic ROSCOFLEX reflecting materials are only part of the Rosco Cinegel Light Control Media. They provide light control by reflection, with varying degrees of "reflection/diffusion", without changing the color balance of the reflected light.

ROSCO also offers the cinematographer a set of three media with "reflection/filtering" properties. The filter, in these members of the 'FLEX family, is actually the protective cover film of these laminated materials.



ROSCOFLEX-C, (Cool). Regular sunlight reflectors reflect only the sun component of daylight, and not the sky, resulting in fill light that is warmer than daylight. Particularly in the early morning and late afternoon, ROSCOFLEX-C is used to avoid a "warm" fill. It gives a soft reflection combined with a light blue filter. This corrects the reflected sunlight for a better match with daylight.

ROSCOFLEX-G, (Gold) a soft reflector similar to gold leaf boards suitable for the early or late in the day look . . . or just to get a "warm" lighting quality.

ROSCOFLEX-D, (Daylight) provides "daylight conversion" by reflectance. Put a 3200 light on, get 5000 off.

It is designed for bounce-lighting applications. When incandescent light is reflected from this material, it is suitable for daylight fill. Where an even cooler look is desired, Rosco Tough ¼ or ½ Booster Blue can be put on the light source. ROSCOFLEX-D is used to line low wattage Soft-Light to provide "Daylight shades

without fill", higher efficiencies than when using a transmission filter on the front.

These seven materials are all supplied in 64 inch wide rolls, and represent a complete family of Light Control Media. Each with a distinct reflecting characteristic and purpose.



To mount the reflection media Rosco developed:

ROSCOBOND—A water-based liquid adhesive specially developed to meet the need for a pressure-sensitive, safe adhesive to bond plastic films to non-porous surfaces such as metal, smooth surfaced foams, plastic sheet or completely sealed wood. Roscobond contains no solvents, so it may be used in non-ventilated areas without the need for special clothing or ventilating equipment.

Besides the basic seven reflecting media there is:

ROSCOSCRIM is a dual purpose material. It has the same sandwich type of construction, as the other 'FLEXES, except that it is perforated. The front has approximately the same reflection characteristics as the ROSCOFLEX-S. When used as a scrim it reduces the transmitted light 2 stops. It is also an excellent sunshade for equipment and personnel.

Mounted on boards it produces less intense reflection than regular reflection materials, minimizing eye strain, tearing and squinting by the actors.

The rolls are 54 inch wide.

For additional information, data sheets, swatchbooks of the complete system and samples contact your Rosco dealer, or write:

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THE SECOND ANNUAL A.S.C. COLLEGE CINEMATOGRAPHY AWARDS

Once again the American Society of Cinematographers encourages America's film students by rewarding excellence in cinematography

On the evening of May 24th, at a gala dinner held at the A.S.C. clubhouse in Hollywood, student cinematographer Philip Earl, Jr., of the University of Southern California Department of Cinema, won the second annual American Society of Cinematographers award for the best photographed college film of 1975.

Film star Greer Garson presented Earl with a specially designed trophy in recognition of his highly professional photography of "THE PREPARATORY", a 24-minute film portraying a young student's trials and tribulations at a Jesuit boys' school.

A second trophy was presented by Miss Garson to Dr. Bernard Kantor, head of the USC Department of Cinema. In his absence, the trophy was accepted on behalf of the University by USC Cinema Professor Mel Sloan.

Plaques of achievement also were awarded by A.S.C. president Lester Shorr to four other students and universities, named as nominees by the Society.

These were: Jerry Feldman, New York U., for the film, "JUST PASSING BY"; Brian England, Northwestern U., "LIGHTHOUSE"; Alan J. Ritsko, Boston

U., "FALLING"; and Ken Burns, Hampshire College (Mass.), "WORKING IN RURAL NEW ENGLAND".

Event chairman Stanley Cortez noted that 125 universities across the nation, participated in the event.

In welcoming those in attendance, A.S.C. President Shorr said: "From its inception, the A.S.C. has remained interested in encouraging young, enthusiastic students of cinematography. Our journal, *American Cinematographer*, is read by student filmmakers the world over and our A.S.C. Manual, considered a 'bible' of cinematography, is used as a textbook by a great many cinema students. Many of our members have conducted seminars and lectures at colleges and universities throughout the country, passing on their know-how of the industry to the students."

Adding to these remarks, Contest Chairman Stanley Cortez, ASC, said: "The preliminary and final entries in this competition were screened, judged and voted on by a panel of 40 A.S.C. members, many of whom are Academy Award winners or nominees. The films entered were mostly made in 16mm color, and the running times

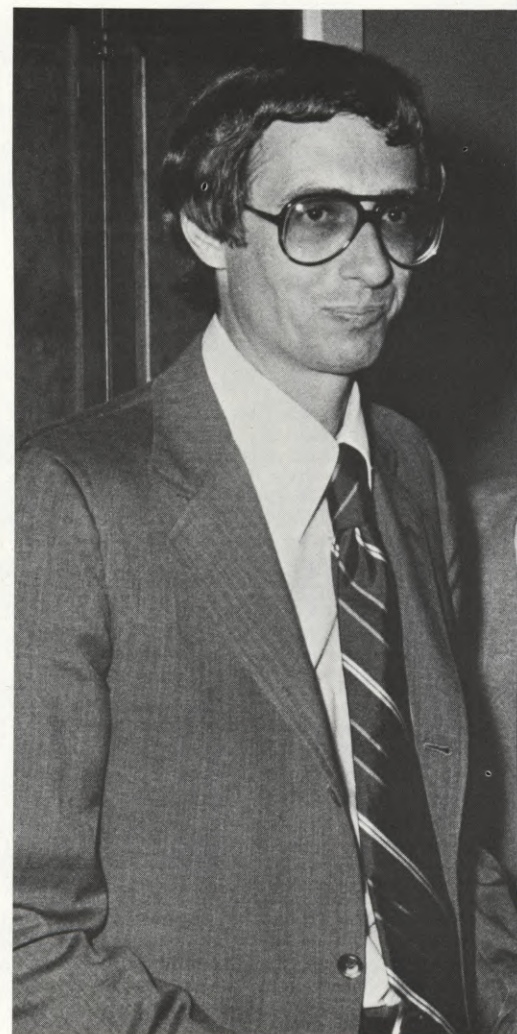
ranged from 10 minutes to 150 minutes.

"These awards symbolize a tradition long associated with the American Society of Cinematographers, that of encouraging young people with creative talent. This, we sincerely hope, will help ensure the future of our great film medium."

A bit later, comedian (and A.S.C. Associate Member) Edgar Bergen, acting as Master of Ceremonies, added his warmth and wit to the evening. He commented: "I can look back with a lot of sentimental memories of the picture business. We refer to them as the 'Good Old Days' — when we weren't so good because we weren't so old. I find that as the years go by I'm getting a little more spiritual. I started forsaking sin at just about the time that sin started forsaking me."

Bergen was then joined by his long-

(LEFT) Flanked by A.S.C. President Lester Shorr and Contest Chairman Stanley Cortez, the gracious Miss Greer Garson addresses the capacity crowd attending the gala awards banquet. (RIGHT) Philip Earl, Jr., winner of the top award for his outstanding photography of "THE PREPARATORY", student film produced by the University of Southern California Department of Cinema.



time wooden sidekick, Mortimer Snerd, and they delighted the crowd with their banter.

Having been introduced by President Shorr, Miss Garson expressed her delight at being reunited with several of those who had been her cameramen during the 15 years that she was a reigning star at MGM Studios, paying special tribute to George Folsey, ASC, and Joseph Ruttenberg, ASC.

Said the gracious Miss Garson: "I cannot allow this wonderful opportunity to go by without paying tribute to all of you — you who indeed represent the elite of the motion picture industry and its arts and sciences. This beautiful clubhouse in which we gather tonight is a citadel of taste and high standards . . . and I know that you are passing on to the Directors of Photography of tomorrow your own high standards, interesting these young students in what is beautiful and what is best . . .

"I should like to write a book about my experiences and say how much we, as performers — and directors, writers and producers — owe to the man who sits there watching, composing, controlling the lights and telling the story in the language of pictures that move. Whether you are photographing Miss Elizabeth Taylor coming in on an elephant — which is quite an entrance on quite a large canvas — or photographing the spirit and thoughts and the soul of a human being through the eyes and the muscles that tighten around the mouth, the range of your artistry and know-how is quite extraordinary . . .

"Speaking for actors and actresses — and especially for the ladies — I should like to tell you how much we owe you. It's a wonderful experience to watch the rushes and see oneself with all the little fretful lines of anxiety or petty cares magically erased from one's face, so that one sees the image of one's self as it *ought* to be — at its most ideal. I used to come away often tremendously moved, watching those figures on the screen that were idealized.

"Of course, these days it's different. Candid photography is the trend, and we are, I am sure, made to appear much worse than we are in real life, in many cases. I know artists are supposed to hold the mirror up to nature, but I think that surely we belong to the generation that tilted the mirror kindly upwards to catch a little more golden sunshine — brighter and more tender and more beautiful than life itself. This gave people two hours in which to forget their troubles, and they went out of the theater feeling much better than

when they went in. Isn't that our function? I think so . . .

"Anyway, thank you for concentrating, as you do, on interpreting the beauty, the goodness and the inspiration that is in life. You do it for each one of us. You do it for the wide world. You are the beating heart, the essence, the center of cinema, whether it is on the big screen or the little screen. Your influence is enormous. Each one of you here has a tremendous responsibility and you discharge it with such generosity and with such taste that I am privileged to be in your company and to have so many here that I can thank all at once."

After having received the top award from Miss Garson and her congratulations, Philip Earl, Jr., remarked: "When I was shooting this film, I never thought that this was going to happen to me. Receiving this award from the top professional people in the business has been a tremendous thrill and everybody on our crew who worked so hard on this film can share this recognition with me tonight. I would like to make special mention of our writer-director, Terence Cahalan. From the very beginning he expressed to me the feeling and the look that he wanted for the film, and we worked very closely together to try to maintain a consistency. He is an individual who never compromises and I learned a tremendous amount from him.

"I would also like to pay tribute to the American Society of Cinematographers for holding this competition which, I feel, inspires all the beginning film-makers in the universities. I know it inspired me tremendously — especially tonight.

"I'd also like to thank my wife, who let me quit a career in computers and start a new one in film-making. It's worth it tonight. Thank you very much." ■



Talented comedian (and A.S.C. Associate Member) Edgar Bergen served as the witty Master of Ceremonies and joined with his wooden sidekick, Mortimer Snerd, to entertain the audience.



(ABOVE RIGHT) Miss Garson embraces a dear friend, four-time Academy Award winning cinematographer Joseph Ruttenberg, A.S.C., who photographed many of her best films during the 15 years that she was a top star at MGM Studios. (BELOW) President Shorr and Chairman Cortez congratulate the winner, Philip Earl, Jr.

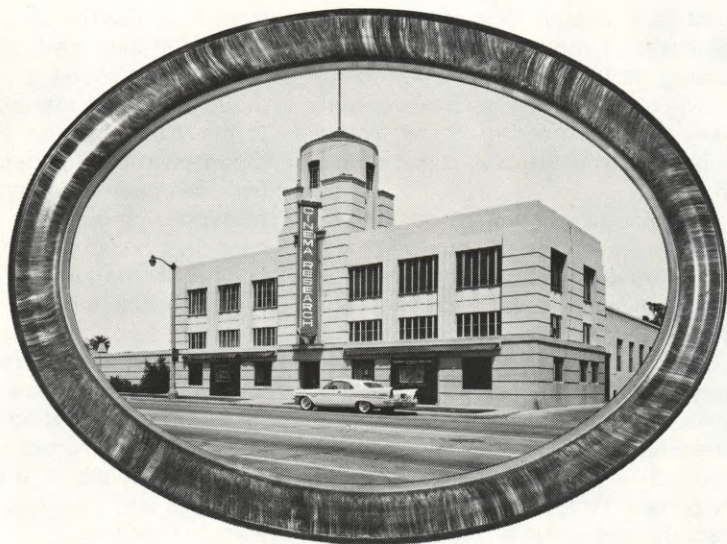


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Over the years this expanding group has made good the promise, leading to new specialized lenses, registration equipment, Academy Award winning optical printers, color timing and laboratory techniques. Cinema Research specialized in color blow-ups, reduction negatives, optical printing of three color separations, wide screen techniques, liquid gate scratch removal and diffuse light techniques. These have all become standard procedure in the industry.



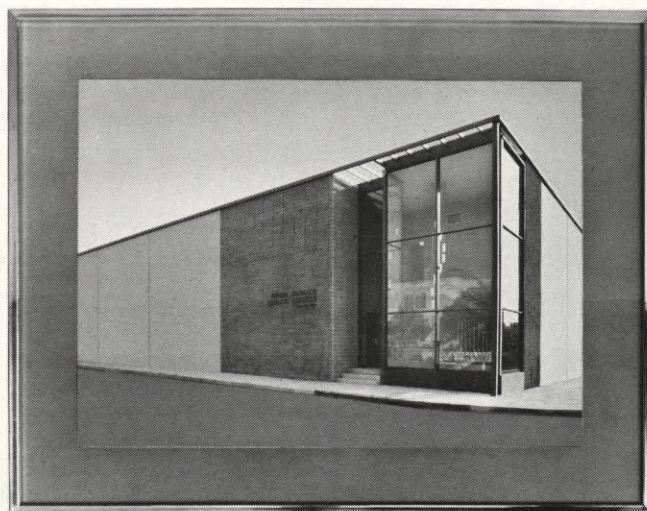
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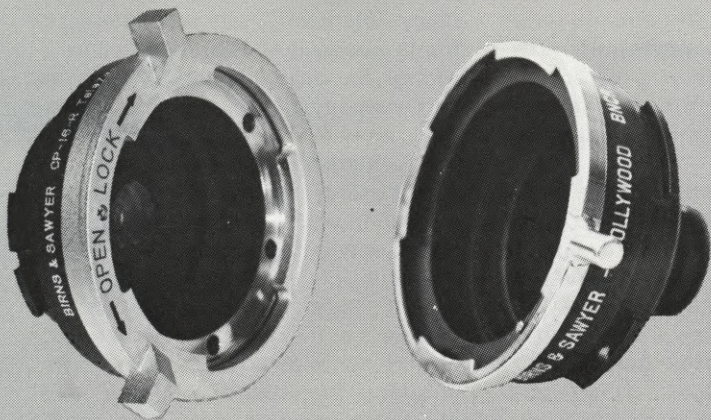
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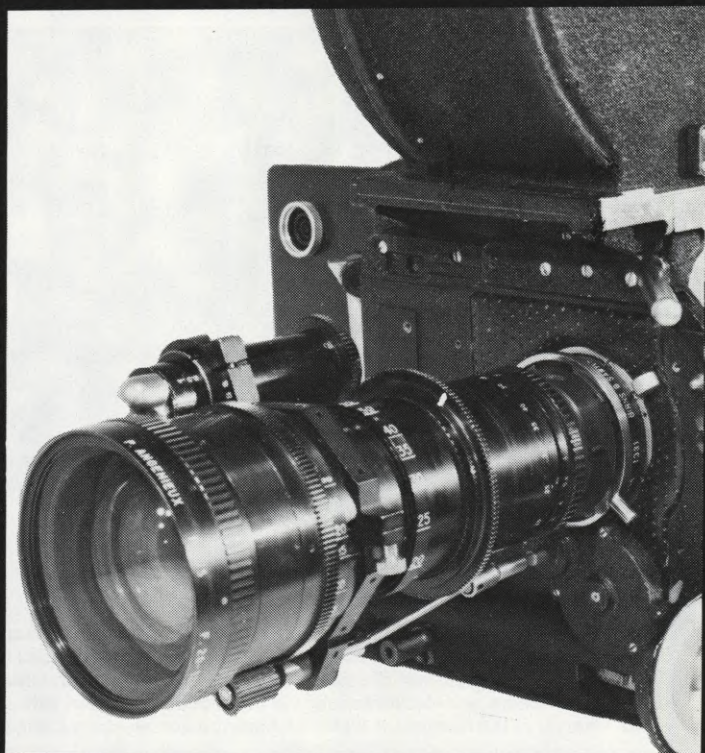
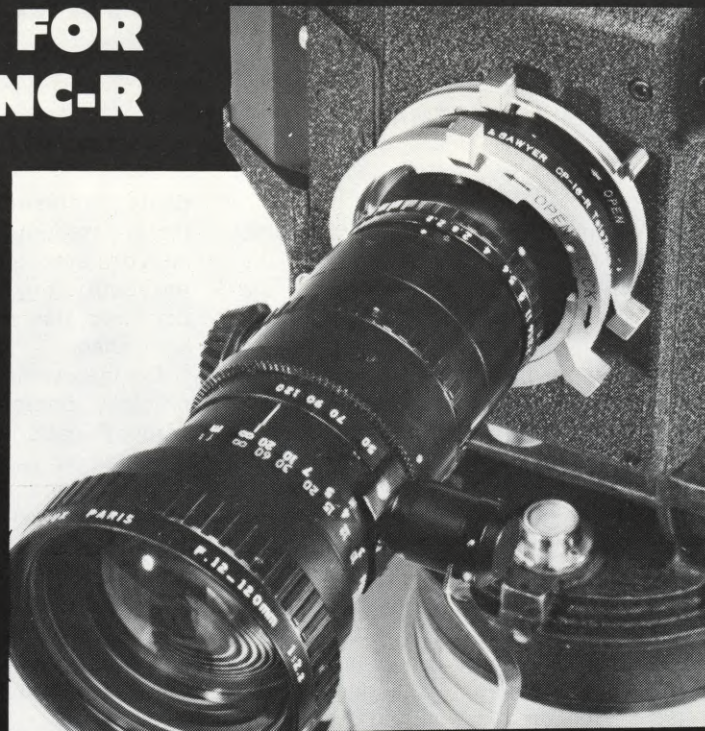
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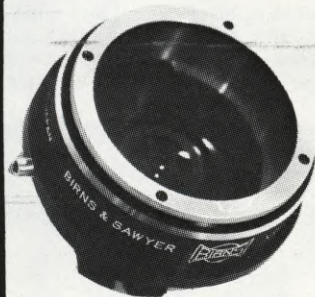
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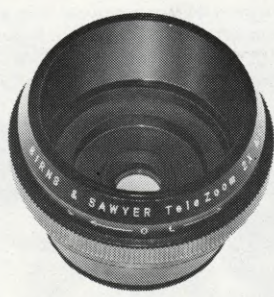
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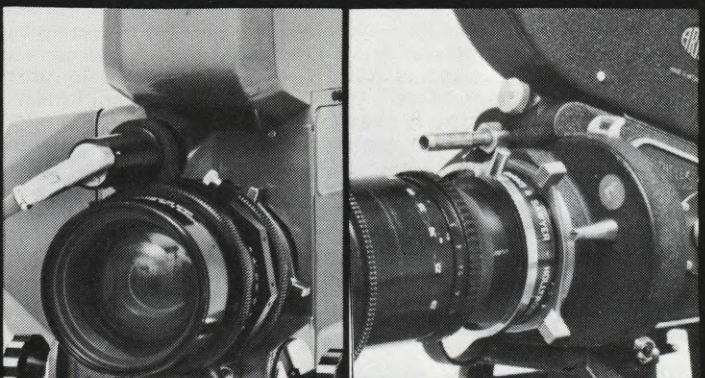
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THE NINTH MOTION PICTURE SEMINAR OF THE NORTHWEST

Seattle's annual two-day film-making forum enjoys a top roster of speakers and the largest attendance in its nine-year history

By HERB A. LIGHTMAN

SEATTLE, Washington

When the good folks from Seattle called to ask me to be Moderator of the Ninth Motion Picture Seminar of the Northwest, to be held in their fair city, my first reaction was: *They must be gluttons for punishment* — my reason being that I had served in the same capacity three years before, and I should have thought they would have wanted to quit while they were ahead — or only slightly behind.

At any rate, I'm glad they called and I'm happy to be back in Seattle because rarely have I encountered a group so absolutely hooked on film. Not only is the turnout inspiring, but the quality of the people attending is first-rate. They are a mixed bag of film stu-

dents, professional film-makers and highly knowledgeable movie buffs — of all types and ages, but with the accent on youth. They hail from the several northwest states of America, plus western Canada.

On the evening before the Seminar officially begins, there is a cruise across Puget Sound to the Kiana Lodge for a salmon barbecue. This is intended as a kind of "ice-breaker", with those registering for the Seminar invited to "socialize with the Seminar speakers in a relaxed social atmosphere." It turns out to be — as advertised — "five hours of beauty, fun and good food." I'm surprised at the number of people who come up to talk to me, or simply tell me how much they

enjoy *American Cinematographer*. The Kiana Lodge is a marvelous place — with all the buildings and art executed in the authentic style of the Indians and Eskimos of the Northwest.

The Seminar, held in the 1,000-seat Playhouse of attractive Seattle Center, gets underway early the next morning with Continental Breakfast served on the patio. For me, it's like "Old Home Week", because so many of the speakers and exhibitors are old friends from Hollywood and elsewhere.

Space limitations preclude comment on each and every item on the schedule, so I shall simply skim the highlights:


WRITING TO SUCCESS — Rob Thompson, a young, ex-Seattle writer, tells about his struggles for success, and how it happened with his first feature screenplay, "HEARTS OF THE WEST".

WIRELESS MICROPHONE TECHNIQUES — Veteran Hollywood sound technician Frank Kelly discusses how the newest cordless pickups are used in the film industry.

RECENT DEVELOPMENTS OF PROFESSIONAL APPLICATIONS OF SUPER-8 — Julie Mamolen (one of three guest editors who compiled the *American Cinematographer* special issue on Professional Super-8) talks about the latest state-of-the-art developments in the narrow-gauge format.

ANIMATION IS AND ANIMATION WAS — Academy Award-winning cartoon artist/director Chuck Jones (creator of Wile E. Coyote and the Roadrunner) gives a humorous/serious talk on film cartooning in today's changing markets.

HMI LIGHTING — Don Matthews, of Braun Electric Canada Ltd., tells about



Taking a break during the Ninth Motion Picture Seminar of the Northwest, outside the Playhouse at Seattle Center, the spacious parklike complex of facilities where the Seattle World's Fair was held. The Seminar draws an attendance of most enthusiastic film students, professional film-makers and dedicated movie buffs of all ages, but with the accent on youth. They come from all of the northwest states of America and western Canada.

A few of the more than thirty distinguished speakers appearing on the program of the Seminar this year. (Left to right): Eminent film critic-historian-cinema professor Arthur Knight; Academy Award-winning cartoon artist-director Chuck Jones; Academy Award-winning Director of Photography Conrad Hall, ASC; "THE PRESIDENT'S MEN" Director Alan J. Pakula; top film editor Verna Fields, winner of this year's Academy Award for "JAWS". The fourth Academy Award winner appearing on the program was F.R. "Budge" Crawley, producer of "THE MAN WHO SKIED DOWN EVEREST".



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"STEADICAM" — THE MOUNT OF THE FUTURE — Garrett Brown demonstrates the revolutionary new camera stabilization device which he invented and does the "Garrett Gavotte", as he gallops about the stage to illustrate its incredible versatility. As proof of the pudding, he shows clips from recent features utilizing the device, including "BOUND FOR GLORY", "THE MARATHON MAN" and "ROCKY". This part of the program turns out to be a real conversation piece and the hit of the show.

DIRECTING A FILM ABOUT A COUPLE OF REPORTERS — Alan J. Pakula, director of the "hottest ticket" among current film releases, "ALL THE PRESIDENT'S MEN", provides a fascinating personal behind-the-scenes view of the filming.

That evening there is a three-hour showing of the Best in Northwest Produced Films. There are a couple that make you wonder how they got into the program, but most are very well executed. The ones I personally like best include: "SORRY PARTNER, YOU LOSE" (Dan Biggs Productions, Portland, Oregon), "WHISTLING SMITH" (National Film Board of Canada, Vancouver, B.C.), "MOUNTAIN MUSIC" (an extremely clever and technically intricate clay animation short by Will Vinton Productions, Portland, Oregon) and "COOPERAGE" (Rocky Mountain Films, Vancouver, B.C.). Regarding the last-mentioned: Who would have thought a how-to-make-a-barrel short could be so fascinating?

One other film on that program bears mention, mainly because it evokes such mixed emotions. Titled "CHALLENGE AT ALYESKA" (Roy Hayter Productions, Vancouver, B.C.), it was commissioned by a company that manufactures mobile home-type structures used as accommodations and field offices for the building of the Alaska pipeline. Superbly photographed and technically impeccable, it is, nevertheless, saddled with such a ridiculously overdramatic "DRAGNET"-type narration that it sparks audience laughter in all the wrong places.

Highlights of the program on the following day include:

MAINTAIN YOUR EQUIPMENT — SOME PROBLEMS — SOME ANSWERS — Diane Saba, who runs a camera repair service in Hollywood, discusses how preventive maintenance of equipment can spare the film-maker much grief.

FILM SOUND — THE SILENT PARTNER — Walter Murch, whose

credits as a sound technician include: "THE GODFATHER I & II", "AMERICAN GRAFFITI" and "THE CONVERSATION", talks about how sound can be used to add extended dimensions to the visual image.

REGIONAL FILM-MAKING — Film critic-historian-cinema professor Arthur Knight makes the telling point that simply the fact that a picture is shot in a certain area doesn't necessarily make it a "regional" film — unless the content of the film centers on the people or activities of that region.

FROM 1942 TO 1976 — Top Hollywood film editor Verna Fields, who recently won the Academy Award for her editing of "JAWS", talks about her work on that film (showing a clip of a suspenseful sequence) and details the steps leading up to her appointment as a Vice President at Universal.

LIFE AND TIMES OF CONRAD HALL, ASC — Wincing a bit at the title given his talk when he was busy elsewhere, the Academy Award-winning cinematographer ("BUTCH CASSIDY AND THE SUNDANCE KID") talks very little about his life or times, concentrating instead on the opportunities for student cinematographers, the use of the STEADICAM on John Schlesinger's "THE MARATHON MAN" (which he has just finished photographing), and the relationship between actors and cinematographers.

The highlight of the day is the appearance of producer/director Robert Wise as keynote speaker for the luncheon held in the vast exhibition hall of Seattle Center. It is a "sold-out" event, drawing the largest crowd since the Seminar was inaugurated nine

years ago.

