

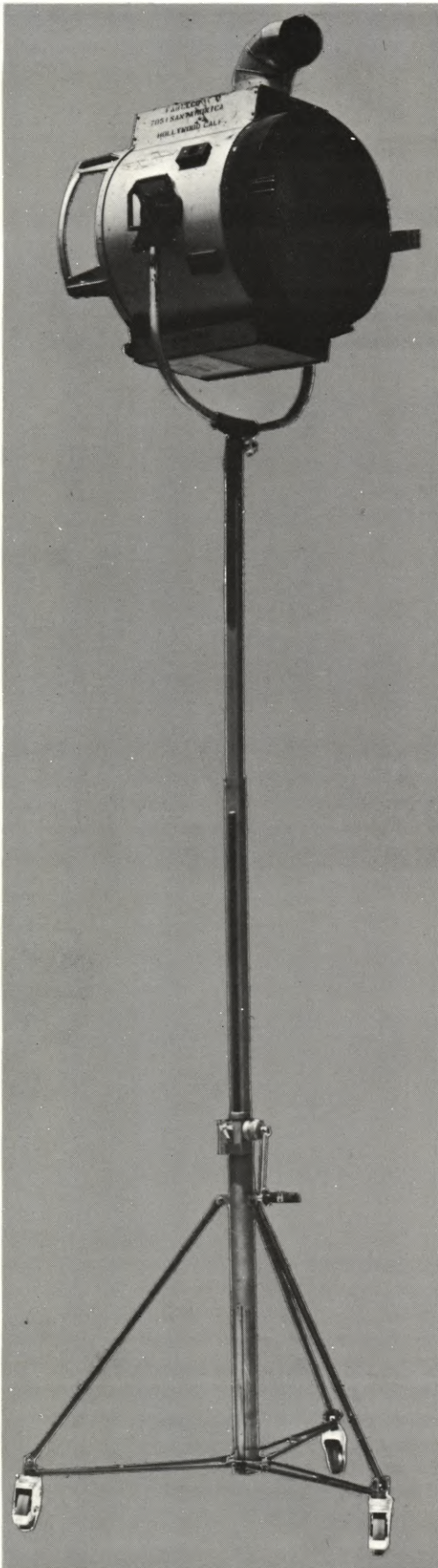
American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

SEPTEMBER 1972 / 75 cents



THE UPSIDE-DOWN FILMING OF "THE POSEIDON ADVENTURE"



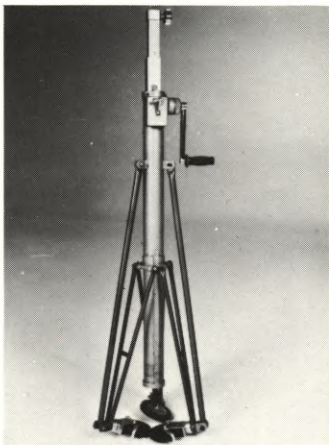
Liftalite extends to over 12½ feet high for quick illumination of those hard to light areas.

LIFTALITE

INTRODUCTORY SALE

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*EXTENDED TO 1 OCTOBER 1972, THEN PRICE INCREASES TO \$525.00 THEREAFTER



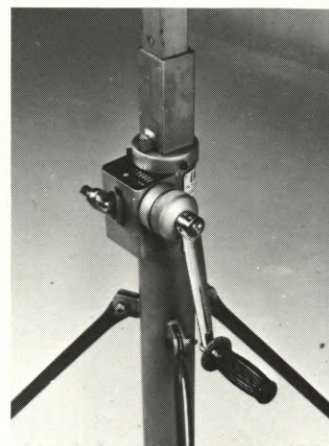
Liftalite collapses to 5 feet, 2 inches and weighs 57 pounds for maximum portability.



Liftalite folds out within a 5 foot circle and stands upright 4 feet, 9 inches for compact maneuverability.



Liftalite holds a 200 pound brute arc and keeps it in place with 2 lock-off wheels for safety.



Liftalite cranks easily up and down and features adjustable clutch and safety break for positive control.

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Division of F&B/Ceco Ind., Inc.

Please ship.....Liftalites at the introductory sale price of \$395.00 each (add 5% tax in Calif.) Total price..... Shipment F.O.B. Hollywood, California.

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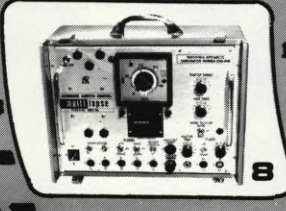
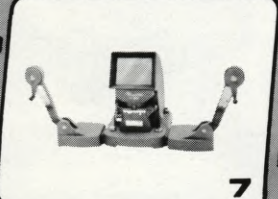
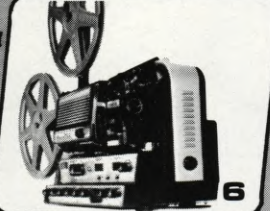
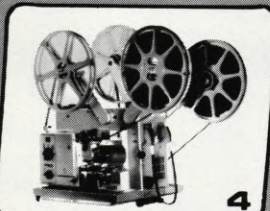
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BEL AIR CAMERA AND HI-FI

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West Los Angeles Headquarters for ARRIFLEX

BEL AIR CAMERA has long enjoyed an enviable reputation as an unequalled source of information and counsel on all subjects pertaining to professional and advanced 8 and 16 mm cinematography. BEL AIR's thoroughly competent staff is constantly available to assist in any cinematographic problem. And all Beaulieu, Arriflex, Sonorex, Hervic, Heurtier, and Uher products are instantly available from stock. Please accept our invitation to visit us at any time to see our vast stock of cinematographic/photographic equipment. Drop us a card or phone if you prefer. You will enjoy your association with Bel Air Camera and Hi Fi.



1. The ARRIFLEX 16BL camera is a self-blimped, lightweight, professional 16mm camera, "sound convertible" for double system/single system recording. All cameras are equipped to accept the Arri single system recording module. All Arriflex 16BL cameras feature built-in 60Hz control signal generator, running light, and automatic electric claspstick with manual scene marker. The famous Arri precision registration pin movement, mirror shutter, reflex finder system with provision for interchangeable finders, standard type A finder, automatic closure eye-piece, ground glass with TV safe action markings, and customer's choice of zoom lens are standard equipment. Arriflex 16BL cameras may be optionally factory equipped with the "APEC" Arri Precision Exposure Control and the Arri Zoom Motor Control. Our staff members will be happy to describe these advanced creative film maker's features for you.
2. The BEAULIEU R16B(PZ). One of the world's most advanced 16mm motion picture cameras. Has built-in power zoom with continuously variable zoom speed from 3 through 15 seconds and positive stop/start with manual override, coupled to the fine Angenieux 12-120 mm "auto" zoom lens. Mirrored shutter allows all the light to pass alternately to the brilliant reflex viewfinder and to the film. Fully automatic exposure control with manual override. Ultra-accurate speed control from 2 to 64 frames per second. Nickel cadmium battery screws into (and forms part of) camera handgrip - eliminating the need for battery back hanging over the shoulder or battery belt attached around the waist. Ability to accept most standard "C" mount lenses, and (with the use of lens adapters) an extensive range of still camera lenses, is only a part of the outstanding features that make the Beaulieu R16B(PZ) the favorite choice of the TV-news film and documentary cameramen, and the "new cinema" producers. The R16B(PZ) is also available with an Angenieux 17-68 mm zoom lens. An optional range of accessories include a 200 ft. magazine, 60 cycle sync generator, 500 mA and extra heavy duty 1000 mA Ni-Cad batteries, battery chargers, cases, etc. Inspect the BEAULIEU R16B(PZ) at Bel Air Camera where ALL your questions can be answered. Consider this fine instrument for your next sync/sound production.
3. The UHER 1000/N Neo Pilot 1/4" Sync Tape Recorder, specifically designed for sound film synchronization is ideal for use with the Beaulieu, Arriflex, Eclair, and similar first line cameras. Its lightweight 7 1/2 lbs., small and compact 11 x 9 x 3 1/2 inch size and the ready accessibility of its operating controls in the ever-ready shoulder case, make it the perfect unit for on-location sound filming. An assured frequency response of 20-20,000 Hz at a stroboscopically controlled speed of 7 1/2 i.p.s. combined with a full-track recording, produces precisely synchronized sound without variation. Ruggedly built and fully climatized. Has interruptible automatic photo-electric level control, interruptible low frequency filter, sync signal test button, battery condition test button, off-the-tape monitoring, built-in monitoring speaker, and adjustable CCIR or NARTB record equalization. Mixer jacks, 600 ohm balanced, for adding sound sources. Operates on self-contained batteries, car battery, or 110/250 volt AC power. Complete with microphone, 5 Ni-Cad batteries, AC Power Supply/Charger, case, and camera connecting cable.
4. The SONOREX Double/16 Sound Projector offers sound capabilities that far exceed those of a conventional 16mm machine. It permits single system optical playback and magnetic record/playback; it provides double system record and playback in perfect sync, and has extensive facilities for transfer, mixing, recording, and re-recording. Picture steadiness is better than 1/1000th of a picture height. The projector uses a 24 volt-250 watt Halogen lamp, a 1:6.9 ratio shutter, and a fast lens for a light output of approximately 500 lumens. A solid state amplifier with a power output of 20 watts continuous into 8 ohms has inputs for microphone, phono, and balanced +6db line. Outputs include built-in monitor, separate main speaker, balanced +6db line, and unbalanced adjustable line. Film-end and film-break safety switches are built in. Standard accessories permit multi-screen, multi-media, and similar special presentations, as well as multi-projector interlocks. Transfers from 1/4" tapes to 200 mil sound tracks on 16mm magnetic film may be made on the Sonorex. This projector is a "must see" for all serious film makers.
5. The BEAULIEU 4008ZM2 Zoom Macro represents the ultimate in advanced Super-8 motion picture cameras. The 4008ZM2 has double system synchronous sound capability (with automatic tape recorder start/stop control), continuously variable power zoom from 2 through 12 seconds, motorized macro focusing as close as 1 millimeter from the front element of its super wide angle Beaulieu-Optivaron f1.8 zoom lens (focal length 6-66mm), without added accessories. Superimpositions and lap-dissolves are possible (up to 100 frames duration) with this unique camera system. The 4008ZM2 accepts all standard C-mount lenses. And all 35mm still camera lenses as well (when used with suitable C-mount adapter). The super-luminous 27X magnification viewfinder functions with a mirrored guillotine-type shutter (set at 45° angle), which alternately directs ALL the light on to the film or into the viewfinder. The viewfinder is equipped with a fine-grain ground glass focusing screen. The variable shutter allows fade-ins, and fade-outs. Self-resetting footage counter and resettable frame counter (1-100). Continuously variable film speeds from 2 through 70 frames per second. Single frame and remote control filming is provided for. Self-contained 250 mA nickel-cadmium battery is readily recharged with a 30 mA charger. Uses standard 50 ft. Super-8 cartridges. With the Beaulieu 4008ZM2 you can produce motion pictures of true professional quality.
6. HEURTIER Super-8 STEREO SOUND Projector. This all new Super-8 projector - an innovation in Super-8 sound projectors - features a unique and revolutionary STEREO SOUND system. The Heurtier ST 42 STEREO's integral magnetic sound system provides professional STEREO SOUND quality, and is supplied with dual speakers, two microphones, and a headphone set. Its "twin head" magnetic recorder (using the main track stripe and balance stripe for recording), can be used for simultaneous full stereo recording, or recording on either one of the two tracks separately - with complete "sound mixing" control. Among other features, the ST-42 STEREO projector offers sound superimposition, sound transfer, echo effects, a built-in public address system, an 18-frame sound/picture separation, and an INSTANT START heavy duty flywheel for the best possible sound recording and playback quality. The ST-42 STEREO sound projector is ruggedly constructed and attractively designed. It provides rock-steady, critically sharp pictures, with a choice of projection speeds at 18 and 24 f.p.s., forward and reverse. PLUS . . . 800' reel capacity; SOM Berthiot 17-28 mm zoom lens, f.1.3; and completely automatic film threading from reel-to-reel.
7. HERVIC 16 mm and Super-8 Viewer-Editors. Large, brilliant projected image (16 mm: 3.2"x4.2"; Super-8: 2.9"x3.8"). Four sided optical prism (instead of shutter) prevents flicker. Sturdy all-metal 16 mm body weighs 8 lbs., all metal Super-8 weighs 5 1/2 lbs. Uses 6 volt 10 watt projection bulb. Optional 16 mm rewinds (2000 ft. capacity, weight 5 lbs.) fold for storage. Super-8 has built-in folding rewinds, 400 ft. capacity. Hervic Viewer-Editors feature a film pressure plate which maintains picture sharpness whether film is in motion or stationary, a frame marker, focusing and framing controls, and dust-proof glass screen. Hervic 16 mm & Super-8 Viewer-Editors are precision made, smooth operating, of professional quality, and are built for many years of service. (Illustration shows 16 mm model with rewinds).
8. MULTILAPSE - a remarkable instrument for time-lapse cinematography. Operates the camera, lights (flood or strobe flash), motors, background curtain, etc., at intervals from 4 frames per second to 1 frame every 45 hours! Entirely automatic, it may be left unattended for days, making time lapse exposures every 4 1/2 minutes, or any other of many selected intervals. Has "shutter hold" to expose several frames at a time, exposure counter, shutter thrust adjustment, flash charge outlet for strobe batteries, fine adjustment for flash synchronization, and many more features not found in any other instrument designed for time-lapse operation. Fully portable, operates on regular 100/120v AC power source. Requires no accessory elements - operates with your normal equipment.

BEL AIR CAMERA AND HI FI, 927 Westwood Blvd., Los Angeles, Calif. 90024.

Please send me literature on the cinema products checked below.

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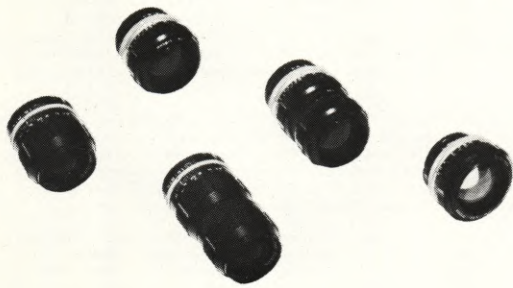
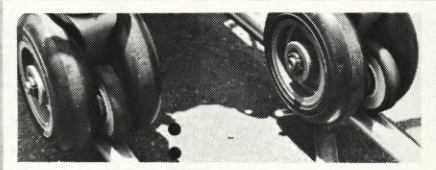
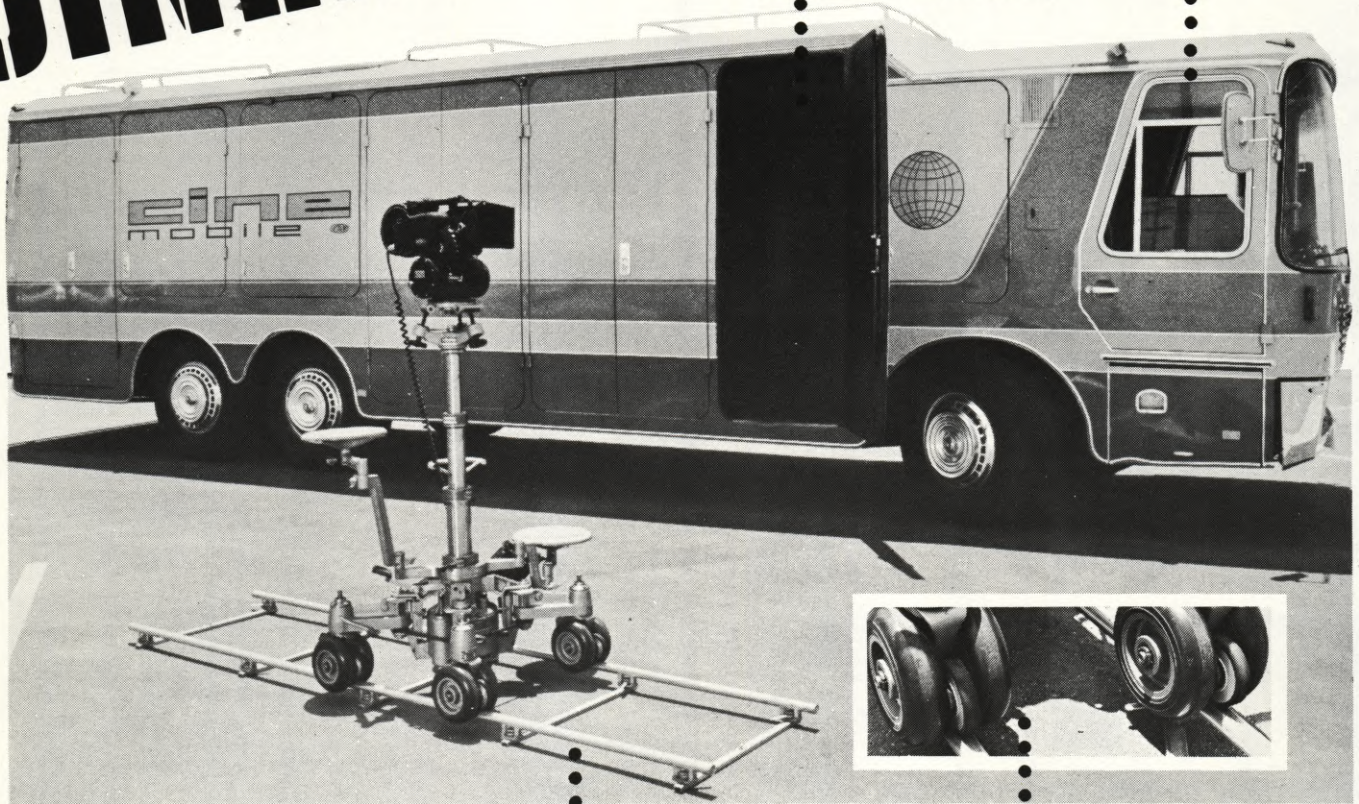
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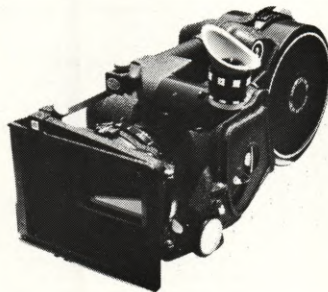
WHAT'S NEW FROM CINEMOBILE

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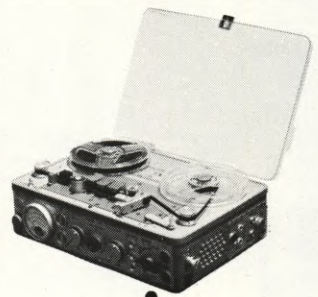
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• FEATURE ARTICLES

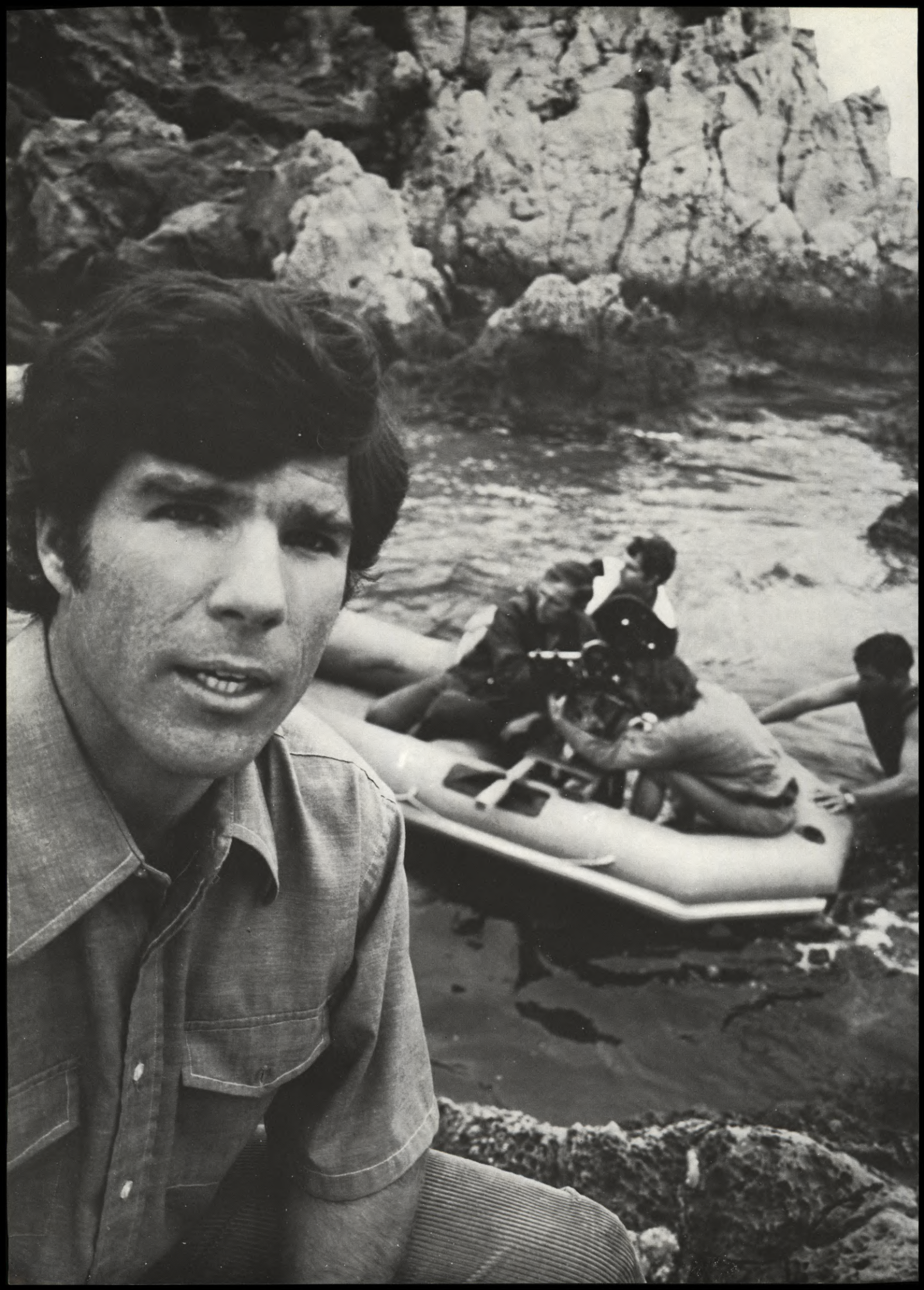
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ON THE COVER: A scene from the Irwin Allen Production for 20th Century-Fox, "THE POSEIDON ADVENTURE", in which survivors seeking escape pick their way through the devastated engine room of an ocean liner which has been turned upside-down by a tidal wave. Cover design by PERRI & SMITH.

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Everyone there was cool.
Except me.

It was my first time in front of a camera and the only "action" I was getting was an uncontrollable knocking in the knees. Even though I'd worked hard to get into a film, when my cue came, there was no getting around the fact that I was scared.

Another thing that threw me at first was shooting out of sequence. It's a lot different from working on the stage. Sometimes the beginning of a film is the end and the end is the beginning. You really have to learn to shift gears to stay on top of your role.

I told you, didn't I, that this picture is being made for television? So I'm glad they're shooting it on Eastman film, not on tape. With film, if it goes over well on the little screen, it can easily go out on the road or be shown in-flight. That'll mean more exposure for the picture...and for me.



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WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE



NEW FORMATS FOR KEM

KEM Electronic Mechanic Corporation, New York and Hollywood, now has available Picture Modules in both the contact Techniscope and anamorphic formats.

In a newly-developed wide-screen housing which presents images 21¼" x 9", both types will instantly drop into place for use on any KEM Universal Editing Table, and are available for purchase or rent.

The Techniscope-format Picture Modules make available for the first time a practical and universal method of using the 2-perforation pull-down system thruout the post-production process. Now it is feasible to have laboratories make contact work prints from Techniscope negatives at half the regular 35mm cost and for the producer to cut and use this material until the final answer print.

A major breakthrough in KEM's application of Techniscope is based on the instant interchangeability of sprockets and shoes on KEM Editing Tables: to solve the problem of the 45 feet per minute sound speed of the Techniscope system, KEM is also making available special sprockets which automatically make any transport run the required one-half of normal 35mm speed; thus, any KEM can run the 2-perf prints in absolute interlock with separate magnetic tracks at either 90 fpm or 45 fpm or, for that matter, with 16mm, 36 fpm tracks.

The anamorphic Picture Modules, for Panavision 35, CinemaScope, and similar 2:1 squeezed formats, are also instantly switchable to normal, unsqueezed 35mm projection within the wide-screen field for regular images approximately 13" x 9", similar in size to the regular 16mm and 35mm KEM Picture Modules.

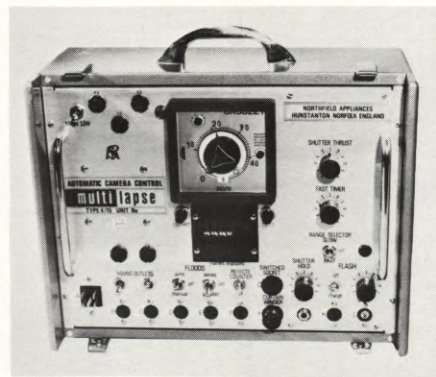
Both the Techniscope and Panavision Picture Modules are in the 2.35 to 1

aspect ratio; the 21¼" x 9" picture size makes screening as well as editing on the KEM practical with these formats.

The development of the wide-screen Modules is part of KEM's continuing program of making available editing machines which retain all their features when interchanged for any combination of formats in professional use in the industry. Super-16, for example, was previously introduced by KEM in Picture Modules 14" x 8½" for an aspect ratio of 1.66 to 1.

All KEM tables use any Picture Modules in combinations up to three in interlock together with additional sound tracks. The forthcoming KEM 4-plate "Junior" will also take any one of these Pictures in interlock with one separate magnetic track.

(Price information if required: Techniscope and Panavision Picture Modules sell for \$2,300.00 each, rent for \$18.00 per day, \$216.00 per month. The special 45 fpm Techniscope sprockets and shoes are \$230.00, and rent for \$2.00 per day, \$24.00 per month.)



HERVIC/MULTILAPSE UNIT AVAILABLE FOR TIME LAPSE PHOTOGRAPHY

Hervic Corporation/Cinema Beaulieu proudly announces the immediate availability of the Hervic/Multilapse automatic control unit for professional time lapse photography.

The Hervic/Multilapse unit has been designed to control the camera, flood lamps and electronic flash at any selected time interval from 4 frames per second . . . to one frame every 45 hours . . . consequently covering most times required in normal time lapse photography work, whether a motion picture camera or a motorized still camera is

used. The Hervic/Multilapse unit will control most makes of motion picture or motorized still cameras . . . the only connection being the cable release from the shutter release solenoid.

A number of very important features to be found on the Hervic/Multilapse unit include:

- Built-in Hold Circuit (which allows camera to expose up to a dozen or more frames per cycle)
- A Release Thrust Control (which varies, from minimum to full power, the thrust or power of the shutter release)
- Slow Timer (six stage timer which gives intervals of 1½ seconds up to 45 hours)
- Fast Timer (fast times of up to 4 or 5 frames per second, and down to 1 frame per 1½ seconds available)
- Integral Frame Counter.

The Hervic/Multilapse unit is housed in an attache-type steel case. The front panel has been designed so that all switches are adjacent to the outlets they control. The total weight of the unit is 40 lbs.

The price of the Hervic/Multilapse unit is: \$1,595.00.

For further information, write Hervic Corporation/Cinema Beaulieu, 14225 Ventura Boulevard, Sherman Oaks, California 91403.

35mm FLICKER-FREE ANALYSIS PROJECTOR

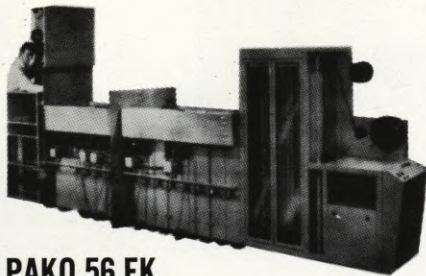
A 35mm flicker-free motion analysis projector is announced by Instrumentation Marketing Corporation, exclusive distributors, Burbank, California.

Designated the Model M-35CF/S-1, it is ideally suited for qualitative presentation for analyzing such films as cine X-ray or cinefluorographic, instrumentation, etc. It features precision flicker-free projection from less than 1 fps to 25 fps, completely variable forward or reverse, no viewer eye strain, tension or fatigue. Its capacity is 1200', has frame counter that adds, subtracts, has push-button reset and high-speed rewind. Stand utilizes a first-surface mirror directing light horizontally; heads turn so that projected image may be rotated 360° or locked in any position. The unit is manufactured by Vanguard Instrument Corp., Melville, L.I., New York.

Price: \$6130.00.

For further information contact: Richard Freeborg, President; Instrumentation Marketing Corp.; 820 South Mariposa Street; Burbank, California 91506; Phone: 213-849-6251. ■

wet and dry laboratory equipment



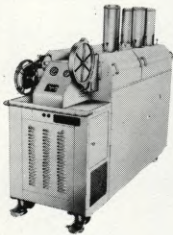
PAKO 56 EK 16MM COLOR PROCESSOR

Ektachrome ME-4 or ECO process. Designed to handle large volumes of film with minimum of labor. **Features:**

- Modular construction — easy installation
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- Air squeegee "wiping"
- Remote main control panel

Only one machine available at sale price. Sold new for more than \$30,000.00.

Sale Price: **\$15,250.00** (Includes spare parts)



HOUSTON A-11 PROCESSOR

A fully automatic processor for reversal and negative-positive films, producing exceptionally fine quality work. Daylight loading feature makes special partitions unnecessary. Casters allow for convenient placement of the machine. Can be operated wherever power, water and drain facilities are available. Rebuilt, in excellent condition and offered at a fraction of the original cost of \$8000.00.

Used **\$1950.00**

Rebuilt, like new **\$3450.00**

Many other processors in stock, for every need. Tabletop portable units to high production continuous duty laboratory models. Let us know your needs.

BELL & HOWELL PRINTER PARTS AVAILABLE

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BELL AND HOWELL CINE PRINTERS

Models D and J

These are the most widely used printers in the industry. Features include 22 exposure positions controlled by magnetic clutch, variable aperture, high-intensity lamp house, 1200-ft. capacity, motor-driven cooling fan, friction-type flange hubs and many more.

Model D, 35mm

Rebuilt, Like New **\$4995.00**

Reconditioned **\$3100.00**

Used **\$2595.00**

Model J, 16mm

Rebuilt, Like New **\$5650.00**

Reconditioned **\$4995.00**

Used **\$4250.00**

OTHER PRINTERS AVAILABLE

Bell & Howell/Depue 35/16 Reduction Printer with additive light source. Fully automatic color printer with tape reader. Rebuilt, excellent condition **\$22,500.00**

Arriflex 35mm Step Printer, with punch tape control, used, as is **\$1495.00**

Herrnfeld 35mm Printer, with shotgun color filter changer, used, as is **\$995.00**

L and F Table Top Contact Printer, 8 and 16mm, used, as is **\$150.00**

Depue Optical Reduction Printer Mdl. K3-35/16, rebuilt, excellent condition **\$5500.00**

Depue light control board designed for use w/ Depue Optical Reduction Printers. Provides 22 light changes, used **\$685.00**

EL 13A FILM DRYER 16/35/70MM

Designed to dry up to 500 ft. of 16, 35 and 70mm film at speeds up to 19 ft. per minute under a wide range of temperature and humidity conditions. Heating and film transport mechanisms are housed in a stainless steel cabinet with reinforced glass inspection doors. Air impingement unit and air recirculation can be controlled from 0 to 100%. Sold new: \$4950.00

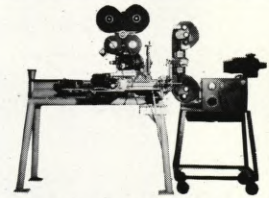
Sale Price, Rebuilt like new **\$3400.00**

BELL & HOWELL 16MM CONTINUOUS COLOR ADDITIVE PRINTER

Completely automatic printer providing scene to scene color and density corrections through the use of coded control tape. Light source of 1000 watts split into three primary colors using dichroic filters. Each color beam independently attenuated by means of radially movable vanes. Thirty exposure steps of .025 log E are available, plus six steps of filter correction. All color and density changes made on the frame line. Printing speed 150 feet per minute. Synchronous motor drive. Torque motor take-ups. Three adjustable fade lengths. Push button start with automatic stop within two frames. All controls illuminated. Model 6100. Complete with 16mm Bell & Howell Sound Head, Model 6190.

Original cost \$32,000.00

Sale price, Like new: **\$14,950.00**



35MM OPTICAL PRINTER

Photographic head is Bell & Howell camera mounted on lathe bed which, while set up for one-to-one printing, can be moved in all directions both vertical and horizontal to enlarge or reduce picture image. Copying lens is Eastman Printing Ektar. Camera also fitted with Acme Reflex Lineup Tube. Camera has electric shutter fading mechanism which can be preset for any length fade or dissolve. Also has bipack magazine setup for traveling matte work within camera itself. Projection head is latest type Acme unit which will accommodate 1000' rolls. Also has two 400' flanges for each magazine that are interchangeable for using traveling matte in printing head. Head and camera have separate motor drives for high speed rewind or positioning plus regular composite motor drive for forward, reverse or opposite directions. Lamp source is variable color temperature controlled Acme Projection Lamp mounted on base which can be moved away for working around printer.

Price **\$11,500.00**

EDGE NUMBERING MACHINE



An important aid and time saving device which enables the film editor to quickly tie together the picture and sound track in perfect synchronization. Prints identification numbers onto the base side of the film with ink.

Model ENM-35. List price \$2500.00

Sale Price **\$1895.00**

Model ENM-16. List Price \$3675.00.

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Sound Scoopic 200



Canon
SOUND SCOOPIC 200

Canon USA, Inc.
10 Nevada Drive
Lake Success, New York 11040

rosco cinegel

T.M.

A COMPLETE SYSTEM OF LIGHT CONTROL MEDIA

Until very recently, light control materials were available to the cinematographer only as a haphazard collection of gels, filters, reflectors and diffusion screens. Borrowed from other fields, they were made to work, mostly because there were no alternatives.

Now, with the help and guidance of several of today's leading cinematographers, we've put together a total system that really answers the needs of the industry.

A full range of Rosco Cinegels is available to control color temperatures of lights of all kinds as well as convert daylight to 3200 K and reduce its intensity. Diffusion materials and reflector surfaces control the "quality" of the light in another dimension.

All these materials have one thing in common: They are designed to precisely fit the special needs of lighting for cinematography.

The Roscoflex panels, for instance, fulfill the need for a fast and easy way to convert daylight from windows and doors to 3200 K, or reduce the intensity of daylight in varying degrees, or a combination of both. The 4 ft. x 8 ft. panels go up fast, strike just as fast, and permit quick response to changing conditions. They are optically clear enough to shoot through and they can be re-used again and again.

But they are not the only way to control daylight. To gel windows there is a range of other Cinegels available. Some adhere directly to glass, others need framing.

There are gels to balance daylight and dichroics to fluorescent light. There's even a gel that takes an

ordinary 3200 K light source, raises it to daylight and adds just enough green to match the cast of the fluorescents. The entire correction can then take place with one filter on the lens. There's no need to turn off or overpower the light from the fluorescents.

There are eight different blues to raise the color temperature of lights. Each has a very specific function, from boosting fading blue-faced FAY lamps, to replacing dichroics altogether.

We offer seven different diffusion materials ranging from a "Tough Frost" able to stand up under high-heat situations to a "Tough Spun" without the itch and irritation of glass.

Whether the Brute you are gelling has white or yellow carbon, Rosco Cinegels offer just the right correction and U-V absorption in waste-free 30" rolls and in a material tough enough to take it.

A "soft" reflector board used to take 100 sheets of aluminum leaf, carefully pasted down with edges curled to break up the light. It takes one single, easily applied, sheet of Roscoflex to create the same effect. And Roscoflex has a tough, salt-air resistant surface that can be washed, dusted, or hosed down again and again without scratching or tarnishing.

Whether you want to control the color temperature of light or its intensity, diffuse it or reflect it, there's a complete range of special materials available from Rosco.

They are very different from each other, each one just right for its specific task, but they all share a common purpose. That's why we've decided to give them a generic name . . . "Light Control Media".

Together they offer the cinematographer, for the first time, a complete system of light control media.



rosco
Port Chester, N.Y. 10573

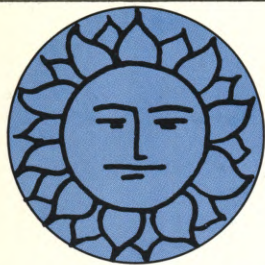
FREE: Swatchbooks of Cinegel are yours, FREE, for the asking.

rosco cinegel

T.M.

NEW

Color Media to balance daylight, quartz or incandescent light to the great cast of standard "daylight" or "cool white" fluorescent bulbs.



CONVERT DAYLIGHT TO 3200 K



ROSCOVIN 85

roscovin 85
Converts "daylight" to 3200 K. Adheres directly to glass without taping or framing.
Rolls: 54" x 50 ft.

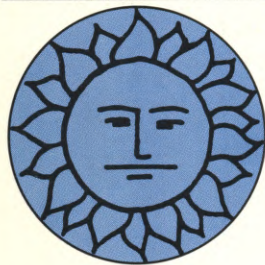
roscolene cine 85
Converts "daylight" to 3200 K. High clarity acetate base.
Rolls: 48" x 50 ft.



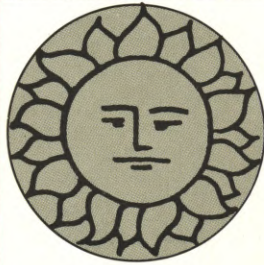
ROSCOLENE CINE 85

ROSCOLEX 85

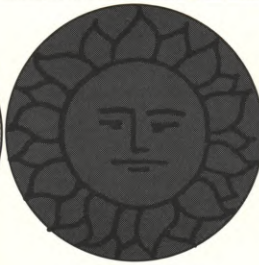
roscolene 85
Converts "daylight" to 3200 K. 4 ft x 8 ft. Optically clear, designed for fast handling.



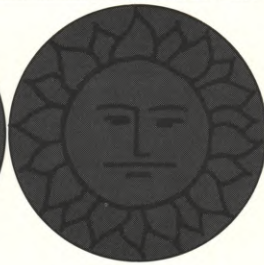
REDUCE THE INTENSITY OF DAYLIGHT



ROSCOVIN N3

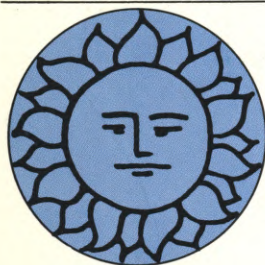


ROSCOVIN N6



ROSCOVIN N9

roscovin
neutral densities
Reduce light intensity.
N3 — 1 stop. N6 — 2 stops.
N9 — 3 stops.
Adhere directly to glass without taping or framing.
Rolls: 54" x 50 ft.



REDUCE THE INTENSITY OF DAYLIGHT AND CONVERT TO 3200 K



ROSCOVIN 85N3



ROSCOVIN 85N6

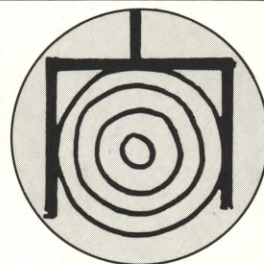


ROSCOVIN 85N9

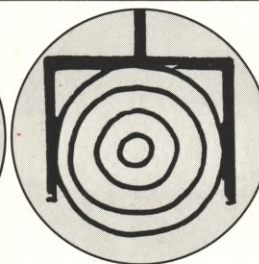
roscovin 85 plus
neutral densities
Convert "daylight" to 3200 K and reduce light intensity by 1, 2 and 3 1/2 stops.
Adhere directly to glass without taping or framing.
Rolls: 54" x 50 ft.



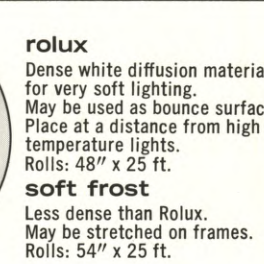
SOFTEN AND DIFFUSE LIGHT



ROLUX



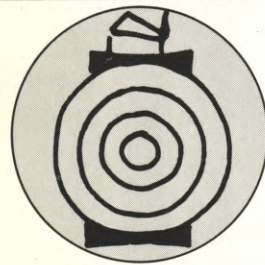
SOFT FROST



CINE FROST

rolux
Dense white diffusion material for very soft lighting. May be used as bounce surface. Place at a distance from high temperature lights.
Rolls: 48" x 25 ft.

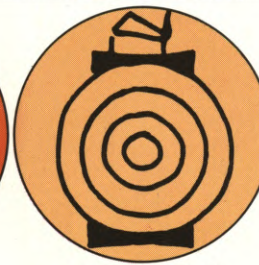
soft frost
Less dense than Rolux. May be stretched on frames.
Rolls: 54" x 25 ft.



FILTER CARBON ARC LIGHT



ROSCOLENE MT2



ROSCOLENE MT2 1/2



BRUTE Y1

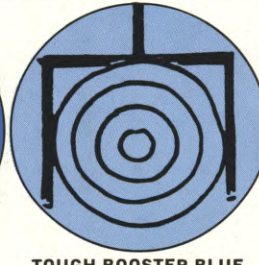
roscolene MT2's
Reduce color temperature of white flame carbon arcs.
Durable acetate base.
Rolls: 48" x 50 ft.



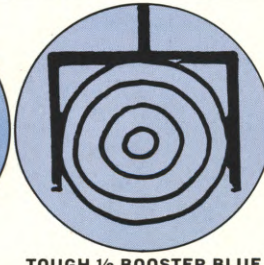
CONVERT 3200 K TO DAYLIGHT. BOOST KELVIN OF LIGHTS



"DAYLIGHT" TOUGH BLUE 50



TOUGH BOOSTER BLUE



TOUGH 1/2 BOOSTER BLUE

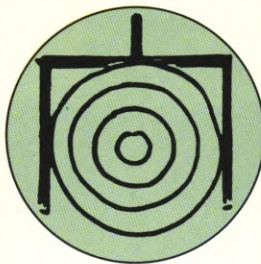
roscolar "tough blues"
Boost color temperatures. Tough Blue 50 boosts 3200 K lights to "daylight" Tough 1/2 Booster Blue and Tough Booster Blue increase Kelvin 400 and 800 degrees respectively. Tough base resists high heat.
Rolls: 48" x 25 ft.

CONVERT DAYLIGHT, DICHROICS OR 3200 K LIGHT TO "FLUORESCENT DAYLIGHT"

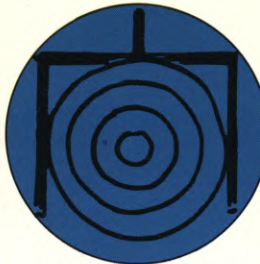


WINDOWGREEN

windowgreen
Converts natural "daylight" to the "fluorescent daylight" of standard fluorescent bulbs. High clarity acetate base. Rolls: 48" x 50 ft.



TOUGH PLUSGREEN



TOUGH PLUSGREEN 50

tough plusgreen
Converts the "daylight" of dichroics or FAY lights to the "fluorescent daylight" of standard fluorescent bulbs. Tough base resists high heat. Rolls: 48" x 25 ft.

tough plusgreen 50
Converts 3200 K light sources to the "fluorescent daylight" of standard fluorescent bulbs. Tough base resists high heat. Rolls: 48" x 25 ft.

LIGHT CONTROL MEDIA



ROSCOLENE CINE N3

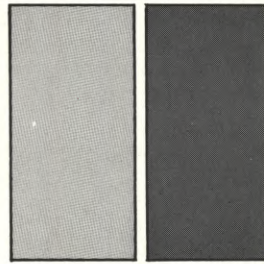


ROSCOLENE CINE N6



ROSCOLENE CINE N9

roscolene cine
neutral densities
Reduce light intensity 1, 2 and 3 stops. High clarity acetate base. Rolls: 48" x 50 ft.



ROSCOLEX N3 ROSCOLEX N6

roscolex
neutral densities
Reduce light intensity 1 and 2 stops. 4 ft x 8 ft optically clear, rigid, panels. Designed for fast handling.

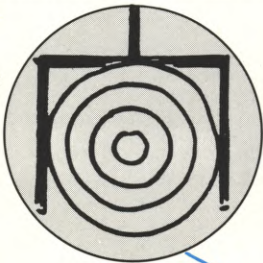


roscolex 85 plus
neutral densities
Convert "daylight" to 3200 K and reduce light intensity by 1½ and 2½ stops. 4 ft. x 8 ft. optically clear, rigid panels. Designed for fast handling.

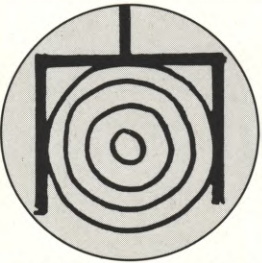
ROSCOLEX 85N3 ROSCOLEX 85N6

roscolene cine frost

Diffusion filter on etched acetate base. Sufficiently heat stable for use on most lights. Rolls: 41" x 50 ft.



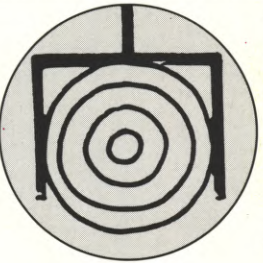
TOUGH FROST



1/2 DENSITY TOUGH FROST



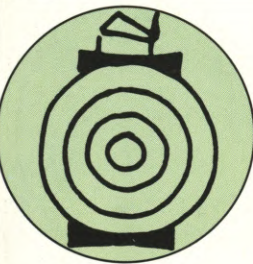
TOUGH SILK



TOUGH SPUN

"tough" diffusion filters

For use on hot lights. Tough Frosts give a soft, even light. Rolls: 48" x 50 ft. Tough Silk gives the effect of silk. Tough Spun diffuses like spun glass without the particle irritation to eyes and skin. Rolls: 48" x 25 ft.

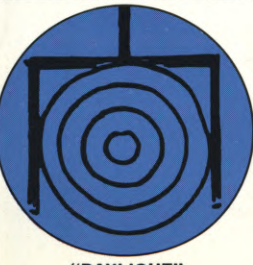
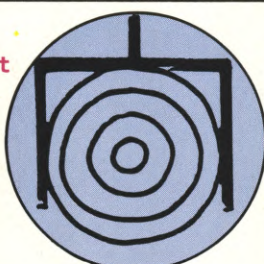


BRUTE YF

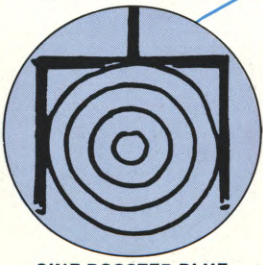
roscolar "brutes"
Absorb the ultra-violet generated by arcs. Brute Y1 reduces Kelvin of white flame carbons. Brute YF corrects yellow flame carbons. Tough, heat stable, durable base. Rolls: 30" x 50 ft.

tough booster frost

A combination of Tough Frost and Booster Blue. Raises color temperature about 500 degrees and diffuses light. Tough, heat resistant base. Rolls: 48" x 25 ft.



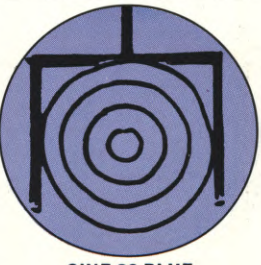
"DAYLIGHT" CINE TD25



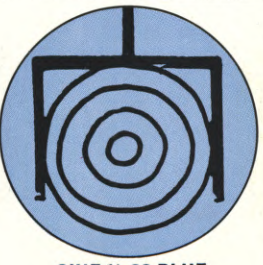
CINE BOOSTER BLUE



CINE 1/2 BOOSTER BLUE

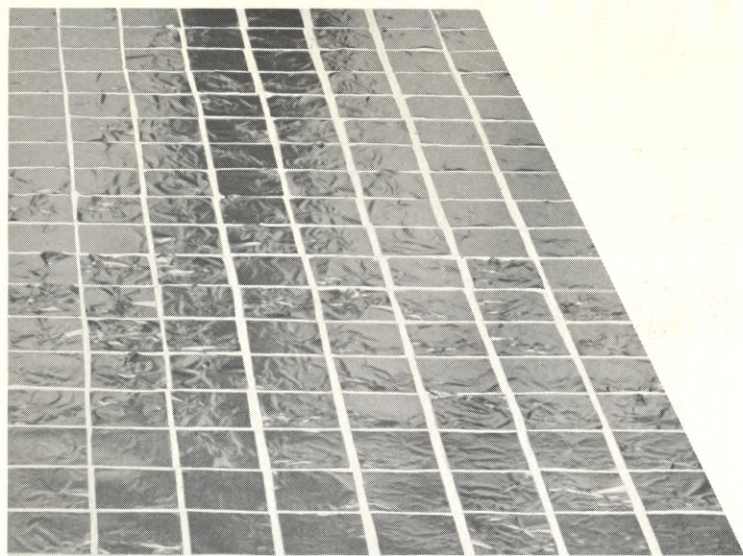


CINE 26 BLUE

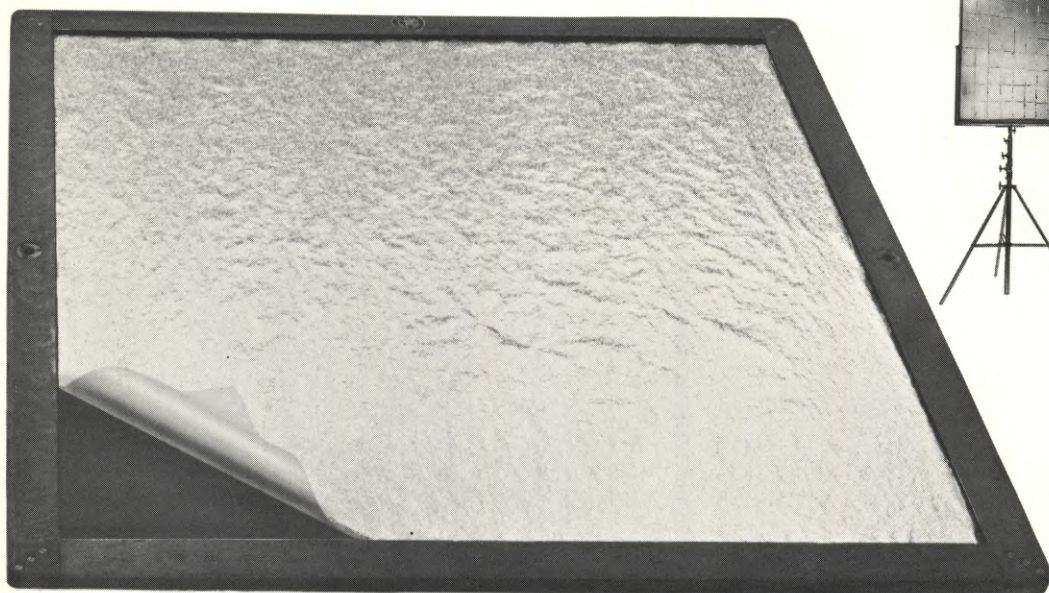


CINE 1/2 26 BLUE

roscolene "cine blues"
Raise color temperatures. TD25 converts 3200 K to daylight, Booster Blue and 1/2 Booster Blue raise K 800 and 400 degrees. Use on FAY lamps or for slightly cooler tone. Cine 26 and 1/2 26, are light warm blues. Acetate base. Rolls: 48" x 50 ft.



It used
to take
100 sheets
to make
a "soft"
reflector.



Now
it takes
only ONE.

roscoflex^{T.M.}



Until now the only way to get a "soft" reflector surface was to laboriously apply 100 small squares of thin aluminum leaf — with edges curled — to a reflector board.

Now all you need is one easy-to-apply sheet of Roscoflex.

Roscoflex has a tough scratch and wear resistant surface. It won't pit or corrode in salt air. If it gets dirty you can wash it, scrub it, hose it down, without affecting the surface.

Roscoflex is available in 6 surfaces: normal "s" (soft), "h" (hard), "ss" (supersoft), and "m" (mirrorhard), plus two colors, "g" (gold) to warm up and "c" (cool blue) to boost the color temperature of reflected light. Rolls are 48" by 30 ft., for waste-free application.

ROSCO
Port Chester, N.Y. 10573

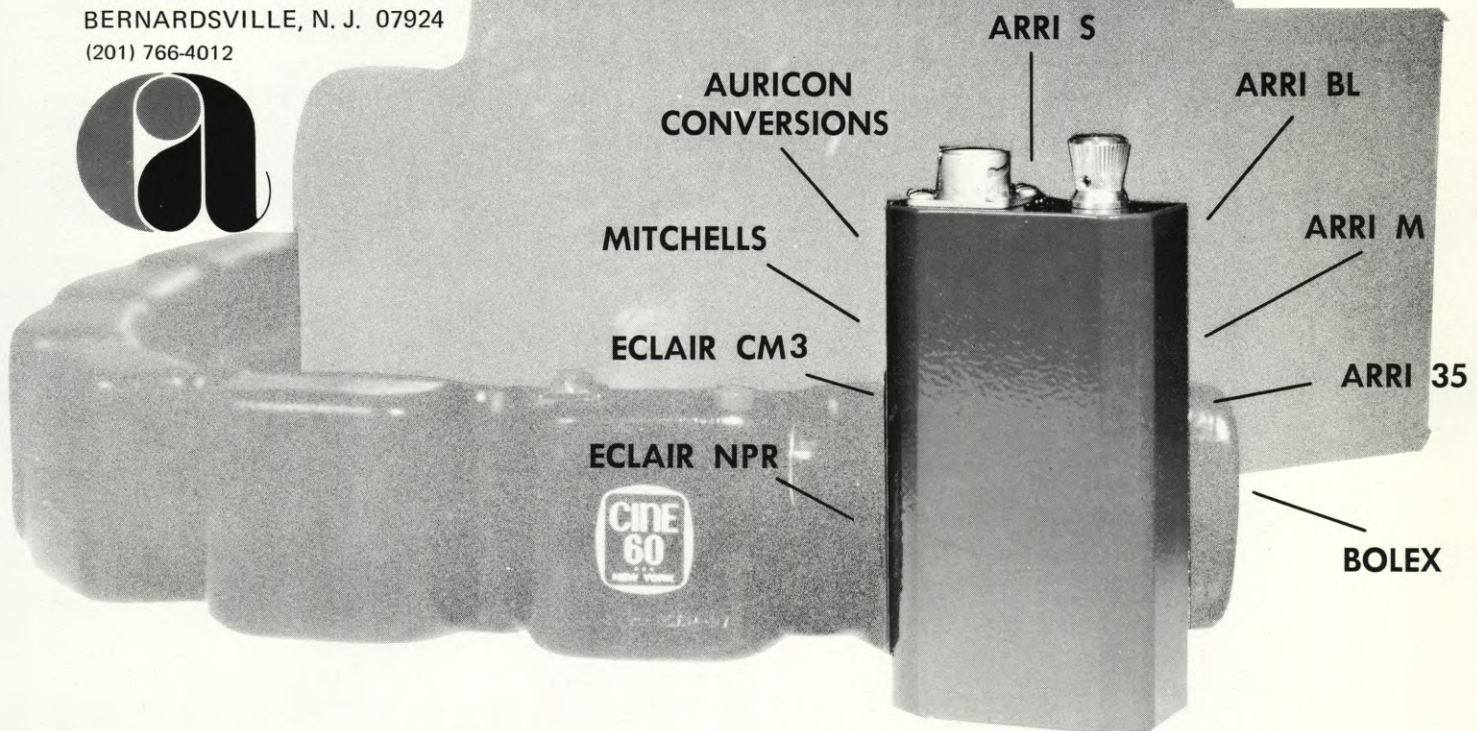
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TECHNICAL SPECIFICATIONS

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- 50, 60 or 6000 cycle switchable tach inputs
- Accepts D. C. inputs 8 to 35 volts
- Out of synch warning light
- Latest CosMos integrated circuitry

PRICE **\$650.** At your regular dealer.

CINEMA WORKSHOP



By ANTON WILSON

FILM STORAGE

The cinematographer must properly handle his film stock, both before and after exposure, if optimum results are to be expected. All film stocks are affected by heat, moisture, age and a variety of other factors. Over a period of time, a film stock can lose some of its speed, exhibit lower contrast and develop an increased fog level. The problem is compounded with color film stocks. The aforementioned deterioration may affect each of the three color layers to a different extent, thus upsetting the color balance.

Refrigeration is the most common method for maintaining the original quality of the film stock. Storing film at reduced temperatures will maintain the original speed of the stock, as well as

part of a year or longer. If long periods of storage are anticipated (in excess of 4-6 months), the film can be kept in a freezer. Film stored at reduced temperatures must be allowed to reach ambient temperature before the can is unsealed. This is *most* important. If the can of film is opened while its temperature is still below the dew point, moisture will condense on the film and may cause spotting. FIGURE 2 lists recommended warm-up times for films in standard packages.

Film rolls should always be stored in their original *sealed* cans. The seals should not be removed until the film is ready to be loaded into the camera. Humidity in the storage area is relatively unimportant. However, values above 70% should be avoided, as rusting of the

cans and molding of the containers may result.

After the film has been exposed, the same care should be exercised in handling. High temperatures and excessive humidity can actually alter the latent image. This situation is even more critical with color stocks, where each of the three dye images can be affected unevenly, thus impairing the overall color balance. The best practice is to process films as soon as possible after exposure. Cameras and magazines should be unloaded as soon as possible. If exposed film must be stored for a period of time, it should be treated the same as raw stock; i.e., resealed in a low-humidity environment and then stored at a reduced temperature. Under no circumstance should film, whether in cans, camera or magazine, be left in confined areas where heat may build up. The most cardinal no-no is leaving a loaded camera or film in the trunk or glove compartment of a car on a hot day.

Film must also be protected while in the camera. On hot days, and when filming in direct sunlight, a white barney on the magazine will reflect the heat and keep the film cooler. If a white barney is not available, covering the magazine with aluminum foil will be equally effective. This technique is also used in the studio or on an animation stand where the magazine is in close proximity to hot lamps. When the loaded camera is not being used, or for long

Continued on Page 1072

FIGURE 1

RECOMMENDED MAXIMUM TEMPERATURES FOR FILM STORAGE	
Type of Film	Maximum Storage Temperature for Periods up to 6 months
Black and White Film	
1. Negative, reversal, and sound films	55F
2. Positive Films	65F
Color Film	
1. Negative	50F
2. Reversal	65F

ensure even color balance with color stocks. The temperature of the storage area should be uniform in order to maintain constant characteristics from roll to roll. The maximum temperature at which films should be stored is reflected in FIGURE 1. Keep in mind that these are *maximum* values. Lower temperatures are quite acceptable. As a matter of fact, temperatures below freezing are commonly employed for long periods of storage.

Most cinematographers use a common food-type refrigerator for storing film. This provides an ideal temperature environment of approximately 40°F and will maintain film for the better

FIGURE 2

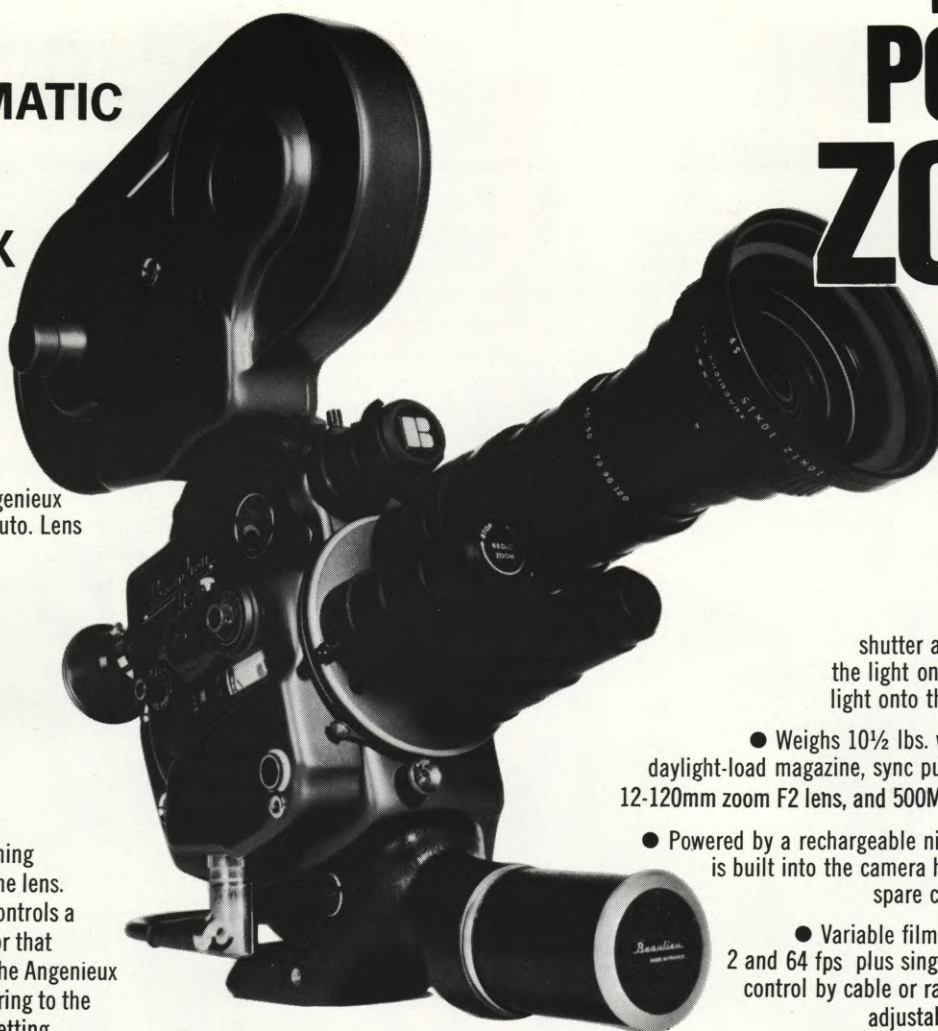
APPROXIMATE WARM-UP TIME FOR FILM PACKAGES TO AVOID MOISTURE CONDENSATION AFTER REMOVAL FROM COLD STORAGE

Difference between Room temperature and Refrigerator temperature	25F		100F	
	70%	90%	70%	90%
Relative humidity in room	70%	90%	70%	90%
	Warm-up time (hours)			
Single 16mm roll	½	1	1	1½
Single 35mm roll	1½	3	3	5
Carton of ten 35mm rolls	12	28	30	46

Beaulieu R16B(PZ)

with BUILT-IN POWER ZOOM

THE AUTOMATIC 16mm REFLEX



Available with Angenieux
12-120mm F2.2 Auto. Lens

\$2611⁹⁵

Or with Angenieux
17-68mm F2.2
Auto. Lens

\$1980⁰⁰

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

● Auto. 16mm camera with 3-15 sec. range power zoom.

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

● Weighs 10½ lbs. when equipped with 200-ft. daylight-load magazine, sync pulse generator, Angenieux 12-120mm zoom F2 lens, and 500MA nickel-cadmium battery.

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

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

We also have the new *Beaulieu* 4008ZM2 Super 8 with Sound Synch Capability and Extreme Zoom Range!

Famous Schneider Optivaron 6 to 66mm (11:1 ratio) F1.8 lens. Up to 92 frame backwind. Motorized macro focusing to 1mm from lens. 2 to 12 sec. motorized variable zoom. 2-70 fps and single frames. Built-in double-system-sync sound capability. Auto. tape recorder start/stop control.



\$999⁰⁰

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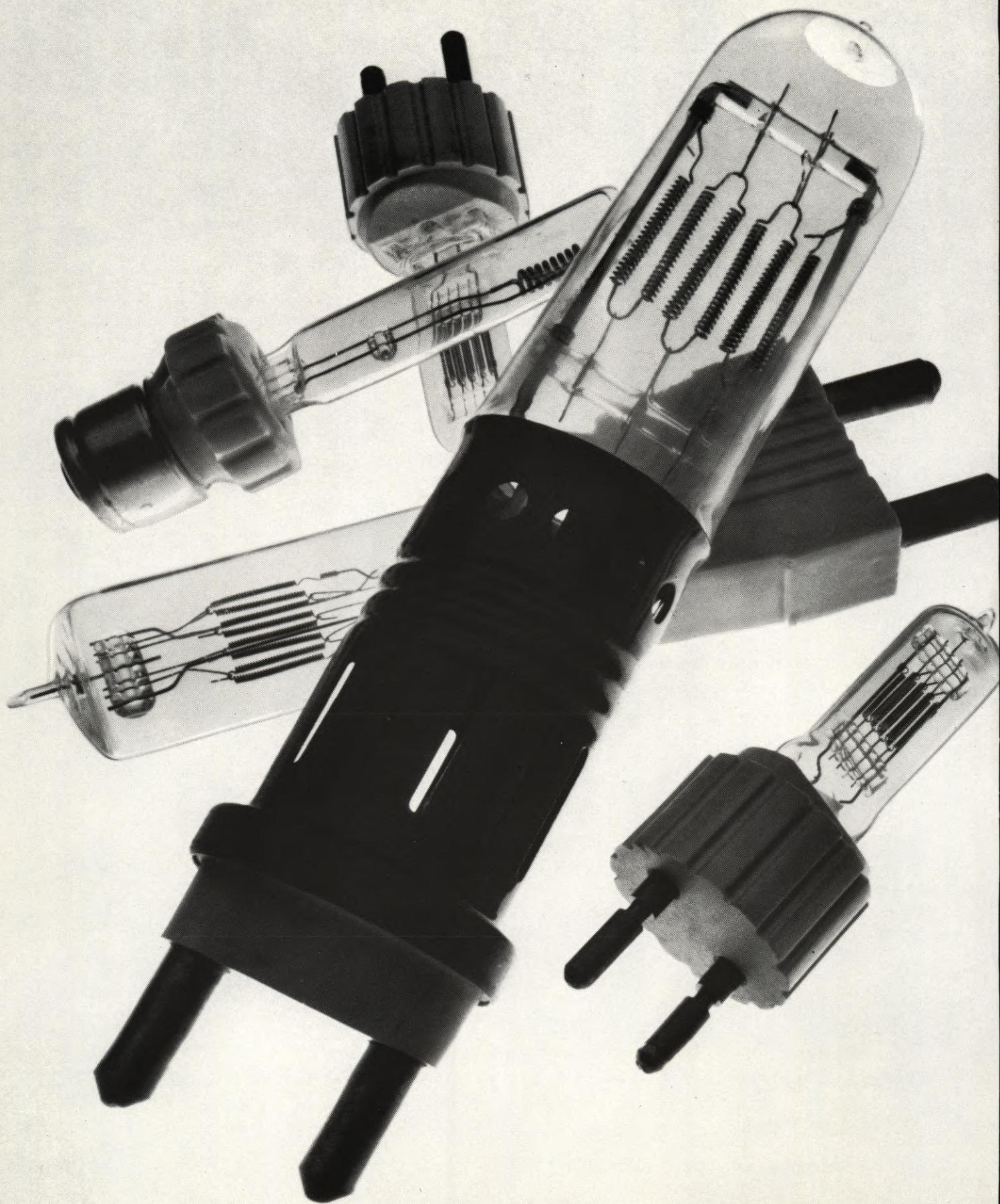
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CHARGE ACCOUNTS INVITED

CAMERAS

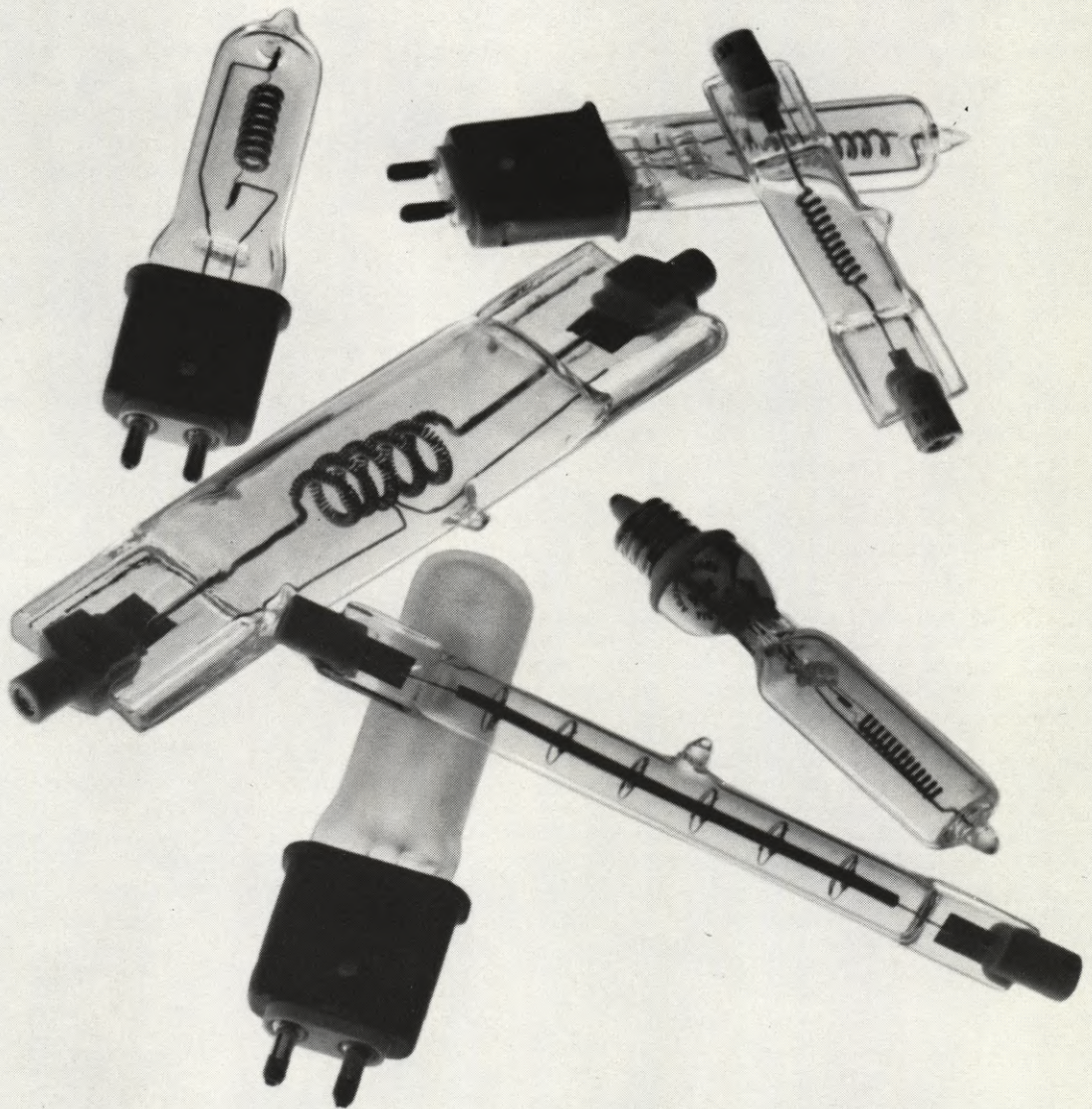
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**Some of our substitutes
for those big, fat incandescents.**



Some of our substitutes for our substitutes.



Those big, fat incandescents blessed the world with a lot of big, fat fixtures and sockets.

So after we came up with our skinny, little tungsten-halogen lamps, the first thing we had to do was set them up on big, fat bases so that they'd fit the old sockets.

Which meant developing a complete line of Substitution Lamps. (You see some of them at the left.)

But soon new fixtures arrived on the

scene. These took full advantage of the inherent small size of Sylvania tungsten-halogen lamps.

(Which, by the way, outlast the fat incandescents about 3-to-1, don't blacken and lose brightness with age, and don't fall off in color temperature.)

For the new fixtures, we developed a complete new Standard Line of tungsten-halogen lamps, like the ones on the right.

Whenever studios replace their old fixtures with new ones, they can substitute

our new lamps for our Substitutes.

Which is OK with us.

Because both of these lines are so much better than the old lamps, that no matter which our customers use, we feel we've done them a world of good.

And there's just no substitute for the

We have a brochure on each line. For your copies, write to: Sylvania Light Center, Danvers, Massachusetts 01923

GTE SYLVANIA

INDUSTRY ACTIVITIES

PROGRAM AND ARRANGEMENTS COMMITTEES NAMED FOR SMPTE'S FALL CONFERENCE IN LOS ANGELES

SMPTE Conference Vice-President Harry Teitelbaum, Hollywood Film Co., and SMPTE Editorial Vice-President Richard E. Putman, General Electric Co., have jointly announced the names of committeemen who will put together the program and handle all the details of the upcoming SMPTE Technical Conference in Los Angeles.

The Conference is set for the Century Plaza Hotel, Oct. 22-27, 1972.

The appointment of Dr. Frank P. Brackett, Jr., Association of Motion Picture and Television Producers (AMPTP), as Program Chairman had been announced earlier. Working with Brackett will be Ralph Westfall, Eastman Kodak Co., as Associate Program Chairman, and Frank P. Clark, AMPTP, as Chairman of the two-day (Thursday-Friday) Symposium on Communications Satellites and CATV.

Newly appointed topic chairmen, who bring together the papers for the technical sessions, are Winton Hoch, for Motion Picture Studio Practices, Lighting, Exposure, etc., Petro Vlahos,

AMPTP, for Sound Recording and Reproduction; Julian D. Hopkinson, Agfa-Gevaert, Inc., for Photosensitive Materials for Motion Picture and TV Practice; Fred J. Scobey, DeLuxe General, Inc., for Laboratory Practice; Paul H. Preo, Eastman Kodak Co., for Theater Presentation Practices; John H. Donlon, Technicolor, for Small Format Films; and Melvin G. Sawelson, Consolidated Film Industries, for Television Systems and Editing.

The names of the Arrangements Chairman Tony Bruno, Eastman Kodak Co., and the Exhibit Chairman Warren Strang, Hollywood Film Co., had been previously announced. Working under Bruno as Assistant Arrangements Chairmen are Don Henderson, Eastman Kodak Co., and Fred Detmers, Technicolor.

Ed Burns, Eastman Kodak Co., is handling Hotel and Motel Arrangements; Dick Sullivan, Eastman Kodak Co., the Hotel Reservations; C. Carroll Adams III, the Public Address and Recording; and Phil Singer, Agfa Gevaert, the Opening Films.

The Registration Chairman is Eugene M. Murphy, Eastman Kodak Co.; the Banquet Chairman is Vern Frith, Hollywood Valley Film Labs, who is assisted

by Dinny Clark, also of Hollywood Valley Film Labs.

Jack Hall, Producers Service Co., is in charge of the Get-Together Luncheon; Don Kloepfel, DeLuxe General Inc., heads up the Projection Committee, and Mrs. Anthony Bruno and Mrs. Kenneth Mason are co-chairmen of the Ladies Committee.

Harry Lehman is Publicity Chairman; Carleton Wright, Agfa Gevaert, and Ken Erhardt, NBC, are handling the hospitality and foreign delegations; and Edward Whiting, Jr., 3M Co., and Marvin Jacobs, are in charge of membership. Transportation is being taken care of by Scott Robertson, Eastman Kodak Co.; and Mardi Rustam, American Film Industries, will be the Auditor, assisted by Russell F. Dubes.

The Conference will feature five days of technical sessions, plus a 92-booth equipment exhibit. For information on the Program, the equipment exhibit, registration and hotel reservations, write to SMPTE Conference, 9 E. 41st St., New York, N.Y. 10017.

•

AFI TO AWARD \$200,000 IN FILMMAKER GRANTS IN 1972-73

The American Film Institute announces it will make awards totaling \$200,000 under the Independent Filmmaker Program. \$100,000 will be awarded in October 1972, and \$100,000 in March 1973. In announcing the awards, George Stevens, Jr., AFI Director, noted that "Seventy-two independent filmmakers have received awards totaling more than \$450,000 since the program's inception in 1968."

The Independent Filmmaker Program is open to any United States citizen or permanent resident, and proposals for any type of film project in 16mm or 35mm will be considered. Individual awards are made to a maximum of \$10,000. Applications are now being accepted for the October awards. Interested parties may apply to The American Film Institute, 501 Doheny Road, Beverly Hills, California 90210.

This and other activities of The American Film Institute are supported by the National Endowment for the Arts.

For further information contact: Sali Ann Kriegsman, Washington, D.C. (202) 833-9300; Jan Haag, Los Angeles (213) 278-8777. ■

A highly informative meeting was held recently in Hollywood under the auspices of International Photographers, Local 659, I.A.T.S.E., as part of an overall union program to continuously update the technical expertise of its membership. Several interesting new items of motion picture equipment were discussed and demonstrated. In the foreground, Keiichiro Ryu, president of Ryu-Den-Sha Co., Ltd., Tokyo, explains to one of the Local 659 members the optical qualities of the new Canon K-35 25mm-120mm vari-focal Macrozoom Lens. Mr. Ryu's company is the exclusive exporter for professional-type Canon motion picture lenses. In the background, Edmund DiGiulio, president of Cinema Products, demonstrates the Canon K-35 lens for Hal Mohr, ASC, president of International Photographers, Local 659, Academy-Award-winning Director of Photography and past president of the American Society of Cinematographers.



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

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The large Vari-flector II (model 404) and stand fit into a 42 x 7" case. And the smaller unit without stand (model 202) fits into a case only 24 x 4½". Both units are compact enough to take to the most remote locations.

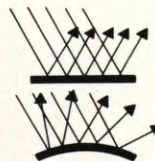
Superior stand-mounting

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



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THE HONOR ROLL

(EDITOR'S NOTE: The American Society of Cinematographers has recently instituted a policy of honoring two of its veteran Directors of Photography members at each of its monthly dinner meetings. In tribute to these men, and their distinguished careers, we shall, henceforth, present on this page short biographies of the men so honored.)

JAMES VAN TREES, ASC

In the May, 1923 issue of AMERICAN CINEMATOGRAPHER, we proudly announced the third president of our organization, James C. Van Trees. His cinematographic activities began with the filming of such early stars as Lenore Ulrich and Vivian Martin in productions which included "The Heart of Paula", "Intrigue", "The Conflict", and "The Road to Love", starring Miss Ulrich; and "Stronger Love", "The Right Direction", "The Wax Model", "The Spirit of Romance", and "Giving Becky a Chance", starring Miss Martin. More early work included such photoplays as "The Shuttle", "Good Night, Paul", "A Pair of Silk Stockings", "Sauce for the Goose", "Mrs. Leffingwell's Boots" and "Happiness a la Mode", starring Constance Talmadge; and vehicles which starred House Peters, Wallace Reid, Bryant Washburn, Shirley Mason, Marguerite Clark, Ethel Clayton, Elsie Ferguson and numerous other celebrities. Other movies included "The White Flower", "The Bonded Woman", and "The Rustle of Silk", starring Betty Compson, and "The Young Rajah", which starred Rudolph Valentino. At First National Pictures his camera work included "Chickie", "Flaming Youth", "Lilies of the Field", and "I Want My Man".

During the late 30's and early 40's Van Trees worked at Warner Brothers Studios and photographed "Love in the Air", "Expensive Husbands", "Flight from Destiny", "Here Comes Happiness", "A Shot in the Dark", "International Squadron", "Steel Against the Sky", "Escape from Crime", "Busses Roared", "Secret Enemies", "You Can't Escape Forever", "The Gorilla Man", "Adventure in Iraq", and "Find the Blackmailer".

After this Warner Brothers period, Van Trees did "The Racket Man", "Nine Girls", and "Two-Man Submarine" at Columbia.

In the 50's Van Trees photographed "I Married Joan" and the "Burns & Allen Show" television series and helped to pioneer the TV industry. He did the "Dobie Gillis" series and "The Phil Silvers Show" during the 60's and retired in 1966.

Although Van Trees did not initiate the multi-camera shooting technique, he got his feet wet on the fast, two-camera system of television film production when he did the "Mickey Rooney" and the "Joan Davis" television shows. Van Trees recalls the techniques used in the mid-twenties during the advent of the "talkies".

"I was with Warner Brothers when that studio began production of sound films," he related. "They gave us seven cameras, each a cumbersome sound-proof booth, and they were placed strategically around the set. The idea was to capture the action in long continuous takes, with the multi-cameras recording the necessary variety of cuts. The trick was to light a set so that the illumination would be favorable to all the cameras. This entailed revolutionary techniques. There could be no lights on the floor, so we put them on top of the camera booths or in front of the booths below the window through which the scenes were shot." Any cinematographer who shot movies under the early-day sound restrictions can easily handle a two-camera set-up for television films."

HANS F. KOENEKAMP, ASC

Hans Koenekamp was born in Denison, Iowa, December 3, 1891. He started in motion pictures in 1913 as a cameraman for Mack Sennett and photographed many Keystone comedies with numerous stars such as Charlie Chaplin, Mabel Norman, Gloria Swanson and the Mack Sennett Bathing Beauties.

In 1917 he moved to Vitagraph Studios and photographed all of Larry Semon's pictures for the next eight

years. From there he moved to First National Studio and photographed two pictures starring Colleen Moore.

Koenekamp, while under contract to Warner Brothers studio for 30 years, directed and photographed second units, specializing in special effects, including much process work on such films as "Moby Dick", "Noah's Ark", "Saratoga Trunk", "I Am a Fugitive from a Chain Gang", "Spirit of St. Louis", "Treasure of Sierra Madre", "Sayonara", and "Spencer's Mountain", and worked with such stars as James Stewart, Humphrey Bogart, Marlon Brando, Maureen O'Hara and Henry Fonda.

During this period he perfected a synchronized motor connection between background projector and camera to facilitate work on his numerous assignments.

Before retiring in 1965 he worked approximately eight years for M.P.O. Commercials. ■

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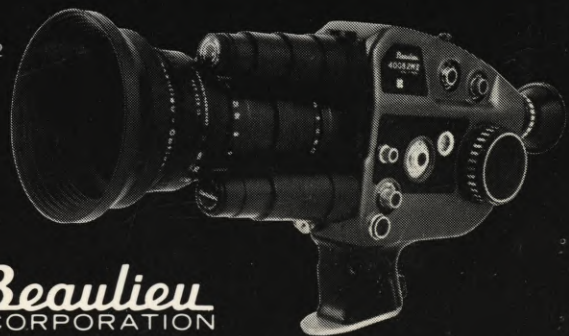
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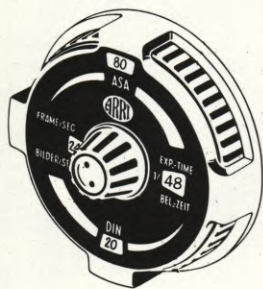
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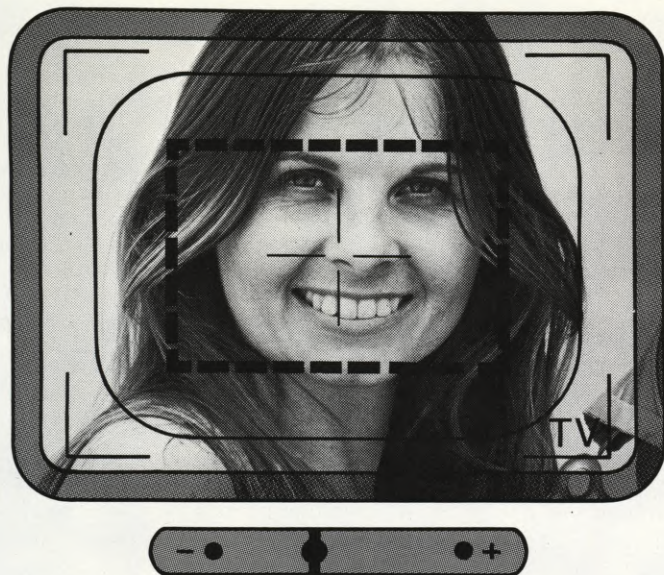
zoom in to 120mm, for example, you get a closeup reading of 3 degrees. (See the photo on the next page: the dotted line shows the measured area.)

How fast is it to operate?

Frame your subject, and focus. Then center the APEC needle, by turning the f stop ring. That's all! And all with your eye at the finder. You take the reading and set the stop *all in one movement*.

Reading inaccessible subjects

Zooming in for an APEC reading is a lot faster than walking onto the set, of course. And sometimes it's not easy to *get* there. Shooting surgery, for example; or wildlife. Or a speaker at the podium.



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The needle is visible just below the image area, as you can see above. If the action moves from shade to sunlight, you can ride the f stop. (APEC is manual, of course — not automatic.) And this is a noteworthy fact: Some APEC users have gotten *one-light release prints!*

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APEC AT WORK:

Arena staff changed lighting without any warning — in mid shot!

Shooting a Jesus Movement rally at the Los Angeles Sports Arena, film-maker Roger Boller arranged the light levels ahead of time with the arena's staff. And before the crowd arrived, he took hand-held readings at various points in the stadium.

But when the rally began, its producers repeatedly lowered the lights for prayers, and raised them at dramatic moments, without warning — often in mid-shot! Mr. Boller just had to follow it from camera position with his APEC meter. *Every foot was perfectly exposed.*

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and WALTER STRENGE, ASC.

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



Q I use 16mm reversal film and am wondering why I should use a work print in editing?

A If you intend to make additional prints from your original, then you should use a work print for editing to avoid finger prints, oil, scratches and mutilation encountered in editing and projection. Such defects would show up in every print made. If you do not intend to make additional prints and only exhibit your original, then no work print would be necessary.

Q Please advise what effective methods can be used to obtain a steady, level image when photographing subject matter from a small boat at 24 frames per second.

A Using modern techniques of electronic and mechanical engineering, so that human reaction time is not the limiting parameter, it should be possible to design and construct an inertia guidance servomechanism that will accomplish the desired results with precision. The main requirement is an adequate budget for the work.

In cinematography, suppression of camera action is not an aim. Instead, motion is introduced under controlled conditions and used effectively to enhance entertainment value. It is well to point out at the start that most small boats are unsuitable for cinematography except in calm waters. When we have an assignment of this sort, we aim for two things: 1) to restrict the violence of motion due to natural forces and 2) to control the direction, angle, amplitude and tempo of camera movement. The first requirement can be met by using a craft large enough for the conditions that will be encountered when shooting. Cycles of pitch, roll and yaw must have a long enough period so that a person of normal reflexes can maintain control of the camera. In rough, open sea, waterline lengths of 90 feet or more are essential in the craft used. For choppy water, where no large waves are present, a suitable camera craft is often rigged by the company at the location. The following describes a type that we have used many times:

A grid of planking is secured to two or more floats, such as rowboats, sealed oil drums, or rafts of planks which should measure 12 feet or more along the shortest side. The whole unit should be capable of supporting weight of several hundred pounds, or at least more than the normal working load. The planking is cross-braced for fair rigidity, and is left open to the action of the water so that wave crests can move through it without rocking the platform. A camera raft of this type having a low ratio of positive buoyancy-to-mass is quite stable and can be propelled at moderate speeds and maneuvered readily by outboard motors (the full swivel type).

The positive aspect of the job is controlling movement in the scenes. This we have done on countless productions by using a gimbal-type tripod tied down at the points. This tripod consists of a rigid steel shaft, coupled through a husky universal joint to the tripod legs, which supports the camera mounted on a panhead, and enables it to remain plumb or level regardless of the angle assumed by the tripod base when moving or swaying with the craft on which it is mounted. The lower section of the shaft is made to telescope and may be adjusted so that the natural frequency of its pendulum action is out of resonance with the craft; thirty to forty inches is a frequent working length. At the base of the shaft, lead weights are firmly secured—100 to 150 pounds being the usual minimum for satisfactory inertia. Photographing a boat race in the North Atlantic, we had 360 pounds of lead at the base of the shaft on each gimbal tripod when working in heavy seas with winds of gale force.

On exteriors, multiple strands of heavy rubber bands are attached to base of the shaft to further restrict the pendulum action. Weight and tension are adjusted to give the right heft and feel for camera operation. When filming continuity at the studio, the gimbal action is approximately simulated so that interior scenes will intercut without change of tempo. From here on in, character of the photography depends on the skill, alertness, agility and discrimination of the camera operator. ■

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pile-up in your camera gate?

Troubled by distracting camera

noise when shooting subjects who should not be distracted from what they are doing?

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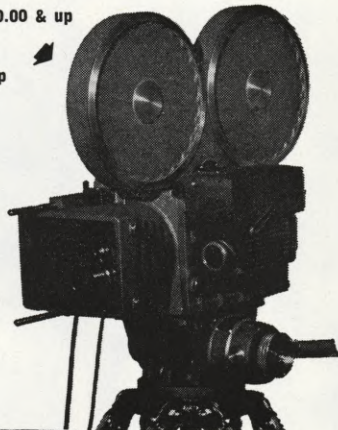
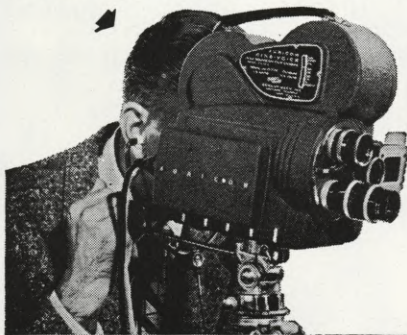


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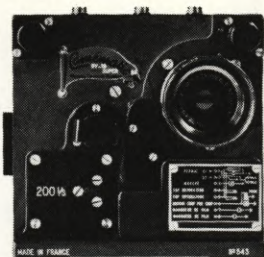
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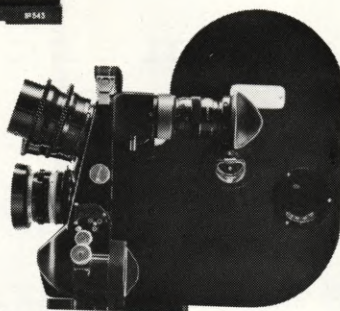
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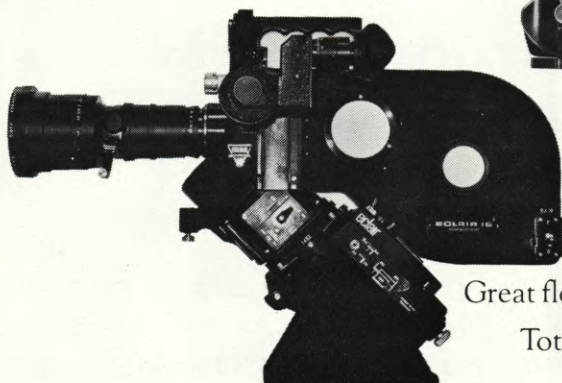
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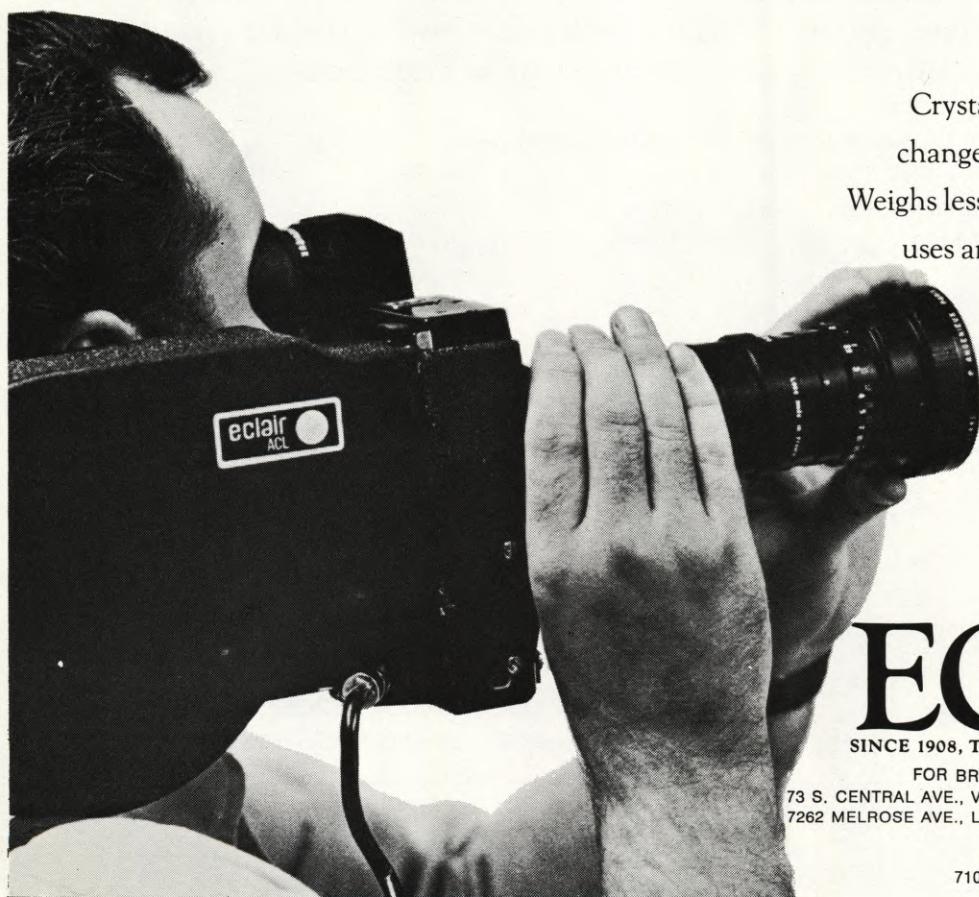
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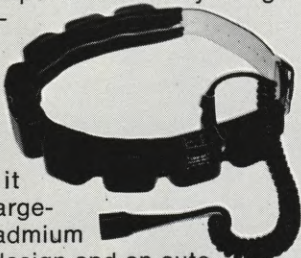
Most moviemakers will agree that the difference between good footage and *great* footage goes beyond talent and luck—it's the little things that often make the difference. Little things like extra mobility, to follow fast-moving action. Or a few extra dB of silence on the set. Little things . . . like the fleeting moment of news, captured because of a minute saved in set-up time. Or an unusual camera-mount that produces the "different" point of view you need.

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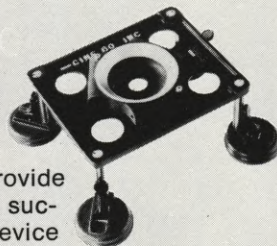
Instant Camera Pod

Our single universal shoulder pod ("unipod") is a lightweight shoulder mount that accepts all cameras. Easily removable between takes, it keeps the camera in the ideal shooting position while offering the maneuverability of single-shoulder construction. Used with the Uni-Eclair Mount (detailed later), this is the only practical pod for the Eclair NPR-16. (By the way, we also have an excellent double-shoulder pod as well.)



Instant Camera Platform

Wherever and whenever you need a stable camera platform, chances are our Vacu-Platform can provide it. This rugged suction-actuated device can be positively fastened to any smooth surface (cars, floors, etc.) without marring. A flick of a lever on its extra-large suction mounts does the job. Especially useful for low-angle work, it mates with standard tripod heads.



Instant Camera Mount

If you've ever watched a good shot pass you by while trying to thread a camera onto a tripod or shoulder pod, the Cine 60 Snaplok is your answer. Combining rapid, fail-safe operation with the ruggedness and precision alignment needed for day-in, day-out use, the Snaplok features light weight and high rigidity. One section mounts on the camera; the other on tripod or shoulder pod. A single pushbutton instantly separates the two. The base unit of the Snaplok is compatible with standard 1/4" and 3/8" sockets.



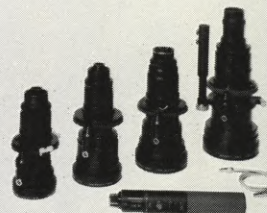
Instant NPR

Our Uni-Eclair Mount is just what the name implies—a universal mount for the Eclair NPR camera. Rugged, yet surprisingly light, it may be left on the camera at all times, ready for hand-held operation or shooting with a tripod or shoulder pod. And, it makes a handy camera rest between takes.



Instant Zoom

If you own one of the fine Angenieux zoom lenses, you can have smoother, more consistent zooming with one of our electric zoom drives. Available in four sizes (for the 9-95mm, 12-120mm, 12-240mm and 25-250mm), these units feature a precision gear assembly which mounts securely and directly to the lens barrels. The gear assembly, in turn, is rigidly coupled to a high-quality DC motor via a flexible shaft. The motor is powered by a transistor-regulated nicad battery pack featuring directional push-buttons and a smooth, variable speed control—all contained in a convenient, palm-sized case—with built-in recharger. (We also make an instant-mounting, collapsible rubber lens hood for the Angenieux 25-250mm zoom.)



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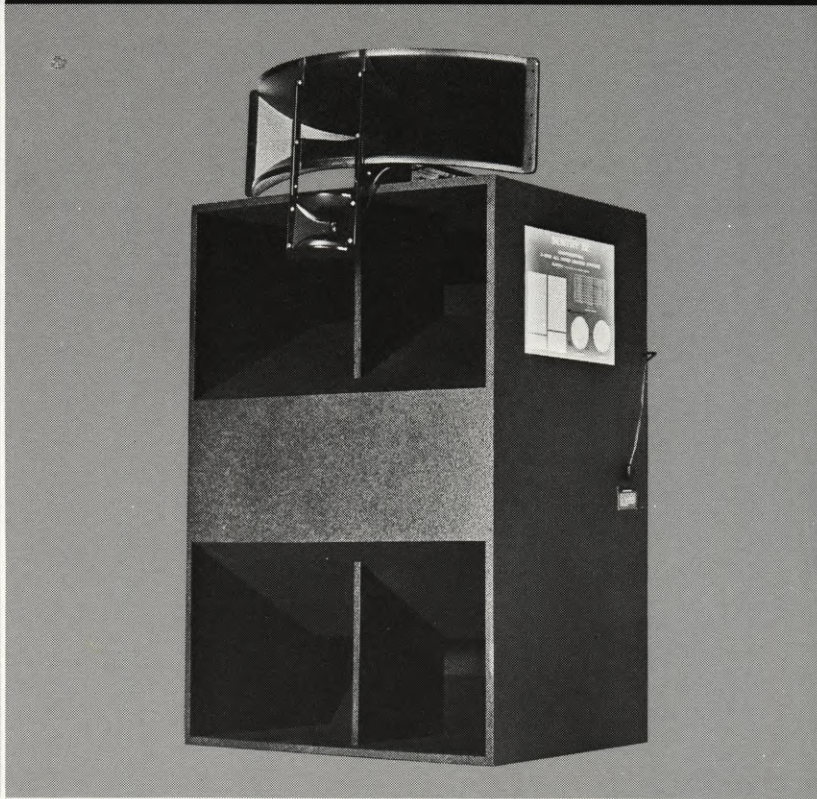


There are many ways that the RE20 will prove a revelation in your studio. Like off-axis response, for instance. As clean and as flat as the pickup on axis. So when you turn the RE20 for better isolation, you get it at every frequency. Not just in the mid-range or high end.

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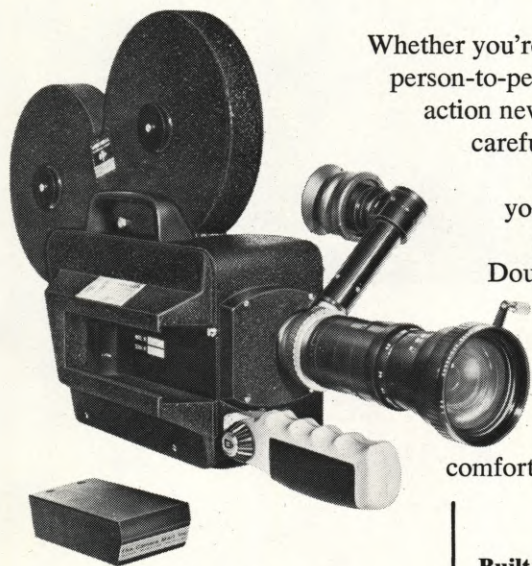


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THE BOOKSHELF

By GEORGE L. GEORGE

Filmographies of 60 outstanding U.S. cameramen appear in the Summer issue of *FILM COMMENT* (\$1.50). This is a thoroughgoing compilation by Richard Koszarski, whose preface traces perceptively the changes in cinematographic style as influenced by technical progress, industrialization of the studios, artistic growth and social awareness.

* * *

What cameramen contributed to a once-standard part of theater programming is detailed in Raymond Fielding's well-researched and entertaining *THE AMERICAN NEWSREEL 1911-1967* (U. of Oklahoma Press \$9.95). The evolution of the genre is traced from its European origins to the first U.S.-produced newsreel and its eventual replacement by TV news reports. Cameramen's initiative and occasional fakery constitute the running theme of this lively survey.

* * *

A comprehensive textbook, *DIRECTING MOTION PICTURES* (Barnes \$2.95), edited by Terence Manner, analyzes in simple and effective language the director's craft and his relationship with cameramen and other members of the crew. Diagrams, illustrations and expert advice from such directors as Huston, Losey, Richardson and Schlesinger cover all fundamentals in this useful student-oriented book.

* * *

Gavin Lambert's *ON CUKOR* (Putnam \$8.95) is a highly evocative portrait of the famed director, an empathic study of a creative individual gifted with a precise understanding of his craft. Cukor discusses his films in an easy and spontaneous manner, pinpointing the significant elements of each: directorial techniques, story line, acting and, occasionally, camerawork. Typical observation: "One thing I seldom do is look through the camera... because I prefer to watch the scene itself with my own eyes."

* * *

With interest in Erich von Stroheim running high after Herman G. Weinberg's masterful *THE COMPLETE "GREED"* (reviewed in our June '72 issue), further light is shed by Peter Noble in *HOLLYWOOD SCAPEGOAT* (Arno Press \$12.). Originally published in 1950 when Stroheim had already fled Hollywood for France, this timely reprint is an invaluable biography that documents the studios' reactions to his

"extravagant" production methods, and discusses his intense concern for photography and composition.

* * *

Improving on the usual format of published screenplays, STANLEY KUBRICK'S *CLOCKWORK ORANGE* (Ballantine \$3.95) tightens the connection between visuals and dialogue by placing the spoken lines between the corresponding film frames. Some 700 stills are used in this eye-catching presentation of a brilliant and unusual movie, superbly photographed by John Alcott, whose skilled work (with Geoffrey Unsworth) on Kubrick's *2001: A Space Odyssey* has been widely praised.

* * *

When Zagreb Studios' animation short *Ersatz* became the first non-U.S. cartoon to win an Oscar, Yugoslav pride received a justified boost. Ronald Holloway's *Z IS FOR ZAGREB* (Barnes \$5.95) is an attractive, illustrated guide to that studio's methods and growth, with career sketches of its major artists. Capsule comments on all its films bring out their unlimited imagination, dexterous draughtsmanship and inspired humor.

* * *

A first-rate bibliography of film literature has been compiled by Prof. George Rehauer in *CINEMA BOOK-LIST* (Scarecrow Press \$10). This perceptive and knowledgeable selection, fully annotated, of some 1600 books published since 1940 and of current periodicals will be an immeasurable help as a reliable reference work for film study courses and library acquisitions.

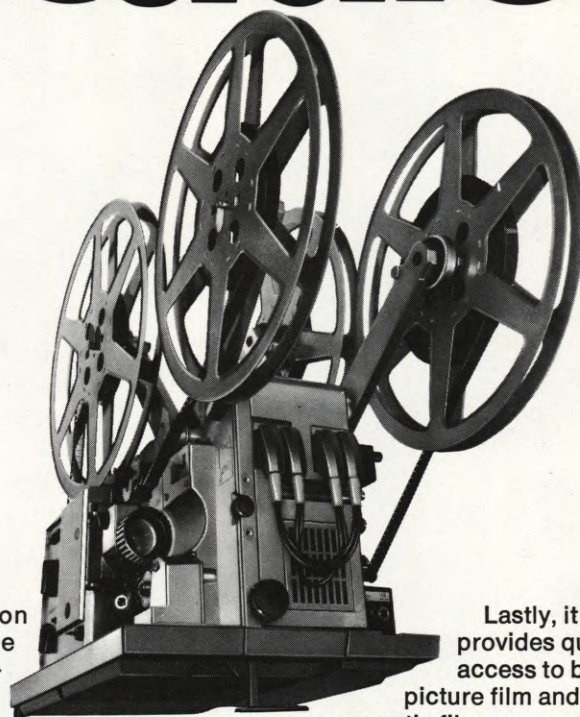
* * *

Official film censorship is bad enough but, as Doug McClelland points out in *THE UNKINDEST CUTS* (Barnes \$10.), the removal of scenes by studio powers-that-be is sometimes an even greater curse. His abundant documentation involves such films as *Greed*, *A Star Is Born*, *Citizen Kane*, *Laura*, *Gypsy*, which were scissored for a variety of arbitrary or otherwise baffling reasons. Interviews with some of the victims, a discussion of TV "re-editing" and numerous stills complete this informative volume.

* * *

Japanese avant-garde filmmaker Taka Limura has assembled in a fascinating book, *PAPER FILM*, scenes and sequences from *Love* and *Flowers' Orgy*, two of his highly original cinematic poems whose exquisite imagery metamorphoses bodies and blossoms into abstract shapes of movement and color. (From the author, 127 Second Ave., NYC 10003. \$10 plus postage.) ■

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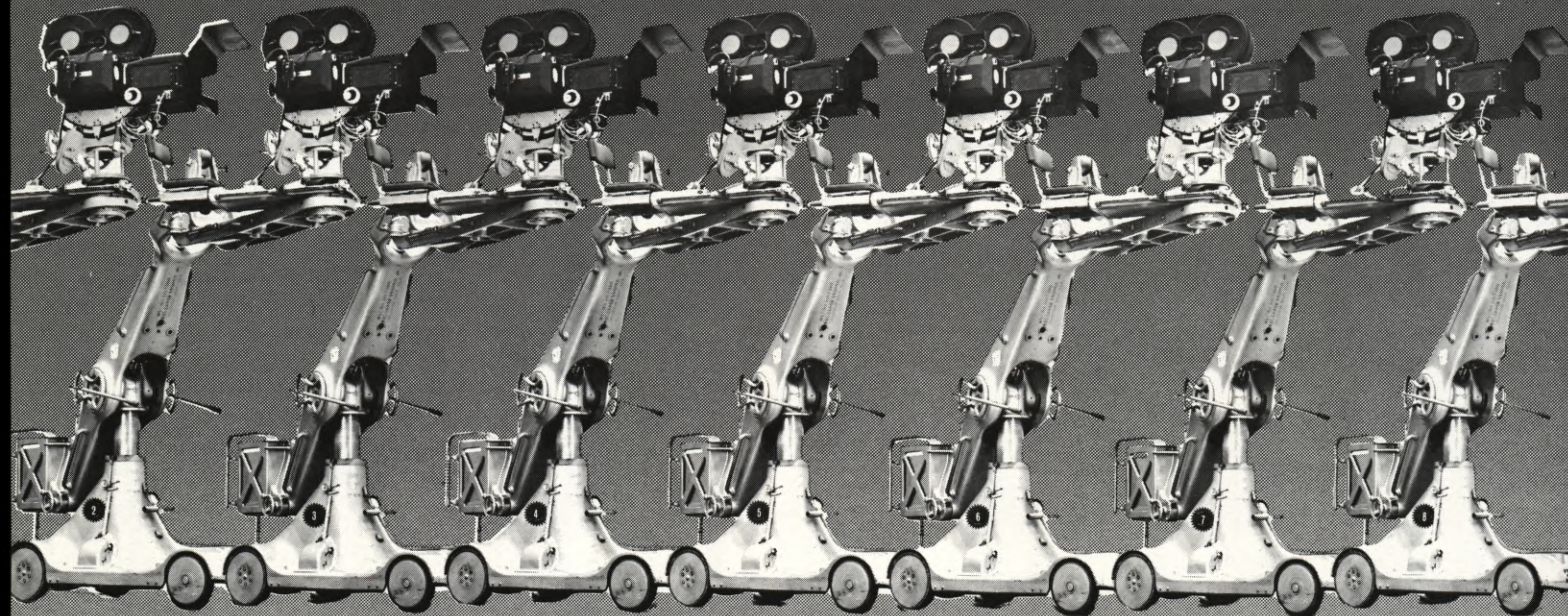
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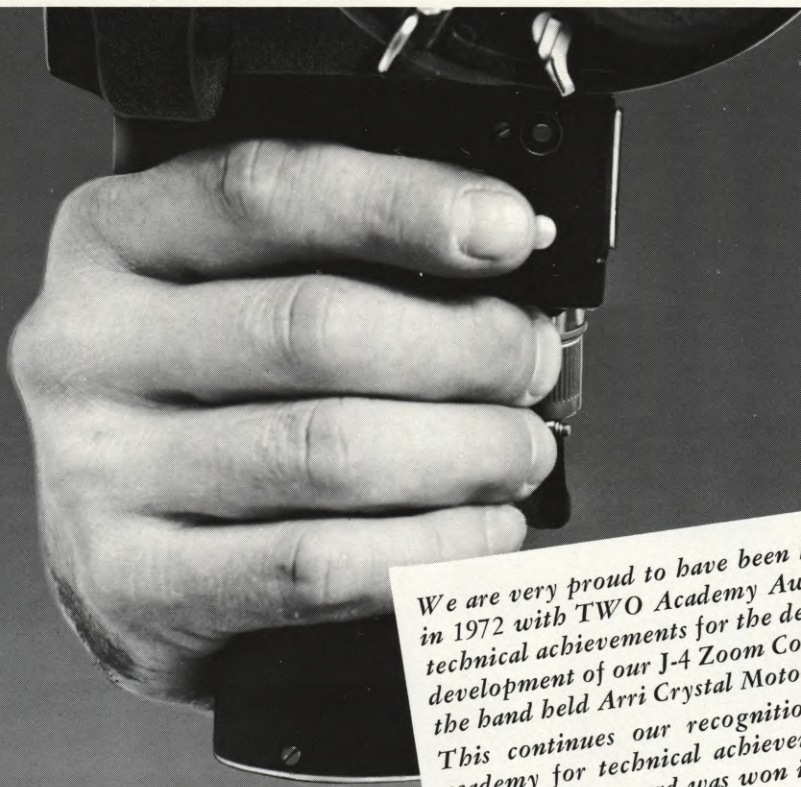


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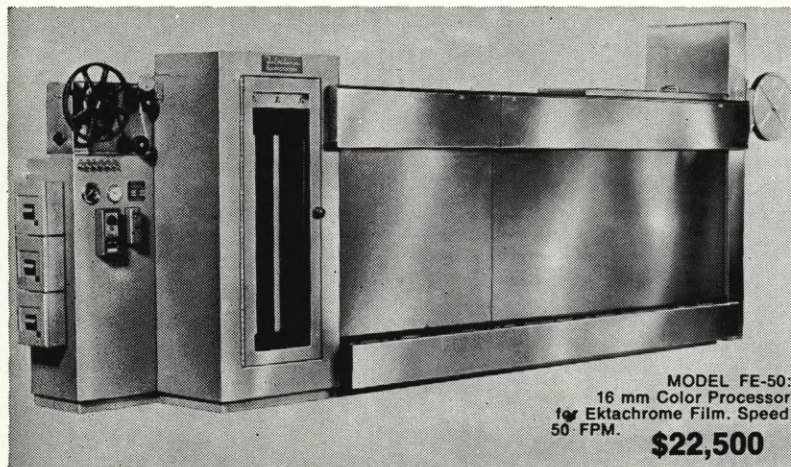
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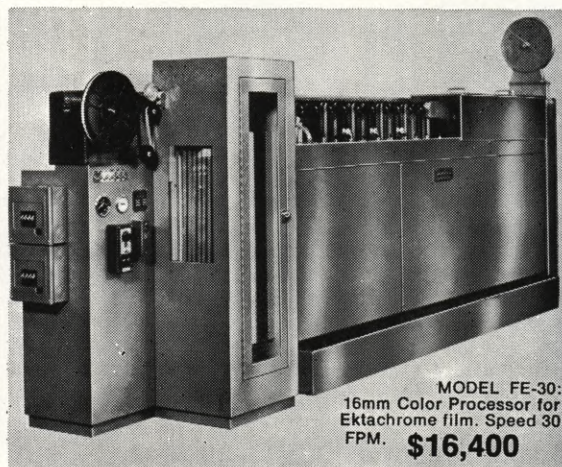
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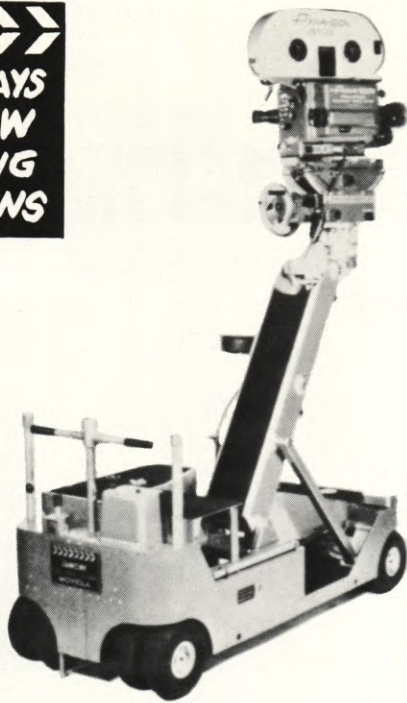
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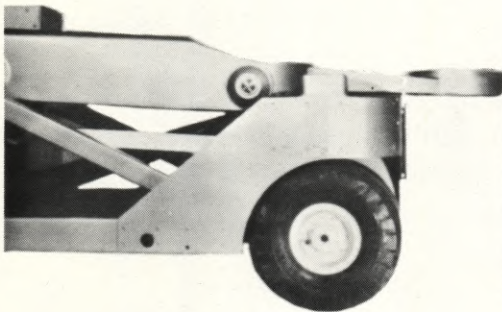
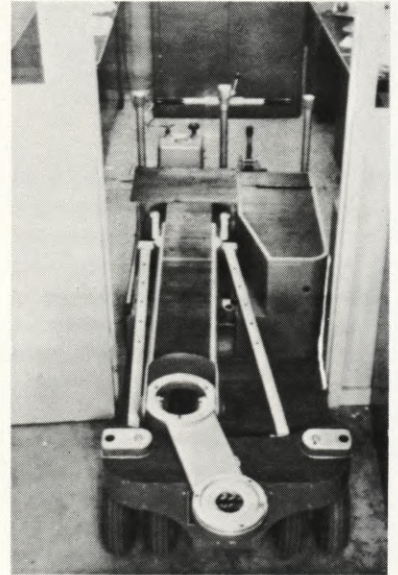
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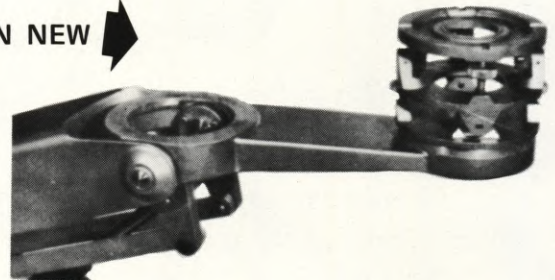
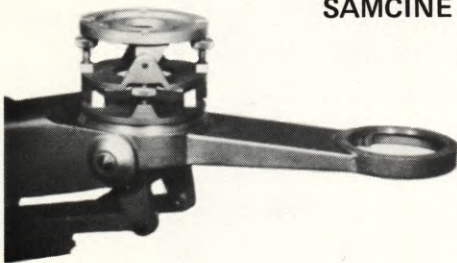


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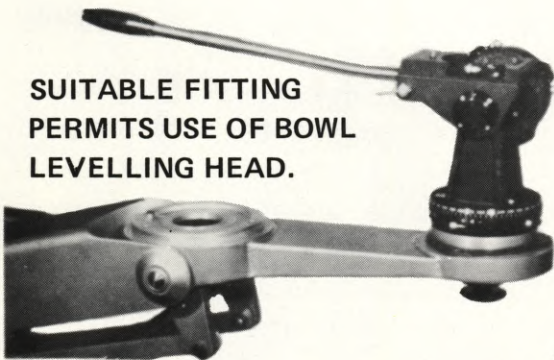


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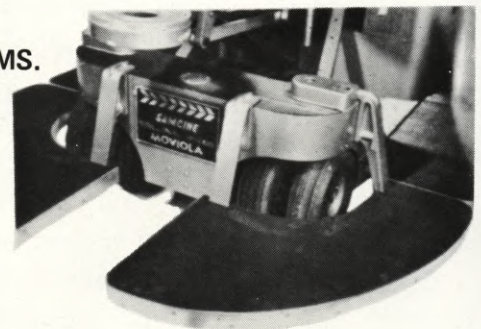
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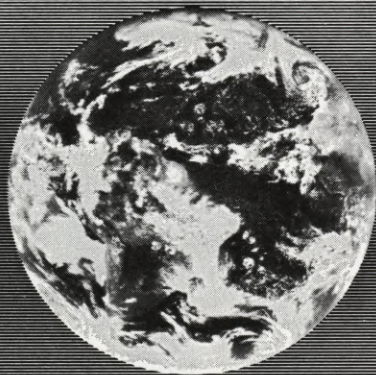
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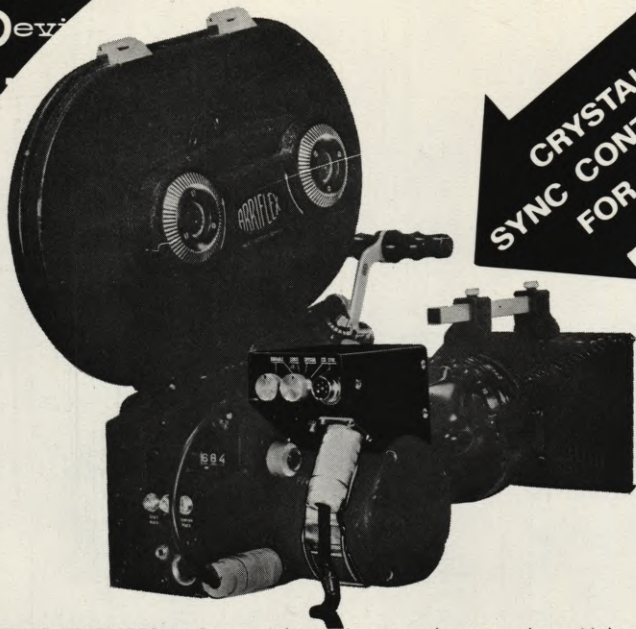
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THE **NMOD-EDIN** UPSIDE-DOWN FILMING OF "THE POSEIDON ADVENTURE"

Standing an 81,000-ton ocean liner on its head proves to be an interesting challenge—even to Hollywood's wizards of movie magic

By JOHN CAMPBELL

The Poseidon (Pō-sī-dun: after the Greek god of the oceans) is an 81,000-ton luxury liner making its last cruise from New York to a Greek ship-breaking yard after a long and illustrious career as "Queen of the Seas." Her new owners, in the interests of saving money, force the captain to drive her at unsafe speeds and, most importantly, reject his attempts to ballast her properly.

During a gala New Year's Eve celebration a monstrous wave strikes Poseidon abeam and capsizes her. The captain manages to radio a distress call, but immediately after, everyone in the superstructure is lost. In the main saloon the effect is hardly less catastrophic, with dead and wounded everywhere. But the sea doesn't immediately enter and there are uninjured survivors.

What follows is the heroic and dramatic struggle of ten of these to make their way up through the explosion wracked and rapidly sinking ship to the propeller housings where there is some chance of escape. They are led by the

Reverend Frank Scott, a man of remarkable will and capabilities. The others are Manny and Belle Rosen, a couple in late middle age; Mike and Linda Rogo, he a tough detective and she a one-time prostitute; pretty 18-year-old Susan Shelby and her 10-year-old brother, Robin; Nonnie Parry, a young singer; James Martin, a haberdasher; and Acres, a steward.

With these varied backgrounds they react differently under the terrible pressures imposed upon them and poignant relationships develop. Along their perilous way four are lost, but six are saved—never to be the same again.

That, in capsule form, is the story line of a new multi-million-dollar Irwin Allen production, "THE POSEIDON ADVENTURE", now in the post-production stages at 20th Century-Fox, which will release the picture. The cast of this extremely ambitious action epic includes the most distinguished group of actors assembled for a single picture anywhere in the world during the past several years. Five of them have been

Academy Award winners, including Gene Hackman, Shelley Winters, Red Buttons, Ernest Borgnine and Jack Albertson. Other outstanding talents were Stella Stevens, Roddy McDowall and Carol Lynley.

The roster of talents working behind the cameras was no less distinguished. The picture has been produced by Irwin Allen, directed by famed British filmmaker Ronald Neame from a Stirling Silliphant screenplay based on the best-selling novel by Paul Gallico, and stunningly photographed by Harold Stine, ASC, in a series of incredible "upside-down" sets designed by Art Director William Creber. The complex mechanical and photographic special effects, so critical to the realistic illusion of a film such as this, were entrusted to the Academy Award-winning team of L.B. "Bill" Abbott, ASC, and A.D. Flowers.

Few motion pictures—if any—have been physically as trying to its actors as Irwin Allen's production of "THE POSEIDON ADVENTURE" at 20th Century-Fox.

(LEFT) In the upside-down engine room set of *S.S. Poseidon*, the camera crew takes a well-deserved breather. (Left to right:) Director of Photography Harold Stine, ASC; Camera Operator Tommy Morris, First Assistant Cameraman Tom Kershner and Second Assistant Cameraman Joe Valdez. (RIGHT) Bedraggled survivors of a rampaging tidal wave which, in the story, turns the huge ocean liner completely over, await the call to "action" in the set representing the *Poseidon's* First Class Dining Saloon, the ornate overhead lighting fixtures of which are now on the floor. These sets were first built right-side-up on the sound stages, then dismantled and reassembled upside-down.





(LEFT) Desperately seeking some avenue of escape, survivors of the holocaust make their way up the narrow tube of a ventilator shaft. (CENTER) Academy Award-winner Gene Hackman, playing the role of a gusty clergyman who assumes leadership under pressure of the tragedy, picks a path through the steaming wreckage of the engine room in his attempt to lead the others to safety. (RIGHT) Exploring the geography of their dilemma, Carol Lynley and Red Buttons peer into the ship's barber shop and are surprised to find the chairs hanging from the ceiling.

(LEFT) Hackman, having climbed up a huge Christmas tree, which he has used as a ladder, pleads with surviving passengers to follow him out of the capsized Dining Saloon. Most of them, immobilized by fear, elect to stay where they are and are later drowned in the huge gush of water that inundates the room. (CENTER) Robin, youngest of the survivors, makes his way to the lavatory, only to find that the tables (and everything else) have been turned on him. (RIGHT) Hackman leads his near-hysterical charges through the roaring flames and gushing steam of the ship's bowels. Though *The Poseidon* is a fictional ship, its sets were built to exact scale from blueprints of *H.M.S. Queen Mary*, now "alive and well" as a tourist attraction in Long Beach, California.



The story of 10 survivors struggling to escape from a capsized ocean liner, wracked with explosions and rapidly sinking, actors in "THE POSEIDON ADVENTURE" spent 10 of the production's 14 weeks in the same clothes, soaking wet and in a miasma of steam and smoke.

The picture was shot in sequence because the principals became dirtier and more tattered and suffered injuries, some for real and some through artifice. It would have been impossible to skip around without committing some anachronism in their appearance.

The genius of Hollywood set builders has been established for many years. They have reconstructed reasonable facsimiles of everything from the Garden of Eden to futuristic concepts not realized even in this remarkable age, plus

most of the settings for important events in between.

In the best traditions of this distinguished history must be added the sets of "THE POSEIDON ADVENTURE". The story tells of the capsizing of a liner of the Queen Mary class and of the struggle of 10 persons to fight their way upwards into the bowels of the vessel towards possible escape through the tunnel which houses one of her four drive shafts.

A number of the pre-capsize sequences were shot aboard the Queen Mary, 81,000-ton liner now permanently moored at Long Beach, Calif. "THE POSEIDON ADVENTURE" was the first feature film to be shot aboard her and she was a very expensive set, the City of Long Beach and other investors having poured over \$100,000,000 into

her rehabilitation. This was all quite convenient, but in establishing a ship of this size it was made imperative to build the upside-down sets—in which nearly three quarters of the picture take place—to Queen Mary scale. This was done from the liner's blueprints and from photographs.

Production designer William J. Creber, art director Ward Preston and set decorator Raphael Bretton were aided by the photographs, which could be inverted, but they and their imaginations were on their own after that.

The most spectacular of the sets was the engine room. One of Red Buttons' lines in this sequence is, "Welcome to hell." And hell it is: an appalling scene of lacerated steel, twisted pipes, dangling wires and girders, peeling dynamos, cliffs of turbine rotors, peaks and



(LEFT) Crew of "THE POSEIDON ADVENTURE" sets up for shooting on the deck of H.M.S. *Queen Mary*, now anchored in the harbor at Long Beach, California, where it attracts millions of tourists. *The Poseidon* of the film is portrayed as an exact replica of the *Queen*. Long Beach authorities were most cooperative, lending blueprints and many fittings from the venerable "Queen of the Seas". (RIGHT) Camera on crane swings into set representing the bridge of *The Poseidon*. Sequence was difficult to shoot, because there are no lights on the bridge of a ship at night, except for tiny lamps that illuminate the instruments.

ravines made by shattered generators only half torn loose from their foundations, split and pouring forth their metal innards. Steam hisses from ruptured pipes and burning oil produces an eerie glow. Water rises menacingly from below.

This set is 43 feet high, by 56 by 60, and while it doesn't encompass the entire engine room of the *Queen Mary*, that part of it which is represented has been built to scale. The spidery walkways and ladders are all inverted, of course, and the cast had to pass over them at no inconsiderable danger to themselves. In fact, according to the story, it is a fatal passage for Gene Hackman and Stella Stevens.

Probably the most ingenious set was the first class dining saloon. The original aboard the *Queen Mary* is intact, but it is in use—and, besides, it could hardly be inverted and put to the uses required for "THE POSEIDON ADVENTURE". So, except for some alterations in decor, a duplicate was built on Stage Six at 20th Century-Fox, using the same dimensions: 118 feet by 60, and 28 feet high.

The same set was employed for sequences right-side-up and upside-down and, in order to speed the conversion, the ceiling was carpeted on its reverse side and the floor was decorated as the ceiling. Thus, when it came time for the inversion, panels were turned over and the basics were there. Tables and chairs were fixed to the ceiling and certain lighting fixtures were fastened to the floor and that was it. Visitors were not surprised that the tables were stationary but they were at the chairs. Production designer Creber had to explain several hundred times that on the *Queen Mary*, in rough weather, the chairs were at-

tached to the deck by elasticcord and, therefore, would remain pretty much in place.

Another innovative feature of this set was that 30-foot sections of it could be tilted to 30 degrees to start the ship rolling over at a gala New Year's Eve party. What producer Allen calls "movie magic" took over from there.

This set was to be employed for even wilder activity when 125 stunt men and women were "drowned" in it. It was rigged to hold water up to three feet deep. It all started with an explosion and then six water howitzers, activated by compressed air and holding 300 gallons each, were fired simultaneously at the unfortunates. Supporting this assault were three high-pressure pumps delivering 4,000 gallons per minute each. The set was filled to capacity in approximately 45 seconds.

Another setting of ingenious design was the radio room of the *Poseidon*. It was important to the story line that the radio operator send out a mayday (distress) call at the last possible moment as the ship rolls over. The entire set was built on an axle, allowing it to swing 180 degrees into a tank of water. A great gout of water smashes through the window and the room rolls with cameras in and out of the water, with more cameras at the windows in the tank recording the action.

Throughout "THE POSEIDON ADVENTURE" the protagonists are constantly menaced by rising waters. For the latter scenes, various sets were built on a giant sled which was eased into a large reservoir at about a 35-degree angle. In the film the water will appear to be rising, while actually the actors and sets are sliding into it.

Another major set was an exact

replica of the navigating bridge of the *Queen Mary*, complete with engine room telegraphs and other equipment from the former *Queen of the Seas*. It was mounted on hydraulic jacks and, under assault from the water howitzers and high-pressure pumps, it, too, rolled over.

Two sets which caused much comment, although not as astonishing in their mechanics and concept, were an upside-down men's room and upside-down barber shop. There were several lapses in the construction of these sets, when carpenters, their minds wandering perhaps, installed doors and fittings in their normal positions.

The great weight of achieving this realism visually fell upon Director of Photography Harold Stine, ASC (veteran of a half-century in the film industry) and his more-than-intrepid camera crew. In the following interview with *American Cinematographer* Editor Herb Lightman, Stine discusses the unique problems inherent in photographing "THE POSEIDON ADVENTURE" and explains how they were solved:

QUESTION: What would you say were some of your major challenges in photographing a film in which more than half of the action takes place in sets that are upside-down?

STINE: There have been many unique lighting problems on this picture—not only because the sets are upside-down most of the time, but because they're so huge. Take the first class dining saloon, for example—it's 118 feet long, 60 feet wide and 28 feet high. We started shooting in it when the set was originally normal—that is, right-side-up. In preparing for that I noticed that there was

no area above the walls for hanging lights, as there is in a conventional set—mainly because the ceiling light fixtures have to be shown to establish the from-the-floor light source later, when the ship is turned upside-down. So I had to figure a way to get light to the far end of that big room. I had two parallels brought onto the set—hoping we wouldn't need that area for the camera—and had the boys rig four 10K's on the parallels. Then we sort of snooted these lights down so that they would reach into the corners 100 feet away.

QUESTION: In order to get any depth of field at all under those conditions, did you find it necessary to push the film in development?

STINE: No. In this case, we ended up with plenty of light. We've been using Panavision's Panazoom lens, with its T/4.2 stop, so we've had enough speed. The 200-degree shutter on the Panavision Reflex 200 camera has been an advantage, too, in that respect. I've been able to get a good exposure at close to 200 foot-candles for the first part of the picture, where the set is upright. On the second part, after the tidal wave flips the ship, we were running at 150 foot-candles, shooting at T/4.5. That was because of the effect we were after, since the light was now all supposed to be coming from the floor—from what used to be the ceiling fixtures—and the background areas of the set were allowed to go pretty dark. From the technical standpoint, it's pretty nice these days to be able to depend upon an exposure meter to tell you what you're doing. When I started in this business 50 years ago, they didn't have meters.

QUESTION: I noticed that the large saloon set was lined with pillars. Did they provide any help in hiding lights?

STINE: They were of terrific benefit when the set was in the upright position. My gaffer would find the angle of the lens we had on the camera and then start stacking the lights in line behind those columns. Each of them furnished a space of about two feet to hide a light behind, and we were able to hang a few backlights. In the upside-down sequences we weren't able to use any backlight, because all of the light was supposed to be coming from the floor.

QUESTION: All of those low lights make everybody look a little bit like Dracula, don't they?

STINE: Well, it's true that low light source is usually very unflattering, but

in this picture you don't have to worry about actor vanity. After all, they're supposed to look like survivors of a shipwreck and if that idea is to come through realistically, you've just got to forget photographic flattery. A more serious problem with the low light source was the fact that it sometimes left us without light where light—dramatically speaking—was really necessary. For example, in one scene Gene Hackman ended up in a position facing away from all the lights on the floor, so that there was no light on his face at all. It was a very dramatic scene and, therefore, essential that the audience see the expression on his face as he delivered his lines. So, at an angle of about 100 degrees from the camera, we put a nice cross-light on him, plus a light fill to get a bit of luminosity into his face. It really came off in a terrific manner, showing the attitude on his face and the character of the man. I feel that it was extremely powerful. We were able to cheat a bit in this case, but there were many times when the light was completely behind the actors and there was nothing we could do to motivate any light on the foreground—so they had to go into extreme low key or complete silhouette.

QUESTION: What would you say was your most challenging scene to light in the picture?

STINE: It wasn't any of the huge sets, as you might expect—it was the bridge of the ocean liner (or the wheel-room, as some call it). In actual working practice, there must not be any lights on the bridge of a ship at night. What are you going to do? How are you going to light it so that you can get an exposure onto the film? You've got to come up with a good clean negative—and it can't be too thin, or the lab will have nothing to work with. I would rather get a little extra onto the film and let the lab print it down later. At any rate, the only light sources that exist at all on the bridge of a ship at night come from the various instruments—the compass in front of the man at the wheel and others that they use for navigation. We simply hid little peanut lights and other small lamps in among all the mechanical devices and let the actors move in and out of this low-key light. To get the effect, I went to 100 foot-candles at about T/4.5 and pushed it one stop. For the reverse angles, where we look out to sea, there was a grey backing and I wanted to make it blue, so we took #25 blue filters and put them over the lamps and just blued the whole sky down to a nice night feeling.



Famed British director, Ronald Neame, discusses scene with Director of Photography Harold Stine, ASC, on the set. Neame has won honors in every major category of film-making, beginning as a cinematographer and moving on to become a producer, writer and director. He has received three Academy Award nominations. Of his American crew he says: "I've got a wonderful unit working with me. It could be quite lonely for a foreigner working in a strange country, but it's nice to have such a lovely unit around me, such friendly and helpful people."

QUESTION: I understand that the action of this picture has been shot in sequence, which is somewhat unusual. Can you comment on that?

STINE: Yes. Well, the shooting in sequence really began at the point where the ship turned over. Up until then we shot out of sequence because the people playing the passengers were all clean and well-dressed. But from that point on, it became almost necessary to shoot in
Continued on Page 1026

Young Eric Shea does a beautiful job of being tossed back and forth on the stationary deck of the *Queen Mary* during filming of storm sequence.



A SYSTEMS APPROACH TO THE CINEMATOGRAPHER'S NEED FOR LIGHT CONTROL MATERIALS

By STAN MILLER

President, Rosco Laboratories

Rosco Laboratories is regarded by many as a newcomer to the motion picture industry. In reality, we *began* in this field—although not on the production side of the business. The first product of the company, in 1910, was a line of dipping lacquers for coloring light bulbs. These colored bulbs were used in theater marquees, where up to that time, only the clear types had been available.

At that time, live performances were integral with the presentation of motion pictures, so we added a line of German colored gelatine filters for use on the stage-show lighting fixtures. This product line was just getting established when World War I broke out, and we were placed in the position of having no product to sell. However, our experience with dye technology in the manufacture of the lamp-dipping lacquers enabled us to develop our own line of colored gelatine filters. This was the start of what is now known as the ROSCOGEL line of theatrical color media. The product is the dominant gelatine filter in use in this country today, and the line has 74 colors in it.

Rosco was now firmly established in the "movie" business, with the colored light bulbs in the marquee, and the color filters for the stage-show lights. The next step, since all these products were sold through the same distribution channels, was to enter the projection booth. This was done with the addition of a line of film products, such as film cement for splicing, lens cleaner, film cleaner and film lacquer. It is of some interest to note that the colored lacquers, and updated versions of the film cement and the lens cleaner are still active products.

During the next period of time, most development emphasis was in the field of color media . . . particularly for the-

atrical applications. This work led, in the fifties, to the colored acetate filters called ROSCOLENE. These products were sold for theater lighting, as art supplies and for the display field. Primarily, they established us more firmly in the theatrical market, and put us in a position to supply color media to the television industry when it changed over to color in the sixties. Our gelatine and acetate color filter lines now established us as the dominant U.S. supplier of color media to the theater and television lighting fields.

Rosco Labs had become very much development-oriented in this period, and we had branched out into the field of metallizing and laminating plastic film-based materials. We had been attracted by the polyester materials from the time of their first appearance on the market. Our experiments with the polyesters included work on coloring them, coating with metallic films and laminating them with other materials. The first product resulting from this work which was applicable to the film and TV lighting markets, was the colored polyester film we call ROSCOLAR. We brought this out in 42 colors, which we have since increased to 52.

BACKGROUND FOR CINEGEL

At about this time, we became aware of the fact that the film industry had needs that were not being met by any commercial supplier. The increase in location activity over in-studio production, with the greater use of the small "quartz" lighting fixtures, and the use of the multiple PAR-lamp fixtures signaled the need for new diffusion materials and color media for filters. We had been selling some material for carbon arc color correction and daylight conversion, and this exposure to the cameramen in the industry enabled us to hear

what some of the problems were.

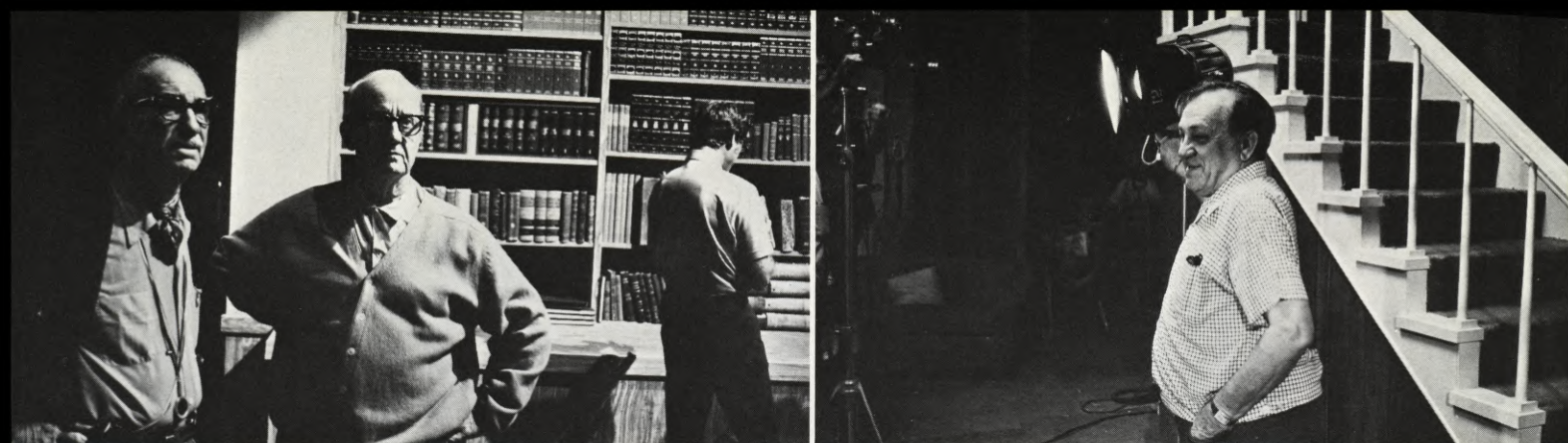
I spent many days observing the Directors of Photography and their crews working on all types of production. These ranged from TV commercials to major features. I asked many questions, and tried to listen carefully to the answers that were offered. A pattern of needs emerged from these contacts. This was the birth of the Cinegel product line. These would be our entrée into the motion picture production field, a line of products that actually solved the problems of the working cameraman. From this initial contact, the policy was established that Rosco Labs would maintain strong contact with the cameramen, gaffers and grips in both the development of new products, and the continuing reassessment of the existing items.

We decided that Cinegel would become a total systems view of the field of "light control" for cinematography. The term "light control", as used here, means modifying the color, or the character, or the amount of light from either natural or artificial sources. This meant that we would be expanding the range of materials we produced in order to do things besides changing the color of the light. Even the changing of color would now be divided into two categories: first, the kind of changes with which we were very familiar, those done for effect or mood; secondly, a relatively new field to us, that of filtering light to meet the spectral energy balance requirements of a color film.

A further consideration of importance was the realization that we were the only company which had the total capability for developing, manufacturing and marketing products in this field. All of our competition was marketing someone else's product, and had very limited control over development. Fur-

(LEFT) Cinematographer Dave Quaid, who has been interested in the new Cinegel line by Rosco and has helped out with measurements and evaluations, makes exposure readings through a panel of ROSCOFLEX 85. (CENTER) Author Stan Miller checks the color temperature of the light filtered by the ROSCOFLEX 85 material. (RIGHT) A test exposure taken through the panel of ROSCOFLEX 85 with tungsten-balanced film.





(LEFT) Gaffer Glen Bird and Director of Photography Robert L. Surtees, ASC on the set of "LOST HORIZON". Surtees utilized Rosco TOUGH SILK diffusion material on the production and was impressed with the quality of the diffusion, and particularly with its low degree of light loss. (RIGHT) Walter Streng, ASC, Director of Photography on "MARCUS WELBY, M.D.", shown on the set experimenting with the TOUGH SPUN diffusion material.

ther, none of these companies could produce the range of materials, without finding a new supplier for each one, that is necessary to span this field.

This strengthened our determination that we were the company which could solve the problems and apply our technology to the field of light control for cinematography. We intend to be a complete source for all of the wide variety of materials needed to accomplish the many "light control" tasks that might now, or in the future, face the cinematographer. In order to assure that this was more than just rhetoric, we embarked on a program of capital expansion a year-and-a-half ago. The last of the planned facilities for this phase of the program, an extruder, is just going on-stream, further expanding the range of in-house manufacturing capabilities.

DIFFUSION MATERIALS

This aspect of light control relates to the need to change the character of the light reaching the subject being photographed. Usually, it is used to "soften" the light, and reduce the density of the shadows that are cast by the source. The most widely-used material for this application in the past has been the so-called "spun-glass". This is made of chopped fiberglass bound together with a resin. The material gets brown when used in front of very hot sources, and there have been many complaints about handling it. There have been some pressures recently to eliminate the spun for this reason.

The other material used in film work for a softening or diffuse effect on the light has been silk. This is one of the old standbys, and it is an excellent material for the effect. Its main drawback is that it is extremely fragile, and of course it will not stand up to very much heat.

We set out to overcome the objections to the existing materials but, even more important, to establish a range of diffusion products which would truly meet the full variety of needs encoun-

tered by the cinematographer. The following four products are the results of the work done to date. All the materials are field-proven in actual production service.

ROLUX is the densest of the new diffusion materials. The material is a relatively stiff sheet product and is intended to soften the most intense point source light. It can change the appearance and effect of the light from a multi-PAR-lamp fixture almost to "softlight" quality. The basic material warms the light slightly, approximately 200° Kelvin, which tends to render skin tones very pleasantly. ROLUX was originally created by us to meet the requirements of photography for TV commercials where the "softlight" look was desired. It remains the largest selling diffusion material we make.

SOFT FROST is a polymer film diffuser that is used like the Marlux panels have been used. It is normally placed a short distance from the luminaires for softening the lighting effect in a large area. In fact, because the material is soft and stretchable, it has been applied by stretching it tautly over the top of an entire set, and pouring the top light through the SOFT FROST. It has been used on location where there were problems with other materials because

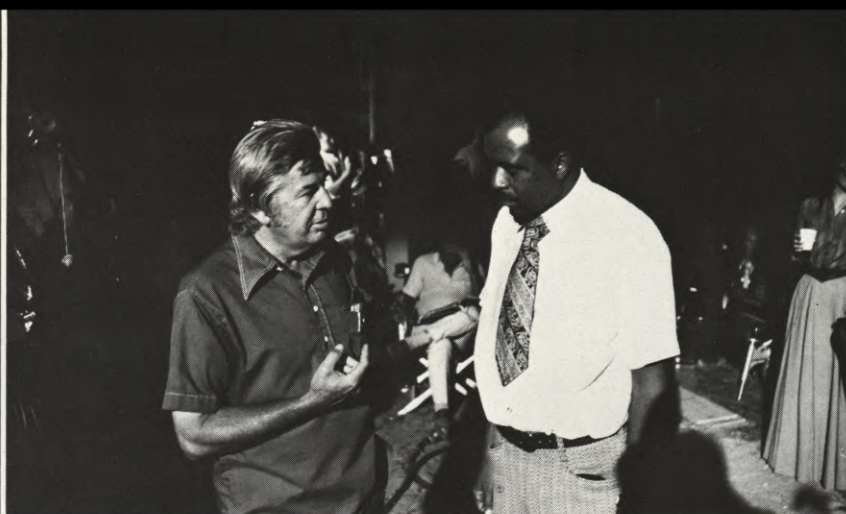
of the noise they made in the wind, and to avoid the surface reflections of the sun.

TOUGH FROST is a frosted polyester sheet diffusion material available in 48"-wide rolls. It has achieved wide application recently due to its very good diffusion characteristics and the fact that it stands up exceptionally well on high-powered light sources. Gene Polito, Director of Photography, is using the Tough Frost material on "ALIAS SMITH AND JONES". He says, "The Tough Frost is an excellent diffusion material for my requirements. I have liked the quality of diffusion obtained with tracing paper, and I feel that this material gives that quality. In addition, it seems to last forever." Mr. Polito added that, "The Tough Frost actually passes more light than the tracing paper!"

TOUGH SILK is a polyester sheet diffusion material which is scratched in one direction in a way that makes it act very much as a silk would. It has the excellent heat-resistance of the polyesters. Some of the most extensive testing of this new material was carried out by Fred Mandl, ASC, in his role as Director of Photography last season for the series "TREASURY AGENT". "This material," states Mr. Mandl, "has the diffusion

(LEFT) Lester Shorr, ASC, Director of Photography and Gaffer Mal Donelson examine a TOUGH SPUN diffuser which has been in service for some time on the set of "THE ODD COUPLE". (RIGHT) Donelson checks out the condition of the TOUGH SPUN diffuser on the camera light for this multi-camera show. Experience on "THE ODD COUPLE" has shown that this diffuser material can be used much longer than the spun glass it replaced.





(LEFT) Gaffer Dick Hart, on the set of "PETE AND TILLIE" (John Alonzo, Director of Photography), adjusts a "dot" which has been covered with ROSCOFLEX-F reflector material. This was being used to provide bounce-fill light. (RIGHT) Ralph Woolsey, ASC, Director of Photography or "THE BOUNTY MAN", discusses the Rosco CINE BOOSTER BLUE and the CINE BOOSTER 1/2 BLUE with John Murray, Western Sales Manager of Rosco Labs.

properties of silk, but you can put it in the accessory clips in a gel frame without it breaking down from the heat. We finally converted to this material for all our diffusion on this show."

Robert L. Surtees, ASC, currently Director of Photography on "LOST HORIZON", has used the Tough Silk material as diffusion on his current production. "The diffusion qualities of this material are outstanding, and we are particularly pleased by the low light loss we get with Tough Silk." Gaffer Glen Bird added, "The durability of the material on the large fixtures is a very important quality, as well as the good diffusion properties."

TOUGH SPUN is a most unusual-looking diffusion material. It is a non-woven polyester mat that is put through some special processing. It has the diffusion characteristics of spun glass, with none of the disadvantages. It doesn't turn brown from the heat, and won't irritate the skin.

The use of Tough Spun has been an

enormous success on the set of "THE ODD COUPLE". This is a multi-camera show, and is done before a live audience.

Lester Shorr, ASC, Director of Photography, explained, "The three-camera format, with a fixed lighting array, demands that we use a great deal of diffusion in order to allow for the large degree of camera movement. We have used spun glass on all our front lighting fixtures since the start of the show in order to get a softlight look.

"Spun glass did the diffusion job, but required fairly constant changing, due to the fact that it turns brown when continuously exposed to heat," says Shorr, "and we were most anxious to find a more durable material with the same diffusion quality.

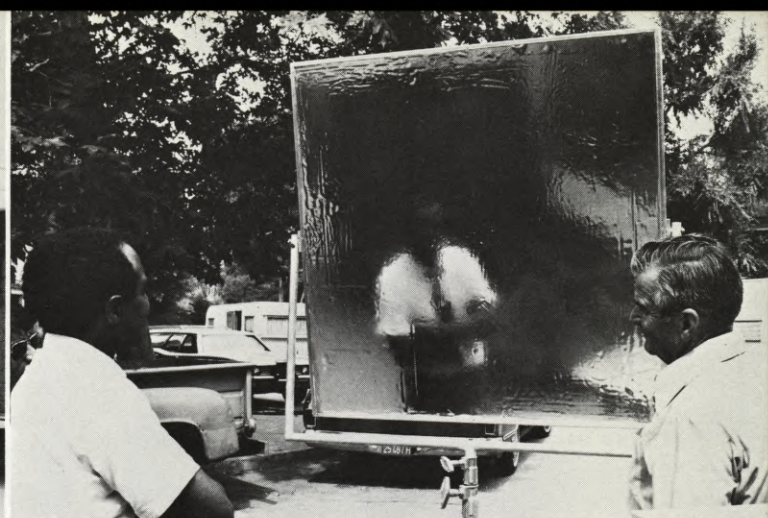
"Samples of Rosco's Tough Spun were brought to me by John Murray during the development of the product. We were asked to substitute it for spun glass, and give Rosco our comments. We found the material to be about the same as the 015 spun, in terms of light loss,

and that its diffusion properties were excellent. One of the most critical lighting requirements, on this type of show, are the camera lights. We have developed our own, in conjunction with Bill Croff of the Paramount Electrical Department, and find that their operation is strongly dependent on the quality of the diffusion. We now use the Rosco Tough Spun in the camera lights, and have finally converted the diffusion on all our lights. We no longer use any of the spun glass material."

"Not only is the diffusion quality excellent," says Mal Donelson (he is gaffer on "THE ODD COUPLE"), "but the total elimination of the handling problem we had with the spun glass is a tremendous boon. There were always complaints of face, hand and sometimes eye irritation from the small fragments of glass fiber from the spun glass. It was a particularly bad problem on a show like this, due to the fact that the final adjustment of the lights involves working with the fixtures overhead. This means that the fiberglass fragments are

(LEFT) Jacques Marquette, ASC, Director of Photography on "STREETS OF SAN FRANCISCO", reviews ROSCOFLEX-F material with Murray. Marquette reported that this material was extremely useful in providing bounce light on "FUZZ", feature on which he was Director of Photography. (RIGHT) Owen Crompton, Grip Department Head at Disney Studios and Murray discuss the remarkable fact that the small hand reflector they are examining has had several tears in the ROSCOFLEX-F covering repaired by simply cementing patches over the tear.





(LEFT) Don Capel, Key Grip on the production "CHARLEY AND THE ANGEL" (Charles K. Wheeler, ASC, Director of Photography), examines the "soft" side of a reflector board covered with ROSCOFLEX-S, and (RIGHT) the "hard" side covered with ROSCOFLEX-H. "The reflective characteristics of this nearly indestructible material are outstanding," says Capel.

falling down on the operator. The use of Tough Spun has totally eliminated this problem."

"We have had a doubled Tough Spun diffusion on a 2K Sky Pan for about 200 hours burning time now, and there are no signs of any deterioration. Effectively, we have stopped changing diffusion on this show," added Shorr.

The above developments comprise the latest in the diffusion field. Work is still going on to improve and refine the products described, in order to incorporate as much as possible of the latest field information.

REFLECTOR MATERIALS

The sunlight reflector has been a tool of the cinematographer for many years. The reflector boards have long been the easy way to provide daylight fill without using power. The covering of the boards has been troublesome and time-consuming, involving a complete cleaning of the board to remove all the previous materials, and then the replacement of the reflector in 5' by 5' squares. Rosco has developed laminated reflectors for use on these boards which duplicate both the "hard" side, ROSCOFLEX-H, and the "soft" side, ROSCOFLEX-S, of the traditional boards. These materials are very rugged, and will resist salt air as well as repeated cleanings, without any significant changes in the surface. The ROSCOFLEX materials are supplied in 48'-wide rolls.

Owen Crompton, Grip Department Head at Walt Disney Studios, says, "These are truly remarkable materials. Their performance is superior to the traditional materials, and they are extremely durable once they are mounted. We find that the ROSCOFLEX-H 'hard' side material has slightly better throw with greater evenness than the old-time material. The ROSCOFLEX-S used on the 'soft' side has outstanding reflec-

tance, and a better spread than we are used to seeing. The best thing about the 'soft' side is that with ROSCOFLEX-S, it looks like it will never wear out."

Don Capel, Key Grip on the feature "CHARLEY AND THE ANGEL", has been involved at Disney in the evaluation of the ROSCOFLEX materials for the reflector boards. He is using them on his current feature. Mr. Capel says, "The most remarkable thing to me were the tests we did to see how the ROSCOFLEX would stand up on location. After creating some tears in the material, we patched the boards by simply cutting small pieces of ROSCOFLEX-S and cementing them down over the tears. We couldn't see the difference in the performance of the patched board. Anyone who has worked with the old 'soft' side material knows that the surface is so fragile that you can't clean it without destroying the surface." Continued Mr. Capel, "You were lucky if a 'soft' side reflector lasted two weeks. These ROSCOFLEX materials seem to me to be just about indestructible."

In addition to the materials for reflector boards, the need for a soft, flexible and lightweight reflector was brought to our attention by the fact that the "Space Blanket" was being used by some cameramen even though it was too small, and it had poor reflectance. We felt that if it was being used with these drawbacks, it must represent a real need.

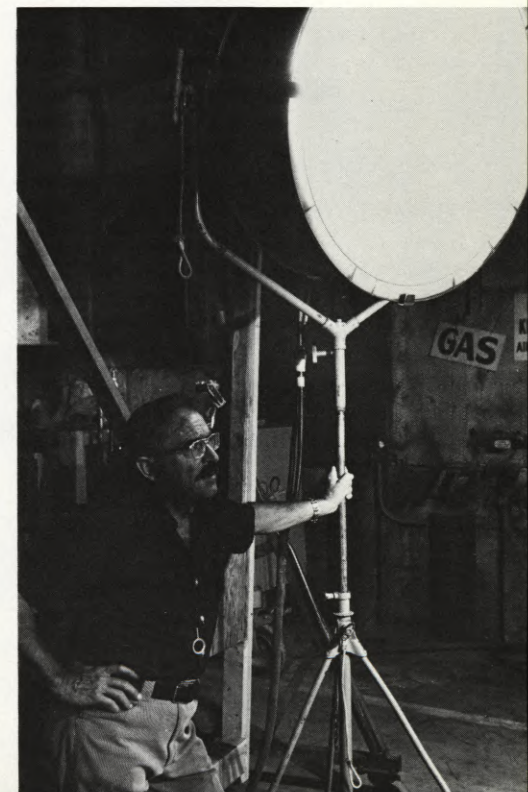
In response to this need, Rosco developed ROSCOFLEX-F, which has very high reflectance, and is extremely lightweight. An entire roll, 54' by 25 feet long weighs about a quarter of a pound! This material offers a convenient means for placing a reflector surface easily in almost any location for bounce lighting, or other reflected light requirements.

John Alonzo, Director of Photog-

raphy on the new film "PETE AND TILLIE", has been using considerable amounts of the ROSCOFLEX-F. One of his applications has involved the use of the material in the form of many small reflectors. These are created by cutting an appropriate-sized piece of the ROSCOFLEX-F and securing it to a gobo. These are then strategically located to offer small amounts of booster light into selected areas of a confined set. Mr. Alonzo formerly used the Space Blanket, but feels that, in addition to the problems noted above, it was "warming" the reflected light.

Jacques Marquette, ASC, Director of Photography on "Fuzz", found the ROSCOFLEX-F reflector material invaluable. Continued on Page 1051

Gene Polito, Director of Photography on "ALIAS SMITH AND JONES", examining the effect of the Rosco TOUGH FROST diffusion material. Polito, who recently photographed "PRIME CUT", formerly used tracing paper for this effect.

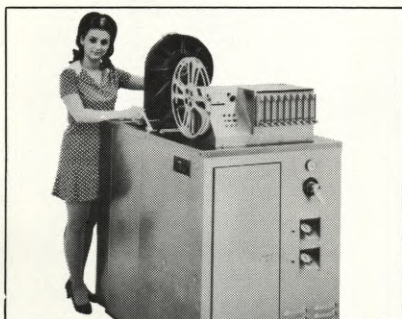


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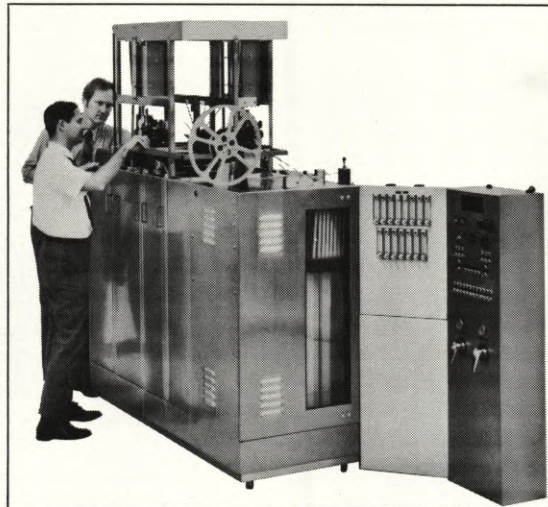
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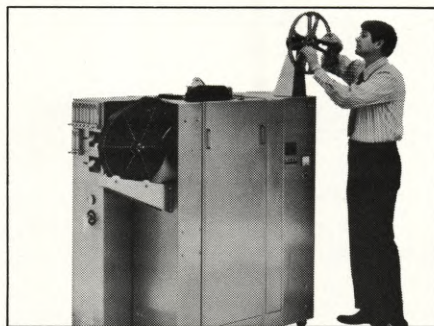
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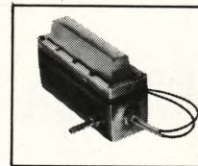


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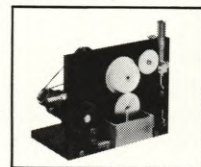


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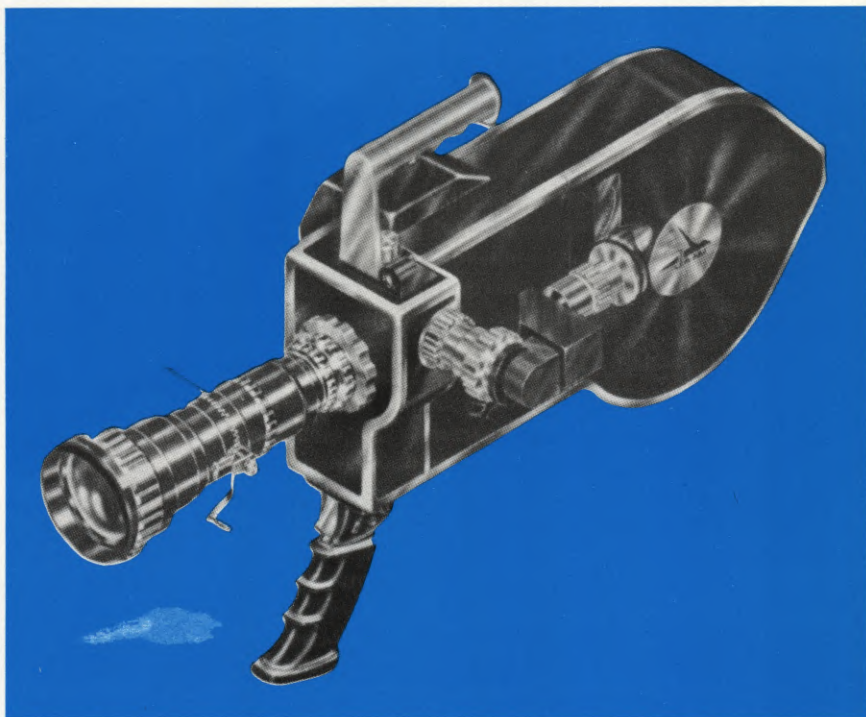
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16mm FOR TELEVISION?

A top laboratory expert analyzes the various problems inherent in the use of the narrow-gauge format for TV and suggests practical alternatives for solving them

By **SIDNEY P. SOLOW**

President, Consolidated Film Industries

There is a great deal of discussion these days relative to the use of 16mm film for television and, as might be expected, there is a certain amount of confusion regarding the feasibility of using the smaller gauge for television work. The first thing that must be understood is that it is meaningless to debate whether 16mm is a large enough gauge for television without first taking into consideration a variety of other factors, including the way the film is to be used and the kinds of emulsions which are available. Sixteen millimeter films are being used successfully for certain kinds of television work, but this does not mean that they can be used with equal success in all areas of television film production or that they necessarily represent the wave of the future.

There is one general technical principle which should be discussed in order to consider the feasibility of using 16mm film stocks for television. It has to do with the factors affecting image quality when a film image is broadcast via television. It is natural, in considering the use of smaller gauge films in television, to think about the comparatively small size of the television screen and conclude that there should be no

problem using 16mm or even Super 8mm film for television, because the image does not have to be enlarged as much as it usually is in direct projection. To most viewers, the direct screen projection of 16mm or Super 8mm film yields a sharper and more detailed image than the television system currently uses in this country. It would seem, therefore, that 16mm or even 8mm should be more than adequate as a medium for television work. Unfortunately, the matter is not so simple.

One of the most important factors in evaluating a film image for use in television is graininess. Surprisingly enough, the requirements are more stringent than those for normal projection. Reproducing a film image on a television screen involves a kind of reverse synergism in which the final image has more apparent graininess than either the film by itself or the television system by itself. Reproducing a film image electronically, therefore, results in an increase of apparent graininess.

In evaluating the grain structure of different photographic images for use in television, what matters, of course, is the "image-to-grain" ratio rather than the absolute size of the grain, since it is

the image-to-grain ratio which affects the apparent graininess of the images when they are reproduced on a television screen. If the identical emulsion is used on 16mm and 35mm stock (as is the case with Eastman Color Negative types 7254 and 5254), the apparent graininess of the 35mm image will be substantially less than that of the 16mm image; and the 35mm image will yield a more pleasing television picture.

The key to evaluating smaller-gauge films for television production work is the number of film generations through which the film image must be duplicated. If the original camera film is to be projected and broadcast directly or recorded onto videotape, and there is no need to make film duplicates, then 16mm will be more than adequate. This is the case with newsfilm. A news cameraman can use a reversal film, and the original film can be edited and run once or twice for the news program and then filed away. If the film is for a local news program and is not intended to be broadcast over a network, it may even be feasible to shoot in Super 8mm. Indeed some television stations located in smaller cities are already shooting some newsfilm in Super 8mm.

PROGRAM ROUTES FOR TV

FIGURE 1

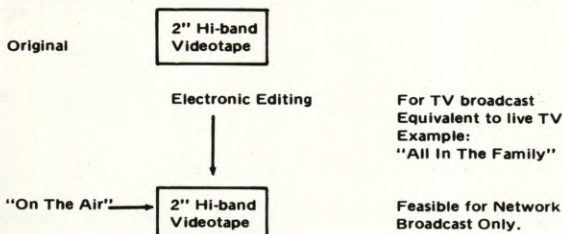


FIGURE 2

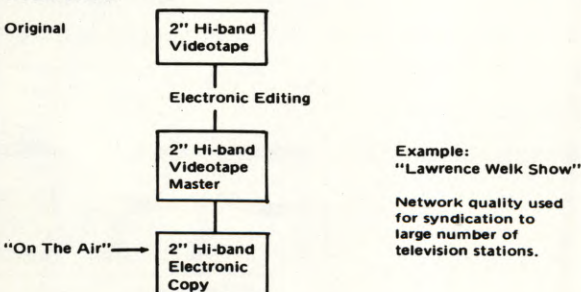


FIGURE 3

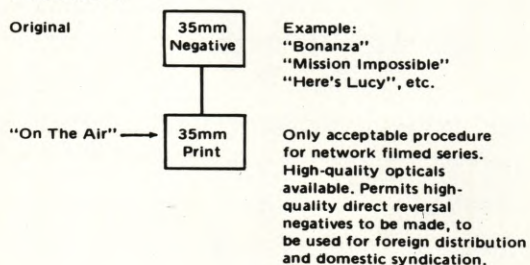


FIGURE 4

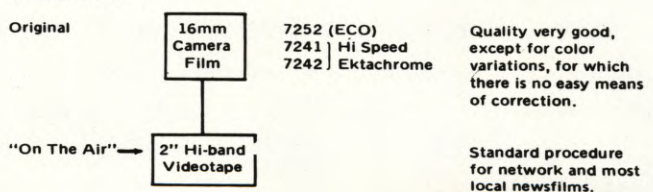


FIGURE 5

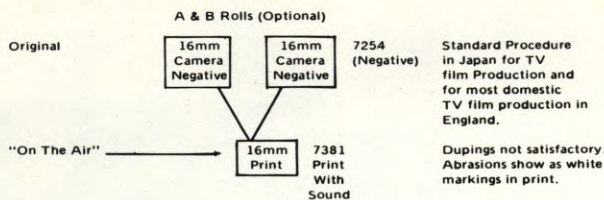


FIGURE 6

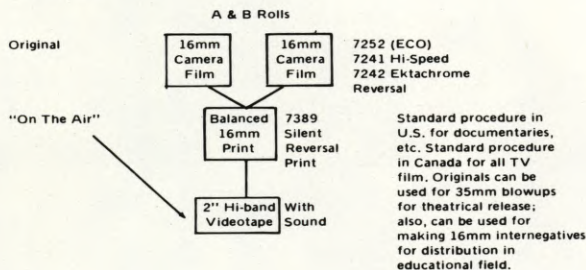


FIGURE 7

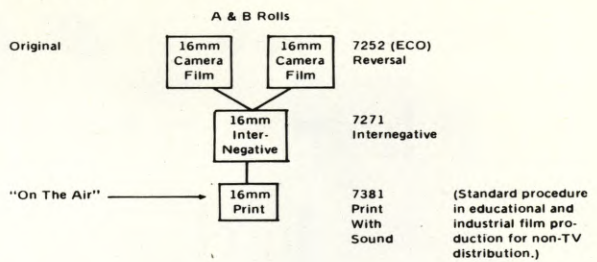
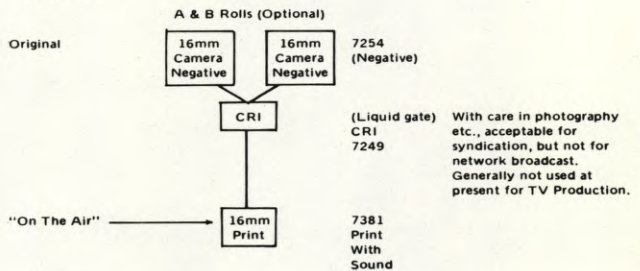


FIGURE 8



Most newsfilm for television is shot on 16mm stock using Ektachrome EF types 7241 and 7242. These film stocks are high-speed reversal films designed for direct projection. They are sufficiently fast [Exposure Index: daylight (7241) 160, Tungsten (7242) 125] to permit filming under adverse light conditions, and they can be force-developed one stop without too great a loss in quality. (Also, they can be forced two stops in emergencies, but the deterioration in quality is severe.)

Sixteen millimeter Ektachrome EF types 7241 and 7242 with proper exposure, flashing, and normal processing yield images which are good enough for network broadcast. It must be emphasized, however, that we are talking about the projection and broadcast of the *original camera material*, since the normal use of newsfilm does not require that it be duplicated. While the footage may be transferred without any quality loss to videotape before it is telecast, that is a matter strictly of convenience for the television station.

There are usually *noticeable variations in the color rendition* stemming from variations in the emulsions, or in the storage, exposure, and processing of the film; but, nonetheless, the basic image quality of 16mm newsfilm used by the networks and many local stations is generally excellent. (It is technically possible to equip the broadcast film chain with an automatic color equalizer to overcome this inconsistency, but this device has not, as yet, been adopted

commercially.)

The problem with using 16mm film for regular television programs comes when it is necessary to duplicate the film image before it is telecast or transferred to videotape. With every generation through which the film image passes there is an inevitable degradation in terms of sharpness and graininess, and a standard third-generation 16mm release print from a 16mm original does not quite meet *network* standards for television use. Third-generation prints from 16mm originals have been used for syndicated television programs, but the image quality obtainable in such a print is not adequate for network television.

There are some documentaries made for television which are possible only because they are shot in 16mm. The circumstances surrounding the production may require an easily-portable camera, uninterrupted long takes, or an extraordinary amount of footage—so that the film is economically feasible only if it is shot in 16mm. In any case, the extent to which 16mm equipment facilitates a production makes it a very attractive medium for a documentary, and the majority of documentaries for television are, therefore, shot in 16mm.

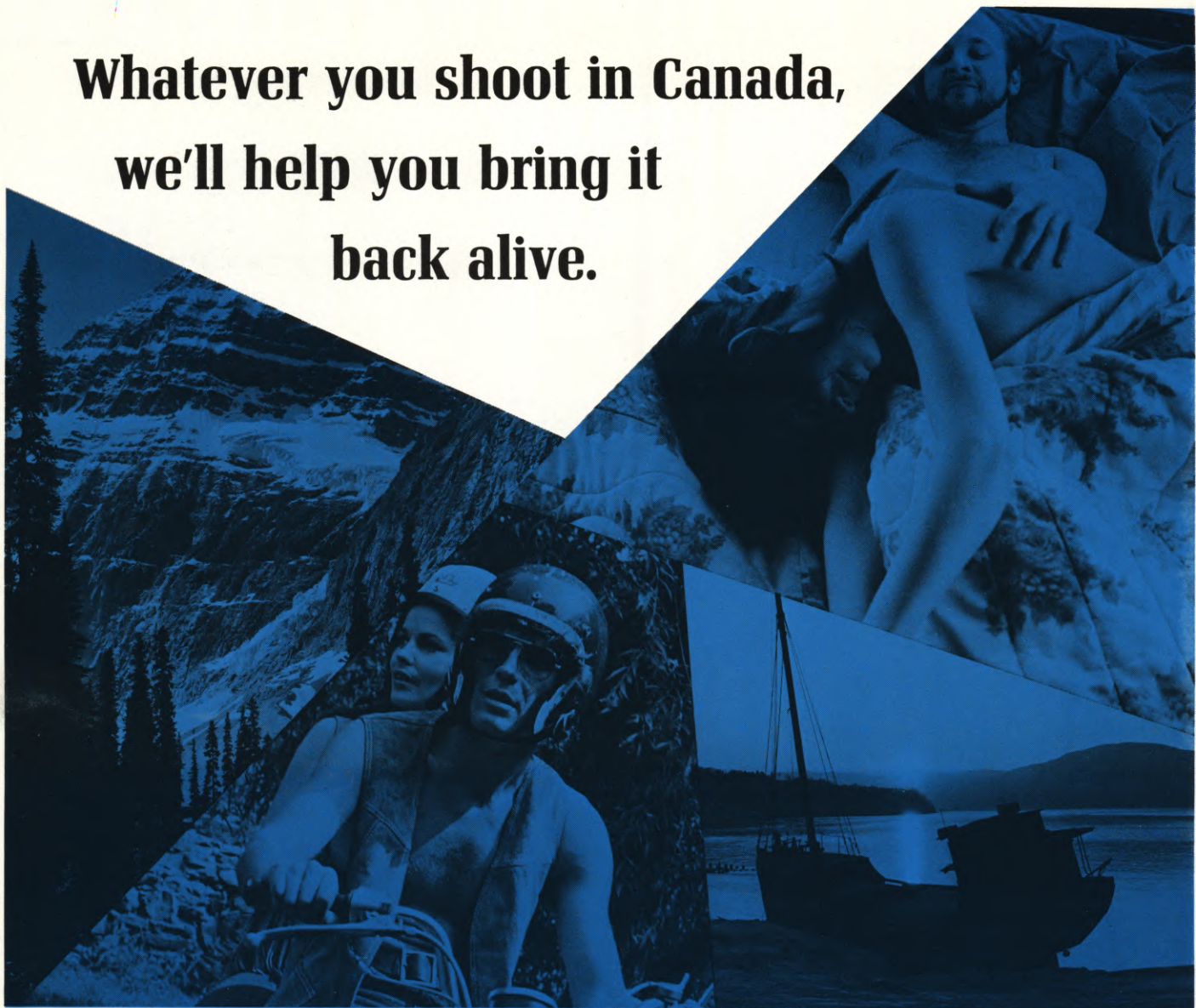
As is true of most 16mm production in this country, the camera stock used for a 16mm television documentary is usually a reversal film, either ECO (type 7252) or Ektachrome EF (types 7241 and 7242). The latter should be flashed prior to processing in order to reduce the contrast to a point where it is

compatible with ECO and therefore suitable for printing, rather than direct projection. Instead of making an internegative which is then used to make release prints, however, the producer of a television documentary will make a low-contrast reversal print from his cut original. While making this print, he is able to have the laboratory incorporate optical effects as well as color corrections into his picture before transferring it to videotape. Making this reversal print enables him to use a second-generation print rather than a third-generation print (from an internegative), and using type 7389 Ektachrome reversal print film prevents the contrast build-up which comes with printing on other print stocks. The sound track is usually transferred directly to the videotape from a separate magnetic track, thus insuring the best possible sound quality. The image quality of the resulting videotape is acceptable to the networks for documentaries and, if the producer later wants to make conventional 16mm release prints for educational distribution, it is still possible to make an internegative and an optical sound track from his original materials.

Before considering the use of 16mm for the production of television series or dramatic programs, we should take note of an aesthetic factor affecting the use of 16mm for documentaries for television. Relatively inferior image quality is often not only acceptable in a documentary but even serves to heighten the

Continued on Page 1042

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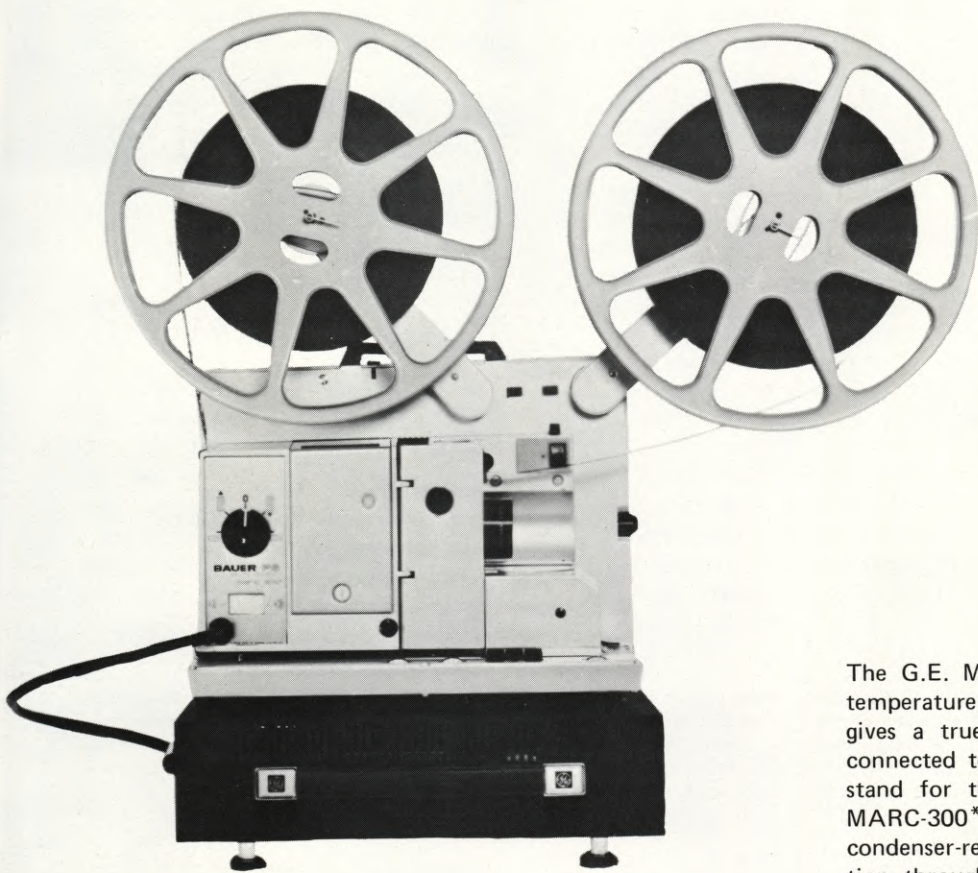
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Two models of a completely new camera system designed to meet the special needs of TV newsreel cameramen

Cinema Products, as an engineering and manufacturing company well-known in the motion picture industry for its advanced technological breakthroughs in crystal sound, reflexing the BNC, etc., and holder of numerous Academy awards for its achievements, was not interested merely in providing another Auricon-type "conversion" camera for the TV news field. Instead, Cinema Products engineers and designers spent considerable time in realistically analyzing the actual requirements faced by TV news cameramen throughout the world. The result was the CP-16, a 16mm single/double-system sound camera. The CP-16 is a completely new camera system, manufactured of light-weight magnesium and designed to fulfill all the requirements faced by TV news cameramen.

Newsreel cameramen basically look for a number of features in any camera system: extreme light weight (without sacrificing steadiness and strength of construction) is one of the most important. The CP-16 weighs some 15 lbs., when equipped with a 400-foot magazine (loaded with 400 feet of film), a 12-120 Angenieux zoom lens, as well as the Nicad battery pack. The CP-16 camera body itself (including motor) weighs only 9 lbs. The CP-16 camera is designed and specially balanced for on-the-shoulder shooting, eliminating the need for back-breaking body-braces and

cumbersome tripods, while permitting utmost mobility.

Another feature of utmost importance for the TV film cameraman is silent camera operation. The CP-16 camera is extremely quiet in operation, with approximately 31 db at three feet.

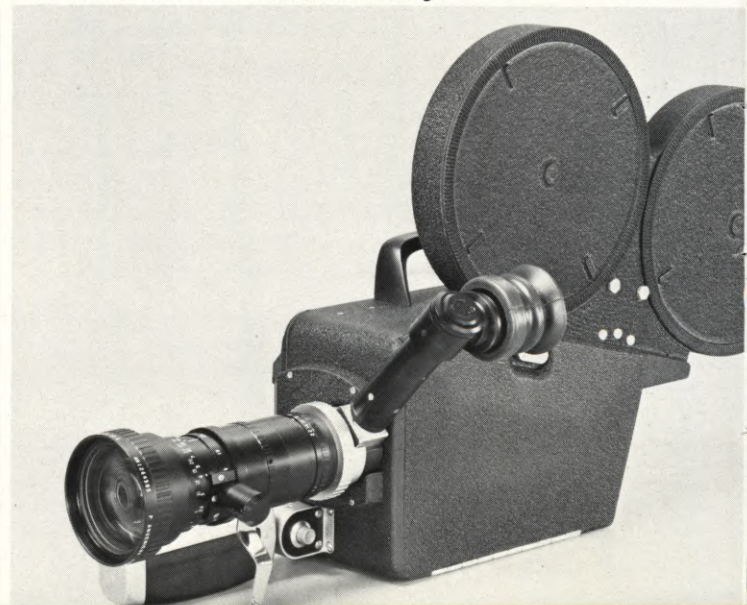
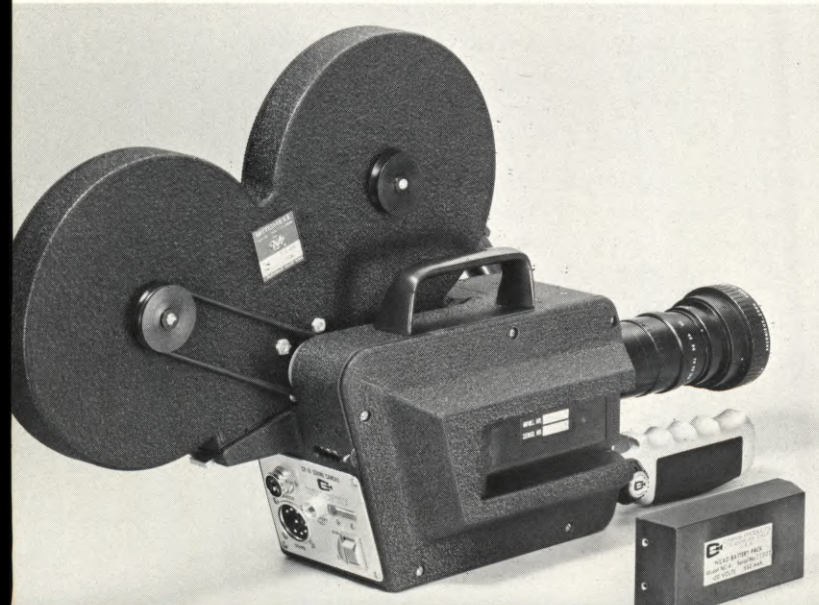
Simplicity and reliability of the power supply is another major consideration. The CP-16 camera accepts the specially-designed Cinema Products 20-Volt Nicad battery pack. This compact and light-weight battery pack instantly clips into the battery channel located in the side of the camera door. The battery pack can run over 3600 feet of 16mm film on one complete charge, and can be recharged fully in 14 hours using the Cinema Products-designed NCC-4 battery charger and AC power-supply unit. The NC-4 Nicad battery pack weighs only 16 ounces, and is so compact in design that a spare can be carried easily in a shirt pocket. The battery charger and AC power supply will run the CP-16 camera (and CP-16/A camera) directly from AC mains, whether or not the Nicad battery pack is in the camera. If the battery pack is in the camera, it will be recharged at the same time. The NCC-4 unit can also recharge a second Nicad battery pack, located outside of the camera, at the same time. With CP-16 cameras there is no requirement for dangling power cables, or battery packs tied around the waist or swinging

over the shoulder.

Film capacity is another factor of importance. After considerable research in the field, Cinema Products engineers decided that TV newsfilm cameras limited to a 200-foot capacity would simply not meet the requirements of the media. The CP-16 camera was consequently designed to accept Mitchell-type 400-foot and 1200-foot magazines. These types of magazines have been extremely popular for many years, and many such magazines, which are in excellent condition, are in stock in most TV newsfilm departments all over the country. The compatibility of the CP-16 camera system with these Mitchell-type magazines eliminates wasteful and unnecessary instant obsolescence. To further aid the working TV newsfilm cameraman, Cinema Products engineers designed a special magazine latch-lock system on the CP-16 camera, and supplies Mitchell-type magazines with a special locking stud so that the magazines can be easily and instantly snapped on and off the camera.

CP-16 cameras can run at 24 fps or 25 fps (and as a special optional feature, at an additional speed of 36 fps or 37.5 fps, by using a special selector switch). Since CP-16 cameras are single/double-system sound cameras, maintaining critically accurate speeds is highly important. The CP-16 camera DC motor is critically controlled by Cinema Products-

(LEFT) Cinema Products' CP-16 camera, showing the CP Nicad battery pack *outside* of the camera's battery receptacle. Weighing only 16 ounces, the battery can be snapped into position in less than a second and is so compact in configuration that a spare battery pack fits easily into a shirt pocket. (RIGHT) Reverse side of CP-16 camera, showing ON-OFF button (located at the bottom front of camera body, just above adjustable/removable hand-grip). There is also a separate ON-OFF switch located at the rear of the camera for convenience during tripod operation. Short viewfinder shown in use with 12mm-120mm Angenieux zoom lens is extremely important for on-the-shoulder shooting.



designed crystal oscillator, which has a sync speed accuracy of ± 8 ppm at 70° F and ± 15 ppm from 0° to 140° F.

CP-16 cameras are, consequently, automatically in cordless sync with professional-type tape recorders which use crystal oscillators of a similar high degree of accuracy for sync sound control. If, for any reason, the CP-16 camera does not maintain its pre-set running speed, the easily visible red-colored "out-of-sync" warning lamp immediately lights up. (A warning light signal is used to indicate an "out-of-sync" mode, instead of using a beep-tone warning sound, because of the unrepeatability of the film footage shot by TV newsfilm cameramen and documentary filmmakers.)

In terms of single systems sound operation, Cinema Products has designed a special sound head that incorporates a record and playback head encapsulated in the same module to guarantee absolute alignment for the entire life of the head. CP-16 cameras can also accept standard Auricon-type magnetic heads, and are also compatible in operation with standard Auricon-type amplifiers.

Though other type C-mount lenses may be used with the CP-16 camera, Cinema Products has adopted the viewfinder-type Angenieux zoom lens as a standard lens for the CP-16. Cinema Products has designed a $2\frac{1}{2}$ " short viewfinder for Angenieux zoom lenses which is ideal for shoulder-supported camera-work. This short viewfinder also incorporates a TV reticle. A filter slot is provided behind the lens. The CP-16 shutter speed is $1/50$ of a second.

Recently Cinema Products became aware that more and more TV newsfilm cameramen had been sent out on very difficult assignments where the camera-



Rear view of the CP-16A camera, with Crystasound System. The built-in amplifier is not merely an "add-on" to an existing camera system, but is part of an overall total-systems-design approach, adhering to the design principle that the playback and record amplifier should be as close in proximity as possible to the record/playback heads. The Crystasound Recording System's controls, as shown here, are clearly visible on the rear panel of the built-in amplifier.

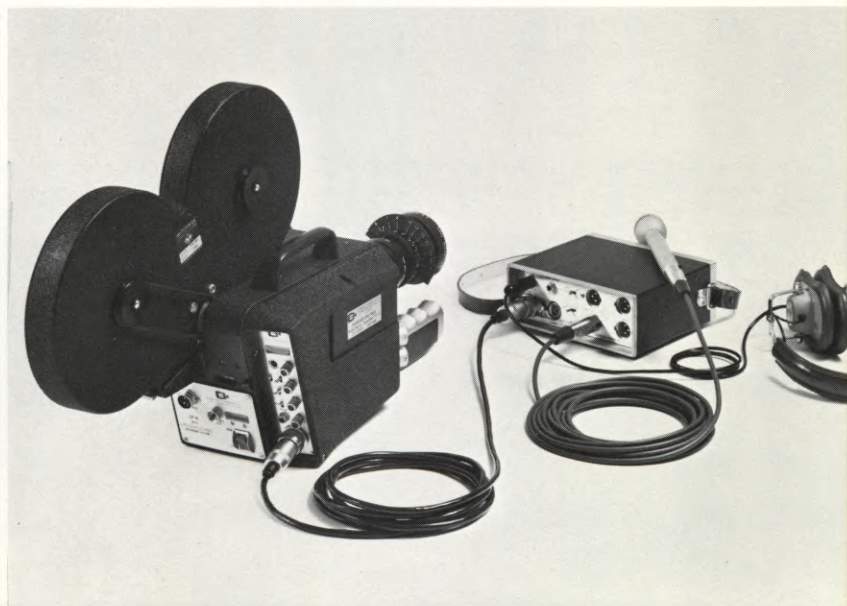
man has been called on to act as his own soundman, thus becoming a "one man band", so to speak. To meet the problems caused by this new reality Cinema Products engineers have again designed a totally new camera system—the CP-16/A.

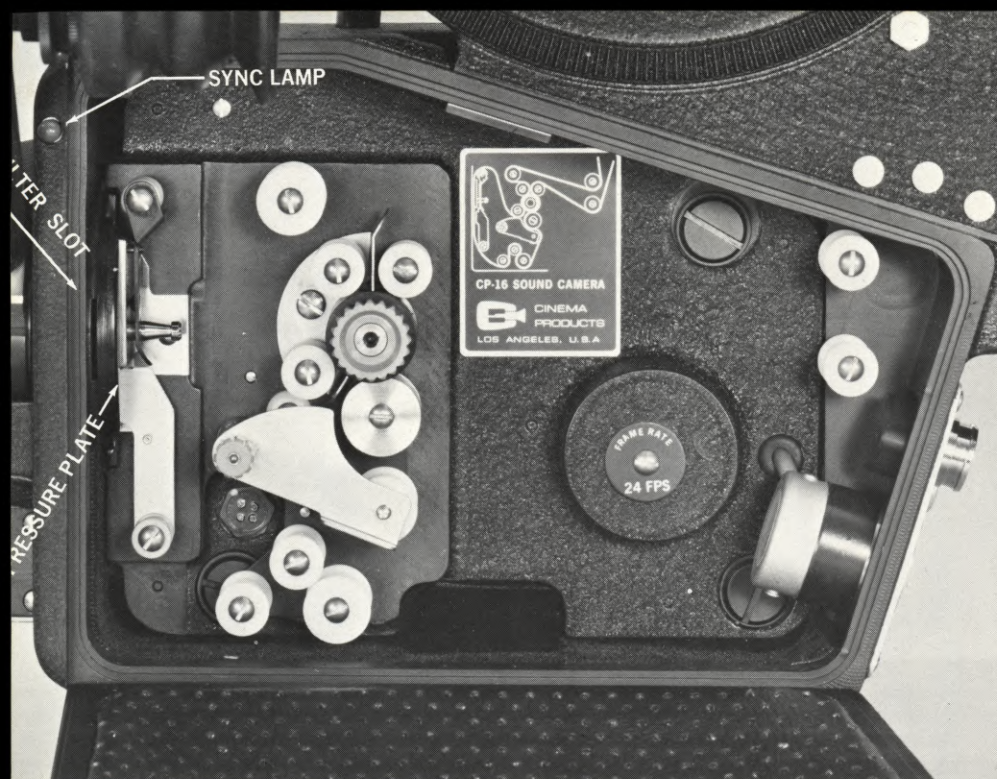
The new CP-16/A incorporates the Crystasound Recording System. The Crystasound built-in amplifier is not merely just another "add-on" to an existing camera system. The new Cinema Products-designed Crystasound recording system, with built-in amplifier, is part of an overall total-systems-design

approach, using the most rational design features to achieve optimum results. Consequently, the new CP-16A built-in amplifier adheres to the design principle that the playback and record amplifier should be in as close proximity as possible to the record/playback heads. Since the record/playback heads are located in the camera head, the new CP-16/A Crystasound amplifier system is built directly into the camera head, as well. This design principle holds true whether a separate sound mixer is used or not.

The built-in amplifier system draws

(LEFT) Front view of the CP-16A camera with Crystasound Recording System. Microphone is shown plugged into one of the two available microphone inputs located on the front of the camera. The cameraman's monitoring earphones are shown plugged into the rear panel of the built-in Crystasound System amplifier. The cameraman can monitor the live mikes while the camera is not running, and is automatically switched to the playback amplifier the moment the camera is turned on. (RIGHT) Rear view of the CP-16A camera, with Crystasound Recording System built-in amplifier, showing the auxiliary mixer.





Close view of the CP-16 film chamber, showing the film transport mechanism, connector which accepts Auricon-type recording heads, behind-the-lens filter slot, and the "out-of-sync" warning lamp, which lights up for a brief instant just as the camera is started, and goes out almost immediately as the camera very quickly reaches the pre-set running speeds . . . speeds which are accurately maintained by the crystal controlled DC motor. The warning lamp will flash on as soon as there is any variance from the pre-set speed.

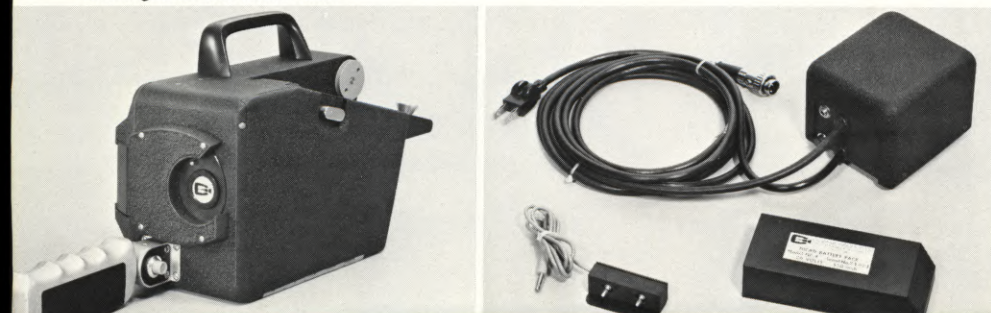
its power from the same Nicad battery pack that powers the camera itself. The Crystasound built-in amplifier features:

- 1) Two microphone inputs and one line input, all with independent volume control.
- 2) Switchable, variable compression, AGC.
- 3) VU meter.
- 4) Headphone monitoring channel that automatically switches from live mike to playback when camera is turned on.
- 5) Automatic bias level (no adjustment required).
- 6) Preview switch (disables bias, so previously recorded material can be checked without erasure).
- 7) Minimum distortion in playback channel, due to close-coupling to pre-amp and thorough shielding.
- 8) Draws only 30 Ma from the camera battery.
- 9) Provision for a line feed to a

tape recorder (through a pig-tail connector attaching to the auxiliary mixer connector on the built-in amplifier). This feature is useful in those instances where the cameraman is recording simultaneously for TV and radio.

- 10) The Crystasound built-in amplifier can be easily removed from the CP-16A camera body through two disconnects. An accessory replacement camera door (wired with two disconnects identical to those used on the Crystasound built-in amplifier) is available, fitted with an 8-pin connector to preserve compatibility with existing Auricon-type amplifiers—in the event that the Crystasound built-in amplifier would require repair.
- 11) The Crystasound built-in amplifier system adds only one pound to the weight of the

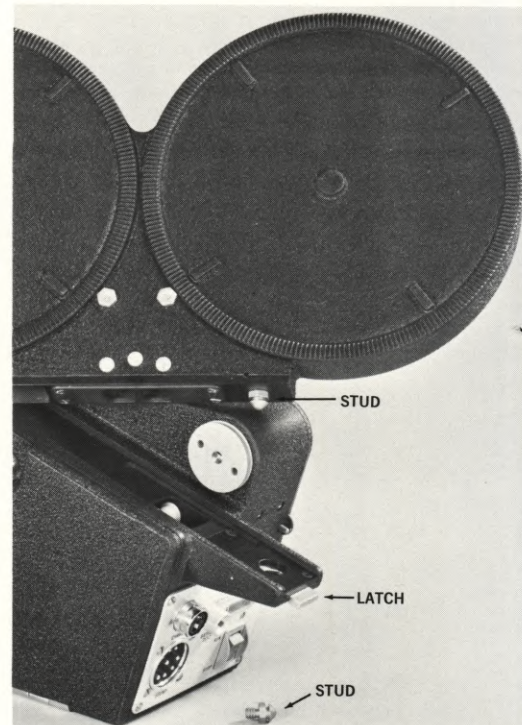
(LEFT) CP-16 camera head (shown minus magazine) weighs only 9 lbs., including motor, and measures 9" long by 6" high by 5½" wide. (RIGHT) Cinema Products Battery Charger and AC Power Supply (Model NCC-4), shown together with a 20-volt Nicad battery pack. The NCC-4 Battery Charger and Power Supply will run the CP-16 and CP-16A cameras directly from AC mains, whether or not the Nicad battery pack is in the camera. If in the camera, it will be recharged at the same time.



camera.

Where it is desirable or necessary to have a sound technician operate a mixer directly, Cinema Products has made available the Crystasound Model 4C Auxiliary Mixer. This mixer features four channels of mike input, with one channel switchable to line and one channel switchable to condenser mike. The auxiliary mixer accommodates both Sennheiser -04 and -05 series condenser mikes, with power supply internal to mixer. The auxiliary mixer also features individual and master volume controls as well as switchable AGC.

Since the introduction of the CP-16, over 125 cameras have been in use in all parts of the world by major television networks, local metropolitan television stations, news services, universities, government agencies, and documentary filmmakers. User response has been

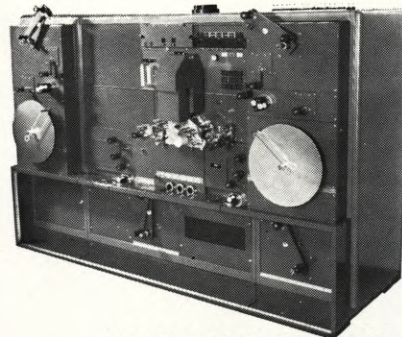


CP-16 cameras are equipped with a special quick-engage/disengage spring-loaded magazine latch. Mitchell 400-ft. magnesium magazines and Mitchell 1200-ft. magazines are supplied with a special lock mount stud, which engages instantly with the spring-loaded sliding latch.

overwhelmingly positive, especially in terms of the CP-16's performance reliability, as well as the freedom of movement it affords the cameraman while filming, thus providing more spontaneous film footage.

Further information on the CP-16 and CP-16A cameras can be obtained by contacting the manufacturer: CINEMA PRODUCTS; 2044 Cotner Ave.; Los Angeles, Calif. 90025; Attn: Marketing Manager.

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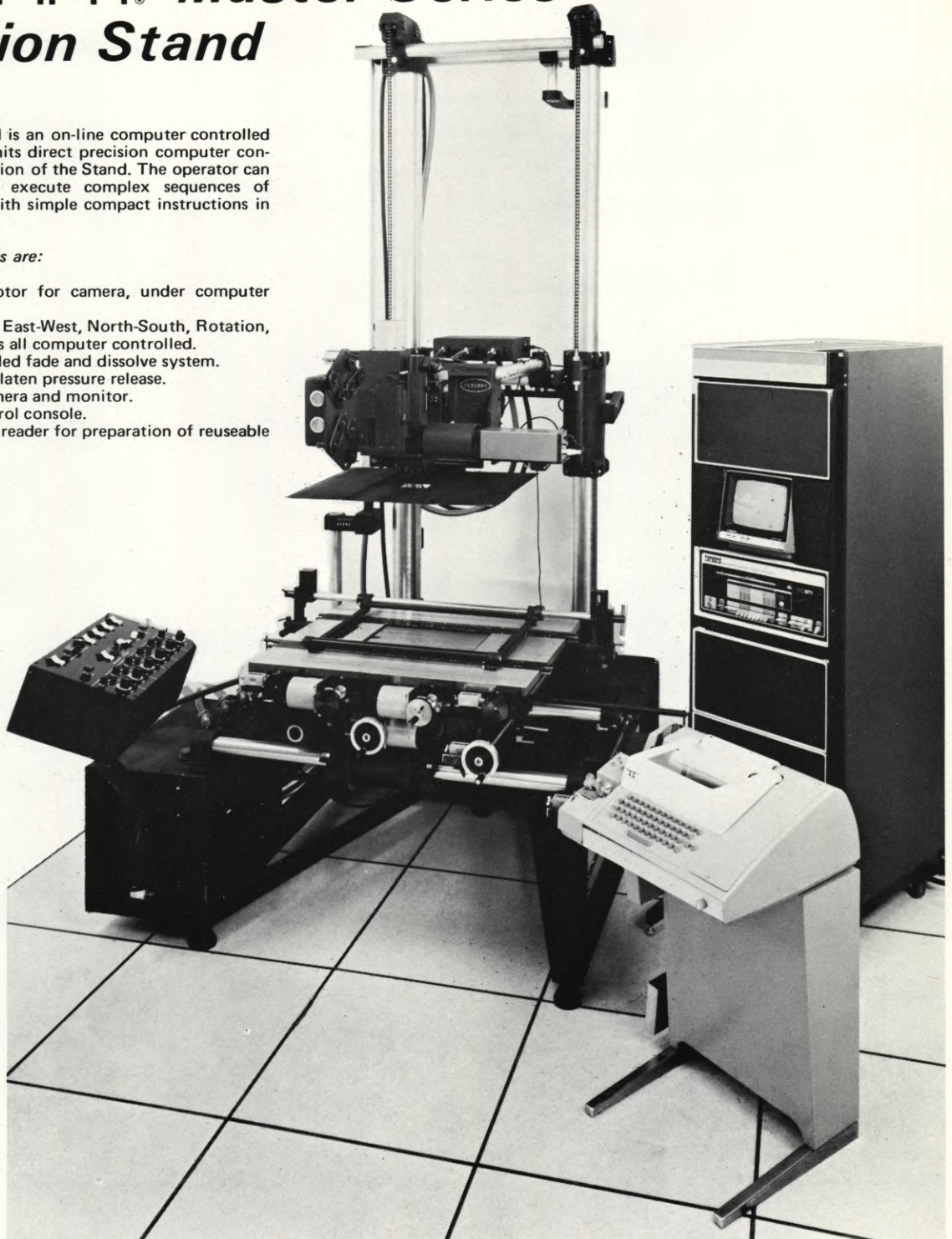
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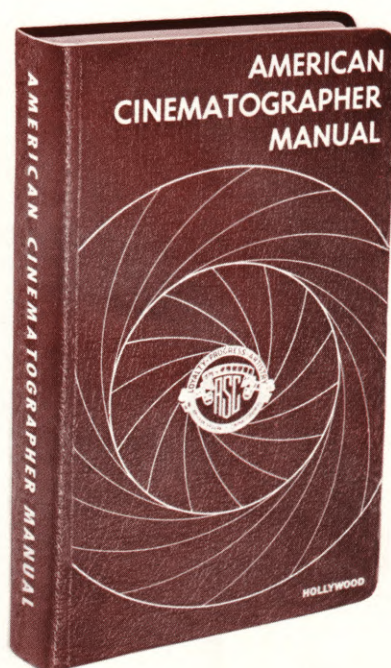
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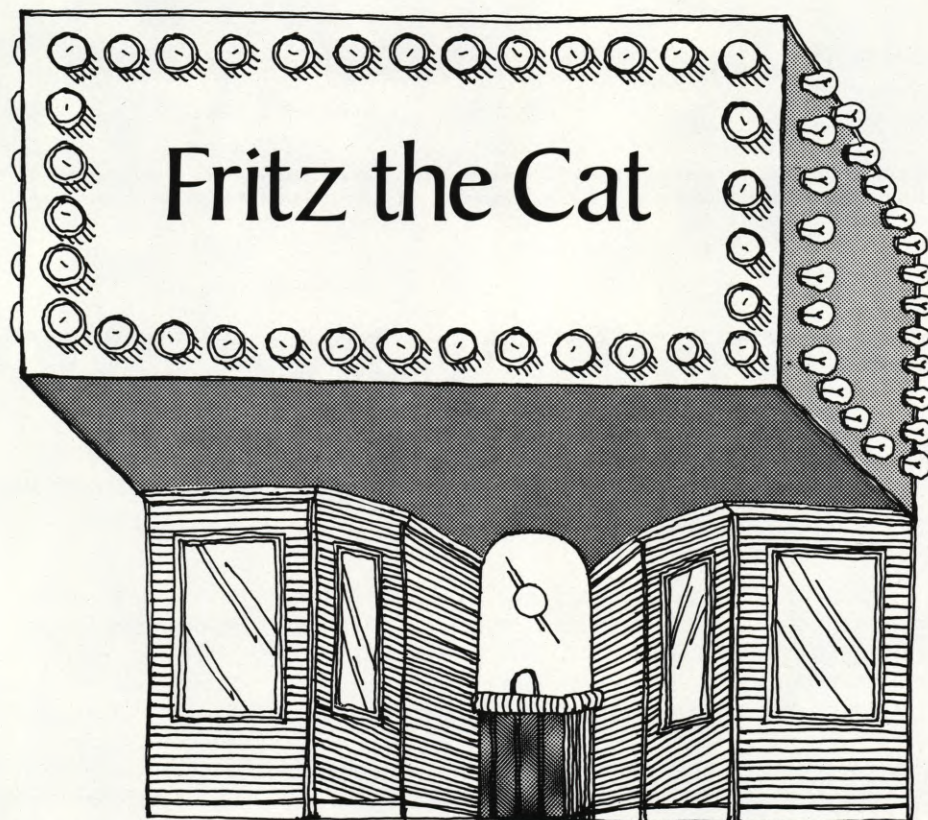
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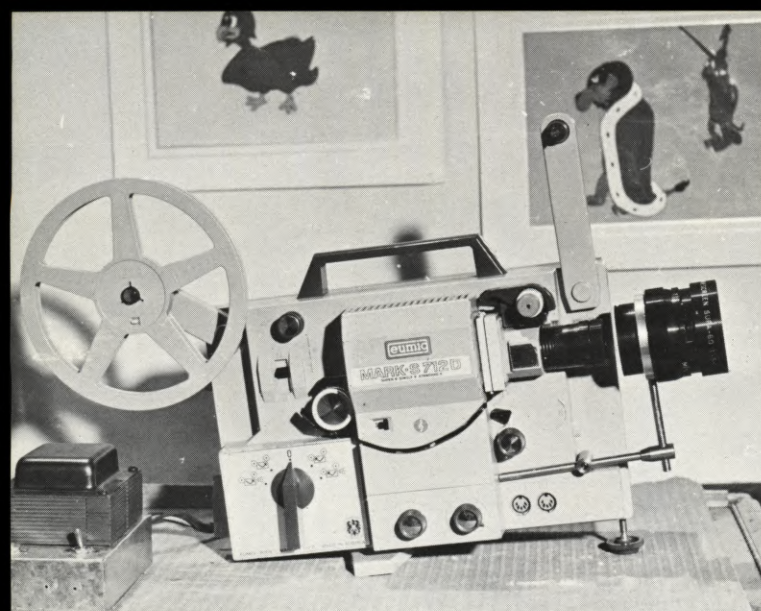
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(LEFT) Eumig Mark S 712D projector, with transformer at left for stronger bulb, and anamorphic lens fitted to front of normal projector lens. (RIGHT) Cameraman Peter Benison connects Optasync to Fuji Z-2 camera prior to shooting. Note the addition of anamorphic lens and lens shade to camera.

FILM EDUCATION ON A BUDGET

How student film-makers at McGill University manage to put a lot on film with very little money

By PETER BENISON

The Student's Society of McGill University is given a portion of each student's fees with which to run its activities. In addition to owning a building and paying salaries to its staff and student officers, the Student's Society supports about 100 clubs, activities and services. Needless to say, the funds don't go far.

One of the biggest clubs is the Film Society. With a varied program of film fare, it receives the patronage of many students throughout the year. It is only because of this that the Student's Soci-

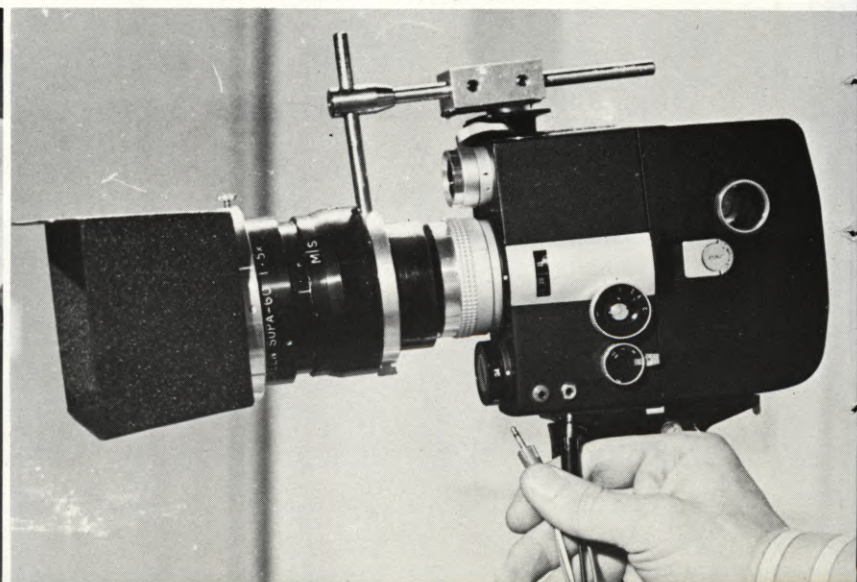
ety supports a Film Workshop. Thus, with an annual budget of between \$1,000 and \$2,000, the McGill Film Workshop came into being six years ago.

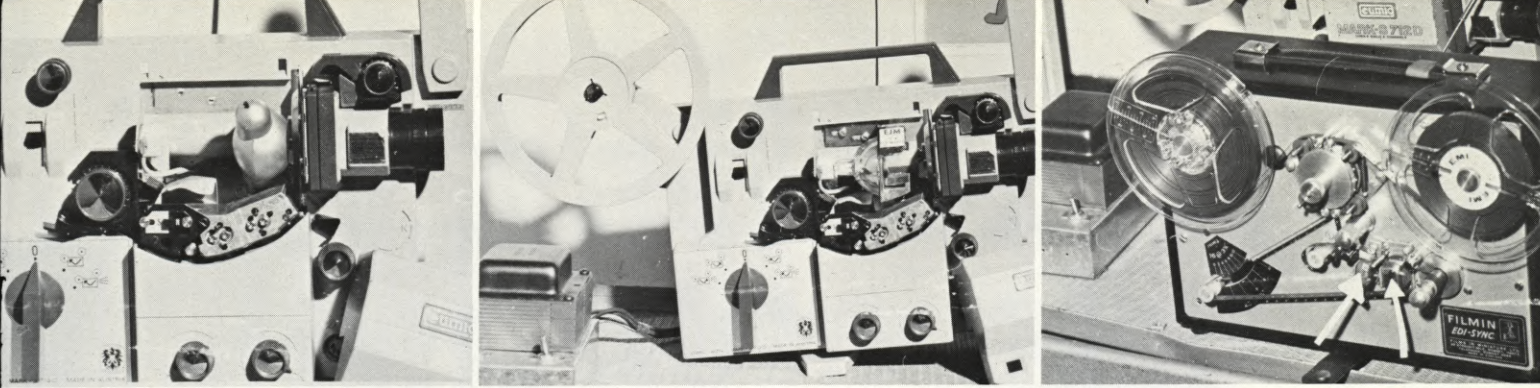
At that time, Super-8 wasn't popular, so all the equipment was Regular 8mm. Most of the cameras were secondhand and, somewhere along the way, an old Bolex was acquired. However, due to poor organization, there were no directions in the aims or goals of the Workshop and the equipment was regularly lost, stolen or in bad repair. Inconsiderate students bringing in the equipment

late fouled up the plans of the next student and consequently, the enthusiasm died.

Such was the situation in 1969 when I became Chairman. I had a free hand to do what I wanted, but with a limited budget, building up the physical plant could take some time. Re-organization started immediately and, with regular meetings scheduled and the equipment under control, we could now expand instead of simply replacing or repairing old equipment. Then we ran into problems of standardization. By then, we

(LEFT) Uher 400 recorder converted to Optasound. Normal Optasound light-sensitive cell is usually mounted on left side of the recorder and is about 6" x 2" x 2". Arrow on left shows only evidence—light sensitive cell and light. Arrow on the right shows switch which enables camera to be started by tape recorder, or recorder to be started by camera. (RIGHT) Fuji Z-2 camera with anamorphic lens, lens shade and showing position of Optasync contacts. The camera receives pulses from sprocketed tape on recorder, so filming speed is governed by tape speed.





(LEFT) Projector as it comes, with 8-volt, 50-watt lamp. (CENTER) Projector after modification. New bracket holds 21-volt, 150-watt FJM bulb and transformer at the left handles these new values. Added strength is needed for light absorption by anamorphic lens, light spread due to a 2:1 image and a generally brighter picture for larger audiences. (RIGHT) Adisync is connected by a shaft to projector to run the tape at the same speed. Normally equipped with playback head only, arrow on left shows addition of erase head and arrow at right shows replaced stereo head/playback head. In addition to providing an extra track, it also makes possible post-syncing.

had both Regular and Super 8mm and of course this meant two sets of equipment. When a student selected one gauge to work with, his chances of getting the equipment he needed when he wanted it were reduced (the equipment from the alternate gauge being useless to him). Our facilities were demanded for different purposes and this was where the trouble was.

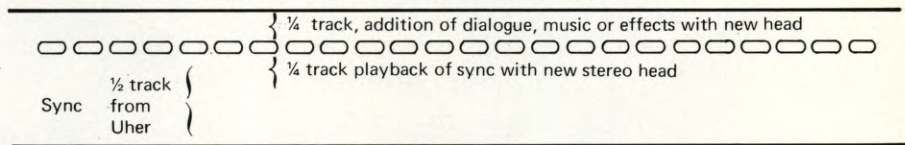
First, there was no practical complement to the academic courses in film offered by McGill. Thus, English students began coming to us to do film projects for their courses. Then students from such areas as Psychology, Engineering, Sociology, Meteorology, etc. began coming to us to do films for marks. As McGill itself didn't support us and we still had to pay import duties and taxes on our purchases, our facilities could no longer service the demand. Then, several people wanted to work in 16mm because of the professional services available. So, with several types of students all interested in our facilities (general interest, course requirements, more advanced), we had to study our situation. As the equipment was too expensive for us, and the stock, processing and related work was too expensive

for the student, 16mm was ruled out. What about a professional-type 8mm unit? As the lab facilities available to 16mm and 35mm workers were denied in 8mm, this meant everything we did would have to be done in the camera. This ruled out Super 8mm as it's not meant for this type of work (despite the high price tag on some of these cameras) and the Double Super 8mm with related Pilotone was still too expensive. What we needed was a system with the rewind facility and in-camera pressure plate of Regular 8mm, and the new frame size and cartridge-loading of Super 8mm. The Fujica Single 8mm system was just that, so we went with it. As the sprocket holes are the same size as Super 8mm, editing and projection are on the same equipment. The cartridge design allows the same path as Regular and, thus, unlimited rewind is possible. Fuji, Konica, Canon and Elmo* all accept this

different cartridge design and films available at the moment are B&W ASA 50, B&W ASA 200, indoor colour ASA 50 and outdoor colour ASA 25. The colour has characteristics similar to Kodachrome. The film base itself is 1/3 thinner but about 10 times stronger than conventional film. It must be spliced with tape, but Fuji has a good system. The tape is available on rolls and this makes it cheaper. It's thin and sticks well. The cut is on the frame line and the tapes are two frames wide, not 4 or 5. A space is left for magnetic striping. With the system's variable shutter and rewind crank, we can do fades, dissolves, multiple exposures, superimposed titling, split screen, split mattes, and a host of other in-camera effects. In short, it is simple for those who want simplicity, and capable of most of the effects the advanced worker may re-

Continued on Page 1046

1/4" MAGNETIC TAPE, 24 PERFORATIONS PER 7 1/2 INCHES



(LEFT) Sue Gammie checks storyboard before making a cut. Editing table includes viewer, synchronizer for Super/Single-8 and sprocketed tape, and playback head. Shelves in back provide convenient storage while students take time off for things like classes. (RIGHT) Ted Krasnicki works with his homemade mixer. Featuring 8 inputs and two channels, this board handles playback head with synchronized playback for Edisync, inputs from tape recorders, turntables, etc., recording onto Edisync and projector and other related audio sources.



On location with Arriflex 35BL

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That's Jack Priestley talking. And this: “*Shooting Across 110th Street* demanded the type of gritty documentary realism I went after in *Naked City*. Stairwells, sidewalks, inside cars.”

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“Hand-holding the 35BL is a pleasure. It just sits there on your shoulder, so you're never tired. It's like shooting 16mm! And this mobility makes the picture more *spontaneous*. Everything gets done twice as fast, and better.”

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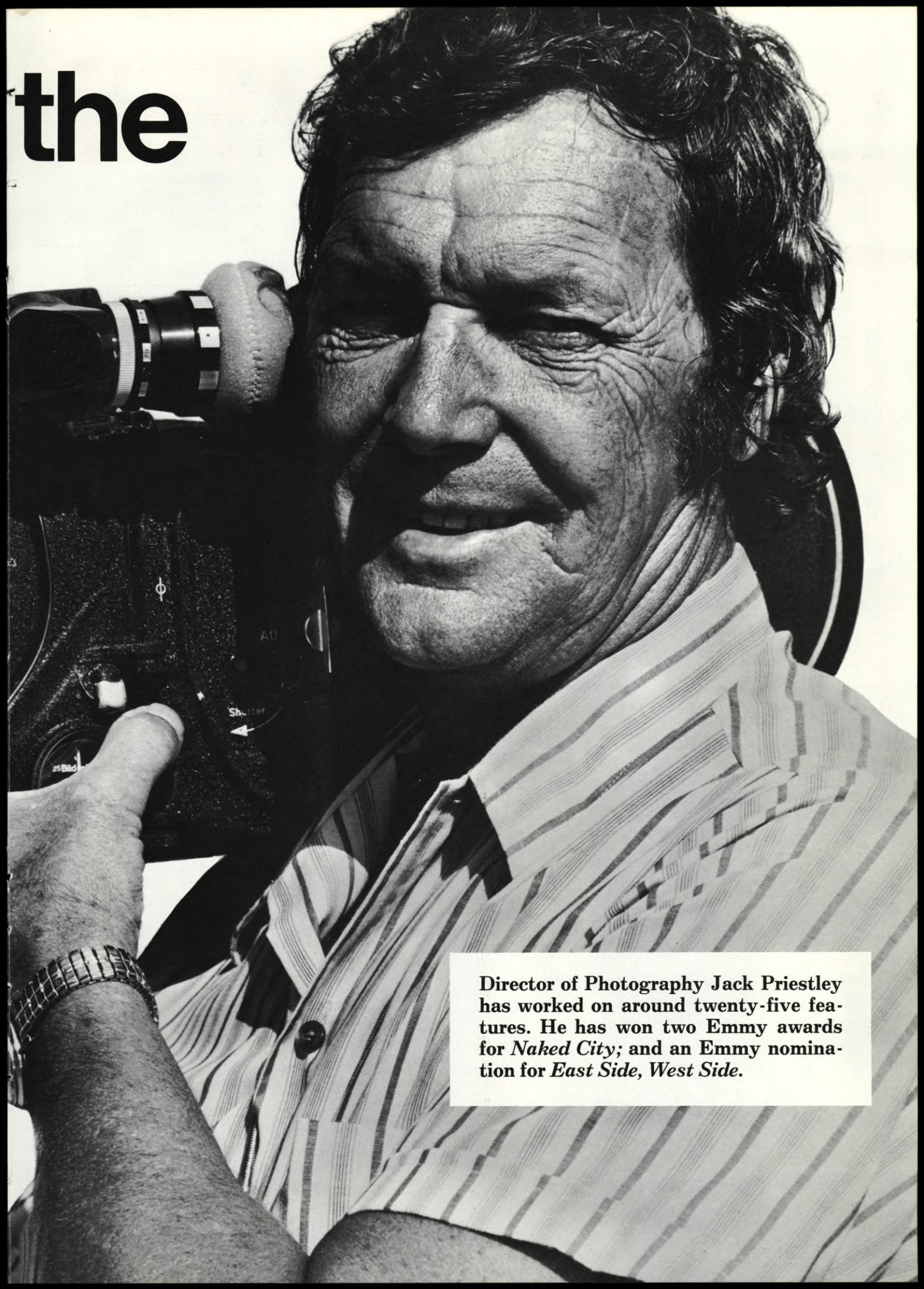
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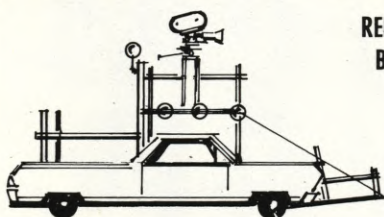


Director of Photography Jack Priestley has worked on around twenty-five features. He has won two Emmy awards for *Naked City*; and an Emmy nomination for *East Side, West Side*.

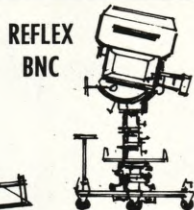
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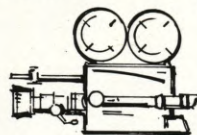
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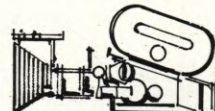
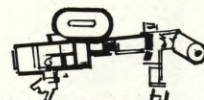


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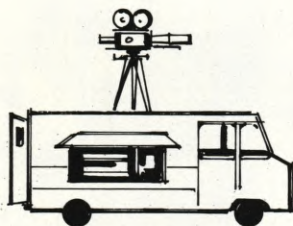


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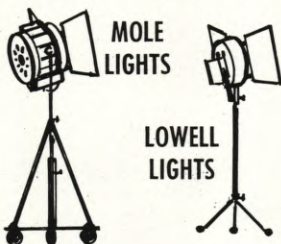
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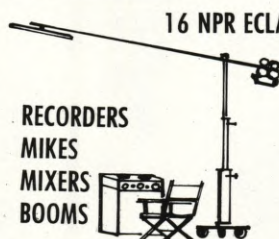


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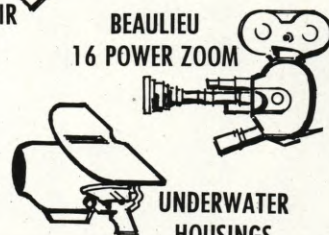
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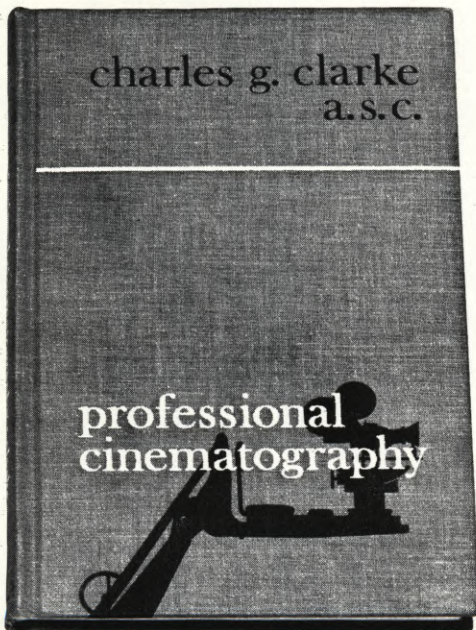
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ABOUT THE AUTHOR: Charles G. Clarke, ASC, a top Director of Photography at 20th Century-Fox for many years, and an ASC member, taught Advanced Cinematography at the University of California at Los Angeles, where he recognized a need for practical professional guidance for students striving to be the industry's future Directors of Photography. It is this need which has given rise to his publication of a book on the subject and subsequently the latest revised edition of Professional Cinematography. The first edition of this valuable book has become required reading at many universities and schools offering courses in cinematography.

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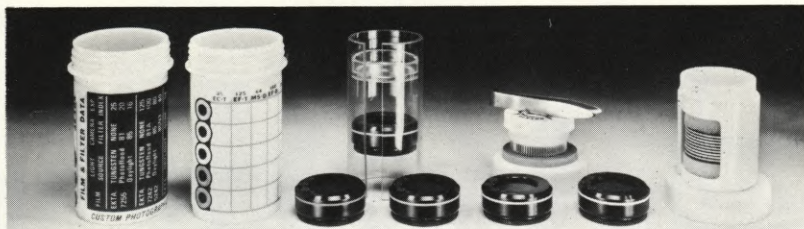
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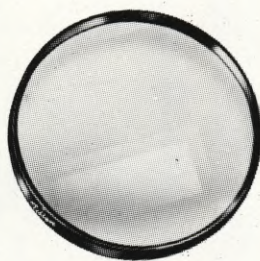
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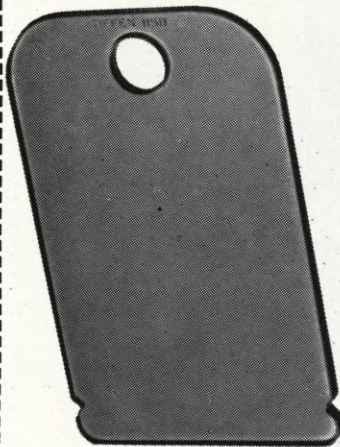
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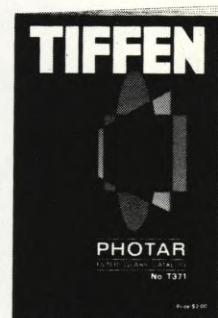
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FILMING "THE CANDIDATE" ON LOCATION CALLS FOR SOME FAST "NATURAL HABITAT" DECISIONS

By RAND LAYTON

A cinema verité photographic style, with the liberal use of hand-held cameras, lends this timely story great authenticity

The car rolls to the edge of the crowd and stops. A figure emerges and is immediately swallowed by waves of enthusiastic admirers.

The face and gestures are familiar, the people are real, and the excitement is obviously genuine. The candidate is caught up in a sea of campaign signs, banners, and buttons. He shakes hands, signs autographs, and is carried along by the press of the crowd.

The audience watches a "television newsfilm crew" jockey for position. Suddenly, it is viewing the action through the camera's eye. The face and gestures are now easily identifiable. It is Robert Redford, star of "THE CANDIDATE", a frenetic story, in near-documentary style, of a California political campaign.

Audiences may not realize it, but about half of the movie (appropriately scheduled for release on July 4) was exposed with hand-held cameras. What appeared to be a TV news team in the crowd sequence described, for example, was actually a camera crew shooting close-up inserts.

Director of Photography Victor J. Kemper, ASC, says the movie required even more hand-held work than John Cassavettes' "HUSBANDS". After working as an operator for such films as "A TIGER MAKES OUT", "ME NATALIE", "CHARLEY", and "ALICE'S RESTAURANT", Kemper was elevated to director of photography for a movie made prior to "HUSBANDS", although that picture has not been released.

His technique during the filming of "THE CANDIDATE" was dictated by the nature of the movie.

"Like many of today's pictures, it was shot entirely on location," Kemper says. "We used no sound stage at all. When we had a motel scene, we rented a room and shot it there. We used the same approach in recording public appearances of the candidate. He visited real supermarkets and took advantage of natural crowd scenes. While we occasionally surrounded him with extras, Redford's presence itself usually generated an excitement in crowds that closely simulated that of campaigning."

The job of the cinematographer was to capture the feeling of reality on film. Often, notes Kemper, it required pushing the medium, Eastman color negative film 5254, to its widest latitude.

"There were restrictions that just don't exist on a sound stage," Kemper says. "We couldn't remove a ceiling or a wall to get the camera angle we wanted or to bring in artificial lighting. Instead, we often had to work within confined areas and still strive for natural effects. There were scenes shot in a motel, for example, that called for the drapes to be drawn. The only illumination was from the lamps that were part of the room's furnishings."

The solution to this and similar technical challenges that the *cinema verité* style of moviemaking demands of photography directors was most often found in the use of portable cameras, creative lighting, and the speed and

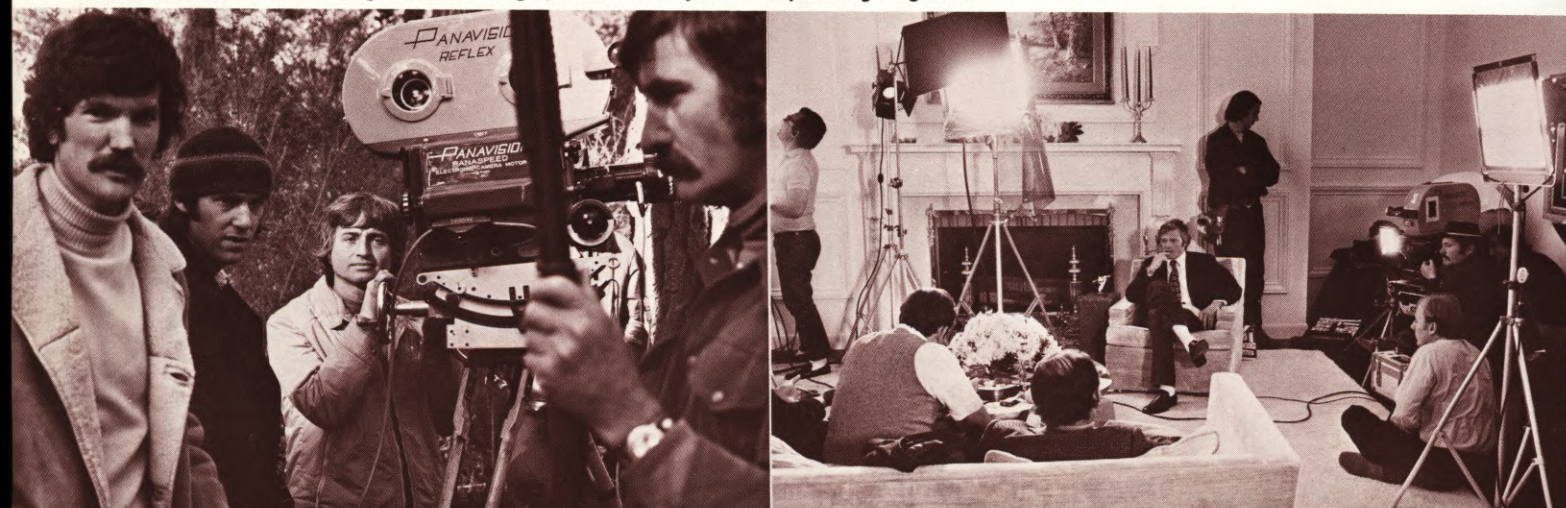
latitude of the film, notes Kemper. He had already successfully coped with similar challenges in filming such movies as "THE MAGIC GARDEN OF STANLEY SWEETHEART", "THEY MIGHT BE GIANTS", "WHO IS HARRY KELLERMAN, AND WHY IS HE SAYING THOSE TERRIBLE THINGS ABOUT ME?", "HOSPITAL", and the just-released "LAST OF THE RED HOT LOVERS".

In "THE CANDIDATE", however, there was something new. The script specified a number of location setups where there would be one chance to shoot—and *only* one. These were mostly opportunities to film the candidate in real crowds under conditions approximating the emotions of political rallies, Kemper recalls.

One such situation occurred during the high school football team's homecoming rally in rural Tracy, California, an annual event that attracts upward of 20,000 cheering, excited people. Another opportunity to film Redford in a wildly enthusiastic crowd occurred December 31, 1971, on Montgomery Street in San Francisco's financial district. Traditionally, employees of the stock brokerage and other financial organizations in the district tear up the old year's calendars at a set time that day.

"When the pieces of calendar came floating down from the windows," says Producer Walter Coblenz, "it was the closest thing that you will ever see to a ticker-tape parade. In fact, we think it

(LEFT) The crew setting up on location for filming of a sequence for "THE CANDIDATE". Director Michael Ritchie in left foreground and Director of Photography Victor J. Kemper, ASC behind the camera. Panavision Reflex camera on a tripod, shown here, provided a solid base for the photography, but many of the action sequences were shot with Panavision-modified and blimped Arriflexes. (RIGHT) A sequence shot inside an actual hotel suite takes advantage of available light, boosted with just a few quartz lighting units.





(LEFT) Cameraman adopts a very low angle as star Robert Redford comes sliding down a sand dune. (RIGHT) Two-man sound/camera "crew" prepares to shoot running scenes of Redford riding in a car. This crew and others like it sometimes appeared in actual scenes of the film, appearing to be a TV newsreel team but, in reality, shooting closeup inserts for the principal photography. The entire emphasis of the visual style was to capture a natural effect and as much realism as possible.

outdid the real ticker-tape parade that occurred when one of the nation's major politicians visited San Francisco in the 1968 presidential campaign."

"These kinds of things virtually required us to 'wing it,'" Kemper comments. "I don't mean that we didn't plan carefully—we did. But we knew that there would be just one chance to get things on film. Our first take had to be right because it usually couldn't be repeated."

Coblentz says the approach was simplicity in itself: Star Redford would stroll into crowds. To add to the realism, the few extras around him would be supplied with campaign posters and buttons, but they were given no specific instructions.

"Chemistry took over," comments Coblentz. "They pushed up and shook his hand just like the tourists, and some of them obtained autographs. In fact, it was exactly like a real campaign appearance."

For Kemper, this approach necessitated quick thinking and virtually instantaneous adaptation to the exigencies of the moment. He could position one camera on a tripod or dolly to record the master shots of the scenes, but the close-up inserts had to be done with hand-held cameras operated amid the jostling of the crowds.

"We used two and three cameras throughout the film," he says, "and occasionally, four. One four-camera time was for the 'natural disaster' that brought together Redford and the opposing candidate in confrontation over the actions they would take, if elected, to deal with and prevent such occurrences in the future.

"The Army was planning to burn some old barracks on Angel Island in the bay at Mill Valley. Coblentz persuaded authorities to have some extra firemen on hand and generate an even bigger blaze than planned by burning 20 barracks in one day, so we'd have our 'disaster.'

"To get the camera angles we needed, we actually had two fires going simultaneously. We covered them news-film-style with three cameras on the ground and a fourth in a helicopter overhead.

"In some situations, when our second camera unit was filming under low-light conditions, they 'pushed' the Eastman color negative film for various sequences. The film is rated for an exposure index of 100 in tungsten light, and 64 in daylight (with a Kodak Wratten filter, no. 85, over the camera lens), which is adequate for most situations," Kemper says.

However, there were some location scenes—for example, at an indoor political rally—where the illumination wasn't sufficient, and it was both impractical and unrealistic to set up too many artificial lights. In these cases, cinematographer Kemper was able to consult not only with the processing lab, but also with F. X. ("Skip") Millor, a sales and engineering representative of Eastman Kodak Company's Motion Picture & Education Markets Division office in San Francisco.

"In the old days—before the popularization of the location films—such on-the-spot technical support from Kodak was available in Hollywood, Chicago, and New York, where most motion pictures were produced," Kemper notes.

"Now, experts such as Millor are available in or near most major metropolitan areas.

"For these scenes—in particular, the massive indoor political rally that took advantage of a crowd attending a real event—the answer was found in 'pushing' the film one camera stop," says Kemper.

Although locations throughout California were utilized, "THE CANDIDATE" was produced from second-floor quarters over a shopping center in suburban Mill Valley. Budgeted at \$1.5 million, the picture is a joint venture by Redford and Director Michael Ritchie, who formed Wildwood-Ritchie Productions for that purpose. Ritchie had previously directed Redford in "DOWN-HILL RACER".

Continued on Page 1048

Scenes with actors showing hustle-bustle behind the scenes of campaign were filmed and intercut with scenes filmed during an actual campaign.



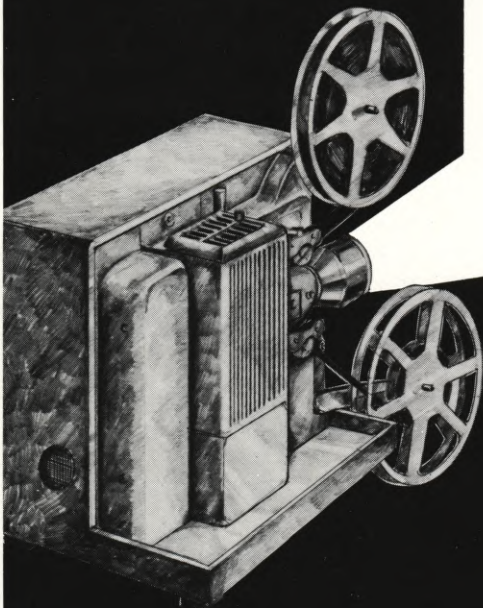
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"THE POSEIDON ADVENTURE"

Continued from Page 993

sequence, because quite a few of the people got scars on them; some got cuts and their clothes began to tear and get dirtier and dirtier as they tried to escape. Also, they got more and more tired as they struggled to get out and it was easier for the actors to play this progressively. It was easier for me and the special effects people, too, from the standpoint of lighting or how much fire to use, and so forth. It would have been very difficult in this kind of picture to jump around out of continuity.

QUESTION: How did you handle the sequence where the ship begins to tilt, just before the tidal wave turns it all the way over?

STINE: There was one corner of the set that was built on a platform measuring, perhaps, 20 by 30 feet—and our principal characters were sitting with a group of other people at a table on that platform. The platform and part of the adjacent wall were attached to a hinge, so that we could raise the whole thing to an angle of 30 degrees. We used that for a number of shots to get the ship started over. We put in other tables with different people and changed the background a bit to get a number of cuts of the passengers starting to slide down and hanging onto the tables. What you will see on the screen in this sequence is real. Take Shelley Winters, for example—who can scream at the top of her lungs—she started hanging onto this table and screaming and calling for her husband, and we got the real thing. There was no pretense in that action.

QUESTION: What did you have to do in terms of camera movement to com-

plement this tilting action?

STINE: We started with our conventional two-way tilt-head, but the operator needed more flexibility than that because we didn't know where the people were going next. Also, that single head wouldn't take care of the tilt of the ship—in other words, the slide motion. So we added half of a tilt-head on top of the other tilt-head and, in that way we were able to get a constant slow side-motion. At the same time, our boom was floating; our camera never stopped floating. So we had four movements going at all times. We had this all predetermined for timing, in order that the operator would know how far to go and how much to tilt—so that we wouldn't overdo it or underdo it.

QUESTION: What about the mechanical problem of turning that huge dining saloon upside-down?

STINE: It obviously had to be very carefully designed with that ultimate effect in mind. Most of the chairs and tables were anchored to the floor, as they often are on ships where rough weather is expected. The set was constructed on the studio stage floor in the conventional manner—right-side-up. Then, after we had shot all of the scenes preceding the impact of the tidal wave—and also the tilting platform scenes I've mentioned—the entire set was taken apart and reassembled upside-down on the stage. The ceiling, with its elaborate lighting fixtures, then became the floor and the anchored tables and chairs were hanging from above. It took more than two weeks to strike and reassemble that set and we utilized the time partially by shooting on location aboard the *Queen Mary*, which is now anchored in Long Beach harbor as a tourist attraction. We

shot inside many of the rooms and also filmed the storm sequences up on deck.

QUESTION: It must have been a real challenge to film storm sequences aboard that ship, securely anchored as it is in a calm harbor.

STINE: Yes, it was—because we couldn't manipulate the deck of the ship or fully control the water, as we would on a sound stage or in the studio tank. The picture opens in a terrific storm. The young boy in the story, Eric Shea, who plays the part of "Robin", had become acquainted with the various officers aboard ship and the Captain had asked him to come and see him some time. He picks this particular stormy day to pay his visit. So, we're on the promenade deck of the ship and it's diving into waves that throw a bank of water over the entire ship. The challenge is to make this look real aboard the *Queen Mary*, which is very solidly anchored. There is no way to rock or roll the decks and there is a certain amount of water available, but it's through the fire hose system. To get the effect, we took five big wind machines and set them up strategically at various places on the deck, with water pouring into the jets in front of the fans. To simulate the wild pitching motion of the ship, we used our rocking-rolling camera and rolled it quite severely. But the tricky part was to get the boy to simulate getting tossed about on the deck in synchronization with our camera movement. He starts at a great distance from the camera and makes his way along the deck, hanging onto the rail and various compartments. He is being pulled by the angle of the ship and then lets loose and goes to the rail. When he did that, we had to time our camera movement so that we tilted away from the rail and we reversed our tilt when he went back

(LEFT) In opening sequence of the film, passengers aboard *The Poseidon* are enjoying a New Years Eve party in the ornate First Class Dining Saloon, while the ship ploughs through a storm. (CENTER) Tidal wave hits and the ship begins to pitch over. Segment of the set shown here had floor and walls rigged on hinges, so that it could be tilted to a 30-degree angle. (RIGHT) With set upside-down, hapless passenger hangs from table before falling to his doom.





Sequential photographs showing the destruction of the ship's radio room as the tidal wave hits and the operator sends out a "mayday" signal. The ingenious set was built on an axle, which allowed it to swing 180 degrees into a tank of water. A great gout of water smashes through the wall and the room rolls with cameras in and out of the water, with more cameras at the window of the tank recording the action.

again. There was so much noise that it was impossible to talk to him or give him directions during the take, so he took it on his own and we sort of tried to follow him as he went back and forth with the ship throwing him around. The boy enjoyed the challenge of doing it and he was just terrific. I've never seen anything like it. When you see it on the screen you'd swear we were out at sea in a storm with the ship pitching all over the place.

QUESTION: Having worked in the motion picture industry for more than a half-century—as you have—I'm sure you've encountered just about every photographic challenge, but I'm willing to bet that this is the first time you've had to cope with shooting aboard an upside-down ship.

STINE: It certainly is—and that adds up to a unique challenge for me—but I'm very fortunate in several ways. For one thing, our Director, Ronald Neame, has himself been a cameraman—one of England's best—and this gives him a precise comprehension of the photographic problems involved. He is very understanding and cooperative to work with. These marvelous sets, designed by Bill

Creber, are another great asset. He's a fine Art Director and he's researched everything down to the last detail. The sets are wonderful to photograph. No matter where you look at them from, you find exciting camera angles. The fact that the sets are upside-down—which rules out overhead lighting—has resulted in the saving of considerable money that would ordinarily have gone into the scaffolding for overhead lights.

QUESTION: But I would think that lighting everything from the floor presents some special problems, too—doesn't it?

STINE: It certainly does. In the story, when the ship turns over, the lights powered by the ship's generators go out. The lights that remain get their current, supposedly, from an emergency battery arrangement. All of the formerly overhead fixtures are now on the floor—so there's nothing left but low light sources, and we have to rely on them in order to see the action and the people. Even so, there have been times when I've left the lights out completely. For example, there was a shot where the people started at the end of a long corridor and came up into camera. I lighted the far

end and then let them come through the corridor with no light on them until they reached the foreground. Then there was a light from below the camera shooting up into their faces—but for the most part of the scene they were in silhouette. In the main corridor running the length of the ship—the one they call
Continued on Page 1070

Camera dollies back as Red Buttons does his roadwork around the decks of the *Queen Mary*. Shelley Winters knits placidly in the foreground.



THE PHOTOGRAPHY OF "THE NEW CENTURIONS"

By RALPH WOOLSEY, ASC
Director of Photography

These days the trend is toward shooting the action for feature films on location, rather than on studio sound stages—and the filming of "THE NEW CENTURIONS" for Columbia Pictures was no exception. For 61 days, with Richard Fleischer directing, we kept the cameras rolling without once stepping inside a Hollywood studio.

We filmed in and around the city of Los Angeles; in prison cells, nudie cafes like The Phone Booth, Fat Jack's or The Hang Up Bar. We filmed in St. Joseph's Hospital, the Mission Road Freeway overpass, on a \$350,000 Trousdale Estate home, a Chatsworth Ranch, Rusty's Hacienda, Russian Flats, Western Avenue's mile of erotic eateries, book-stalls and sex film theatres; in MacArthur Park, Skid Row, Progress Place, the Los Angeles Police Academy's parade field; and the Old Hollenbeck Police Station, where Mickey Cohen, Benny (Meatball) Ganson, prohibition era bootleggers, robbers, killers, the Knit Cap Rapist, once were booked and held in the station's six cement-block, steel-barred cells, which now bulge with toys for the needy children of the area—but no studio sound stage.

The nearest we came to anything even resembling a studio property was the Columbia Ranch, where we used a little piece of the street to stage a Chicano riot. Everything else was shot on location—on the streets of Los Angeles, under bridges and sometimes in

unbelievably small quarters. There was a lot of action involving police cars and other vehicles, where we would bring in intricate mechanical devices to shoot the chases. All of this made the picture very challenging and interesting to work on.

I've been asked to describe the photographic style that was used in approaching the filming of the picture. The director, Richard Fleischer, and I both felt that it should be "real"—that the people and the situations portrayed should look as much like real people and situations as possible.

We didn't use any photographic gimmicks—like fog filters, for example. I'm not too great a lover of fog filters—but over and above that, we were after a certain amount of contrast. Much of the action was shot at night (40 nights of work), with the film pushed two stops. As anybody who studies sensitometry knows, when you push the film like that you increase the highlight density—you don't do a thing for the shadows. But you do run the danger of their becoming foggy and any more fog that you would add with filters would only increase that fog level and, therefore, dilute the contrast.

That doesn't mean that I'm arbitrarily against fog filters; they're being used a lot lately. But I think it all depends upon the type of story you're shooting and what you want to do with it. I can conceive of situations where it might be

the right thing to do, so I wouldn't put it down in all cases. But on "CENTURIONS" I had the feeling—and I know the director had the same feeling—that we wanted to get the gutsy look and pick up as much detail as possible. Then, too, many of the sequences amounted actually to stunt situations, and the old adage runs that if you're doing a stunt, the audience has to see it. This meant that we then had to light some street areas to a limited degree because, when a car pulled away or went by, we had to be able to see more than just a couple of headlights or tail lights. We had to see the occupants and what was going on.

A lot of the action took place right on the streets and the existing light was used to the utmost, with the fastest lenses we could get our hands on. We also had the first of the new Panavision cameras with the 200-degree shutter and that helped a lot. We used it to great advantage.

We knew in advance that we would be making a lot of night running shots with police cars, so we made tests—some with normal development, some with extended development—and against various backgrounds. On some streets the windows and shops were less brilliant and we would have to change the key light on the people accordingly. I've done a lot of shooting on the streets at night and I've found that, rather than just guess at the exposure of the background, it was better to get a representa-

(LEFT) Stuntman doubling for Stacey Keach hangs on for dear life as car hits road barriers and flies through the air during wild chase sequence. He was almost scraped off several times in the process. Two Arriflexes mounted on the hood record the action, (RIGHT) Lining up the Panavision R-200 camera for a dolly shot alongside the car. Arriflex with drop-down bracket is mounted by means of Super-grip to formica-faced board strapped down to the hood. Board, cushioned on furniture pads, effectively served to minimize vibrations.





(LEFT) Panavision camera mounted on miniature dolly set up on outrigger platform alongside the car. (RIGHT) Keach, suspended from the force, walks with friend, while camera dollied in front of them. Old trick of dollying light-weight Brute, plus spot/flood, minimizes travel and keeps lights out of the camera angle. Camera "holds size" on couple with zoom lens, and also makes lateral dolly move for perspective change past poles and trees.

tive reading with a spot meter and work from there. For example, I would pick an electric sign—let's say, one of those inside-illuminated white signs—and take the basic reading from that. I'm still using the old SEI spot meter because it has a complete photographic range—a lot of scales that you can interpolate into your negative response. It works better than meters with CdS cells, because they are very red-sensitive, for one thing, and they don't always respond immediately in very weak light.

I find the SEI to be extremely accurate. I can, for example, read a bright sign and expose it to be 80% of the brightness value of the scene. I know where the faces come on the photographic scale, so I use this as an average to sort of hang the exposure on—that representative bright area in the street.

Of course, the streets vary tremendously in brightness. Some of them are bright enough, on the average, to use a T/4 zoom lens to get the best exposure,

and others are down so far that you have to shoot wide open at T/1.4 and just sort of hope that something comes up on the background. Then, you get into residential streets where there isn't anything and you have to throw in some light to help it.

One of our constant problems during the night shooting was that we would start filming early in the evening on a street with all of the store windows brightly lighted. Then, as we got closer to midnight, many of those lights would be turned off, so that the background would look quite different. We'd have to readjust the key light on the actors and hope that we could get some sort of match. Sometimes we'd have to move toward a corner where there was a brightly lighted gas station.

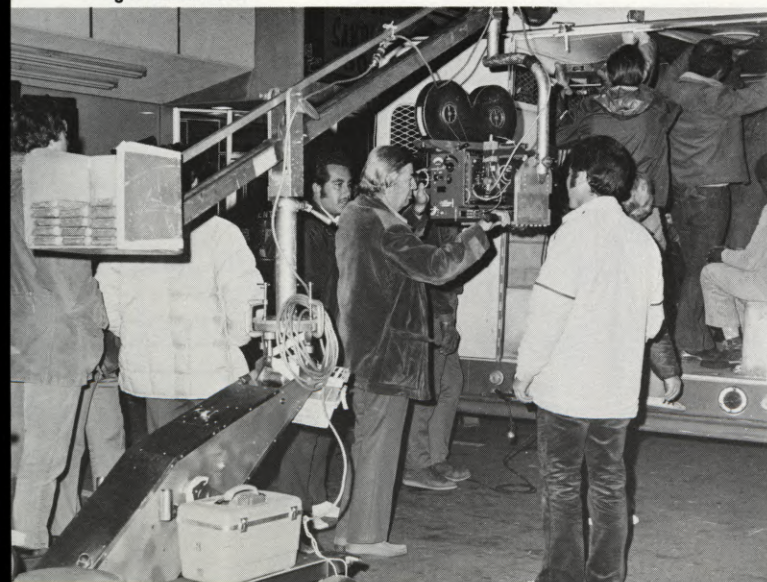
There were a great many running shots in this picture. It has become standard, for daytime running shots, to make them in the actual moving vehicles, because nobody wants to shoot process anymore. We all do it and we've

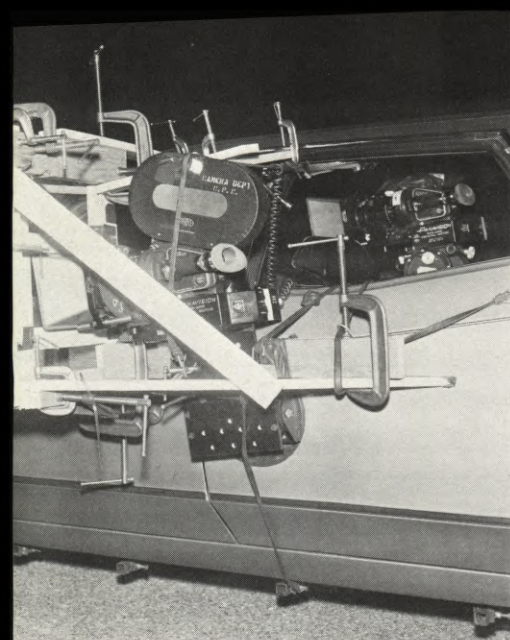
got the problem of balancing interior with exterior light pretty well licked by using compact, intense light sources and battery power supplies. But up until recently, if a producer talked about making running shots in vehicles at night, the usual rejoinder was: "You may as well do it in front of a piece of black velvet, because it's so dark out there."

On one job I did, which happened to be filmed in Kansas City, we actually used front-projection for the night running shots. We went out and shot all of the background stuff—freeways, building and everything—and front-projected it. It worked beautifully.

However, on "CENTURIONS", we had several complicated chases at night that called for tricky running shots over wide areas. The one chase with the call girl known as "Silverpants" was written for night and it really had to be night. But for one of the other chases, the one following the street riot, there was a discussion as to whether it was going to

(LEFT) Cinematographer adjusts the Panavision Reflex camera suspended from balanced arm mounted on a dolly. "Floating" to various positions, combined with varying magnification of zoom lens, produced convincing illusion of "traveling" inside patrol wagon. Vehicle was rocked and traveling light effects were used through the windows in order to further enhance the illusion. (RIGHT) Director Richard Fleischer times traffic light sequence for start of patrol car run through intersection, while Director of Photography Ralph Woolsey, ASC, holds meter, ready to follow changing light conditions.





One Arriflex camera on Super-grip mounted on side of the car, while second Arriflex is mounted inside for through-the-windshield angle.

be done day or night. I felt that it would fit the rest of the picture best to have it at night, and it was just a matter of finding the right spot. We looked at a lot of locations, including an extensive railroad yard area on the east side. That would have been a good place to shoot but, for some reason, the railway company wouldn't let us work in there. So we chose a spot under the Fourth Street bridge in east Los Angeles. It was an area about 2,000 feet long and ran through a series of columns under the bridge. On the screen you don't realize it's that long, because you see just pieces of it patched together—but we must have lit at least half of it at one time, plus approaches and exits.

To light that sequence we used the equivalent of 20 Brutes. We used some actual arcs, of course, but we also used a lot of PAR-64 lamps, all clear. I don't like dichroic filters. We had the PAR-64's in both narrow spots and wide beam configurations. We used no Maxi-

brutes or FAY lights, per se.

On that sequence and others we used Masterlight transformers a great deal. The gaffer on this picture was Frank Leonetti, who was one of the originators of the Masterlight units and, of course, is an expert in using them. There were many instances where we found them to be invaluable. We don't use them to boost lower-voltage lamps anymore, as we used to in the old days with the Colortran transformers, when we'd take an ordinary household bulb and boost it up to 3200 or 3400 degrees Kelvin. But Frank has found that you can take a 1,000-watt, 3200 Kelvin quartz lamp and you can boost it—and I mean really *boost* it—so that it will go up to 160-70 volts, and out of one of those spots you can get as much light as you would get out of a 10K.

These transformers work fantastically well where you need long-distance penetration. Working under the bridge, we would arrange a number of those skinny light stands with PAR-64 single units and hide them out of the way. We'd direct some of them under the arches and others to various little spots up on top. Each lamp had its own pot on the transformer, so that when you checked out the lighting from the camera position, you could say, "Let's bring up #3 a couple of points and knock #4 down."

Now, it's true that these situations require AC current, so we took a little AC generator with us for this type of lighting. Arcs are mainly useful where you have large areas to cover and where the areas are open enough so that they will do you some good. However, under the bridge there were a lot of obstacles in the way. We were able to pre-rig some arcs on their own parallels where we thought they would do us the most good, but there were places where all you wanted was a hot streak that would just go forever. In such cases, we found

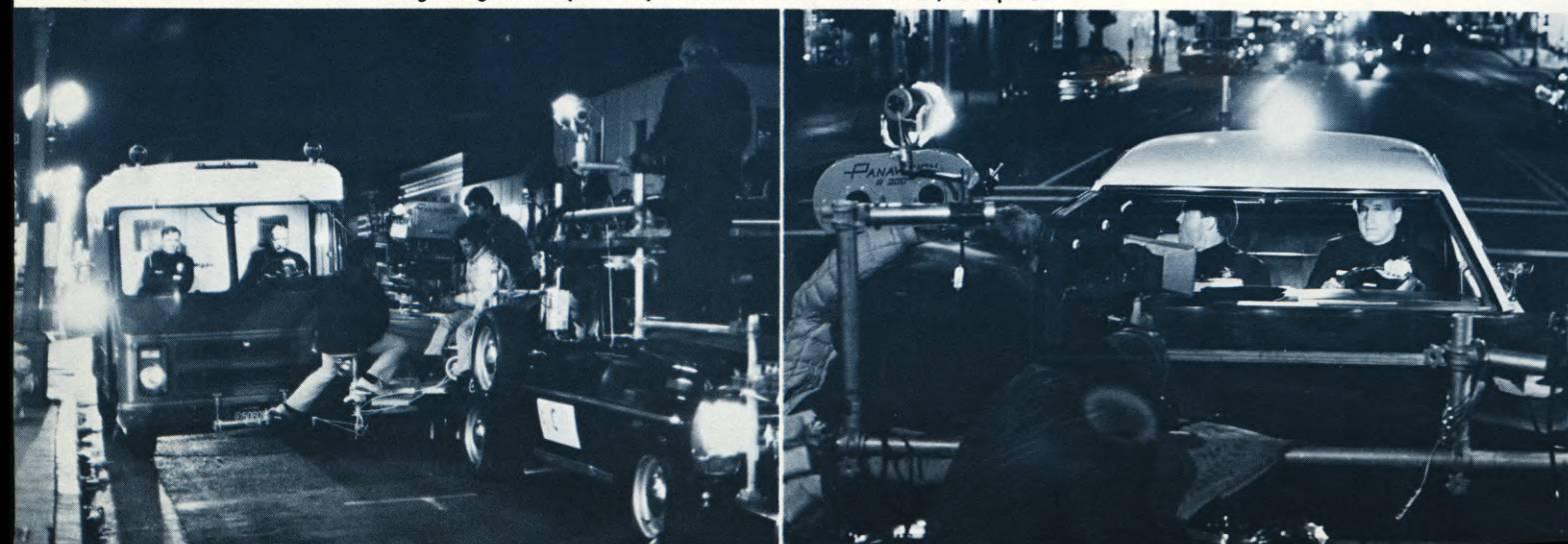
that taking a narrow spot and boosting it up did the trick better. We used the transformers on the streets in other places, too, and sometimes we could just "steal" a little AC current from a doorway or an apartment house.

Some sequences—such as the one where the police pick up the black whores and ride them around in the wagon—required extensive street lighting and we had to run an awful lot of cable to prepare for the two nights of work we would do in that area. We had to plot where all of this cable was to be laid on a stretch of Western Avenue and it took a lot of time to rig all that. On other occasions, where we had large areas to light, it just didn't pay to run all of that cable, so we would use two generators—one large one for the main load and another one placed across the street. Sometimes, instead of a second generator, we would use the transformers, where we could find AC current, and hide a few of the Masterlights around. You can put them on small fold-up stands and conceal them easily behind telephone poles and get a lot of light out of them, or you can just nail them onto little brackets or plates and hang them from the poles.

We used the 1000-watt narrow-beam spot-type lamps where we needed the long narrow throw, but we also used a lot of medium-beams and even wide-beams in some cases. They were standard PAR-64 lamps in their regular little housings, but I hadn't realized that they could be boosted to such a fantastic degree. If you need a small source, this kind of lamp is somewhat uncontrollable; if your subjects get too close to the beam, it will burn everything up. But where you are projecting it a long distance, it's great.

Of course, we used a lot of conventional lighting equipment, too—mainly Brute arcs—for lighting large areas that

(LEFT) Side-towing arrangement for night-for-night trucking shot. Insert carries dolly for angle change during the scene, coupled with zoom variation. Batteries and dimmers for the lights were carried on insert car, in addition to the crew. (RIGHT) Panavision R-200 camera, pointed through open window, shoots across two officers, using split diopters in order to hold focus on both with very low light levels used. Second camera (Arriflex) was mounted on hood to get single closeups or to pan from one man to the other, as required.





(LEFT) Wide-angle shot inside squadroom of old Hollenbeck Police Station, showing Velon draped around ceiling bank of lights positioned to carry through window source effect. PAR-64 lamps (with various beams), plus focusing quartz lights, were used—all with Macbeth filters. All lights were on individual Masterlight transformer controls to permit precise intensity adjustments. (RIGHT) R-200 camera mounted on modified O'Connor missile-tracking fluid head, which makes possible extremely low setups, or tilt through 360 degrees.

called for just a basic lighting. In the tenement riot sequence, for example, just two arcs criss-crossing each other put the basic lighting in. The rest was lights in the windows and little effects things that we added as we went along.

As for the shots inside the cars—these usually involved the driver or a couple of people shot from an angle where the focus wasn't going to be the big problem. Maybe you'd make a straight-back shot of two guys in a car or truck and then shoot individual closeups crossed—so that, even though you were shooting at T/1.4, you only had to hold focus at one plane. However, Fleischer doesn't like straight-back two-shots. He prefers shooting through a window across the two men and reverses of the same. In other words, over-the-profile shots, both ways. This type of angle is very effective, but there was only one way that I could think of to get what he wanted and that was through the use of split diopters.

Usually, in working with split diopters, you have to line up the split with some vertical line in the composition and we thought that we would have to line it up on a bar of the window on the other side of the car, but we were shooting so wide open that we found this wasn't necessary. T/1.4 is the maximum lens aperture of the anamorphic system, and we sometimes shot that wide open, but we found that the split diopters worked just as well at T/1.4 as at smaller apertures. The only critical thing was to make sure, once the actors were in position, that they didn't move toward or away from the camera.

The running night shots presented their own special problems, since we were shooting dialogue all the time, often with two cameras. That meant

that we needed a lot of car mounts that could hold a sound camera, the operator and an assistant riding a platform on the side of the car—whichever side was called for. Then we would mount an Arriflex with a flat base over the hood of the car and get a closeup at the same time. Sometimes that camera would even pan from one guy to the other in the car.

Now, this meant, of course, that all the lighting that we used to produce effects tied to the street lighting had to be kept out of the camera angles. You can light for one camera by itself very nicely, but when you are using two cameras at different angles—let's say, a front camera and a side camera—you have to compromise a bit on your lighting.

For effects, we would have one light hitting the window frame that would fill in the background. There was another light beaming through the rear window of the car that would represent a varying source coming from that direction and, of course, there was the main light source coming in from the front—presumably from street lights or shop window lights. We used about four lights representing illumination from various directions. Most of these were 30-volt lights running on large nickel-cadmium batteries. The little 30-volt seal-beam lamps we used were just like standard seal-beam lamps, but smaller in scale. They were controlled by little solid state dimmers that Frank had made up.

The police car would be towed by an insert camera car on which rode the sound department, any number of crew people, batteries and all sorts of other things—because there was already a big enough load on the squad cars, which

had been specially sprung for the purpose. They had also been set up for car mounts in the rear trunk looking forward, on either side looking across—plus a platform on the front where you could ride shooting backwards or across. A lot of work was done in advance to get all of those mounting situations worked out.

We found in our tests that the sound camera rode beautifully on the side platform. It could be locked off with no difficulty at all. The Key Grip, Marty Kashuk, rigged a sort of telescoping hydraulic ram, so that we could just pump the big camera up to any height we wanted, move it around for the shot and lock it off.

We had also discovered in testing that when using the Super-grip or some other type of mount directly on the hood of

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Cinematographer Woolsey adjusting Baby 10K with Macbeth filter for fill light prior to filming of closeup of slum landlord.



JUNGLE ADVENTURE

Scientist turns film-maker to shoot a "docudrama" in the Rain Forest of Costa Rica—and finds that he likes it

By CHARLES L. HOGUE, Ph.D.

Before that day I had never touched a motion picture camera, but Larry Savadove—producer with Alan Landsburg Productions—said, "Don't worry about it, these are the greatest cameras in the world, and you'll be working like a professional in no time at all." Of course I didn't believe this, but the opportunity to travel back to the tropics and have ample time to investigate many of the biological features of the tropical rain forest was too tempting to turn down.

I was to be a "New Explorer." "THE NEW EXPLORERS" is the name of the Television Documentary Series being produced by Alan Landsburg Productions. It consists of a series of one-hour films covering the adventures of scientists from all backgrounds who have been asked to choose parts of the world that are still so isolated from man that they are virtually unspoiled and still retain their primitive nature. The scientists are asked to live several months in these areas and carry on whatever investigations they feel are worthy and to make a film record of the entire experience. Each explorer is equipped with Beaulieu camera equipment and the necessary accoutrements of life and of his discipline, laboratory equipment and so on, so that he may carry on his work to the fullest extent possible, yet still have time to act as his own cinematographer.

The first of the series, produced in association with Dr. Theodore Walker, was a detailed ecological study of Lake Eva, a remote lake located on Baranoff Island in the Peril Strait near Sitka,

Alaska. (See *American Cinematographer*, November 1970.)

I am an entomologist. I am interested in all insect life, and the tropical rain forest offers the greatest potential of any ecological system in the world for learning about insect biology. Insect life explodes in the rain forest. The majority of the world species of insects live here displaying innumerable variations on life cycles, bizarre body forms and incredible colors, behavior and ecological relationships. However, because of the difficult conditions of life and the remoteness of most of the jungle areas of the world, few entomologists have a chance to spend very much time exploring the wonders of insect life there.

I have made a number of trips to tropical areas as a part of my work as Senior Curator of Entomology at the Natural History Museum in Los Angeles. I have been fascinated all my life with the tropical zone of the world and with the great forests that still exist there. When I was asked by the Alan Landsburg organization for the ideal spot to locate another of the New Explorer series, a place where one of the most curious insects of all is to be found, the army ant, I immediately suggested the Osa Peninsula of Costa Rica in Central America. The Osa Peninsula is still one of the wildest parts of Central America, and having worked previously in a locality there called Rincón, on the upper end of the Golfo Dulce, approximately thirty miles northwest of Golfito, the main banana port of the country, I suggested this as the general location to carry on the project.

More precisely speaking, my home and headquarters for the project for the next three months was to be a structure maintained by the Tropical Science Center in a very dense area of uncut forest some four miles from the coast. TSC is a non-profit organization headed by Leslie Holdridge and Joe Tosi, who are world-known tropical foresters. The station is situated by a small landing strip cut from the jungle several years ago as a facility for a lumber company which is operating in the area. The structure is completely surrounded by very heavy growth, providing an excellent site for research on tropical insects in general, and is an especially suitable area for the army ants which were to be the subject of focus in the filming.

The rain forest of the Rincón area is as fine as any in the world. The some two hundred species of giant hardwoods making up the majority of the forest vegetation have still preserved their pristine appearance, having been but barely touched by the hand of man. Logging to a limited extent has been carried on in the general area, but the effects are negligible. Costa Rica is rapidly becoming populated, however, and all the signs of encroachment on this area are evident. When one flies over the forest, numerous clearings and cut areas made by squatters are noticed.

Landing at Rincón is like dropping out of the sky of the present and landing in a primeval lost world of the past. The strip is hewn out of the forest and from 5000 feet appears like little more than a scar on a carpeted living room floor. The tropical version of the

(LEFT) The author operates one of the three Beaulieu R16 cameras furnished to him for filming principal footage of television documentary special shot in the Costa Rican rain forest, part of "THE NEW EXPLORERS" series, produced by Alan Landsburg Productions. Dr. Hogue had never operated a motion picture camera prior to accepting this assignment. (RIGHT) The real "stars" of the picture. This mass under the inclined log is made up of the bodies of tens of thousands of army ants. Such a formation is the bivouac, or temporary nest, of these nomadic ants.





(LEFT) The nest of a large social wasp (*Synoica surinama*). The nest is constructed of paper pulp made by the wasps by mixing chewed food fiber and saliva. This nest was about four feet long. (RIGHT) A fluorescent "black light" tube was operated against a white sheet to attract nocturnal insects. The specimens were used both in photography and preserved for scientific study.

Alaska bush pilot shows no fear on the approach which doesn't help in calming your own nerves, but you drop into the little clearing effortlessly. After the vibration stops at the end of the taxi, you open the door and step out into a Turkish bath.

My home in the jungle was a two-story wooden affair with a concrete floor and adequate room for my provisions and equipment. Upstairs were my sleeping quarters. My bed consisted of the typical oversize Latin American canvas cots on which I placed a natty old mattress. Downstairs was my main work area, a large room in the center of the structure, and the kitchen and "bathroom" and in one corner my refrigerator, which was always adequately stocked, thanks to Alan Landsburg and AVE Airlines, with sufficient quantities of beer (sometimes pushing the film supplies aside, I have to admit) to keep the body in functioning condition.

Meeting the supply plane from San José was always an adventure and a surprise to see what had been sent me this day in the way of provisions. In that part of the world your support seems to have a knack for never quite doing the expected or ordained thing. I remember one time ordering five small packages of salted peanuts and receiving instead a week later fifty such packages, which, needless to say, lasted for my entire stay. I waited an eternity for film provisions and actually ran out of film one time.

The company provided me with a refrigerator (run on propane gas) in which to keep my film reserve cool in

the tropical heat, and a radio transceiver for access to the outside world. There are no roads or telephones into the area and the communication is otherwise through the bi-weekly plane service from San José, the capital of Costa Rica. On Tuesdays and Fridays I looked forward to the little Cessna 180 coming in and landing in front of the station and bringing me my food, mail and surprises and taking my recently exposed film so that it could be packed and shipped back to Los Angeles.

Logistics in Costa Rica were very ably handled by Sr. Jorge Campabadal of the Organization for Tropical Studies and to them I owe my survival and

relative comfort during the weeks of the project.

Although the days are hot and humid, at night the air cools off, the humidity drops somewhat and it becomes quite comfortable. I even had to use a blanket at night. Though it was far from uncomfortable at the station, not all of my visitors seemed completely enchanted with the place. Most were amazed not to find hordes of mosquitoes and steaming swamps crawling with snakes and crocodiles, but there are other hidden dangers. To this Larry Savadove can attest; he carried an interesting little parasite with him when he left me after settling me in the station. Three weeks later I learned, via my radio, that a human bot fly maggot had developed in his leg, and he had to undergo surgery to have it removed. I developed one myself and was able to remove it easily using the local native practice by covering the wound with a piece of bacon and squeezing out the maggot the next morning after it had festered, but Larry's companion had grown much larger and required surgery to be removed. Complications had set in, and he was some time recuperating from his initiation to the insect life of Rincón.

The only real dangers from the area, apart from sundry diseases, such as malaria, which one might conceivably contract, are the snakes. Several species of poisonous snakes are known from the area, the commonest being the fer-de-lance. Individuals of this species grow to 8-10 feet and have an insidiously oversized head bearing fangs an inch or more in length. They can inject enough venom into you to bring about your demise in short order. Other not-so-friendly snakes in the area are the bushmaster,

The field station structure built by Tropical Science Center at Rincón, which served as Hogue's headquarters and home during nearly three months of isolation from outside world in the dense rain forest, which was literally at the back door. The jeep came in by barge and was used late in the trip for special filming excursions on the access road to Rincón.





(LEFT) With a machete, Hogue's young friend killed this six-foot *fer-de-lance* one morning in front of the station. This species and several other very venomous snakes are found in the area. (RIGHT) The author with a Hercules beetle (*Dynastes hercules*), which was attracted to a mercury-vapor lamp run at night. A tremendously powerful insect, this male forced open the bars of a wire bird cage and escaped.

coral snake, rattlesnakes, and a variety of other relatives of the *fer-de-lance*, one of which climbs trees, preferring to meet you face to face on the trail. Having these fellows in the grass makes you think twice before flopping into the undergrowth to take a close-up sequence of a couple of fighting army ants or rushing through the weedy edge of a clearing to catch a bird in flight.

The adventure started like so many do in Latin America countries with the delays and frustration in getting customs clearance on the equipment. Larry Savadove accompanied me to assist in setting up the station, and we sweat out a week in San José with the customs authorities trying to free \$10,000 worth of gear from hock. By the end of the first week we were able to get most of our equipment and took off for Rincón, however, still without the cameras. The Beaulieus were still being held, and for several days more I suffered the unhappy experience of being in the area without a camera; this of course is when the action always seems to be at its best. As you might guess, on the day of our arrival the army ants were swarming all over the station, and there we were without our cameras. After a few days' delay, however, all the equipment arrived, and I was set up and ready to go when Larry left.

My cinema equipment consisted of three Beaulieu 16mm (R16) movie cameras, one equipped with a 12.5-75mm Angenieux zoom lens, a second with a 17-68mm zoom lens and a third blank turret model specially provided to allow attachments of variable close-up lenses.

Most of the close-up work was done with a F/2.8, 40mm Makrokilar lens, which proved itself to be the most useful of all those provided by the company. My cameras were powered by standard 500mA Beaulieu nickel cadmium batteries, which I recharged with a Honda 2000 gasoline-powered generator. I was also thoughtfully provided with mountains of accessories, a large part of which turned out to be inconvenient or otherwise unusable in this tropical environment. I'll mention some of the items which fit into this category as I proceed.

The interval of my stay at Rincón was during the high-point of the dry season. But "dry" is a relative term in the rain forest. Rain came almost every day and towards the end, as the rainy season approached, frequently fell in deluges. Clearly, timing a filming expedition for the dry season is a requisite for working in the rain forest.

The main problem that a photographer faces in the tropical forest besides rain is the absence of light. In the tropics the sun is as bright as anywhere, but its light never reaches the ground in forested areas because of the tremendously thick vegetation. The latter not only directly blocks out the light rays but also absorbs a tremendous amount of the reflected ambient light that has managed to filter down through the upper stories of the forest. I found myself constantly fighting this problem, and I feel that I succeeded in conquering it only to a limited extent.

A majority of the photography with which I was involved would be consi-

dered close-up or cinemicrography. The light problems here are quite different from those encountered with general photography of macro-sized objects. In the latter case, because of the poor light and also because of the altered quality of the light—a preponderance of green and blue (ultra-violet rays predominating)—the photographer can easily go awry in his exposure.

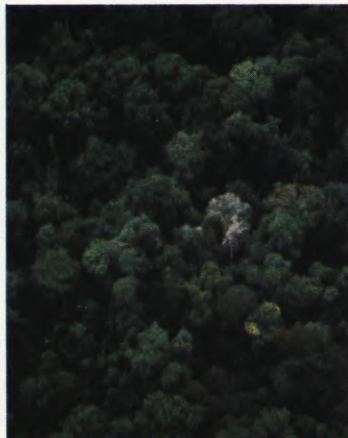
The first solution that comes to mind is the adaptation of faster film, but this does not always solve the difficulty. The faster films such as Kodak 7241, while having an ASA 160, produce grainy effects and colors easily go awry when exposures are really not right on. "Blue Days" at the lab are also encountered more frequently. It is useless to think about artificial light in the forest interior when one is working practically alone. The impossibilities of transporting equipment through the understory and even getting it to the remote site in the first place are too real to even think of bringing in most artificially powered lights. Artificial light means artificial power also and in addition to the light equipment itself there are generators or heavy batteries to be transported. When you are working in a perpetual sauna bath, the very idea of carrying this quantity of equipment is ludicrous enough to boggle even the mind heavily bent by jungle fever.

Reflectors made with aluminum foil or mirrors are practically useless in the rain forest for augmenting the light supply, since the sun rarely shows its face sufficiently to provide the light for reflection.

I came to rely on scheduling my photographing activities so that I would be able to take the best advantage of the natural sunlight that was available during the day. Much of each day was lost because of cloud cover; rain is synonymous. The jungle thrives on rain, and rain is a part of almost every day. It rains around two hundred inches a year at Rincón, and rain means clouds and clouds mean no sun. I found that the late hours of the morning or noon hours were often best for general work, because the sun was able to penetrate the forest at this time and rain was less common. Also, curiously, a very good time of the day for photography was just before sunset. There is no twilight in the tropics, and the sun goes down with a thud, but just before the end of the day there are frequently clear skies and the sun slips in on a steep angle between branches of the trees and illuminates the interior of the forest often in dramatic ways. The lower angle of the sun tends to emphasize shadows, and some of the nicest effects can be



(LEFT) Closeup stills shot in the forest shade required the use of strobes. The author used a balanced double-strobe arrangement—one to provide highlight, the opposite for filling shadows. (CENTER) A butterfly common to the area. It has two tails on the hind quarters of the rear wings which move when the butterfly is at rest. The tails mimic the antennae and probably attract the beak of a bird away from the head end. (RIGHT) Just south of Rincón on the coast was a stand of mangroves, a favorite haunt of many birds and other animals.



(LEFT) From the air, the forest canopy appears as a continuous carpet of deep green velvet. Over 200 species of trees are found in the area. (CENTER) One of an endless variety of paper nests of social wasps found in the American tropics. A telephoto lens is useful for filming closeups of these potentially dangerous subjects. (RIGHT) "Set" made by Hogue for photographing live insects. The covering of screen prevented the escape of the specimens and closeups could be taken through the front against artificial backdrops at the back or with the out-of-focus forest in the background.



(LEFT) One of the "poison arrow" frogs (*Dendrobates auratus*)—so-called because glands in the skin have been used by the Indians to make poison for tipping arrows and blow-gun darts. (CENTER) Hogue following a bird in flight with Beaulieu R16 camera. (RIGHT) "88's". A butterfly with a color pattern underneath in the form of the number eighty-eight. They were common near the station building.

obtained by working at that time of the day.

Nevertheless, though I was able to work around some of the weather problems, I could hardly say that lighting conditions were even adequate most of the time and I spent a considerable amount of energy and verbiage swearing in the direction of the sky, hoping to dislodge the clouds from the face of the sun but was seldom successful. Shooting in the interior of the rain forest is something like taking pictures inside of a giant animal. The forest literally swallows you up, and you seem to be doing everything from the inside rather than

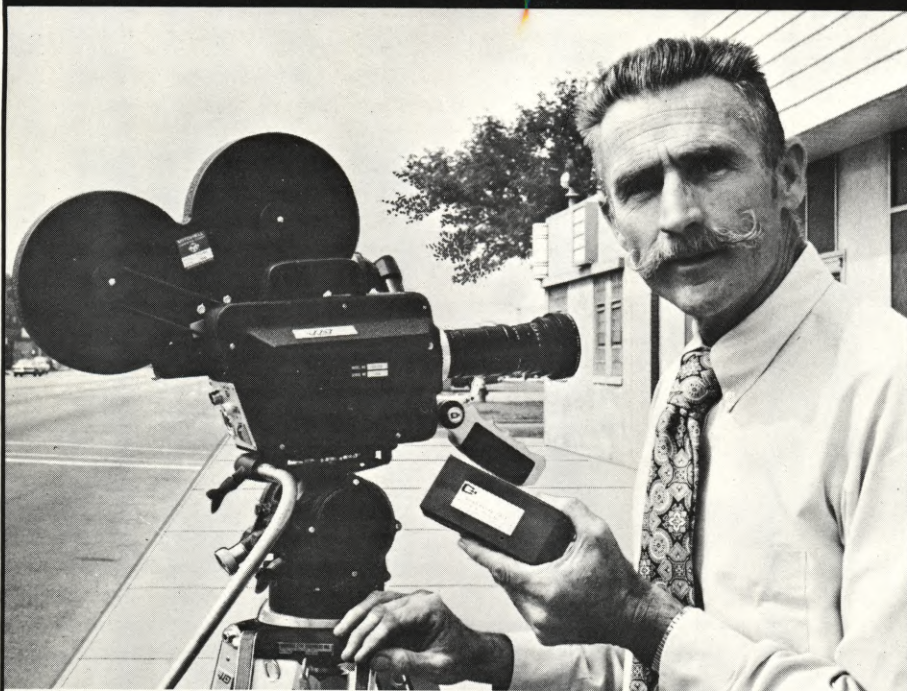
from the outside. Seldom are you able to get back far enough from a tree or a branch or some object to impart perspective and many times to even include more than a small portion of the subject.

However, working on the macro-level was only a small part of the job. Because the insects were the main subject of the film, I was involved in close-up procedures the majority of the time. Suitable lighting here also presented the greatest problem to success. Never was I completely satisfied with any of the methods or equipment available to me. