

American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

DECEMBER 1973/75 CENTS



The Filming of
Jonathan Livingston Seagull

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Our vision and PANAVISION

As the building took shape, people were impressed. We were impressed. So, apparently were the Panavision people, who

named us exclusive East Coast Distributors. Which we find especially flattering, since they've long been noted for pioneering the latest in cinematography. Without compromise.

All this equipment and no place to go

Knowing filmmaking, and filmmakers, we realized New York needed something more: a soundstage—or more realistically, a soundstage *complex*—to give motion picture professionals the facilities and flexibility they need to utilize today's most advanced cinema technology. Without a lock, stock & barrel transcontinental migration. So that any additional location or stage takes wouldn't require back-and-forth trekking.

But instead of the usual re-conversion of the sprawling ex-garages now dotting the west side, we started from the ground up. Resulting in a three-studio complex that tops anything you'll find this side of the Sacramento (and possibly even further West).

Enough aerial photography

In the not-too-distant future, we'll be introducing New York's West Coast to the filmmaking public. But why wait? We're waiting to make you part of the excitement at

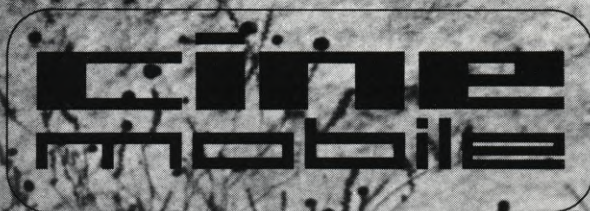
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American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

DECEMBER, 1973

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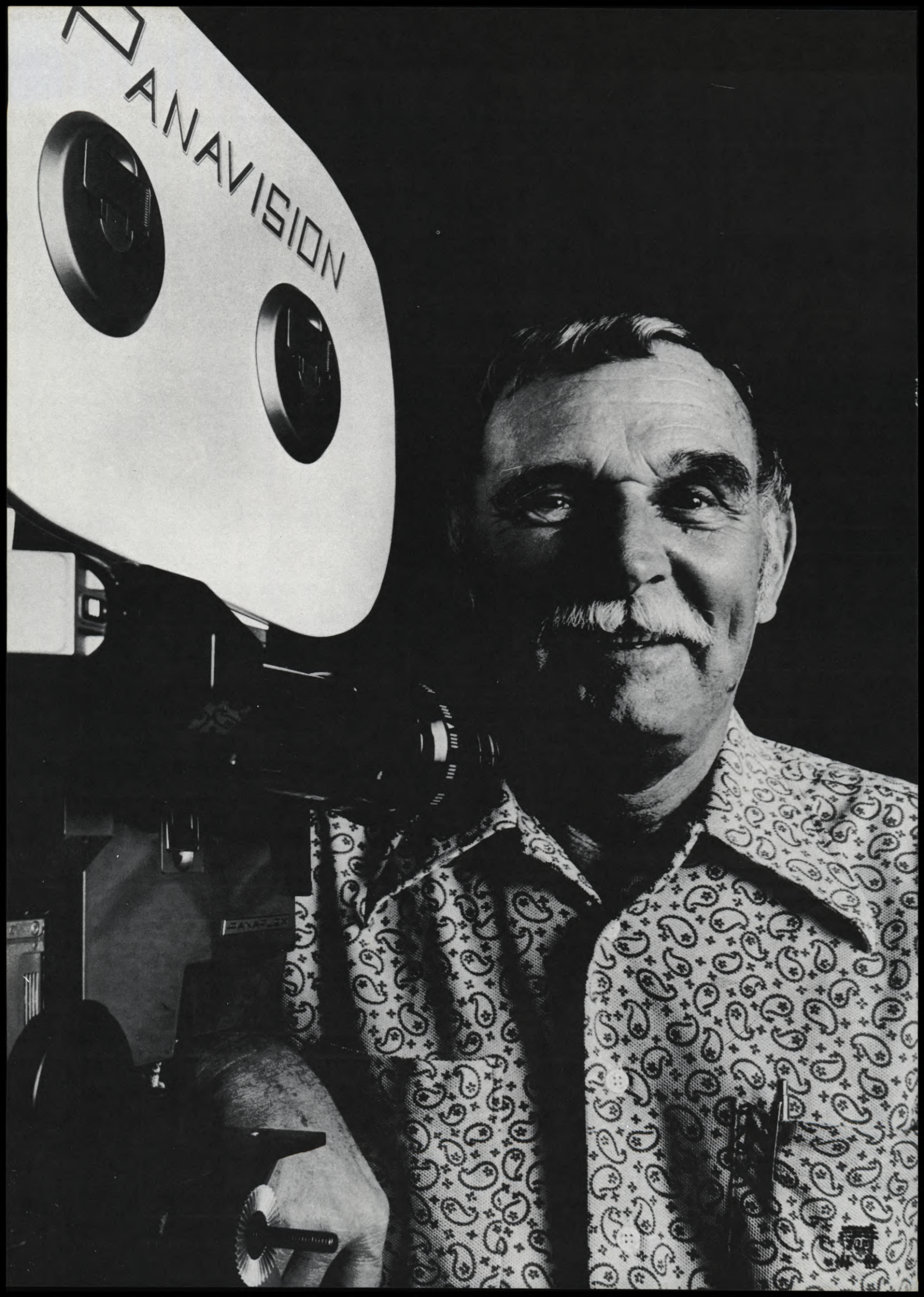
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ON THE COVER: Posterization of a photograph of the seagull who plays the "title role" in the Hall Bartlett/Paramount Pictures production of "JONATHAN LIVINGSTON SEAGULL". Original photograph by MacGillvray/Freeman.

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

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ANAVISION

"I knew it the moment the producer showed me the script.

"But more important than the Emmys and other awards that 'Brian's Song' won was the fact that it was the highest-rated made-for-tv movie ever. I mean, people wanted to see this movie. Maybe even needed to.

"That's why thousands of them packed Chicago theaters to see 'Brian's Song' just a few weeks after it had been on television.

"And, as a cameraman who has been in the business for fifty years, working on 'Brian's Song' made me feel good. You know, jumping from one medium to another without a hitch.

"That's why I like the flexibility and freedom of something like Eastman film. And why I'll stick with it.

"After all, I never know when another 'Brian's Song' might come along."

Joseph Biroc. Award winning
Director of Photography, "Brian's Song."

Be sure to watch "The Men Who Made The Movies," an eight-part series made possible by Kodak Grant and scheduled for PBS broadcasting in November and December.



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WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE

CBS LABORATORIES LASER COLOR FILM RECORDER TO ENTER WORLDWIDE SERVICE

The Laser Color Film Recorder (LCFR) developed by CBS Laboratories, a Division of Columbia Broadcasting System, Inc., will enter into commercial service early in 1974. CBS Laboratories has three contracts for the Laser Color Film Recorder for Rank Film Laboratories, London; Consolidated Film Industries, Hollywood, California; and Byron Motion Pictures Inc., Washington, D.C., it was announced by J. Kenneth Moore, General Manager for Electronic Systems Department.

"The Laser Color Film Recorder," Mr. Moore stated, "provides a new standard of quality for video tape-to-film transfer without incurring the high production cost associated with systems using color separation processes. The LCFR produces full color imagery in a single exposure.

"The flexibility inherent in the LCFR also allows for economic operation independent of the number of transfers required. For customers requiring a single or a few prints," Mr. Moore went on to say, "the Laser Color Film Recorder can record directly onto reversal film, but for film laboratories where production costs on large orders dictate the use of a negative, the Laser Color Film Recorder will also record directly onto negative film. Both approaches have been successfully demonstrated with the most modern photographic materials and have resulted in very high-quality transfers," Mr. Moore stated.

A prototype system of the LCFR is in operation at CBS Broadcast Center in New York City.

In 1972 the Laser Color Film Recorder was selected as one of the year's 100 most significant products by Industrial Research, Inc.

Mr. Moore sums up the unique features of the Laser Color Film Recorder as: high resolution, high color purity, low noise, no phosphor decay effect, excellent scan linearity and precise color registration.

CBS Laboratories has a background in laser film recorder technology which began several years ago with the development of a 50 MHz 100-lp/mm laser film recorder system. The first system consisted of a laser flying-spot scanner and a 5-inch aerial film laser recorder

system. Continuing development has led to the Compass Link System, whereby high-quality photographic imagery is sent via Satellite from Southeast Asia to Washington, D.C. The Laser Color Film Recorder is the most advanced of systems in the progression of CBS laser developments.

For more information on the subject of this release, or any activities at CBS Laboratories, please contact Herbert A. Grant, Director of Information Services, 227 High Ridge Rd., Stamford, Conn. 06905 (203) 327-2000 / TWX 710-474-0694.



SCOOP LAMPS BY GE

Two new Quartzline® light sources for television and motion picture production were introduced recently by the General Electric Company at the annual convention of the Society of Motion Picture and Television Engineers.

The new units are 1500- and 2000-watt "Scoop Lamps," so called because they are designed for use in 16- or 18-inch scoop-shaped reflectors. The new lamps supplement a 1000-watt lamp introduced a year ago, completing GE's line of scoop lamps.

Scoop lamps are designed to provide lighting which creates softer, more diffuse shadows than smaller lamps of equal wattage, thus making them desirable for use in TV, movie, and still photography studios.

GE's scoop lamps are self-cleaning tungsten-halogen Quartzline types, which offer the benefits of long life,

high light output, and extremely stable light output and color temperature throughout life. They have longer life and/or higher light output than other tungsten-halogen and conventional incandescent lamps presently available for similar applications, according to GE, and operate effectively in any position. The new lamps have special "low-noise" construction to minimize generation of audible noise, even when used on solid-state studio dimmers.

The 1500-watt lamp is identical in size and physical appearance to the 1000-watt version. The inside-frosted PS-52 outer bulb is six and a half inches in diameter and 13 inches in overall length. A quartz tungsten-halogen filament tube is mounted inside, along the axis of the bulb. It is expected to be the "most wanted" size for studio lighting applications.

The 2000-watt lamp is completely different in physical appearance. There is no outer bulb. The Quartzline tube is one inch in diameter by about 4 inches long, and is outside-frosted. The lamp has a maximum overall length of 11¾ inches. Only the quartz tube is luminous. The rest of the lamp length is an extension to the mogul screw base. The extension serves to make the light-center-length the same as that of the 1000- and 1500-watt lamps—9½ inches.

The 1000-watt bulb has a rated average life of 500 hours, with initial light output rating of 27,000 lumens. The 1500-watt lamp has an average life rating of 1000 hours and initial light output of 41,000 lumens. Comparable ratings for the 2000-watt lamp are 750 hours and 58,000 lumens. All three are rated at 3200° Kelvin.

CP-16 CAMERA MODELS AVAILABLE WITH AUTOMATIC IRIS

Cinema Products Corporation announces that CP-16 and CP-16/A camera models accept the new Angenieux 9.5-95mm and 12-120mm zoom lenses—BOTH with built-in Angenieux-designed *AUTOMATIC IRIS*. Exposure control is instant and precise—with no "hunt-and-peek" time delays.

These improved and advanced Angenieux Automatic Iris zoom lens control systems are ideally suited for operation with ultra-lightweight CP-16 camera models, and draw power from the same nicad battery pack powering the entire CP-16 camera system.

For further information, please write to Cinema Products Corporation, 2044 Cotner Avenue, Los Angeles, California 90025.

Eat your heart out.

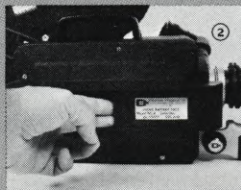
If you're not using the CP-16 or CP-16/A for your TV news or documentary filmmaking, you have every reason to feel sorry for yourself.

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



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

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



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

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

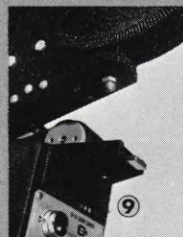
⑤ Silent operation allows for uninhibited candid cinematography.

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

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



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



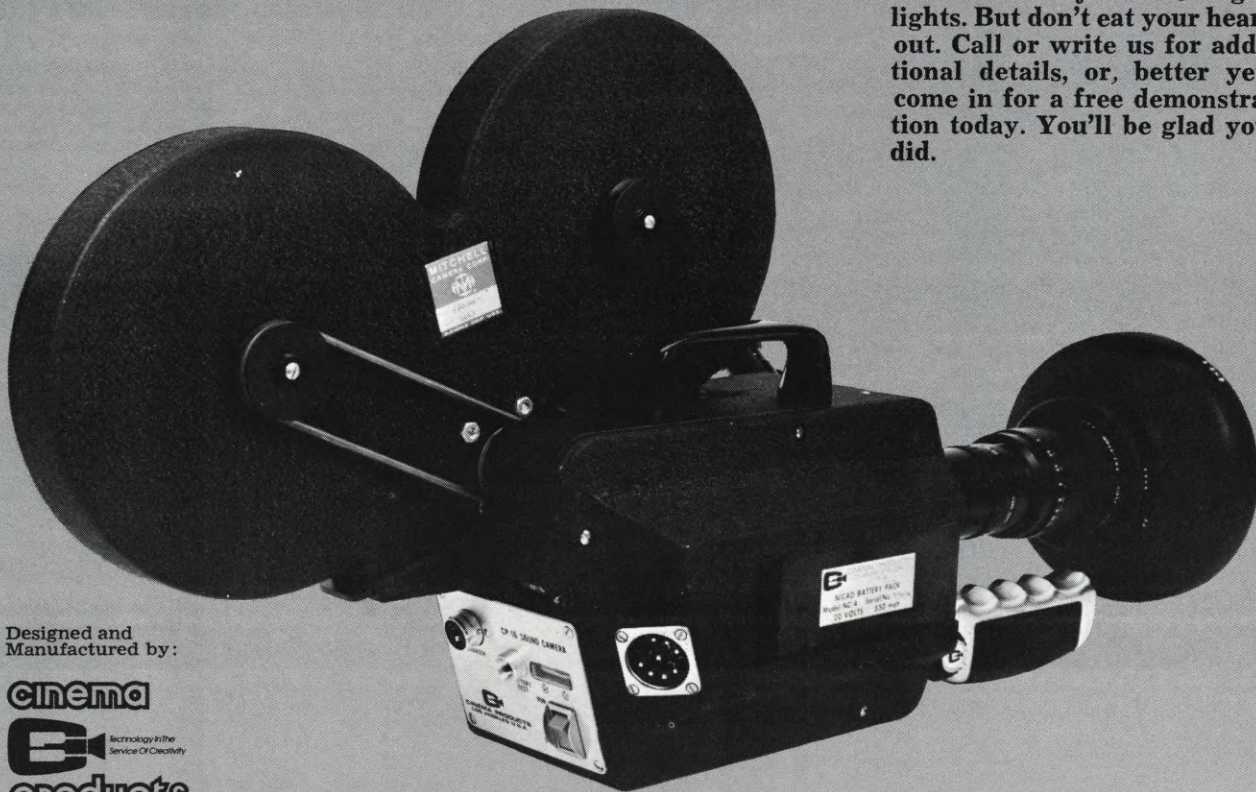
⑨ Standard Mitchell-type 400' or 1200' magazines can instantly be snapped on or off camera with unique quick-release button.

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



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

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



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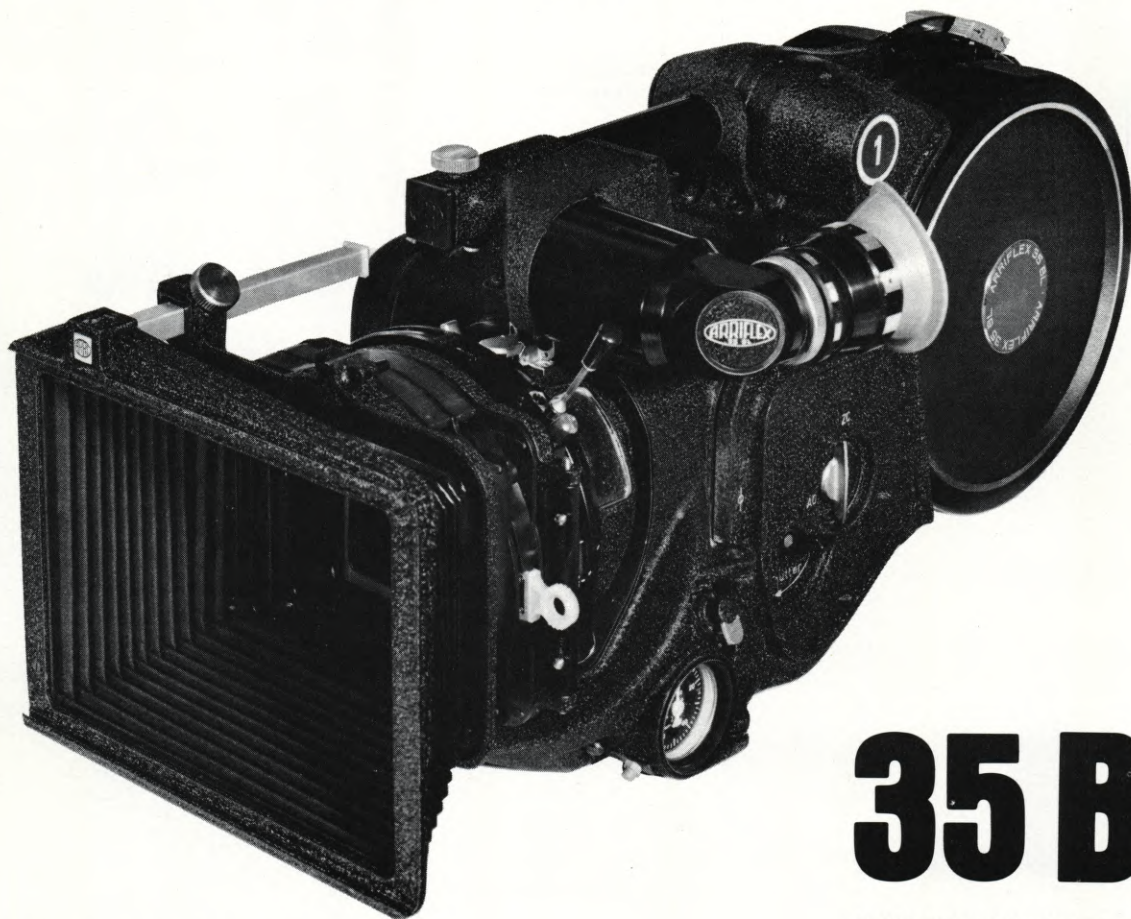
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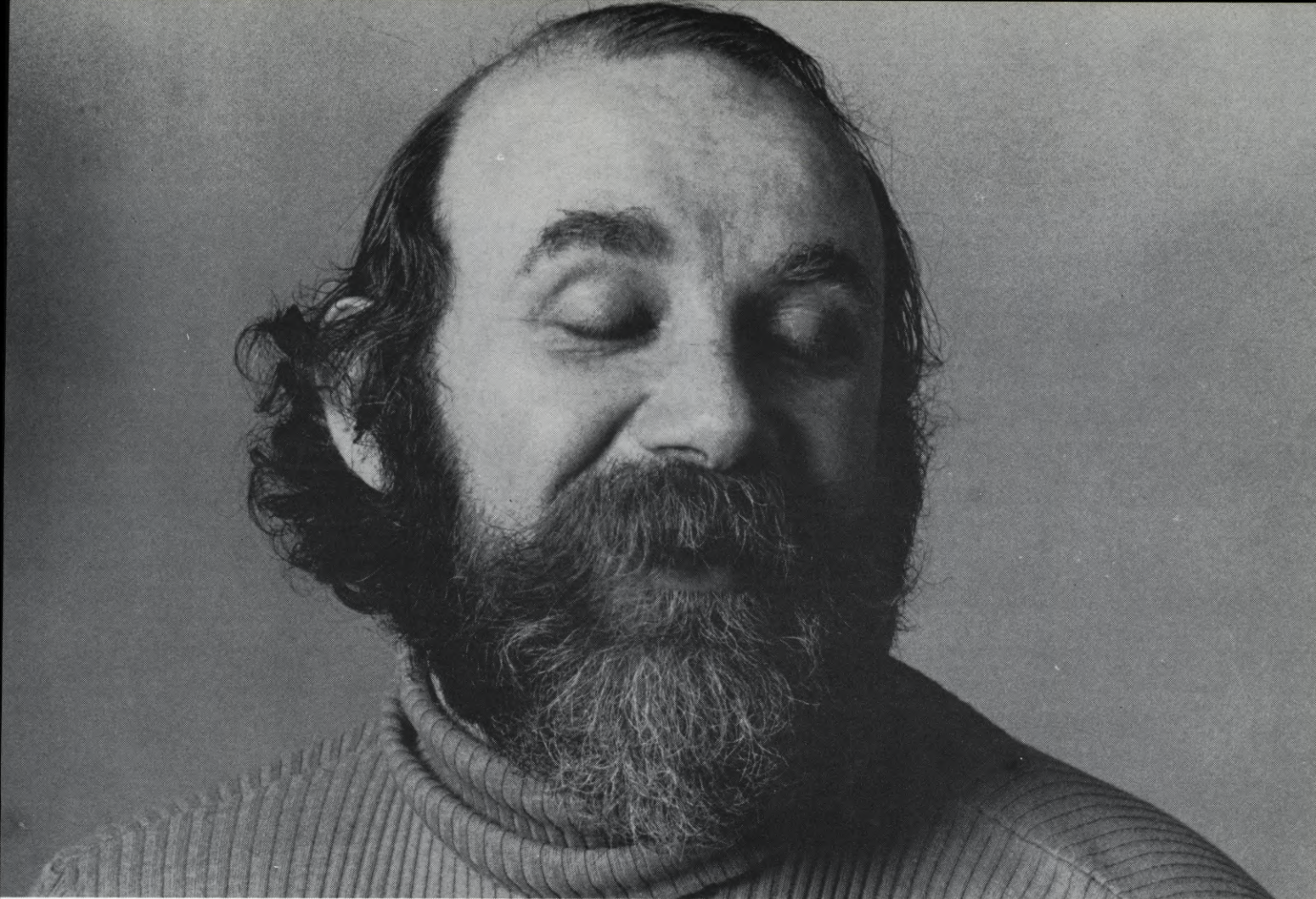
35 BL

No filming tool was ever received with more enthusiasm than the Arri 35BL—the industry's first, silent, portable 35mm production camera. And it has lived up to every expectation—proving itself in more than one hundred features and commercials. At only 26 lbs., mags that change in seconds, the 35BL is spurring new concepts in 35mm filmmaking.

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"Sometimes I wish I wasn't Sy Cane, 'cause I'd love to have me as a friend."

Especially now. I've just become the exclusive East Coast Distributor for the most innovative 16mm single/double system sound camera on the market. The Wilcam W-2+4 Reflex

And that makes me a good guy to know.

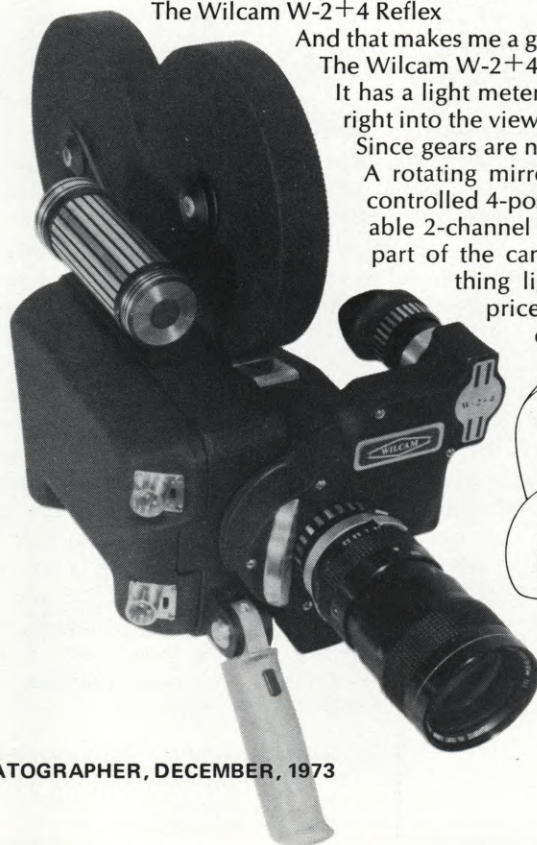
The Wilcam W-2+4 is the only pure reflex camera in its class. It has a light meter, VU meter and footage counter all built right into the viewfinder.

Since gears are noisy, the Wilcam has a belt drive instead. A rotating mirror that always stops closed. A fingertip controlled 4-position internal filter wheel. And a detachable 2-channel AGC amplifier that becomes an integral part of the camera, making cables obsolete. The only thing lighter than the magnesium body is the price; just about what you'd pay for a lot less camera.

If you'd like some literature on the new Wilcam just call and ask for Sy Cane, your friendly East Coast monopoly.



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QUESTIONS & ANSWERS

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



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

Q In order to provide fill light for a large area outdoors, I understand that several sunlight reflectors are often used together. I have observed that most cinematographers achieve very evenly lighted scenes with reflectors, even to the extent of controlling the sun-to-fill ratio (3:1). It would seem impossible from a time standpoint alone to individually place the various reflectors and measure the light. How is this uniformity achieved and the correct ratio maintained without unduly delaying production?

A The placement of sunlight reflectors is always controlled by the position of the sun in conjunction with the angle of the shot that is being made. Large areas are "filled" by using a number of reflectors—sometimes a dozen are used. But with enough grips on hand to constantly change the position of the reflectors, the desired result is accomplished.

Cinematographers never measure the light from reflectors to determine a light value ratio. This is accomplished through experience and judgment—judging the balance by sight. Also, a great many shots are "filled" with booster lights, instead of with reflected light, especially closeups and medium shots.

Q We have been producing three fashion films annually, using 16mm Commercial Ektachrome making release prints without sound.

On our next production (working with a low budget, of course) we would like to add sound, including narration and background music, and make about 10 prints.

How can we add sound at low cost to our 16mm Commercial Ektachrome original master?

A To obtain the type of sound track you require, the usual procedure is to begin with the use of magnetic tape. Record your narration on one tape, then record your music on a second tape. If you have two-channel facilities available when re-recording, you can combine the two tracks on a single tape, thus obtaining the level of narration and music that you wish.

Where such facilities are not available, then your best bet is to engage a

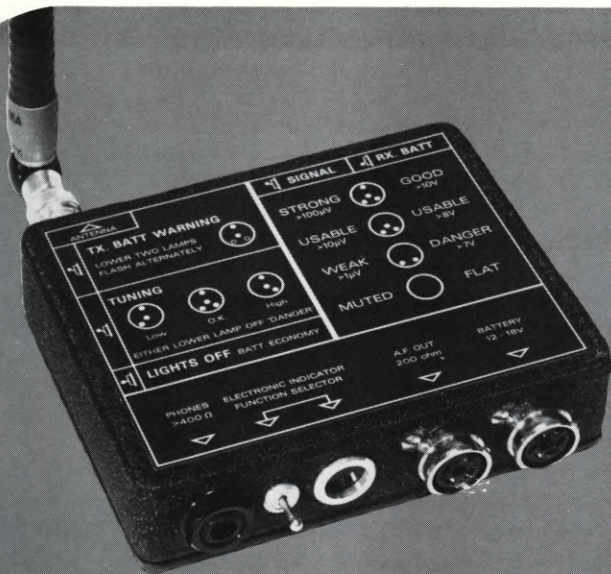
professional sound recording studio to do the work for you. From the resultant single tape, the recording studio can then transfer to an optical negative sound track for Ektachrome printing. In the cutting, sync your picture with the sound track to prepare it for release printing.

Q What is the color temperature of matchlight? What color gelatin filter placed over a lamp rated at 3200° Kelvin will simulate the effect of matchlight? Will an MT-2 or similar filter panel used over a window convert the daylight coming through to 3200°K to give a satisfactory matchlight effect?

A The color temperature of matchlight ranges between 1700° and 1800°K. The MT-2 filter will convert sunlight (6000°K) to 3200°K. Two thicknesses of the MT-2 filter gelatin, therefore, will almost exactly reduce the color temperature of the window light to that of matchlight.

Q For a film I am making dealing with the ocean, I wish to make titles in the sand, with waves washing one title away and the title followed by another, how can I do this?

A Make a wooden box about 3 by 6 feet in size and 8-inches deep and fill it half-full of sand. Tilt the box so that when the sand is leveled it is even with the top of the lower edge of the box. Next, provide a tub of water and place it near the box, where an assistant can pour its contents into the box at the elevated side. With your camera lined up on the sand box (but without the box itself visible in the finder, of course) write the first title in the sand. Start camera by fading in; read the title as you shoot to determine the required screen time, then have the sand flooded with water to obliterate the title at the same time you fade out on the title. Next, wind back film in the camera. Write the next title in the sand and fade in on same as you start to shoot again. This will create a dissolve at this point. Continue shooting for the desired reading time, then repeat the procedure for as many subsequent titles as you may require.



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8-26 mm f/1.6 wide angle zoom

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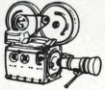
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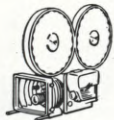
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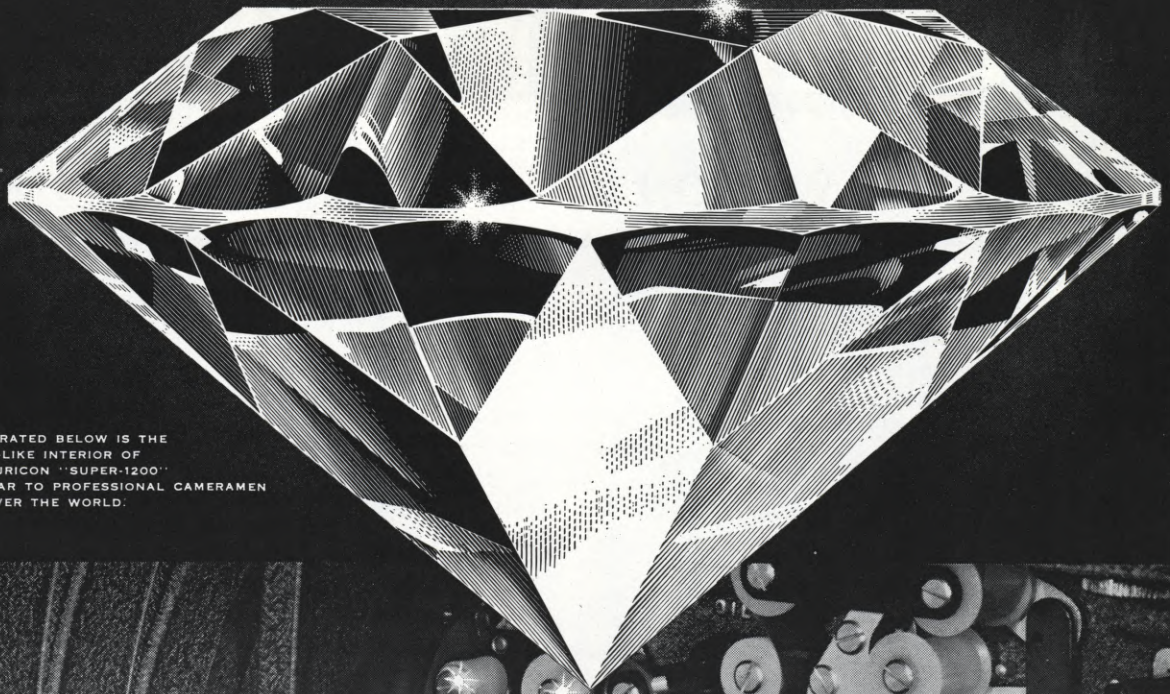
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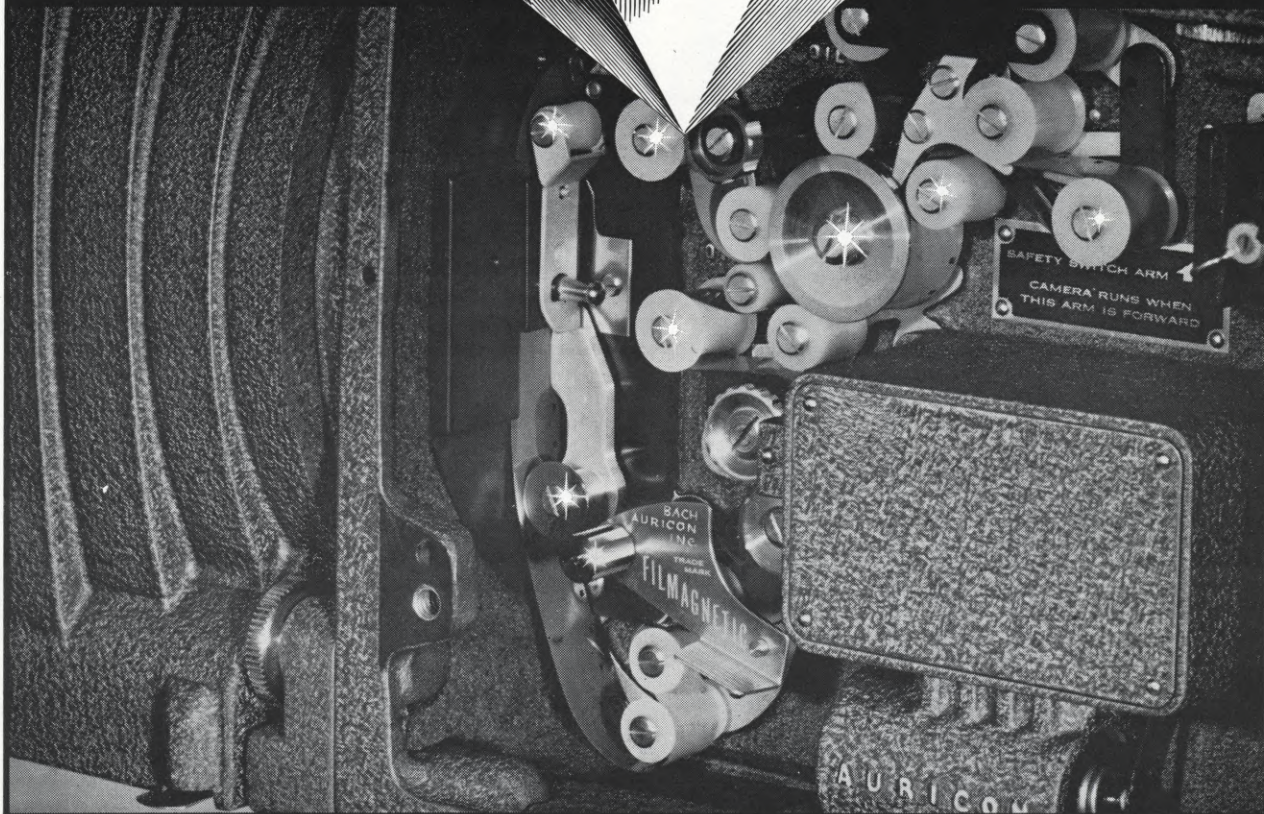
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CINEMA WORKSHOP



By ANTON WILSON

CRYSTAL-SYNC

Crystal-Sync has provided the cameraman and producer with a new dimension in freedom and flexibility. By employing cameras with crystal-drives and crystal-equipped recorders, the producer can use any number of cameras or recorders to cover a particular scene. Moreover, set-up time is cut to a minimum because each camera and recorder is an autonomous unit; there are no inter-connections. Certain shots that would normally be post-synced can now be shot lip-sync, thus cutting post-production time and costs. This would include air-to-ground shots and shots from (or of) moving vehicles.

Most important to the cameraman is his liberation from the "umbilical" cord or sync cable. To many cameramen, the sound man and recorder are not unlike a ball and chain around his neck. With the absence of the sync cable, the cameraman is now a free agent with virtually no distance limitations between himself and the soundman.

The crystal-drive on the camera, as we have seen, actually drives the camera at a precise sound speed. The crystal on the recorder does something a little different. The crystal-drive on the camera can insure precise film speed because it is mechanically interlocked with the film via the sprocket holes.

On the other hand, a 1/4" tape transport does not enjoy this mechanical intimacy with the tape it drives. Driving a tape transport at a precise speed would not insure that the tape itself was moving at the same precise speed. The tape could slip in the capstan drive. Even if the tape did not slip in the capstan, sync could still be affected by capstan wear, tape slippage or capstan wear on playback, or tape stretch or shrinkage.

For these reasons, a control signal is still necessary on the tape track. In essence, the pilotone signal is still recorded, but it comes from a crystal in the recorder and not from the camera. The crystal in the recorder does not "drive" the recorder (unlike the camera), but merely puts out a precise 60-Hz signal that goes through the conventional pilotone circuitry of the recorder. The tape is resolved in the

normal fashion; as a matter of fact, one need not inform the transfer house that the roll was shot crystal in lieu of a sync cable. In practice, one merely plugs a crystal into the pilotone input of the recorder and—*presto!*—perfect sync with every crystal camera in the world.

So far, everything we have discussed about crystal has provided simplicity and flexibility. It is now time to bring up the topic of slating. If you normally use clapsticks, continue to do so. If, however, you have been using the automatic slate lamps and oscillator in the recorder, you are in for a surprise. The signal to the oscillator in the recorder came down from the camera through the pilotone sync cable. With crystal there is no cable; no cable—no automatic slate. Before you start crying, there are several alternative methods to establishing a start mark with crystal sync.

The easiest method consists of a flashing light on the recorder connected to the start-mark oscillator. At the beginning or end of a take, the cameraman points the camera at the soundman and zooms in on the recorder. The soundman then momentarily pushes a button which will flash the light and activate the start-mark oscillator in the recorder. In essence, the result is the same as that with the conventional automatic slate, except that the bulb is at the recorder instead of inside the camera. This system works well with one camera or several cameras that will all start or stop at the same time. This system worked well for me on a recent rock concert we filmed employing four cameras. At the end of each number all the cameras pointed to the recorder and bulb. The soundman then hit the button and all cameras were simultaneously end-slatted along with the corresponding beep on the track. There are several commercially available units on the market that perform this function. This type of device is also easy to construct for those of you who are do-it-yourselfers.

For the ultimate in versatility, a radio-slating system is a must. This consists of a small transmitter on each camera and a tiny receiver with the recorder. (See FIGURE 1). Each time

the camera is started, the automatic bloop in the camera flashes several frames and also radio transmits the bloop tone to the receiver at the recorder. The results are, again, identical to the conventional automatic slate; flash frames on the film and a beep-tone on the tape. Some devices can provide for silent (European) slates also. For multiple camera set-ups, each camera can be provided with a unique frequency such that each camera can be identified on playback. Probably the best way to employ this system is with a stereo-sync recorder. One channel records the audio while the other channel records the start and stop bloops for each camera. This provides a "control track" that can be transferred onto a 100-mil center track on the full-coat. Thus, the editor knows when each camera went on and off, and for any scene he can establish how many (and which) cameras covered the action. ■

FIGURE 1—Miniature transmitter of the Cameraman's Remote Start/Slate RS/S-2 System, shown attached to body of Eclair ACL camera. Each time the camera is started, the automatic bloop light in the camera flashes several frames and radio transmits bloop tone to receiver at the recorder.





DOCUMENTARY NEWS DYNAMITE

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

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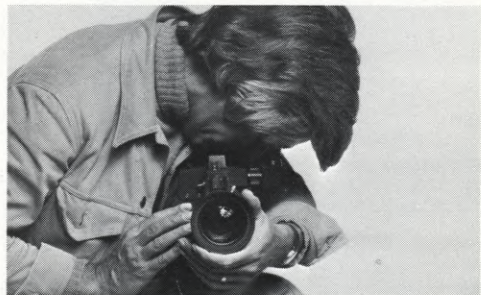
AUTOMATIC BEHIND-THE-LENS EXPOSURE CONTROL (With Manual Override)

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

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

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

Canon's super cameras for Super 8.