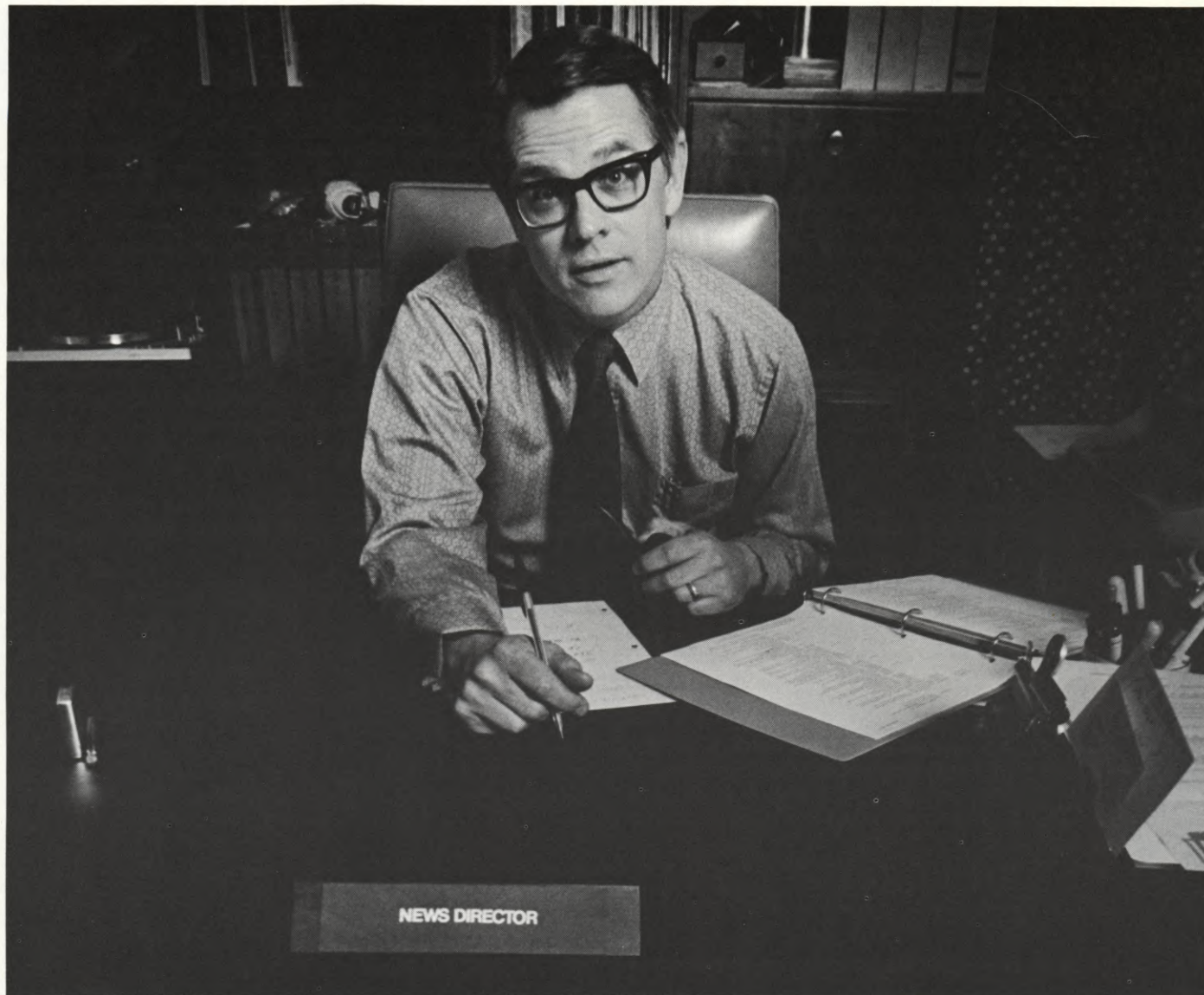
In my introduction of Wise I say: "I can think of no film-maker in Hollywood who is so much admired, respected and liked by his crews as Robert Wise — which says it all." Always underplayed, Wise's directness and honesty, both as a man and an artist, comes across to the crowd. He impresses for exactly what he is: the complete film technician (he is highly knowledgeable in every phase of production) and a consummate perfectionist — with heart. After the luncheon is concluded he is surrounded by a crowd of people eager to talk with him.

That evening, and concluding the Seminar, there is a screening session that lasts until almost 2 a.m. — with the entire audience remaining in place fascinated until the very end. The program leads off with "METROLINER", a film by Victoria Hochberg, made with the aid of an American Film Institute grant. I have mixed emotions about this one. While it features many striking images of the crack train from which it draws its title, and is technically most professional, the film-maker apparently could not resist dragging in everything including the kitchen sink. Effect is piled upon effect; there is much repetition of ideas; some of the scenes and sequences (in an apparent attempt at *avant garde chic*) are totally irrelevant to the subject. This kind of cinematic overkill — sadly — results in loss of impact in a film which, had it been shorter and more crystallized, could have been a stunner.

Next comes a screening of the delightful early-Hollywood comedy, **Continued on Page 824**

Attendees flock around producer/director Robert Wise, keynote speaker at the Seminar luncheon held in the Seattle Center exhibition hall. Their eagerness to talk to him and ask questions following his speech is indicative of the tremendous interest in film and film-making that exists in the Northwest. Seattle's West Coast proximity to Hollywood, plus the warm hospitality extended by the local people, draw many of the top technicians of the Hollywood film industry to appear at the Seminar.

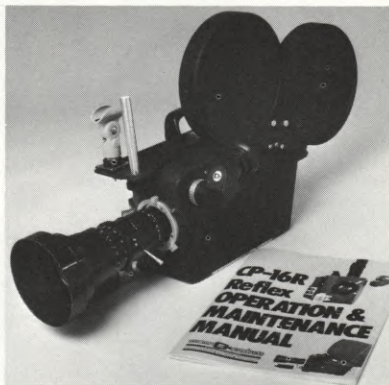




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ROBERT WISE TALKS ABOUT "THE NEW HOLLYWOOD"

Producer/directors today exercise much firmer control over their finished pictures than they ever did when this famed film-maker began his directing career 33 years ago

(EDITOR'S NOTE: The following is excerpted from the luncheon keynote address by producer/director Robert Wise at the Ninth Motion Picture Seminar of the Northwest, held in Seattle, Washington.)

When I was considering what to talk to you about today, it occurred to me that you might be interested in that certain "changing of the face" of Hollywood that has transpired since I started directing thirty-some years ago.

I was particularly reminded of that phenomenon by a little scene that took place in January when I went over to MGM Studios to begin a new project. I had been at Universal Studios since 1970 and had made three pictures there, but the new one would be made for United Artists, so I went over to MGM to see about getting some office space. I knew that lot well because I had worked there before and when the Studio Manager headed for a certain familiar section of the lot, I asked myself: "Am I going to be taken to that old Makeup Building where I had offices the last time I was here?" Sure enough — that was it. We got into the elevator and he took me up to the third floor. I thought to myself: "Surely he isn't going to take me to those very same offices." But, by George, he *did!*

A segment of the record crowd that packed the Seattle Center to attend the luncheon of the Ninth Motion Picture Seminar of the Northwest, at which Hollywood Producer/director Robert Wise was the keynote speaker. The annual seminar draws heavily from the several northwestern states of America, as well as from their neighbors in western Canada. This year's event was the best attended to date.

He took me to the same suite of offices I'd had when I was at MGM from 1954 to 1957.

But now there was a big difference, even though the offices were the same. At that time I was under contract to MGM making MGM pictures. Now I was coming back to make a picture not for MGM, but for United Artists, and it wasn't even a sure thing that I would make the picture on the MGM lot. When you work with United Artists, you go where you can get the best deal for facilities, in order to make your picture for the least money.

However, that experience started me thinking about how much things have changed since I started directing — and why those changes have taken place. I arrived at the conclusion that conditions in Hollywood are the best that they have ever been for the individual director or producer/director.

When I started my directing career with "CURSE OF THE CAT PEOPLE" in 1943, the studios were all churning them out. We made about 50 or 60 pictures a year at RKO, at least half of which were "B" pictures. It was a kind of factory, and that was true of all the major studios. I was given a standard seven-year contract — something which I don't hear of anymore. I'm sure there are still a few around, but it was a

standard thing at the time. It was an interesting kind of contract, because the first year was in six-month increments, with an option at the end of each six-month period. They were required to give me 20 weeks of work out of the 26, but it was at their option as to whether I would stay on. I had no voice in it. If I wanted to leave, but they wanted to pick up the option, that was it; I was stuck. Under the seven-year contract there were two six-month options, then two one-year options (40 weeks out of the 52 guaranteed), with the remaining two options for two-year periods each.

I wanted very, very much to direct "THE SET-UP", which was coming up for production at RKO, but I wanted equally to escape from my contract and get out of that studio, because Howard Hughes had bought it not long before that time and I could see it going no place. I got my wish for once. I made the picture, but they didn't pick up my option, and I escaped.

My next situation offered me more freedom. After getting out of my RKO contract, I signed a non-exclusive contract to do two pictures a year for 20th Century-Fox, but with the right to do outside pictures, as well. I worked under that arrangement for three years, doing some pictures for 20th and some for Warners. During that period I also went over to MGM for the first time to do "EXECUTIVE SUITE". After that I went abroad for Warners to do "HELEN OF TROY", but in the meantime, "EXECUTIVE SUITE" had been previewed and the people at MGM were very excited about it. As a result, they offered me a kind of fantastic contract — a straight three-year contract with 52 weeks of work a year. So I went over to MGM to direct pictures and was set up in the offices to which I was now returning.

Before the expiration of that contract I got into a tiff with MGM over what I considered a lack of promotion on a film I'd made, and I secured my release — except that I still owed them one film, which I later made, "THE HAUNTING". However, that marked the last time I've been under contract to a major studio — or any studio. All of my films — every one since then — have been made as individual projects, even when I stayed at a particular studio for several years. For example, I had a spell at 20th Century-Fox in the '60s when I made



"THE SOUND OF MUSIC", "THE SAND PEBBLES" and "STAR!". People were under the impression that I had a multiple-picture deal with 20th, but I didn't have. I had chosen to remain completely independent and select my own projects and work my deals out individually on each one. The same was true at Universal, where I made three pictures in a row. They've all been individual projects.

I'm not the only one who works that way. It has become the trend for most of us, in contrast to the old days when you were under contract and directed and that was it. "ODDS AGAINST TOMORROW" was the first picture on which I got the chance to function as my own producer — to both produce and direct — and I've had that arrangement on all my films since then. It's a marked change from the old days.

Even after I had left RKO and was working with MGM or 20th as a director, I had no say about the release of the picture, about the publicity, about the promotion, about what was done with my film after it was finished. Usually I didn't even know when it was going to open until I picked up the *Los Angeles Times* and read that it was running at the Pantages Theater. That was it; you were just cut off.

During the period of the last 10 or 15 years, all that has changed remarkably for those of us who have gotten into the position of being our own producers and working independently with the studios who put up the money and do the distribution. Now our contracts stipulate that we get involved with our pictures after they are finished. I don't have the right to control the advertising, but I must be consulted about it. I must be brought along the way. I must have ideas thrown at me. I must have all the kinds of thrust they are thinking of made available to me. I must be able to react and to make suggestions myself. Now, sometimes I may not agree with them completely, but at least I've been consulted. The same thing happens with the release pattern — when the picture is going to go out, what kind of pattern, where it is going to play, what theaters. I can't tell you what a marked difference it is for the film-maker to have that kind of continuity and to be able to have a voice in what happens to his film once he finishes it and turns it over to the company.

I've found just in the last few weeks, however, that this kind of opportunity also brings with it responsibilities and that sometimes your pictures will never let go of you. You fight very hard to get your editing rights and controls on your film. I finally got the right to "final cut" on my film, "THE ANDROMEDA

STRAIN", and that's the first time I had such clear-cut control — not only for theatrical release, but for TV release, as well.

The film had been sold to NBC a few years ago for two runnings on television and, at that time, I had agreed to make a few censor cuts (about 50 seconds out of the film) in order to satisfy the network's Standards and Practices office. A few weeks ago I got an urgent call from an executive at Universal, who told me that they'd sold the film to ABC for two additional runnings, but that they had a problem. They wanted to run the film on a Monday night at 8:30, which meant that there would be a half-hour still remaining of the "Family Hour". They said that they were going to have to make more cuts in the film in order to accommodate the Family Hour spot, but they realized that they had to consult me first because I had the editing rights. Well, I can only tell you that I've had phone calls and sessions and rage and emotions going on in the last few weeks the likes of which I haven't had in this business for many years. They came out with the most ridiculous, nonsensical cuts I had ever seen, in order to accommodate this Family Hour. We had a line in the picture where they're approaching the desert facility and Kate Reid says: "It's a great place to grow pot." *Out for the Family Hour!* She makes a funny crack about not being bothered by red lights because she once worked in a bordello. *Out for the Family Hour!* It was absolutely insane.

I told them that I couldn't work with them on that because I was so angry and emotionally upset by the whole bit, the ridiculousness of it. I accused them of not living in any world of reality, because it just didn't make any sense in terms of what I knew was going on in the world. But I thought that because we'd made a few cuts in the NBC version, I might be required to at least have a go at making these added cuts for ABC. I called my lawyer and he looked at my contract and said: "You don't have to cut a damned thing. You don't *have* to cut *anything* for them; it's as straight out as can be. The only cuts you might have to make for censorship reasons may be in the foreign market."

This put a whole new complexion on the thing, and I was able to send a wire saying: "Please cease and desist. Don't do it, under threat of restraint and lawsuit."

We finally resolved the whole thing. They came back to me after having taken the whole list they'd had to a higher executive and they immediately pulled back on three-fourths of the things they'd originally planned to cut

out of the film. Suddenly it was alright to say "pot". Suddenly it was alright to say "bordello". And it was alright to do this and that.

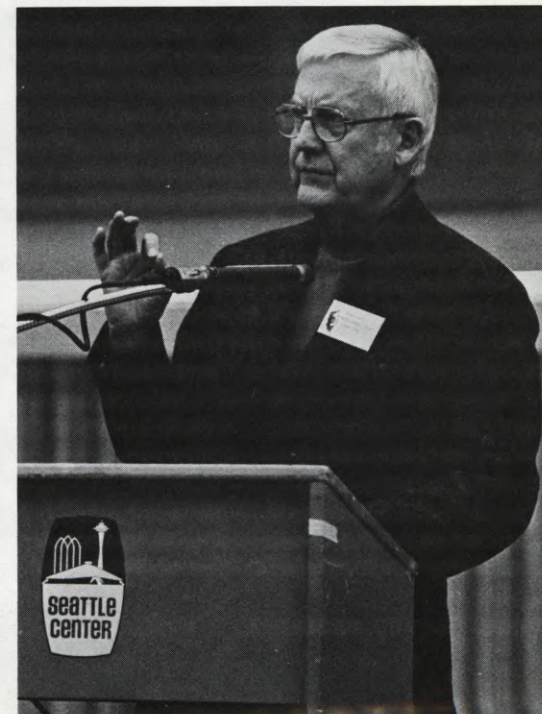
I hate to think what would have happened if I hadn't had editing control. All of those nonsense things would have been done. But finally, in a very professional and responsible way, we worked it out. I allowed them to make a few cuts that I didn't think would hurt the film. They made their point in regard to how the 8:30 p.m. spot would be a good time-slot because of the ratings the film might get if it went on at that hour. So we eventually resolved it, but I find it interesting that the network should show such a lack of responsibility to the artists' work that they would send this nonsensical, emasculating list of cuts to be made — cuts which, in the final analysis, really didn't *have* to be made. We actually made about 20% of the cuts they'd originally asked for.

The fact is that all of that goes along with what you take on when you get yourself into the position of being your own producer, as well as director, and getting clauses regarding your creative rights into your contract. It *does* require a continuity of involvement with your films. "THE ANDROMEDA STRAIN" was released in 1971, but here it is five years later and I'm still working on it — and I suppose the same thing will happen five years from now.

That's about all I want to talk about in terms of any formal statements, but I'd be very happy to answer any questions about anything I've talked about — or anything else.

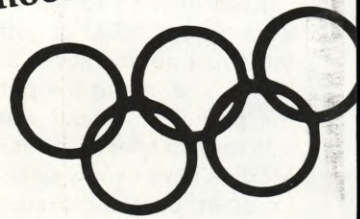
Continued on Page 780

Academy Award-winning Producer/director of such film classics as "WEST SIDE STORY" and "THE SOUND OF MUSIC", Wise was obviously a favorite of those attending.



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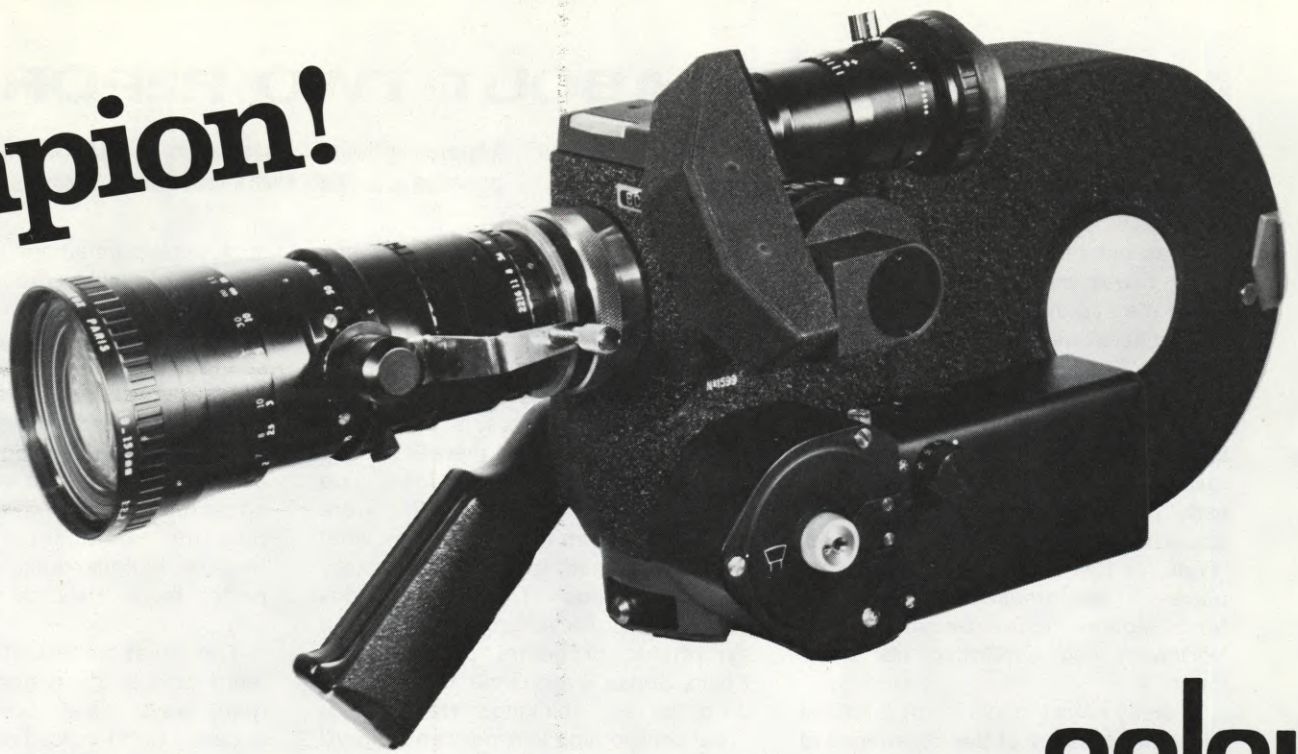


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MAKING A FILM ABOUT TWO REPORTERS

By ALAN J. PAKULA

Director

I was out of town and unreachable when I was supposed to be asked about the title of my talk today. When I arrived here I was told it had been given the title: "Making a Film About Two Reporters". That amused me, because somebody else had called the film the same thing. Ron Ziegler, President Nixon's press secretary, went to an early preview of the film and, when asked what he thought about it, said: "Well, it's just a picture about two reporters." I was amused to see that the Ninth Motion Picture Seminar of the Northwest had confirmed his statement.

In many ways the title is apt, because to me the essence of the experience of the film is the whole Walter Mitty fantasy of what it would have been like to have been Woodward and Bernstein. These two reporters, when they discovered the Watergate mysteries and broke through the cover-up, affected all of our lives and our whole society.

When Bob Redford asked me to direct "ALL THE PRESIDENT'S MEN" — it was Bob's idea to make the film — I said: "The experience of making the film fascinates me. How to do it I have no idea at this point, but since I've always been a producer, and have always produced the films I've directed, let's make damned sure we agree about the kind of film we want to make — and let's start out by saying what kind of films we *don't* want to make out of this book." I went on to say: "The first film we don't want to make would be 'Sundance Woodward and Butch Bernstein laughing their way through the east, as they bring down the President of the United States.' There are failures you can live with and failures you can't. That's one we can't."

The other thing we couldn't do would be an overall montage of all of the historical implications of Watergate. It would have been the longest montage in history. So we sat down to see what it would be like to be these two reporters, Woodward and Bernstein. It's been a fascinating adventure, recreating two men's lives. The whole experience was colored by the fact that they are very much alive.

I went to the *Washington Post* and spent months at Bob Woodward's desk. He was upstairs doing "The Final Days" with Carl Bernstein. I had Bob Woodward's desk in the newsroom and I had my own Walter Mitty fantasy. I was a reporter for the *Washington Post*. I

would attend all the meetings. It was marvelous.

There was another problem in directing this picture and that was that you could hear the drums rolling in the background, signifying that this was an important event. There is no way of writing importance and there is no way of directing importance and there is no way of acting importance. We were going to do a film that would show what it was like, and it had to be totally unselfconscious. I was very concerned that the actors might hear a symphonic orchestra playing John Philip Sousa every time they walked onto the set, thinking: "Here is our great contribution to American history!" So I tried to lessen the environment so that it was as if we were all play-acting after school, because actors would come onto the set and they would say: "I must give my all for this film." The fact is that most actors' "all" is just too much. Laurence Olivier once said that an actor should hold something in reserve, and some actors should hold a *lot* in reserve. It was a problem I've never had to this extent in any other film, and I don't think I ever will again, because of the very nature of the event.

Everything portrayed in the film was dictated by trying to make it an immediate experience, trying to say what it was like at that time. Originally Bob Redford had seen the film as possibly being made in black and white, in what I suppose you would call "a classic documentary style", but I didn't want to do that. To me "documentary" does not necessarily mean black and white; it does not necessarily mean grainy; it does not necessarily mean hand-held cameras. Or, at least, "reality" does not mean that to me.

I felt there had to be a very, very specific visual storytelling approach to this film. I wanted to use color, and from the time that I first walked into the *Washington Post* newsroom, I knew we *had* to use color — because reality just gives you wonderful, wonderful gifts.

Woodward and Bernstein were enormously helpful, but there was that difficulty about the fact that they were alive, and I would say to them: "You know, Bob and Carl, it would be a lot easier if this had happened 100 years ago and you were long since gone — not that I wish you that."

But there is always the danger, when dealing with living people, of going a Wax Museum of a film — of getting

such perfect imitations that there is no essence of reality. I made anybody with a major part in the film who was supposed to work at the *Washington Post* spend time at the *Washington Post*. Bob Redford had been there long before I had, and Dustin Hoffman went out on his own investigative reporting case. It's amazing that when Dustin disappeared into the newsroom it would take me ten minutes to find him, because he looked like every other reporter there. He's extraordinary that way.

The most important thing was to learn how to be a good reporter. In many ways, it's a "how-to" picture. I accused Bob Redford of making "how-to" pictures. With "DOWNHILL RACER" it was how to be a good downhill racer. In "THE CANDIDATE" it was how to be a successful candidate — or an unsuccessful one. In "JEREMIAH JOHNSON" it was how to survive in the wilderness. And now, in "ALL THE PRESIDENT'S MEN", it was how to be an investigative reporter.

After the research was done, the most important thing was to make it our own, and at that point I had to say to Woodward and Bernstein: "Look — you're wonderful. You're terrific, but we have to make it our own and if you watch over us, you are going to be the real people and we'll just be *doppelgangers*, and these actors will keep thinking of themselves as imitations of real people."

So we built the set of the *Washington Post* in California and that was quite wonderful, because when Ben Bradlee came from Washington to visit our set, he was a visitor to our *Washington Post*. The real Ben Bradlee of our *Washington Post* was Jason Robards, and Bradlee was just a visiting Ben Bradlee. This was terrific for the actors. It gave them a sense of security to make it their own. If I had had other actors playing Woodward and Bernstein, I would not have looked for the same performances. I did not want imitations. You use things in Bob Redford; you use things in Dustin Hoffman; the parts become an integration of the actors and the characters. It's the only way I know how to work with actors.

Fortunately for us, the *Washington Post* had just moved into its new newsroom six months before Woodward and Bernstein started their investigation. It was a relentlessly fluorescent-

lighted room, huge and totally white — a very hard white. The colors of the chairs were poster colors — hard electric blues, hard oranges and reds, hard greens. The lighting was ruthless and for a world of investigation it was just marvelous, because it was a world without shadows, a room in which nothing could be hidden. That was the essence of the visualization of the whole activity of trying to expose things that people were trying to hide, and that became the visual focus of the film. This room with its glaring light was the hub of the film and from there we would go out into the dark places with their dark secrets.

For me there were fascinating ironies in this. Most detective stories take place in seedy environments; they take place in dark worlds where nymphomaniacs and alcoholics are huddling. But here we were going into a world where the sun always shines on the people, the world of well-kept lawns and well-kept houses, where the people pay their taxes on time.

The Director of Photography, Gordon Willis, and I worked for visual counterpoint. For example, there is a scene with Jane Alexander, who plays a bookkeeper — a perfectly wonderful actress — and Dustin is interviewing her. We shot this in a tiny little house in suburban Maryland. It's a set we could have built in any studio, but it also had a porch and it had those wonderful eastern trees. We shot a second sequence between Woodward and Bernstein and her, in which they are questioning her and asking her all of these really tatty questions about the scandals, the cheapest kind of human activities being explored. But against her fear, through the screened porch, it's all sunlight. It could be an Impressionist painting. It's incredibly romantic-looking. The world looks perfect, but inside it's all crumbly.

Visually, we constantly made counterpoints in this way. We went inside the home of Hugh Sloan, who was Treasurer of the Committee to Reelect the President, and we photographed it in a very formal tableau. There is this young man sitting in an 18th-century winged chair, like a modern version of a Virginia squire, with all of that American Dream background behind him, everything formal and everything in place, but everything that comes out of his mouth deals with decay. We tried to get that kind of visual counterpoint.

Gordie Willis and I had worked on two other pictures together before "ALL THE PRESIDENT'S MEN". They were "KLUTE" and "PARALLAX VIEW". He had also worked with Fran-



Distinguished Hollywood film-maker Alan J. Pakula spent more than a year preparing and filming "ALL THE PRESIDENT'S MEN", adapted from the best-selling book by Washington Post investigative reporters Bob Woodward and Carl Bernstein. Pakula's other credits include (as producer): "TO KILL A MOCKINGBIRD", "LOVE WITH A PROPER STRANGER", and "UP THE DOWN STAIRCASE", plus (as director): "THE STERILE CUCKOO", "KLUTE", and "PARALLAX VIEW".

cis Ford Coppola on both of the "GOD-FATHER" films. After "GODFATHER II" a critic in Minneapolis had called him "The Prince of Darkness" because of his reputation for very dark, moody photography. But we needed a "Prince of Light", as well, on this film. Before I asked him to do the film, I talked to Gordie about my problem of wanting to see lots of counterpointed action, lots of scenes with action going on in several planes deep into the background. It meant much use of wide-angle lenses. It meant a lot of the total opposite of all the flare photography that is being done today. It meant going back to a crisp, hard, sharp style of cinematography.

Visual style in films is always dictated by content, and in this case it was to represent how reporters see and how they look at things and their perceptions. In order to achieve that style, Gordie used a lot of split-diopters, which are essentially bifocal glasses, in a lens sense. Split-diopters make it possible to shoot with enormous depth, but they make it very difficult for the actors. For example, Bob Redford has a six-minute scene filmed straight through in one set-up, with no cuts. The camera moves imperceptibly. It starts on a medium closeup of him and in the background there is a group of people in the newsroom watching McGovern on television as he dumps Eagleton from the ticket. In the foreground there is Bob Redford obsessed with his own story and finding out how money that was given to the Committee to Reelect wound up in a Mexican bank account. He pursues his story, going from one

phone call to another and another. We wanted that counterpoint of action in several planes, which meant using a split-diopter. Bob had his plane in which he was in focus, but if his hand moved half-an-inch too far he would be out of focus. The prospect of this disaster didn't thrill him, but it was very important to the style of the film for us to be able to watch him shut out the whole world. That's the obsession of the investigative reporter, an absolute obsession for exposing the secrets that people in power want to hide.

"ALL THE PRESIDENT'S MEN" is not a moralistic film, despite the fact that it is an incredibly heroic story in outline. It deals with the power of the individual — in this case, two individuals, two really unimportant reporters who bring down the most powerful people on earth. Their reasons were not heroic. Investigative reporters are quite amoral. They are obsessed just like people are who climb mountains "because they are there." They are obsessed with exposing untruths in high places. I have my own little tacky theoretical hypothesis about why. I call it the "Catcher in the Rye" syndrome, that syndrome of the adolescent when he gets to that age when he suddenly realizes that Daddy is imperfect, with all of his Achilles Heels, and suddenly the great disappointment that comes out, and the enormous anger and disillusionment that is expressed. There is something about investigative reporters constantly exposing the untruths and hypocrisies of the people in power that relates to that.

Continued on Page 819



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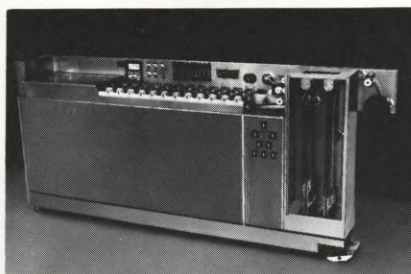
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**FIRST USE OF STEADICAM-35
ON "BOUND FOR GLORY"**
Continued from Page 791

QUESTION: Specifically how did you use the STEADICAM-35 in photographing "BOUND FOR GLORY"?

WEXLER: I used it a number of times. The most spectacular usage was a combination shot which started with the camera high up on a Chapman crane to show a huge camp of migrants in the Thirties, poor people who were camped out in a sort of shantytown. The camera craned down to find David Carradine, who plays Woody Guthrie, sitting on an old car. He gets up off the car as the camera crane reaches ground level and the cameraman steps off the crane with the STEADICAM in hand and follows Carradine underneath tents and through narrow passageways and crowds of people until he reaches another actor. They then have a scene where they back through more crowds of people. The camera moves as if it has no limitations, which, in a sense, it doesn't have, because it travels over rough terrain where you couldn't lay dolly tracks — and even if you could lay dolly tracks, they would appear in the picture. It's quite spectacular. We used it in a number of other places where it was impossible to lay tracks, but where we wanted some fast movement.

QUESTION: I've seen footage shot with the STEADICAM-35 and that, of course, is the proof of the pudding — but when you merely hear its capabilities described in words it sounds a bit like science-fiction, don't you think?

A hand-held Arriflex 35BL is used to put the audience right into the middle of a fracas taking place inside a boxcar, while the Panaflex (at left) covers it from another angle. "BOUND FOR GLORY" depicts an era in which poverty, and the desperation which it engendered, sometimes led to violence, and such action is best captured with the hand-held camera.



WEXLER: That's true. Usually when a new device comes out there are overstatements. People say: "This is the greatest thing ever! This is a breakthrough! It will change the way motion pictures are made!" But I do think that this particular device will significantly increase the fluidity of the camera. It will, perhaps, be overused until people settle down to knowing how and where to use it, but it definitely is an exciting new working tool.

QUESTION: What camera did you use on the STEADICAM-35?

WEXLER: The camera we used was an extensively modified Arriflex 2C, with a 2/3" video camera coupled to the viewing system to provide full reflex viewing. I understand that Cinema Products will sell it as a complete package, camera included, because the camera is very delicately balanced to the stabilizing device. One of the problems with the first prototype was how to follow focus. Someone had to reach out and touch the camera, with the possibility of disturbing its smoothness. Obviously, a camera that is so delicately balanced as to be able to float that way can't have some assistant's big meat hook on it, because every time he would touch the camera to change focus he would run the risk of affecting its steadiness. On the test footage that Garrett Brown shot he had a lens with sufficient depth of field to carry, but for regular production work it is necessary to be able to follow focus. When I was in Sweden a few years ago I bought a remote-control follow-focus device from a man named Heden. It had a small servo motor like a zoom motor, except that it was attached to



At a railroad crossing, the camera on a Chapman crane soars above the action. Dolly and crane shots throughout helped maintain a "fluid" camera.

the focusing mechanism. From that servo motor a cable went to a box which had calibrations on it, so that the assistant could change focus without actually touching the camera. I mentioned that to Ed DiGiulio and he thought that some such provision would be perfect for the STEADICAM — so the second time I used it, on "BOUND FOR GLORY", it had this remote focus control which helped us do much more elaborate shots. Now Cinema Products has carried the concept a step further and I understand that the production model has a wireless focus and f-stop remote-control which is completely unattached to the camera.

QUESTION: Aside from the obvious thing of running up and down stairs with somebody, what do you think might be some of the other uses for this device in feature production — or even in the filming of commercials?

WEXLER: Connie Hall, who is a good friend of mine, recently photographed a picture called "THE MARATHON MAN", starring Dustin Hoffman, with John Schlesinger directing. In that picture Hoffman had to do a lot of fast movement through the streets of New York — and New Yorkers are not known for being very cooperative when

someone is pointing a camera in their direction. With no crew around at all, Dustin would take off down the street with Garrett Brown and his STEADICAM either ahead of him or behind him and, because he was not looking directly through the camera, people didn't know exactly who was shooting where. In this way they were able to get some spectacular fast-action shots for "THE MARATHON MAN" right in the city streets of New York. The device will undoubtedly be used a lot in the filming of commercials because of the spectacular nature of it and the fact that the producers of commercials are always striving to make them more and more unusual. I'm most excited about what we call "combination shots", where the camera and the device start off on a dolly or crane, with the operator then stepping off to go through a doorway or do some elaborate twisting or turning that could not be done on a dolly. Certainly, on productions where there isn't a big grip crew or where time doesn't allow for the laying of dolly tracks, the STEADICAM could be substituted.

QUESTION: How did the video viewfinder system work out for you?

WEXLER: It produces a super-bright image that doesn't seem to be diminished by external light falling upon it, so it worked fine. The STEADICAM, with its video viewfinder and possibility for TV monitoring, represents a sort of marriage of the film and video media. The thought now is to include a small transmitter that will send the video image to a Sony tape recorder so that it will be possible for the director, or anyone else who is interested, to see the



A flatcar providing a platform for the Panaflex camera, the director and camera crew is used to make a "trucking shot" of a steam locomotive moving along the tracks. In evolving a photographic style for the film, Director of Photography Haskell Wexler, ASC, opted for muted color that would have an implied black-and-white feel to it, while retaining the realism of a world which, after all, does exist in color.

shot on video tape immediately after the camera operator has made it. That's already been done on an experimental basis.

QUESTION: How difficult is the STEADICAM to operate? I mean, can just about anyone with normal intelligence and dexterity pick it up and go with it?

WEXLER: It's not that simple. Garrett Brown is the cameraman who invented it and he's a regular ballet dancer with it. But I think that any other camera operator will have to spend two, three or four days practicing in order to

become adept with it. It's just not something you put on and instantly start to shoot stuff as good as what you see on the sample reel. I tried it and I was about 30% as good as Garrett Brown. Connie Hall tried it and said he was about 50% as good. It is a device that requires the development of a personal skill on the part of the operator — and a certain amount of stamina. But, as I said before, the STEADICAM is an exciting new tool for the film-maker, and it's interesting to me that a cameraman on his own in New York — through his own fiddling and mechanical knowledge — was able to do the basic development on it. ■

(LEFT) An intricate action scene is shot along a railroad siding. (CENTER) Cinematographer Wexler shown with Director Hal Ashby, whose most recently released film was the highly successful "SHAMPOO". (Right) Backed against the wall in one of the small location interiors utilized during the filming, Wexler lines up a shot with the Panaflex camera. Veteran of many a documentary shoot under similar cramped conditions, he took it all easily in stride.



"THE NEW HOLLYWOOD"

Continued from Page 771

QUESTION: Were the cuts demanded in "THE ANDROMEDA STRAIN" only in the 30-minute portion of the film that would be shown during the Family Hour?

WISE: No, they were throughout the entire film. The first thing I said to them was: "Okay, let's look at the first half-hour." But the policy is that if a film starts in the Family Hour, the regulations must be enforced throughout its entire running time. The reasoning runs that a lot of children will stay up to see the entire film, so it has to be addressed as if the whole thing were running in the Family Hour.

QUESTION: When you sent the telegram to Universal to cease and desist, did they do it?

WISE: I haven't had to do that with Universal. The telegram I mentioned went to ABC. I want to say that Universal stood by me 100% in this — backed me up completely. They told ABC: "This is between you and Bob. He has all the rights. We gave them to him, and we knew what we were doing when we put that clause in the contract." They backed me all the way and they couldn't have been better, in the professional sense.

QUESTION: Do you have any idea of what the latest trends in the feature film might be? For example, are we getting away from the "disaster" film and moving toward something else?

WISE: I really don't know. I'm not a very good trend-spotter, I guess. Although there are more "disaster" films on the drawing boards, I sense that this cycle, to a degree, is drawing to a close. Nevertheless, we'll see "JAWS PART II" and a couple more like that. There still seems to be a trend toward period pieces — nostalgia — but beyond that I really don't know what the current trend is.

QUESTION: What do you consider the film you would least like to have made, and what happened to make it unsuccessful?

WISE: I've had a fair number of those (they never get mentioned by moderators), but I suppose that for everything that went into it, the film would have to be "STAR!". When I say "everything that went into it", I mean the tremendous amount of money and all the high hopes for it and all the feelings we had that it would be successful and

well-received. I'm often asked why it didn't work — why it didn't take off. I have no better answer for that than anyone else. Maybe the audience didn't want to see Julie Andrews in that kind of material. Maybe they expected a different sort of thing out of the life of Gertie Lawrence than we wanted to make, which was not the definitive biography of the lady, but a look at her in certain situations, with certain people, and a sweep of the times. I suppose that's the film I regret making the most.

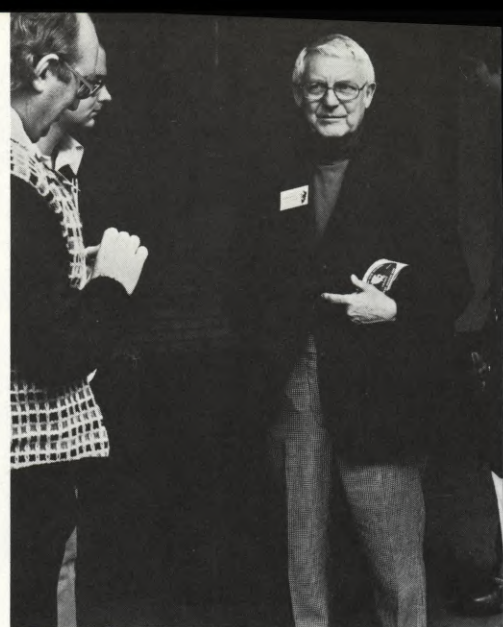
QUESTION: How closely do you work with the film editor on post-production?

WISE: Very closely. I don't do any editing myself. I don't breathe down his neck, but I'm there and I run the footage with him and I suggest and I change and we try things. I follow my films through completely — all through the editing, through the sound, through the music, through the scoring, the dubbing, back into the lab, checking the initial prints, trying to get the right release prints, and following right on through. But I do work closely with the editor. When I first started directing I would occasionally get in and do some editing myself. I remember that when I did "THE SET-UP", which was five years after I'd started directing, I did cut most of the fight sequences because I found myself getting impatient with what was happening and the film was kind of fascinating — but I haven't done any actual editing for 20 years.

QUESTION: Do you believe that the editor should be on the set during shooting?

WISE: No, but he can be, if he wants to visit. It all depends upon the individual case. In my case, there is really no need for it. Before I started directing, however, I worked with Garson Kanin, who was new to film, and he always had an editor with him. I think it provided a lot of help to him. So I think that under circumstances where people are not familiar with the techniques and the possibilities and the coverage, having an editor on the set is fine. But in my own particular case I really don't feel it's necessary. Occasionally I'll call the editor up, if he's not around for a certain sequence, and ask: "Do you think you will need this shot or that shot?" But I don't feel that I need him there all the time.

QUESTION: What are the steps you take in deciding what properties to make?



Like other guest professionals of the film industry, at the seminar, Wise was surrounded by many eager to ask questions following his talk.

WISE: And that, by the way, is the major decision that any of us must make on every project — when you say: "That's what I'm going to make into my next film." None of us can escape the strengths or weaknesses of that basic decision. Some of us might do better than others on that score, but it's always with you — and that goes for the director, the writer, the actors, the star or anyone else involved. First, the story, in whatever form it may be — a play, a book, an original screenplay — must grab me as a reader and as an audience. I must get very caught up in it and almost forget that I'm reading it as possible screen material. Second, if I become caught up in it, I analyze it as to whether I could bring something to it in terms of cinematic handling. Number three — and very important: Is there an audience for it? Granted that I am going to make the greatest film in the world out of it, is there potentially a large enough audience for it, enough people who are going to come to see it? Not infrequently you have to shake your head on that one and put the property aside. And fourth: What is it going to cost? That's very closely related to Number Three. At this point I'm thinking of what it might cost in terms of a top-of-the-head guesstimate — something I can approximate without any official input, but strictly on the basis of my years in the business. If I don't ask myself that, I'm going to have egg on my face when I go in to talk to the studio executives. That's the first thing they're going to ask: "What do you think it's going to cost, Bob?" So Three and Four — how big the audience and how much it's going to cost — are closely related and of critical importance. Those are

Continued on Page 826

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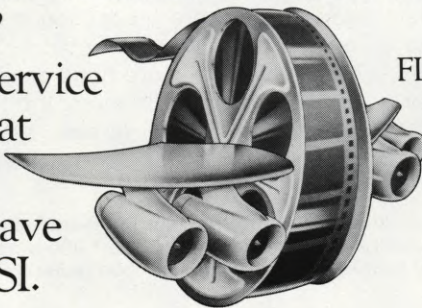
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By **MICHAEL SAMUELSON**
Samfreight, London

The time was 1 o'clock in the afternoon — the telex in our office at Cricklewood Broadway started to chatter — the message read "Urgent, Urgent, Urgent! Will Michael Samuelson please come to the telex."

From Addis Ababa, Ethiopia, came a plea from a desperate Production Manager who explained he was part of an American Broadcasting Company team making a television epic about Africa. The telex went on that at 12 noon tomorrow they had an audience to film with the late Emperor, but, alas, they had just this moment had an accident with their camera. No way could they risk missing such an important interview. What could we do in London to get a replacement camera to deepest Africa within 23 hours?

They filmed the Emperor on time, thanks to a helpful Vice President of TWA who arranged to delay the only flight from Europe to Addis that day. A courier grabbed a camera in London and made a dash to Frankfurt, where TWA's Airliner waited one hour for him. Seven hours later a very relieved Production Manager met him at the Airport. ABC got their scoop.

Then again, on another occasion, we received a cable as follows:

"19.35 Valletta, Malta,
Have just dropped your Mitchell camera in sea, please send another STOP signed John Shackleton, Merryman Productions."

The day staff were leaving for home. The Production Manager did not apologise nor send his regards which, I'm afraid, is the "norm" in the camera rental industry. By 7 a.m. next morning the unit was back in business. We found there was a midnight holiday flight from Gatwick, and we were able to check-out and send a complete

replacement outfit.

As the unit returned to base at the end of the day's shooting, their boat had capsized and ended up in the sea. They did not lose one hour's shooting time, as the new equipment was with them for first shot next morning. Such is the urgency of the film freight business, and that is why we have our own freight handling organisation, Samfreight Limited, based at London's Heathrow Airport. Their mission in life is to put their foot in the door of an aircraft so that we can make a flight which would otherwise be impossible.

This enables us to give a unique service to the Industry — something we call "Instant Flight and Waybills". They come just like the coffee, "Instant". When somebody from an overseas production phones, desperately requiring a piece of equipment, either a new piece of equipment or a replacement, whilst they are talking to us, our freight office selects a flight and hands us a waybill and these details are immediately passed on to the unit whilst they are still talking to us. Information with which they are able to reassure their unit that the equipment is on its way.

Today film-making is more international than ever before. Heretofore, films were mainly shot in studios, incurring vast expenses in set construction and studio overheads. Today, if you want to film a Spanish village you do not build it in a studio in Hollywood, Rome or London, you go to Spain and find the village best suited to your needs. This means that in 1976 very much more production is carried out on location than ever before and, in fact, most films have none or very few studio sequences in them. If it is a big production in such faraway places as Asia, South Africa, or Australia, the

cost of transport alone frequently goes well over the quarter-million-dollar mark.

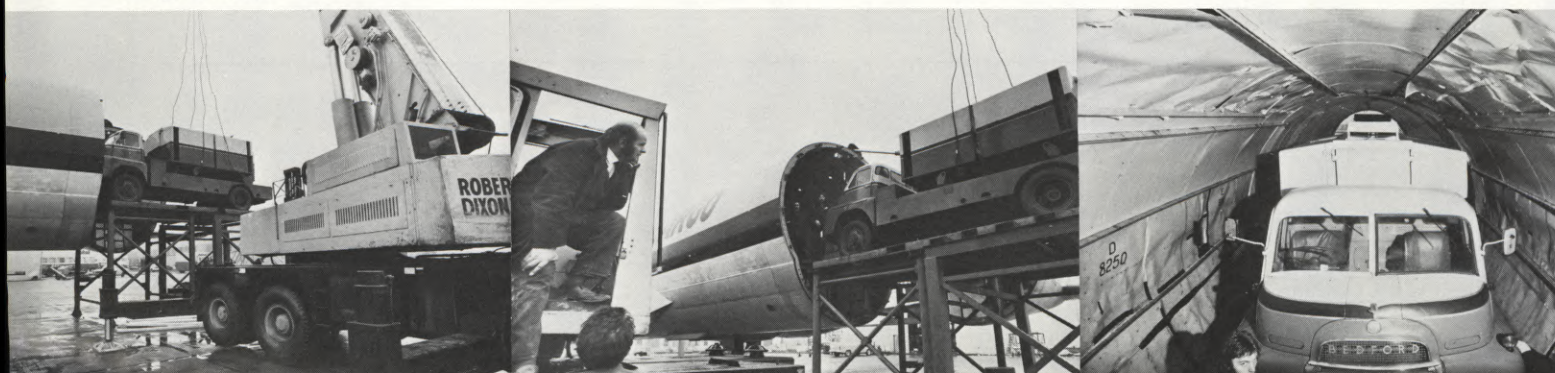
For "THE WILBY CONSPIRACY" made in Kenya a couple of years ago, we flew out a 1,000-amp silent generator, which weighs 12½ tons, together with a Sam Mobile, a specialised vehicle for film equipment. For this production, one of the world's largest types of plane — a Galaxy — had to be specially chartered. The cost was very high but, of course, this was offset by the additional hire charges which would have been incurred had sea shipment taken place.

Samfreight is currently working on Joe Levine's "A BRIDGE TOO FAR", the story of the Arnhem Battle. For this, between 300 and 400 World War II vehicles will have to be transported to Holland. As many of them are no longer able to move under their own power and are currently situated all over Britain, a large sea-going car ferry will be chartered to make a trip around the British Isles collecting armoured cars and trucks at various ports of call.

It is a very specialised job handling such large productions, and such Film Industry/Shipping specialists are to be found in most of the world's film capitals. There are only three or four UK freight agents capable of handling the many ramifications of a big location production.

"Dailies" exposed in Spain today, can be back in Spain tomorrow, having been to London for developing and printing overnight. Provided that the flight lands by 10 p.m. tonight at London's Heathrow Airport, the film can clear customs and be in the laboratory by midnight. It can be processed, printed and ready for collection by 8 o'clock tomorrow morning, and on a flight back to the location within 2 or 3

(LEFT) Large mobile crane assists hydraulic lift in positioning 9½-ton 1,000-amp silent generator onto aircraft pre-entry platform. (CENTER) An anxious moment, as cables of the mobile crane are slackened and the 1,000-amp mobile generator prepares to enter fuselage of the massive cargo air freighter. (RIGHT) Success! Nine-and-a-half tons of mobile generator safely stored inside the freighter aircraft, en route to a foreign location.



hours. With production on a feature sometimes costing tens of thousands of dollars a day, it is essential that the Director know exactly what material he has before moving on to new scenes and sets.

This is all part of the big movie freight business service. But don't think the specialist agent is only there to look after the multi-million-dollar production. Their bread-and-butter business comes more from the individual or small company involved in television commercials, audio-visual presentations, or any other part of the many-sided media industry. They are there to help them all.

Costs, of course, are often as important as time. Depending on the urgency the agent will advise the best way of sending a shipment. It could be by Air, Road, Rail or Sea. In the Film Industry, Air is the most widely used mode of transport and not necessarily the most expensive. It is often possible to consolidate a shipment with other people, so that you obtain a cheaper rate for a much heavier load. A big saving, should the shipment be going somewhere as far as Australia. If you can reduce the per-kilo rate by up to 50% by consolidation, it obviously makes a vast difference in the cost. On the more popular routes the consolidators publish time-tables utilising scheduled flights; such shipments can be as quick as those handled by the airlines direct, but you must check their schedules out very carefully if your goods are very urgently needed.

In certain emergencies sometimes even Airfreight is not quick enough and items have to be flown out as baggage accompanied by a courier. This can be really expensive, as every kilo which exceeds the normal free baggage allowance is calculated at 1% of the outward one-way first class fare. Obviously, the big advantage with this system is that the items get personal supervision all the way along the line and instant customs attendance at both ends of the flight; this consequently saves valuable time. Here in London many of our staff carry their passports with them at all times in the hope that they will spend an evening in some exotic city rather than sit at home with their television supper! Recently we have had a secretary who unexpectedly dined in the Swiss Alps and a projectionist who rang his wife to say that he wouldn't be home within the hour, as he was boarding a flight for South Africa. On both occasions the reason for the trips was to get a piece of equipment to a unit... fast!

For the same reason, sometimes it pays to charter a whole aircraft — not

THE LONDON CHAMBER OF COMMERCE & INDUSTRY

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Sample of an ATA Carnet, best described as "a passport for goods", a type of document which, in recent years, has greatly facilitated consignments of equipment abroad for temporary use. Some 30 foreign countries currently accept Carnets as a satisfactory way of guaranteeing that equipment will later be re-exported. Now widely used, they eliminate the necessity of employing agents at every port of call and, therefore, save much time and money.

only because it may be cheaper, but to facilitate customs clearance at the other end. For the Olympics in Mexico some 55 cameramen and other technicians flew to Mexico, accompanied by six hundred and thirty items of accompanying baggage — the baggage being all their cameras, lenses, recorders, lights, etc. Whereas it is possible to sometimes get very inexpensive fares for passengers, there is no such efficient, inexperienced or quick way of clearing difficult customs with large quantities of cameras, as to arrive with it as baggage! That way it never disappears into freight sheds and computers to await the whim of an Officer before he deigns to allow it out. Certain countries are notoriously difficult and extremely expensive to get equipment imported on a temporary basis. Mexico is such a country, and it was well worth chartering a plane for the Olympics, for this reason alone. It worked so well we utilized the same method four years later at Munich.

Shipping consignments abroad for temporary use has, in recent years, been made very much easier by the introduction of the ATA Carnet. These are now widely used. A Carnet can best be described as a Passport for Goods. Instead of the costly and difficult procedure of raising a bond in overseas territories, one can, in fact, with the aid of certain Chambers of Commerce, put up a bond or guarantee in your own home town. Some 30 foreign nations accept Carnets as a satisfactory way of guaranteeing that the equipment will later be re-exported.

Those countries are: Australia, Austria, Belgium, Luxembourg, Bulgaria, Canada, Czechoslovakia, Denmark, Finland, France, Germany (Federal Republic), Gibraltar, Italy, Ivory Coast, Netherlands, Norway, Portugal, Republic of Ireland, Rumania, Spain, Sweden, Switzerland, Turkey, U.K., U.S.A., Yugoslavia.

Carnets mean that one does not need to employ agents at every port of call, as they are simple enough to use. This can save a lot of money. Those people who have ever paid a French Customs agent's bill will tell you that it is a terrifying experience — worse than reading a horror film script! Adding the date in being only half the story.

However, having said it is less expensive, you must be meticulously careful in using them correctly. Each Carnet has a predetermined number of counterfoils and vouchers — one for every country you leave, and one for every country you enter. As you leave your home territory, your Customs will stamp the first page; that is evidence that the goods listed have, in fact, been

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DO NOT X-RAY

SAMFREIGHT LTD., Room 65, Cargo Agents Building, London (Heathrow) Airport, Hounslow, Middx. Telephone: (01) 897 2851. Telex: 22197. Cables: Samfreight London

In recent years, because of hijacking and bomb scares, many items are routinely X-rayed at airports. Despite assurances to the contrary, X-raying can fog film and destroy thousands of feet of expensive shooting. To avoid this, make sure that every package of film is clearly marked with a DO NOT X-RAY label similar to the specimen shown above.

exported. On arrival at the first foreign port of call, the Customs Officer there will stamp the next page; that is evidence that the equipment has now been imported into their territory. As you leave their territory you get another stamp, and so on and so forth. Therefore, if you are driving across Europe, at each frontier the Carnet is stamped twice — once for exporting the equipment and once for importing it into another territory. This operation is carried out by two totally different nationalities of Customs Officers. This procedure must be followed to the letter at each frontier post. No short cuts, please.

Customs Officers take little interest in filming equipment leaving a country as hand baggage, or freight. Therefore, it is the Carnet holder's responsibility to ensure that a Customs inspection is carried out. If the equipment is to be Customs-examined, you are strongly advised to arrive at the airport at least two hours before departure time and to insist that the Customs Officials inspect the equipment and stamp the Carnet in the correct manner. Do not be put off by a wave of the hand on departure, when an Officer says you can go through without an inspection taking place, because if you don't get an exit stamp basic Carnet rules will be broken. On several occasions, sometimes many months after

the equipment has returned, we have had to send cameras and lenses back to foreign countries for them to inspect, thus proving that the items were, in fact, re-exported and NOT sold in their territory. This can be expensive and aggravating for all concerned. You have been warned.

Now, how to obtain a Carnet. It is easiest to call your agent, but if you want to try yourself it is necessary to supply the issuing Chamber of Commerce with the following: an application form, issuing fee, Carnet documents and enough security to cover any duty claims that may arise if the Carnet is misused. The amount of the security varies and depends on the countries being visited. It is calculated on the highest rate of duty and taxes in those territories uplifted by a further 10%. Your freight agent will advise you of the exact amount upon application. Depending on the security required, this guarantee can take the form of cash, cheque or a guarantee given by your bank or insurance company. The latter method will only be accepted when given on the official Chamber of Commerce form.

Having raised a security it is essential, I repeat, that you follow carefully the instructions given on the Carnet. Otherwise, on return you could find yourself in great difficulties getting your security
Continued on Page 817

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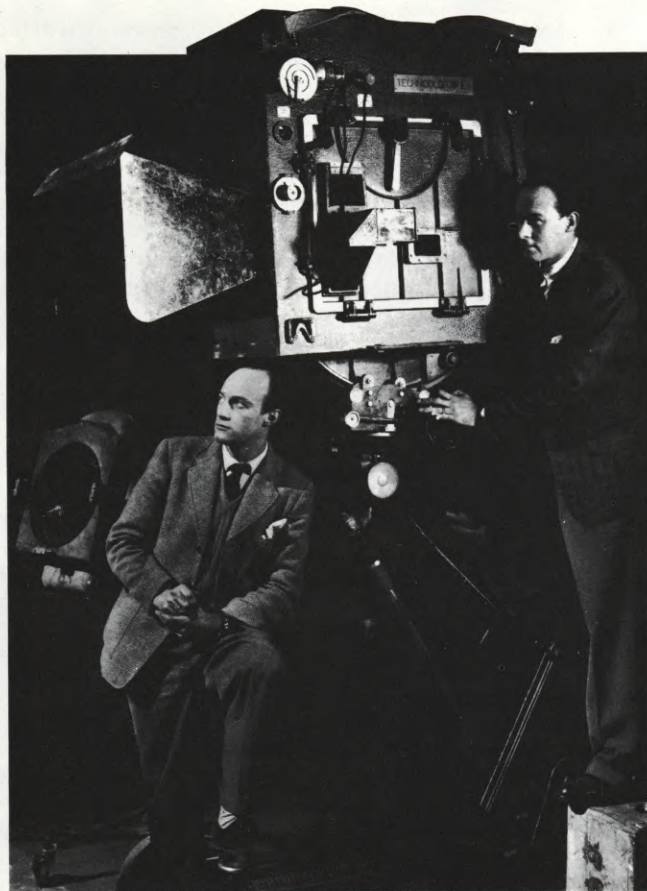
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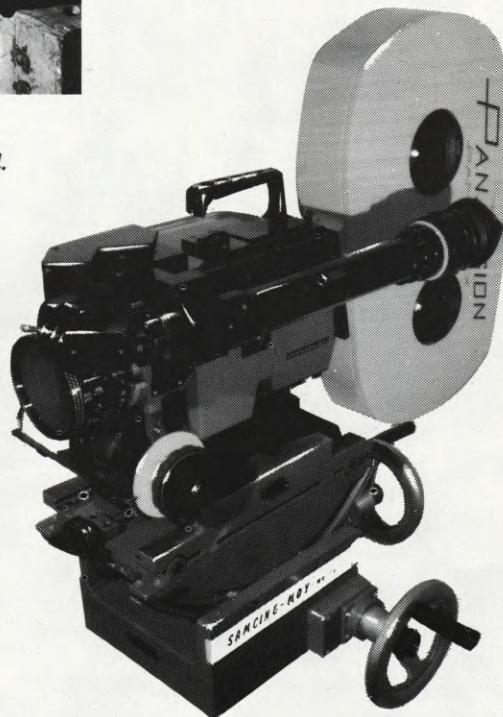
*Jack Cardiff and Geoffrey Unsworth with the
Technicolor 3 strip camera on a 22" Moy head.*

Like the Mk. I the new head has a built-in balancing slide, an either-way-round adjustable wedge, a dovetail camera attachment, optional off-set control positions, two-speed pan and tilt action (four speeds with the off-set arms), a large 'T' level and a levelling high hat, as well as adjustable pan friction.

If you've got a low profile camera and you want to get a head, get a Samcine-Moy MkIII.

Times have changed. There was a time when a Technicolor 3 strip camera required a 22" geared head. For standard studio cameras a 16" quadrant is considered to be ideal. Now, to accommodate the new low profile cameras we have produced a superb 13" head, the Samcine-Moy MkIII.

The Samcine-Moy MkIII has the same silky movement as larger geared heads, the same feel and the same balanced gun-metal control handles which smooth out long pans and tilts.



*The Panavision Panaflex camera on a 13"
Samcine-Moy geared head.*

PANAVISION[®]

EUROPEAN MANAGING ASSOCIATES

STEADICAM-35 - A REVOLUTIONARY NEW CONCEPT IN CAMERA STABILIZATION

By ED DiGIULIO

President, Cinema Products Corp.

This new creative tool for the cinematographer and director permits a fast-moving, hand-held camera to "float" smoothly through the air

This is the era of hand-held shooting for professional cinematography. The desire for realism, the increasing use of location filming, the need to film practical interiors, and the creative need of both cameraman and director to produce new and imaginative imagery have all conspired to cause an enormous rise in the use of hand-held cinematography over the past decade.

Although Arnold & Richter introduced the Arriflex 35mm hand-held reflex camera back in the '30s, it has not been until relatively recently that hand-held cinematography has become a major tool in filmmaking. More recently, Arriflex and Panavision have both developed extremely fine cameras, the Arriflex 35BL and the Panaflex, that have given added impetus to this trend.

The new wave of filmmakers from post-war France brought us *Cinéma Verité*, where the hand-held camera was carried about without concern for picture stability. While it introduced a sense of intimacy and immediacy, *Cinéma Verité* failed in its basic effort to convey a sense of realism. This is because the hand-held camera of *Cinéma Verité* "saw" the world in a totally unrealistic way. The human eye does not rock-and-roll and bump the way the hand-held camera of *Cinéma Verité* was wont to do. The eyes are part of an exquisite human servo-system (the brain) that is constantly adjusting and correcting for body motions so that the scene we see is always steady. For example, you could be running alongside a slow moving freight train and easily read small print

on the side of the freight car.

This brings us to the fundamental concept of our new and revolutionary camera stabilizing system. The stabilizing system was invented by an East Coast filmmaker named Garrett Brown. He experimented over a period of years with different stabilizing systems and gradually evolved a rough prototype of the system we have developed.

Garrett came to us almost two years ago with a 35mm print that he had shot with his prototype system, using a modified Arriflex camera. We were excited by the film, and immediately entered into an exclusive licensing agreement whereby Cinema Products would design and develop various versions of Brown's stabilizing system, which Cinema Products would manufacture and distribute on a worldwide basis.

So unique and revolutionary is our new camera stabilizing system, so far-reaching in its ramifications, that we have already applied for all foreign and U.S. patent rights to cover every possible aspect of any version or application of the system.

The first motion picture camera version, called STEADICAM-35m, was used by Haskell Wexler, ASC, on "BOUND FOR GLORY". It has since been used extensively by Conrad Hall, ASC, on "MARATHON MAN", and by James Crabe on "ROCKY". Bill Fraker, ASC, has tested with it on the upcoming "HERETIC", and he, too, plans to use it for a number of difficult scenes in that production.

STEADICAM-35 provides total mobility and portability while recording extremely steady and smooth images. It allows the camera operator freedom of movement he never had before. For example, the system permits the camera operator to run at top speed over rough terrain (even skipping over rocks), or run up and down staircases while shooting, and still deliver completely jitter-free shots of dolly-quality smoothness.

The STEADICAM-35 system utilizes an extensively modified Arri IIC as the basic camera mechanism. We also installed a "hard front" to permit use of the exciting new Canon aspheric super-fast lenses (and, for that matter, any other lenses in standard reflex BNC-type mount). The drive circuit was modified so that the reflex mirror always stops in the viewing position. The Arri IIC camera is driven, of course,

Cameraman Garrett Brown demonstrates his invention, the STEADICAM-35, which delivers dolly-smooth, jitter-free images when the operator is running very fast (even up and down staircases), or sitting in a helicopter, or riding on the back of a flat-bed truck over any kind of rough terrain. It has been used with great success on such recent features as "BOUND FOR GLORY" (See Page 788), "THE MARATHON MAN" and "ROCKY".



by our crystal-controlled motor.

A 2/3" video camera has been coupled to the Arri IIC viewing system to provide full reflex viewing by means of a super-bright, specially designed 3" monitor. The viewing system in the reflex viewing door of the Arri IIC has been modified so that, by means of a flipped mirror, the camera operator has the option of viewing either on the 3" monitor while shooting, or through the regular camera eyepiece while setting up scenes. The 2/3" video camera incorporates a highly sensitive silicon matrix-type tube to produce a high-quality image with the low light levels one normally experiences from the rear of a ground glass.

While the video pickup was fairly straightforward, especially in view of the fact that we have been doing this for years on reflex BNC's (and more recently, on the CP-16R), the monitor presented us with a totally new problem. Since the complete camera system is virtually floating in space in front of the camera operator, and since the camera operator will be frequently shooting in bright sunlight with the sun most often behind him, it became immediately apparent that a conventional monitor, no matter how high its quality, would never be adequate to the task of providing bright and sharp pictures when bright sunlight is impinging on the monitor screen.

For this reason we had to design a totally new high-resolution TV monitor from scratch, using a special high-intensity kinescope tube of such brilliance that it produces over 4000 foot-lamberts on the screen of the tube before passing through a special filter, designed to virtually eliminate any reflections on the face of the tube from all ambient light sources, including

The STEADICAM-35 remote follow-focus control (operated by means of wireless transmission) permits the assistant complete freedom in following focus, without an "umbilical cord" tying him to the camera. It remotely operates a servo-driven follow-focus unit attached to the front of the modified Arri 2C camera. A cable-connected remote follow-focus control model is also available, if desired.



The complete STEADICAM-35 system consists of a body brace, with a support arm attached at one end, and (through a free-floating gimbal) to the camera system at the other end. A special 3" high-intensity monitor on the camera permits convenient two-eyed viewing in all ambient light situations. Below the camera is a monitor power-supply module, crystal-controlled camera drive motor, control circuitry, and the battery pack powering both the film and video cameras.

direct sunlight. (As a comparison it should be noted that a bright B&W monitor typically provides a maximum of 400 footlamberts on its screen.)

The lower portion of the camera assembly, in a T-bar type of arrangement, contains the monitor power supply module, crystal-controlled camera drive motor and control circuitry, and the battery pack powering both the film and video cameras. (For the sake of realizing maximum weight saving, we use a 20-volt, silver-zinc, five-ampere-hour battery pack.)

The operator supports the whole camera structure by means of a body brace which is a padded close-fitting harness-like jacket, designed to sustain the total weight of the system mainly on the operator's hips. Attached

to the breast-plate of the jacket is an exoskeletal-type articulated support arm, which parallels the operator's arm in any position, and almost completely counteracts the weight of the camera system with a carefully calibrated spring force. The camera system attaches to the support arm by means of a free-floating gimbal. In this manner, the camera operator is able to pan or tilt the camera at will, and move it up or down, or side-to-side, in a free-floating manner. For instance, the camera operator can boom up or down nearly three feet, he can pan a full 360° or tilt up or down 60° . . . and he can accomplish all this while he himself is in motion. He can even run forwards and shoot backwards.

As it is a critical requirement of the camera system that it be floating undisturbed "in space", it would obviously be impossible for the assistant to follow-focus in the normal manner. For this reason we have developed a highly sophisticated servo follow-focus system that meshes with the standard BNCR-type lens follow-focus gear, and can be operated by a remote electronic control box either through a thin flexible electrical cable or by wireless transmission.

All of the preceding technical description brings us to the basic point of STEADICAM-35, which is that the human body is a perfect servo-system if used properly. The analogy we often draw is that you can run down the street with your hand extended and pointing steadily in a specific direction. By supporting the total weight of the camera system from the body brace, **Continued on Page 802**



THE FIRST FEATURE USE OF STEADICAM-35 ON "BOUND FOR GLORY"

A biographical feature about the life of America's great folk poet, singer and author, Woody Guthrie, marks the premiere usage in a feature of a revolutionary new camera stabilization system

"BOUND FOR GLORY", based on the acclaimed 1943 autobiography of America's great folk poet, singer and author, Woody Guthrie, is being brought to the screen by producers Robert F. Blumhofe and Harold Leventhal for United Artists.

Directed by Hal Ashby, and starring David Carradine as Woody, "BOUND FOR GLORY" begins in Pampa, Texas, in 1936 and covers four years of Woody's life up to his initial rise to prominence in Los Angeles.

The film is more than the story of one man who was the official chronicler of his generation. As a saga of America in the depression years, it captures the authentic mood and conditions of that era as seen through the eyes of a wanderer who hitchhiked and rode the rails, singing in bars, hobo jungles and migratory worker camps.

A perfect pairing of cinematographer with subject matter was the selection of Haskell Wexler, ASC, as Director of Photography on "BOUND FOR GLORY". An Oscar winner for "WHO'S AFRAID OF VIRGINIA WOOLF?", he actually knew Woody Guthrie quite well and has a special feel for earthy themes visualized on screen in a semi-documentary style. His other films include "AMERICAN GRAFFITI", "ONE FLEW OVER THE CUCKOO'S NEST", "IN THE HEAT OF THE

NIGHT" and "THE THOMAS CROWN AFFAIR". He won much critical acclaim for "MEDIUM COOL", which he also wrote, produced and directed.

Achieving a photographic style of muted color and fluid camera in his visualization of "BOUND FOR GLORY", Wexler was the first to use on a feature film Cinema Products' revolutionary new camera stabilization system, STEADICAM-35. In the interview that follows he comments on this and other aspects of the filming:

QUESTION: Can you give me a bit of background on "BOUND FOR GLORY" and, in particular, your involvement with the project?

WEXLER: "BOUND FOR GLORY" is a film which deals with a period in the life of Woody Guthrie, a famous American folk singer who flourished in the early Forties and Fifties. He's probably best known now for being Arlo Guthrie's father. But in the early days he was a sort of Tom Jones type of character, whose songs and life reflected the struggles of the poor people, and particularly the Okies and people who were displaced by the Dust Bowl. My interest in the film stemmed from Woody Guthrie's music. I knew Woody when he became a merchant seaman and I was a merchant seaman and he

and I were friends in the National Maritime Union. All my kids were brought up on his music. He wrote a lot of children's music, as well as the Americana music that he is best known for.

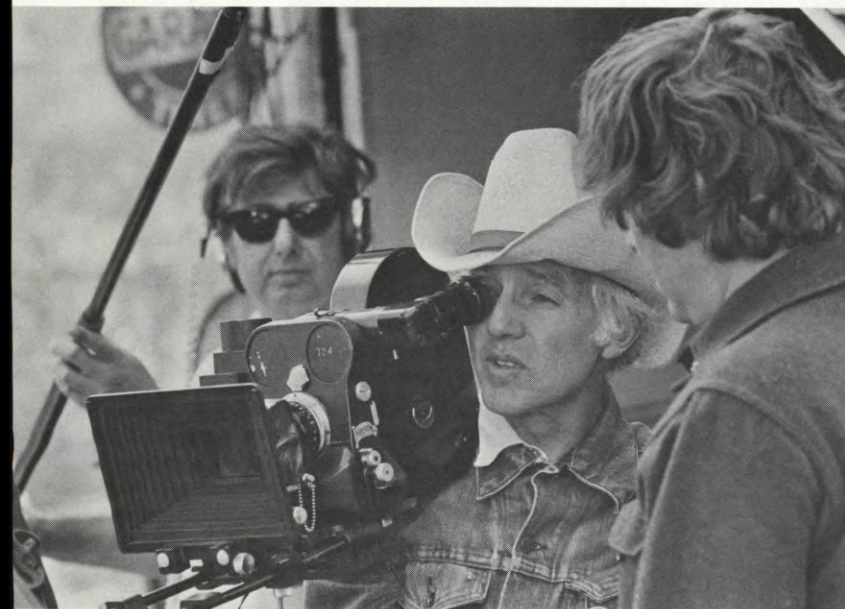
QUESTION: What led up to your actually being assigned to photograph the picture?

WEXLER: When the first script was written I was asked to direct the film and I met with Woody's widow and Pete Seeger and Bobby Dylan and a number of other people who had been important in Woody Guthrie's life, but the script was not good and so I went on to do other things. Then, when a new script had been written and Hal Ashby was assigned to direct the picture, Hal asked me to photograph it. I was very pleased at the prospect of working with Hal Ashby. I had worked with him when he was an editor and knew him to be a very compassionate, interesting filmmaker, so I looked forward to the opportunity.

QUESTION: What sort of photographic style did you decide to adopt?

WEXLER: Well, the action of the picture is supposed to take place during the Thirties, and most people have preconceived ideas of what Thirties films

(LEFT) On location during filming of the United Artists production, "BOUND FOR GLORY", based on the life story of Woody Guthrie, Director of Photography Haskell Wexler, ASC, lines up a shot with the Eclair CM-3, long a favorite in his collection of equipment. (RIGHT) Looking a bit like a Man from Mars, Garrett Brown moves behind star David Carradine with the STEADICAM-35, revolutionary new camera stabilization system which he designed and invented for marketing by Cinema Products Corp.





Scenes for "BOUND FOR GLORY" depicting incidents in Texas and Oklahoma were actually filmed in and around the northern California city of Stockton. A very realistic migrant workers' camp, typical of the Dust Bowl era, was set up in authentic detail and extras playing the hapless migrants "lived" in it 10 hours a day, with all of its inconveniences, so that they could absorb the psychological patterns of those whom they were portraying.



Garrett Brown demonstrates the amazing maneuverability of his invention, the revolutionary new STEADICAM-35. Whether held level or tilted up or down, the rig floats smoothly, like a miniature helicopter gliding at eye level. The operator can run with it, leap up steps and move swiftly over very rough terrain without the jerking and bouncing movements inevitable when ordinary hand-held cameras are used in such circumstances.

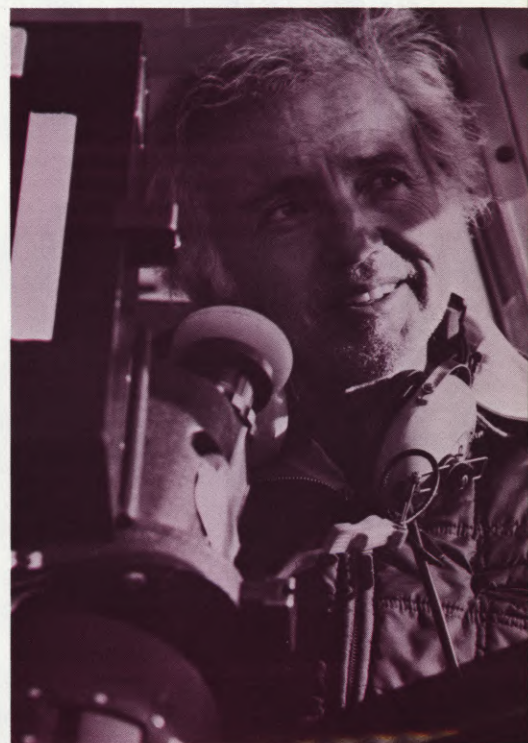
are supposed to look like. Where these notions come from I don't know, but they probably come from other films or still pictures we've seen. Still photographs of that period were black and white, usually a little bit faded, desaturated, a bit grainy — so the assumption, when you set out to make a picture of the Thirties, is that it should look like that. As a matter of fact, Technicolor was in existence at that time and the color was anything but pastel and grainy — but I set out to make a basically black and white film, while shooting in color.

QUESTION: From the mechanical standpoint, how did you go about doing that?

WEXLER: I worked with the art director and costume designer to keep as much color as possible out from in front of the camera. There are various camera techniques we can use to minimize saturation, but the easiest and best way is to get the color out from in front of

the camera, and I think that was done fairly successfully with the help of those two departments. As far as what I used in front of the lens is concerned, after doing some testing I ended up by using more or less traditional things — fog filters, low contrast filters, diffusion, and coffee-colored pantyhose, which gave it a slightly brownish tone to soften the image. The pantyhose material is essentially a net, but it's a little heavier than the usual stocking net, and it worked fairly well. Outside of that, I tried not to shoot in front light, because it's difficult to desaturate front light. However, I found that by over-exposing a front light shot I was able to desaturate it more than by exposing it correctly. We made tests with a guy who runs an optical house to try to desaturate by introducing a black and white register, but, since I was using 5254 color negative, it became too grainy. If you want to use that method of desaturation after you've shot, you have to use 5247, which has a much better grain structure than 5254.

Haskell Wexler, ASC, winner of the "Best Cinematography" Academy Award for "WHO'S AFRAID OF VIRGINIA WOOLF?" is a constant experimenter and innovator in new techniques and equipment for cinematography.





"BOUND FOR GLORY" depicts the Dust Bowl disaster of the 1930s, in the course of which violent windstorms raged across Oklahoma and adjacent states, blowing away precious topsoil, reducing thousands of farmers to poverty and causing countless families to migrate westward in search of survival. To portray this tragedy in the film, shovelfuls of dust were thrown into the airstreams of powerful wind machines.

QUESTION: Then you don't subscribe to the school that decrees: "the more grain the merrier" when you're shooting a "realistic" subject?

WEXLER: I don't. I feel that when the final prints go onto the screens of theaters around the country they somehow always get grainier than you thought they would be anyway. So I believe that you really have to struggle to get a first-class photographic image in your original, in that respect, assuming that by the time the public sees it the result will be sufficiently deteriorated to have that "old" look.

QUESTION: We've had queries from our readers asking what the difference is between a light fog filter and a low-contrast filter. Would you care to answer that?

WEXLER: I can only tell them from what I've observed — and that may not be scientific enough — that fog filters seem to "bloom" more. If you have a hot window, for example, the bloom of that window — the spreading of the light — will be more than what you would get with a low-contrast filter. Looking at interiors in old still photo-

graphs — which were often shot using natural light — you'll notice that the windows did have that sort of blossoming look, and fog filters do that more than low-contrast filters. Both of them tend to soften and desaturate, but you'll get more of a halo effect with the fog filters than with the low-contrast filters. Incidentally, Harrison and Tiffen low-contrast filters differ, as do Harrison and Tiffen fog filters. I've found, for example, that Harrison fog filters seem a little warmer in color temperature than the Tiffens.

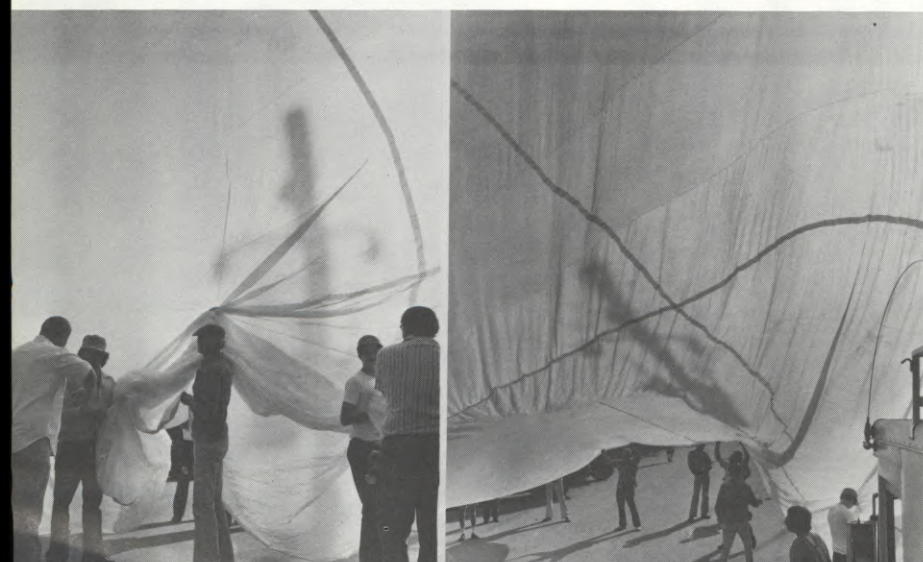
QUESTION: In set stills from "BOUND FOR GLORY", I noticed some huge white scrims in use. Can you tell me about them?

WEXLER: In the old days of silent films they used to build all the sets outside. Then they'd take white muslin and stretch it over the tops of the sets — and that would be their lighting. Since we were making a period film and shooting a lot of exteriors, I had some silks made — which were not silk at all, but reinforced Dacron made for sailing ships. They were huge — 50 x 50 feet — and they allowed us to shoot a lengthy scene without the usual problems of

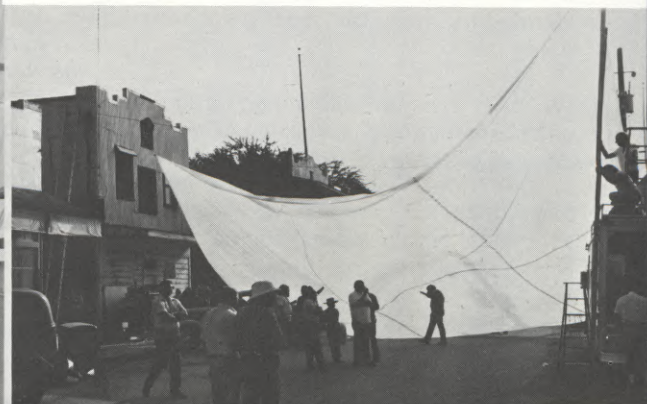
mismatching, where the shadow would be in one place at the beginning of a scene and in another place at the end of the scene. By creating a soft, diffused light, these scrims enabled us to shoot for the major part of a day without worrying about light matches.

QUESTION: Did you have any problems with scrims that big?

WEXLER: Well, there were a few disadvantages. Number one, when a wind comes up it's difficult to anchor the things, because a sail that size will pull the biggest sailing ship across the ocean. Number two is the sound problem that develops when the sail gets snapped in the wind. I used to pray that the snap wouldn't come on a line, so that the dialogue would be in the clear. We'd also use smaller silks to pound reflectors through, rather than use just the hard reflectors — or perhaps we'd use 12 x 12-foot silks and then take nine or ten lights and pound them through the silk for fill light. I usually used blue-colored lights, because I found that normal light hit through the silk (even though the silk was very thin) would have a warmer color temperature than I wanted — so, by having a



In order to smooth out the sunlight and minimize problems of mismatching, Wexler had 50 x 50-foot "silks" made up. They were actually fabricated from reinforced Dacron, the material now used for boat sails, and were most helpful, although using them in a stiff wind was difficult.





In an effort to get spontaneous action of the extras "living" in the migrant camp built for the film near Stockton, California, an Arriflex 35BL camera was installed in a suitcase with a port hole cut into the end. The camera operator, dressed to match the extras, was able to move inconspicuously among them and film their unstudied reactions. This lent an additional documentary touch to the sequence.

Roscolene blue tint on the lights, the color temperature was maintained correctly.

QUESTION: Did you use any unusual lighting units in shooting the picture?

WEXLER: I used one we called the "Cronecone". It's named after Jordan Cronenweth, a cameraman friend of mine who developed it. It's a snoot extension to a normal fresnel lamp which allows you to place a square tracing paper frame a few feet in front of the light. Of course, many cameramen have used tracing paper and silks in front of lamps to give a penetrating but soft light. However, the problem of just doing it that way is that the spill light goes out the sides of the lamp and you end up placing goboes all around the sides to center the light through the diffusion material. The "Cronecone" is like an extended snoot which gives you a penetrating square softlight. I used it on "ONE FLEW OVER THE CUCKOO'S NEST" and also on "BOUND FOR GLORY" and it is a very, very beautiful white, controllable softlight. When put on a 10K, for example, it has much more penetrating power than you'd get from an 8K softlight or any other of the standard softlight units.

This was something that was developed by a fellow cameraman and I saw it and he offered to let me use it on my film. Earlier, he had shot a film in which he'd had to light a huge night exterior. I have nine extremely lightweight, but powerful, umbrella lights and he used those mounted on long thin poles up high over an exterior party set to provide about 10 soft, diffused foot-candles coming down for general exposure. He said it worked very well for him. I was pleased to have something that he could use, and he was pleased to have something that I could use. I think there is a lot more of that being done between cameramen now. When you develop something you like, it would seem like a generous gesture to make it available to your fellow cameramen.

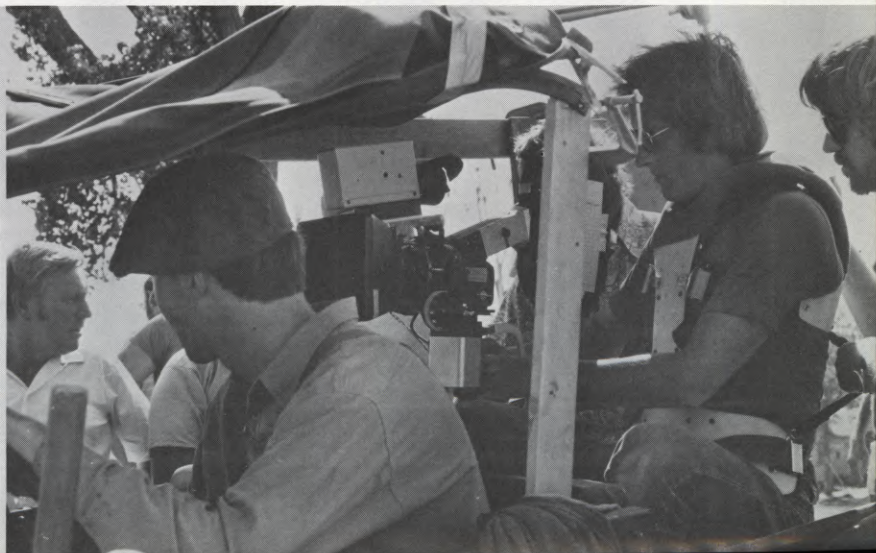
QUESTION: The big news on "BOUND FOR GLORY", photographically speaking, was the first use on a feature of the new STEADICAM-35 system. Could you tell me about that?

WEXLER: That was certainly one of the most exciting aspects of the filming. A cameraman from New York, Garrett Brown, had, over the years, developed what might be described as a "weight-

less", vibrationless hand-held camera support system. I had met Garrett when this was still in a prototype stage and induced him to let me use it — and use it himself — on a commercial that I did. At that time he was negotiating with Cinema Products to have them manufacture the device commercially. Essentially, the STEADICAM-35 allows you to do hand-held shots — shots in which the camera is not mounted on a tripod or dolly — and move anywhere, with the camera remaining absolutely steady and vibration-free. That sounds incredible if you think about it, because when you walk there is a natural up and down movement of the body, and when you run that body movement is greatly increased. Your head moves up and down. But the basic principle of Brown's device is that, since the viewing system on the camera is video, your eye does not have to be to the camera. Since your head is not attached to the camera, it's possible to actually run up and down stairs, to run through narrow passageways, or to hold the camera extended weightless in your hand and make shots which, when you see them on the screen, look like they were made from a miniature helicopter.

Continued on Page 778

(LEFT) With the STEADICAM-35 "floating" from his body brace, Garrett Brown, inventor of the device, steps off camera crane platform and begins to move through the migrant camp. (RIGHT) Brown, with his STEADICAM-35 at the ready, sits in the bed of a pickup truck, as David Carradine prepares to drive it. The radically different new device effectively dampens the vibration and movement of practically any vehicle.



THE FILMING OF "TO FLY" Continued from Page 752

head. We researched the various types of fluid tripod heads and finally settled on the relatively new O'Connor 150. It worked very well and has features that other tripod heads, even the O'Connor 100, do not have.

The camera itself was the modified, newly designed IMAX camera built by Bill Shaw in Toronto. Because the camera utilizes a split-beam type of reflex system, which absorbs approximately one half of the light coming through the lens, the exposure had to be increased by one F-stop. The camera is capable of running from 42 frames per second to 1 frame per second.

PREPARATION FOR SHOOTING

Since IMAX filmmaking is a completely new way of making movies and because the camera itself is a prototype for standard IMAX cameras of the future, more than three months were spent in technical preparation for the shooting, beyond the traditional preparation concerns of budgeting, casting, location scouting, costuming and scripting. We found ourselves plunged into an intensive development of camera mounts, essential for the omnipresent camera movement, as well as mastering and improving the

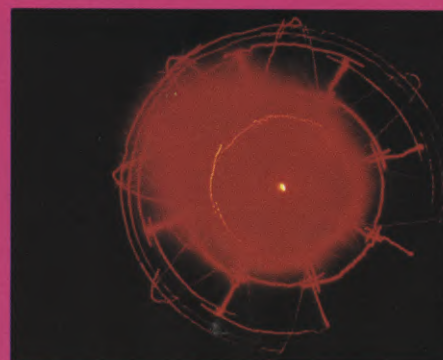
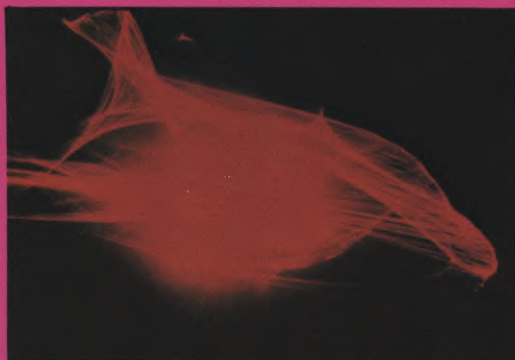
technical operation of the camera itself.

Mounts needed to be constructed for everything from balloon baskets to jets, from trains to helicopters. Although the point of view from each of the different mounts would carry its own visceral thrill, the helicopter mount would be the workhorse of the film and, therefore, required the most time and development. Two mounts were specially designed by Nelson Tyler as extensive enlargements of his 35mm and 70mm mounts. The cameraman-operated door mount, designed for slower air speeds, was the largest Tyler had ever made, weighing in excess of 300 pounds. Cameraman and camera protruded precariously outside the helicopter, requiring development of a larger than normal wind screen for the protection of both.

We also developed an underneath mount to obtain the necessary points of view moving through, above and under objects at a higher, more exciting rate of speed. This mount had to be perfectly steady and could not be operated by the cameraman. A remote-controlled closed-circuit TV with lenses that matched the IMAX lenses was developed so the cameraman could frame his shot safely ensconced inside the helicopter. This camera mount was also equipped with a motorized, remote-controlled tilt device which enabled it to tilt to the rear, straight down

or tilt up to reveal what lay directly ahead. The only other remote control available to the camera operator was a device making possible one-quarter-stop incremental changes in the F-stop. A special spinning disc, uniquely designed for repelling water, was often placed over the lens, permitting the camera to run in all weather conditions, including the misty winds above the vertiginous Niagara Falls. With the fisheye lens, this mount and all its accoutrements gave some of the most spectacularly involving footage ever seen. Development of these mounts for the world's largest helicopter camera was an enormous undertaking. Both mounts had to be completely vibrationless, since each little vibration would be more apparent on the large screen. Thanks to Nelson Tyler, after two months of development, and another month of testing and perfecting, we acquired two mounts that were essential in creating the sense of a magic carpet ride.

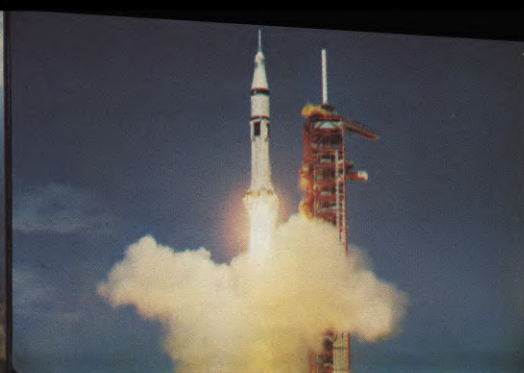
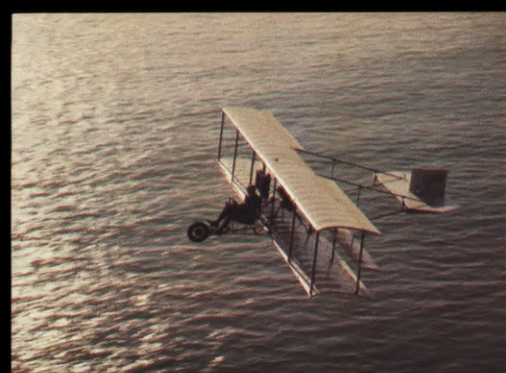
Other mounts were developed for more specialized purposes. One particular scene was envisioned with the Blue Angels in tight formation skimming over the Colorado River and desert near Yuma, Arizona. In order to accomplish this shot, we had to develop a camera mount for IMAX that would fit in the camera-bay position beneath a F4 Reconnaissance Fighter,



Experimental examples of various types of laser patterns recorded onto film. These were made as tests during the early planning stages of "TO FLY". For that project Jim Palmer and Barney Kaelin developed the first laser image-to-IMAX transfer system (see Page 754), and it represents the first use of a laser with the IMAX or any other 65mm/70mm film format. The laser-patterned image offers an almost unlimited range of possibilities and opens new horizons to the experimental film-maker.

(LEFT) Premier acrobatic pilot Art Scholl and his "Super Chipmunk". The IMAX camera was mounted beneath a wing to achieve thrilling POV's of loops, rolls and upside-down flying. (CENTER) Boeing donated a 747 and a 737 camera plane to the production. Fortunately, the weather and clouds were beautiful, making possible the filming of truly "heavenly" images. (RIGHT) Three characters in the film pause along the trail for an evening supper of campfired beans, as they cross America in the early 1800's.





Full-size actual IMAX frames from "TO FLY". (LEFT) Veteran movie pilot Frank Tallman flies the classic 1907 Curtiss Pusher for a scene in the film. (CENTER) Pilot Bob Wills maneuvers his multi-colored hang-glider along the volcanic cliff formations off Kauai, Hawaii. (RIGHT) The Saturn IB heads for the heavens. By special permission, MacGillivray and Freeman were allowed to photograph the roll-out and blast-off of the giant rocket, signaling the first time such an event has been filmed in the IMAX format.



(ABOVE LEFT) Not too long ago the jumping off place for settlers moving West, the St. Louis of today, with its magnificent arch, appears as modern as any of America's great cities. (CENTER) A fisheye, bird's eye, IMAX-eye view of New York City. (RIGHT) An aerial view of Lake Powell, which transformed the West. (BELOW LEFT) Making one of the few helium balloon flights in recent years, the flag-draped balloon soars over forested, unpopulated country in West Virginia. (CENTER) The "Blue Angels" in formation, as seen by the following F-4 camera plane. (RIGHT) The IMAX frame was divided into 36 small images to create a dazzling fly's-eye view of jet performance.



(LEFT) Steaming past older cultures, the railroad connects East and West. (CENTER) The camera was mounted below the tops of the tracks on a specially designed platform to create a motion-filled dramatic image of an early 1891 steam locomotive. (RIGHT) Nested in a colorful woodland glade of northern Vermont, a colonial couple exchanges sweet words, as the balloon floats silently above.



capable of keeping pace with the Blue Angels Jets. This mount had to be built and then tested for vibrations and sightings with the IMAX camera on actual Blue Angels flights before it could be used for the filming.

We also wanted a scene of the enormous 747 taking off, shot from the belly and looking backwards toward the rear tires. From this chilling vantage point, the silvered undercarriage of the airplane would reflect the runway, yielding a mirror-like double image. In order to build an aerodynamically approved steady mount for an airplane that travels at such a high rate of speed, the people at Boeing headquarters in Seattle, Washington, spent long, tedious hours designing and testing the mount. After many weeks, the mount was completed and successfully tested. This shot, along with the Blue Angels mount shots, turned out some of the most spectacular footage in the film, well rewarding all the effort that went into the construction of the indi-

vidualized mounts.

Pedestrian in comparison with the jet mounts, the camera car mounts still served their normally useful function, providing close, dynamic running-shots from the roof of our highly-suspended camera car, as well as from the rear of the car, close to the ground.

With the aid of several exceptionally sturdy mounts specially adapted for an 1891 train, breathtaking closeups were obtained of drive wheels on the front end of the historic, steam-billowing terror of the buffalo.

Cherry-pickers were the most easily acquired mounts. They were helpful on several occasions, but most notably during filming of the balloon basket. Two cherry-pickers were used to separately hoist the balloon basket and then the camera and cameraman in order to achieve maximum relative motion.

Because all the mounts described were developed and tested so thoroughly during preparation, actual

shooting time was efficiently minimized and major problems in production were eliminated.

The ambitious nature of the IMAX project entailed making many new improvements in the existing camera. Suggestions were made to Graeme Ferguson, Robert Kerr and Bill Shaw of IMAX ENTERTAINMENT of Toronto, who build and lease the IMAX equipment. Three new IMAX cameras were built specifically for this project and the Philadelphia 76 project. In order to avoid any sort of operational breakdown or technical difficulty during filming, we sent our camera assistant, Phil Schwartz, to Toronto for two weeks to assist in assembling the actual IMAX camera that we would be using on location. Thus, when Phil was finished with his special two weeks at the "IMAX School of Photography and Camera Assembly", he was completely aware of the inner workings of the camera and could repair it on location if necessary. Though no major difficulties were

A series of four sequential photographs showing how one of the most stunning scenes in the film was shot. To provide a dramatic conclusion for the westward expansion sequence, it was envisioned to have a steam locomotive come crashing head-on into the camera, with the scene then cutting to a Model-T flivver, as it races down a dirt road above the crashing Western seashore. Rather than sacrificing one of the four existing IMAX cameras, it was decided to build a mirror frame, have a reversed number "3" painted on the front of the locomotive, and stand back as the train ran full-bore into the mirror. The resultant scene on the giant IMAX screen has the audience running for cover.



actually encountered, we had the assurance that should such difficulties arise, we were in a position to eliminate them before any delays occurred in the complex production schedule.

Because of the construction of new mounts, as well as the technical improvements to the camera itself, tests were made with all lenses and magazines in order to insure that everything was in perfect working order.

The three months that we spent in developing and testing the technical equipment for the IMAX shooting was time well spent. We experienced no technical breakdowns, due either to camera failure or mount failure. It was largely because of this extensive preparation period that the film came in on time and in such beautiful shape. We are firm believers that one must do thorough homework and be fully prepared before going on location. Only through the careful attention to every technical and creative decision was this production completed without unpleasant surprises, either for us as producers or for our clients.

SHOOTING

The actual shooting of this motion picture took five months, two-and-one-half months in the spring and two-and-one-half months in the fall of 1975. In telling the story, we utilized the entire range of American scenery, from Vermont to Florida, from the coast of California to the coast of Hawaii, from the lowland heat of the great deserts and canyons to the snow-capped mountains of the Sierras.

We worked with a medium-sized crew of hand-picked technicians and creative personnel. While we assumed responsibility for production, direction and photography, Jeff Blyth looked after production management, scheduling and costuming. Byron McKinney of Francis Thompson Inc. was invaluable as chief liaison with our clients and the various companies and organizations who assisted in the production. Barbara Smith was our first production assistant. Assistant cameraman was Philip Schwartz. Cindy Huston was second-camera assistant and production assistant. Rae Troutman was grip; Pat Gilluly was our gaffer; Brad Ohlund, assistant grip; George Nolan, Chuck Phillips and Adrian Brooks, helicopter pilots; and Elizabeth Howell made crucial contributions from our home office as unit secretary and accountant. This tightly knit group of individuals worked smoothly as a team dedicated to getting the best image possible on the film negative.



In order to simulate a balloon flight to shoot closeups of actor Peter Walker, the balloon's basket and the camera were suspended on two separate cherry-pickers, which moved in opposing directions to heighten the illusion of actual in-flight motion. Since the IMAX camera was used without a blimp, the dialogue had to be looped later.

The daily routine went from 5:00 a.m. to 9:00 p.m. every day of the week. With this gruelling schedule, it was a necessity to have a crew that worked together efficiently and harmoniously. Our crews are always picked not only for their technical abilities and experience, but also for their compatible personalities, so that everyone will work smoothly together, thus minimizing any time loss due to strained communication. We encourage creative suggestions from all members of the crew, as we firmly believe that the filmmaking process is one of total collaboration, whether it be work such as the motion picture "SKY RIDERS" or the work done in the past on such

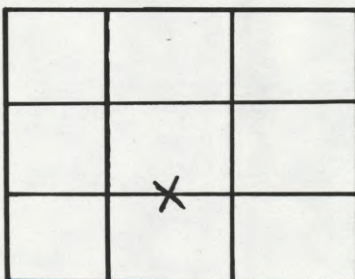
productions as "JONATHAN LIVINGSTON SEAGULL", "THE TOWERING INFERNO" or any of our many TV commercials.

POSTSHOOTING SCHEDULE

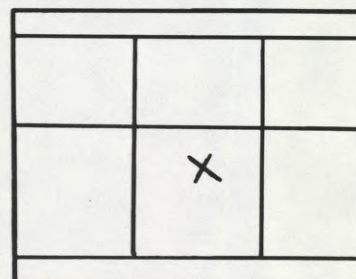
With shooting completed, we embarked on the complicated six-month job of finishing the film which included the following elements: (1) Development, research and filming of the ending space sequence; (2) Development of proper mattes and split screen opticals for various sequences; (3) Editing; (4) Selection and working closely with composer, Bernardo Segall; (5) Final music and sound mix of the picture.

Continued on Page 798

When the IMAX frame is split into six separate images in the traditional way (LEFT), the audience level of sight is split between the two bottom rows, creating a confusing visual situation. To solve the problem, new mattes were created to divide the screen into two rows of three images each, with the bottom row 15% larger than the top. (RIGHT) This served to shift the audience's point of attention to the center panel of the bottom row.



**TRADITIONAL IMAX
SPLIT SCREEN**



**SMITHSONIAN FILM
IMAX SPLIT SCREEN**

(X — DENOTES AUDIENCE CENTER OF ATTENTION)

"TO FLY" SPACE SEQUENCES

Continued from Page 755

we couldn't get enough of it. We lost one stop with our pellicle viewfinder. Our close-up lens was a speedy f/5.6 and occasionally it was used with a polarizer and a bellows extension. We couldn't force-develop our negative because we were very concerned with maintaining consistent black densities. On top of that, we sometimes, in the case of large planetary models, had to film at T/16 for enough depth of field.

These factors influenced the storyboard greatly. Each shot was designed in terms of *how* it could be photographed in IMAX. That very rarely meant the *best* or most convenient way to photograph it. Each scene was detailed very carefully in the storyboard and to insure that we were communicating our exact intentions to the National Air and Space Museum, each shot was broken down into two-second intervals. It showed the full progression of elements during the shot. We used the new color Xerox machines to quickly make each frame from elements that were painted on clear cels and backgrounds.

Our shots broke down into three

general categories. There were a number of scenes that required studio facilities and planetary models. Another group could be filmed at our offices on a home-made animation stand using 2-dimensional artwork. The rest of the shots were of an abstract nature and each required its own particular conditions (see accompanying article on laser photography).

Fortunately for us, we were able to work with George Casey of Graphic Films for the studio portion of our filming. They were able to provide their excellent planetary models and facilities as well as their years of expertise in this kind of photography. While they had never filmed directly in the IMAX format they were able to adapt many of their techniques to our film.

The most difficult of the shots made with Graphic Films was Jupiter as seen travelling across the surface of Io, one of its moons. In the distance our starship passes between them headed for deep space. It required four separate passes of the negative through the camera, each time being rewound to heads and rethreaded to a common start frame. Io's surface was photographed first, moving slowly past the camera on tracks. Its upper limit of

travel was then scribed on a piece of glass in our matte box. We then changed set-ups to film their Jupiter model, again scribing its boundaries on the piece of glass. The ship was a two-inch transparency (of a three-foot starship model) rear-lighted on a stationary glass frame. In this case it was the camera that moved on a motorized gear-driven dolly. Once more the limits of that component of the shot were scribed on our matte box and then we finally exposed a starfield that took into account the placement of each element.

While at Graphic Films we also filmed a sunrise as seen from space. We used their beautiful Earth model and motorized dolly tracks to create the effect that we were leaving Earth orbit from the dark side and moving far enough away to reveal the sun. We used a 5K with a snout for our sun, aimed directly at the camera lens. It wasn't bright enough by itself to create a rim of light around the Earth's rim so we employed a 10K set at right angles to the Earth and it was goboed off to create a fairly well-defined rim. We worked very closely with Mike Collins, the former Apollo astronaut and now Director of the Air and Space Mu-



Actual full-size IMAX frames from the space sequences of "TO FLY". (ABOVE LEFT) In the newly designed 6-panel optical formation, the protective ring of the 2nd stage engines on the Saturn rocket falls back to earth. The scene was photographed by a 16mm camera actually mounted on the engine stage. (CENTER) The discovery ship explores Jupiter and its moon, Io. The scene was accomplished with models photographed in four separate camera passes. (RIGHT) The ship passes in front of Saturn on its way to the outer nebulae and galaxies. Photographing this scene required both front and back-lighting. (BELOW LEFT) To simulate nebulae and exploding stars, special combinations of paints and chemicals were used. (CENTER) The spacecraft, built specially for the film, was designed as a long-distance "discovery" or scientific explorer craft. (RIGHT) One of the re-created weird and wonderful sights of outer space.



seum, for his opinions as to the effect of the sun in space. He should know.

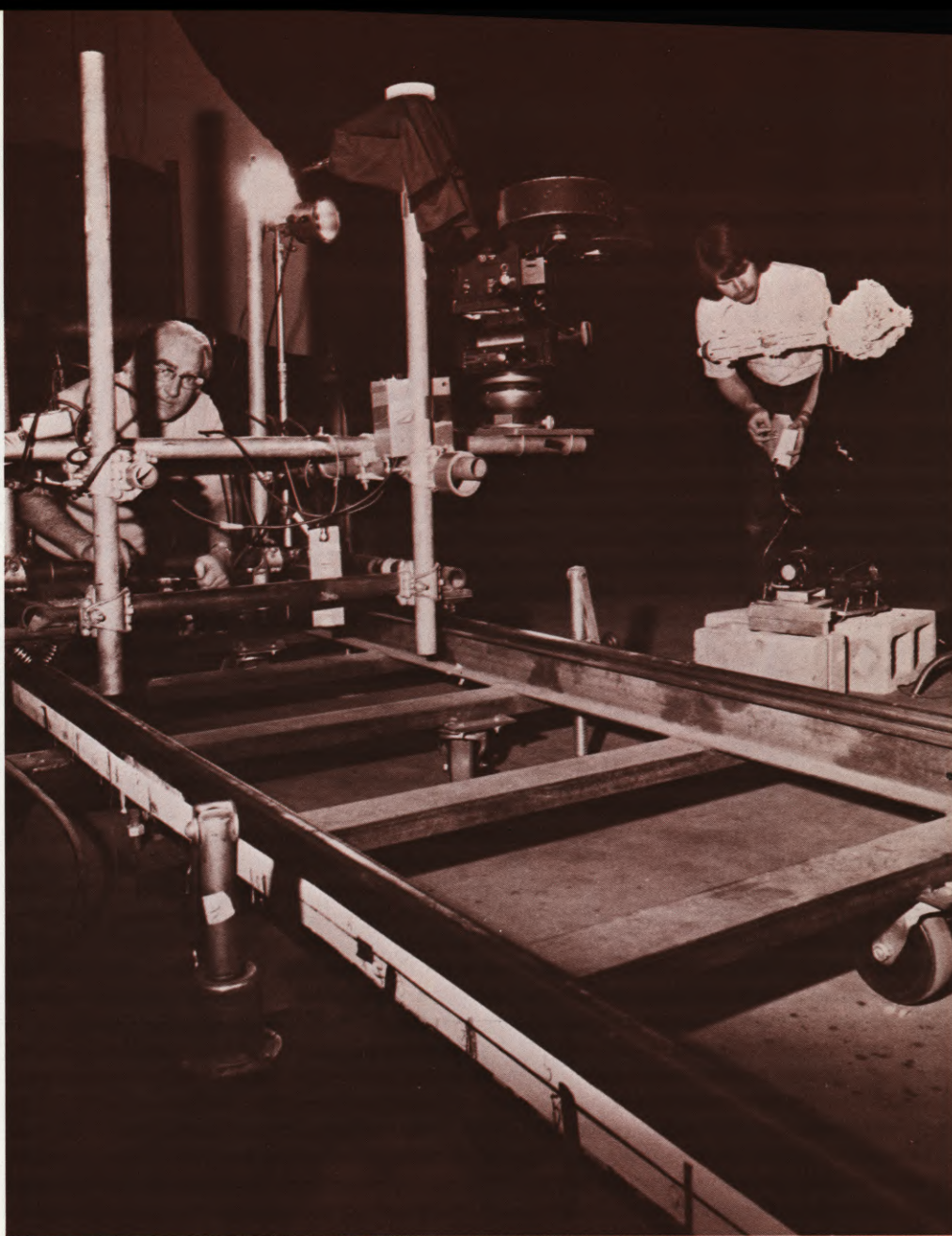
We also filmed our starship model in a variety of passes to be used to unify the entire sequence. It serves almost the same function as our 747 earlier in the film and, in fact, I designed the model to have the same color scheme. It took about 150 hours to build from many model plane, tank and rocket kits. It was based on some fairly well-known ideas about future forms of propulsion, such as advanced ion drive and magnetically-contained nuclear reactions, such as deuterium/helium-3. Mike Collins was able to provide many important inputs that affected design and construction and was a willing resource throughout the entire film.

As part of our arrangement with Graphic Films we were able to use their facilities to generate a number of still photographs that were then used in later scenes. We used their large Saturn model, for example, so that it could be filmed on our animation stand as a large transparency. This was partially due to the retouching required to remove traces of support for the model's rings. The storyboard showed the starship passing directly across the face of the planet, which meant that we had to use an animation technique.

Our stars were generated on high-contrast negative sheet film (Kodalith) on which we could easily matte clear areas for the planets. Saturn was a 24"-wide transparency that was matted into a continuous 60" x 24" kodalith starfield. The ship was a photographic print (and was therefore opaque) that was mounted on a large sheet of glass. Saturn, its starfield and the ship were filmed simultaneously, both top and bottom lit, so that the ship would be self-matting over the stars and the planet. It took considerable effort to balance the lighting for the planet transparency and the ship. All the top light was polarized (as was the camera lens) to eliminate surface reflections and maintain a black starfield. To make things more difficult the Saturn transparency and stars moved *behind* the ship. Had we been able to single-frame we could have filmed it as two separate and registered passes, one top lit, the other bottom lit. We had to make the 60" transparency/starfield move smoothly behind the large sheet of glass. We were working with a 30-field opal glass, so we had to contend with reflections over a wide area. The art moved so slowly during filming that the backlights caused it to buckle from the heat and it had to be replaced.

We acquired an Oxberry auxiliary peg bar which we motorized with

Continued on Page 810



In order to make the Starship "move", the camera was actually moving on a vibrationless geared track. Here Blyth adjusts the ship on its motorized, revolving pedestal, while technician from Graphic Films adjusts the dolly track motor. The two-minute space sequence in the film took four-and-a-half months to pre-plan, test and shoot.

Zoom motor controls with specially modified gearing were used to make slow, smooth, repeatable moves on the animation stand. In this case, the moon photograph moves into the frame across the backlit background of the star field and a transparency of the Earth. Since the moves were precisely repeatable, tests could be made in 16mm before shooting the final scenes in IMAX.



PRODUCING "TO FLY"
Continued from Page 795

THE MAKING OF AN IMAX SPACE SEQUENCE

Since the film ends in space, many months were spent in research, development and construction of the final space sequence. Because it is such a complicated story on its own, Jeff Blyth, who supervised and constructed the special effects, has contributed separate comments, as has Jim Palmer, who developed the laser beam special effects.

SPLIT-SCREEN OPTICALS

The enormous IMAX process was originally developed to incorporate many images onto an enormous screen, while eliminating the need for several projectors. Two of the first IMAX films ever made ("LABYRINTH" and "TIGER CHILD", both produced for World Fairs) spectacularly utilized this capacity. To highlight and dramatize various sequences in "TO FLY", we designed carefully orchestrated images for incorporation into one frame. However, before we could begin filming, we made an intensive

A set-up to achieve an extreme low angle of the 1891 steam locomotive, as it bears down on the moving camera. Using a wide-angle lens, the rails enter the frame from the sides, then quickly converge toward center frame, creating a dramatic perspective effect. To create a sense of movement, the ties move rapidly through the bottom of the frame in a "strobing" manner.



The Mac-Free camera car (with its special suspension) which had previously been used for shooting numerous car commercials and shorts, served perfectly to keep the IMAX camera in motion while pacing a stagecoach, a Model-T Ford or a steam locomotive. There are many such close, dynamic running shots in "TO FLY".

study of the IMAX split-screen possibilities. The traditional IMAX split-screen consists of an equal division of the frame into nine smaller 35mm frames, which doesn't allow for any single point of viewer reference. Moreover, the audience level of sight is split between the two bottom rows, causing an unpleasant, and at times confusing, visual situation. Therefore, to correct these visual problems for the Smithsonian production, we designed new mattes with the help of Jim Liles, of the Optical Department at MGM, and

Dennis E. Moore, in which there would be two rows of three images.

In the new matte, the bottom row would be 15% larger than the top row. Now, there would be a clear focus of attention for the audience in the center panel of the bottom row, the five other panels contributing to the framing of that one center panel. These new mattes were rigorously designed and tested prior to their final use. The resulting panels, as they appear in "TO FLY", are a very successful choreography of images which provide excellent highlight to the film. Barbara Smith, our production and editing assistant, supervised the assembly of historic stock footage, along with the material we had filmed for these multi-panel sequences.

EDITING

Editing the IMAX picture provides the usual new experience, now expected with IMAX, which forces a whole mental house-cleaning of all previously engrained ideas concerning visual psychology. Eye travel, focus, attention span and pacing are completely altered by the size and enormity of the IMAX screen and the availability of the IMAX sound system. Because the audience's senses are being assailed from above, below, peripheral left and right as well as from behind, it's extremely important to keep all these factors in mind while editing an IMAX movie. It is all too easy to overload an audience with sensory input and produce a degree of confusion which will inevitably distract from the overall aesthetic involvement.

In order to avoid the problems inherent in editing for this system, we installed in our studio two 35mm-70mm Norelco AAll projectors, projecting an image 16 feet wide. Sitting proportionately close to the screen, we were able to get the sense of pacing and eye travel so necessary for editing an IMAX movie.



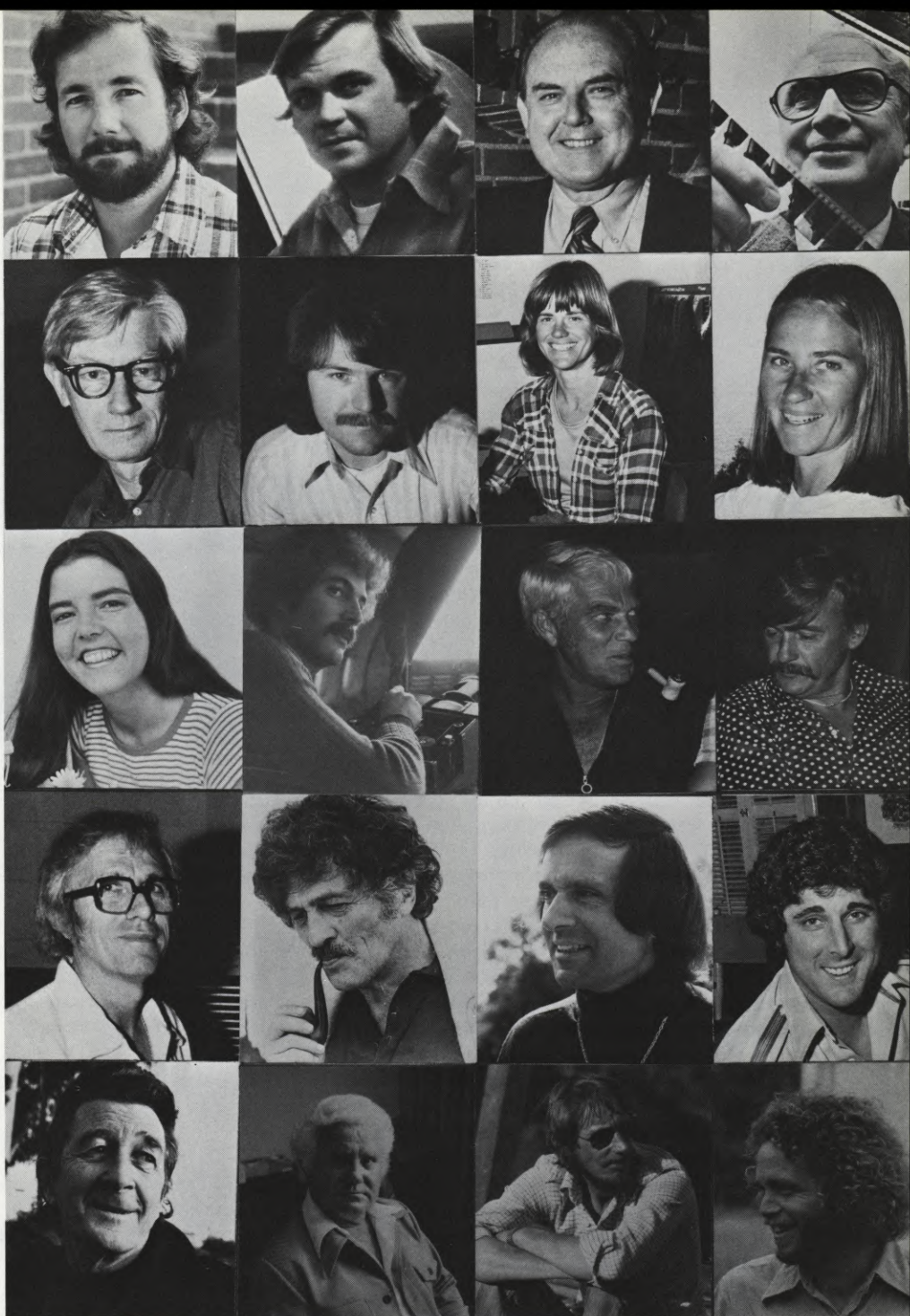
After having cut a sequence on the Moviola, the next step was to project over and over again, criticizing the cuts in relation to the size of the image and distance and position from the audience. Only by editing with a large projection screen as a right-hand tool can the proper pacing and audience attention-centering be effectively controlled.

Editing this film with the assistance of Alexander Hammid took four months, even though the shooting ratio was relatively low, due to the high cost of the IMAX film. We had directed the sequences in order that they could be cut in several ways, in the event we might want to try several different cuts before final selection.

The method of editing a film and then testing it before a small audience has proven extremely effective for us in the past and it paid off once again with our clients on the IMAX film. After numerous trial screenings in our home office, we presented our clients with a rough cut which met with immediate applause and praise, something rare in this particular business. Fortunately, we were blessed at all times with extreme cooperation and assistance rendered from both our clients — the Smithsonian Institution and Continental Oil Company. Both were willing at any time to help us with opinions that creatively contributed to the positive artistic aspects of the picture. In this way, our two clients became essential creative members of our crew and assisted enormously in perfecting the picture. It's rare for others to be unselfishly motivated and in this case, the Continental Oil Company's representatives, Rud Lawrence and Tony Sheldon-Moir, as well as the representatives from the Smithsonian Institution, Mike Collins, Mel Zisfein, Von del Chamberlain and Gene Knight and others, were always concerned about the overall effect of the motion picture and its success as a whole.

SOUND

IMAX Theatres, especially the IMAX theatre at the National Air and Space Museum, are virtual sound chambers. The Smithsonian Theatre has eleven separate speaker placements. Each speaker is bi-amped so that the highs and lows are incredibly clear and the frequency response is enormously broad. Moreover, the acoustics of the theatre itself are carefully controlled to insure the cleanest, most hi-fidelity stereo-sound available. In our opinion, the Smithsonian Theatre is the finest motion picture projection house in the United States.



Filmmaking is a collaborative effort. The following people formed the bulk of the team that made "TO FLY" — which still leaves out many other important contributors: (TOP ROW) Greg MacGillivray, Jim Freeman (Producers, Directors, Photographers), Byron McKinney (Executive Producer), Francis Thompson (Writer). (SECOND ROW) Alexander Hammid (Editing Supervisor), Jeff Blyth (Associate Producer), Barbara Smith (Production Assistant), Cindy Huston (Assistant Cameraperson). (THIRD ROW) Elizabeth Howell (Secretary, Bookkeeper), Phil Schwartz (Camera Assistant), Rae Troutman (Grip), Pat Gilluly (Gaffer). (FOURTH ROW) Dan Wallin (Music Mixer), Bernardo Segáll (Composer), Richard McCurdy (Music Editor), Sam Shaw (Sound Effects Editor). (FIFTH ROW) Tom McGrath (Narration Writer), Jim Liles (MGM Optical Chief), George Nolan (Helicopter Pilot), Brad Ohlund (Assistant Grip). (NOT PICTURED) Dennis Root (Special Assistant for Space Sequence), Chuck Phillips, (Helicopter Pilot), Adrienne Brooks (Helicopter Pilot), Paul Martin (Music Mix Advisor), John Divers (Storyboard Developer), Ray West (Sound Mixer), Jack Woltz (Sound Mixer), George Casey and Les Novros (Graphic Films).

The sound in the IMAX motion picture is not striped on the individual print, but is run in interlock from a 35mm full-coat magnetic 6-track sprocketed piece of film, running in exact synchronization with the picture. Because of the speed of travel of the

tape, the size of the tape and the uniformity of the magnetic coating, this system offers the highest quality 6-track sound reproduction possible. This technical advancement allows the creative mind to simply run wild with
Continued on Page 808

**PHOTOGRAPHING "INDEPENDENCE"
WHERE IT HAPPENED**
Continued from Page 748

We tried to shoot in overcast light whenever possible. Of course, we didn't really have a choice, because whatever it was that day, that's the way we shot. We did try to jockey shots around, so that if we knew it was going to be clearer later in the day, we would shoot a scene out in the open in a certain area, with overcast light, and then move into a shaded area when the sun came out later. But we did have to live with overhead light, which no cinematographer likes because of the harsh shadows. It really didn't hurt us too much, however, because with the smoke and the heavy filter pack the sunlight took on a beautiful soft quality. We took advantage of it whenever we did have it and tried to make those shots very pretty.

Using the smoke inside was interesting. There were some scenes in which we had Venetian blinds and we'd fill the room with smoke to get a very light mist, then blast off through the windows to get sharp rays of light. Everybody was thrilled with the effect. We were all having a ball just coming up with whatever we wanted to. It wasn't as though we had to sustain a great look for a two-hour feature; we had only a half-hour picture, in which each shot could be dynamic in itself. So it was almost like doing a long TV commercial, though in a different way. I had a terrific crew working with me. All of them pitched in and felt like a part of it, and they had a grand old time.

The smoke we used inside was created with bee burners and, of course, we didn't have the wind problem indoors, so we were able to get a very even light mist. It almost makes the film look a bit grainy, but it still has a richness to it. In one scene where Eli Wallach comes out of one room, walks through a hallway and up a flight of steps, I went to three different colors of light in the three rooms. I used the same smoke in all three rooms, but lighted each room with a different light source to get a varied color effect. In the room where he walks up the steps, which is the room where the Liberty Bell is usually kept, I used arcs outside the windows to come through with shafts of light to silhouette him. Because of certain logistics, we had to make that shot at night and we had a huge bay window to deal with. All we did was hang two 20 x 30-foot white scrims on cherrypickers outside the windows. lit them with arcs, and then kept them back from the windows. We then shot between the scrim and the



Working in close coordination, Huston and Roizman confer. Of his experience in working on the film, Roizman says: "Working with John Huston was one of the great thrills of my life, because he's such a great man and commands so much respect from everybody around him."

windows to get the shafts of light inside.

That scene came about as the result of John Huston saying to me at about 4 o'clock in the afternoon one day: "I have this idea for a shot." He described it to me and asked: "Can you do it?"

"A piece of cake," I said, knowing that it was going to take forever to set up.

"I'll go back to the hotel," he said. "Call me when you're ready."

We started working on it, broke for dinner, and came back and made the shot after dinner. It was one of those things that was kind of a surprise, but it was a fun challenge for everybody working on it and turned out to be our favorite shot in the picture.

There is quite a bit of camera movement in "INDEPENDENCE", because John Huston had said that he wanted to do each sequence in one shot wherever possible, except for the interiors showing the meetings taking place. We did those in a series of cuts, but every other sequence, wherever possible, was done with a combination of dolly and zoom and some kind of movement to give it flow, because the structure of the picture itself doesn't have much flow.

As far as interior lighting was concerned, we tried to duplicate the lighting that was authentic to the period. For daylight, I attempted to make it look like all the light was coming through the windows. To get this effect I used the

old standard FAY lights with soft frosted tracing paper to diffuse them. We shot without 85 gels on the windows and used just an 81EF filter on the lens, as opposed to an 85, because I wanted everything to have a slightly cool look.

For the night interiors, the approach was based on the fact that all they had by way of artificial lighting during that period was candlelight — so all I did was to try to simulate a source of candlelight and I used orange filters on the lamps.

We used all Panavision equipment and shot most of the picture with their 20mm-to-120mm lens, which was so sharp that when we did diffuse it we were able to get nice diffusion without deteriorating the image. Speaking of sharpness, when I was first asked to do the picture by Producer Lloyd Ritter, who is also a cameraman, he had already shot some of the second unit footage, using 5247 color negative. Then he asked me to shoot a couple of major scenes with him. Since we hadn't really determined a photographic style yet, these were shot completely straight on 5247.

Then, when John Huston arrived, he said that he wanted the mystical effect. That's when I went for the heavy filtration and switched over to the 5254 color negative for lower contrast. I felt that it would be better suited to our purposes. Needless to say, the two batches of footage didn't match at all and when they were intercut in the

Continued on Page 816

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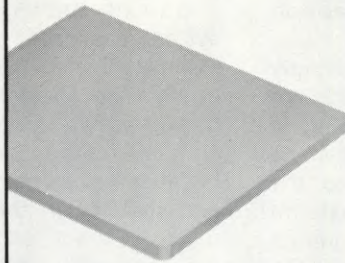
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THE NEW STEADICAM-35 Continued from Page 787

we permit the camera to move with the operator as if it were an extension of his own body (part of his internal servo-system, so to speak) so the operator can easily control and guide the camera in any direction he pleases with a gentle movement of his hand.

With regard to the increasingly popular electronic cameras which are improving in quality and reducing in size, to the point where they can be considered real competitors to the 16mm film camera for television production, we have entered into a contractual agreement with RCA whereby we will adapt and integrate their new TK-76 camera with the Brown stabilizing system, creating a totally new stabilized video camera system which we call the CP/TK-76.

We showed a prototype of this system at the NAB convention in Chicago in March of this year, and it was without question one of the outstanding hits of the show. We were inundated by requests from other video camera manufacturers such as Fernseh, Ikegami, and Thompson to see if our stabilizing system could be adapted to their cameras as well. The answer is that of course it can, provided that the electronic and mechanical interfaces are properly accommodated.

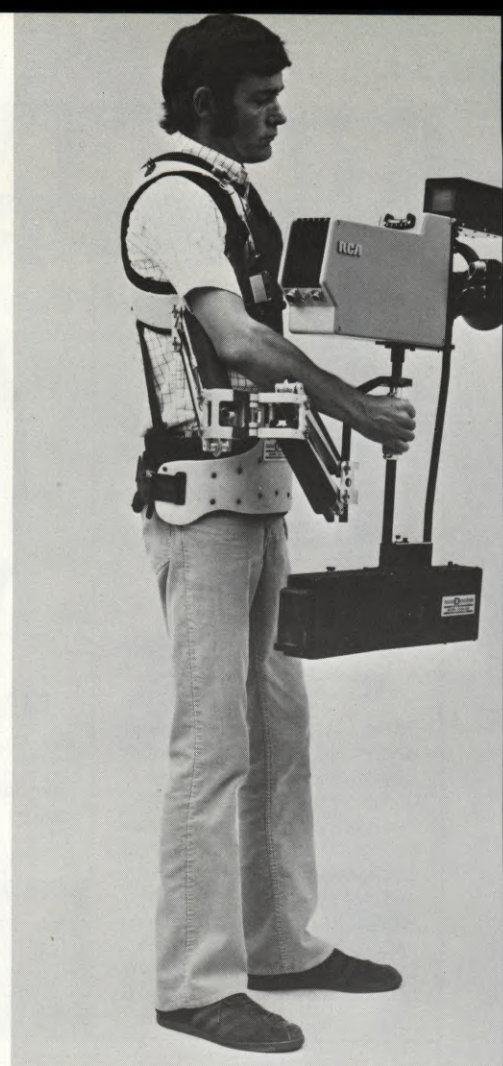
STEADICAM-35 (and other applications of our camera stabilizing system to video cameras or 16mm film cameras) opens up whole new vistas of creative cinematography. That a great deal of the track laying for dollies in location shooting can be eliminated is obvious. What is even more exciting is

the fact that moving shots of a totally different nature than have been possible heretofore can now be done. Practical interiors with their tight confining movements are made easy and much more esthetically pleasing. Even crane shots can be easily simulated by means of a ramp or temporary stairs.

Garrett Brown, inventor of the system, has already demonstrated that in filming from a helicopter, with appropriate wind screening, he gets better quality results than can be achieved with a helicopter camera mount because he has much greater flexibility and mobility in the aircraft. Furthermore, he is not tied to the camera, as is the case with a helicopter mount, so that his body motions are also filtered out, as well as the high-frequency vibrations of the aircraft.

As a matter of fact, any *vehicle* can now serve as a perfect camera platform. And since the STEADICAM-35 stabilizing system has a shock absorption capability of 2-3 feet (unlike conventional stabilizing devices which have a shock absorption capability of a few inches only), it is conceivable that an experienced STEADICAM-35 operator may be able to gallop on horseback and still shoot extremely smooth and steady shots.

To make the most of this exciting new tool, operators may need some time to practice with the system before they can expect to accomplish some of the more dazzling sequences that are now possible with STEADICAM-35. Cinema Products will be holding special training seminars and demonstrations to acquaint professional cinematographers with STEADICAM-35 and explore its potential capabilities.



The CP/TK-76 Stabilized Video Camera System, a Cinema Products modification of RCA's lightweight, self-contained TK-76 color video camera, incorporating the radically new Brown Stabilizer.

I think it can be fairly stated that STEADICAM-35 provides the cinematographer and the director with a completely new creative tool which will provide new challenges to their imagination. ■



The revolutionary new CP/TK-76 stabilized portable color TV camera was used for the first time during ABC-TV's coverage of the 28th annual Emmy Awards presentation by the National Academy of Television Arts and Sciences on May 17. The RCA TK-76 camera, modified by Cinema Products Corporation into a STEADICAM-TV system, was used throughout the pre-taping of production numbers in the show, the most dramatic of which was the big opening dance sequence staged with the specially-lit Century City buildings as background and the multi-level plaza in front of the Shubert Theatre serving as a giant set. It was also used to provide unique live views of presenters, recipients and the audience inside the theatre.



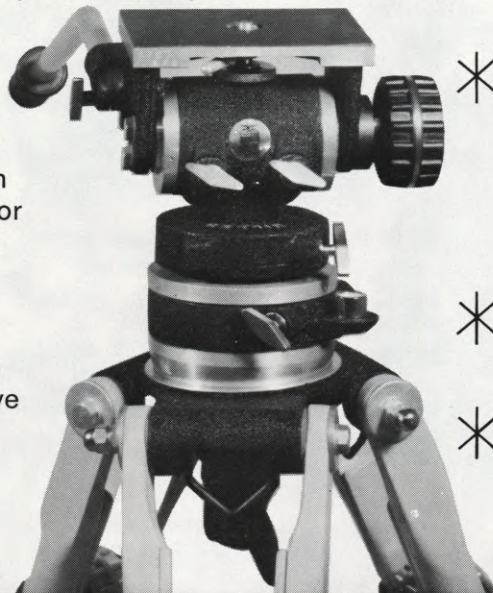
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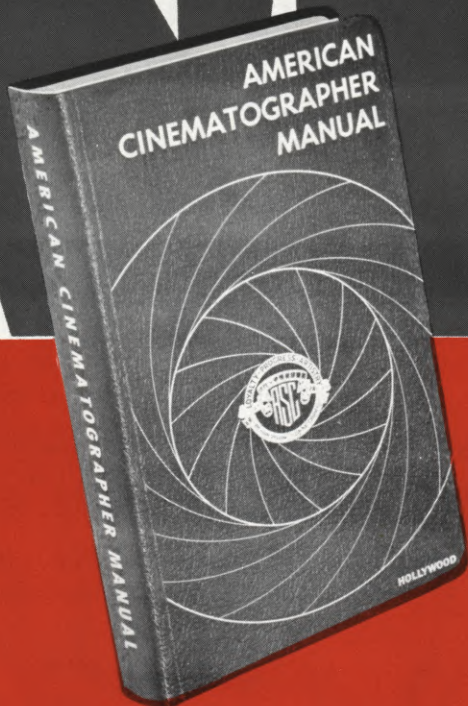
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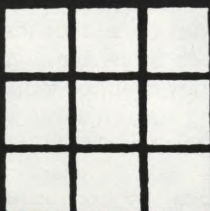
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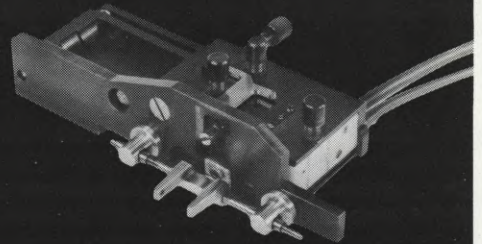
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"VIRGINIA . . . PURSUIT OF HAPPINESS"

Continued from Page 757

was possible to read the time from his wristwatch!)

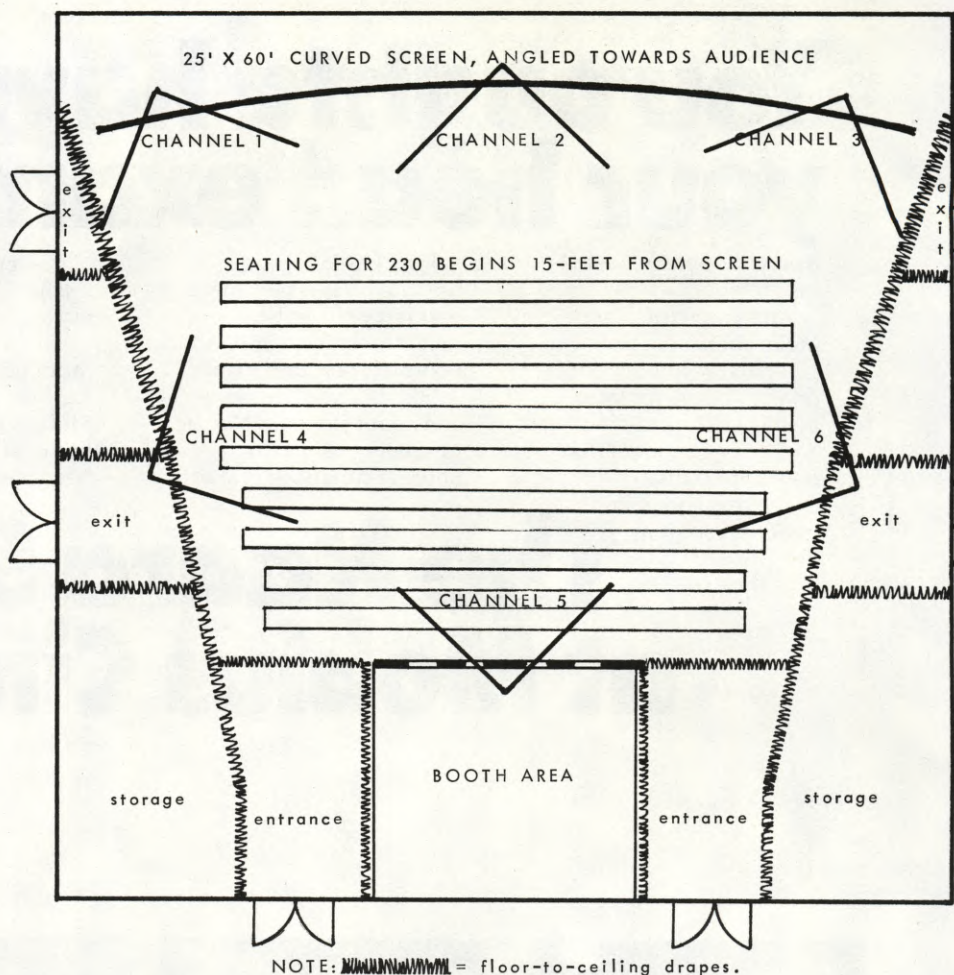
Closely allied with the image quality question was the choice of wide-screen system. Starting at the level of quality desired, then adding the variety of camera equipment needed, and further adding the degree of service demanded, the decision was easy. Panavision, of course. Frank Vogel-sang, Vice-President, filled our production needs with speed and style. The lens complement that I finally arrived at included a 50mm-to-500mm Panazoom, a 35mm Panatar, and a 25mm Distortion Panatar, offered with Frank's customary warning. Mounting these lenses was a Panavision Mitchell Mark II for the majority of the material, a Panavision Blimped Arri for the sync documentary footage, and a Panavision Bell Helmet Eyemo for the lunatic-fringe element.

It may seem odd that with our great concern for image clarity I would include a zoom lens without several prime lenses to cover its range. The decision to forget these additional prime lenses was based on both production speed and economy considerations. But it was not a major compromise of quality. Surely there is some sharpness lost between a prime 50mm lens and the 50mm end of a zoom, but with the Panazoom it is barely discernible, especially with the 5247 stock and 70mm flat release.

John Gunselman, the director, had decided upon a visual style that utilized much camera movement: pan, tilt, dolly and boom. In fact, I can recall only two or three set-ups during the entire production where some form of camera movement was not used. My choice of support equipment, therefore, was a compromise between solid support and maximum mobility. Specifically, an O'Connor 100 fluid head that performed exceptionally well, even in situations where a Worrall was preferable, Ronford and Mitchell legs, and a Stindt Dolly, in itself an honorable, well-thought-out compromise that possesses most of the functions of the Moviola and Fischer dollies but at considerably less weight and size.

With the image quality a top priority, I would have preferred to have filled our daylight material with arcs. But, again, due to budget and speed of production considerations, such was not possible. In their place I designed and had built a non-electric substitute: foldable four-foot-by-eight-foot plywood reflectors that produced a bright wide spread. They proved to be efficient, powerful and easy to use. They were

THE KINGS DOMINION 70mm THEATER



The special-purpose theater at Kings Dominion in Richmond, Virginia, where "VIRGINIA . . . PURSUIT OF HAPPINESS" is being shown. Note the altered speaker placement and screen size in relation to the audience area. Instead of the usual five channels behind the screen and one surround channel, this configuration has three channels behind the screen and three in the house.

so successful that I doubt if the lack of arc fill is discernible.

During the first week-to-ten-days of the production schedule we attempted to shoot all of the sequence material. That is, those scenes that formed the bones of the finished production and those scenes that had a continuity within themselves. These were the closest to standard dramatic production and included a small town folk festival, a fishing village, a cargo ship loading, and a carriage ride through the streets of Williamsburg. With the help and advice of the Virginia Film Commission, we were able to control our selected locations and shoot for a specific product.

It was during the latter part of the schedule that we added the meat to these bones with a wide variety of scenes from throughout the state. It was also during this period that the economy and quality of our support unit became evident. Shots made through the 500mm end of the Panazoom held rock-steady through a pan or tilt on the O'Connor 100 head. The

Stindt Dolly, with its arm at the fully raised position (lens height approximately six feet, six inches), showed a little too much play during a dolly run, but it was well within acceptable limits.

The Mark II camera itself proved its sturdiness under very demanding conditions, such as the crop-dusting sequence, where the Colonel (as we eventually named the Mitchell camera) was secured to the nose of the bi-plane as it ran through its paces. From one vertical climb to another, the Colonel did his job, never losing a frame.

The mobility of our complement became especially evident on a particular cool morning as we waited on a deserted Virginia beach for the sunrise. We had set the Mark II with the Panazoom on a shot that began with the beach straw blowing in the wind, then slowly dropped focus to the ball of the rising sun. This was set on the long end of the Panazoom and timing was critical. Since the exact spot where the sun broke the horizon was unknown, we had to wait until it began to show, Continued on Page 814



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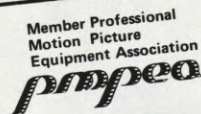


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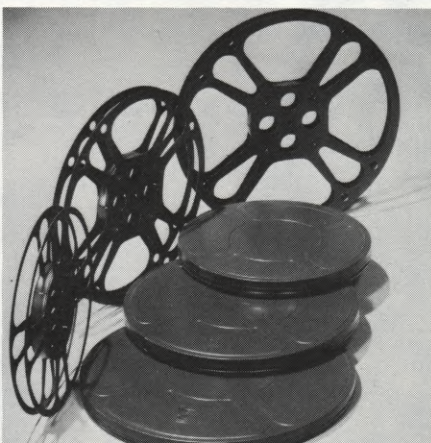
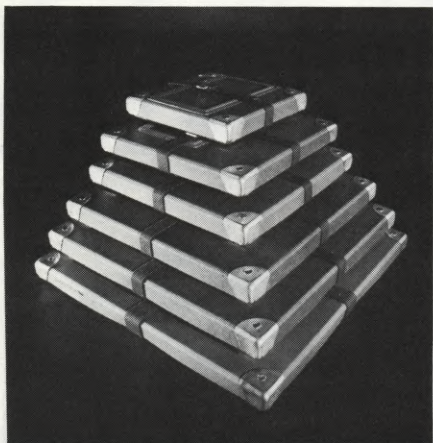
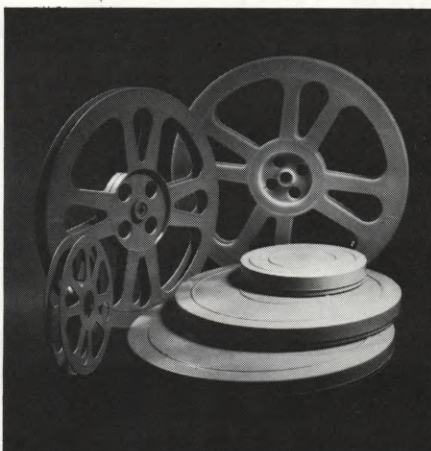
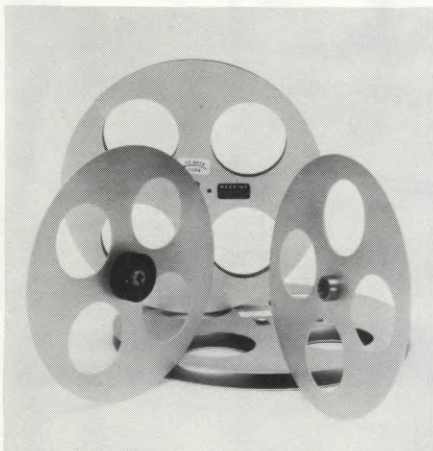
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PRODUCING "TO FLY"
Continued from Page 799

subtly ingenious audio effects.

Because of the enormous possibilities with sound, certain scenes were written into the script solely for the effect of the sound itself. For instance, the introduction of jet aircraft takes the form of two high-speed jets crossing in the center of the screen. The sound starts from the sides of the theatre, crosses in the center and then instantly returns back to the sides. The audience should receive acoustical shivers of joy from this alone, as their aural center of attention dramatically shifts focus with the criss-crossing of sound images.

On another occasion, an 1891 locomotive, starting in center screen, small in distance, charges straight toward the camera, finally smashing directly into the camera lens as the sound parallels it, slowly growing around the audience and finally engulfing it as the train smashes headlong into the screen.

Of course, the possibility of isolating the sound enlarges the whole creative possibilities of exciting interaction between aural and visual images. For instance, with quite a degree of clarity, it is possible to run music from the rear speakers while sound effects come from the front. This permits the creation of whatever mood is desired with the music, while from the front speakers comes the feeling of realism.

MUSIC

The music for this motion picture was extremely important, since the picture is basically an audio-visual experience, a voyage through time. The composer was very carefully selected and the music which he was to compose was well planned. Bernardo Segáll, the famed Brazilian concert pianist, was selected as a creative artist who could compose music having a classical feeling, an air of sophistication and elegance, which would maintain the steady rhythm and pulse of the film.

Recorded at Burbank Studios in one of the finest rooms available for sizable orchestras, the large music score was directed by Segáll and played by forty-nine of the most professional and experienced symphonic orchestra members in California. The end result was equal in success to the tremendous amount of effort expended in creating it.

We worked extremely closely with Bernardo and found such collaboration between the ideas of the producer-directors and the carefully enlarged, embellished structuring by

the composer to provide the best of two worlds.

The music was recorded on 16-track tape, then mixed down to three channels, full-coat 35. We mixed so that there would be authentic stereo, right and left front, with the third channel containing the evenly divided right and left rear, thus creating a quadraphonic surround-feeling to the musical experience.

FINAL PRINT AND INSTALLATION AT THE THEATRE

Once the final IMAX print and sound mixdown were completed, we went to Washington, D.C., to install the picture in the theatre. We have always considered the installation of a movie into a permanent exhibition theatre as one of the most important aspects in film production. It is incredibly easy for an inexperienced projectionist or sound man, insensitive to the various sound levels of the mix, to distort or diminish the overall effect of a movie. For this reason, we assisted in installing the motion picture in the theatre and supervising the projection and sound equalization. Moreover, during the run of the picture at the museum, we plan to visit frequently in order to check on the sound and picture quality to maintain the integrity of an artistic accomplishment that has taken over a year-and-a-half to bring to completion.

TO FLY

Only through careful organization and thorough preparation together with the creative contributions of all those who worked with us, could this film have been made successful in all four areas important to film production:

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2. It must fulfill the sponsor's or client's dream.
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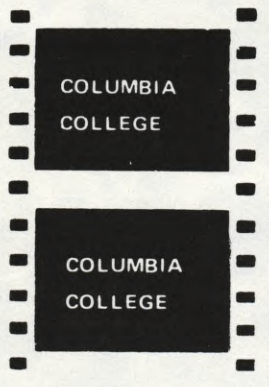
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"TO FLY" SPACE SEQUENCES Continued from Page 797

special gears and a zoom motor and control. It took quite a bit of adjusting to get the peg bar to move smoothly on its original track, let alone the much longer one we needed for this shot. We spent many hours getting it to traverse the entire length of the stand without any bumps or jiggles. Saturn and the starfield were attached to the peg bar and the sheet of glass with the ship on it was suspended as close as possible to the surface of the starfield without interfering with its movement.

We wanted to add some other movement to the shot, as well, so we mounted the camera on a Worrall geared head and replaced the pan wheel with a specially-built gear. This, too, was driven by a zoom motor and it added a slight pan to the shot. Because we were filming this particular scene at 5 fps and the camera was only panning a few inches on the artwork, the zoom motor and gears were barely turning during the shot. We had tried several motors and control devices for ultra smoothness and we were pleasantly surprised at how well the zoom motors worked even at such slow speeds. In a couple of shots we used them to control tilt movements, as well. Most important of all, the geared head and zoom motors gave us something we could repeat with accuracy. We could afford to test extensively in 16mm for speed of movement with the assurance we could duplicate the movements later in IMAX.

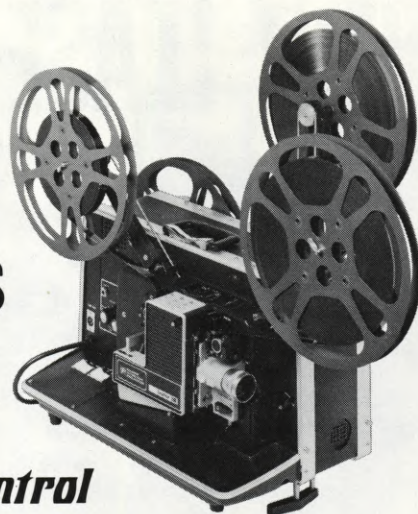
The one shot that we thought would be the most elusive was a Saturn rocket taking off. We had filmed the roll-out at Cape Canaveral of the Apollo-Soyez mission earlier in the year and then returned for the summer lift-off. We used two remotely-started cameras mounted only 1200' from the base of the rocket. What we had going against us was the failure of other film crews on three previous missions. Something always went wrong with the cameras, usually traced to the humidity and condensation that forms in the camera (and on the lens) because they are left outside for over 24 hours. In our case it was the worst time of the year (July) with monstrous thunderstorms rolling across the cape and humidity that had you soaked by 10 a.m. We built shelters for the cameras and had them enclosed in tight plastic bags with a worklight that was left on all the time in the hopes that it would reduce the relative humidity. We had an opportunity to place one of our cameras on the pad a day early so we thought it would be a good test. The next morning, and our last chance to work at the pad, we found the camera so wet inside that a piece of test film

was decomposing in the gate. It was totally jammed, and took three hours to tear down and clean. We could do nothing but lubricate every surface and part that touched the film, reasoning that some high-speed cameras splash a little oil on film without causing too much damage. Quite frankly, we weren't too confident about our chances of filming the last Saturn rocket ever. The next day we watched the lift-off from the VAB, over 3 miles away. Hours later we were allowed back on the pad and found the cameras had both run perfectly.

We tried very hard to come up with some effects that would engulf the audience completely and came up with what we called our Discount-Slit-Scan. It cost about 1/1000th what it did in "2001" and was relatively easy to set up. It had absolutely nothing to do with slit-scan photography other than to look very much like the effect.

We created artwork on 8"x10" sheets of white paper. The art deliberately contained grey areas designed to "break-up" when printed onto high-contrast film. We made Kodaliths of each piece and they were then carefully matched together to create an 8"x30-foot piece of art. Using an overhead projector with a specially designed track and motorized mechanism, the artwork was pulled very smoothly over the glass surface of the projector. The images were projected onto a very large reflective white card that faced the lens of the projector, and was set up about ten feet from it. Focus was maintained across the entire white card and the extreme density of the Kodalith film maintained solid blacks that would not "read" on the negative. The IMAX camera was set up with a fish-eye lens very close to one edge of the white card and perpendicular to the axis of the projector. The camera faced the far edge of the card, creating a "horizon". The images moved towards the camera and were deliberately distorted by the lens and the slight curvature we imparted to the white card. It gave the effect of very distant moving shapes that stretched out and exaggerated as they came closer and then rushed by the camera. This was done to create one plane, covering half the IMAX frame. We then flipped the camera over, rewound the film and repeated the effect for the other half of the image. The 30-foot-long artwork had gels of different colors attached directly to its top surface (so as not to interfere with its movements through the tracks on the projector). We experimented several times in 16mm to get the best effect of color and speed. We also had to make a giant rewind to

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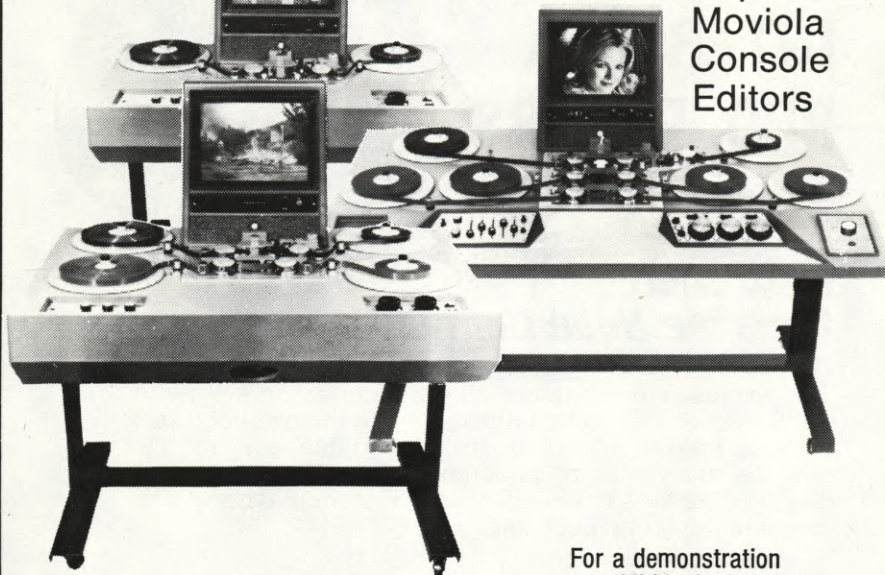
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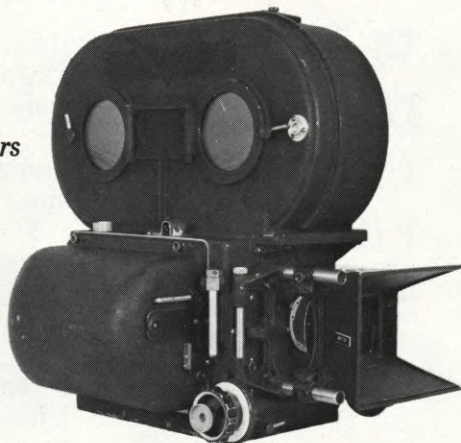
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take-up and pull all the artwork, and it, too, was driven by a zoom motor.

By far the most interesting of our effects involved what look like immense and colorful nebulae expanding and contracting in deep space. In actuality they ranged in size from a pack of cigarettes to a postage stamp. We filmed them using a bellows extension, a Hasselblad closeup lens and a variety of diopters. The camera was mounted on a very rigid stand pointing straight down, the fully extended lens about 14" from the surface of a table top. The table and stand were very firmly braced to dampen all vibrations. An 8"x10" plastic developing tray (although just about any flat container will work) was filled halfway with a *measured* amount of water. (This creates a constant focus because the surface is always the same distance from the film plane each time you set up). To the water we added a few squirts of jet black ink, mixing it in thoroughly. When the liquids settled to a smooth, ripple-free surface we added one drop of white enamel paint. It virtually explodes on contact, pulling itself apart and expanding rapidly into clusters and arms that break up into a million little white spots, all moving outward from the center.

We must have loaded and unloaded that tray of water/ink/paint 500 times and it never worked the same twice. That was the problem. There were many variables that affected the results, such as: the temperature of the water and paint, the *relative* temperature of the water and paint (cold seems to slow the reaction slightly), the size of the container, proximity of lights (we used two 1000's set up 2½ feet from the tray for an approximate f/8 stop), the thickness of the paint, the size of the drop of paint and, most importantly, the type of paint. No two white enamels reacted the same, even when they were the same brand. Even the reactions of one kind of paint might be different an hour later. We tried many different types and colors but ended up using only a few types of white which we could then color by adding gels to our lights. One interesting technique was to form a small wire into a shape, like a branding iron, and then dip it into the paint. Its shape had to be perfectly flat on the bottom but once it was carefully lowered into the ink/water it created some really beautiful patterns.

Our biggest headache, besides trying to repeat something for the cameras that we saw and liked while experimenting, was the speed of the reaction. It should be filmed at 96 fps. if not more. There are little motions created by currents within the expand-

ing paint that you can't see with the naked eye but are picked up at 24 fps. Some of these currents add to the effect, but most don't. Since we couldn't film much above 32 fps. we wanted to slow everything down. We tried using mineral oil as our medium (the ink and some paints don't mix) and various other solutions, but the most promising (and the most surprising) was to add a layer of paint thinner to the surface of the water. It slowed down many of the reactions and created some interesting new ones. Some paints sank immediately to the interface layer between the water and thinner and began to drift and dissolve while other paints spread out across the top surface, leaving the bottom layer undisturbed and creating a 3-dimensional effect. All the paints form a scummy residue almost immediately that starts to slow the reaction once it reaches the edge of the container. We found no way around that problem except trying paint that is "fuel-proof" for model airplanes. It forms such a thick residue that it can be picked right up off the water if you don't like the pattern. At least it saves the hassle of loading and unloading the container all the time.

The space sequence took 4½ months to pre-plan, test and shoot, all for a two-minute sequence at the end of the film. It would have taken a great deal more time and money had we not planned every phase of it from the beginning. It was a series of challenges above and beyond the problems encountered in the rest of the film.

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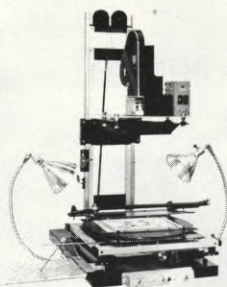
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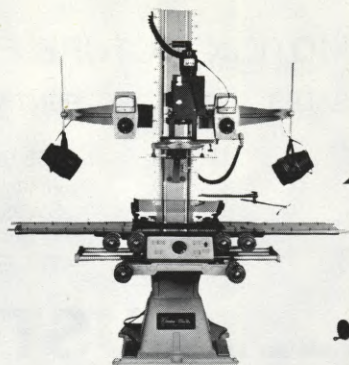
The 2X extender is available in the following lens mounts: Arriflex standard, Eclair CM3 and Arriflex bayonet, which can be used with any Arri bayonet-mounted zoom lens and certain focusable prime lenses.

For additional information contact Lane at A.G.E. Inc., 1430 N. Cahuenga Blvd., Hollywood, Calif. 90028. Telephone is (213) 466-3561.

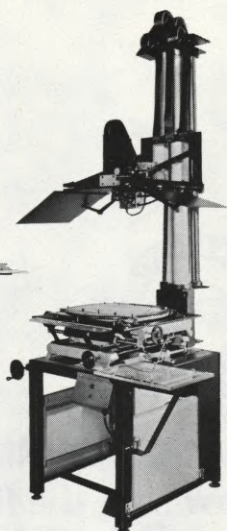
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"VIRGINIA . . . PURSUIT OF HAPPINESS"

Continued from Page 806

then very quickly set the camera, the beach straw, and roll before it rose too high. Flawlessly, the Mark II on Ronford legs was positioned and leveled in a matter of moments and we got the shot first try.

Since the eventual product was to be a Bicentennial film with some added thrills and excitement, several days of shooting were spent putting a camera either in or on some vehicle. It was here that the 25mm Distortion Panatar was utilized. It is a gimmick lens and would be an obvious problem if used as a normal working production lens. When used for a special purpose, however, the distortion aspects of this Panatar are added thrills. What we had in mind was positioning the audience in exciting points of view and letting them see various precarious eyeline views, like the cropduster I mentioned, as well as a roller coaster, a runaway hay wagon and, in a different vein, a carriage ride through the streets of Williamsburg.

Another bones section of the production was held off until the final week of shooting. These were the aerials that open and close the film and function as a subtle thrill in themselves. The type of views we wanted were head-on wide shots (the 25mm Distortion Panatar) moving forward. This tended to be a problem with most helicopter mounts, so John Gunselman and I did some testing and he devised a new shock mount base that fit our exact needs. Basically, the camera rides on a new cross member going between the struts of the copter. By being as far as possible from the main body of the copter, vibration is minimized and the view is free. Since all of our aerial shots were extremely wide, the inability to sight the camera was not a problem and the lowered camera position on the copter produced some exciting results, such as the shot in which the camera seems to almost touch the tree tops ("almost touch" is for the F.A.A.'s benefit).

I mentioned that at the beginning I expected one of my main problems on VIRGINIA . . . PURSUIT OF HAPPINESS to be logistics, and, as the production continued, this proved to be even a larger headache than I imagined. Just in the area of daily or semi-daily rushes, the speed of our travel and the constant change of our schedule made them impossible. When you're in the hills of Virginia there is little that can be done to get the rushes through, especially if you'll be in Richmond the next day (tentatively), and

Norfolk the day after that (also tentative). By the final day of shooting we had seen only five per cent of our efforts projected, with the remainder scattered between Technicolor in New York and various points around Virginia. We had to make a hard decision about concluding production. Based on the five per cent that we had seen — and faith — we ended shooting on schedule with our corporate fingers crossed.

When we did track down all of the "lost" shipments of dailies (more like semi-monthlies) and screened them in Cincinnati, the results were as we had hoped, with the one exception of a needed seagull shot that I had simply blown. As I made a hasty trip to again view *Jonathan Livingston Seagull* and marvel at the focus work, Don Regensburger, the production manager, re-scheduled the lost shot as well as several new night views of Norfolk and Richmond. This additional shooting brought us in three days over schedule with twenty-five thousand feet of material (remember that the final cut is twelve minutes).

I am proud of the footage both for its visual quality and its substance, its information. And therein lies the production paradox of VIRGINIA ... PURSUIT OF HAPPINESS. It is documentary in concept, yet theatrical in picture quality. The style and sharpness of the visual image seems to help this non-narrated production flow from one scene to another, sometimes jumping many miles and days. This was only accomplished because of the fluid scheduling and rescheduling of our production manager, Don Regensburger, the speed and quality of our crew, Oscar Kosarin's beautiful and moving music score, and, of course, John Guntzelman's excellent direction and editing. Metaphorically, what we have produced is a portrait, a real picture of Virginia, with judicious re-touching. And that is precisely what we hoped to do.

CREDITS

VIRGINIA ... PURSUIT OF HAPPINESS

An Alliance Pictures Corporation Production
Presented by The F & M Bank and Kings Dominion

Produced by	Jack Rouse with Keith James
Directed by	John Guntzelman
Production Manager	Don Regensburger
Original Concept	Jack Rouse Keith James
Developed by	Dan Guntzelman Jack Rouse
Additional lyrics by	Dan Guntzelman Jack Rouse
Narration written by	Dan Guntzelman
Edited by	John Guntzelman
Sound by	Don Regensburger
Director of Photography	Dan Guntzelman
Original music composition by	Oscar Kosarin
Narrated by	Cecil Hale

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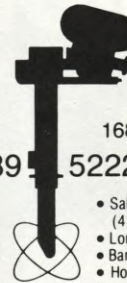


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PHOTOGRAPHING INDEPENDENCE

Continued from Page 800

workprint the effect was very jarring. However, when I saw the final print I was amazed to see that the lab had optically added diffusion to the first material shot and had lowered its contrast, so that everything now matched beautifully. I had never seen this done so well before and I learned from it that you can change many things after the fact, if you want to.

20th Century-Fox financed the production of "INDEPENDENCE" — obviously as their contribution to the American Bicentennial and not as a business venture, because the film will be shown only at Independence Hall in a little theater built just for that purpose. They intend to run it for the next 20 years. I don't know what the film actually cost, but I feel that for 20th Century-Fox to make such a contribution to the country and to the film art medium was quite outstanding.

As I said before, everybody who worked on the project really enjoyed it and it was a pleasure to work with that particular group of people, because each one was an artist in his own right and a fine craftsman. Norman Leigh, my gaffer, had to deal with a great many lights under difficult conditions because of our short shooting schedule. He just never stopped working, but he loved every minute of it and he was terrific.

My key grip, Ken Goss, had to live with all those rigs that we came up with at the last minute, such as 20 x 30-foot scrimms with cherrypickers and arcs off huge parallels. He said that he'd never had so much fun, and he was just great. My assistant, Hank Muller, and operator, Bill Steiner, Jr., had a ball working on the picture.

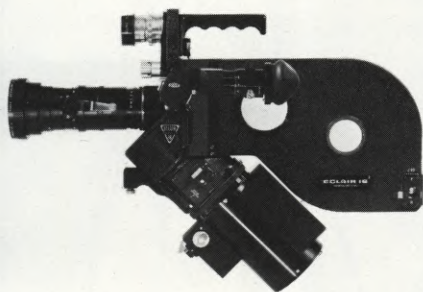
It was a pleasure to work with Steven Grimes, the production designer, and Gene Rudolph and Joe Caraciola, who did all the prop work and smoke effects. The people from the production department, Pat Casey and Sol Fol, had a very difficult assignment and did a terrific job, as did Biff Johnson, the associate producer.

I'd like to thank Lloyd and Joyce Ritter, the producer and writer, respectively, for asking me to do the picture in the first place, because it was so much fun to do.

Working with John Huston was one of the great thrills of my life, because he is such a great man and he commands so much respect from everybody around him. I've heard many people refer to him as "The Great Mesmerizer".

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Continued from Page 784

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CINEMA WORKSHOP
Continued from Page 730

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FILM ABOUT REPORTERS
 Continued from Page 775

All of these things came out in the making of the film. I had an enormous problem in trying to get full three-dimensional characters onto the screen, because the narrative demands of the story were just so relentless. Hitchcock has always said that, in a suspense film, it's so much easier to use established stars, because you have no time for deep character exploration. Yet, I did not want the people the reporters interviewed to be merely narrative tools who just served the story, so I spent endless time with the actors in discussions of the characters they were playing. There were things never verbalized in the film that, nevertheless, added to the suspense, and it's curious that while it is a huge story in the historic sense, the picture is made up of many tiny mosaics, with one tiny little thing leading to another tiny little thing.

The essence of investigative reporting is making people talk about things they don't want to talk about, and unless the characters being interviewed are specific and you understand what their frustrations and hangups are, there is no suspense in the scene. It's the classic tip-of-the-iceberg theory — which is, hopefully, that the actor has all that going to texture his performance and, even though his background is never discussed, the audience will feel a dimension it would not feel otherwise.

I have talked about visual style being dictated by content, and I really believe that. Otherwise, it's just a *tour de force*, and I have no use for that. But *visual* and *audio* style are very closely related and, to me, the sound is almost as important as the photography in the making of a film. The essential conception that fascinated me and dictated much of the visual and audio style of this particular film was the way little absurd elements combined to bring down towering people in power. If ever there was a story that demonstrates that the pen is mightier than the sword, God knows it's "ALL THE PRESIDENT'S MEN". In this case it's the typewriter that becomes the weapon and, in order to dramatize that, we opened the film with a typewriter key that is as big as any gun in the world, slamming letters onto a blank white screen. While we used a regular typewriter, we mixed with its own sound a bullet shot — the firing of a gun — and the sound of a whiplash.

I spent a lot of time doing that sort of thing, because it does make a point. We pushed up the sound of pencils and



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the scratching of pens, as they make their little notes and one phone call or piece of information leads to another, so that it was like the sound of little rats scratching their way into these huge walls of power, bringing them down in a way that all the guns in the world could not.

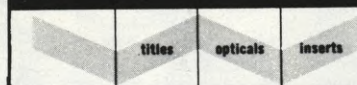
One amazing problem we had was that of visually dramatizing the people the reporters were against. The antagonists — the "heavies", if you want to call them that — are never really seen in person in the film. The picture deals with the reporters' point-of-view and they never meet the people in the higher-up places. So there were two methods we used in order to visualize power. One method was that of showing the antagonists on television sets. There's something about seeing people on television or film that makes them godlike, untouchable, beyond your reach. That worked very well. The other method we used for dramatizing them visually was through the Washington, D.C. buildings in which they held power. The buildings look like postcards — lovely, graceful, humane in their proportions — but they're really citadels of power.

Are there any questions?

QUESTION: Did you know when you started work on the film that Redford and Hoffman would play the two reporters or did you consider using unknown actors?

PAKULA: It was Bob Redford's idea to do the film a year-and-a-half before I came onto the project. He had spoken to Woodward and Bernstein as far back as 1972, long before the film script was written. By the time I came onto the picture, Bob had already committed Dustin to play the other role — so it was Bob and Dustin definitely. I said to Bob: "One of my great concerns is that we have two top stars playing two unknown reporters. How do we do that?" I was more concerned about Bob than I was about Dustin, because Dustin has an "average man" quality. He's a character actor. People don't think of Dustin as being larger than life. But, as I told Bob: "You have an air of enormous confidence on the screen. Everything you do seems to come so easily and with such grace." I told him this as he was having trouble opening a bottle of club soda. He laughed and said: "Look at me." I said: "But what comes across on the screen is not necessarily the same thing that happens in real life. If what you do comes across as a star performance, the film will be destroyed." As a result, the star performance in the film, in terms of personality, is that of Jason Robards as

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Ben Bradlee — and that's the way it was supposed to be. That was the key to solving the problem. Woodward and Bernstein are supposed to be two young, unknown reporters. They must disappear into the newsroom. They must be working for a man who totally overshadows them — and editors do have "star" personalities. God knows Ben Bradlee does. I said to Jason: "If you don't overpower those two, the film is out the window." Fortunately, Bob and Dustin had enormous respect for Jason, and they understood the problem. I mean, they would watch Jason walk away with a scene — and do it happily. Other stars would have had another director the next day. The other key for Bob in keeping that problem under control was his character's curious relationship with "Deep Throat". In their scenes together the relationship is almost that of teacher and acolyte. He is intimidated by Deep Throat. He's afraid of making a fool of himself. That worked well, but the problem of having big stars playing unknown reporters was one we had to deal with all through the filming.

QUESTION: One of the criticisms I've heard about the film is that it's too talky, and not very cinematic, because of the long takes. What do you think about that?

PAKULA: I've read just the opposite. Somebody said: "What you did in the Library of Congress was visually showing off." He was referring to the shot in the Library where the camera starts on a closeup of tiny library slips, as they are going through them, trying to prove that Howard Hunt was investigating Ted Kennedy for the White House, and then goes all the way up to the top of the dome. There was a reason behind that shot. For one thing, I wanted to dramatize those tiny little slips of paper that would end up destroying enormous power. For another, there was the needle-in-the-haystack aspect of it. Also, one of the biggest problems of the film was to dramatize what investigative reporters actually do. The essence of it is the sheer, stubborn, agonizing patience they demonstrate in going over and over details. How do you dramatize that without tedium? That's why the camera keeps going up and up and up, until they become infinitesimally small figures. That shot took so long on the screen that we finally telescoped it with two dissolves. Otherwise we would still be going up right now. But it was a way of dramatizing visually the kind of endurance it takes to be an investigative reporter. As for the statement that the

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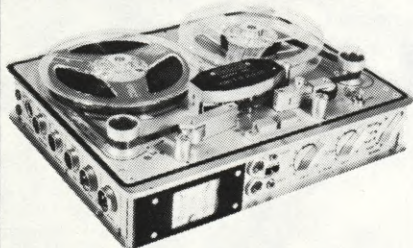
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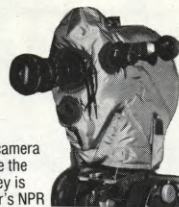
film is too talky — the fact is that reporters deal with words. Their is a totally verbal world. The essence of this film is words, and for those in the audience who don't like to listen or don't like to read, I can only say that it's the wrong film for them. Several people have said that the film is visually an enormous tour de force. I personally think it's somewhere in the middle.

QUESTION: What about your extensive use of the moving camera?

PAKULA: That occurred mainly in the second half of the picture. I deliberately kept the camera very locked in at the beginning, because I didn't want to soup up the film with random movement. For example, Bob Redford plays a very tightly-closed, compressed character. He is obsessed, and it's that obsession that drives the film. But you couldn't do any colorful things externally at that point, because that would have put the film down the drain. I wanted to keep the character of Woodward very compressed, with an energy that was ready to explode at any point, but temporarily held in. There is the sequence, for instance, where he's on the phone making a series of four or five calls, trying to find out who the hell Howard Hunt is, with only voices on the other end of the phone. I didn't want to show the people he was talking to, because you had to see what it's like to be a reporter trying to get people you can't even see to communicate with you and tell you things they don't want to tell you. We shot the set-up for the first phone call and it was fine. Bob said: "Okay, call me when you're ready for the new set-up for the next phone call." I said: "We are ready. It's this same set-up — and the one after that and the one after that and the one after that — because we've got to show what it's like to be a reporter, locked in, trapped with that phone, making call after call, holding on, talking to unknown voices, trying to get that story to build." Therefore, the movement is very controlled, and then gradually, as the film starts to progress, the camera begins to move with them. As they get more manic, the camera gets more manic, so that near the end of the film there is a shot of Dustin when he thinks he's gotten confirmation of Haldeman being named as one of the heads of the secret fund. We started at one end of the newsroom and we flew. One of the best Disneyland rides we've ever had was on that dolly. We went with him from the end of the newsroom as he ran all the way to Bob's desk, which was in the middle, and then he and Bob ran all the way to the other end of the news-

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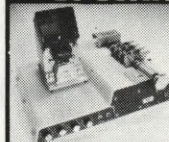
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room on a diagonal until they hit the elevator. They ran through two sound stages. At that point I wanted to dramatize the fact that they were so manic that they were out of control and getting unreliable. But up until that point I wouldn't use camera movement or cuts just to say: "A series of phone calls is boring, so I'm going to concentrate the audience's attention by using flash for the sake of flash." ■

(EDITOR'S NOTE: The foregoing is excerpted from a talk given by Alan J. Pakula at the Ninth Motion Picture Seminar of the Northwest, held recently in Seattle, Washington.)

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NORTHWEST SEMINAR
Continued from Page 771

"HEARTS OF THE WEST", replete
with many "in" references that tickle
those of us who have grown up in this
industry. The enthusiastic audience
response provides a proud moment for
Rob Thompson, the young ex-Seattle
author of the screenplay, who is pres-
ent at the screening.

Topping off the program is a
showing of the Academy Award-
winning feature documentary, "THE
MAN WHO SKIED DOWN EVER-
EST", with its producer, F.R. "Budge"
Crawley, present. Having already seen
the film once, I am impressed all over
again by its technical virtuosity and
stunning action.

One of the things that impresses me
the most about the Seattle Seminar is
that the horrendous effort of planning
and carrying it through is accom-
plished entirely by volunteers — most
of whom are extremely busy local film
people. Yet, the whole thing is brought
off so smoothly and with such a mini-
mum of snafu that it amazes me. Those
responsible are too numerous to
mention, but one who especially im-
presses is the always-affable Les Davis,
charged with the complicated and
thankless task of lining up the various
speakers and seeing to their arrivals
(all at different times), accom-
modations and departures. Through it
all, he remains constantly pleasant and
cooperative.

Heart-warming, too, is the intimate,
almost "family" spirit that pervades the
Seminar. This is commented on by
Laszlo Pal, Seattle producer/cinema-
tographer and an old friend, who says:
"We hold ourselves back from pub-
licizing the Seminar too much, because
if it got too big we would have to move it
into the 4,000-seat Main Auditorium —
and that would destroy the person-to-
person spirit, which we think is so
important."

I agree; it's a lovely spirit — one
which should be maintained at any
cost.

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fabulous, glamorous, amorous Holly-
wood. On the plane, I tell myself that
perhaps, some time in the future, those
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moment of madness and invite me
back to be Moderator once again.

But even if they don't, I may come
back anyway — just to be part of the
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1:05PM 1:35PM
Recent Developments in Professional Applications of Super 8 — Julie Mamolen

1:35PM 1:55PM
How To Make A Screen Writer Earn His Pay — Jim Halpin

1:55PM 2:30PM
The System and What It Can/Can't Do For You — F.R. "Budge" Crawley

2:30PM 2:50PM
Break

2:50PM 3:20PM
60 Second Feature — Can It Be Cut To 30 — Joe Feke

3:20PM 3:45PM
"STEADICAM", The Mount of the Future — Garrett W. Brown

3:45PM 4:15PM
"Directing a Film About A Couple of Reporters" — Alan J. Pakula

4:15PM 5:00PM
Animation Is and Animation Was — Chuck Jones

5:00PM 5:30PM
Questions, Answers & Discussions with Speakers

8:00PM 11:00PM
Showings of the Best in the Northwest produced film

PROGRAM SATURDAY, MAY 22, 1976

8:30AM 9:00AM
Registration

9:00AM 9:15AM
Introduction — Herb A. Lightman

9:15AM 9:35AM
Computer Films — Richard Speer

9:35AM 9:55AM
Possibilities of the Computer Controlled Horizontal Optical Effects System — Ken Levine

9:55AM 10:15AM
Maintain Your Equipment — Some Problems — Some Answers — Diane Saba

10:15AM 10:30AM
Break

10:30AM 11:00AM
Making It Move — Victoria Hochberg

11:00AM 11:25AM
Summer Olympics — 1986 — Len Chapple

11:25AM 12:05PM
Film Coordinators Panel — F.R. "Budge" Crawley, Moderator Panelists Include: Chuck Ross, Alberta; Bill Round, British Columbia; Lloyd Howe, Idaho; Scott Warden, Montana; Warren Merrill, Oregon; and Hank Pearson, Washington

12:05PM 2:00PM
Luncheon — Exhibition Hall, Seattle Center
Keynote Speaker Mr. Robert Wise, Producer/Director

2:00PM 2:30PM
Film Sound — The Silent Partner — Walter Murch

2:30PM 3:00PM
Regional Filmmaking — Arthur Knight

3:00PM 3:40PM
Life and Times of Conrad Hall ASC — Conrad Hall

3:40PM 4:20PM
From 1942 to 1976 — Verna Fields

4:20PM 5:00PM
Questions, Answers and Discussions with Speakers

8:00PM 12:30AM
Selected films by Seminar speakers with personal comments. Films shown tonight will be "Metroliner", "Hearts of the West" and "The Man Who Skied Down Mt. Everest". Rated PG.

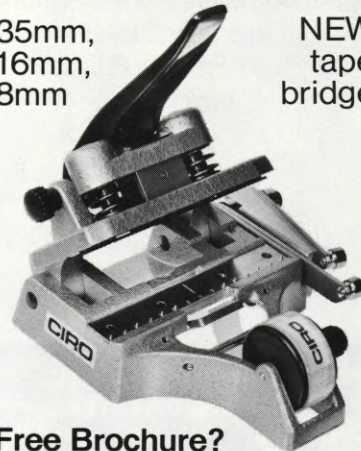
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Sample books on request

"THE NEW HOLLYWOOD"

Continued from Page 780

the steps I go through before I decide on a project. At the moment there are two or three up for decisions. There's one in particular that I love and would just love to do, but it's sitting on my desk because I don't know whether there is enough interest in the subject matter to attract a mass audience.

QUESTION: Out of all those factors which you've just mentioned, which one is the most important in making your decision?

WISE: It comes down to finances. That's why I say that Three and Four are tied together. The Front Office is going to relate the size of the potential audience to the size of the budget, and this happens not infrequently. I can't tell you how many projects over the years I've felt keen on and submitted, only to have them turned down by the company, the distributors, the people putting up the money, because they didn't feel that subject-matterwise the thing was going to be popular enough. It's simply a case of pure economics. On your pet projects you keep hoping that there will come a time when the audience will change or grow, or that you will be able to get independent financing interested, or that you will find a way to make it for half what you thought it was going to cost. But that's where it is: audience related to cost.

QUESTION: What do you think is responsible for the current trend toward remaking old movies?

WISE: That trend seems to pop up regularly through the years, and I don't mean that as a putdown. The new version of "A STAR IS BORN" can probably be a marvelous show, but the track record on remakes of popular
Continued overleaf



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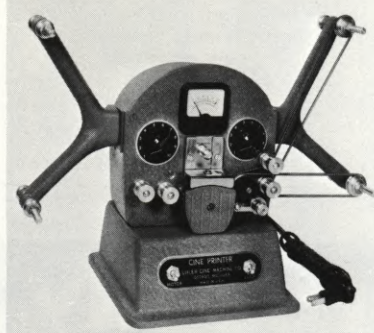
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films has been very poor. I would say that probably 95% of them have been failures. Yet the business keeps getting hooked every so often to put one into a remake. But I think they are very, very questionable.

QUESTION: Do you think that more films will be shot in 16mm instead of 35mm in the future?

WISE: I would hope so. I would think that there should be a growing trend to use 16mm more, because of the new film stock and what can be done with it. I can't honestly say that I know of any strong surge on the Hollywood scene for that to happen, but I know that a number of us film-makers have been intrigued by the prospect. We like the idea because of the economics and the equipment that is available. I would think that the use of 16mm has to increase. How fast it will occur I couldn't make a guess.

QUESTION: How about shooting on tape?

WISE: That is something that does intrigue all of us who are in the film industry. We feel that down the line at some time, when they get a really good one-to-one tape-to-film transfer system

(which they don't actually have yet), we will probably be shooting some of our films on tape. There is much interest in the idea and a certain excitement about the potential of tape for feature subjects, but so far the transfer has not been good enough to consider doing it at the top level.

QUESTION: How did you happen to decide on the idea of using helicopter shots for the opening sequence of "THE SOUND OF MUSIC"?

WISE: I stole it from myself on "WEST SIDE STORY". I was one of the first to use a helicopter in filming, and I decided to use it again because it had been used (quite successfully, I thought) in the opening sequence of "WEST SIDE STORY". On that film, I needed an opening to establish New York. Also, we were doing a musical and one of the problems you always have with a musical is to deal with the fact that it is a musical. On the stage, with its stylized scenery, you accept the fact of people breaking into song and dance without any sense of embarrassment, but the screen is a very real medium and so the problem becomes much more difficult. I felt that we wanted to open the picture by actually showing the turf on which the

story was taking place, and I needed some kind of delivery of New York City that wouldn't be the same old across-the-river, with the bridge and the skyline and all that — hopefully, a view of New York that people hadn't seen. It would be New York — but in abstract, a larger-than-life New York. So I got to thinking about it and remembered how I had shot a scene in "ODDS AGAINST TOMORROW" from a building down in the cloverleaf, going across the river and up the Hudson, and how interesting that was. And I said to myself: "I'll bet it would look marvelous, looking straight down on this city, with the canyons of skyscrapers and the cross streets and the cars and everything."

QUESTION: Do you have a new film project in the works at present?

WISE: Yes, I'm preparing to make a new film from a novel that came out four or five months ago titled "AUDREY ROSE". It's a modern-day story that is based on reincarnation, and it provides a fascinating look at that subject. I think it will really be an eye-opener for some people regarding the whole concept of reincarnation. It will be dramatic, suspenseful and chilling (I hope) and maybe educational. I start shooting July 20th. ■

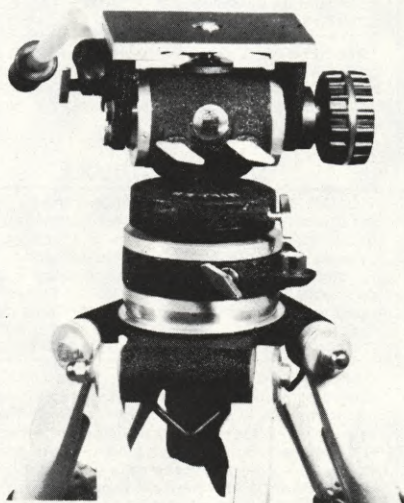
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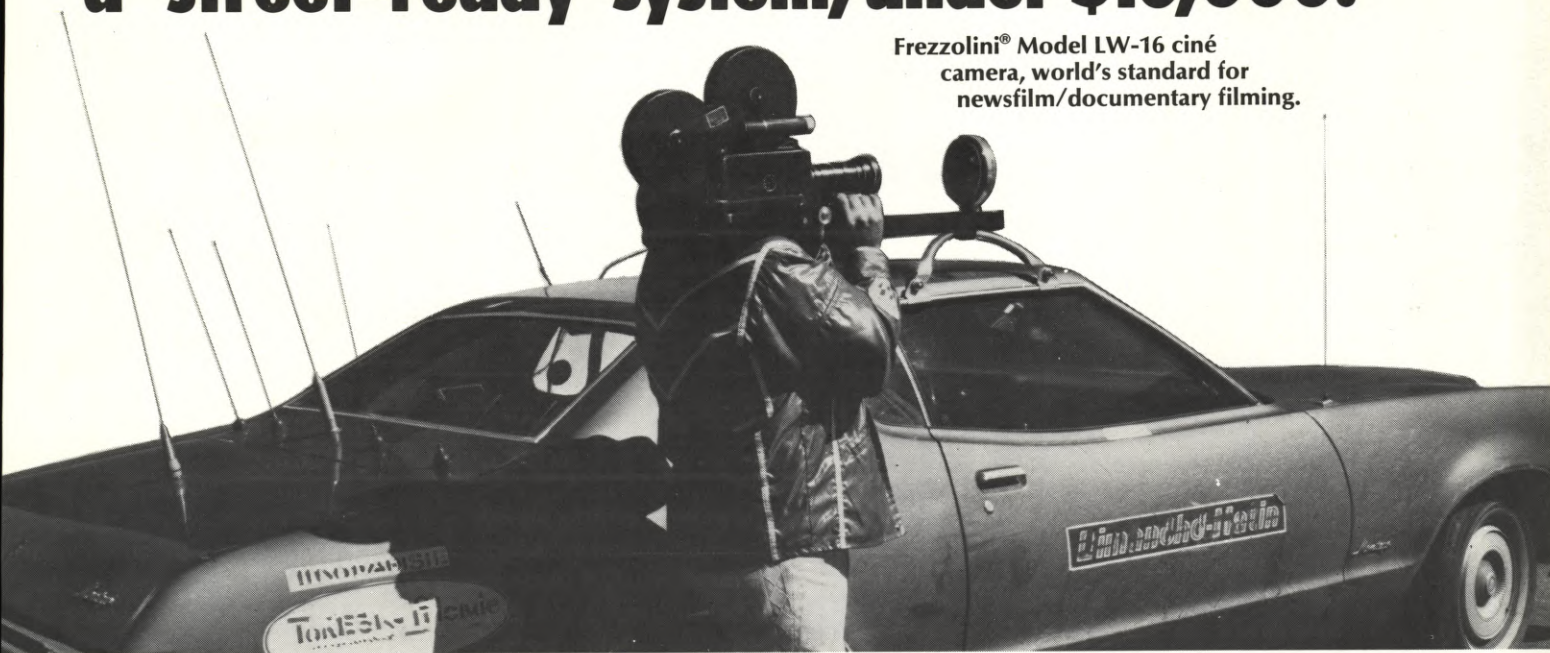


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