Here they are. The cameras that do everything you ever dreamed a Super 8 could do. And do it with such smoothness, reliability and versatility that film-making becomes literally a matter of mind over machine.

Let your imagination roam, your Canon Super 8 will follow it with a new sense of freedom and innovation that could only come from the world's largest manufacturer of fine cameras.

Canon Auto Zoom 1014 Electronic

Now you can get the spectacular effects other cameras denied you. Canon's newest Super 8, the 1014—with ten times zooming ratio—lets you glide effortlessly from 7.0 to 70mm either automatically or manually.

With variable shutter control you can make perfectly matched lap dissolves, superimposed images, fade-outs and fade-ins. Even animation is possible because the 1014 gives you filming speeds from instant slow-motion to single frame with synchronized flash.

Time lapse is also possible with the Interval Timer E. Or if you want to get into the picture yourself, there's the Self Timer E for delayed action filming.

In a Canon camera you'd naturally expect a superb lens. That it is. The 1014 gives you a fast f:1.4 lens with built-in macro capability. So you can shoot as close as $\frac{3}{8}$ of an inch from the front of the lens.

Metering is split-image through-the-lens rangefinder with an accuracy you'd expect from the maker of one of the most prized professional SLR cameras. And with built-in servo control, the camera sets the aperture for you. So you can concentrate on the shot instead of the light.

The Canon 1014—the Super 8 that meets and matches 16 mm head-on.

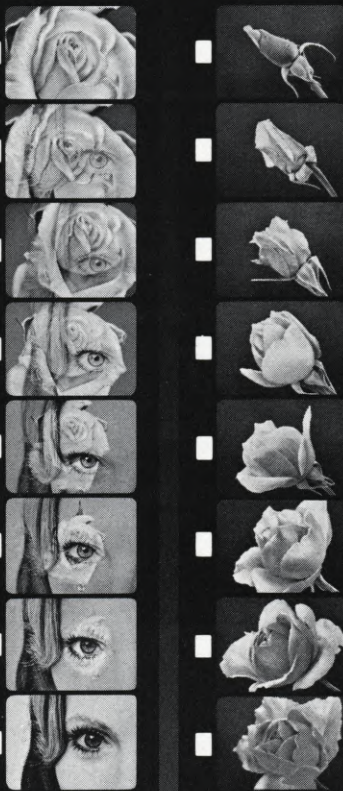
Canon Auto Zoom 814 Electronic

This is the camera from which the 1014 was born. And it's hard to find more distinguished parentage. The Canon 814 with eight times zooming ratio (7.5 to 60mm) has proven itself time and again as one of the most versatile, most reliable Super 8s available.

Since it's not mass-produced, it's not for everyone. Only those who want the best. A lucky few. But that doesn't mean anyone can't operate it.

The 814 gives you the same automatic exposure accuracy with servo electric-eye metering, the same automatic fade-out, fade-in capability as the 1014. Along with shutter speeds from instant slow-motion to single frame with synched flash, remote control and super close-up macro without attachments.

For more information about these and Canon's other fine movie cameras, see your photo dealer. Or write to us—Canon USA, Dept. AC-2



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(LEFT) At recent dinner meeting of the American Society of Cinematographers, held at the A.S.C. clubhouse in Hollywood, A.S.C. President Ernest Laszlo, ASC, presents a gold desk set (with miniature gold tripod-mounted camera) to George Folsey, ASC, honored for his cinematic artistry during six decades of work in the industry. (CENTER) Also paying tribute to George was his son, film editor/producer George Folsey, Jr., shown here with his dad. (RIGHT) Veteran film director Clarence Brown, one of the "greats" of Hollywood's golden era, was Guest of Honor, regaling the dinner guests with anecdotes from his sparkling career.

INDUSTRY ACTIVITIES

FOLSEY LAUDED IN SRO TRIBUTE BY CINEMATOGRAPHERS

A turnout of more than 100 Hollywood notables lauded veteran director of photography George Folsey at the fall Honor Roll dinner of the American Society of Cinematographers on October 29th.

Comedian Edgar Bergen and director Clarence Brown, both longtime friends of Folsey, joined A.S.C. members in paying tribute to the distinguished cinematographer, whose career has spanned six decades in Hollywood.

"George Folsey has taught me how to enjoy life," said Bergen. "He has a happy knack of getting the most out of life, and I think all of us could benefit by emulating him."

A portion of one of Folsey's favorite movies, the silent "Orchids and Ermine," starring Colleen Moore, was screened for the packed audience at the

A.S.C.'s headquarters building in Hollywood.

The A.S.C., founded in 1919, has a membership extending to five continents. A.S.C. members have won 77 Academy Awards, dating back to 1928.

EIGHT TECHNICAL ACHIEVEMENTS CONSIDERED FOR ACADEMY AWARDS

Eight technical achievements of the past year have been selected for the 46th Annual Academy Awards consideration, it has been announced by Wilton R. Holm, Chairman of the Academy Scientific or Technical Awards Committee.

Meetings and demonstrations to evaluate the achievements are now in progress, with a final meeting scheduled for November to determine which of the

achievements the committee will recommend to the Academy's Board of Governors for Awards recognition.

Pursuant to Academy policy, the following list of achievements under consideration is being publicized to permit those with claims of prior art or with devices similar to those under consideration to so advise the Academy:

Light Control Media, Rosco Laboratories; Scoring Console System, Quad-Eight Sound Corporation and The Burbank Studios; Arriflex 35BL Camera, Arriflex Company of America; Dubbing Console, Quad-Eight Sound Corporation and Samuel Goldwyn Studios; Acme Series 100 Liquid Gate System, PSC Technology Inc.; High Speed Re-Recording System, Magna-Tech Electronic Co.; Model 2101 Optical Printer, Research Products Incorporated; and Anamorphic Focusing System, The Todd-AO Corporation. ■

(LEFT) Honored at a special luncheon in the Conference Room of Consolidated Film Industries in Hollywood recently were three of the foremost technical authorities of the Soviet film industry. (Left to right) Prof. Victor G. Komar, Deputy Director Cinema and Photo Research Institute (NIKFI); Mr. Vsevolod A. Bisikalov, General Director of Production Complex "Koperfilm" Goskino USSR; and Dr. Michael Z. Wysotsky, Deputy Technical Director and Head of Engineering Research for Mosfilm Studios, Moscow. With them (right) is Wilton Holm, Director of the AMPTP Research Center. (RIGHT) Sidney Solow, President of CFI, (standing) proposes a toast to the Russian guests.

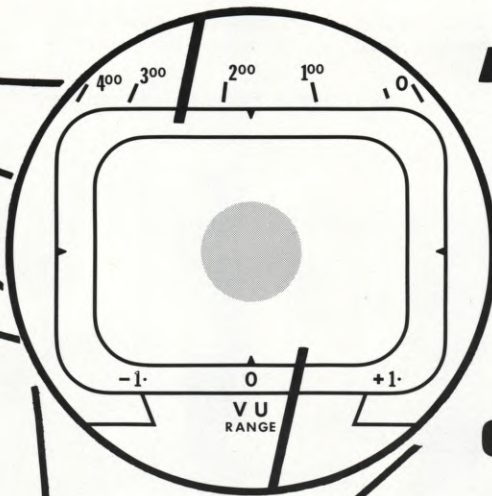


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complete system as illustrated..\$8,375.00

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

\$ 160.00

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

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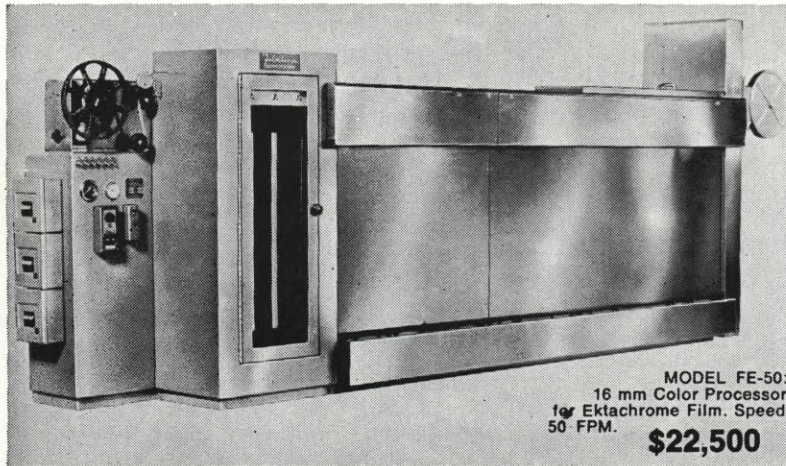
The Money-Makers

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

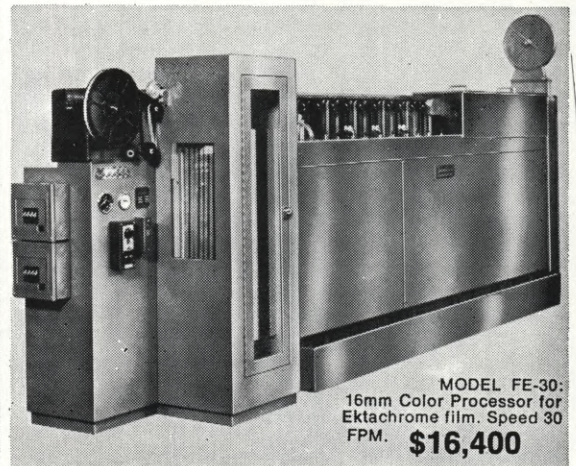
The Filmline Models FE-30 and FE-50 are fast, foolproof, troublefree and long-lasting. They turn out consistently superior work. The design is backed by Filmline's reputation as the world's leading manufacturer of film processors for the motion picture laboratory industry.

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

Check the exclusive Filmline features below:



MODEL FE-50:
16 mm Color Processor
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This marvel of engineering completely eliminates film breakage, pulled perforations, scratches and operator error. The film can be deliberately stalled in the machine without film breakage or significant change of film footage in solutions. The heart of any film processor is the drive system. No other film drive system such as sprocket drive, bottom drive or simple clutch drives with floating lower assemblies can give you the performance capability of the unique Filmline Overdrive Film Transport System.
- **"TORQUE MOTOR TAKE-UP"** gives you constant film take-up and does not impose any stress or strain on the film itself. Completely independent of the film transport system. This FILMLINE feature is usually found in professional commercial processors but is incorporated on the FE-30 and

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

- **"TEMP-GUARD"** positive temperature control system. Completely transistorized circuitry insures temperature control to well within processing tolerances. Temp-Guard controls temperatures accurately and without the problems of other systems of lesser sophistication.
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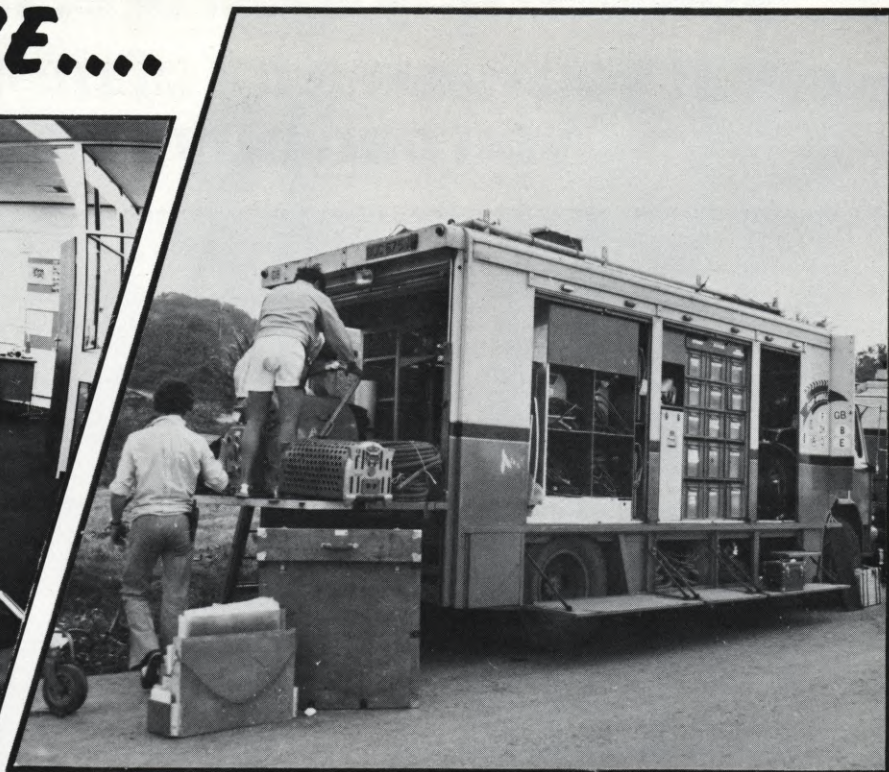
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Your contribution, no matter what its size, will help make life a whole lot happier for one of these children somewhere in the world.

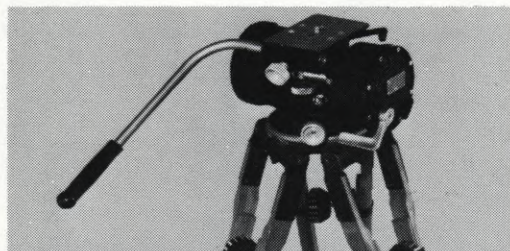
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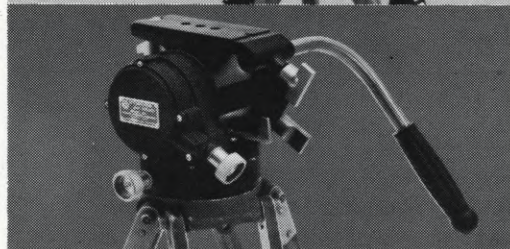


If you want smoother footage, use our heads.

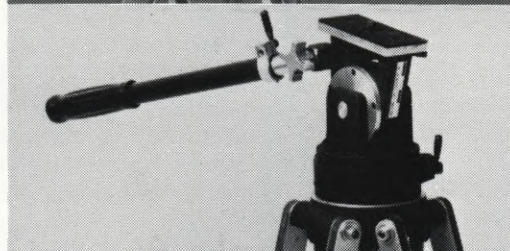
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Capacity: 100 lbs. Weight: 16 lbs.
360° Pan. Tilt: +60° to -60°.



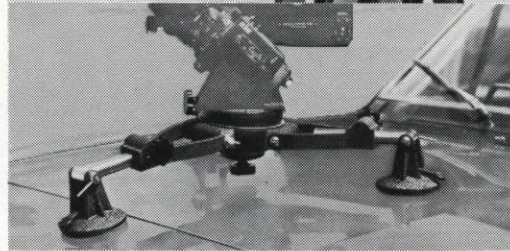
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Capacity: 50 lbs. Weight: 7 lbs.
360° Pan. Tilt: +45° to -45°.
Fully adjustable pan and tilt drag.
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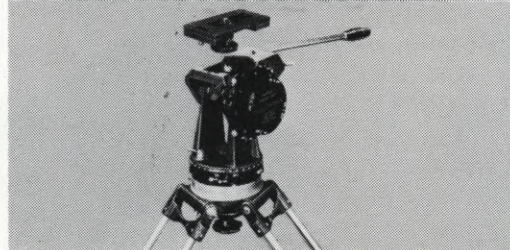
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Positive pan and tilt locks.



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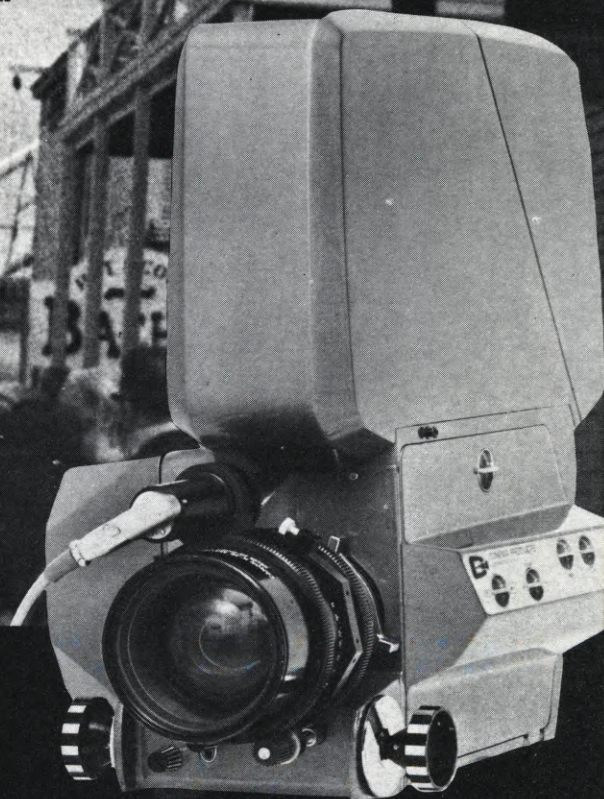
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POINTS OF VIEW

A significant anthology concerned with the directorial craft, **DIRECTORS IN ACTION** (Bobbs-Merrill \$9.95/5.95) offers a rich selection of interviews and articles by and about directors. Ably edited by Bob Thomas, it delves into directors' trade secrets, standard techniques and individual methods of translating a scenario into filmic terms. The heartaches and rewards of directing are revealed by such established or upcoming filmmakers as Robert Altman, William Friedkin, Alfred Hitchcock, Stanley Kubrick, Gordon Parks, Sam Peckinpah and George Stevens. Text and illustrations first appeared in *Action*, the stimulating magazine of the Directors Guild of America.

* * *

In a heavily documented volume, **THE ONLY GOOD INDIAN...** (Drama Book Specialists \$12.50), Ralph and Natasha Friar draw up a detailed indictment of Hollywood's handling of the American Indian, his history, customs and personality, thus contributing to the destruction of a native culture and its people. The evidence cites scores of specific films where the Indians' way of life is distorted and its destruction justified, even in recent well-intentioned movies like *Little Big Man*.

* * *

The past glories of the MGM Studio, now fallen on lean days, are evoked by James Robert Parish and Ronald L. Bowers in **THE MGM STOCK COMPANY** (Arlington \$14.95), an imposing, illustrated book of minibiographies of 145 performers that graced its payroll during the lush years. Facts are skillfully blended with gossip for the anticipated pleasure of researchers and buffs alike.

* * *

The stuntmen's daredevil craft is scrutinized in an informative and knowledgeable book by Arthur Wise and Derek Ware, **STUNTING IN THE CINEMA** (St. Martin's \$7.95). Its discussion of early star performers, the rise of professional stuntmen and the mechanics of spectacular stunts is as exciting as any adventure story—only this is for real.

* * *

Art Ronnie's **LOCKLEAR, THE MAN WHO WALKED ON WINGS** (Barnes \$12) spins a colorful tale of Locklear's death-defying aerial feats of the 20's, recorded—often at their own peril—by such ASC members as Stanley Cortez, Elmer Dyer and Leon Shamroy.

* * *

ART AND TECHNOLOGY

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By GEORGE L. GEORGE

the Disney Studios, the Harry N. Abrams, Co., publishers of many superior art books, has produced a magnificent volume by Christopher Finch, **THE ART OF WALT DISNEY**. Its text surveys at length Disney's life and work drawing on the studio's archives, interviews with dozens of his collaborators and explains the basic techniques of animation through story sketches, layouts, drawings and background paintings. The illustrations, however, make the book unique: there are 763 of them, 351 in full color, and 12 foldouts. Their quality is superb, from soft pastels to brilliant tones, magnificently reproduced on the large format pages. Priced at \$45 (\$35 up to Dec. 31), it is unquestionably worth it.

* * *

Eventual fusion of science, technology and art is forecast in Douglas Davis's imaginative and documented **ART AND THE FUTURE** (Praeger \$20). This truly visionary book anticipates a totally kinetic art form rising from such current electronic achievements as Vanderbeek's computer films, Paik's "cathode-ray canvas" and the Videofreex experiments.

* * *

The current status of cinema is discussed in depth in a special issue of **ARTS IN SOCIETY** (U. of Wisconsin \$2.50). Its theme—"Film: New Challenge and New Possibility"—deals with the expansion of college film courses, the social and esthetic evolution of film and its relevancy to the dynamics of our society.

* * *

MAGS INTO BOOKS

The recognition of film as an art worthy of academic consideration has extended from books on cinema to periodicals. Launched by the International Federation of Film Archives (FIAF), the first yearbook, **INTERNATIONAL INDEX TO FILM PERIODICALS 1972** (Bowker \$17.95), edited by Karen Jones of the Danish Film Museum, lists and annotates the contents of 59 of the world's most representative film journals. Sixteen U.S. magazines are represented, including *American Cinematographer*, *Action*, *Cinéaste*, *Film Comment*, *Film Quarterly*. This index will be of utmost value for scholarly research.

* * *

In the same area of film periodicals, Arno Press has been issuing bound

volumes of out-of-print magazines of historic import. Available are 10 volumes of **CLOSE UP 1927-33**, the first magazine to deal with the history, theory, criticism and esthetics of film (\$27.50 per vol., \$245 for the set); **EXPERIMENTAL CINEMA 1930-34**, dedicated to cinematic progress in the artistic and social fields (\$20); **FILMS 1939-40**, a quarterly which reflected the conflicts in a world at the brink of war (\$25); and the first four volumes of **FILMS IN REVIEW 1950-53**, an invaluable source of factual information about the cinema's early history (\$125).

* * *

NORTH OF THE BORDER

Public awareness of a distinct Canadian film identity has been crystalizing in recent years as made-in-Canada theatrical features—often bold, sometimes naive, always interesting—began hitting U.S. and world screens in increasing numbers. A look at the Canadian film industry seems in order, facilitated by a recent spurt of books on the subject.

For a general survey, Eleanor Beatie's **HANDBOOK OF CANADIAN FILM** (Peter Martin Associates, Toronto, \$2.95) traces its historic growth, and lists its wealth in creative talent, technical assets, industrial structures, educational and cultural resources. An impressive balance sheet, it is attractively presented and richly informative. Another valuable source is **FILM CANADIANA: A YEARBOOK OF CANADIAN CINEMA 1972-73** (Canadian Film Institute, Ottawa, \$9.95). This comprehensive reference volume, compiled by Louis Valenzuela and Piers Handling, offers statistics on film/tv production, corporate and governmental organizations, and other relevant data.

* * *

Filmmaking in Quebec is surveyed in **PETIT GUIDE DU CINEMA QUEBECOIS**, an informative brochure whose French text presents no barrier to understanding (Conseil Québécois pour la Diffusion du Cinéma, Montreal, \$1). It lists outstanding Quebec movie makers, their features and shorts of the last 15 years, with critical comments and production data. As a sample of Quebec filmmaking, the script of the National Film Board of Canada feature, **WAKE UP, MES BONS AMIS** (*Un Pays Sans Bon Sens*), presents a lyrical panorama of the realities and hopes of Quebec's fierce regionalism (Lidec, Montreal, \$7.50). **HOW TO MAKE OR NOT TO MAKE A CANADIAN FILM** (Cinémathèque Canadienne, Montreal, \$1), edited by André Paquet, combines a chronological survey with the candid views of Canadian filmmakers. ■

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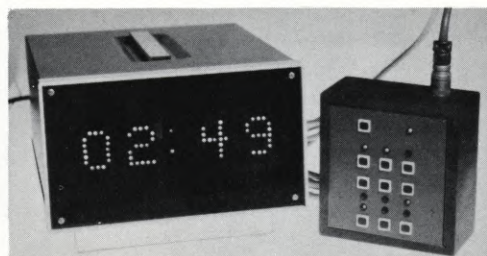
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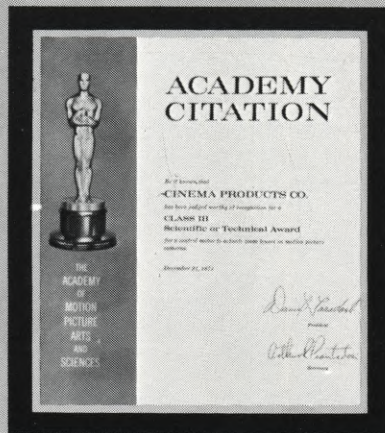
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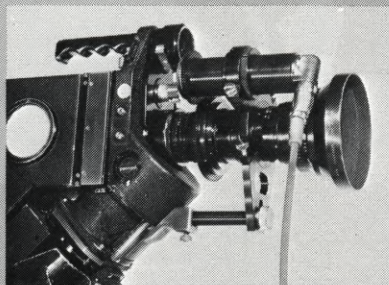
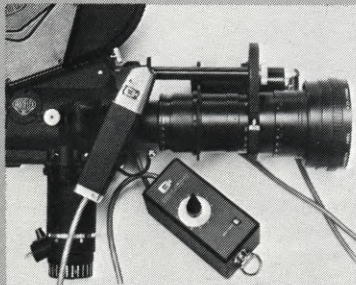
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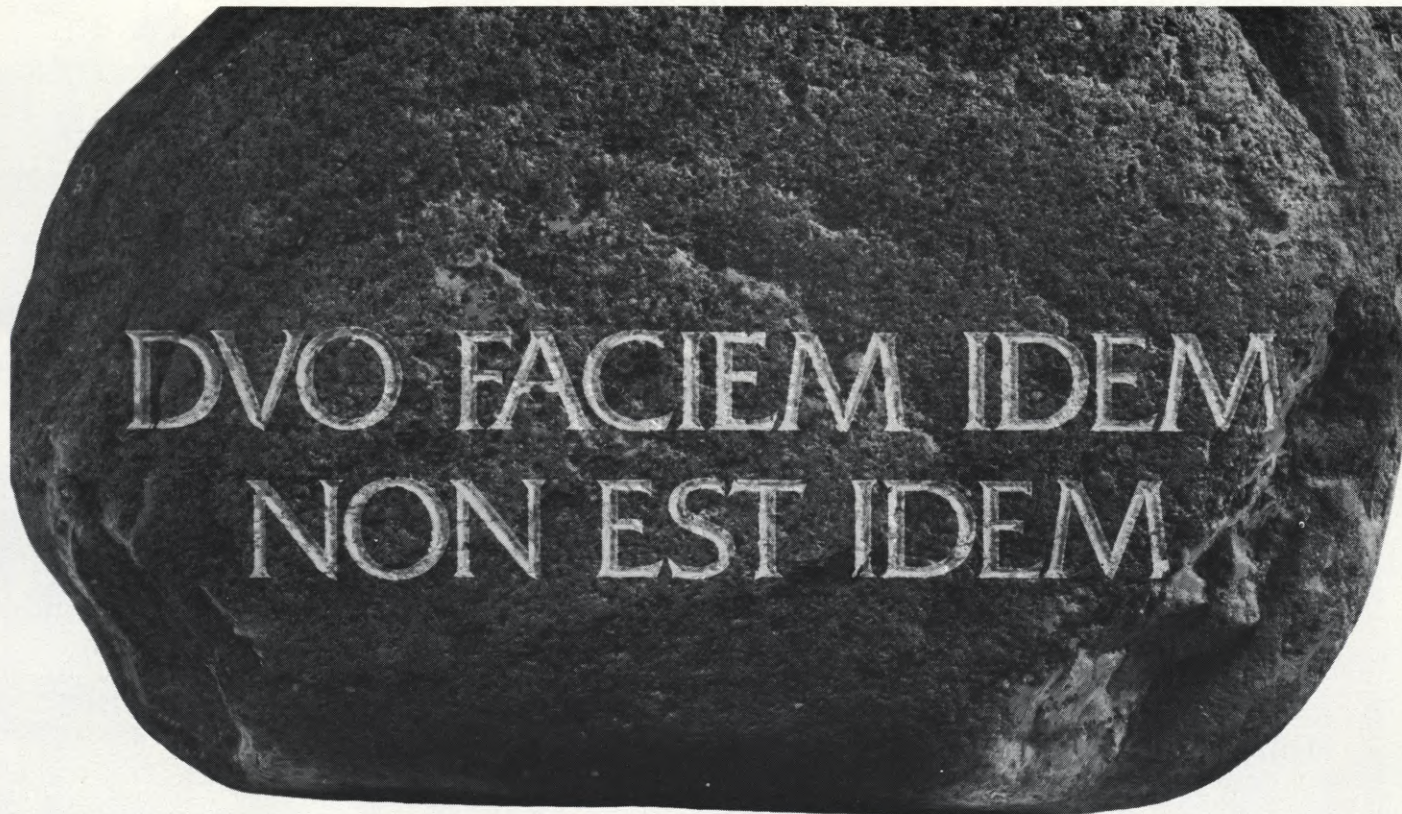
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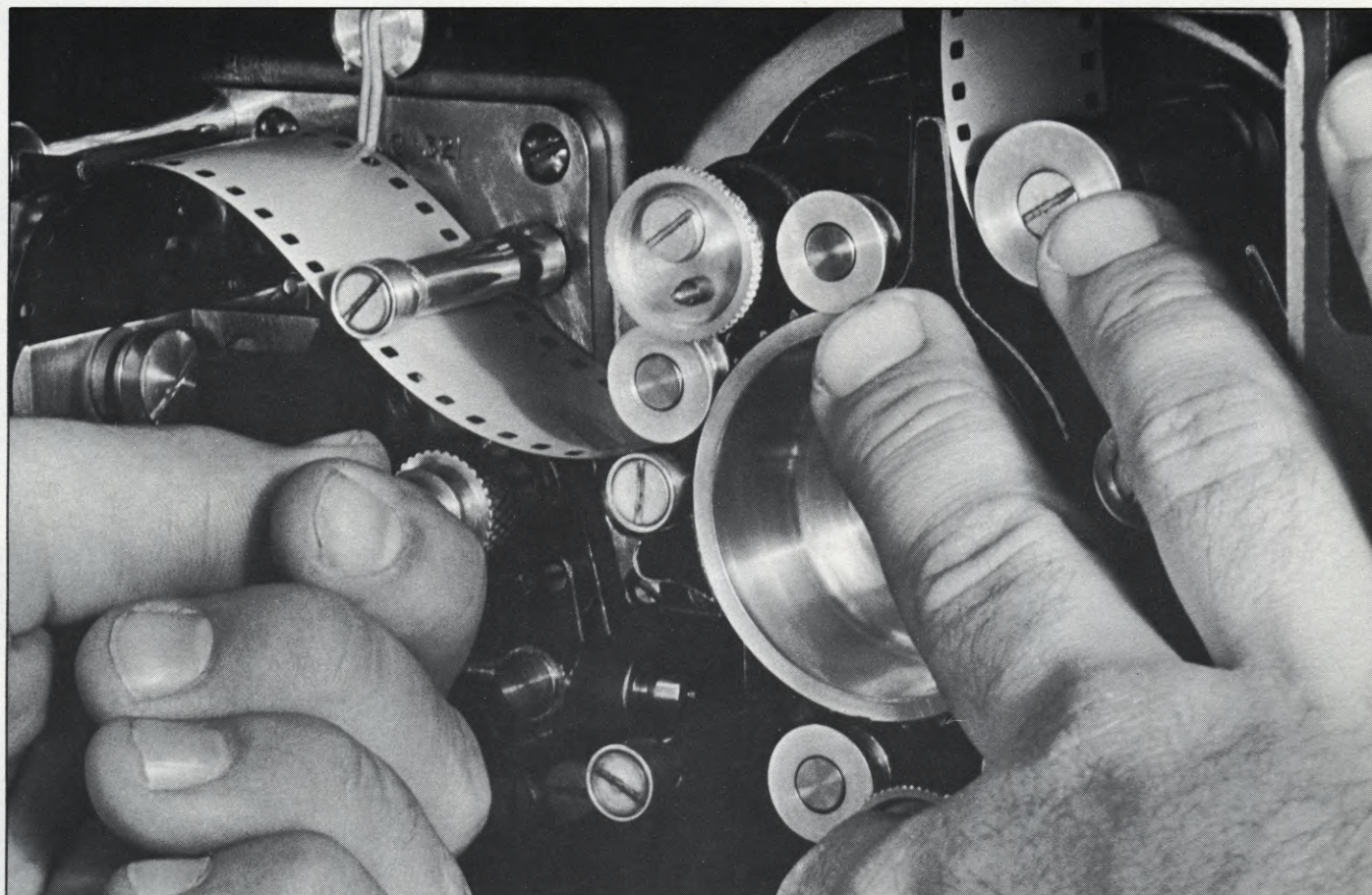
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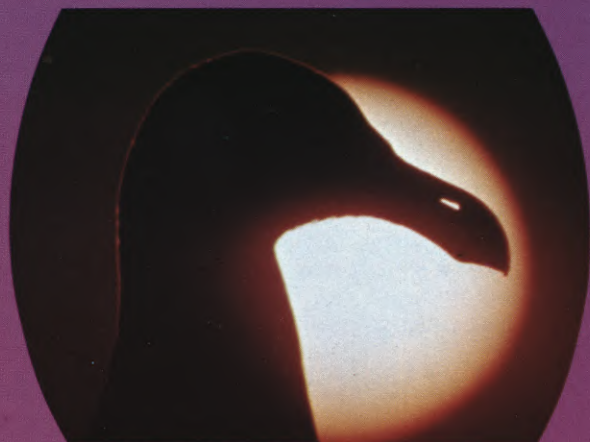
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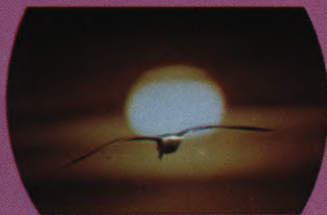


The Filming of
**Jonathan
Livingston
Seagull**

■ "Each film has its own life. It dictates its own style," says filmmaker Hall Bartlett, the producer-director of "JONATHAN LIVINGSTON SEAGULL", recently released by Paramount Pictures. "A lot of mistakes have been made by producers and directors when they have tried to impose the same style on all scripts. The *auteur* thing is for the birds, but not this bird film."

■ He's in his New York hotel suite when he says this and he's speaking of his film version of the fantastically popular Richard Bach novel about a seagull who successfully strives for self-perfection, Bartlett had been determined, ever since buying the film rights to the soaring best-seller, that he would maintain the book's integrity in filmic terms. He believes that the story is so important to so many people that it had to be filmed with complete honesty, and yet reflect his own deep feelings about life,





LAYOUT DESIGN BY DAN PERRI.

freedom and love. The decision was made at the outset to avoid animation in filming the story, and not to use people. The movie would be made entirely with trained and wild seagulls.

His credo while filming "JONATHAN LIVINGSTON SEAGULL" was to stay flexible. "Many times we saved the film by remaining open to every new discovery, every new creative surge," he says. "If I hadn't stayed open, I would have built a trap for myself. Film was meant to be a creative art. I wanted everybody in my crew to give me ideas as often as they wished. We all contributed to this project."

It's the first relatively free moment that Bartlett has had to himself in days, what with top-level meetings, a press conference, reporters to see, contracts to negotiate, the myriad million business details to iron out in launching a film.

There's a call to California to check on personal matters, another call, again to California, again personal.

A third call to room service to order a cheeseburger and iced tea and then he sits down on the couch to talk about the filming of "JONATHAN LIVINGSTON SEAGULL", a project of such intense personal vision that he has spent most of the previous evening checking out the East Side theatres where the movie is to be booked.

Bartlett has personally supervised every aspect of "JONATHAN LIVINGSTON SEAGULL" as if it were a child to be handled gently, something very human, something very fragile, something very real.

"I felt I had to make this film," he says, leaning back. "I feel very strongly that we're in an age in motion pictures, in all the arts and in life generally, of negativity. People feel that the cards are stacked against them personally so that no one can win.

"I think 'JONATHAN LIVINGSTON SEAGULL' has been such a tremendous success as a novel because it is very positive on terms that any human being can relate to. It says that inside every person is the potential to be something more. By looking into yourself and knowing yourself and reaching for the best within yourself, you or I or anyone can have a different kind of life. That to me is the most needed thing of our time."

The star of the picture—playing the title role—is a Glaucous Gull, also known as *Larus hyperboreus*. A sturdy, robust type, the Glaucous is equipped with webbed feet, long pointed wings, a stout, hooked bill and generally a square tail. The webbed feet make him a natural for leaving his prints at Grauman's Chinese Theatre.

Finding a seagull with the right personality to play Jonathan was not easy, but the one that eventually landed himself the role did so by hungrily biting at a piece of fried squid.

Early in the spring of 1972, Bartlett and bird trainer Gary Gero were lunching at a Cannery Row restaurant in Monterey. Seated by a window which had louvres on the bottom and a wooden platform outside, the two men noticed that the seagulls would flock on the platform for *their* lunchtime snack—

bits of rolls tossed at them by the restaurant's customers.

"I noticed one bird," Bartlett says, "who was very aggressive. He'd keep all the others away. Both Gary and I felt he was a special bird. But there seemed to be no way to catch him until Gero got an idea. He put his hand through the louvres, palm up, with a piece of fried squid in his hand.

"The bird came right to him and Gary grabbed him by the beak and pulled him through the louvres. He was squawking and fighting every inch of the way but Gero knows how to handle birds. He borrowed my jacket, wrapped this gull up in it and we took him outside to the station wagon."

His future film star in hand, Bartlett had to contend with some of the customers who were concerned about what had been happening to the seagull with a yen for fried squid. Bartlett explains: "I had to come back and explain to the other patrons who were about to call the police that we had a license from the state and federal government to catch gulls for the film."

Whether or not the philosophy of the novel comes across successfully on film is a value judgment which audiences will have to make, but there is one element of the picture on which there seems to be unanimous agreement: the photography is magnificent. Photographed from the ground by Jack Couffer, and from the air by young Laguna Beach, California film-makers Greg MacGillvray and Jim Freeman, the images that appear on the screen have earned such critical terms as "majestic", "lyrical", "poetic", "visually stunning" and just about every other superlative that could be applied to cinematography.

In the following interview for *AMERICAN CINEMATOGRAPHER*, Director of Photography Jack Couffer discusses the very special challenges inherent in translating "JONATHAN LIVINGSTON SEAGULL" into cinematic terms:

QUESTION: Anyone who has read the novel on which this film is based is bound to become aware of the really staggering problems involved in putting this one on the screen. From your viewpoint, as Director of Photography, could you tell me what you considered to be the major problem of filming such a vehicle?

COUFFER: *The basic problem was how to make an hour-and-a-half of seagulls interesting pictorially. We realized from the beginning that this film would require considerable photographic imagination. The problem of maintaining*

Richard Bach (left), author of the novel and screenplay for "JONATHAN LIVINGSTON SEAGULL", shown on location with producer-director Hall Bartlett and the star of the film, the gull who plays Jonathan. (Black and white photographs by ELLIOTT STEPHEN MARKS.)



visual interest in a feature-length picture using only gulls—as photogenic as they might be—could be solved only by using as much photographic variety as one could dream up—variety of color, mood and movement, achieved by shooting in all weather conditions and times of day, plus a great variety of locations, and through all the seasons.

QUESTION: To a film technician—though certainly not to the audience—it is obvious that some of the lyrical and spectacular action sequences in the film would have had to have been achieved through the alteration of the standard frame rate—undercranking and overcranking, to be specific. Would you care to discuss why and how these alterations were utilized?

COUFFER: Since only seagulls appear in the picture—and no humans at all—there was no requirement for lip-sync. Thus, the 24-frame-per-second “standard” became totally arbitrary and served only as a taking-off point. The flight of a bird, curiously enough, looks natural on the screen only when overcranked at two times the normal rate, and becomes increasingly graceful as the camera is speeded up even more. Our “standard” speed for flight shots was 120 fps. The shots of birds in dives were shot at the normal rate or slightly undercranked, even closeup head shots were often cranked at 120 fps, and some attitudes, looks, etc., were extended by overcranking to look more natural. Otherwise, the head movements would have looked unnaturally jerky.

QUESTION: To what extent were camera movement and the use of the zoom lens employed?

COUFFER: We used the Panavision 50-500mm zoom lens on 90 percent of the shots, not necessarily for the zoom capability, but as a variable focal length objective lens. It's the most useful aid to natural history filming since reflex viewing. A combination of zooming with simultaneous camera movement gave a “gull's-eye-view” feeling to some of the shots. We also used the hand-held moving camera to achieve several unusual effects—a hand-held Arriflex, for example, focused on a gull trained to hover in one position. A closeup of a gull rolling over into inverted flight was accomplished in this way—with the hand-held camera rotated on its own axis, while a hot reflector was changed from the top to the bottom of the bird at the same time. This carefully synchronized combination made it look as if the bird had

Continued on Page 1568



The “SEAGULL” company on location in Death Valley near Zabriskie Point, the same location where Antonioni's film of the same name was made. This picture, which has only seagull actors for subjects, was made in a variety of locations, ranging from below-sea-level desert to Mt. Whitney, the highest mountain in the United States.

Director of Photography Jack Couffer trains his camera lens on a couple of indifferent gulls, while Production Supervisor Gaylin Schultz looks on. With the academic background of a naturalist, Couffer is one of the most famous wildlife cameramen in the world, recently turned director.



A LIFE WITH "JONATHAN"

A team of young film-makers takes to the skies to film helicopter scenes for "JONATHAN LIVINGSTON SEAGULL" and gets "gulled" into a symbiotic relationship with the birds

By GREG MacGILLVRAY and JIM FREEMAN

MacGillvray-Freeman Productions, Laguna Beach, California

THE BEGINNING

Last October *Variety* carried a little announcement that Hall Bartlett had obtained the film rights to the best-selling book, *Jonathan Livingston Seagull*, and that production was about to begin. Peter Pascal, our exclusive agent and good friend, had read the book and knew we loved it, so he called Mr. Bartlett and made an appointment to show him some really beautiful seagull shots that we'd taken while standing on beaches for ten years filming the surf.

After gaining an appointment with Hall, who was extremely busy but creative and open enough to meet with anyone who could offer suggestions, even Peter and us, Peter assumed that Hall would have a 35mm projector but he assumed incorrectly. Just before the appointment Peter rushed down to Birns and Sawyer and rented a 35mm projector that was about the size of a

small pickup truck, took the thing apart and then back-packed it up to the 9th floor on Sunset Boulevard where Hall's office is located. After about six trips he finally got the entire projector to the 9th floor, put the thing together and showed him our seagull shots. Mr. Bartlett was very impressed with Peter's carrying act as well as the seagull shots, so the next thing we knew we were under contract to take a lot more pictures of seagulls. And for the next six months we did just that.

THE EQUIPMENT

We were hired by Hall Bartlett, the producer and director, to do all the

helicopter aerial filming, and our first step was to arrange for the equipment and work out the technical problems that would be involved in shooting something in the air, from the air. Through Hall, we contacted Panavision and supplied ourselves with an array of lenses and cameras from their wide selection. The main lens was a 50-to-500 mm zoom, which is the equivalent of a

25-to-250mm for flat 35mm. The other wide-screen anamorphic lenses were 30mm, 40mm, 50mm, 75mm and 100mm prime lenses and 150mm and 1000mm telephotos for extreme close-ups. The prime lenses were chosen for use for a point-of-view camera that was mounted beneath the helicopter to give the fantastic feeling of flying like a gull inches above the water, banking through canyons, and soaring above tree tops. The lenses were collimated and checked to be the finest optically, as they would be used many times in low-level light, wide open. The camera used was the fantastic Mitchell Mark II. Panavision was super-cooperative in this manner and, after about four days of going through the equipment, we had it sent up to Carmel.

THE SHOOTING

The home base for the first four months of the picture was Carmel, at the beautiful Holiday Inn in Carmel Valley. It was really a fantastic location because the birds selected as "stars" of the film had their own suite, and across the street from the motel was a brand new twin cinema where arrangements had been made to screen dailies from 5:00 p.m. to 7:00 p.m. every day. They had excellent facilities and really sharp anamorphic projection, so it was super to analyze what you were doing. This was a fantastic help, because you were doing something that hadn't been done before. So it was a learning process and a whole new experience.

Each day we'd begin around 3:30 a.m. We'd leave the Holiday Inn with about 20 birds. We'd get to the airport and preflight the helicopter, and usually be in the air by 5:30. It would usually take about half-an-hour to get into a position high enough to film the sun coming up. It wasn't unusual to shoot 12,000 to 13,000 feet of film in a day. We'd gas the helicopter four or five times, pausing only 10 minutes to gobble a sandwich while the engine was still running and the gas truck was simultaneously pumping gas in. The day would always end at sunset, but by the time you got back to the airport, took the Tyler mount out and put the helicopter to bed, it would be 7:30 or 8:00.

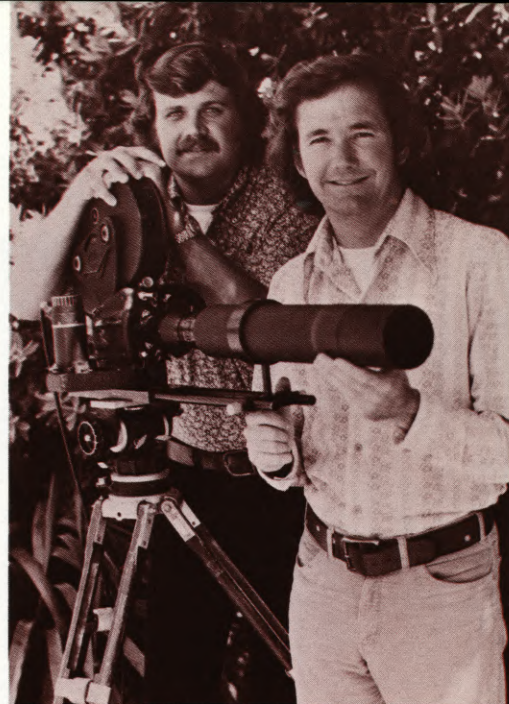
In the evening it would usually take about an hour-and-a-half just to unload all the magazines and make out the camera reports. We printed all the takes shot with the helicopter because we had a pretty good shooting ratio and we didn't want to leave anything overlooked. Cindy, the camera assistant, would come out of the changing bag with just cans, and cans, and cans of film. She seemed like the Mad Hatter:

Every time you thought she had pulled the last can out there were always three more. There were more than 800,000 feet of film shot for a movie 10,000 feet long—a ratio of about 1 to 80. The helicopter flew 226 hours, which is, I'm sure, a record, especially in the three-and-a-half months of helicopter photography.

There were very few days that we didn't fly at all. Even when the weather was marginal, we would take a chance to try to get something really unusual, and we usually would find it. Every morning at the airport, we'd call Mr. Bartlett, usually just before we'd take off at 5:30 or 5:45, and we'd chat for about half an hour. Mr. Bartlett and Richard Bach, the book's author, wrote the screenplay which was broken down into 250 scenes with various mood requirements, to be taken from the helicopter. Some were to be filmed in overcast light. Others were to be filmed in harsh sunshine. Some at sunrise, some at sunset, some in fog, some in rain. The feeling of motion was necessary in all of these moods, meaning that the camera had to be dollying through canyons or through treetops because, if a bird is just in the air without reference, it appears like the bird's hanging there by a wire.

The spring of 1973 had probably the most rain that the locals had seen in Carmel for a good number of years and after every rain storm we were greeted by these fantastic clouds. Additionally, the air was crystal-clear, just like a beautiful Kenmore washing machine had twirled through the area. These clouds provided a fantastic three-dimensional backdrop for the birds.

MacGillvray-Freeman Camera Assistant, Cindy Huston pauses just long enough in the frantic pace of shooting to grab a sandwich from the station wagon tailgate. Each day she loaded and unloaded endless cans of film from the magazines, and spent hours making out camera reports. 800,000 feet of 35mm film were shot and all takes were printed. A total of 226 hours was spent in helicopter shooting.



Jim Freeman and Greg MacGillvray started as specialists in surfing photography and have since gone on to "higher" things, like the helicopter filming for "JONATHAN".

MOOD-COLOR

Since the whole movie really relied on photographic techniques to enhance the moods of the book, we chose to film most of the movie in color, pushing the film often one stop after shooting wide open at dawn and sunset to capture these little-known quiet hours of the day.

The script also called for the feeling of night, so instead of shooting the customary day-for-night, Director of Photography Jack Couffer suggested we shoot with black and white film, with a 29F filter (super dark red), exposing in the normal fashion with heavy crosslight and heavy backlight. The result was

rich, rich jet-blacks, super-whites and a fantastic grey. It looked incredible, because you had a complete tonal range when the black and white negative was printed on color stock with a blue tint. It's the first time I've really seen a day-for-night really look like night.

Another technique that proved to be very successful was shooting a positive Ektachrome Reversal film in 35mm, when normally you're shooting 5254, which is a negative film. This positive film, when specially processed as a negative, gave us a reversed image—a negative image on the screen. But it wasn't the gimmicky negative image that you'd expect with Kodacolor or regular 5254 camera negative. It took on a new dimension by starting with a positive and then going back to the negative.

The standard camera speed for the whole movie was considered to be 64 frames per second. Consequently, the film went through the camera about two-and-a-half times faster than it normally does. But 64 frames gave believability, whereas if we shot the birds at standard 24 frames, they appeared extremely jerky, looking as if you were shooting at 6 frames a second. At 120 frames per second another common speed, you were able to analyze birds' wing patterns and their wing movement. One of our favorite shots in the movie is when the bird is soaring and you can actually see his head rotating around his body and everything is a constant except for his little head checking everything out.

Jack Couffer, who photographed "LIVING FREE" and "THE DARWIN ADVENTURE", was the Director of Photography. Jack did the personal, integral relationships between Jonathan and Fletcher and all the beautiful shots that took place on the ground, which required a great deal of patience and took advantage of Jack's 35-some years of photographing animals. Jack has filmed all types of animals and the seagull was probably the last one on his list.

Our helicopter-aerial operation was totally separate from that of the ground crew; consequently, there were two supplies of birds, two separate bird carriers and two different places to keep the birds.

Before production, Mr. Bartlett discussed the ideals of the film and what the goals were. We broke the script down into scenes accordingly, and we soon found out that some shots were easy and some shots were hard. Some shots were semi-impossible, and then there were those shots that weren't possible at all. Occasionally we would

get an impossible shot by a pure stroke of luck. And it was a one-taker; in fact, so many of the shots in the movie were one-takers. You could try to improve for 50 more takes and the elements never would get together correctly. So, this is one reason that the picture took so much time. You couldn't say, "Well today, January 1st, we're going to go out and shoot diving shots; January 2nd we'll shoot a sunrise." You learn to work with the variables.

The standard camera for the production was a Mitchell Mark II. It's really a fantastic camera because it has the adaptability to go from normal speed to 120 frames-per-second with its high-speed motor. You have to use a 12-volt battery with a DC to AC inverter. Probably 90% of the time the high-speed motor was employed, on the ground as well as in the air. Also, the 1,000mm Panavision telephoto lens was used often. The wildflower sequence was shot exclusively with a 1,000mm lens. This is the love sequence.

EQUIPMENT—PEOPLE

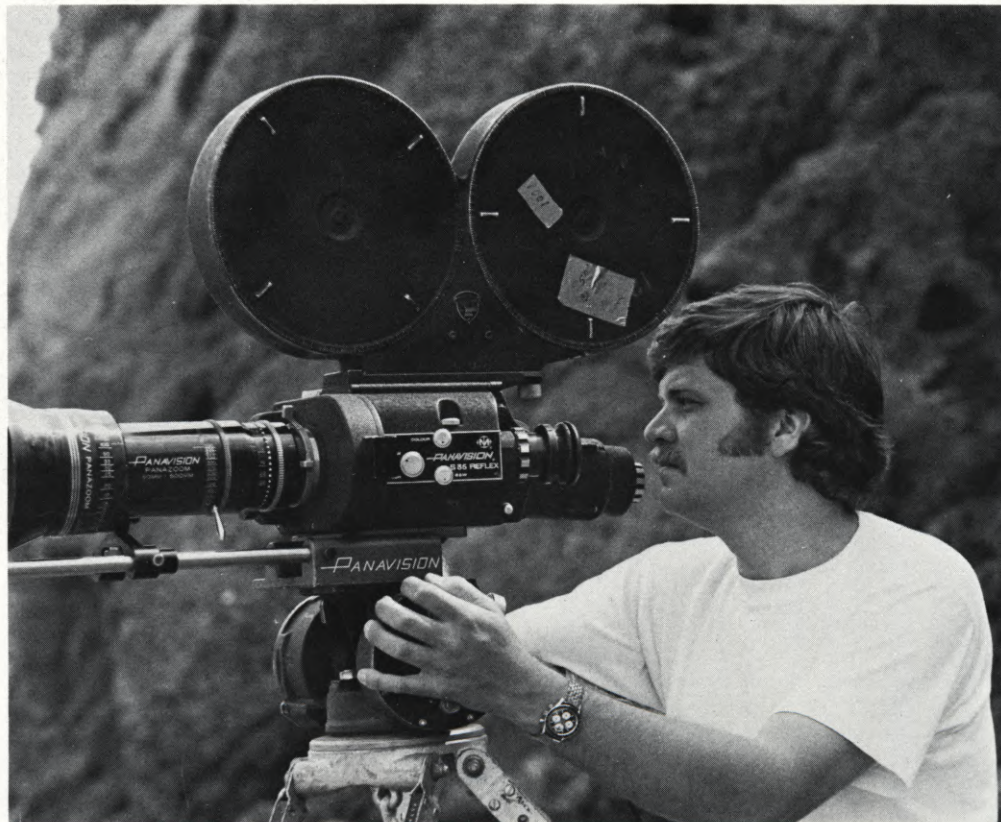
The helicopter used, a J2A with a turbo-charged engine, was really an ideal ship to shoot from, because the door has the least amount of restriction of any helicopter in the medium-sized field. Its super-charged engine enabled you to go up to about 12,000 feet;

whereas, if it wasn't super-charged, you wouldn't be able to get up above 4,000 feet without a tremendous amount of strain. The mount that was used was the major mount from Tyler Camera Systems, which is a fantastic helicopter mount. The whole system is suspended by springs and the operator sits on the springs, so he is totally isolated from the helicopter. The gimbaled joints give you three separate axes of movement.

Many people were tremendously helpful in the production of the film. Gaylin Shultz was the production supervisor and was a pretty amazing person. Almost every problem was placed on his head. His responsibility was to capture the seagulls and to see that they were taken care of correctly and, above all, that there was always an ample supply of these birds.

Jack Couffer was in charge of all the ground photography. His patience and past experience were a great asset in his work. Joan Arnold was the secretary and general traffic controller for the whole operation. You could always depend on her as being an anchor woman for a phone call, or for a problem or a troubleshooter. George Nolan was the helicopter pilot. The remaining crew, the gaffers, grips, assistants, bird crew, and drivers were all very professional and contributed much to the visual excitement of the film.

Jim Freeman used Panavision-adapted Mitchell Mark II camera for all of his shooting on the film. Main lens was 50-to-500mm anamorphic zoom lens. Prime anamorphic lenses included: 30mm, 40mm, 50mm, 75mm, 100mm and 150mm. A 1000mm telephoto lens was used for extreme closeups of the birds flying.





"Let's begin with level flight," says Jonathan to young bird students who want to learn to fly higher and better than all of the other seagulls. Theme of the film, like that of the novel, is that it is possible to break away from the mundane level of the crowd and soar to undreamed of peaks of perfection—if only one has the will and courage to try it.

Another person who really contributed the fantastic diving feeling and incredible aerobatic maneuvers was Art Scholl. He's the foremost aerobatic pilot. With his super Chipmunk airplane, the guy can do unbelievable things. Two Panavision cameras were strapped beneath the Chipmunk's wings so the lens was almost as low as the landing gear. With the landing gear retracted he could just get the cameras inches above the ground at 200 miles an hour. Then he would come down from 8,000 feet in a full-on dive and pull back, leveling out just before smashing into the ocean, pulling off 11½ G's—then fly inverted over the deck, then come back to level again, and then go off into a steep bank doing rolls. With the fantastic maneuverability, it gives the audience a feeling of speed that was never possible with the helicopter or any other means. Gaylin designed the camera rigs for this airplane, and they were just as strong as the airplane itself. In fact, we feared that if the cameras would hit a treetop or a cliff, the airplane wing would come off, and not the camera, because they were really solid.

OUR FRIENDS—THE SEAGULLS

Our first experience with a seagull was really classic. You expect him to be really soft and really gentle. And in their own environment they're really soft and gentle, but when they're suddenly put into a man-made environment they become a little self-protective. So, consequently, when you stick your hand in their cage it isn't just a hand shake that you get, it's a "bill shake" and, in the process of getting the bill shake, you get bitten. So the first thing was to learn to move slowly, so that the seagulls didn't get freaked out by an arm coming into their little world. After moving slowly you can win their friendship to the point where they wouldn't bite your finger off.

The first experiences with the birds being released from the helicopter were really quite disastrous. When we first released the seagulls, the helicopter came to a hover, the seagulls were released and they simply flew away. We were hoping that they'd fly in formation with the helicopter, but they refused. We never could catch up to them. So we finally learned that, on releasing

the seagulls from the helicopter, we had to stay alongside in a sort of a formation flight.

When you get into seagulls it's just like getting into dogs or cats or different kinds of pigeons. People think there's only one kind of seagull. There're over 40 different kinds of seagulls, and once you're around them for a few weeks you soon learn to distinguish the different varieties. It's much like a toy Chihuahua versus a toy Collie. There's obviously a difference in size, head shape, leg shape and everything, all the way down to the color. The same is true with seagulls. There are big seagulls and little seagulls and some have fat heads and some have little heads.

The prettiest type is called a Western Gull, and the Western Gull was selected to become Jonathan. He is a four-year-old, mature seagull who has received the final color markings and is only found in a couple of locations: Ventura and Berkeley. The best place to find gulls is at the garbage dump, because all seagulls love to eat and the garbage dump seems to have the best selection of food.

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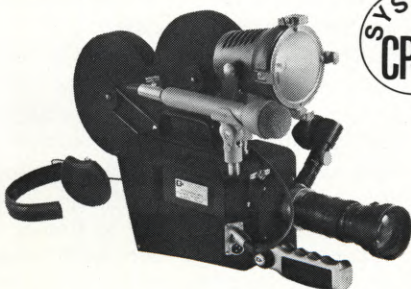
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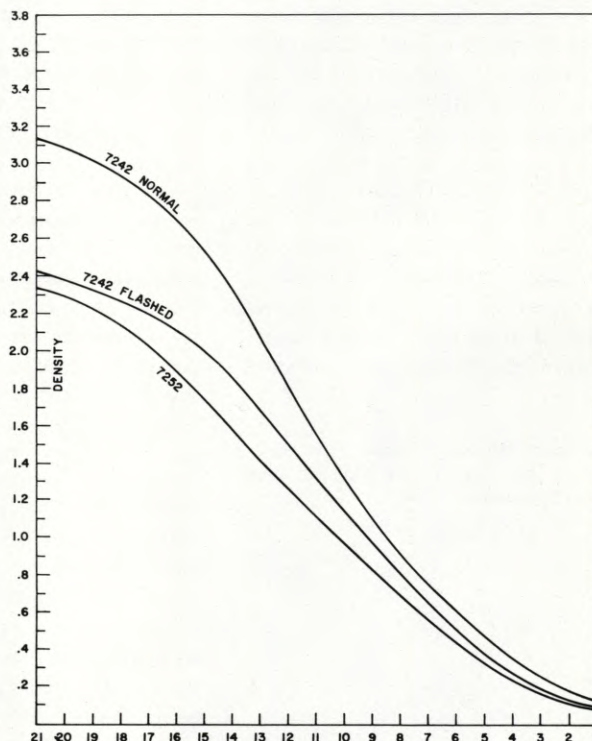
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THE 114TH SMPTE CONFERENCE AND EQUIPMENT EXHIBIT

Though a bit short on papers of interest to film people, the event presented many significant items of new equipment

Held at the Americana Hotel in New York, October 14th through 19th, the 114th SMPTE Conference and Equipment Exhibit was, for reasons not readily explainable, not as well attended as in years past, though there seemed to be a greater number of international visitors—most notably, delegations from the Soviet Union and the People's Republic of China.

As for the technical program—depending upon whether you were a "film person" or a "video person", it could be regarded as either a boon or a bust. For example, of the five days of papers and seminars scheduled, one day was devoted to film methods, equipment and technology, one day to laboratory practices, and *three* days to video methods, technology and equipment. Many of the film people present felt that they came out on the short end—especially since the film program scheduled did not live up to its previously announced billing.

To explain the latter statement: The announced topic of the morning session of the first day was "Film Production Around the World With Latest Trends in China and Russia". Whoever dreamed that up obviously hadn't previewed any of the scheduled papers. The program for that morning, as it actually came off, dealt not at all with "Film Production Around the World", nor (with the

exception of one paper on a universal frame format in use at Mosfilm Studios) did it even remotely concern itself with "Latest Trends in China and Russia".

The SMPTE should not be surprised if it receives a visit from the Fair Labeling people.

The first paper on the program, tantalizingly titled "Filming in China", promised much more than it delivered. The synopsis read:

"On April 17, 1973, a Women's Friendship Delegation, the first of its kind to be officially invited, left Los Angeles for the People's Republic of China. During the next three weeks, the twelve-woman delegation selected and headed up by Shirley MacLaine visited cultural and educational institutions (mostly in Canton, Shanghai and Peking) and met with many Chinese people, women in particular. Four of the twelve women on the delegation formed a crew that was busy full-time filming both China and the responses of the eight other women to what they were seeing."

So far, so good—but when Camera-woman-Director Claudia Weil got up to deliver her paper—if such it could be called—she devoted the time exclusively (in the gushing tones usually reserved for reminiscences of a sorority slumber party) to describing the other girls in the safari, what great kids they were and how grand it was to get to know them all. The only thing missing was a quick background chorus of "Getting To Know You". A reference to the fact that the four-woman crew shot "thousands of feet of film" was as close as "Ms." Weil got to "Filming in China".

Next up was a paper entitled: "When an Immovable Object Meets an Irresistible Force", and it was actually a kind of panel featuring personnel of the Hardtimes Movie Company, a group composed of three young married couples and one "single", who is presumably a kind of relief pitcher. Interestingly enough, the synopsis of the paper mentioned only the four *women* members of the group, implying that the three phantom males were kept around to perform an occasional bit of insemination and carry the equipment.

One of the chaps, Mike Gilligan, husband of the group's Director, Sonja Gilligan, gleefully reported that he was able to develop a close rapport because

he "gets to sleep with the director"—hardly an original method of developing rapport in the *film* industry.

The "Immovable Object" of the title presumably referred to difficulties encountered in raising money to make films, while the "Irresistible Force" was the Hardtimes Movie Company's unswerving determination to get the films made, come hell or low finances.

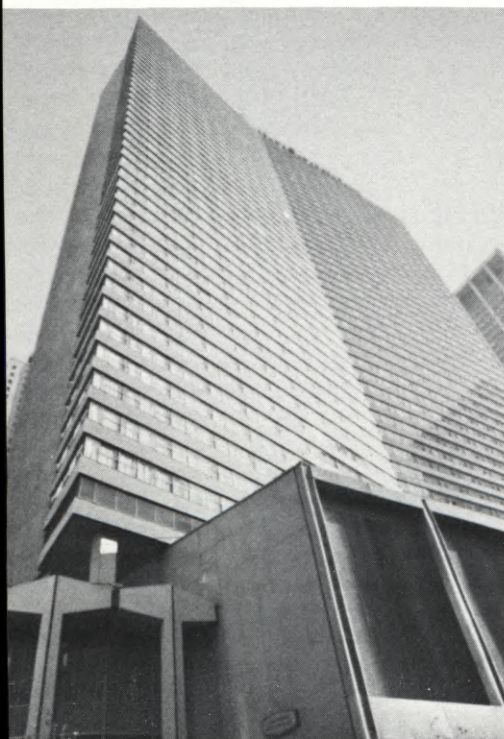
They made it (by promoting funds from wealthy friends and "Wall Street" corporations) and Associate Producer Julie Motz (the "single" of the group) implied in her talk that "total togetherness" was the key to it all, with the women members preferably running the show. A brilliant stroke for Women's Lib—but the proof of this particular pudding is what ends up on the screen.

One of the more interesting papers was the next one, entitled: "An Interpretation of the Mythology Surrounding the Selection of a 16mm Color Stock for Production Use", by Jack Behr and Barry Hampe, which stated as its premise: "The mythology of 16mm filmmaking asserts that ECO is *always* the preferred stock, EFB is *only* for low-light crises and TV news, and 16mm Color Negative should *never* be used."

The authors made exhaustive tests (clips of which were shown during the seminar), in which all three stocks were used to shoot a variety of interior and exterior scenes, with the results of each scene being inter-cut to show direct comparison of the respective stocks.

Their conclusion, borne out by what appeared on the screen, was: "ECO must be used when fine grain is the over-riding consideration. But ECO performs badly out of the studio. That leaves EFB and Color Negative. Good quality prints *can* be made from EFB, even from an internegative, but contrast *does* build up and color shifts. And that leaves Color Negative. The color is superb—it looks like movies ought to look. It is essentially as fast as EFB (and two stops faster than ECO), but because it is a printing original, contrast doesn't build up as much with every generation, and the color doesn't shift. As a negative stock, it offers more printing latitude and color control than ECO or EFB. Careful handling of preprint materials, and manufacture of a liquid-gate optical C.R.I. can control the dirt problem. The cost is comparable to produc-

The Americana Hotel in New York City, headquarters for the 114th SMPTE Conference and Equipment Exhibit.





(LEFT) The Get-Together Luncheon of the 114th SMPTE Conference featured the granting of various awards and a dynamic address by Eastman Kodak President Walter A. Fallon. (RIGHT) The Equipment Exhibit, held on the lower level of the Americana Hotel, included five new cameras and a host of other significant items of motion picture and television equipment.

tion with EFB, but its resolving power is better than that of EFB. (And the new 16mm Eastman Color Negative, type 7247, which Eastman announced this year, approaches ECO's fine grain characteristics.)"

All of this may come as a surprise to many American film-makers, who have avoided 16mm Color Negative like the plague—even though it is widely, and successfully, used in other countries.

Next up was a paper on "Electronic Cinematography" by William G. Connolly, CBS Television Network, New York. This paper gave an account of operational experience gained in engineering tests, in production and post-production, using a live electronic camera and videotape recorder in the cinematic single-camera technique. The results obtained in the production and editing of a feature for television ("SANDCASTLES") using this technique were presented.

"The script of 'SANDCASTLES' was a severe challenge for a first attempt, in that 90% of the action was shot on location. Further, many of the scenes were shot at night. A number of the automobile scenes in the script required a camera mounted on a vehicle.

"The editing of picture and dialogue . . . were effected at the console of the CMX-600. The program was assembled automatically on the CMX-200, using the editing data from the console. Color correction for scene-to-scene matching was done on the CBS Laboratories Model 5500 color corrector.

"It is concluded that the electronic cinematographic technique offers significant technical and cost advantages for programs produced for television."

The last paper before the lunch break was "A Universal Frame for Motion Picture Production", presented by Dr. M.Z. Wysotsky, of Mosfilm Studios, Moscow.

The paper explained how Mosfilm Studios, in cooperation with research

institute NIKFI, carried out experimental work to establish a new universal 35mm negative frame for motion picture production:

"From the universal frame, different prints can be derived, as follows: wide-screen anamorphic with aspect ratio 2.35:1, non-anamorphic wide-screen—1.85:1 to 1.66:1, 70mm, Academy format for television and conventional theatres, as well as 16mm.

"A negative frame which is the full width of the 35mm film between perforations (25mm x 16mm) is used for photography with non-anamorphic camera lenses.

"From the exposed area of this frame the appropriate areas are selected for optical printing to yield copies of corresponding required formats. Contact printing is used to get copies for TV and other purposes with aspect ratio 1.37:1."

At the Get-Together Luncheon which followed, Walter A. Fallon, President and Chief Executive Officer of Eastman Kodak Co. was Guest Speaker. His dynamic address, entitled "Getting The Imagination in Focus", made the point that film is here to stay and that it can co-exist with tape quite compatibly into the foreseeable future. The text of his talk, in its entirety, is reproduced in this issue of *American Cinematographer*, beginning on Page 1540.

After lunch, James Crawford, Vice President of Frezzolini Electronics, made a presentation entitled: "The Frezzi-Cordless Camera's Design and Application", and he chose to do it in the form of a free-wheeling sort of *cinema verité* movie in which Jim himself showed the viewers around the Frezzolini plant in Hawthorne, N.J., and pointed out the salient features of the camera. Jim has to be one of the great natural comedians of all time, because his antics on screen were hilarious. The audience wasn't quite sure whether he was putting them on or whether he was

for real—but one thing was certain: no one who was there will ever forget the Frezzi-Cordless camera!

Next up was Edmund DiGiulio, President of Cinema Products Corporation, who, in his paper, "The Systems Approach to the Design of a News/Documentary Camera", said: "To truly apply systems engineering to the design of equipment, it is necessary first to clearly define the problem to be solved with the development of the new hardware. It is then necessary to weigh all the factors involved, consider carefully all the possible tradeoffs, review carefully the strengths and weaknesses of existing equipment, and finally, establish a tight feed-back system of information from the end user, so that the equipment can be modified to its optimum configuration."

He went on to tell in detail how this method had been applied to his own company's highly successful CP-16 and CP-16A news/documentary cameras.

If the Technical Program at the 114th SMPTE Conference fell somewhat short of delighting the film people, the Equipment Exhibit succeeded. Rarely have so many exciting items of new equipment been introduced at one fell swoop. The new cameras alone included: the new XR35 Lightweight Studio Camera (from Cinema Products), the new (and very radically changed since *Photokina*) Arriflex 16SR camera, the new Maurer Odyssey 16 camera, the new Wilcam W-2+4 16mm Sound Camera, and the new Reflex CP-16R and CP-16R/A TV-News/documentary Camera System. In addition, there were many other fine new pieces of equipment—most notably, the fantastic new Elemack "Mantis" Camera Boom Dolly.

Reports on several of these items of new equipment appear in this issue of *American Cinematographer*, beginning on Page 1544. Reports on some of the others will appear in subsequent issues.

HERB A. LIGHTMAN

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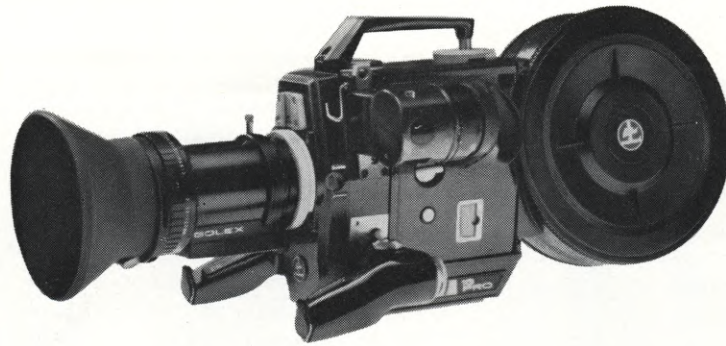


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GETTING THE IMAGINATION IN FOCUS

By WALTER A. FALLON

President, Eastman Kodak Company

After appearing before a wide variety of audiences over the past couple of years, it's a special treat to be back with a group that includes people who would appreciate a half-hour dissertation on the enduring beauty to be found in a sensitometric curve.

I'm afraid we'll have to forego that pleasure, though, because I sense that you have other things on your minds. These are hardly times to encourage complacency on the part of us concerned with the technical end of motion pictures and television.

For example, I note that our good friend Marshall McLuhan is in print again. After settling us in a "global village" a few years ago, he has now installed some seats and turned it into a "global theater." What's playing there is not quite clear. But his references to "electronic man" and "the new electronic citizenry" make it a safe bet that his shooting stock has nothing at all to do with sensitometric curves.

And in his latest work, sub-titled *The Executive As Dropout*, Dr. McLuhan has added some helpful hints on electronics and the executive that sound suspiciously like "Strike Three" to a man who started out as a chemist, who has spent a number of years in the technology of motion picture film, and who has put in some time in an executive office.

One must also wonder over some of the statements in the business press—like the recent one that would lead you to believe that the percentage of prime-time television produced on film is diminishing at such a rate that zero is only a few years away.

Well, this came as news to Kodak's market analysts. They took the trouble to do a headcount on the shows scheduled for the 1973-74 season. It comes out that 85 percent of prime-time hours originate on film—actually an increase of a couple of points over last year.

Also, a look at the latest Kodak production and sales figures indicates that somebody somewhere is buying a lot of motion-picture footage. Apparently the word hasn't gotten around about the demise of film.

And the people at Kodak who come at me with R&D appropriation requests to sign sure haven't heard about it—I guarantee you that.

In a dynamic address to the Society of Motion Picture and Television Engineers, the President of Eastman Kodak debunks the gloom-and-doomsayers who moan that "film is dead" and calls for a new surge of industry imagination

Of course, these gloomy forebodings are not exactly new. We received the first announcement of the imminent passing of film more than 15 years ago.

In the meantime, the quality of film has gotten better and better. Film prices have actually gone down while the prices of just about everything else have

gone up. And the volume sold has increased annually at a rate well in excess of the Gross National Product as a whole.

Under the circumstances, one is tempted to drag out the old Mark Twain chestnut about the report of his death being greatly exaggerated.

Introduced by Society of Motion Picture and Television Engineers President, Byron S. Roudabush, the President of the Eastman Kodak Company, Walter A. Fallon, addresses large audience attending the Get-Together Luncheon of the 114th SMPTE Conference and Equipment Exhibit, held in New York, Oct. 14-19. His no-nonsense talk was accompanied by a multi-screen slide presentation and a rare "talking picture" of the late George Eastman.



But that one has been over-used. Anyway, there are a couple of other bits of Twain wisdom that seem more appropriate here.

The story of his life, Mark Twain once wrote, was that he "was seldom able to see an opportunity until it had ceased being one." On another occasion, he added: "You can't depend on your eyes when your imagination is out of focus."

And that is very much like the story of the broader technology that unites us all, in which motion pictures, television and radio show up merely as different routes to the same end. This is "the technology of making experience repeatable," to use Daniel Boorstin's apt phrase for it.

The development of this technology has been characterized by frequent appearances of opportunity cunningly presenting itself to beholders as just one problem after another. Let's recall a few of them.

For a starter, we could go all the way back to the precursor of motion pictures, sound recording. Many portrayed the early phonograph as a contrivance of the devil. But who came up with the most alarming vision of all?

Believe it or not, it was the most popular musician of this time, John Philip Sousa. He published this grim warning: "In the prospective scheme of mechanical music, we shall see man and maiden in a light canoe under the summer moon on an Adirondack lake with a gramophone caroling love songs from amidsthips." And "The Spanish cavalier must abandon his guitar and serenade his beloved with a phonograph under his arm." And finally, "Children are naturally imitative, and if, in their infancy, they hear only phonographs, will they not sing, if they sing at all, in imitation, and finally become simply human phonographs—without soul or expression?" Maybe the old "March King" had something there after all.

But you have to suspect that Sousa may have been less concerned about the guitars of Spanish cavaliers than he was about playing dates for big brass bands.

When Thomas Edison, who had invented the phonograph, applied the same thinking to the visual image, he came up with the Kinetoscope. But he refused to let his imagination roam beyond the penny-in-the-slot, hand-cranked peepshow, because he foresaw another of those problems. If the images were projected so that more than one person could see them at a showing, he would run out of customers in no time.

Back on the sound side, an enterprising young wireless operator, named David Sarnoff, advanced a novel plan

for broadcasting signals to be captured and turned into sound by a "Radio Music Box." His associates of the time greeted the idea as an unsolvable paradox. If you broadcast something, how could you be sure who received it? Besides, it would kill the sales of phonograph records.

When sound and sight came together in the "talkies," a witch's brew of new problems appeared. The microphone became the dictator of content and creativity. Production moved into rooms with walls literally, rather than figuratively, padded. The camera was relegated to a soundproof box, with its capability of expression shackled. The voice of the director was stilled. At least during takes.

And since few of the day's leading players were vocally geared for the big change, where would the stars come from? Who would sell tickets at the box-office once the novelty of sound wore off?

There was one personality of the era, though, who made the transition to sound quite convincingly: George Eastman.

(EDITOR'S NOTE: At this point in Mr. Fallon's address, there was flashed upon the screen, for viewing by the SMPTE Luncheon audience, a rare "talking picture" of the late George Eastman, in which, speaking directly into the motion picture camera lens, he congratulates members of the Society of Motion Picture Engineers on the occasion of that organization's 15th anniversary, which occurred in 1930.)

As Byron indicated in his introduction, that appearance by Mr. Eastman (his only known speaking role on film, incidentally) was before the SMPE Convention of 1930. To my way of thinking, his words of congratulation on the growth and staying powers of your organization bear repeating today. At the going rate, I note that it will be the year 2016 before you again hear formally from a Kodak president. But I am confident that the same message will be in order.

Before looking ahead to that, however, let's go back to our survey of opportunity masquerading as problems. There are a couple of other noteworthy examples in the post-war period. The coming of television opened up a whole new wing in the morgue.

Radio was doomed. Now that we could have pictures to go along with words and music, nobody would be content to just listen. The movies were doomed. Since people could have their entertainment "free" and "live," they weren't likely to pay to get it canned. Newspapers did not look long for this

world either. With the advent of electronic journalism, tomorrow's headline would be obsolete before it could be set in type.

Then another major impasse was reached when David Sarnoff, who apparently had not learned from his earlier "problem" in establishing an audience for broadcast radio, committed the NBC network to color. Where was all that program material in color going to come from? Well, here we are in 1973 and television is undeniably flourishing. But radio has to be judged a pretty healthy-looking corpse. There are more radios in use than television sets, and phonographs, and automobiles combined. Incidentally, radio is the chief medium for promoting the sale of phonograph records. Newspapers have proved to be rather durable, too. While the absolute number of daily publications has thinned slightly over 25 years, total circulation in this country has seen a net gain.

Well, how could so many knowledgeable people, so often, lose sight of the opportunity for the problems? What caused the contemporary imagination to go out of focus—as Twain put it? Most important, what can we glean from it all that might apply to the heralded confrontation between photography and electronics?

It's not difficult at all for the imagination to slip out of focus when it has to be filtered through a series of misdefinitions, misimpressions, misassumptions, and mismatches, as well as myopia, myth and outright fallacy. And it seems that the technology of repeatable experience, by its nature, abounds in all of these.

To take an obvious example, there is the misdefinition of the movie audience as those people who buy a ticket at a box office to get in to see a motion picture. By these terms, since 1945 the audience has shrunk from 80 million admissions a week to 18 million a week last year. Numbers like those would do a lot to blur the imagination of anybody considering motion pictures as a business.

Yet the fact is that feature films consistently run between 16 and 22 per cent of prime-time television programming. On any given Tuesday night last February, 70 million people were watching movies originally produced for theatrical release or expressly made for TV.

Closely related to the misdefined audience is the myth of market saturation. It's arrived at by counting the hours of television broadcasting and the number of theater screens in this coun-

Continued on Page 1580

Alan Gordon Enterprises 1973 Sale of the Year

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Mitchell 16mm complete w/four lenses, motor, viewfinder, matte box, 2 ea. 400' magazines, cases. Used, excellent condition. Price new, \$9200.00	\$3250.00
Auricon Super 1200 complete w/optical sound amplifier, microphone, viewfinder, 2 ea. 1200' magazines and cases. Used, excellent condition. Price new, \$6000.00	\$2550.00

Maurer complete w/two 400' magazines, optical viewfinder, matte box, 115V motor, used, excellent condition. Price new, \$10,000.00	\$1695.00
Eastman Kodak K-100 complete w/25mm Ektar lens, viewfinder lens, 40' spring wind. Used, excellent condition. Price new, \$650.00	\$ 295.00
Eastman Kodak Reflex complete w/three Angenieux Ekton lenses, motor, three 400' magazines. Like new	\$1695.00
Gun Camera 16mm (GSAP) Fairchild, w/35mm lens, 24V DC; used, good condition	\$ 98.50
Gun Camera 16mm (GSAP) Bell & Howell, w/o lens, 24V DC. Can be easily converted to 'C' mount. Used, good condition	\$ 125.00
Mini-Cam 16, Mdl. 55GE. Rebuilt better than new. 24/48 fps, special shutter, 1/100 sec. Accepts 'C' mount lenses	\$ 298.50
Gordon Bell Helmet for use with above listed gun cameras. Choice of size, color white, if available. Model GB16. New	\$ 75.00
Fairchild Mdl. HS101 highspeed camera, complete with lens, motor, power supply, control box, cables and case. Originally sold for \$3550.00	\$2300.00
Traid Mdl. 200P 16mm, 50' magazine load time-lapse camera, 24V DC, accepts all 'C' mount lenses. Value \$450.00	\$ 225.00
Bolex H16 w/20-60mm motorized zoom lens. Special tripod dove-tail base, 115V sync motor. Complete	\$ 350.00



CAMERA ACCESSORIES

Blimps

Arriflex Universal Studio sound blimp for Arri 16S/16M, aluminum construction, precision acoustical dampening. New list price \$5200.00	\$1500.00
Cine Special Blimp, Ceco	\$ 295.00
Maurer O-5 Blimp	\$ 985.00
Raby Blimp for Mitchell Std. N.C., Wall, B&H 2709, etc.	\$ 450.00
Eclair Aquaflex underwater housing for 16mm or 35mm Camerette. Used, excellent condition	\$1495.00

16mm Magazines

Mitchell type 400', new	\$ 120.00
Mitchell Magnesium 400', new	\$ 185.00
B&H 400' NEW	\$ 135.00
Cine Special 100'	\$ 125.00
Cine Special 200'	\$ 325.00
Eclair Camerette 400'	\$ 245.00
Maurer 05 400'	\$ 155.00

35mm Magazines

Arriflex 400'	\$ 125.00
B&H 400' fiber	\$ 19.50
B&H 400' metal	\$ 55.00
B&H 400' bipack	\$ 145.00
B&H 1000'	\$ 95.00
Eclair Camerette 400'	\$ 245.00
Mitchell 400' std	\$ 60.00
Mitchell 1000' std	\$ 115.00

Motors

Eclair CM-3 220V 60-cycle, 3-phase synchronous motor	\$ 425.00
Bell & Howell Filmo 12 and 24V DC	\$ 95.00

Mitchell 16 24V variable speed	\$ 375.00
Mitchell 16 24V highspeed (96 fps)	\$ 375.00
Mitchell 16 110V highspeed (48-128 fps)	\$ 420.00
Mitchell R35 12V variable speed	\$ 285.00
Mitchell 35 BNC 220-V 3-ph multi-duty	\$ 995.00
Mitchell 35 BNC, phase synchronous	\$ 595.00
Mitchell 35 NC 110V sync	\$ 395.00
Mitchell 35 NC 110V variable speed	\$ 495.00
Mitchell 35 NC 24V variable speed	\$ 495.00
Arriflex 16 110V/42V AC synchronous, complete with power supply	\$ 295.00
Arriflex 35 110V synchronous, mounted on gear base, with footage counter	\$ 525.00

Tripods-Heads

Heavy duty, std. tripods, heads and legs, manufacturer unknown — Each	\$ 30.00
NCE Master Hydro Fluid tripod, brand new w/legs	\$ 995.00
Akeley gyro-tripod	\$ 425.00
Large heavy duty spring loaded friction heads	\$ 325.00
Paramount Studio Crane. Mdl. 11, electrically operated, maximum boom, 15', overall length, 33'	\$ 500.00
Paramount Studio Crane. Mdl. 111. Similar to Mdl. 11. Overall length 31'. Some parts missing	\$ 400.00

LIGHTING AND GRIP EQUIPMENT

	Sale Price
2K Soft Light, low silhouette LQBS 20	\$ 165.00
Maxi-Brute 9, NEW	\$ 375.00
4-light 'FEY' fixture, uses DWE or FBE lamps, individual switches. New value, \$179.00	\$ 79.95
2x2 Hand Reflectors w/stand mounting yoke. Hard and soft side. New	\$ 40.00
ColorTran 500 flood 1000W LQK5/YMA. New price, \$59.95	\$ 29.95
ColorTran Scoop 1000W LQK-15, New price, \$110.00	\$ 37.50
CYC-Strip 1000W background light LQC10 12-3. New price, \$300.00	\$ 150.00
CYC-Strip LQC 10 6-3. New price, \$170	\$ 85.00
ColorTran Soft Light 800W LQS 80-10P. New price, \$530.00	\$ 379.50
Birns & Sawyer Mdl. 5530 SeAQuartz Underwater Light 30V DC head only. Sold new for \$295.00	\$ 195.00
Mole Richardson 2000 w Junior spot	\$ 69.50
5K Kleigal, as is	\$ 95.00

Dollies and Cranes

20th Century-Fox Stage Crane, powered by self-contained rechargeable batteries, offer a variety of camera positions from 144" off ground to floor level. Unit is 48"x98", boom arm 144" long, has 45° swing. Weight 1750 lbs. Used, excellent	\$5500.00
McAllister Crab dolly	\$2500.00
Houston Fearless Panoram Dolly, 4-wheel, steerable, complete with boom arm	\$ 795.00
Raby 4-wheel stage dolly with boom arm. Fair condition	\$ 300.00

LENSES AND FILTERS

Arriflex	Sale Price
9.5-95mm, Arri mount	\$1995.00
11.5mm Schneider f/1.9	\$ 150.00
16mm Schneider f/1.9	\$ 125.00
25mm Schneider f/2	\$ 125.00
50mm Schneider f/2	\$ 125.00

Zoom Lenses

17-85mm Pan Cinor, Arri mount	\$ 175.00
17-70mm Pan Cinor, Arri mount	\$ 150.00
12-120mm Angenieux, Arri mount	\$ 850.00

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Good through February 15, 1974 only.

SOUND RECORDING EQUIPMENT

	Sale Price
Berndt Maurer galvanometer variable density, reconditioned	\$2500.00
Complete Post-Production Sound Package. Film sound transfer and mixing system w/all modern components, less than year and a half old, ready for immediate installation and use. Includes Magnasync 2200 recorder, Triple series 2200 reproducers, 4-position mixing console, interlocking system, M370 distributor, B&H optical/magnetic projector w/sync interlock, Sync/Selsyn control panel, 1000 cycle sync generator, Magnasync tape sync, patchcord panel, McIntosh stereo amplifier, Rek-O-Kut turntable, intercom, speakers, headset. Rack mounted, completely assembled. Used, excellent, guaranteed	\$10,500.00
Multitrack Magnetics Mdl. R101 16-35 magnetic tape recorder. Rack panel. Like new	\$5782.00
Ampex 350 sloping panel 1/4" recorder	\$ 895.00
Ampex 602 in rack panel 1/4" recorder	\$ 695.00
Ampex portable 1/4" recorder	\$ 295.00
Atlas sound boom	\$ 695.00
Fishpole Microphone Booms, lightweight anodized aluminum, extend from 5' to 12', wired. \$135.00 value. New	\$ 89.50
Stellavox Model SM5, Pilotone, complete w/case, batteries and AC power supply. Excellent condition	\$ 425.00
Roberts Model 1700 half-track monaural recorder, 2-speed pause control, VU meter, with built-in public address system, complete with microphone. New price, \$179.95	\$ 99.50
Concord Model 850 AC/DC wireless PA system. Demonstration model, excellent	\$ 175.00
Uher Model 5000 Dictating and Transcribing Recorder, monaural, half-track, complete with stenographic accessories. \$350.00 value	\$ 110.00

SOUND RECORDING ACCESSORIES

	Sale Price
Location Sound Cart. Portable, folds up, ideal for moving recorder, mixer, booms, cables, etc. on location or in studio. New	\$ 350.00
Sennheiser EM-1008 wireless receiver. New	\$ 300.00
Sennheiser R-1010 wireless receiver. New	\$ 225.00
Sennheiser T-203 wireless pocket receiver. New	\$ 250.00
Sennheiser SK-1005 wireless transmitter. New	\$ 200.00
Sennheiser SK-1008 wireless transmitter. New	\$ 225.00
Sennheiser T-201 receiver	\$ 140.00
Sennheiser SK-1006 transmitter	\$ 100.00
Sennheiser wireless kits, including EM-1008 receiver, SK-1007 transmitter, MK-12 microphone, case	\$ 575.00

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THE NEW CP-16R/A AND CP-16R/A REFLEX TV-NEWSFILM DOCUMENTARY CAMERA SYSTEM, PLUS UNIQUE PLC-4 MAGAZINE MAKE JOINT DEBUT

Already proven highly successful, this favorite of the newsreel cameramen adds the reflex capability and an unusual new magazine

Making its debut at the Equipment Exhibit of the 114th SMPTE Conference in New York was Cinema Products' new CP-16R and CP-16R/A Reflex Camera System. These reflexed versions of the popular CP-16 and CP-16/A TV-newsfilm/documentary cameras had been eagerly awaited and received considerable favorable attention from the crowds attending the Exhibit.

As if that weren't enough, Cinema Products also unveiled its new 400-foot magazine, designed to fit not only its own CP-16 line of cameras, but all other 16mm cameras that presently utilize the Mitchell-type magazine.

The new PLC-4 magazine is made of high-impact glass-filled Lexan. This is an extremely rugged material used in the manufacture of hard hats and football helmets. The magazine is a compartment type to permit use of either 200 or 400-foot darkroom core or daylight load spools. It utilizes hinged doors which provide quick access for loading and unloading. The doors have a triple-step light trap to insure against light leaks. There are two thumb-activated latches on each door to guarantee positive safe closure. When a latch is not fully secured a bright luminescent orange band is visible to alert the operator.

Two major advantages are obtained by the use of glass-filled Lexan, as opposed to magnesium, which has been the most popular material for this type magazine up until now. For one thing an additional weight saving of 1/2

pound is achieved but, more importantly, the problem of film spotting, caused by particles of magnesium adhering to the emulsion and then reacting in the developing bath, is completely eliminated. The toe of the magazine is a removable aluminum insert. This makes repair and replacement of the toe a simple matter as compared with the problem when the toe of a magnesium magazine breaks.

The magazine is compatible either with conventional screw-down fastening methods or with the unique Cinema Products snap latch stud technique.

In response to a request for more comprehensive data on the new CP-16R and CP-16R/A Reflex camera system, as well as the unique PLC-4 magazine, Ed DiGiulio provided the following additional information:

WHY THE CP-16R AND CP-16R/A CAMERA SYSTEM AND PLC-4 MAGAZINE WERE DEVELOPED

By Edmund DiGiulio
President, Cinema Products Corporation

Our CP-16 has been received with such critical acclaim by the TV news-gathering organizations that it has now become recognized as the preferred camera for TV newsmen. This fact has been established by a survey recently conducted by the Radio and Television News Directors Association.*

The CP-16, of course, is not a reflex

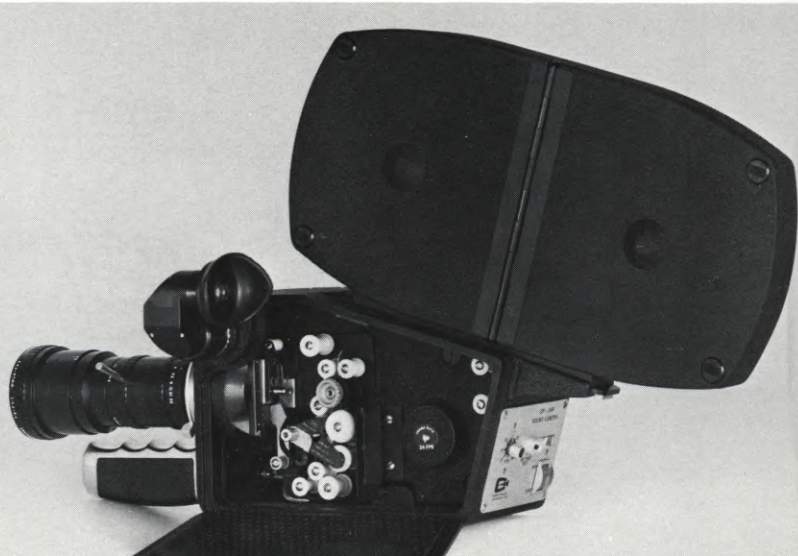
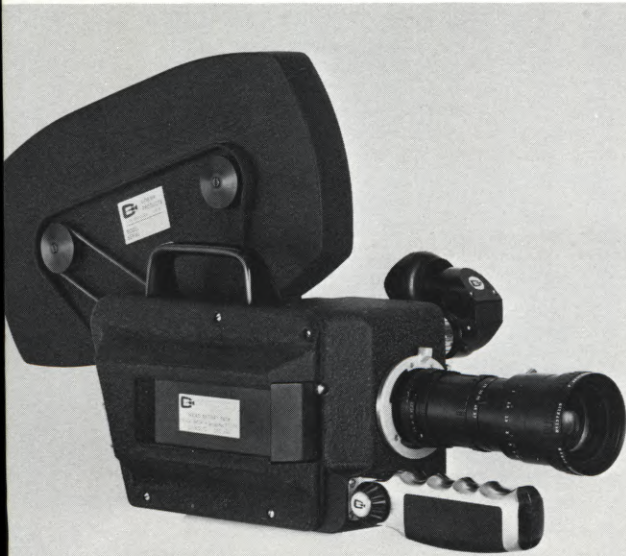
camera and relies exclusively on Angenieux Zoom lenses that are equipped with a reflex viewfinder. While this may be adequate for most TV news applications, it does represent a severe limitation in many instances. Even in hard news coverage, there are many occasions when an extremely long telephoto lens could be used to tremendous advantage. For example: looking over the Berlin wall. In close, low-lit quarters, a wide-angle fast lens would be of tremendous value.

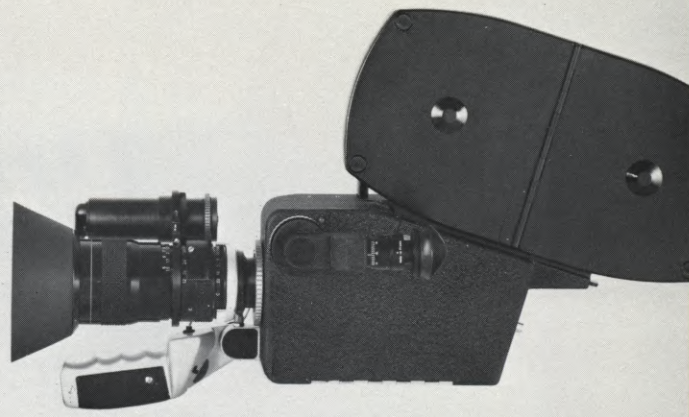
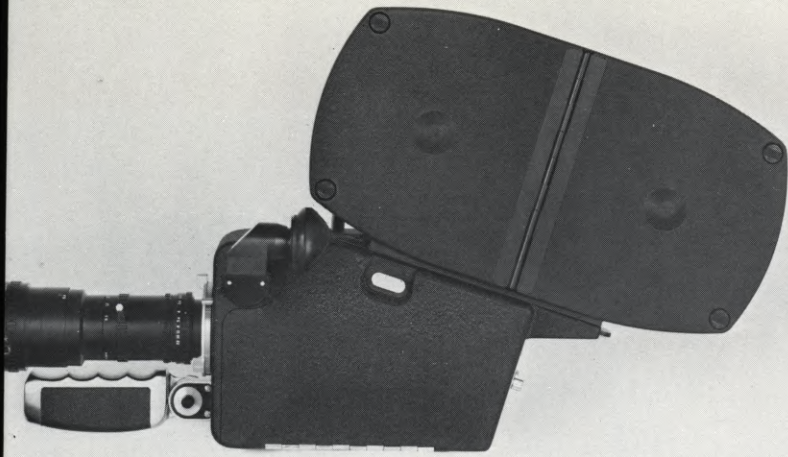
We designed the new CP-16R lens mount so that it would be compatible with all Arri-mounted lenses using a special adapter. For the standard CP mount for the CP-16R camera, we made a radical departure from what other 16mm cameras employ. We have designed what amounts to a miniature BNCR-type mount. This provides for a positive locking ring against the lens flange, so that there is no possibility of

**QUOTE FROM THE RTNDA COMMUNICATOR #10, OCTOBER 1973:*

"As newsfilm operations move toward increased use of natural SOF, they appear to be moving toward the CP-16A as their preferred camera. It has a built-in amplifier and one-pound battery as part of a single shoulder-balanced unit. The sound cameras now used most by RTNDA news operations are Auricons, often with conversions such as those by Frezzolini and General. Auricons are listed as most used at 64% of the stations, compared to 22% for the CP-16 and CP-16/A. But when asked their preferred camera, 58% of the respondents list the CP-16 or CP-16/A, compared to 29% for Auricons and their conversions."

(LEFT) The new CP-16R camera, shown equipped with Angenieux 9.5mm-57mm zoom lens (with miniaturized BNCR-type lens mount), plus Cinema Products-designed standard reflex viewfinder and unique PLC-4 400-foot magazine. (RIGHT) CP-16R camera, shown with door open. This camera door utilizes a triple-step light trap, instead of a rubber gasket.





(LEFT) Side view of the CP-16R camera, showing CP-16R standard viewfinder. (RIGHT) CP-16R/A reflex camera, shown with Angenieux "orientable" viewfinder, J-5 Zoom Control, Canon Macrozoom 12-120mm lens, plus the new Cinema Products PLC-4 lightweight glass-filled Lexan 400-foot magazine.

lens movement. Moreover, the lens is not torqued in any way when being installed in the camera, because the locking action is generated by the ring and not the lens. For this reason, we chose to make the Arri adapter a part that is set-screw-attached to the individual lens, rather than an adapter put onto the camera lens board. In this manner, we provide all the advantages of the CP mounting arrangement.

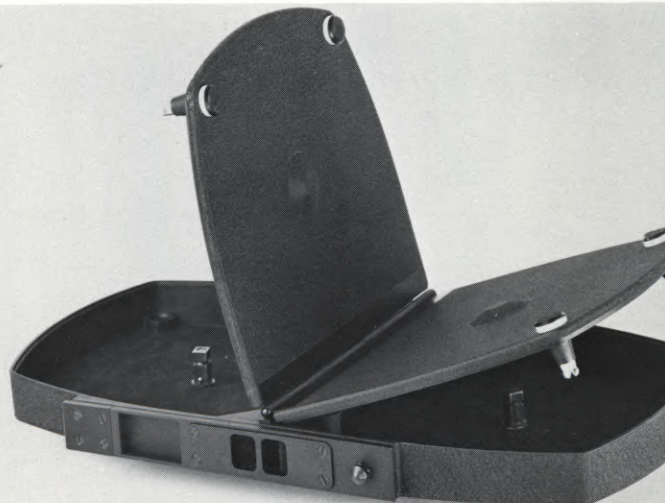
The rotating mirror shutter is driven by a small gear cluster in a sealed gear box. We utilized a design technique that proved extremely successful for us in the design of the XR35 Studio camera. As a result, the camera is extremely silent, even when the lens is removed. The mirror shutter rotates from below the aperture, projecting a reflex viewing image to a ground glass which is set above the aperture and at right angles to it. The ground glass is, of course, interchangeable. The viewing area is extremely large, easily encompassing the Super-16 format.

Continued on Page 1585

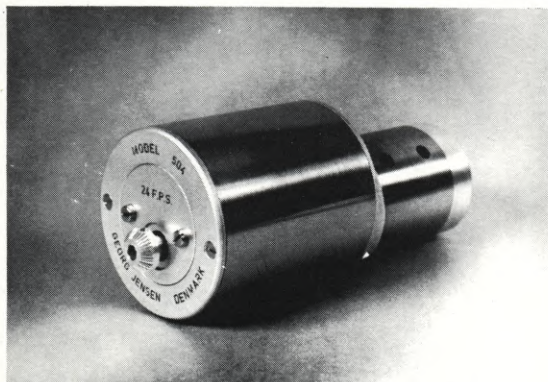


(LEFT) Rear view of the CP-16R/A reflex camera, showing sync and variable speed controls. (RIGHT) Cinema Products molded fiberglass shoulder pad, with built-in 17-degree slope to accommodate the normal shoulder slope (adjustable front-to-back, as well as side-to-side).

(LEFT) Cinema Products unique new PLC-4 glass-filled Lexan magazine is 1/2-pound lighter than magnesium magazine and eliminates problem caused by particles of magnesium adhering to the emulsion and then reacting in the developing bath. (RIGHT) PLC-4 magazine with door open. Toe of the magazine is a moveable aluminum insert, making repair or replacement simple. Magazine fits all cameras that take standard Mitchell-type magazines.



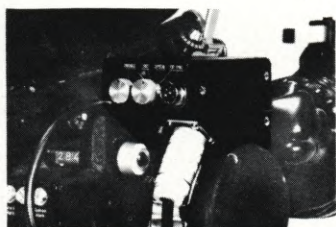
Crystalize Now!



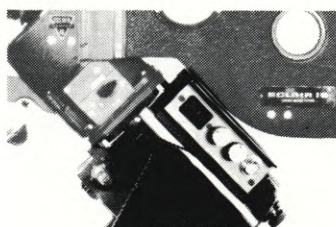
Arri S or M Model 504

With the unique Jensen 504. \$975

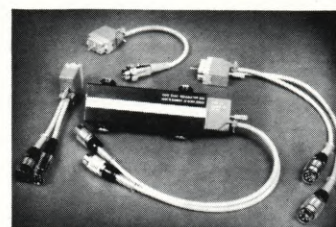
- Automatic out-of-crystal sync safety stop.
- No cables or adaptation — simply slip into camera and crystal sync with other cameras, recorders.
- Uses your standard battery and cables.



Arri BL Model 505
\$775

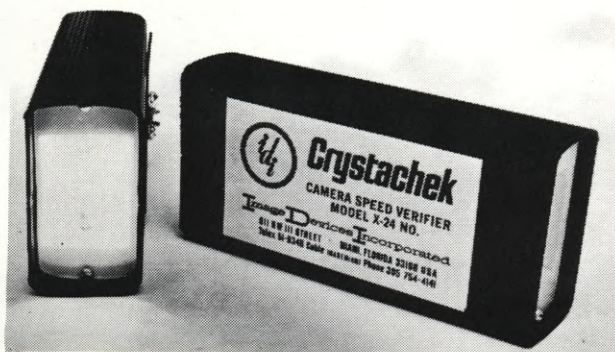


Eclair NPR Model 508 Conversion
\$975



Any Tape Recorder Model 550
\$250

New Crystal Checker!



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

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

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The Lowell Link System holds up everything except the shooting. And travels in one case!

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You can never be really sure what you'll need on location until you finish shooting. So you either haul a truckload of conventional grip gear, or try to improvise on the spot. You lose time, money or quality.

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your back. Link components snap together in countless combinations to form booms, background supports, flags, floor-to-ceiling poles, water weights, stand extensions, braces, rigging devices.

You can attach a Lowell Quartz (shown above), Lowell Softlight and most location lights to any part of our rigs, or to a door.

Components are available individually and in kits. You can make all the above rigs from one kit. Not all at one time, but several at one time, including many not shown.

For more details, see your dealer. Or ask us for our free brochures.



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SMPTE EQUIPMENT EXHIBIT

ARRIFLEX 16SR CAMERA SINCE PHOTOKINA 1972

An up-to-date report on the many changes that have been made in the new Arri since it was shown in prototype at Cologne

The sleek new Arriflex 16SR camera burst like a bombshell over *Photokina 1972* in Cologne last fall. Crowds flocking to the ARRI booth were fascinated by the ingenious design and obvious craftsmanship of the extraordinarily compact "camera for all seasons", and it quickly became the conversation piece of this granddaddy of all photographic trade fairs.

The hard-working staff of Arnold & Richter KG (Munich) repeatedly emphasized that the four 16SR's on display were *working prototypes*—nothing more. They maintained that these had been rushed to completion to meet the *Photokina* deadline and that many changes would be made before the camera would go into production a year hence, according to estimates at the time.

Exactly a year later, at the Equipment Exhibit of the 114th SMPTE Conference in New York, the final production model of the Arriflex 16SR was unveiled and it quickly became obvious that many, many changes had, indeed, been made in it since *Photokina*—not petty, superficial changes, but very radical, in-depth basic design changes calculated to make the 16SR "the ultimate in 16mm filming instruments."

On hand to explain these changes

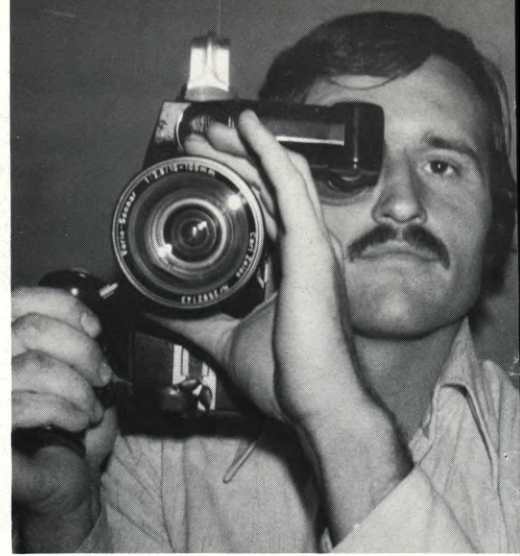
The new Arriflex 16SR 16mm reflex sound camera, is an extremely compact camera which, according to Arnold & Richter, was designed to include "all of the operational advantages a cameraman wants to see in a modern camera." It is a prime, "no-compromise" camera, for both hand-held and studio work and has been planned to cover the entire field of 16mm production.

was Arnold & Richter's Special Projects Manager, Horst Bergmann. When the SMPTE Exhibit closed, he and Volker Bahnemann, executive of the Arriflex Company of America, brought the 16SR to Hollywood for a special showing to the industry at the Sheraton-Universal Hotel.

Following *Photokina*, a comprehensive report on the 16SR had appeared in this journal (see *American Cinematographer*, December 1972), but it now became obvious that an up-dated report was in order, based on the extensive changes which had been made in the interim. With that in mind, we asked Horst Bergmann to give us a current rundown on the camera, and what follows is the gist of that interview:

QUESTION: I'm sure that our readers would be most interested in knowing about the most important design changes which have been made in the Arriflex 16SR since its auspicious prototype debut at *Photokina*. Would you be kind enough to bring us up to date on those changes?

BERGMANN: We have completely redesigned the movement of the camera and now have what we describe as being a "multi-joint mechanism." This type of movement is inherently very quiet. It is



Cinematographer Richard Robertson tries the 16SR on for size during recent industry showing of camera at Sheraton-Universal Hotel, Hollywood.

capable of running, without detrimental effects upon its low noise level properties, at speeds well above 50 frames per second. The movement is pin-registered, with low drag and a low power requirement.

In addition, the magazine has been substantially redesigned. The magazine which will be introduced with the camera has a 400-foot capacity. We have also refined the take-up and feed mechanism of the magazine and introduced more substantial hinges to the magazine doors. Incorporated in the magazine are two footage counters; one for core loads and one for daylight spools. The pressure plate system has been redesigned and improved, and the aperture plate block (which brings pressure against the film in the exposure plane) has been increased in size.

On the motor circuit, we refined the component layout for simplified testing and servicing. We have also incorporated an electronic buckle switch. This is an overload-sensing circuit that cuts off the power to the motor in the event of a magazine or camera jam. It works similarly to the power stage in a modern Hi-Fi amplifier. When the circuit is overloaded, the power supply is momentarily disconnected, but is reset automatically after a rest period of approximately one second. The camera can then be switched on again, provided that the source of the problem has been eliminated.

We have also incorporated a very sophisticated out-of-sync warning circuit which activates a blinking light in the viewfinder. When any out-of-sync condition occurs, as minor as 1/10th of a frame, the out-of-sync warning system is activated.

In addition, we have added a pilotone generator which derives its



frequency from the motor feedback and is switchable from 50 or 60 cycles at speeds of 24 or 25 frames per second.

The camera has forward-reverse capability, although the magazines are forward-running only, for the time being. Should there be a demand for reverse-running magazines, we have the capability to supply them.

The automatic slating system in the 16SR is the same as the system presently being used in our 16S, 16BL and other Arri cameras.

On the viewfinder, we have made some important changes, too. Firstly, the viewfinder eyepiece has been brought 14mm forward. This moves the camera further back on the shoulder and provides ease of handling. The viewfinder now also swings a few degrees below horizontal on each side of the camera to improve balance and handling.

The rest of the development work has been devoted to improving the service aspect of the camera. The camera electronics board is one module; the exposure meter is one module; the motor is one module; the automatic exposure control system is one module—all designed for ease of access and serviceability. All modules are linked by quick-disconnect plugs.

QUESTION: Were these changes arrived at on the basis of feedback which you received at Photokina or, if not, what did prompt you to make them?

BERGMANN: Feedback from Photokina, plus a limited field experience with the four prototypes we had at that time. Of course, even before Photokina we already had realized, when the prototypes were completed, that certain details in the camera had to be changed, but there was simply no time to do it for Photokina. By the way, the film transport movement, which is in the camera now, was just not ready for the last Photokina, so we had to equip our first few prototypes with our standard movement. The new movement was designed in order to obtain a movement with the lowest possible noise level without compromising film handling, and particularly to obtain a movement which will maintain that low noise level over the life of the camera with a very minimum service demand.

QUESTION: You've just made the statement that the camera will be introduced with a 400-foot magazine. Does that mean that the idea of a 200-foot magazine, as shown at Photokina, will be discarded, or will it be an optional piece of equipment?



Arnold & Richter KG Special Projects Manager Horst Bergmann (left), shown here with a couple of goggle-eyed spectators during the Sheraton-Universal showing, came from Munich especially to present the camera at the 114th SMPTE Conference Equipment Exhibit in New York, followed by the Hollywood presentation.

BERGMANN: In showing the camera to interested people within the industry, we have encountered very little demand for the 200-foot magazine. For this reason, we are going to introduce the camera with the 400-foot magazine, and it is most likely that the 200-foot magazine, which we showed at Photokina, will not go into production at all.

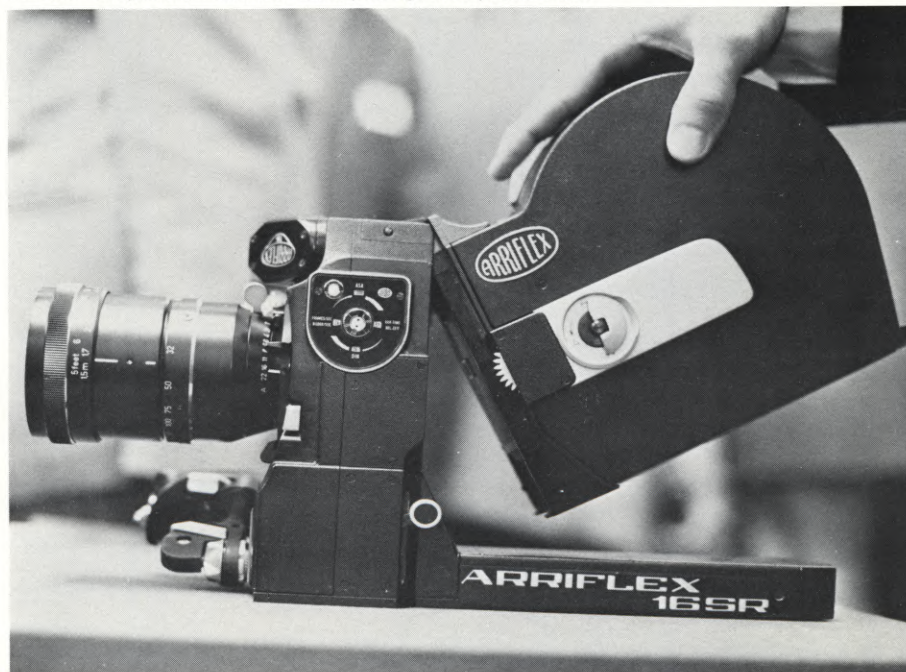
QUESTION: Obviously the 16SR, despite its very compact size and shape, is far from being simply a newsreel camera. What do you anticipate its scope to be?

BERGMANN: Our aim has always been to design a "no compromise camera" and the Arri 16SR, in "state of the art" compactness, features all of the opera-

tional advantages a cameraman wants to see in a modern camera. That is to say: a high-quality registration-pin movement, an uncompromising exposure control system, extended into an automatic exposure control for certain applications, a 400-foot magazine capability and convenient features like the automatically stopping shutter, internal release for iris control of the taking lens (very much like what you are used to in a single-lens reflex camera, where the iris is always wide open for viewing and focusing and, on the instant of exposure, the iris is closed down to shooting aperture. It opens instantly when the camera is stopped again). The Arri 16SR was designed to satisfy the needs of the cinematographer, be it in the area

Continued on Page 1587

The 16SR is a quick-change-magazine camera, to enable a cameraman to work fast for news or documentary filming. It was originally shown at Photokina with both 200-foot and 400-foot (shown here) magazines. However, since interim market survey indicated little demand for the 200-foot magazine, it will most likely not go into production.



In flying dollies and underwater rigs, Arriflex is the chosen camera.

Helicopter and underwater shooting have a lot in common. They're both *fluid*, and both are costly. And, more than usual, you're at the mercy of your equipment.

Close-up: Faces of two people looking at camera. Pull back slightly. They're looking out at you through window of moving train. Camera is tracking beside train. See part of compartment, one wheel turning.

Airborne Dolly

Pull back and round *in front* of train. It's on a trestle bridge, over water. Pull back again, and way up. Zoom out slowly. Trestle bridge is now a thin line surrounded by 1,700 square miles of blue water. Train is about 15 miles from shore, and barely visible below.

That's Barry Herron's establishing shot for the Great Salt Lake. Part of a series of ABC-TV Specials called "The American Idea," and produced by Alan Landsburg.

Sunken Treasure

For another documentary Special, called "Treasure," and sponsored by the National Geographic Society, Mr. Herron



J. Barry Herron using Arri 16S with 400 foot magazine inside Birns & Sawyer underwater housing.

shot divers searching for sunken Spanish Galleons off Key West. First, a three-hour, 60 mile boat ride to the search site. There, currents were so strong that he could shoot only at slack tide — about an hour.

Budget Strained

Helicopters cost up to \$200.00 an *hour*. It sometimes takes several hours to fly to the location. You frequently have to spend at least an hour teaching a new photo pilot how to maneu-

ver for the camera. Once you get there, you'd better get the shot.

"Did You Get It?"

"It's the same with underwater shooting," says Mr. Herron. "You call the producer, with the film in the can beside you, undeveloped. Almost always, the first thing he says is: 'Did you get it?' You say: 'Yes!' You hope you're right."

Depend On Arriflex

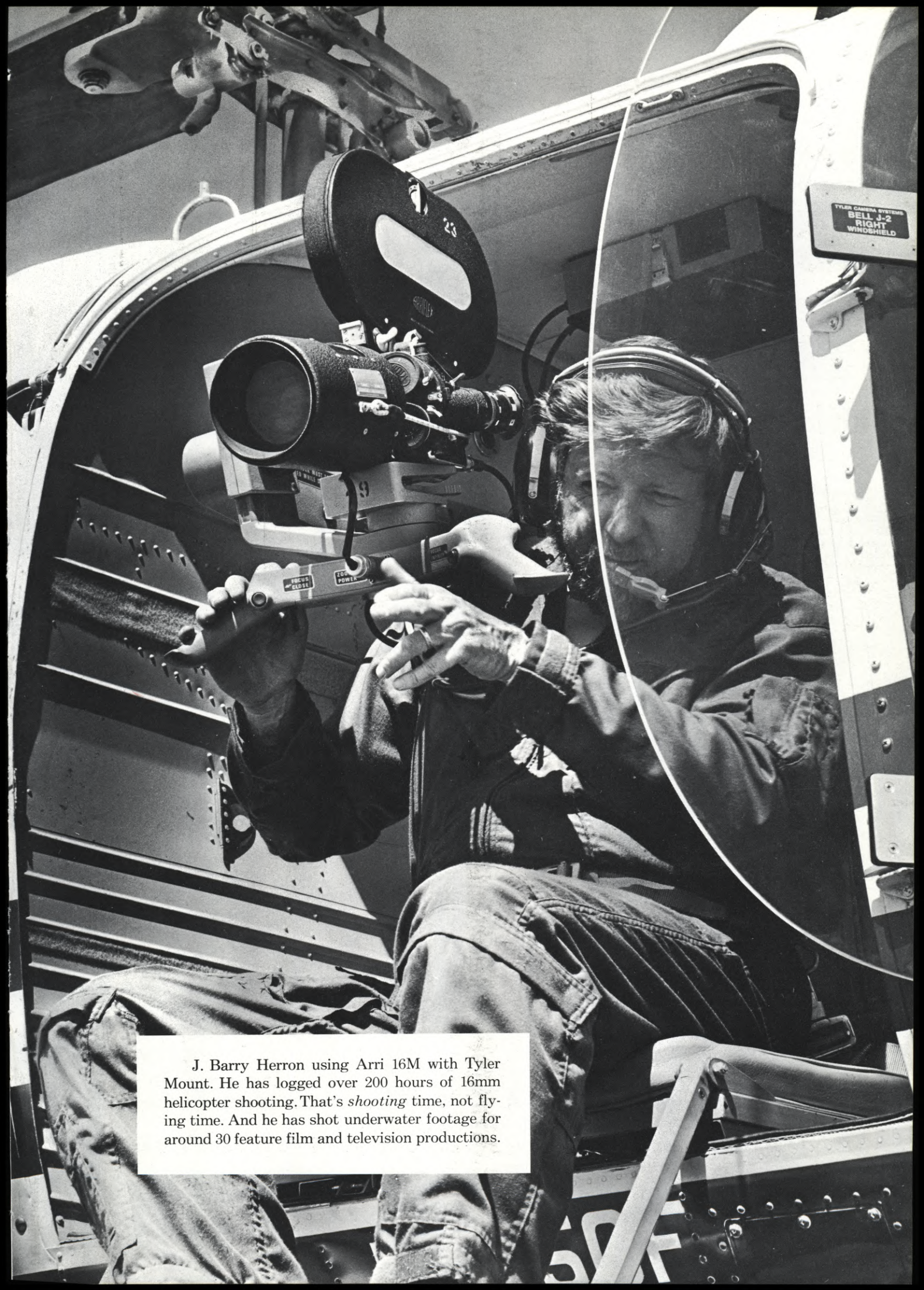
"On the ground," says Mr. Herron, "I've used several makes of camera. But up there and down there, I use *only* the Arri. Things can and do go wrong with helicopters, scuba gear, outboard motors — you name it. But in fifteen years, I've learned to depend on Arriflex."

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J. Barry Herron using Arri 16M with Tyler Mount. He has logged over 200 hours of 16mm helicopter shooting. That's *shooting* time, not flying time. And he has shot underwater footage for around 30 feature film and television productions.

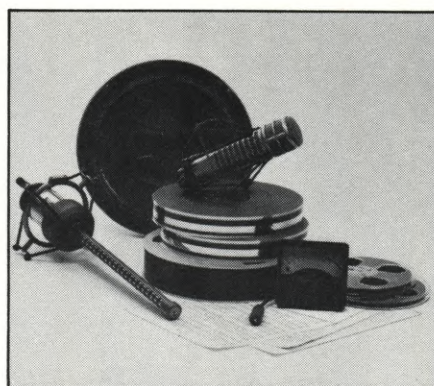
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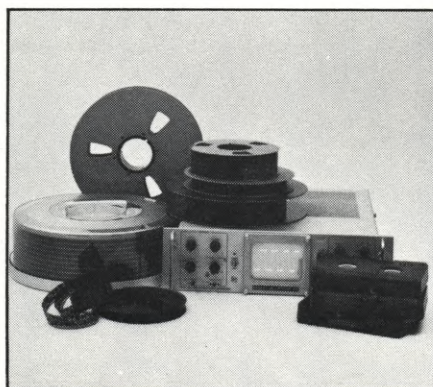
film processing



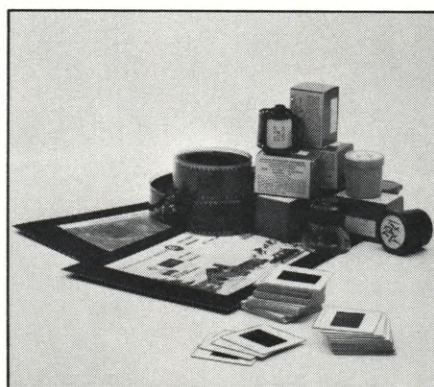
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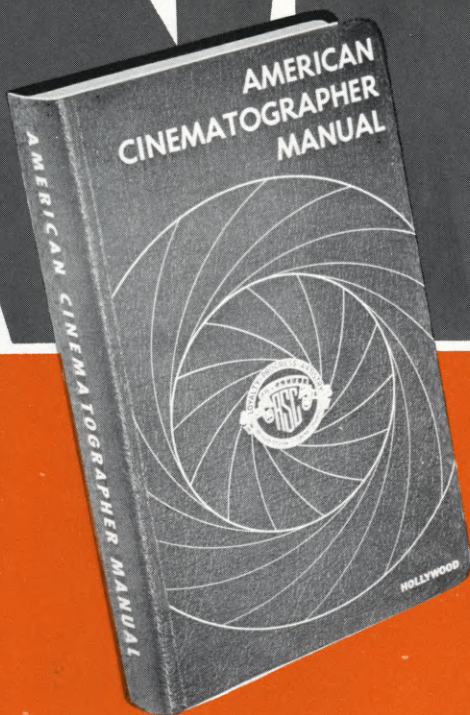
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SMPTE EQUIPMENT EXHIBIT

THE CAMERAMANS REMOTE START/SLATE RS/S-2

An ingenious transmitter-receiver combination, which, by means of a radio link, furnishes a start and stop command for the sound recorder, as well as a startmark signal, originating at the camera

Among the many production accessories presented at the 114th SMPTE Equipment Exhibit, one of the most interesting was the Cameraman's Remote Start/Slate RS/S-2, manufactured by Stuart R. Cody Co., Inc., of Boston. Displayed at SMPTE, it was set up to link an Eclair ACL with the miniature Nagra SN recorder, but can be used with a variety of camera and recorder equipment.

GENERAL DESCRIPTION

The Cameraman's Remote Start/Slate RS/S-2 is a radio control device, consisting of a miniature transmitter, which is fastened to any of several popular models of professional motion picture cameras. The transmitter automatically sends commands to a receiver connected to various models of professional synchronous sound recorders, intended for motion picture location sound recording.

This radio link furnishes a start and stop command for the sound recorder, as well as a startmark signal, originating at the camera, which is recorded on tape to signal the beginning of a shot, or "take".

The system is compactly designed to insure the lowest possible profile and to complement the latest documentary equipment. Both the transmitter and the receiver are completely solid state,

A configuration in which the Cameraman's Remote Start/Slate RS/S-2 is used to radio link an Eclair ACL camera to a Nagra SN recorder. In the photograph below, the receiver has been secured to the left end of the recorder with gaffer tape, while the transmitter (with antenna) is shown attached to the left side of the ACL camera body.

featuring state-of-the-art developments in miniaturization techniques.

The Remote Start/Slate has a usable range greater than 75 yards, transmitting in the VHF band between television channels 4 and 5, in compliance with FCC Regulations governing Class C Citizens Radio Services. Seven channels are available, and two-channel operation is forthcoming. Purchasers may exchange for alternate frequencies up to 90 days after sale. System pricing is below \$1000.00 and varies with different cameras and recorders.

GENERAL TRANSMITTER OPERATION

The transmitter is attached to the camera at a convenient point, and powered by the camera battery, requiring 12 volts DC—negative ground. (A 16-volt adaptor is available.) A single control, the "wild sound" switch, permits the sound recorder to start without the camera running and continue sound recording after the camera is stopped. An extra switch space is provided for future innovation or two channel select for transmitter frequency.

SPECIFIC INSTRUCTIONS—ARRIFLEX 16 BL CAMERA

Attachment to Camera

At least four types of crystal-stabil-

ized motor-drive units are currently available for the Arri 16BL. Some are mounted externally on the camera. The electronic requirements and mounting fixtures for the Remote Start/Slate transmitter are fully compatible with all motor drive units known presently.

SPECIFIC INSTRUCTIONS—ECLAIR ACL CAMERA

Attachment to Camera

The Remote Slate/Start transmitter is attached by removing the two chrome-plated screws located at the right hand side of the ACL (these are dummy screws and should be retained for later use). The transmitter is then fitted to the camera body, aligning the two thumbscrews to the threaded holes now available. Both screws are tightened, using *finger pressure only*, and the male Jaeger plug, found on the end of the short connecting cable, is inserted into the ACL power socket on the camera body. The ACL battery cable plug is then connected to the receptacle found on the transmitter housing.

GENERAL RECEIVER OPERATION

The miniature receiver can be suitably fastened to the recorder's shoulder strap and plugged directly into the recorder's remote control and sync sockets.

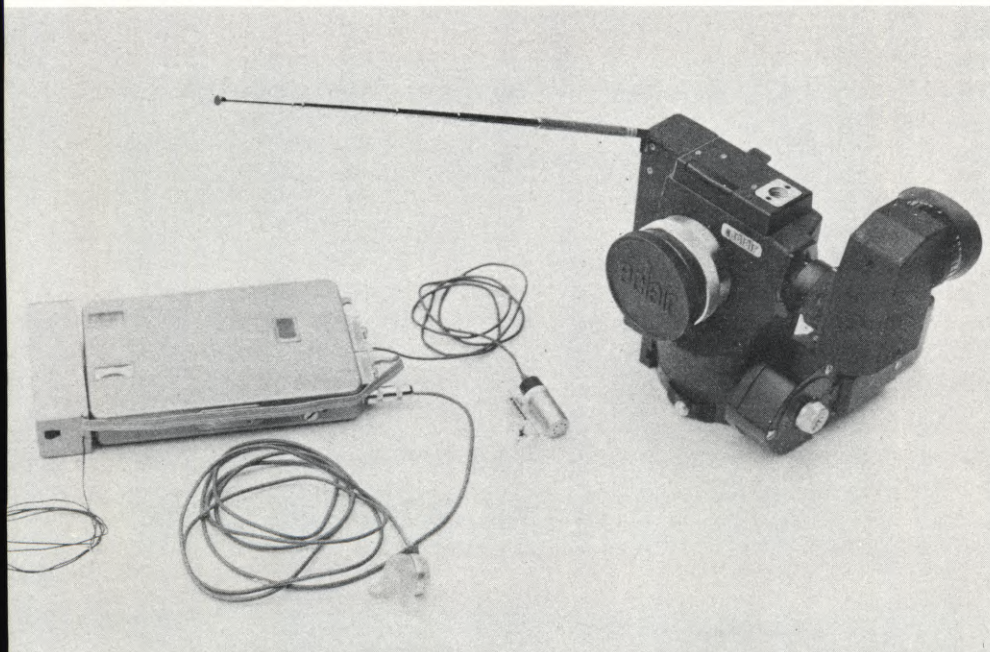
SPECIFIC INSTRUCTIONS—NAGRA SN RECEIVER (RCV-SN)

The SN receiver was designed to be as compact as possible. It measures 1-1/8" square by 4" long. A flat multi-conductor cable with a Nagra SFA accessory plug facilitates direct connection to the SN. A miniature slide switch allows MANUAL operation without receiving radio signals.

It is suggested that a 4" length of gaffer tape be used to secure the receiver to the recorder by placing it across the joint where they meet underneath the equipment. A large rubber band may also be used to hold the recorder and receiver together.

SPECIFIC INSTRUCTIONS—NAGRA IV RECEIVER (RCV-B)

The Remote Start/Slate Receiver is powered by the Nagra IV. Hookup is simple, with two plugs connecting the receiver at the recorder's mixer and sync sockets.



System Range

Maximum range varies, subject to the following conditions: receiver battery voltage, antenna length, environmental limitations (large metal objects nearby), and actual circuit performance. Units leaving the factory are tested for 75 yards minimum range in urban terrain.

Range limitations are first indicated by a loss of startmark or "bloop". The start/stop function has a greater range than the slating function.

SYSTEM EXPANSIONS

The Cameraman's Remote Start/Slate system is readily adaptable to multiple camera operation with one or more recorders. Requirements for a practical working design demanded consideration of several factors:

Camera Identification and Startmark Transmission

Each camera must have its own transmitter which must be on its own channel, in order to distinguish one camera from another and to prevent self-interference between transmitters. Presently, seven channels are stocked with others available on special order.

Receiving Equipment

Each camera requires its own receiver; these receivers may be combined to control one or more sound recorders. A combining device is needed: a) to distribute DC power from the recorder, b) to identify one camera from another, c) to provide logic functions to start the recorder, when any camera starts, and maintain operation until all cameras stop, and d) slating capabilities must also be provided. The combining device has a straightforward electronic design, expandable to suit the channel requirements of the user. It adapts a number of standard receiver units to control a single sound recorder. As there are many packaging variations, depending on the make and model of the recorder used, the combining device is available only on special order. It is easily retrofitted to existing Remote Start/Slate systems.

Silent Slating

A method of inaudible startmarking is required with two or more cameras operating a common sound recorder. The simplest method would be to use an additional track on a multitrack recorder, such as the stereo Synchronone Stellavox. This recorder has two full audio channels available for microphones at different points of view, (depending on each camera position) and a wide band sync track capable of recording sync pulse from internal crys-

tal as well as slating information.

Silent slating is optional also on single channel Start/Slate receivers. The silent-slate adaptor is small and easy to use, consisting of an electronic switch which utilizes the +8 volt "bloop" signal to turn the crystal sync pulse on and off.

The Cameraman's Remote Start/Slate System was displayed at SMPTE by THE CAMERA MART INC., 456 West 55th Street, New York, N.Y. 10019. The equipment and further information pertaining to it are available from that company. ■

GENERAL FEATURES CAMERAMAN'S REMOTE START/SLATE RS/S-2 SYSTEM

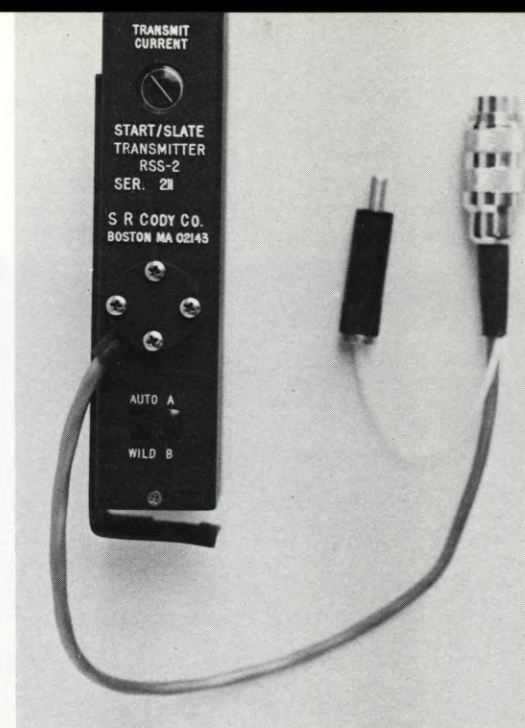
TRANSMITTER

- * Automatic control of tape motion and startmark via camera.
- * No modifications necessary to most cameras.
- * Flat black finish, 1-1/4" square by 5-3/8" long.
- * Weighs under 8 ounces complete.
- * Built-in meter measures transmit current.
- * AUTO/WILD switch runs tape without film rolling.
- * Antenna telescopes from 4.5 to 16".
- * Mounting accessories available for many popular cameras, others on special order.
- * Powered by camera battery.

STANDARD RECEIVER

- * Unbreakable lightweight plastic housing.
- * Starts recorder motion as camera starts.
- * Triggers internal startmark "bloop" or clapper.
- * Several models available to fit many sync recorders with no modification.
- * Powered from recorder's supply.
- * Flexible antenna, easily concealed.
- * 1-1/4" square by 4.5 inches long. Weighs approximately 5 oz.
- * Override switch for additional recording or threading.

The Cameraman's Remote Start/Slate RS/S-2 is readily adaptable to multiple camera operation with one or more recorders. Each camera requires its own transmitter and its own receiver. Shown here is a configuration for receiving sound from three cameras to be recorded on a single recorder. The three receivers are at right. Combining device is at the top.



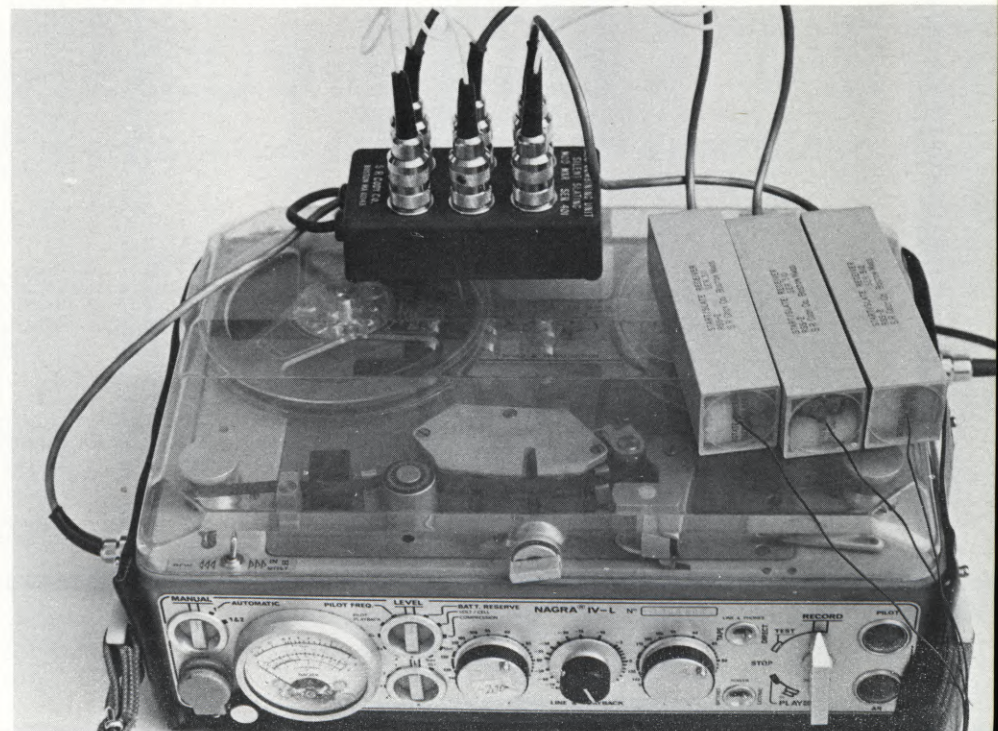
The miniature Cameraman's Remote Start/Slate RS/S-2 transmitter is powered by the camera battery, requiring 12 volts DC—negative ground.

NAGRA SN RECEIVER ALSO FEATURES:

- * Very compact 1-1/8" square by 3-7/8" long. Fits into all SN leather cases.
- * Built-in 30 Hz crystal.
- * Crystal controlled, fixed frequency reception.

ADDITIONALLY:

- * Seven channels available.
- * System adaptable for multiple camera operation.
- * An extra receiver can be used to control set lighting or clocks.
- * 75 yard range under normal urban conditions.
- * Silent slating accessory provides noiseless slates.
- * Accessories available for control of camera using basic transmitter and receiver. ■



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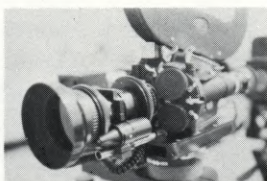
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R.F. carrier frequencies are in the VHF high band range and crystal controlled to avoid drift. Extra features include low cost, easily available batteries, dual input transmitter and multiple channel operation. FERCO's list price for the basic 55/57 system including transmitter, receiver, connecting cable to Nagra, and aerials is \$1,100.00 **New York:** 419 W. 54 St., N.Y. 10019 (212) 581-5474 **San Francisco:** 363 Brannan St., Ca. 94111 (415) 398-2307 **Santa Fe:** 1626 Canyon Rd. (P.O. Box 493) N.M. 87501 (515) 983-4127.

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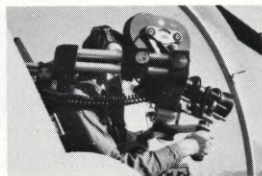
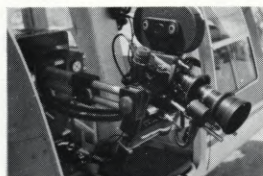


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CINEMA PRODUCTS' XR 35 STUDIO CAMERA

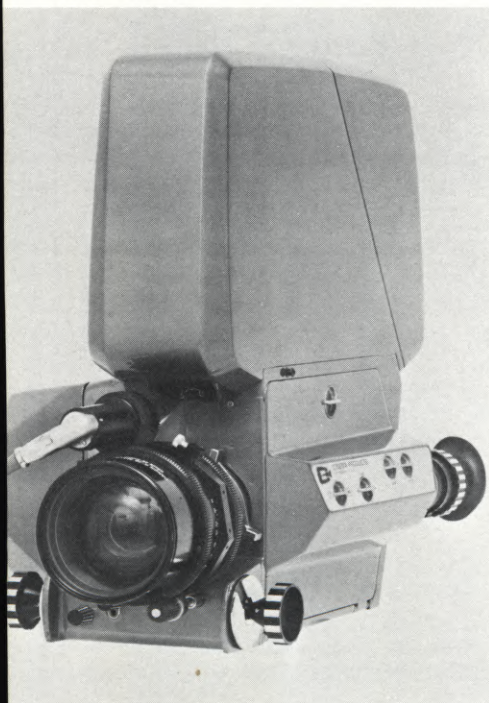
Utilizing a classic movement, this new studio camera is lighter in weight and more compact than others in its category making it a valuable camera for use on location, as well

"Sneak-previewed" in prototype form at *Photokina 1972* in Cologne, the new Cinema Products XR35 Studio Camera, now in production, was officially presented to the industry as part of the Equipment Exhibit of the 114th SMPTE Conference.

This handsome camera, in its "unitized" shell—the magazine blimp is permanently attached to the camera body blimp—was designed to serve both as a studio and location camera—a lightweight, compact alternative to the Mitchell BNCR and the Panavision R-200. Though it has a futuristic look about it and includes many new and unique features, its film transport system is designed around the dependable standard Mitchell pin-registering compensating link movement, with exclusive Cinema Products-designed two-axis stroke adjustment.

The production model of the XR35 is so new that it has scarcely had a chance to establish a lengthy track record to date. It has, however, been used, with apparent great success, in photographing the recently-completed American International production, "SUGAR HILL".

Shown here with Canon K-35 25-120mm Macro Zoom lens mounted, the handsome new XR25 incorporates many advanced technical features.



In an attempt to find out how the XR35 performed in its first field test under actual production conditions, the Cinematographer and First Assistant Cameraman who worked on "SUGAR HILL" were asked to give their frank comments on the new camera.

Commenting on the XR35, Director of Photography Robert Jessup said: "I found that it gave us excellent picture quality. It was very fast to work with and I think the general layout of the camera is excellent. All of the operating controls are on the rear of the camera and are very easy for the Assistant or the Operator to handle with no difficulty at all. The pitch adjustment which Ed DiGiulio has put into the XR35 seems to be very effective in giving us a quieter-running camera. Of course, it has the crystal motor, which functioned perfectly, and there is a battery meter on the rear of the camera which made it convenient for us to check the condition of the batteries as we went along.

"The camera is all in one piece. There is nothing to assemble. You simply set it on the head, put the lens in, plug it in and roll. It's in a single case with its few accessories: the matte box, rods and power cable, and it's a very fast camera to set up. Being lighter in weight than other studio cameras, it's easy for the Assistant to handle. It doesn't take two people to lift it on and off the head. The displacement-type magazines, being smaller and lighter in weight, take up less space and they load into the camera a lot easier than the standard Mitchell magazines. They've designed a wide throat into the camera, so that it takes the loop of the magazine a lot easier and faster, and it has a quick-release latch, so that there is no latch to screw down. The magazine slides right in, pops down, and it's locked. There is a very convenient little hook on the inside of the blimp cover that you can hook the belt onto when you are putting the magazine in or taking it out. This prevents you from losing the belt down inside—something which happens with the BNC.

"The XR35 is a handy camera. Comparing it with other production cameras, I'd say that it's not an Arriflex 35BL and it's not a Panaflex. It's a faster BNC or PSR type of camera—smaller and lighter in weight. I was very happy with

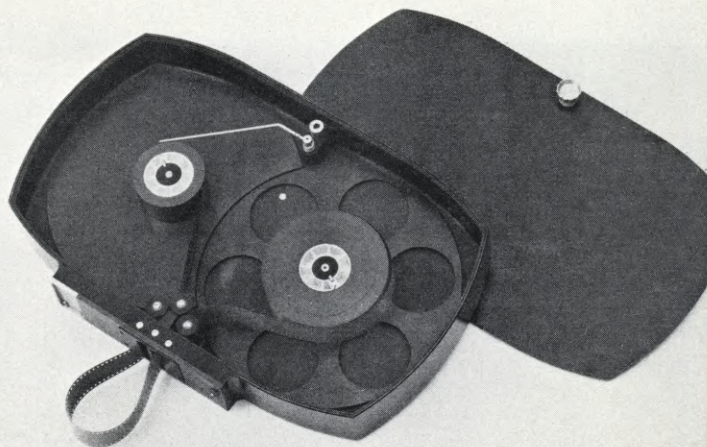
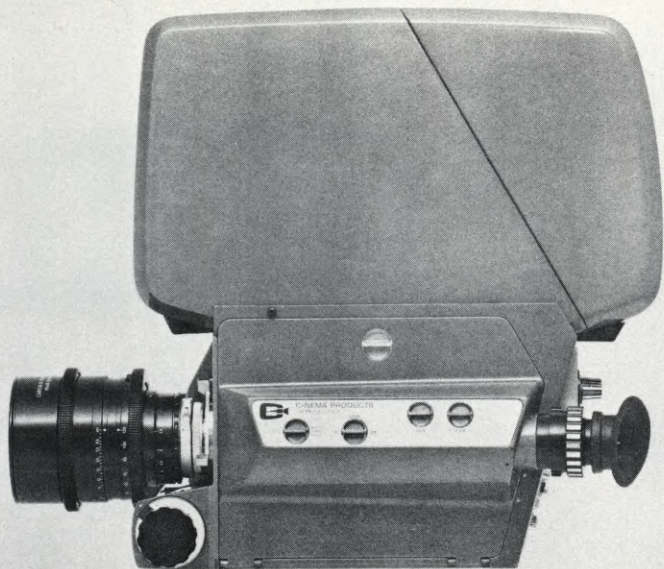
it and I would be happy to use it on another picture."

On the basis of considerable physical contact with the XR35 during the filming of "SUGAR HILL", First Assistant Cameraman Edward A. Nielson had this to say about the new camera: "Basically, the XR35 has the BNC movement, which is what just about every Assistant Cameraman in the country is used to working with. I was a little hesitant about it at first, as you always are with any new camera—but one of the things which sold me on it was the loading. It has what might be called a 'speed mount load' which enables you to take the magazine, slide it in and it locks right into position. From that point on the threading is exactly the same as it would be for an NC or BNC. I found that the XR35 enables you to save five or ten seconds, timewise, in loading. This can be very important during those times when the talent and everyone else gets a little edgy during the reload.

"As I've said, every Assistant is a bit hesitant with a new camera and it's slow starting off, but once I got to know the XR35 a little bit I became very confident in working with it. When you're using a BNC on location, you find that it becomes very heavy. It takes two men to move it around. With this new camera, one person can grab it, put it on the head, take it off and move it around. It's so much quicker than having to use two men or wait for the second man to come and help you move it.

"The XR35 is a very quiet camera—comparable, in that respect, to a BNCR or PSR. The only time we had to barney it was when we were shooting with the zoom lens close to the talent, and it wasn't a true barney—just something like a towel laid over the zoom lens barrel. Even so, it was a lot quieter, in that close, than any other camera I've worked with. I found shooting with a zoom lens to be quieter, too. You don't have to bother with a lens blimp, as you do with the BNCR. You can see all your markings easily, and it's just as quiet as the lens-blimped camera. The sound people on 'SUGAR HILL' felt that way about it, too.

"The XR35 has very clear optics in the viewing system. It's not like working with a pellicle mirror, where you lose



(LEFT) The XR35 numbers among its unique features "unitized" construction, which means that the magazine blimp is permanently attached to the camera body. The camera is stored—ready to shoot (except for lens)—in one compact carrying case. Its reflex rotating mirror stops automatically in viewing position. Its pitch-adjustment facility helps make it an especially quiet camera, with no lens shroud required. (RIGHT) Displacement type 1000-foot, lightweight magazine, especially designed for this camera, aids in making it compact.

your contrast and about a third of a stop, also. It's a very crisp viewing system. The inching knob is located on the inside of the camera, and you have to grow accustomed to that. It's a little strange at first working with something you don't know about, but as you grow into it, you learn to like it. I found the XR35 to be a very enjoyable camera and one that is very easy to work with."

In commenting on the use of the XR35 in shooting "SUGAR HILL", Jim Martin of Alan Gordon Enterprises Inc. had this to say: "I thought that the XR35 could offer a production cost saving when I suggested it to the people at American International Pictures. The premise was that this camera, being lighter, smaller and more compact overall than the normal studio camera, would serve as a multi-purpose camera for what they wanted to do, rather than their having to take along a BNCR or PSR, with a Mark II for back-up. As it turned out, this is just what happened and it saved them the cost of carrying an additional camera on the show. They still had their 1000-foot capacity and the full range of lenses they wanted. It will, of course, accept all BNCR-mounted lenses—including any of the new fast lenses—and it's uninhibited by shrouds or anything like that. So, I thought it would serve that purpose for them, and I think it did reflect a great saving in production costs."

FEATURES OF THE CINEMA PRODUCTS XR35 STUDIO CAMERA

- Most compact and lightweight studio camera available.
- Unitized construction—magazine blimp is

permanently attached to camera body blimp. The XR35 is stored—ready to shoot (except for lens)—in one compact carrying case.

- Rotating mirror reflex—with mirror stopping automatically in viewing position. Pellicle reflex available as an option.
- Normal and anamorphic viewing with Hi-Lo magnification, using large BFC-type helically adjustable eyepiece.
- Silent operation (no lens shroud required).
- Crystal controlled motor, with sync and continuously variable speed capability from 4-32 fps.
- Out-of-sync warning tone (adjustable volume) on rear control panel—plus out-of-sync warning light for sensitive filming situations.
- Built-in filter wheel located forward of shutter, with spaces for six selectable standard gelatin filters.
- New lightweight "QUAD" displacement-type magnesium 1000-ft. magazine, with quick-open cover and snap-latch hold-down for fast loading.
- "Clam shell" opening at rear of low profile magazine blimp housing provides easy access for magazine loading, yet requires no side or headroom clearance.
- Exclusive two-axis vari-pitch stroke adjustment.
- Internal threading knob on movement shaft.
- Quick acting snap-latch on motor blimp housing provides fast access to motor and filter wheel.
- Recessed carrying handles at front and rear of camera, with work light located in front handle.
- Illuminated footage counter and bubble level, plus internal blimp work light.
- Camera blimp housing constructed of magnesium, and finished in durable "steel gray" epoxy enamel.

TECHNICAL SPECIFICATIONS:

Dimensions: Overall length: 21". Overall width: 14". Overall height: 22".

Weight: 93 lbs. complete (including motor and magazine, except for lens and film).

Sound Level: 27 ± 1 dB, measured 3 ft. from film plane on weighted "A" scale.

Speeds: 24 fps—with crystal controlled accuracy of ±15 ppm over a temperature range of 0-140°F. Continuously variable speed from 4-32 fps.

Power: Camera will run from any DC source ranging from 28-36 volts, current varying inversely with voltage. Nominal drain from standard Cinema Products 30V battery (Model LA-2): 7 amps. There is a 15 amp resettable circuit breaker on the control panel. Power cable is a simple two lead cable, with no

switch box in line (power and on/off switches are located on control panel). Power cable terminates at battery end in standard 8-pin Cannon connector.

Film Capacity: 1000 ft.—in a special "QUAD" (quick acting displacement) magazine.

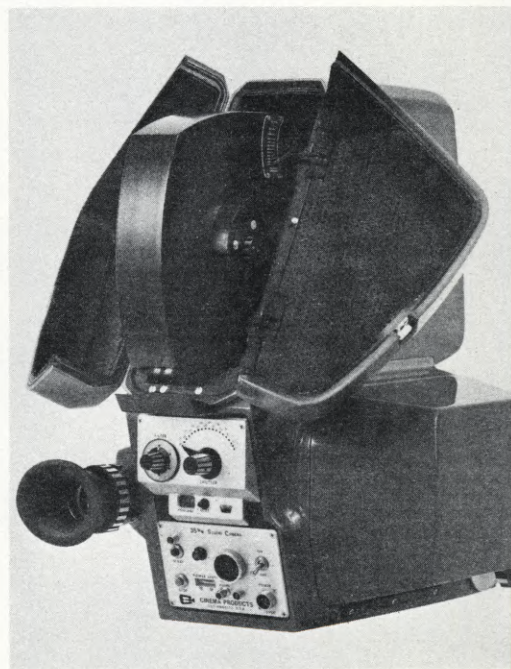
Shutter: Continuously variable from 5-180°.

Filters: Six position filter wheel, accepting standard gelatin filters. Filter wheel position is forward of shutter.

Film Transport: Standard Mitchell pin-registering compensating link movement, with exclusive Cinema Products-designed two-axis stroke adjustment. Dual eccentrics provide for independent adjustment of length of stroke and position of claw-entry relative to register pins.

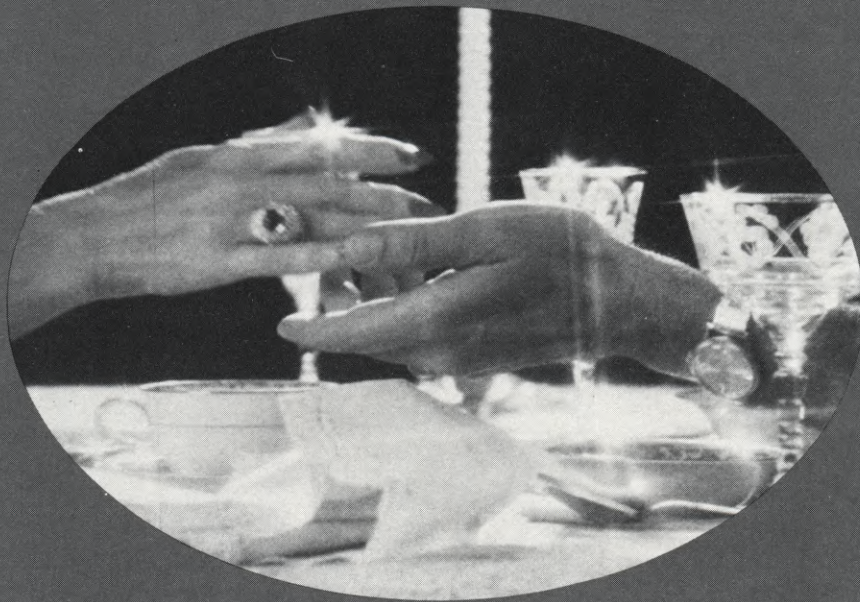
Lens Mount: The XR35 camera accepts all BNCR-type mounted lenses.

"Clam shell" magazine chamber doors provide easy access for magazine loading, yet require no side or headroom clearance in tight places.



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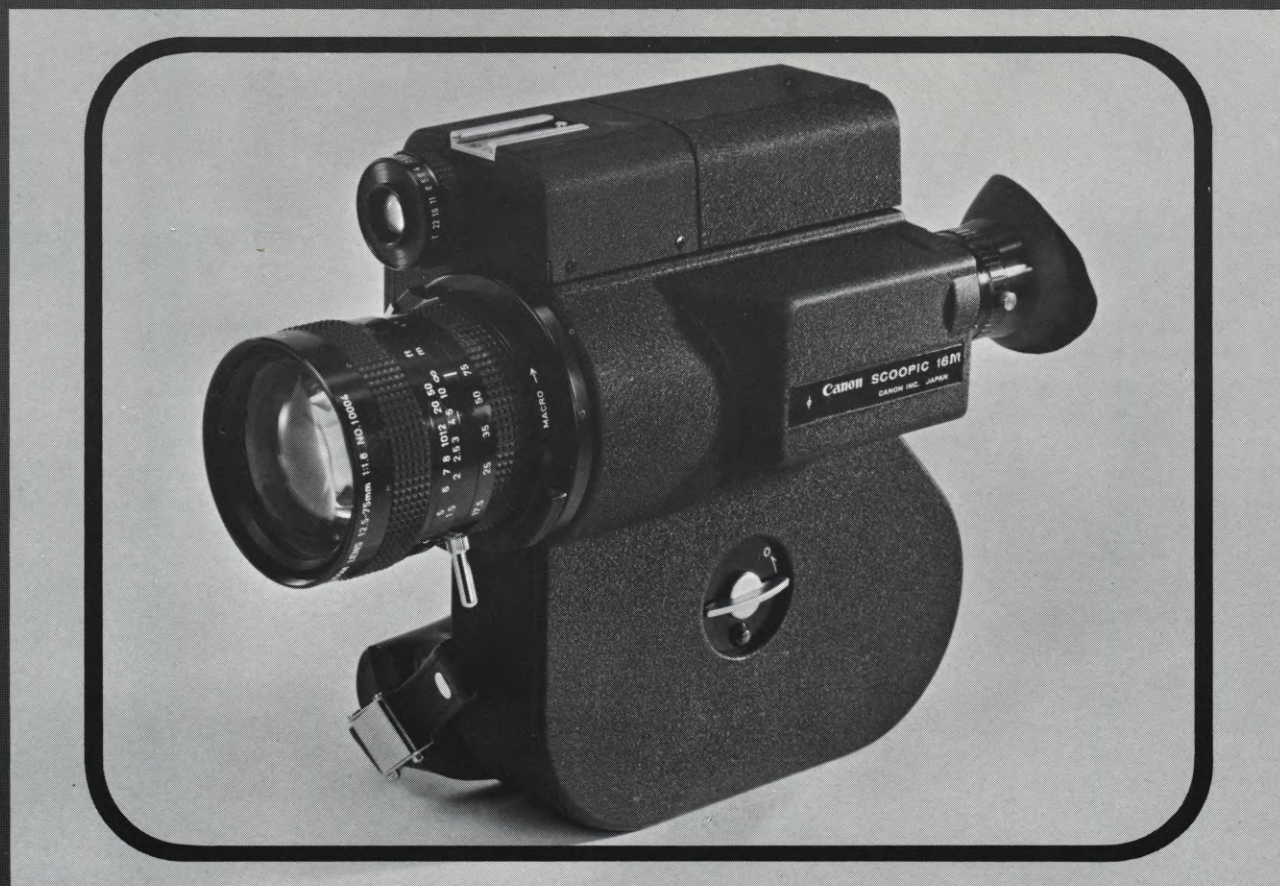


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Good news for news.



T2.5 4 5.6 8 11 16 22 32

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

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

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

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

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

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

A servo-controlled automatic exposure system

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

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

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

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

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

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SMPTE EQUIPMENT EXHIBIT

THE NEW WILCAM W-2+4 16mm SOUND CAMERA

Evolving from the design of a professional Super-8 camera, a new 16mm camera, with many advanced features, makes its debut

About 12 months ago Wilcam Photo Research, Inc. demonstrated a prototype Super-8 camera at several trade shows in the United States and Europe. It was also the subject of an article in the December 1972 issue of *American Cinematographer*. This camera was received with great enthusiasm for its technical features, but acceptance of the Super-8 format for professional use is still very slow. For this reason, and also due to the uncertainty of film packaging, it was decided not to produce this Super-8 camera until some time in the future. An almost universal reaction to this Super-8 camera was: "If you only had this in a 16mm format." Well, now it is available.

Making its debut in the Equipment Exhibit of the recent 114th SMPTE Conference in New York, the new Wilcam W-2+4 is a light-weight, all-magnesium, 16mm single/double-system sound camera with mirror-reflex shutter.

The Wilcam W-2+4 is a light-weight, all-magnesium, 16mm single/double-system sound camera with mirror-reflex shutter. The added complexity in manufacture of this type of camera is more than offset by the many advantages, a few of which are: lenses can be used without the addition of a delicate beam-splitter viewfinder; the viewfinder image is many times brighter and, of course, all the light reaches the film. Having the finder as an integral part of the camera body, it is possible to include these additional features inside the viewfinder: below the image the W-2+4 camera has a built-in match-pointer light meter which, at full zoom of 120mm, is equivalent to a 1-degree spot meter. A

slide switch on the front of the camera converts this to an audio VU meter, so that a single operator can check the sound level without taking his eye off the subject matter he is filming. Above the image is an analog footage counter reading from 400 feet to zero.

A 4-position filter slide is fitted just in front of the mirror shutter, giving finger tip control of a clear filter, plus three other positions; 85B, 85BN3 and CC20R filters are normally supplied. However, the filter slide is instantly removable and any combination of filters may be fitted; the individual gelatin filter is 7/8 in. diameter. The lens mount is a quick-release bayonet type and an adapter can be supplied for using Arriflex lenses. The choice of lens mount is always difficult for the camera designer; the use of a standard mount is greatly to be desired, if at all possible. However, the only standard mount available for 16mm cameras is the C mount, and this was introduced in the late 1920's for the small lenses then in use. All the current manufacturers of zoom lenses are opposed to a C mount, as it is quite unsuitable for present-day lenses. Even if the mechanics of a C mount were acceptable, optical limitations make it impossible to use a rotating mirror shutter and TTL light meter that will give accurate readings below F/3.5 with a lens mount .690 in. from

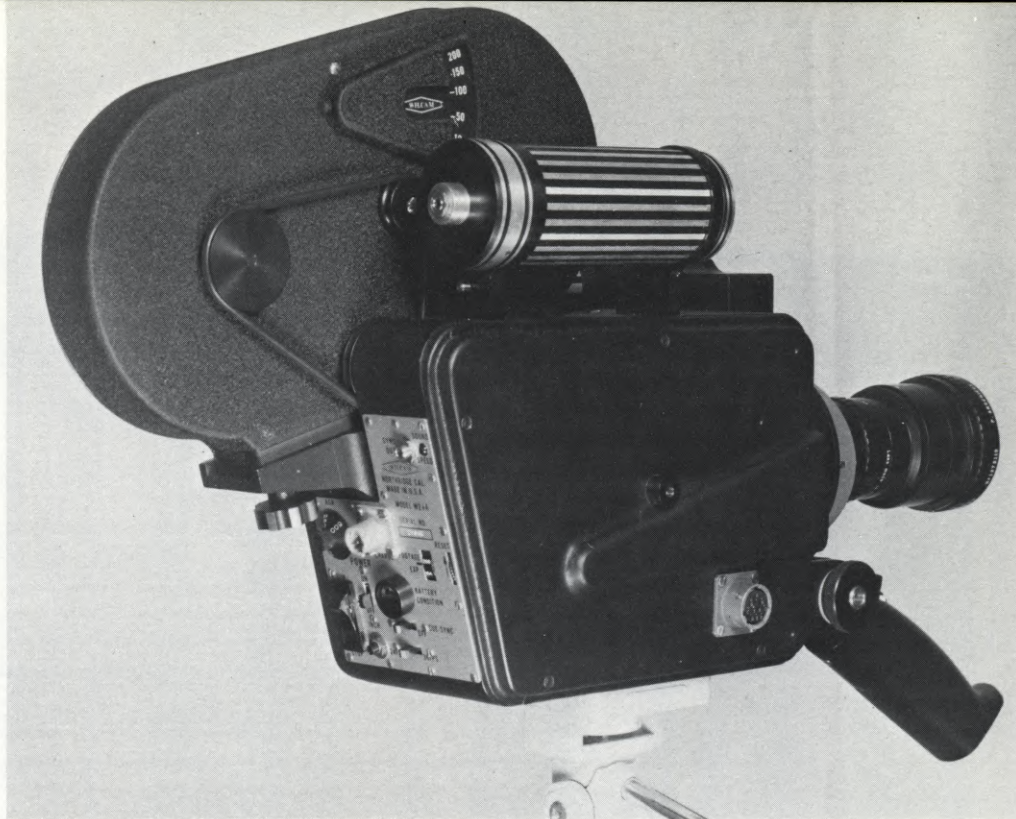
BASIC FEATURES OF THE NEW WILCAM W-2+4 16mm SOUND CAMERA

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



the film plane.

The W-2+4 16mm camera is driven by a 12-volt DC motor, which is speed-controlled by a crystal oscillator through a phase lock circuit. Due to its unique design it will maintain its speed lock from no-load condition to many times required load. The 24/25 FPS is accurate to 1 frame in 1200' at temperatures of -20 to +120°F. 36 FPS is also available for sporting events, etc. The drive motor is capable of very high torque (6in. ozs.) giving ultra-rapid acceleration. There is also an electromagnetic brake which will stop the camera when running at 24 FPS on the very next frame, always with the mirror shutter closed. With this combination it is possible to go from one take to the next without cutting, and have quite acceptable footage. The batteries are the latest type fast-charge nicad cells (re-charging time 1 hour) housed in the



For two-man operation, with an extra sound man, it is only necessary to remove the entire amplifier. This leaves the camera side, with connector for external amplifier, readily accessible. The film transport is the well-known Auricon movement and will accept all Auricon-type magnetic head units.

able bias for optimum recording. A separate volume control is provided for the monitor headphone as well as voice-music switches for each microphone input. For two-man operation with an extra sound man it is only necessary to remove the entire amplifier; this leaves the camera side with connector for external amplifier readily accessible.

Standard Mitchell-type magazines are used and Wilcam Photo Research, Inc. also makes a 200-foot magazine weighing only 18 ozs. The film transport is the well-known Auricon movement and will accept all Auricon type magnetic head units. The W-2+4 16mm

sound-on-film camera can be supplied with its own integral amplifier, as described above, with single-channel external amplifier or with three-channel external amplifier. In all cases these amplifiers are supplied complete with the Wilcam magnetic head unit.

The camera is already tooled for production, as represented during its first general showing at the October SMPTE seminar in New York.

For further information on the Wilcam W-2+4 16mm Sound Camera, contact: Wilcam Photo Research Incorporated, 8619 Yolanda Avenue, Northridge, California 91324. ■

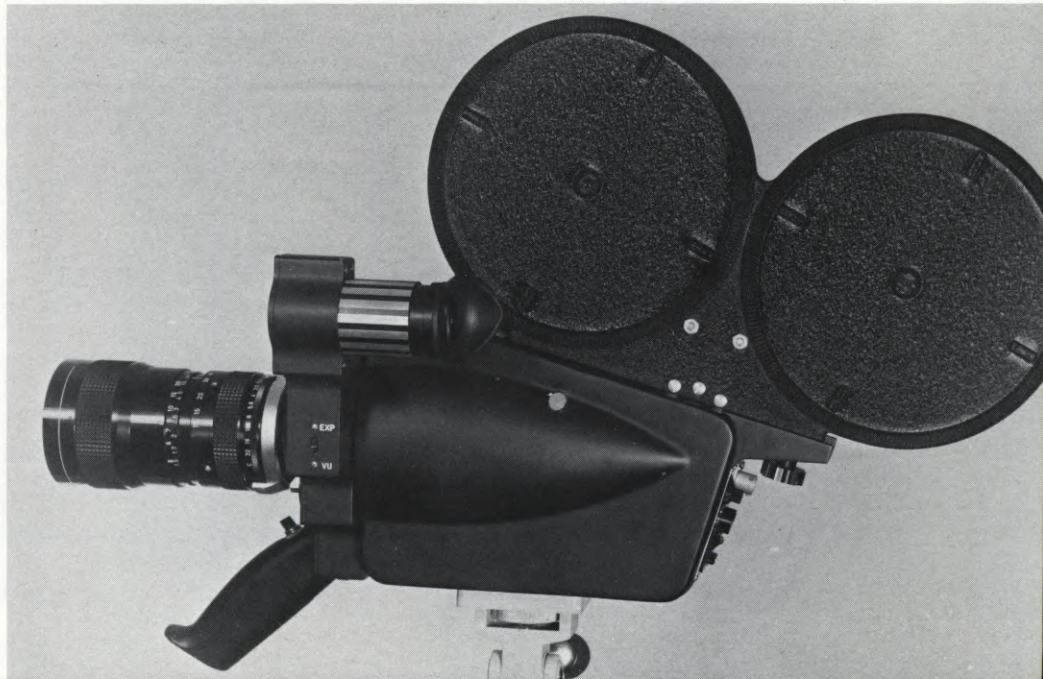
The lens mount of the Wilcam W-2+4 camera is a quick-release bayonet type and an adaptor can be supplied for using Arriflex lenses. Standard Mitchell-type magazines are used and Wilcam Photo Research, Inc. also makes a 200-foot magazine weighing only 18 ozs.



The amplifier (right), with two microphone inputs, is contained in a high-impact plastic molding, that exactly conforms to the camera's side.

camera top handle. The pack is 1½" diameter x 4¼" long and will run 1600 feet of film per charge.

The amplifier, with two microphone inputs, is contained in a high-impact plastic molding, MU metal-lined, that exactly conforms to the camera side; the connector locates itself as the amplifier is placed on the camera body and a single knurled screw holds it in place. The amplifier contains all IC circuitry, has separate AGC for each channel with manual override and manually adjust-





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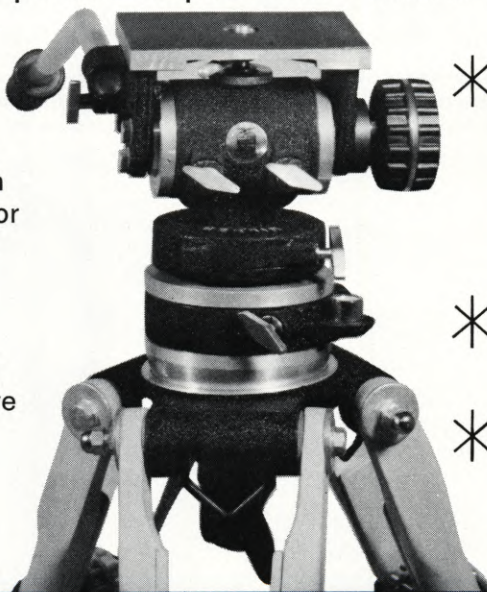
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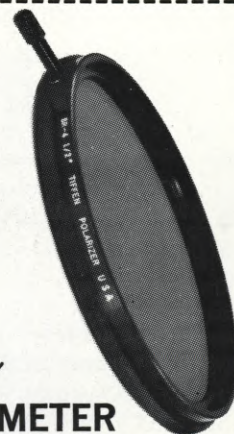


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Natural fog conditions can be simulated by the use of Tiffen Fog Filters #1, #2, #3, #4 and #5. Variations can be created by using combinations of these filters. Density of the fog effect can also be controlled by changes in exposure and development. Supplied in series sizes, direct screw-in sizes, 4 1/2" diameter and squares.

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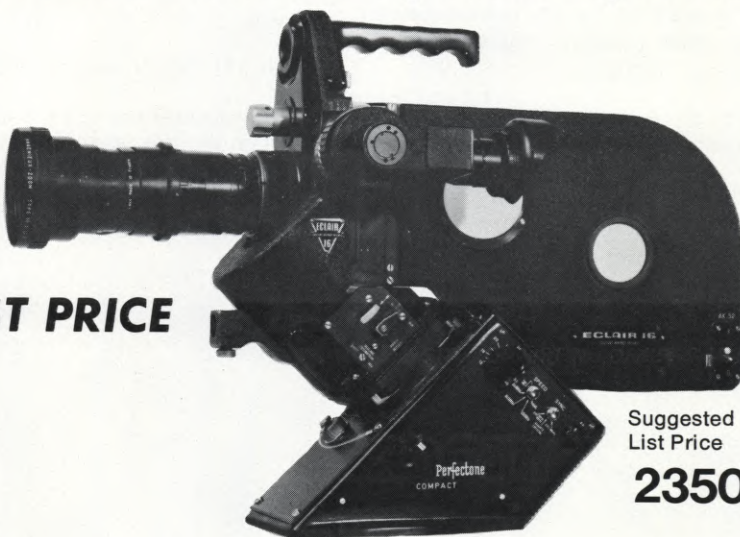
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JONATHAN LIVINGSTON SEAGULL

Continued from Page 1529

turned upside-down in flight. Also, I shot some closeups of the dives by hand-holding the camera "cockeyed" and walking or zooming in, so that the gull appeared to be diving at a sharp angle.

QUESTION: In reference to that close-up you mentioned of the bird appearing to turn upside-down in flight: such a shot would usually have been made with a rather long lens, and we all know that it is almost impossible to hand-hold long telephoto lenses without some jerkiness creeping in. Wouldn't it have been smoother to use some sort of simple mechanical device to rotate the camera?

COUFFER: Originally we did have such a mechanical device for this purpose—a mount that held the camera and rotated 180 degrees on lens axis—but the effect was actually too perfect and looked unnatural, so we used the hand-held camera instead. I wasn't using a long lens for that shot. I was working close-in to the bird, only three or four feet away, and I used a wide-angle lens. And I was shooting at 120 fps so there was no jerkiness. The Arri, incidentally, has an eyepiece that rotates, so that you can hold it with the eyepiece stuck in your eye socket and simply rotate the camera body. This is a fortunate bit of engineering which, I'm sure, was not designed in anticipation of making seagulls do barrel-rolls.

QUESTION: Aside from keeping a picture featuring wall-to-wall seagulls visually interesting for an hour-and-a-half, what other problems did you have in shooting "SEAGULL"?

COUFFER: One problem that really had me worried when I first read the script was the fact that there were a great many night sequences indicated. I knew that these would have to be shot day-for-night, because we wanted to see backgrounds and there was no possible way to light night-for-night. The first rule in day-for-night shooting is to eliminate the sky wherever possible and, if one must have a sky in the shot, to try and hold a fixed composition necessary for the use of a pola-screen or graduated neutral density filter. Obviously, when photographing a bird in flight, I would have to be shooting into the sky and panning all the time. The panning requirement eliminated the possible use of a pola-screen, and graduated neutral density filters were ruled out for the same reason. I really worried about the day-for-night problem for about a week. The solution seems very obvious, now that the picture's completed, but at the time it was a great problem. I simply shot the night sequences on black and white negative stock, which is highly responsive to filtered effects, and printed it along with the regular color dailies. We used Eastman Double-X negative with a deep red filter (29F) and underexposed it a couple of stops. It worked out that, with the faster film, the filter and the underexposure, I could use the same ASA rating as I had been using with the Eastmancolor negative. In other words, I shot the black and white at ASA 64. I tried to shoot all closeups in three-quarter backlight, with lots of heavy shadow areas. For flying shots it didn't matter so much what angle of sunlight we used, but there had to be big areas of blue sky, so that the red filter could effectively make the sky black.

QUESTION: Obviously these day-for-

night scenes, shot on black and white negative against dark skies, could be printed with any desired amount of blue added to give them a cold night effect in the final cut, but did you find any difficulty in intercutting such scenes with those shot on color negative?

COUFFER: Actually, yes. The one problem in using the black and white for such scenes is that you can't make shots originally photographed in color look the same. This meant that the editor couldn't steal a shot from a day sequence, print it up for night and insert it into a black and white sequence. A couple of times our editor, Frank Keller, felt compelled to do this because he had the action he wanted in a day shot, but the result was a noticeable mismatch in the final film. I'm sure the continuity of action justified doing this, but it mortified me to see the photographic mismatch. Incidentally, I had a heck of a time holding down blue in those shots. It's become a convention to see a lot of blue in night shots, but to me, the black and white effect with a minimum of blue was more natural.

QUESTION: Were the Eastman 5254 Color Negative and Double-X black and white negative the only two film stocks used on the picture?

COUFFER: Actually we used three film stocks for the negative. One section of the movie deals with Jonathan's experience in "another world". One of the pictorial effects to accomplish the "other world" feeling was that all of the gulls in that world were pure white. We used white gulls for the intimate material in those sequences, but we also used footage of wild conventionally-colored gulls for much of the flight sequences. A special still photographer named Elliot

(LEFT) All of the camera gear and other production equipment had to be lowered down the face of the cliff by means of block and tackle at Garrapatta Beach, a wildly beautiful, very remote spot on the coast south of Carmel, California. (RIGHT) Trainer Ray Berwick coaxes a reluctant seagull to show some emotion, while Jack Couffer mans the camera waiting for the action to develop. The trainers on "SEAGULL" did an incredible job of putting these birds through their paces in front of the lens.

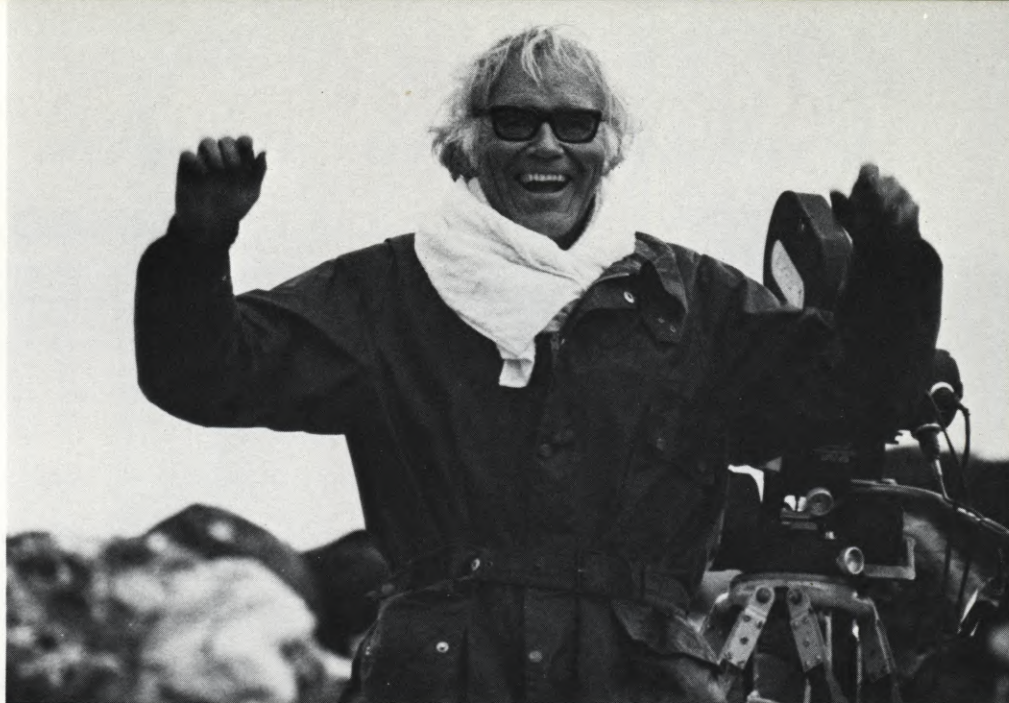


Marks was on the set for a while, and he shot some transparencies on Ektachrome which he then had developed as negative (ordinarily the film is reversed in processing and comes out as a positive transparency). When the gull was in silhouette, the result of Elliot's shots showed a pure white bird. That's where I got the idea—to give credit where credit is due. I ordered up some Ektachrome still film in 400-foot rolls, and shot some tests. I didn't do what Elliot did, but used the positive image Ektachrome for our original which gave a negative effect. Some of the skies really went wild with this strange process and the birds stayed pure white. We also shot some silhouettes of birds on EK color and tried for the same effect in the lab. I can't tell you why, but we never could achieve the same rich effect of the Ektachrome by printing EK color for a negative effect in the lab. So we ended up by shooting a few miles of Ektachrome. It's a very expensive film, so anyone who thinks we shot some of the movie in black and white to save money can rest assured that we more than made up the difference in raw-stock costs with our purchase of Ektachrome.

QUESTION: The birds in the "other world" sequences certainly do look different. Is there anything else that was done—other than what you've already mentioned—to take them out of reality, so to speak?

COUFFER: As described in the story, the gulls in this world were actually supposed to glow! Well, I never did completely solve that problem. I couldn't come up with anything that would make the gulls radiate a light that would make their immediate surroundings seem to have a light source from the bird. But I did eliminate the gulls' shadows, and always placed the white birds in a direct backlight with areas of deep black shadows behind. Then we just poured in the hottest possible reflectors, lead side, full blast, and burned in the light from two sides so that there was no modeling at all on the gulls. It's a completely unnatural effect, of course, but that's what we wanted. I can't guess at how many stops overexposed the gulls were, surely three or four. About all the detail you can see is the eye and the beak which were not pure white to start with.

QUESTION: The novel has been variously described as "poetic, lyrical, metaphysical", and so forth. Wasn't it rather difficult to capture these some-



Portrait of a cinematographer jumping for joy. A jubilant Jack Couffer, very happy at getting an "impossible" shot, demonstrates his glee. The photographic challenge of making this picture was almost mind-boggling, but the dedicated efforts of cameramen on the ground and in the air resulted in some of the most beautiful photography ever put on film.

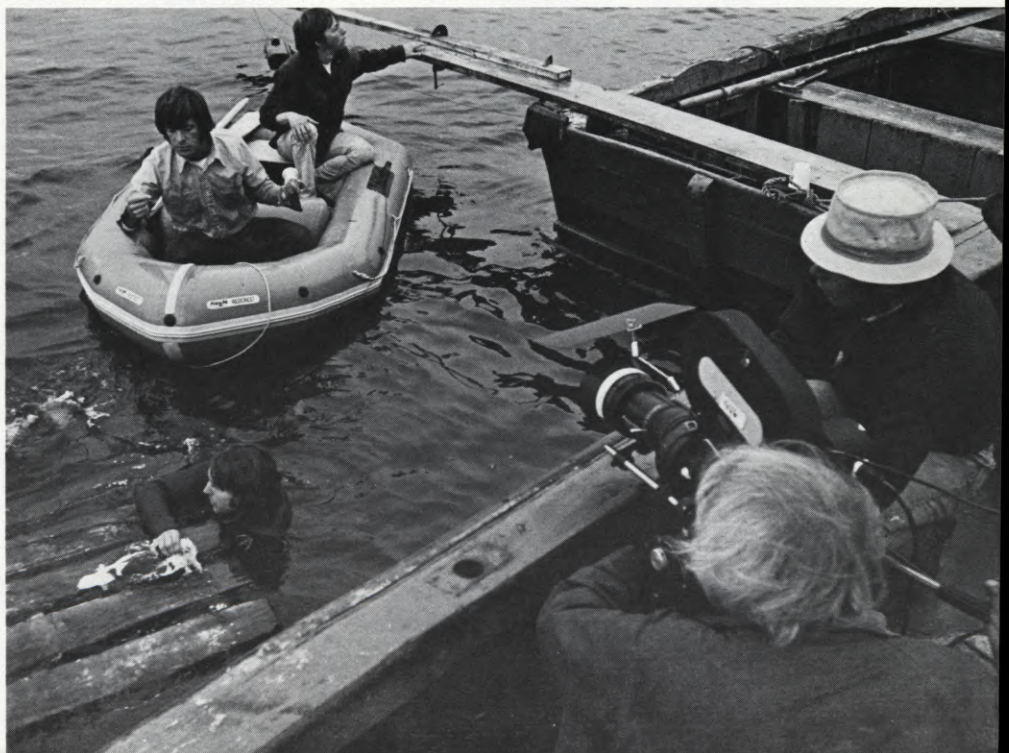
what nebulous qualities on film in order to avoid having it turn out like simply a documentary on birdlife—which, incidentally, it certainly is not?

COUFFER: All of this relates to another concept which we had at the beginning. I didn't want the film to look like a natural history film. It's not a natural history story at all. The author knew a hell of a lot more about airplanes than he did about seagulls, as any ornithologist will tell you, and the story wasn't really concerned with either one. It's an allegory, of course, about human

experience. The ideas in the story are poetic, so I hoped for the photography to be something of a visual poem. It's very unlike the natural history films I have shot in which the photography is more straightforward—except for *THE DARWIN ADVENTURE*, which also treated some of the natural history material in an abstract way. Incidentally, I think that's one of the best pictures I ever made, and nobody's heard of it, although 20th Century-Fox was supposed to have been distributing it for a year.

Continued on Page 1590

The crew prepares to film one of the most emotion-packed sequences in the picture. An exhausted Jonathan lies exhausted on a raft, prepared to give up the ghost, but his dauntless spirit finally soars and his body along with it. Filming at Monterey Bay, Jack Couffer and trainer Gary Gero are in the boat (foreground), while Mathew Place works in the water.



FILMING "ISIS" AMONG THE WITCHES

or "I DON' WANNA GET TURNED INTO NO FROG!"

Daredevil editor accompanies a group of intrepid film-makers shooting a witchcraft movie and almost ends up green and bumpy

By HERB A. LIGHTMAN

"Witches? . . . In St. Paul, Minnesota? You gotta be kidding."

"Honest Injun," says the voice on the other end of long distance. It's Maury Hurley, calling from Minneapolis, and he sounds excited—but then, old Maury would sound excited reading the telephone book. "There're covens and covens of witches in St. Paul—46, to be exact," he goes on. "It's got something to do with how the stars are arranged. The main star is poised right over St.

Paul—so all the witches flock there. It's practically the witch capital of the world!"

"Salem must be green with envy," I comment.

"Anyway, we're making this feature movie with a full cast of real live witches—and they're even going to let us film their secret rituals. We want you to come along."

He's just made me an offer I can't refuse! In the time that it takes me to

pack my broomstick and bat wings, I'm on the plane and off to the Twin Cities. All witches aside, the main reason that I've dropped everything to go is that a couple of years ago I had a wild time with Maury and his zany crew while they were shagging snowmobiles around during the filming of their first feature—then called "STORM" (see *American Cinematographer*, February 1972)—and I was much impressed with this group of turned-on dudes who would rather make movies than eat (and it sometimes comes to that!).

Actually, they've got their own production company in Minneapolis, Woodbine Pictures Corp., which specializes in industrial films, documentaries, TV specials, and the like—but they dream of features, just as kids at Christmas have visions of sugar plums dancing through their tiny skulls. Having made one feature, they're now bitten by the bug. But whereas last time they had \$300,000 of someone else's money to spend, this time it's their own money—\$18,000 total budget.

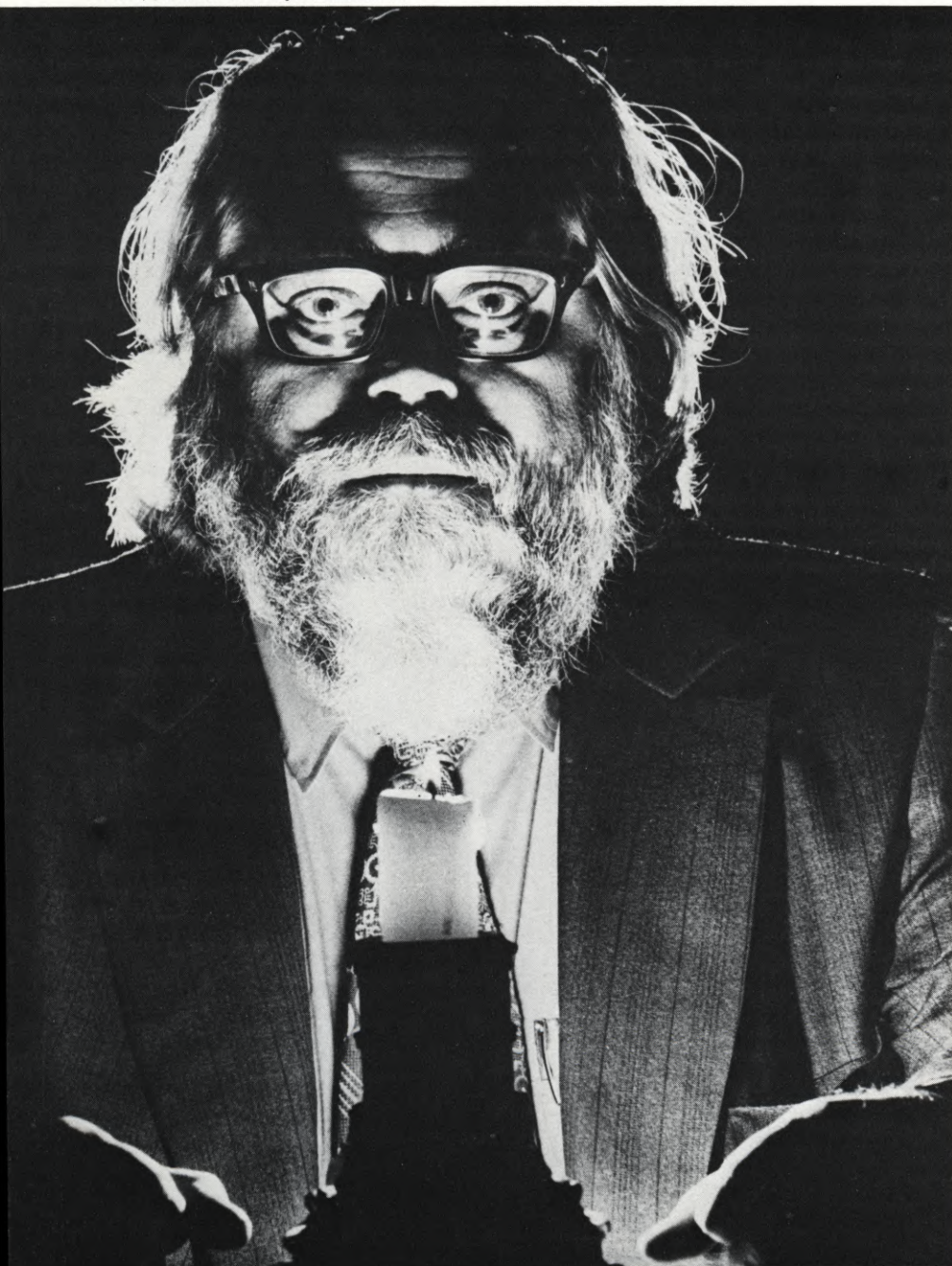
A neat trick, if they can do it.

"Sure we can do it!" says Maury Hurley, when I arrive in St. Paul. Maury is nothing, if not positive. "Three of us are taking some of the money we make in our other company, shooting industrials, and we're committing it to this project. If we can pull it off for \$18,000—which includes a sizable contingency—that in itself will be a remarkable experiment. It's a great way to make this movie, but you couldn't do it on any other kind of movie. We don't have to shoot on a steady schedule. We can work the shooting in between things we're doing in our other company. Not being subject to the usual pressures of schedule, we can pour into it all of the creativity and work and time that's necessary—and still do it on our budget."

He tells me that the name of the film is "ISIS"—which has a certain ring to it—and I ask him how he happened to decide on a film about witchcraft.

"I wanted to do something that dealt with different kinds of perspectives, different kinds of realities, different kinds of mystical or religious beliefs," he tells me. "At first I thought of doing something about Zen or Yoga, but I

Although he may not look like a witch, Carl Weschke is the leader of a coven in St. Paul, Minnesota. He also owns Llewellyn Publishing Co., one of the top occult publishing houses in the world. He will make his screen debut playing himself in a new feature about witchcraft called "ISIS", a Pi-in-the-Sky Production.





(TOP LEFT) The witches silently assemble in the dimly-lit ritual room, located on the lower level of Carl Weschke's home. It is an oval room, filled with the trappings of witchcraft. The magic circle and pentagram are drawn on the carpet. Candles burn in a mirror-lined coffin standing against the wall. (CENTER) Between set-ups, Director Maury Hurley gives his "star" instructions. (RIGHT) The crew films initiation: Skip Nelson with hand-held NPR, Lyle McIntyre with Nagra, Ned Judge (in shadow) with ACL on tripod. (BELOW LEFT) Weschke "opens the circle", summoning the "powers" to attend. (CENTER) The naked initiate, hands tied behind her back, begins the ritual. (LEFT) Witches chant around the bonfire, during "Calling Down of the Moon" ceremony.



Candid photographs taken during filming of "Calling Down of the Moon" ceremony show crew and witches mingling in easy camaraderie. This is basically a joyous ceremony, during which the coven sings, chants and dances around the fire. Torches were fueled by propane tanks buried in the ground. Late autumn chill led Weschke to observe: "I'm beginning to think we're indoor witches." In photograph at TOP CENTER, Ned Judge holds his "homemade fill light", which consists simply of a bare quartz lamp hanging from a cord, battery-powered and backed up by a "reflector" made of folded aluminum foil. It is amazingly efficient.





The house in St. Paul that Carl Weschke and his family live in, and which also houses Llewellyn Publishing Co., is a spooky old brownstone mansion, haunted by the ghost of a suicide servant girl. It is here that the rituals of Weschke's coven are conducted. "A perfect pad for a witch," says the enthralled author.

discarded that idea because neither Zen nor Yoga lends itself to the development of a plot line. After all, it's pretty hard to make a film about a guy who's sitting there looking at his toenails. Then I met the witches—a very casual meeting at first—and talked with them on and off for about three months. In the course of our conversations, it became evident that they had a religious belief that was not anything like what I thought witchcraft was. They were very serious people, involved in something which they felt added up to Truth. If you looked at it as a traditional Catholic from Boston—where I was brought up in the old Catholic ethic—half, or maybe 80% of what you've been taught is that if you don't do what you're supposed to do, the Devil is going to get you, or the witches, or the things that go bump in the night. So I had a built-in belief that there was another side to the God coin.

"Anyway, after talking to these people and winning their trust and cooperation, I decided to make the film about witchcraft. It's a good vehicle for us because of the drama of the rituals. Such rituals lend themselves to the dramatic impact we're after. We had a bit of trouble at first arriving at a plot line. The rituals were either too powerful for the plot, or the plot became too complicated. We decided to simplify, and now our basic plot line is about a girl who has reached the depths of profound loneliness because her life is pointless, meaningless. She's not sad; she's not sitting in a room all by herself;

she's out and she's doing, but her life is without direction.

"Through a casual kind of meeting with some witches—who she doesn't know, at the time, are witches—she becomes interested in them as people. This stimulates her interest in why they are what they are—which leads her on into witchcraft. She feels drawn to it by a kind of magnetism. She commits to it, which gives her a kind of purpose and strength—and it's that commitment that we're really going to try to examine, as much as the occult aspects of the witchcraft."

I ask him about the style of the film and his method of working.

"It's a very bizarre method of working, for a director like myself," he tells me. "We don't have a traditional script, with specific scenes and a bunch of dialogue all lined out. That would be effective for most films, but not for this one. What we're trying to do is show things in such a way that one scene propels us into the next scene. I've taken the people who are working with me—Ned and Lyle and Skip—and put them in a position where there is an enormous amount of responsibility and pressure on them. I'm not telling them what is happening before we go into a situation. Whatever the event may be, I'm relying on them to give me the feeling and the flavor of the event, as they see it—as it happens around them. It's not documentary as much as what they used to call, a few years ago, a 'happening'; you're right in the middle

of it and it's swirling around you, but within it are the essences of what's happening. I expect them to capture those essences on film—even though I've asked for only four or five shots to advance the plot line. I've looked through the lens maybe four times since we've started—operating on faith. It's scary until you see the stuff come back from the lab. Then you say: 'Yeah. That's what I had in mind. Look at that!' It's a strange way to work, but judging from what we've seen to date, it's worth it."

The crew begins to assemble for the shooting that is to take place that night. Some of them I know from the snowmobile caper and there is a backslapping reunion. Lyle McIntyre is one of them—good old faithful, dependable, long-suffering Lyle. Functioning as Production Manager, among dozens of other things, he's the one who fields the various crises that develop, at the rate of three-and-a-half a minute. Seemingly unflappable, he sorts things out in his own quiet way and invariably gets the train back on the track just as it's plunging toward destruction.

Then there's Skip Nelson, whom I last saw pointing his zoom lens into a charging snowmobile. Skip is an ace news and documentary cameraman, the kind of guy who never admits that a shot is impossible—and, for him, it isn't. With it all, he's quiet and good-natured and positive—a pro to his fingertips.

There're a couple of blokes on the crew I haven't met before. Ned Judge, a jolly giant of a man, is one of the principals in *Woodbine* and is also (I am to find out) an absolutely first-rate cameraman.

Rounding out the compact crew is Fred Baker, who, for all I know, may have had his tongue cut out, because during all the time that I am around him he utters not a syllable—just bustles about furiously, doing whatever has to be done.

Lyle, by nature somewhat shy and laconic, loosens up under the liberating influence of a scotch-and-soda and talks about the filming.

"This project is loosely organized, compared to our last feature," he tells me, "but we all work together very well. All of us, starting with television, have worked in a variety of filming backgrounds. We know there're going to be problems and, therefore, we're prepared for whatever happens. The problems are solved very, very quickly, because nobody is afraid of pitching in and helping. We're all involved in this project, so everybody does anything necessary to make it happen. Nobody is sitting on his butt, worrying about what time it is and

waiting for his check. Everybody is making a movie and doing whatever he can to help. We work in an atmosphere of mutual trust. Shooting without a formal script is difficult and we're under extreme pressure. Hopefully, we can pull it off—but none of us here doubts that we will. It's only on the outside that people say: 'Yeah—*maybe* it will work.' We're going to do it well because we're well-equipped and we know all the tricks. Those of us who are involved in the filming are convinced it's going to work—because it's *got* to work."

Stout fellow!

The equipment is being prepared for the shoot that night and, since that aspect is of special interest to *American Cinematographer* readers, I collar Ned Judge in a relatively quiet moment and ask him about the cameras, lights, etc., that are being used in the filming.

"As you know, this picture is a sort of marriage between documentary style and fictional style, but as far as the cameras and equipment are concerned, the method of shooting is pretty much documentary," he says. "Therefore, we've selected equipment that has been designed for the field—quick-change-magazine cameras like the Eclair ACL and NPR, with the Arriflex brought along as a back-up camera.

"As far as lighting is concerned, we're using the new Lowell Tota-lights, six of them, and several Mole-Richardson location kits. This picture presents quite a problem for the cameramen because, while we're shooting it in documentary style, we'd love to have the kind of lighting control and technical control that's needed to make it into a very beautiful fiction-type film. But that's impossible, of course, because in most of the situations we shoot, the *action* is uncontrollable. There are a lot of mood sequences, where it wouldn't be appropriate to use a general, bland kind of lighting that would cover the action no matter what happens. We try, instead, for a very dramatic kind of lighting that enhances the mood, but the situation is usually so uncontrolled that you may suddenly end up with a key person standing in total darkness, while somebody you don't give a damn about shooting is standing right in the spotlight. It's very difficult, but you have to worry with it and keep on your toes—always attempting to outguess the people in front of the camera, trying to keep one step ahead of what they're doing.

"It wouldn't be so bad if we had the crew to switch and dim lights, or follow people with spots, but in this kind of shooting you've got to keep your crew as small and as low-profile as possible.



As part of the "Calling down of the Moon" ceremony, Weschke kneels before Mari Norvang, who plays a witchcraft novice in "ISIS". In the background are crew members: Cameraman Skip Nelson (with camera on tripod), Lyle McIntyre (Production Manager doubling as soundman), Cameraman Ned Judge and Director Maury Hurley, helping out by holding Coleman lantern pressed into service as fill light.

We've got a small, cohesive crew and we all work very well together, but sometimes we wish we could add one more man to run lights.

"For various reasons of lab control and post-production control, we've decided to shoot as much as possible on ECO reversal film, and we're trying not to push anything unless we absolutely have to. When we get into a really low-light situation where we can shoot without pushing, we use EF, but where it's necessary to push one stop, we switch to 16mm Color Negative, rather than EF pushed one stop. We made tests with both, and we like the results with the negative much better. The blacks are blacker and the images appear sharper and have a nicer overall quality. We're going to end up with a mixed bag of reversal and negative film. I wish I could have talked beforehand to someone who's had to mix negative and reversal; to get some idea of the post-production problems and the solutions they may have discovered, but in Minneapolis that was impossible—so I've just gone ahead and shot it."

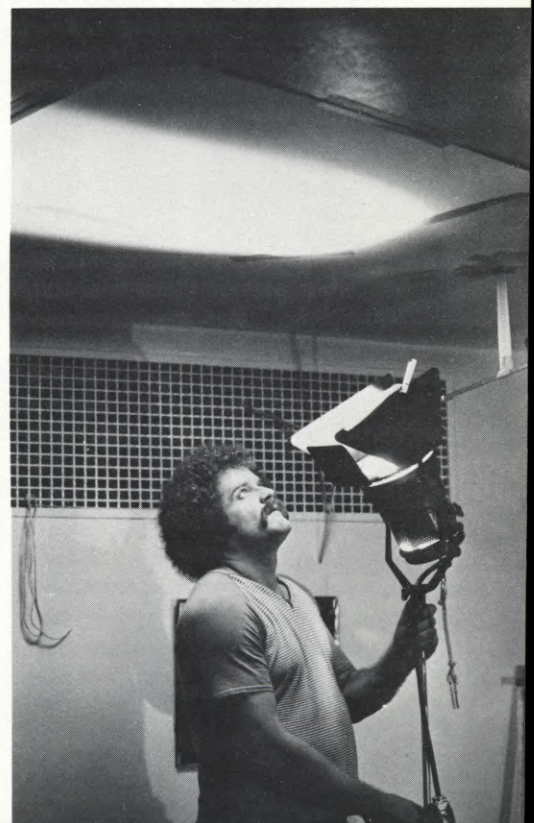
I ask Ned which camera he, personally, prefers to use for this type of shooting.

"Well, we're using an ACL with the new 400-foot magazine and we're also using an NPR," he says. "I personally prefer the NPR over the ACL. For one thing, I'm 6'4" and weigh 230 lbs., so the blank weight of the NPR doesn't bother me. I really like its orientable viewfinder. That makes the NPR a lap

camera, a knee camera, a stomach camera, a back camera; you can use your body to hold it rigid and shoot from any position. The viewfinder on the ACL is particularly ill-designed and the camera's noisier than the NPR. It also doesn't have the shutter that automatically stops open in the viewfinder—which is a really handy item when

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Ned Judge bounces the beam of a small quartz light off the ceiling to provide a faint fill light during shooting of ritual sequence.



THE PRODUCTION OF "ONE BY ONE"

By PETER SAMUELSON, *Production Manager*
(Euroshoot) for Leavell-Brunswick Productions

Small crew, using the latest filming technology, captures the reality of the Grand Prix racing circuit and "tells it like it is" in 35mm

It's not as if Auto Racing is a new subject for film. Sleek racer flashes past the NPR in unidentifiable blur of colour: "And so Emerson Fittipaldi wins for the third time. In boxing yesterday..." The 16mm coverage of racing is an exciting but ultimately frustrating business, one that our crew on "ONE BY ONE" knows well. There you stand in the rain at Druids corner, restricted by ferocious Marshals to one place, and the colour and screams of the cars are lost in a tiny negative, and bad vantage points. It's all cars and bends and pans.

At the other end of the scale, Mr. McQueen and Mr. Frankenheimer, formidable film-makers with obvious box-office sense, have each made an epic of

a sport, with the colour and the charisma of actual locations. But, these zillion-dollar epics do not represent the reality of racing, jealous though one may be of the slickness of dramatic intensity. Something is lacking. I worked for seven months on "LE MANS" with Steve McQueen. To simulate crowd response to passing cars in the pits one day, we organized five hundred extras with two American flags. When we dropped the left-hand flag, they all looked at the right-hand flag, and vice versa. Lo, the racing crowd follows the passage of the cars, their eyes in mysterious synchronism. But however well the race footage and convincing the cast were, it is not

respectfully a racer's film, because it is not Jackie Stewart who never makes a mistake, it is not Francois Cevert or Peter Revson waving to the crowds. Put bluntly, on "LE MANS" we fired radio-controlled Lolas dressed as Ferraris at Martini signs, we created holocausts of burning petroleum, but the terrible, awful tragedy of Roger Williamson losing his life at Zandvoort, or Francois Cevert at Watkins Glen is absent in the spills and thrills of fiction. There is excitement in the Racing Epic, but it does not represent a Human Document, has no inkling of the weird, vivid, symbolic life of a Racing Driver.

It is only recently that it has become practical to make a 35mm feature about the real world of racing. It is one

(LEFT) Michael Delaney shoots Jackie Stewart in nerve-wracking few seconds before Swedish Grand Prix. The 1973 World Champion was one of four top drivers extensively interviewed under contract. (CENTER) An example of the infra-red experiments made with various filter packs. (RIGHT) Jacky Ickx, Belgian racing champion, shoulders Arri 35BL. Mutual respect grew during season between drivers and film crew.



(LEFT) Driver Nanni Galli controlled on/off and swivel movement of camera mounted on Iso-Marlboro at the Monaco Race. This is believed to be the first time 35mm cameras have been mounted with controllable pan and tilt on a Formula One car. (CENTER) Three-Camera rig in use at South African Grand Prix. Rigs of this type allow racers to remain in shot for up to forty seconds. (RIGHT) Rene Guissart, in wheelchair "dolly", perambulates through cars lined up on grid before French Grand Prix.



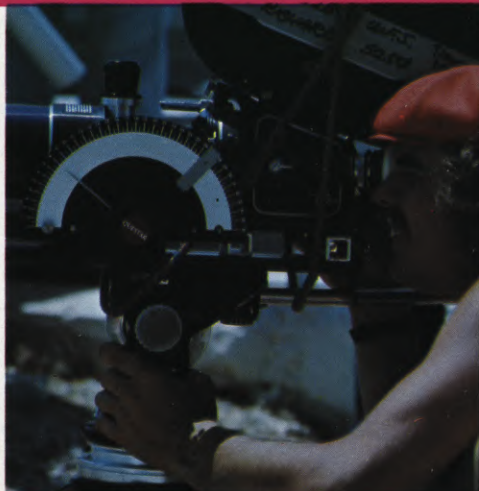
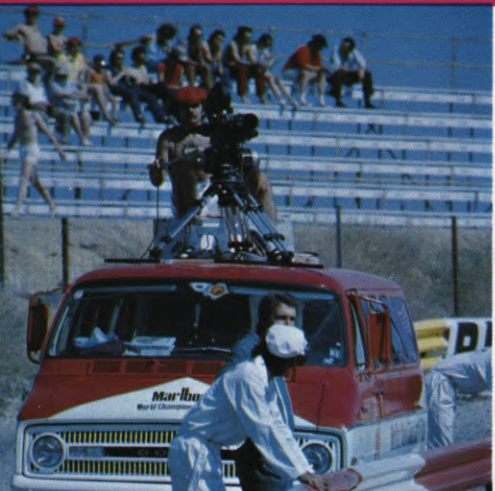


(LEFT) Sean O'Dell assists Claude DuBoc with 35BL in interviewing Mike Hailwood atop mountain near Marseilles. The new camera made 35mm sync-sound possible for the first time in difficult locations. (CENTER) Extreme Macro-Photography of mechanical elements and race calligraphy was executed in brief periods when mechanics were not occupied. Low profile of crew led to respect and cooperation of racing teams. (RIGHT) Jamie Shourt aligns Questar using reflex finder on lens. Precise calculation was necessary to film difficult angles through mirrors. The accurate follow-focus scale can also be seen.



(LEFT) Special machinings and adaptation to side-mounted motor base were necessary to mount the maximum 3200mm lens. (CENTER) Arri 35BL made possible a complete sync-sound unit kept in readiness. Cameraman and soundman could grab entire unit and run. (RIGHT) Soundman Kevin Courtts places Audio Radio Mike on the late Francois Cevert. Nagra S allowed voice and background to be recorded separately for balancing later.

(LEFT) Questar lens was used throughout, minus 85 filter, to gain extra precious speed. (CENTER) Car-to-car running shots were achieved at speeds up to 180 mph, thanks to Jacques Beranger's sophisticated reduced-vibration mounts. (RIGHT) Vibration on the Questar was a major problem. After experiments with Dynalens devices, the simple solution was to lock all parts of the apparatus together very tightly.



(LEFT) Three-camera rig was hung under the mobile timing bridge at Paul Ricard French Grand Prix. Bill Shourt indoctrinates dubious track safety official. (CENTER) Camera angles were complicated by intended four-meter rise and fall of bridge. Finally the marshal received monogrammed T-Shirts and the bridge remained immobile. (RIGHT) Use of three cameras allows lengthening of car pass-by in extended phase split-screen. The distortion of a fish-eye effect is thereby avoided and the cars are larger in the frame.



thing to spend five hours on each set-up and have a crew of fifty to help. It is quite another thing to run around Race Tracks in twelve countries over nine months to follow the garish personalities and stupendous machines. Nor is the problem purely one of logistics. The fact is that until the introduction of the Panaflex fully-silent, hand-held reflex camera, and the Arriflex 35BL, there simply was no way of shooting location sound interiors in 35mm, with anything remotely like the speed or efficiency of an NPR or other silent 16mm equipment.

State-of-the-Art technology is now available, and Leavell-Brunswick set out for South America last January to cover the Argentina G.P. Since then, we have followed the teams and hangers-on through each race from Brazil and South Africa, through the European series to Canada and Watkins Glen. The gratifying element has been the degree to which our crew has become accepted by the clique that is Racing. As the races rolled by, the built-in animosity to "those damned people with the cameras" faded as the mechanics and drivers came not only to recognize us, but saw that we favoured a low-key approach, while the news-boys climbed all over each other for a better angle. We showed that we were as interested in the weary men who slave all night before a race to prepare a gear-box or modify an engine as in the race-day pomp and glory. We were invariably the first crew to arrive, and the last to leave—no one-day news coverage. Lastly, agreements with Jackie Stewart, now World Champion; with Peter Revson, Mike Hailwood, and the late Francois Cevert allowed us to interview them in depth on and off the track, and to place audio radio mikes on them at the racetracks, an important consideration when the ambient noise level is so painfully high.

Sync-sound sequences throughout were shot with an Arriflex 35BL, these months of filming constituting perhaps the most testing assignment of the model to date. The Cameramen involved, Jackie Kargayan from France, Mike Delaney from England, with John Tully, Rene Guissart and Claude Duboc, found the camera a great improvement over the imperfectly soft-blipped 2C's that were previously the only way to shoot portable sync 35 in quiet areas. We did find that the camera was heavy for the kind of sprinting involved in, for example, the pits area at Silverstone, especially during a race when the incoming car has no intention of slowing any more for the cameraman equipped with a BL than for one with an NPR!

Despite the "teething problems" en-

countered with any new piece of equipment, the feeling is that the new Kodak Eastman-color negative, in conjunction with the Arri 35BL and Panaflex type of silent portable, is the most important development in high-quality filming since the BNC. Suddenly the vastly greater definition and quality of 35mm wide-screen techniques can tackle a range of *cinema verité* subjects, and lend them the credibility and impact of a big screen.

In our case the illustration is regrettably an accident. Racing is a world on the margin of disaster: Jackie Stewart will take a corner at 105 miles per hour. The line he takes and the speed never vary under the same road conditions. "Never vary" means never *ever*. We superimposed footage... and it does not look superimposed or in bad register... that is why he is the Champion. But the science and art sometimes fail, and perhaps the most awful footage on film is part of our "ONE BY ONE". At Zandvoort, Roger Williamson's car hits a guard rail, and is a blazing inferno as the gasoline ignites even before the car slides to a halt. We see Williamson vainly try to pull himself clear of the flames in the few seconds of protection his suit of Nomex can provide. He is trapped. Nobody moves to help. Some spectators jump over a fence and run towards the fire. They are chased away by police with dogs. David Purley, a friend of Roger's, pulls out of the race and runs to help. He struggles to turn the car right side up, hands burning. He runs to a horrified track-marshal and snatches the fire extinguisher from him. He struggles, the car burns, Williamson dies before our eyes and the race goes on around them. 35mm... 1:1.85... colour... stereo sound. Totally horrifying and almost impossible to watch even on the KEM here in Hollywood. We are not glorifying the dangers and vicarious thrills of racing, but recording them with sympathy and attempting to penetrate the weird "do or die" culture that attracts drivers and thousands of spectators.

Peter Leavell and Brunswick Films decided from the very start to exploit the big negative wherever possible. I think we realised that racing is essentially a boring spectator sport if the audience has none of the emotional smells and camaraderie of the live event. Because of our close relationship with the teams, we were able to cheat crews into normally forbidden positions and gain unique and fascinating closeups of the racer at work. But apart from the advantages of being around longer, of having time to follow-through an idea from week to week, several rather

unique techniques were developed to enhance the racing footage. The Shourt brothers, of Communication Arts in Boulder, adapted a Questar mirror telescope to provide a 3200mm follow-focus lens for a 2C Arri, while still keeping the entire rig less than two feet long. Not only were straight-line shots of remarkable clarity and exceptional duration achieved, but we were able to pick out isolated crowd candids and the nervous ultra-closeups of drivers and team managers before a race without intruding. We did not ruin their concentration, so they did not react to our presence and a moving intimacy is developed in our thematic coverage: The viewer is right in there with them.

The Questar was also used in conjunction with several ten-to-twenty-inch-square mirrors, mounted on ball swivel joints and placed in the normally "verboden" areas of the track—under timing bridges, inside guard railing and over the pits. The Questar was used to film into these mirrors and with careful calculation of sun-angles, glare factors and camera line, interesting and unique effects were obtained.

Permission was obtained at the Paul Ricard French Grand Prix Track, and at the Monaco Grand Prix to place multiple-camera, synchronized rigs around the track. It seemed to us that, apart from the fictional epics where actors and cars can be posed, the bane of live racing coverage is the brief glimpses in which the speeding cars are seen. The camera has either to remain static and catch the blur of a passing car, or to pan and tilt and open up the zoom in a giddy attempt to keep the racer in shot. By using three or more synchronized cameras—controlled by radio from one camera position, but spread along several hundred yards of track—we can intercut and keep the same car or pack in shot for almost a minute. For the first time one can really observe the superb technical precision of a great driver—Stewart or Fittipaldi, and interestingly enough, the more such material we see, the less the drivers appear as reckless daredevils. It is not just driving a car fast, but line, position, drift and split-second timing.

It was in the field of car-mount footage that the disadvantages of 35mm equipment were most evident. It was easy to be envious of the 16mm boys with their little GSAP cameras gaffer-taped to the spars of a racer. It is obviously quite a different proposition to place an Arri 2C, as the G-Force generated on a corner taken at over one hundred miles per hour is something that defies imagination. We were fortunate to have Jacques Beranger working

with us, and he brought with him the expertise that helped create mounts, under Gaylin Schultz, on the McQueen film. We were not helped by the fact that Team Managers have better things to do with the limited time available in practice sessions than have monster cameras strapped and bolted to their precious struts!

Sound was recorded on a Nagra 4S by Kevin Coutts and Jean Kargayan. Jean, an old hand at French Television Sports Specials coverage, and basically an Editor by trade, is also in sole charge of our cutting at Horizontal Editing Studios in Hollywood, where his dexterity on the KEM is helped by the exact knowledge of all available material gained from having been present actively at every race.

Neck-mike use of the outstanding ECM50 microphone on a driver in the high ambient noise level of the screeching pits was found to be very useful, while we recorded the background on the second channel of the 4S with a multi-directional mike. Thus the balance becomes a dubbing decision, rather than one to be made in the harried atmosphere of location shooting.

The terrible multi-car collision on the second lap of the British Grand Prix at Silverstone was captured vividly by three Leavell-Brunswick units. The collision, at 140 miles per hour, miraculously caused no greater human damage than a broken ankle, although nine cars were totally written off, and the race was stopped. The Kargayan 35BL footage shows, in one harrowing four-minute take that no fiction can emulate, a static shot of the race start, after which the damaged car of Jackie Oliver scrapes past and stops camera right. Oliver emerges, swearing, and the crowd shouts encouragement. He scowls and shouts back, "Good luck! What for?" As he walks away, the cars come around on their second lap. The crash is as prolonged as it is spectacular. We see pieces of wheel and bodywork fly through the air, drivers wave to avoid the still-arriving back of the pack, people run on and off the track, one of the cars over-revs noisily in center frame. The sound-track is full of stereo fire engines, screeching horns, BBC commentary, as well as with swearing and the gush of extinguishers. Yellow flags wave frantically and police whistles blow: It is a once-in-a-lifetime shot, well backed up by a reverse angle and a telephoto high-speed shot.

Another way in which we hope to take car-photography out of the realm of the "now you see it, now you don't" is through the use of imaginative opti-

Camera Opticals

Type: Tri-split screen multi-camera head

Description: Three cameras mounted on a precision platform

Effect 1: Static platform, static cameras show cars moving in three sequential segments of a given field of view. Action is from left to right, top to bottom. Background is static with cars moving across.

Benefit: Study of how a driver might handle an interesting curve.

Effect 2: Same as above with added pan of the platform.

Benefit: Action is heightened by panning with the pack blurring the background and letting the cars slide out of view at pan end.

Effect 3: Printing the film in out of sync combinations.

Benefit: Creates three view "playback effect" of say one car cut into the middle of real time action of the pack.

PRE-PRODUCTION ROUGH SKETCHES FOR SHOOTING THREE-CAMERA SEQUENCE.

icals, especially split-screens. Rob Black and Bruce Green of Praxis are advising here in Los Angeles, and, of course, the KEM table is ideally useful, as any number of picture elements can be seen at once, with full sound. Jean and John Arrufat are executing many of the original ideas of Jamie Shourt, with the material shot in the correct ratios! One three-camera rig was placed under a timing bridge at the French Grand Prix. Camera #1 captures the oncoming cars, Camera #2 points straight down, and #3 picks them up departing behind camera. The same rig was used on a horizontal plane in Sweden, with the advantage that step-framing can be used to keep the cars in shot for longer than a simply intercut sequence could, and the lower panels can dissolve to the next shot

while the top completes the first sequence. As well as cine material, Gordon Rowley, who travelled with us, has supplied many 70mm Ektachrome stills, whose careful composition and framing allow us to incorporate the best close-up observation of fiction with the blur and excitement of documentary fact.

We have now been involved in Iso-Marlboros and John Player Team Lotus for so long that it is difficult to see the wood for the trees. But there has been a fairly rigid *auteur* scenario all along from Peter Leavell, and this avoids most of the waste inherent in racing footage. We hope to have in fine-cut very soon a technically-innovative, top-quality feature documentary that will do justice to the arena of the modern Gladiators. ■



(LEFT) In a rare moment on the ground, aerial cameraman Jim Freeman and assistant set up the Panavision-adapted Mitchell Mark II, with 1000mm lens, in a field of wildflowers. (CENTER) Jonathan pecks among the wildflowers, waiting for his ladybird to arrive for filming of the "love sequence". (RIGHT) Jim checks out the camera which is mounted beneath the cab of the helicopter to get super-low-level flying shots.



(LEFT) Freeman is right at home behind the Tyler-mounted camera. The aerial cameramen would usually be in the air by 5:30 in the morning, and it was not unusual to shoot 12,000 to 13,000 feet of 35mm film in a single day. (CENTER) The seagulls contentedly fly along with the helicopter. They probably think it's just another "big bird". (RIGHT) At dusk, the camera crew films shots of the gulls, while wind machine at right stirs up a minor gale.

(LEFT) An ingenious ruse is put into effect to get shots of soaring gulls. A dummy bird rides piggyback on a radio-controlled model airplane until it reaches a suitable altitude, at which time the bird is released from the plane (by remote control) and glides gracefully before the cameras. (CENTER) In a rare moment of violence for this film, Jonathan is attacked by a hawk. (RIGHT) The "love sequence" in the field of wildflowers was filmed entirely with the 1000mm lens.



(LEFT) After a hard day in the helicopter, Jim Freeman relaxes in his hotel room, surrounded by bits and pieces of Panavision equipment. 226 hours of helicopter filming were logged for "JONATHAN", which must be the track record. (CENTER) Jonathan glides against the snow-swept slopes of Mt. Whitney, California, the highest peak in the United States. (RIGHT) The seagulls waded contentedly in the surf at sunset. The picture is filled with poetic images like this and is a feast for the eye.



LIFE WITH "JONATHAN"

Continued from Page 1533

Once the birds were caught, they were put into aluminum carrying cases and transported back to Carmel, where they lived in a huge barn complete with fresh horsemeat, fresh tuna, vitamins and, of course, fresh water. The birds were kept here for a maximum of three days. The best "Jonathan" gulls were transported to room 336 at the Holiday Inn. This was really a neat room. It was a corner room so that it had a two-way view: an Eastern view and a Southern view and the birds had the whole room to themselves. There were 20 birds in this room who were selected to ride in the helicopter because they had the perfect markings, perfect necks, and, above all, perfect feather condition so they could soar and glide.

One night after the birds were getting fairly well adapted to room 336, there was a little dispute between bird No. 3 and bird No. 17. They couldn't quite decide who was going to rule the lamp and in the process of discussion they knocked over the lamp, which was conveniently left on as a night lamp so the birds wouldn't be afraid of the dark. The lamp fell over and it scorched the wall. Fortunately, somebody heard the noise, rushed right in and none of the seagulls were hurt. The only loss was that their perch fell down.

Room 336 was purposely picked because it was at the end of the hallway and it was on the third floor, so that, if there was full occupancy in the motel, the seagull suite theoretically wouldn't bother any of the other guests. But occasionally the birds had a very lively night or they were just in a very talkative mood and four or five doorways down you could still hear reverberations of their talking. In fact, occasionally, you could even hear them as far down as the elevator, which is probably 20 rooms down from their suite.

The seagulls always enjoyed riding down the elevators. In fact, one enjoyed it so much that, in the process of going down, he got loose in the elevator and when the elevator opened on the first floor he was the first one who got out, shocking a couple businessmen and their wives who were there for a seminar.

Another classic moment was when several seagulls were riding up in the elevator to go to bed in room 336 and we pushed the elevator on the non-stop button to bypass floor No. 2, but this time the elevator stopped at floor No. 2. In stepped a really dapper couple dressed in their evening gowns. They thought they were going down, but really they were going up in this eleva-

tor full of seagulls. They had on so much perfume that for the first few seconds they really didn't notice the strange seagull odor. But as the elevator continued going up, they suddenly realized there was another smell competing with their perfume. At first they pretended not to notice. Once they saw the seagulls, they acted like they were just seeing things and looked straight ahead at the elevator doors.

Like whenever there's 50 people in an elevator, the first few floors you're afraid to look at one another and then, after the next 10 floors, you take a quick glance around. Then, when another person has eye contact with you, you quickly look away because you don't want to be guilty of being seen looking at someone else in an elevator. The perfumed people took quick glances, but they never really gave the seagull good eye contact. The seagull was staring at them the whole time because he was really in the elevator first and, really, these perfumed ladies were the intruders. In fact, the seagulls were probably getting a headache from all that perfume.

When room 336 became the seagull suite, the first thing the Holiday Inn did was take out the bed and put down ten sheets to protect the carpet. The sheets would be changed every day, but instead of changing just one sheet on the bed, the maids changed about 15 sheets. The common joke among the Holiday Inn maids was to always give a new girl room 336. They'd say that the room had to be made up quickly and the girl would go flying into the room to be greeted by 20 seagulls.

During the day, the seagulls had a full view. The curtains were pulled back, the window was opened, and about six lucky seagulls would sit on the ledge just watching the sights and sounds below. It was really a strange sight to be coming back from the restaurant and look up towards the third floor, admiring the skyline, and then see six birds just sitting across this window. At first you figured that somebody had some really pretty decoys for decoration but when they'd start flapping their wings and making their seagull sound you knew they weren't just decoys. One time, by mistake, the desk clerk rang room 336 and scared the seagull that was sitting on the phone. As he jumped off he knocked the phone off the hook and all the desk clerk heard was a bunch of noise.

GEORGE: HALF SEAGULL

At first George Nolan was a fantastic helicopter pilot, but as the months went on he went through a transformation



Freeman, who feels that he, the camera, the Tyler mount and the plane are "one" in the air, did the helicopter filming for last year's Academy Award-winning short, "SENTINELS OF SILENCE".

and took on a new personality. He inherited part of the seagulls' disposition. We think now he's more than half seagull. He learned to anticipate the seagull's moves, and that was the secret. If you reacted to what the seagull did, it was too late. You had to be about a second or two seconds ahead of the bird. George mastered this perfectly and we got so we could do a three-quarter front on a bird and come around to a three-quarter rear and have the bird peel away—or we would start with a top angle coming down to a straight-on angle, dropping down to a look-up angle at the bird. In the process of changing the axis, it gave the bird an incredible climbing feeling or dropping feeling and, in reality, the bird wasn't moving at all, it was the helicopter, thanks to George. It gave the birds another dimension to their flying. One morning we were getting into position at about 8,000 feet when seagull No. 2 got out of his little cage and started walking up towards the front of the helicopter. George had on his bright red socks which were, in turn, hooked to a battery. These batteries caused a direct short in his socks which gave him a little foot heat in the 10°-to-30° weather. The next thing I heard over the intercom system was: "Get this dude off my drumstick!" I turned around and looked and here's this seagull latched onto his sock and a little bit of his skin. I guess the red reminded the gull of some fresh horse meat that he'd had the day before at the Holiday Inn. But he just didn't want to

Continued on Page 1588

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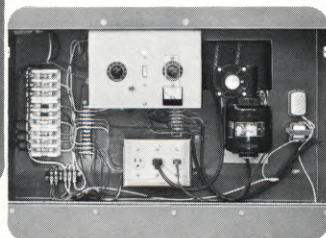
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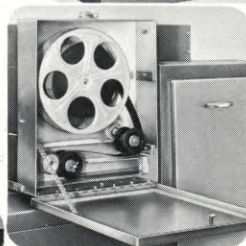
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(Above) DRYING CABINET
(Below) LOADING STATION

IMAGINATION IN FOCUS

Continued from Page 1541

try. The first is limited by the length of the day. The second, while showing some growth, reflects structural rearrangements more than actual expansion. Naturally, this all adds up to a picture of saturation. But there are a couple of flaws in the picture.

The most immediate is the self-imposed phrase, "in this country." It strikes me as more than a little parochial to talk about saturation when about 2/3 of the world's population does not enjoy the entertainment, educational and informational values inherent in the idea of repeatable experience.

It gets even more ironic when you consider that motion-picture film is one of the few items known to man that is standardized throughout the world—due in no small measure to the efforts of this society. Even if we do stick to our own shores, the saturation argument overlooks the tremendous growth potential in new applications of the visual image.

Over the last ten years American business has multiplied its investment for hardware and software in motion pictures and other forms of audiovisual communications. The potential in this area alone has grown so fast that it now equals in dollars the total of what the entire market in audiovisuals amounted to about ten years ago. Then, too, the growth forecast by some for cable television overwhelms any idea of market saturation.

Already today about ten percent of American homes are receiving cable television. By 1980, about 35 percent of homes are expected to be connected. Watching what's happened in places like Toronto... where 45% of the TV homes are connected by cable... reinforces the plausibility of such a forecast. It doesn't take a tightly focused imagination to see that staple attractions on pay TV are going to be sports and feature movies on an extra-charge basis. If each of the wired homes averages just one movie a month at a charge of, say, three dollars, the total would about equal the box-office receipts of all the movie houses in the United States last year.

Now, it's possible that these movies of the 80's could originate on some electronic medium. It's much more likely to be on film. All of the artistry and craftsmanship of movie-making has been built up around film. The center of gravity is there. And in my opinion, it will remain there, as movie-making continues on its path of development.

That brings us to the basic misim-

pression underlying the repeated promises of the tape take-over that has been "imminent" for some fifteen years now. The misimpression is that film is a sitting target while video systems advance in gigantic leaps. It overlooks the real facts of what has been happening in both fields.

During the fifteen years I'm talking about, no fewer than 31 new or improved motion picture film products have been introduced by Kodak alone. As many of you already know, the 35mm color negative that will become available to the industry in limited quantities around the first of the year, offers a sharpness and lack of graininess that we believe will set new quality standards for the projected image. The 16mm version of the same stock makes possible results comparable to what was obtained with 35mm only a few years ago. Television producers operating under budgetary constraints will now have another option for cutting costs with very little sacrifice in picture quality.

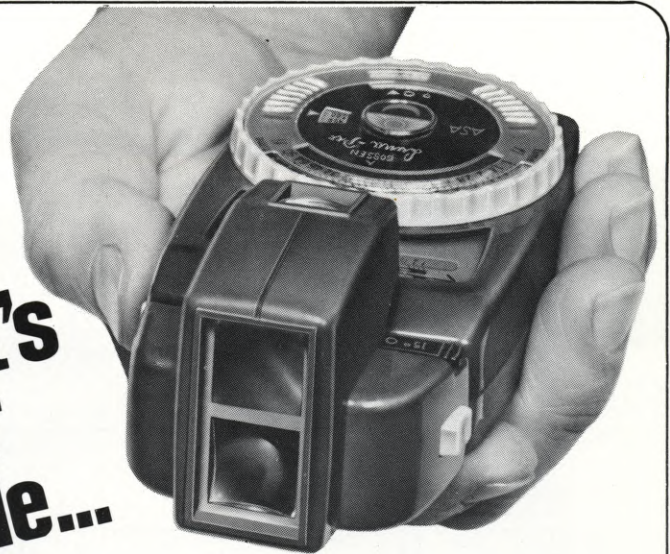
Much of the development work in electronic systems has centered necessarily on miniaturization of equipment. Until electronic cameras and recorders become a good deal less costly, a lot lighter, and shed their umbilical cords, they are likely to stay pretty much studio-bound.

We all recognize that considerable progress is being made in this and in other directions. But what should also be recognized is that equivalent, if not greater, progress has been made in the same time frame toward making the photographic process smaller, more economical, easier to use—and still of professional caliber. I'm referring principally to developments in Super-8.

When you put this together with a videoplayer that allows direct plug-in of a film cassette into the electronic circuit, the idea of Super-8 film chains begins to move out of the novelty phase for the television industry—both broadcast and cable—and certainly for educational, industrial, and military users. In the future, any low-cost tape installation will have to be compared for economic justification alongside Super-8. And it is in this area of economics that many a mismatch has occurred. Most of the cost justifications made for tape rest on two rather wobbly premises.

First, the inherently higher cost of electronic equipment is not allowed to enter the picture. Second, the re-use factor of the tape is weighted heavily. In other words, you get the razor free and the blade stays sharp indefinitely. It doesn't take a degree in economics to realize that things just don't work out

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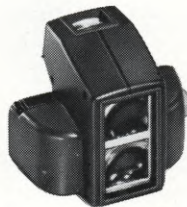


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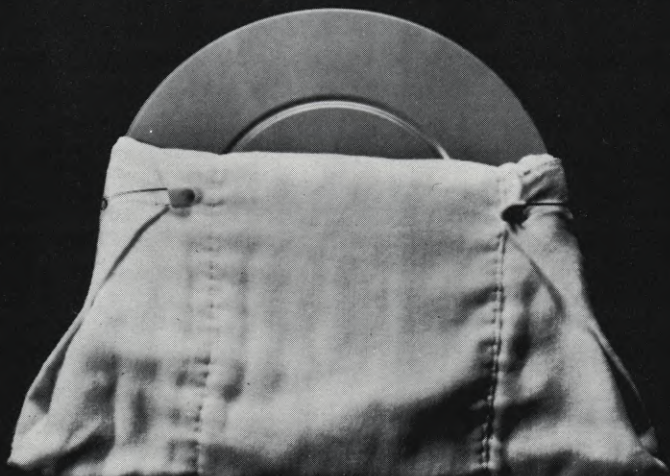


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that way in any line of business. Equipment costs have to be amortized somewhere. And you re-use tape only at the expense of losing the program material or of transferring it to film. Any tape-and-film comparison is a case of apples and oranges unless it takes into account the total costs of each approach.

As for myopia, I guess that most of us who ever worked in the technical side of the business have, from time to time, slipped into the shortsighted viewpoint that the quality standards of a whole industry can be set by laboratory demonstrations.

In a way I wish this were so. I could walk you through the laboratories up in Rochester and show you some of the things going on in lasers and film characteristics, for instance, that would probably knock your eyes out. And there we are again—right back at myopia. Because life in the laboratory just isn't the same as life in the field. Actually, we see more than enough room for improvement in the average quality of results with existing film technology. The mis-assumption that I had in mind is the fairly common one that technological progress is a process of replacement. We come by it probably on the basis of a few outstanding innovations: The automobile for the horse and buggy. The jet engine for the piston engine. The transistor for the vacuum tube.

As a matter of fact, these are more the exceptions than the rule.

If you took a broad survey of a hundred or more significant developments of this century, I believe you would find that they were more additive than subtractive. That is, new things coming out establish themselves alongside what was already there, rather than pushing them out.

For example, I can remember that about the time I was subjected to Elementary Physics, one of the big events was the introduction of the fluorescent lamp. It gave more light with less wattage. You could twist it into any number of fascinating shapes. Naturally, the fluorescent was going to put the familiar incandescent light bulb out of business. What actually happened, of course, was that each has found its own place because of certain distinct advantages: The fluorescent, for utilitarian areas where a high overall level of light is important. The incandescent, where the human desire for selectivity, convenience, and warmth needs to be satisfied.

Moving to more recent times and closer to home—my home, if not yours—I can tell you categorically that the years which saw the widespread acceptance of instant photography were

the period of greatest growth in history for conventional photography. One could cite many other instances in which new technology moved in alongside existing technology with the two getting along just fine.

The misassumption that progress is necessarily equated with replacement has given rise to what I believe is the outright fallacy underlying the Great Debate. It is that the future of film and tape is necessarily an "either-or" proposition. It is true that there are certain applications within the broad technology of repeatable experience where one or the other has clear-cut superiority.

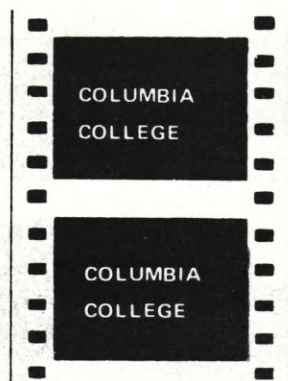
In the early days of television, it was my Company that brought out the process that gave birth to the so-called "hot kine," allowing Uncle Miltie to be seen in prime time on the West Coast. Therefore, I can tell you that the sight of a still-damp original being slapped on a projector for playback was never quite our notion of the ideal application of film's best characteristics. The instant-playback capabilities of videotape fill a real need here. For this one clear-cut purpose, tape can do a job for which film was never really suited.

On the other hand, for large-screen projection, where resolution and image sharpness are the criteria, film is, today, the only suitable medium. And with an improved emulsion coming along, as I mentioned, it appears as though this state of affairs should hold good for quite a while. In between these two extremes is a wide range of production, distribution, and show situations in which both media present the user with advantages, whose relative weight depends on his priorities.

The electronic medium has going for it immediate access, some re-usability of the raw material, more control of the output. The photographic medium offers greater camera mobility, more practical convenience in editing, more information storage potential, international standardization, and lower cost.

Users are going to want all these characteristics on different occasions. It looks as though both media are going to be around together as long as they have something to offer the user. And at Kodak we feel that will be a long, long while. So this would be as good a time as any to start talking sense about the interrelationship between the two.

I think we could all subscribe to the simple statement of principle that the user ought to be able to make his decision on the basis of what he wants to do rather than the least obnoxious trade-off. I'll tell you a couple of things that we have been doing at Kodak lately to further that principle. In addition to



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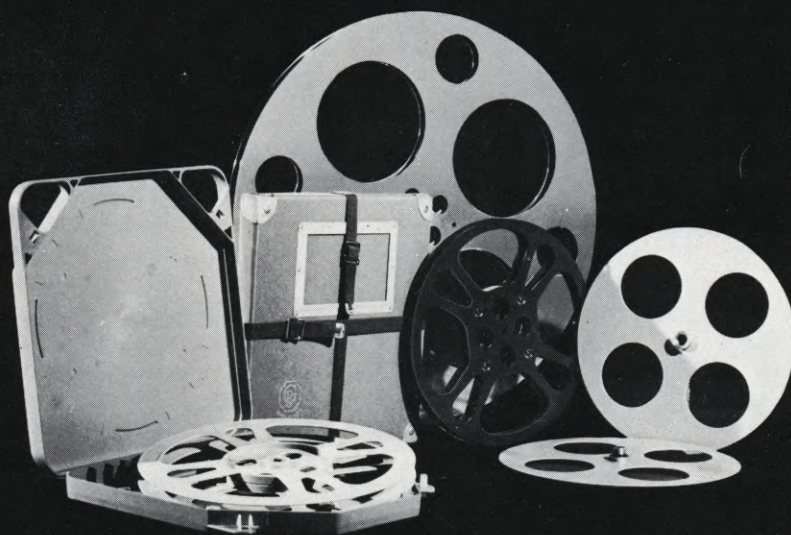
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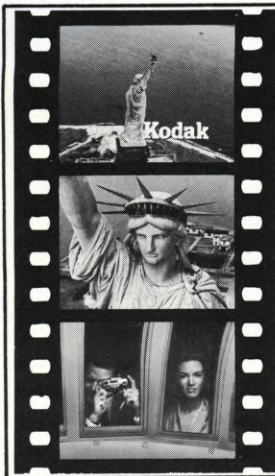
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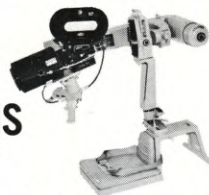
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improving the film materials themselves, we have applied substantial efforts at the points of match-up between photography and electronics. As you probably remember, we demonstrated before this society the feasibility of videoplayer equipment using Super-8 film cartridges.

This equipment makes it possible to plug photographic images directly into electronic circuitry for conversion and display. It is compatible with FCC requirements for broadcasting, and it meets the NTSC signal standards. Also, the Kodak Videoplayer might do a little something to further the cause of international understanding in communications. I am happy to say that it has been accepted abroad for use in the PAL system.

In the reverse direction—electronic-to-photographic transfer—we have made noteworthy advances in the Triniscopes method of recording. The aim point here is to make available for use with the electronic medium something like the kind of quality control that color separations brought to the print medium. Triniscopes is just one example of what is being done to help you in the industry get the most you can from the present state-of-the-art.

Now, I am sure that if an electronics manufacturer or a video-tape producer were represented on this platform you could be hearing of similar steps being taken from their positions along the tape-to-film route. But all the steps that they or I could cite necessarily remain limited and isolated.

Getting the imagination into focus requires a common vision of what it is we're supposed to be focusing on. Admittedly, dreaming about what might be doesn't come that easily to us "technical types." We're more accustomed to working out precise specifications of what is and to be thinking of progress in incremental steps. But it has happened in the past, and every time it has opened new vistas in the technology of repeatable experience.

As far as I am concerned, there could be no more productive place for it to start happening again than in the deliberations of this society. And no more auspicious time than the present.

If this kind of common vision does come about, if the collective imagination of a most imaginative industry can be brought into a single focus, I am confident we will all realize positive results. And when that future president of Eastman Kodak keeps his speaking date with you in the year 2016, he'll be able to cite one more instance in which opportunity came to call, masquerading as a problem.

Thank you

NEW CP-16R AND CP-16RA REFLEX CAMERA SYSTEM

Continued from Page 1545

The standard eyepiece for the CP-16R has a large, bright viewing system and a very convenient dioptic adjustment. A rotating collar moves in a helical slot to provide this adjustment in a precise, smooth manner. When properly set, the adjustment can be locked off with a thumb screw.

The attachment of the standard eyepiece to the camera is through a locking arrangement which is identical to that used by the Angenieux orientable viewfinder. Accordingly, the Angenieux orientable viewfinder may be used with the camera as an optional accessory.

We were unhappy with this Angenieux viewfinder, however, because it caused the eye of the operator to be approximately four inches behind the film plane. We have designed an erect image viewfinder of our own in which the legs of the viewfinder fold in a forward direction, so as to have the eye of the operator remain approximately one inch behind the film plane, as is the case with the standard CP-16R finder. Our finder provides erect image viewing with left and right eye accommodation and 360-degree rotation about the horizontal axis normal to the prime lens optical axis.

We will also provide, with the standard CP-16R finder, an extender tube for left-eye viewing in those cases where this is required.

We have also changed our approach to the AC operation, utilizing two small chargers in lieu of the battery eliminator. And we now encourage full release on our NC-4 Nicad batteries (since each NC-4 can drive over 4000 feet of 16mm film on a single charge).

A small molded-fiberglass shoulder pad was also designed for use with this camera. It has a built-in 17-degree slope to accommodate the normal shoulder slope. It is adjustable front-to-back, as well as side-to-side.

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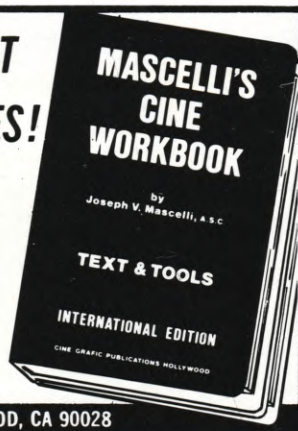
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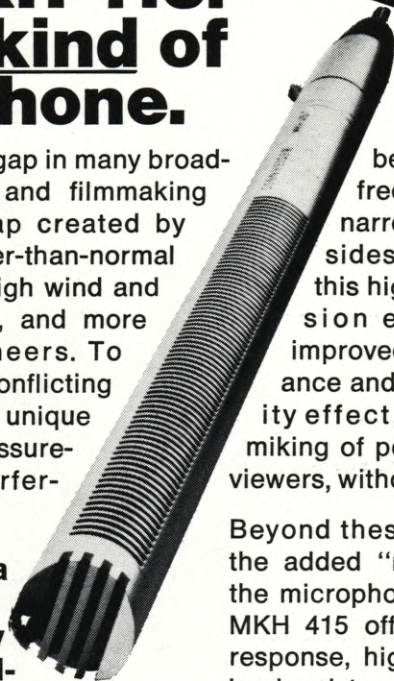
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For further information about this equipment, please contact: CINEMA PRODUCTS CORPORATION, 2044 Cotner Avenue, Los Angeles, California 90025, Telephone: (213) 478-0711. ■

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ARRIFLEX 16SR CAMERA UP-DATED

Continued from Page 1549

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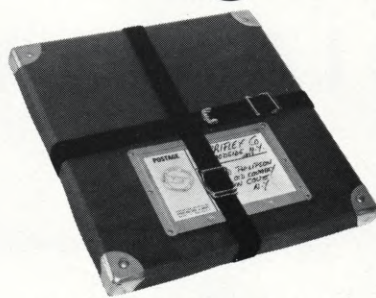
BERGMANN: *The camera design concept is such that the Super-16 conversion is easily possible. This will be a conversion which can be handled by all Arriflex service departments.*

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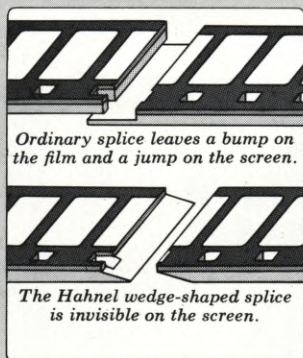
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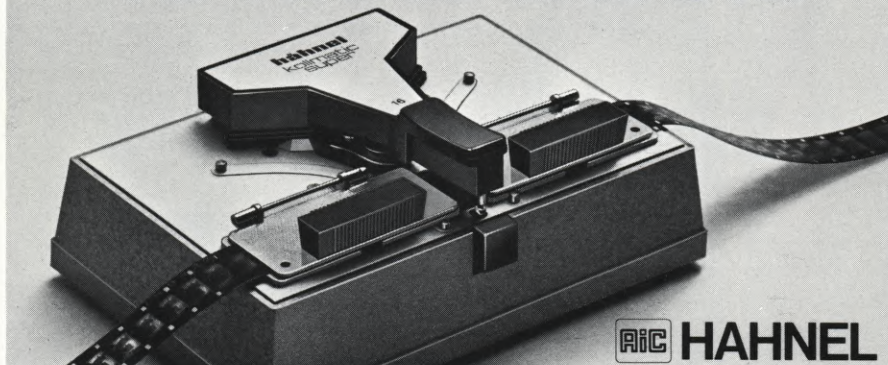


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LIFE WITH "JONATHAN"

Continued from Page 1579

let go of that sock.

The seagulls would love to get up in front next to George's leg and just check out the view through the bubble. In fact, they were really glad, because they didn't have to make any effort to have all this beautiful scenery pass by them. They always seemed a little disappointed when they finally were released from the helicopter and had to see the scenery on their own effort. One time we released a seagull and flew with him for about 30 miles in formation. That bird was such a ham, he'd give us three-quarter fronts, three-quarter rears; he'd bank for us, glide for us, pump for us. He'd do everything you could ever ask for a seagull to do. Then we looked down at the gas gauge and had to come down from 8,500 feet to refuel. As we started down, the seagull followed us. It was one of the most incredible things. We went through six magazines. It got to the point where we were sick of photographing him because, after all, you know, you can only shoot a star for so long; then you have to bring on a stand-in or a new star. This bird was so cooperative that he gave us some of the most spectacular shots of the movie. We could lock off with him coming in extremely close and the bird seemed to enjoy every moment of it.

Thankfully, it got to the point that we could change magazines in less than a minute, totally cleaning and inspecting all the rollers and the aperture plate. At 120 frames-per-second, the film goes through mighty fast, and you get to be really quick at changing magazines. We always carried a minimum of 20 magazines in the helicopter. Normally we had seven of color, seven of black and white, and six of Ektachrome. We could only use 400-foot magazines, because the door on the helicopter prohibits using a 1,000-foot magazine because of size. It's like filming interiors in a car; you just can't have a big magazine jutting out of the camera.

THE LOCATIONS

The most important element of the production was having an ample supply of seagulls. So whatever location we chose, we automatically took the helicopter, all our camera equipment, the crew and, above all, the stars. When we left the Holiday Inn in Carmel we had a huge "Adventure in Moving" with a U-Haul truck. It was complete with bedding facilities, heat lamps and, above all, there was a screen on the back that became the gull's picture window. As the birds were going from Carmel to Mt.

Whitney, they wanted some air conditioning, so we just opened up the back end. As we were driving down the freeway on Route 99, all the seagulls lined up next to the window and checked out all the funny-looking people that were driving in the cars behind. It really created some traffic jams.

Once the truck arrived at its location, a portable 20-by-20-foot pen was put up. There was a long ramp that came down from the truck and, as soon as the pen was assembled, all the seagulls would automatically come scooting down this little ramp because they really enjoyed getting to their garden area. There they had luxurious baths and an outdoor carpet on the ground to keep the dirt from their feathers. Each bird was bathed by hand with Johnson's Baby Shampoo, the no-tear variety so their eyes wouldn't burn. They would just love to be hand-bathed. They were kept super clean so that when they were filmed against the white snow, they appeared just as white, if not whiter. A variety of locations was used besides Carmel and Mt. Whitney. Point Reyes proves to be a fantastic location, because of Drake's Bay. It's glassy most of the time, perfect for tremendous reflection and sunsets. Also Pismo Beach sand dunes were used for the outcast sequence where Jonathan's alone. The way the sand dunes were photographed made them look 100 miles long—whereas, in reality, they are only a few miles long. The late afternoon light showed the shadow of a seagull flying as well as the texture and the patterns of the dunes. Death Valley was used for a variety of backdrops, and for moonrise and sunrise shots.

Another location, Tehachapi, was used for the love scene between Sally and Jonathan. The huge rains brought an unusual amount of wildflowers—multi-colored carpets half-a-mile long on the foothills of the Tehachapi Mountains. It took about ten days to film the sequence with the right light. The 1,000mm lens really brought out the patterns in the flowers, as well as the extreme closeups necessary for the script.

A LIFE WITH JONATHAN

During the course of time we saw some incredible things, such as we had never seen before. We lived the life of a seagull: we were always thinking about seagulls, looking at seagulls, and talking with Mr. Bartlett about seagulls. It seemed that almost every hour that you were awake, your whole mind was on the gulls, and on how you could increase the aesthetic value of the film. ■

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JONATHAN LIVINGSTON SEAGULL

Continued from Page 1569

QUESTION: Some of the more stunning shots in "SEAGULL" were obviously made from the air. Can you tell me about those?

COUFFER: A very important aspect of the photography in J.L.S. is the spectacular helicopter work, and full credit for that goes to the cameraman, Jim Freeman, and the pilot, George Nolan. They worked perfectly as a team, and produced some breathtaking shots that I don't believe have ever been surpassed in helicopter photography. They were on location with us for at least three months, and I don't think that any picture has ever had so much helicopter time. We also had two different fixed-wing airplanes with top stunt pilots who did some of the POV shots. The camera was mounted in the undercarriage, exposure predetermined, and was started by the pilot by remote control at the beginning of a maneuver.

QUESTION: Anyone who has ever tried to film wildlife of any kind—especially in closeup—knows that it is much more difficult than it appears to be. You are one of the acknowledged experts at this very special kind of cinematography. I wonder if you would mind breaking the challenge down into its specific components?

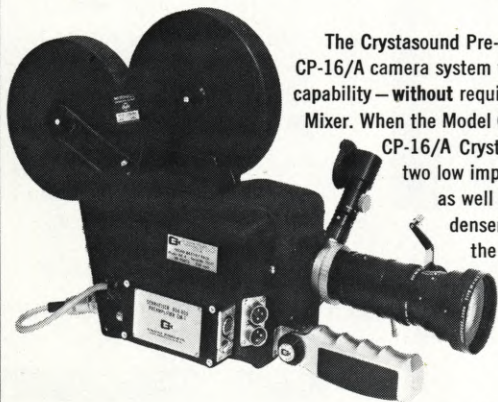
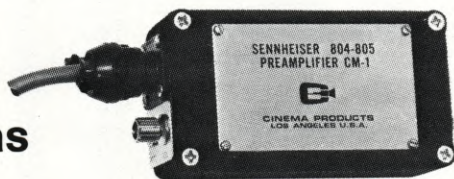
COUFFER: One problem with photographing this film would seem as if it ought to be a pretty basic operation. The problem was keeping the subject in the picture! I used a Panavision-adapted Mitchell Mark II which had reflex viewing. A lot of the shots of the gulls doing aerobatics, and fast flight really presented problems of keeping the subject in the frame. Erratic, unpredictable flight is very difficult to follow. I do my own operating, and I follow focus myself on the groundglass, so the problem is multiplied. But there's no way an assistant can keep a moving bird in focus when you're shooting on the long end of a zoom lens or with the 1000mm which I often used. Panavision adapted an Arri bull's-eye viewfinder for me which I could use with my left eye for tracking, while keeping focus with the right eye. I don't claim that I could do both at the same time; it was back and forth, but I practiced a lot until it became automatic.

But that was only a small technical problem. The answer to your question concerns my first interest as a naturalist when I was a youngster. My involvement with film came as a happy coinci-

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dence when I was in school at USC studying zoology. At the time they had a mediocre Zoology Department and a superior Cinema Department. I had a friend named Conrad Hall (who, of course, is now a distinguished cinematographer), who was taking courses in filmmaking after having changed over from a major in journalism, and I went with him to listen to a few lectures by Slavko Vorkapich who was head of the Cinema Department. I was really inspired by Vorky. He changed my whole objective in life, just as he'd done Con's. We both ended up majoring in Cinema Arts. It's an example, in case any teachers would like to take inspiration from it, where the imagination of one teacher had a profound effect on our lives.

One irritant to my career is that producers are uneasy with my background in natural history. It's the old problem of being categorized. If you're good at one thing, you can't be capable in something else. I've got a reputation for being able to shoot and direct natural history films. But what about people? Producers never seem to realize that I've directed the people in films like "RING OF BRIGHT WATER". It seems crazy, but this business is a bit nuts.

Believe me, it's a lot easier for me to deal with actors who respond to what you have discussed with them, than it is with animals which behave only because of some maneuver you've dreamed up to outsmart them. I'm equally comfortable with a film involving good actors where I can more-or-less relax and let it happen, or scratching my brain devising ways to make it happen with the animals.

QUESTION: I know that you have, during recent years, concentrated more on directing than on working as a cinematographer. What kind of adjustments, if any, did you have to make in going back to being a Director of Photography, after having worked so much as a Director?

COUFFER: I've been a Director for the past few years, and it's been several years since I've done more photography than second unit work on my own films. Most of my films deal with some aspect of natural history, with people in the biggest part of the movie and animals in the remainder. I shoot the animal parts myself as a second unit operation, pre- or post-production, and direct the main unit with another cameraman, just as in any conventional film. It bothers me that in this business it's considered a step backward to go from

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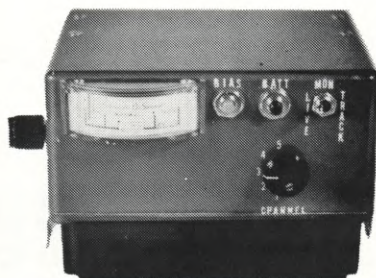
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directing to Director of Photography. At least Directors think it is—D.P.s don't!

QUESTION: With the exception of Haskell Wexler and yourself, there are very few "big league" Hollywood film-makers who function both as Director and Cinematographer, or alternate between the two crafts. Do you find any dichotomy in doing so?

COUFFER: Not to forget Bill Fraker who is active both shooting and directing. Now, on to the question: I simply like to work in film, and I like to use my hands and body as much as my head. Whatever capacity I happen to be in, Director or D.P., I'm always lugging something from one set-up to the next, and tearing around doing things that maybe some shop steward from another craft gets uneasy about, but I really enjoy it and I believe the crews pitch in even more when they see the boss doing the dirty work along with the rest. But that isn't the reason I do it. I do it because I like it.

I think you can make more mistakes and get away with them as a Director than as a D.P. There are times when you can cover yourself with set-ups and in other ways, and you can bluff your way through situations. It's something you have to do when you don't have an answer—stumble through and depend on intuition. As a Director of Photography everything is there on the screen. There are a few directors around who don't know what they're doing—but not many D.P.'s.

QUESTION: No two directors work in exactly the same manner, even though both may achieve excellent results. From the very human standpoint, don't you find it a bit difficult to work as a Director of Photography now, with someone else actually directing the picture. What I mean is: aren't you sometimes tempted to tell the Director how you would stage a particular piece of action if you were directing?

COUFFER: I'm usually quite able to restrain my directorial urges. Often I see other directors doing things I would do differently, and sometimes I think they're wrong. Sometimes, depending on the situation and the director, and because of the team nature of film-making, if I think an idea might be welcome, I might offer a suggestion; sometimes not. It's a matter of discretion and judgment and mostly personality. As often as not, I see another director do something really inspired that I didn't think of, and I learn something. I'm not

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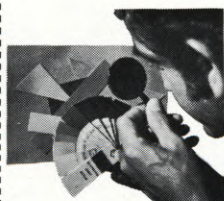
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a self-centered person who has irrevocable ideas about how things must be done. As a director, I'm very much open to suggestion from anyone on the set. I'll listen to anyone's idea—as long as they don't pout if I don't agree with it. That's an understanding I always have with the crews I work with—and it's a part of why my pictures are usually a happy film-making experience. Everyone's participating beyond their narrow niche. This attitude helps to get good people. No one likes to work for a tyrant.

QUESTION: Through the years you have built an almost unparalleled reputation as an expert in filming wildlife. Can you tell me how you feel this might have given you a very special background for shooting a picture like "JONATHAN LIVINGSTON SEAGULL"?

COUFFER: There were some very tricky things with this film concerning bird training and handling. Because of my background, I worked very closely with the trainers. In this area Hall Bartlett gave me free rein, so I was something else in addition to cameraman. There were a lot of people who didn't think it would be possible to get gulls performing some of the aerobatic feats that the script required, and great credit goes to the trainers for pulling this off.

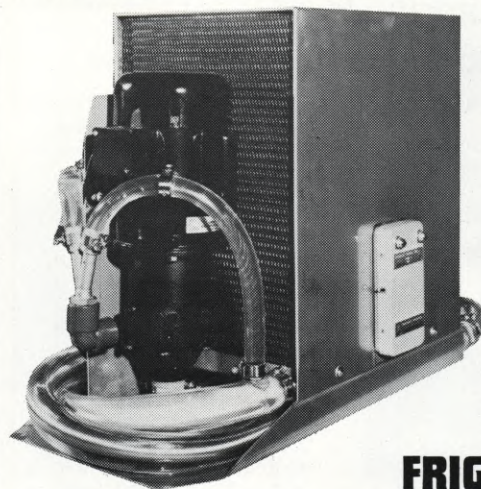
Also, curiously enough, some of the best of the dive shots and other aerobatics were the natural behavior of wild birds. One wouldn't imagine that seagulls really do some of those things, but under exceptional circumstances they do. It was my experience as a naturalist that put me at an advantage in knowing under what circumstances I might find the gulls behaving in extraordinary ways.

QUESTION: Some of the scenes in "SEAGULL" are so spectacular that they could only have been achieved with the aid of special effects. However, it is a tribute both to you and to special effects expert L.B. Abbott, ASC, that it is impossible to tell where the one craft leaves off and the other begins—just as it should be. Would you care to comment on this?

COUFFER: Bill Abbott lived up to his incredible reputation as the master of special effects, and did a great deal for the visual effects of the picture. He combined some helicopter backgrounds with trained bird shots made against a blue backing, and he put some birds against his own backgrounds, and con-

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tributed some other very tricky shots. But a lot of the shots that look as if they might be special effects were actually shot the way you see them.

QUESTION: Are there any further comments you could like to make about your experiences in working on "JONATHAN LIVINGSTON SEAGULL"?

COUFFER: There have been some very complimentary comments about the photography. I'd like to say very honestly that a great deal of the credit is due to Hall Bartlett who was the Producer and Director. He was very demanding, uncompromisingly so, and I think I would have been tempted to settle for less in many cases if it hadn't been for this attitude of pressing for the best. We had time and the budget to do this—a luxury which I haven't always had—but it was Hall Bartlett reaching out for quality that really made it happen.

QUESTION: One more thing. Someone told me I should ask you about an incident during the filming which involved a large wave. What did he mean by that?

COUFFER: Ah, yes. The incident of the great wave. We did a lot of work on beaches, along the edge of the surf, and the height of the tide became as important in making a daily schedule as the coffee break. Often we'd move a set-up half-a-dozen times up or down the beach as the tide rose or fell.

On this particular day, famous in a very small circle, and known as "The Day of the Great Wave", we had been working for three or four hours on a beach at the mouth of a narrow cliff-rimmed gorge. We had an "A"-frame at the edge of the cliff with a high-line on which we'd sent down a lot of equipment and, while the grips were laying about fifty feet of track for a Western dolly, I was set up for another shot with the camera on a tripod.

We were hoping to get some high surf in the background, and weren't quite ready with the actors when I saw this big set of waves outside. I said something that in retrospect was pretty stupid, like: "Wow, Hall! That's the kind of background we want! Look at that wave! Isn't it just beautiful?"

I was getting my kicks by merrily visualizing the proposed shot through the viewfinder as that big foaming monster bore down. I felt perfectly safe, I mean, we'd been working on the beach for hours and were familiar with the day's pattern of waves, but this one was really the "ninth ninth", as the surfers

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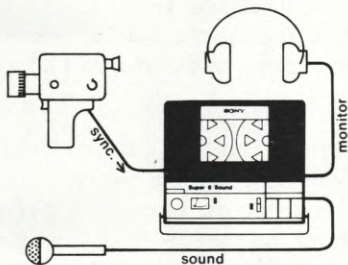
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say, the biggest wave of the biggest set of the day.

About the time it broke and that wall of white water started charging up the beach, I realized we were in trouble. I yelled, and my assistant yelled, and everyone nearby came running to help with the camera. But it was all pretty futile. I wrapped my arms around the tripod head, braced myself, gritted my teeth, and waited for the inevitable. Three or four guys arrived to hold on. Either they thought I'd make a good anchor, or maybe they felt they could help me take on the whole Pacific Ocean, which seemed to be coming at us all at once. I was braced in a very heroic stance, pushing the tripod legs down into the sand as hard as I could. I was holding the camera and it was holding me—we were holding each other—and helping hands were holding us. Then the wave hit, and one by one I felt my buddies go. It was like losing part of your crew from a foundering lifeboat. After the initial wall of water crashed on us like a bomb, the aftershock just kept on coming. It was like trying to keep your feet in the middle of a strong river current. The wave crested up above my waist, and in a few seconds I was all alone—assistant, grips, gaffer, director, all gone with the tide. As the current tore by, I could feel it digging out the sand under my feet and from under the tripod legs. We slowly sank together into the sand, and I kept shoving down, embracing that precious camera to the last.

Then it stopped—and it all happened again in reverse in the backwash!

When it was over, I was left standing with the camera in a hole about two feet deep. There were struggling bodies, apple boxes, wedges, planks, batteries, track, and reflectors scattered along about half-a-mile of beach. A hundred yards back in the canyon we dug the dolly out of the sand. What a bunch of drowned rats we were. Nobody escaped a soaking. But there was a good feeling of averted catastrophe. Nobody succumbed, and we had a rather jolly time cleaning up the mess. Norm Harris, the gaffer, was the only casualty. He got clouted with a sharp-edged accessory case that he was trying to surfboard, and he went limping around, picking pieces out of the sand and bleeding like a war hero counting the dead after a battle.

I'd love to have watched that scene as one of the uninvolved spectators up on the cliff. Everything a movie company does seems insane to them, anyway. This must have confirmed that we really were, all, totally mad. I probably would have died laughing. ■

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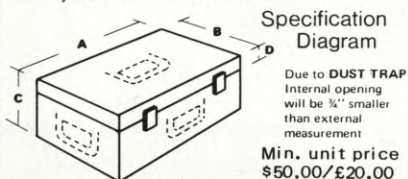
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FILMING THE WITCHES

Continued from Page 1573

you're shooting fast, moving around a lot and don't want to be always fooling with the armature on the motor."

"What about the lenses you're using?" I ask

"On the ACL we're using the Angenieux 9.5mm-57mm zoom, which has the low-light-level requirement we need. It's T/1.6 and a fairly sharp lens. We're also using the Canon 12mm-120mm Macrozoom lens. On the NPR we're using the Angenieux 12mm-120mm and 9.5mm-95mm zooms. We also have an Angenieux 25mm F/95 prime lens for the really low-level stuff. In some scenes we'll be shooting with literally one foot-candle of light. Using a one-stop push (which brings the film to ASA 200) and shooting with the F/95 lens, we'll just get inside the exposurable range of the film."

Maury Hurley gives me a briefing on the shooting that will take place that night: "We're going to be filming the First Initiation of our leading lady into the coven. (It takes three initiations to become a full-fledged witch, but she's just a novice at this point in the story.) We'll be shooting in the home of Carl Weschke, who's the Head Witch of the coven, and the real thing. Every witch has a 'witch name' and his is 'Gnosticus'. He owns the Llewellyn Publishing Company, one of the top occult publishing houses in the world. He's a sincere man and very knowledgeable about all aspects of the occult, as well as about all other kinds of religion. He's also a man whom I respect and trust. He's not an actor, of course, but it would be difficult to find an actor to play the part as well as he does it. He has a great look about him—a great face, a great beard and a great presence. His eyes are perfect and he has a magnificent bass voice. He conducts the witchcraft rituals exactly as they really are. We'll be shooting tonight in the actual ritual room, which is in the basement of his home. The Initiation Ceremony will be precisely authentic, from start to finish—and this will be the first time it's ever been filmed."

"Gee, I can hardly wait!" I chortle. "It's just like Halloween!"

Maury fixes me with a glare. "Now, we all know about your weird sense of humor from the last time you came clomping around with us," he says, not too unkindly, "so don't go making any smart-ass remarks in front of the witches. They just might turn you into a frog."

I gulp. "I don't wanna get turned into no frog," I say, my voice already sound-

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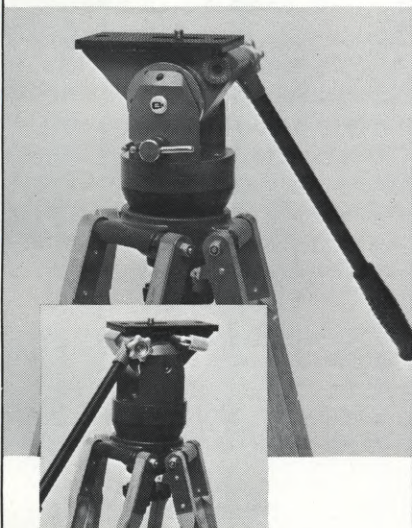
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ing like a croak. "Green ain't my color."

"Those bumps wouldn't do much for you, either," says Hurley, "so watch it, Bub."

If the best Art Director in Hollywood were to design an abode for the Head Witch of a coven, he couldn't do better than the home that Carl Weschke actually lives in. It's an imposing three-story structure built of reddish brownstone. Its circular turret looms over the landscape and its windows stare down like the eyes of the dead. The trees that stand next to it clutch at it with barren limbs.

The house is, I'm told, about 90 years old and it's appropriately haunted by the ghost of a young serving girl who was rendered pregnant by the master of the house, 'round about the turn of the century, and decided to end it all by hanging herself in the third-floor stairwell. At odd moments the poor darling can be heard weeping and carrying on up there.

The inside of the house is, if anything, even more atmospheric than its exterior. The ceilings are high, the rooms spacious. The walls are faced with elaborate paneling and exotic coverings. Several of the rooms are lined from floor to ceiling with book-crammed shelves—a vast library of volumes on everything to do with the occult, world religions, psychology, philosophy and related subjects. A truly "grand" staircase sweeps toward the upper floors. This house is the perfect pad for the Head Witch of a coven.

Carl Weschke lives here with his attractive young wife (they were wedded in a witchcraft ceremony) and infant son. The house also serves as the headquarters of his occult publishing business.

Soon I meet the gentleman himself, and I'm utterly disarmed by him. Whereas I had expected to meet someone rather theatrical and faintly sinister, he is none of those things. He is, instead, a man of obviously very high intelligence and encyclopaedic knowledge. He is friendly and down-to-earth and has a droll sense of humor. Though he is very sincere and serious about witchcraft, it's plain to see that he doesn't take himself too seriously.

I know very little about witchcraft—only what I learned while researching a production of "Bell, Book and Candle" which I directed on television several years ago—so I make so bold as to ask him a few questions, which he graciously answers.

When I ask him how he defines witchcraft he says that it is regarded as a religion, but, even more than that, a practical philosophy for positive living.

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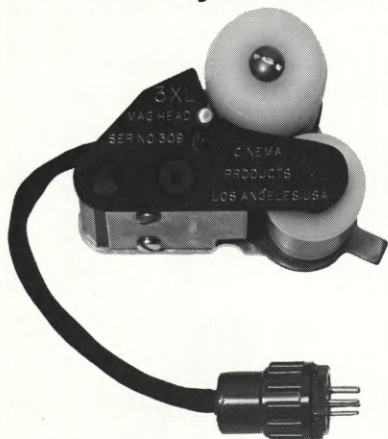
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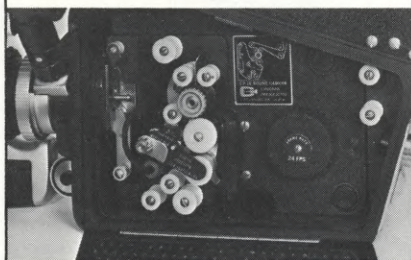
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His coven practices "white magic", with the aim of helping the individual realize his highest potential as a person. Though he has nothing derogatory to say about Satanists and black magic types, it is clear that his philosophy is far removed from theirs—although they share some basic rituals in common. "It's not the form, but the *intent* that makes the difference," he tells me.

I ask him why he has consented to participate in the making of this film and he tells me, very simply, that he feels that witchcraft has been kept a deep, dark secret for far too long. Miapprehensions have grown up about it because of the secrecy and he feels that the film will help inform the public as to what it really is; also, he trusts Hurley and his crew to treat the subject with respect. He admits that his views are not shared by all of the witches. Many of them feel that their secrets have been jealously guarded for 2,000 years and that this secrecy must continue. He shrugs—he has to do what he thinks is right. He excuses himself politely. He has to get into his robes for the filming that is to take place.

Meanwhile, the leading lady has arrived. She is a lovely blonde named Mari Norvang—friendly and funny and a really good sport, as it turns out. She's done some stage work and a few television dramas, but this is her first feature movie. By curious coincidence, she has played on television the role of the hapless maid servant who hanged herself in the stairwell on the third floor.

Meanwhile, the crew is busy in the basement, hanging lights, readying cameras, taking meter readings. The first scene will be a "walking dolly" shot down a long corridor as the novice and her witch guide approach the ritual chamber. Ned hides Tota-Lights in nooks and crannies along the way, covering them with reddish amber gels. The "key" light on the girls' faces will actually emanate from the candles they are carrying.

Maury calls for a run-through. The girls walk down the corridor. Skip Nelson, hand-holding the Eclair with the F/.95 lens mounted walks backward about four paces in front of them, executing a very smooth "trucking" shot. Three takes are made. Maury "prints" the last one. It's in the can. Strike it! Next set-up!

Now we move into the ritual chamber, and this is an astounding "set". It is an oval-shaped room with a low ceiling and it is crammed with the various trappings of witchcraft. A mirror-lined black coffin stands against one wall, with candles burning inside it. There are crystal balls, smoking incense contain-

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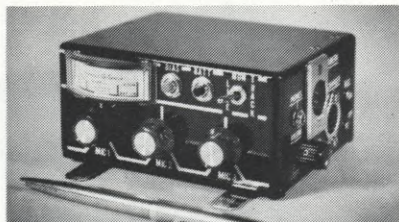
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ers, black-light posters of occult design, and many unfamiliar objects of an exotic nature. On the carpet has been drawn the "magic circle" with pentagram in the center. Overhead a Tiffany glass lamp sheds a ruddy glow.

Tiny Mole-Richardson quartz lights have been hung against the low ceiling to provide atmospheric area lighting. Ned Judge bounces the beam of a slightly larger lamp off the ceiling to provide some sort of faint fill light over-all.

Present in the room, resplendent in their witch robes, are Carl, his wife and two other young ladies. The crew is set up to shoot—Ned with the tripod-mounted ACL, Skip hand-holding the NPR, Lyle holding the microphone, with the Nagra slung from his shoulder. Since this is the real thing, there will be no rehearsals. They'll have to "wing" it.

The Initiation Ritual begins with Carl "opening the circle"—that is, calling up the "powers" from their various other worlds—commanding them to come forth and join the circle. The roster of powers summoned includes a comprehensive pantheon of ancient deities—Egyptian gods, Indian gods, the Hebrew god, Assyrian gods, Druidic gods. Facing, in turn, toward the four points of the compass, and pointing aloft a small dagger, Carl sings out their names in a *basso profundo* worthy of an opera star. I could swear I feel the room filling with unseen presences. My hair stands on end.

Suddenly there is a knock on the door—and I almost jump out of my skin. Carl asks who is there, and the witch guide says that a novitiate has come, seeking initiation. Carl bids them enter, and the door slowly opens.

There stands the red-robed guide leading the novitiate, who is mother-naked, except for a sweet smile on her face and a blue hood-like cap that covers her eyes. Her hands are tied behind her back with a silken cord.

They move on into the room and enter the magic circle through a wooden archway. I can hear the faint whir of the cameras—and the pounding of my own heart. I can't shake the feeling that there are more entities in that room than I can see. The vibes are confused and strangely hostile. The air seems thick.

The Initiation Ritual unfolds in a choreography that seems to be moving at about 96 frames. Carl's deep voice fills the room as he recites the incantations. Swinging a pyx fuming with incense, he greets the novitiate, embraces her, kneels before her, bestows the ritual kisses.

The camera crew stands transfixed.



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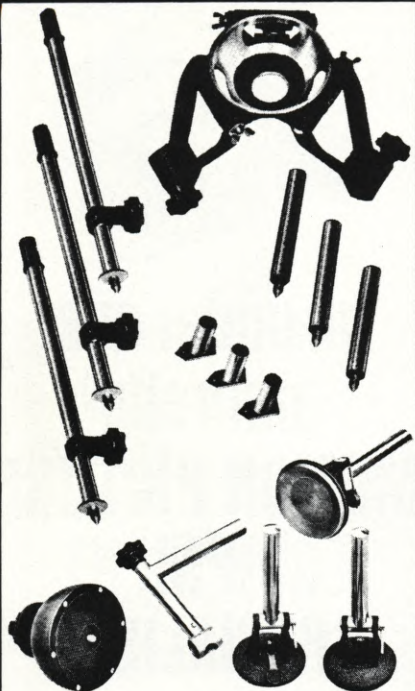
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Skip Nelson, moving like a ghost about the room with his hand-held camera, probes for angles. His movements seem dreamlike—as if he were gliding about on full automatic.

Now the novice is kneeling before the coven leader, as he prepares to carry out the symbolic scourging. There is a tension in the very air. The "scourge" is made up of flails that are actually colored ribbons. He lashes the naked back of the kneeling novice, counting out the blows one-by-one. With each blow the tension seems to mount.

When he reaches the ninth blow, one of the attendant witches suddenly collapses and falls to the floor. The cameras continue to whirl. This must be part of the ritual. But, no—something is very wrong. The other witches rush to the fallen one. Her face is dead white against her red robe. Carl quietly calls for water, kneels over the stricken witch, rubs her wrists, gently slaps her cheek. For what seems like several minutes, she does not move at all. The tension in the room is, by now, almost unbearable. Then slowly—incredibly slowly—she begins to stir. It takes the longest time for her to float up out of the mists of wherever she was—and now she doesn't know where she is. It takes several more minutes for her to reorient to the here and the now.

The cameras have stopped. I catch a glimpse of Hurley's face. He's goggle-eyed—horrified—and so am I.

The fallen witch is helped to her feet. She mumbles something about having seen visions... heard voices... Hurley turns to the crew. "It's a wrap," he says in a hoarse whisper. "We won't shoot anymore tonight." We're all shaken by what has happened—all except Carl, who seems completely composed and tranquil.

Later, back at my hotel, we huddle over scotch-and-sodas, performing a post mortem of the evening's events.

"We can never shoot in that room again," says Hurley. "We went too far... offended someone... or some thing... I'd been warned that something startling might happen there tonight—and it *did*."

"What in hell do you suppose *did* happen?" I ask.

"I don't really know," says Hurley. "To us, standing outside the circle, it looked like it fell apart because of the heat, the lights, the tension. But to the witches inside the circle, it fell apart because powers came in and possessed the girl and she passed out. They told me privately that this was unusual. They never expected it to happen. By their definition, we invoked the gods and commanded them to be present at the

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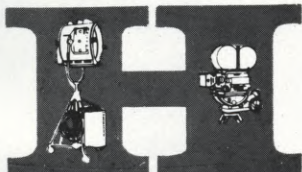
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ceremony, but we had no purpose for them. There was no reason for them to be there—except our cotton-pickin' movie—and so they were mischievous. I don't know. I can't really explain it. I just know that it happened, and I don't want it to happen again."

"What about the shooting scheduled for tomorrow night?" I ask.

"Well, tomorrow night we're going to shoot the 'Calling down of the Moon' ceremony outdoors," he says. "It's a celebration kind of thing—chanting and dancing around the fire. Carl says it's all right to go through with it. But this time, we won't open the circle. I think that was our big mistake—opening the circle and actually invoking the powers. We were trying to be completely authentic, but we got more authenticity than we bargained for!"

On the following evening we drive to a place in the countryside about 25 miles outside of St. Paul. We turn into a gate and find ourselves in what seems like a vast private estate. It is actually a former experimental horticultural farm belonging to Carl's parents. On it, 40 years ago, his late father had built a magnificent log cabin.

We go inside and meet Carl's mother, a charming lady who, with the typical warm hospitality of midwestern people, extends a cordial welcome to the camera crew, the first arrivals. She has prepared a heaping tray of sandwiches and coffee to sustain the witches who are to gather for the ceremony that night.

I'm absolutely fascinated with the log cabin. Built of huge logs originally trucked in from God-knows-where, it is an authentic replica of American frontier architecture—except for the modern plumbing and electricity that have been added for comfort's sake. With my Walter Mitty imagination, I have little trouble becoming Daniel Boone in a place like this.

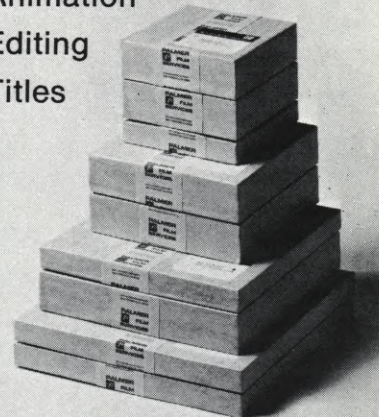
The area where we are going to shoot is a clearing off in the woods. Details are formed to gather firewood and get the torches set up. Lyle McIntyre has brought along a portable television set which he plugs into his car so that he can watch "ALL IN THE FAMILY" between chores.


The torches, four of them surrounding the fire area—are to be fueled by propane and it's necessary to dig holes to hide the propane tanks. Loads of firewood are brought in and stacked, so that everything is ready by the time the witches arrive. There are more of them tonight—three men and six women. Just the right proportion, by my reckoning.

By the time it is dark, everything is set to go. Lyle having seen Archie

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Bunker through his crisis of the evening, now has the Nagra set up for recording. Skip has his fast lens mounted on the NPR. This is going to be essentially an available light shoot, with all of the lighting coming from the fire and the torches. Obviously, with a bunch of witches in dark robes, moving against a pitch black background, that won't quite do it.

To help the situation, Ned has rigged a makeshift portable light. It consists simply of a bare quartz lamp dangling from a wire and backed up by a folded aluminum foil reflector. This ridiculous-looking homemade rig, powered by a battery slung over Ned's shoulder, kicks out an amazing amount of lumens and it serves admirably as a fill light or rim light as needed. A couple of Coleman lanterns, actually brought along as work lights, are pressed into service for the same purpose, even though their color temperatures are a bit high.

The "Calling down of the Moon" Ceremony begins and Carl, who carefully avoids "opening the circle" this time, welcomes the initiate and goes through the appropriate ritual. The witches chant in unison as they march around the fire.

The cameras grind and everything goes very well. Meanwhile, the night air has grown very cold and the witches (to say nothing of the camera crew) are shivering. Between takes, Carl says: "I'm beginning to think we're indoor witches."

Now is when Skip Nelson shows his genius as a cameraman. Shooting with the F/.95 lens wide open, he has about a three-eighths-inch depth of field and the light level is so low that he can barely see anything clearly enough through the viewfinder to get a focus. But he manages to split whatever focus there is to get in-depth shots and some fine compositions. Ned is also busy shooting like the pro that he is, and there's nary a complaint from either of them.

All goes without a hitch. Nobody gets possessed by anything (except, maybe, the cold); nobody passes out; there's nothing but good vibes. We wrap it all up in short order and gorge ourselves on Mrs. Weschke's fine sandwiches.

The next morning, winging toward Hollywood on the plane, I reflect that this has been one of my more worthwhile adventures. I've had the pleasure of being with a group of real pros doing their thing for the sheer joy of doing it. I've met some fascinating people and learned a lot about witchcraft.

And I've managed to get the hell out of there without getting turned into a frog!



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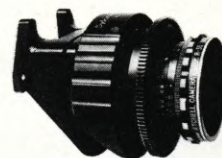
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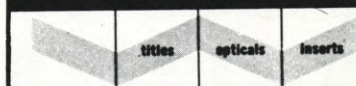
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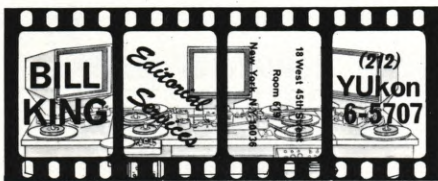
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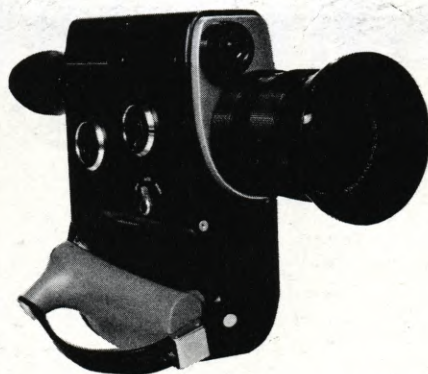
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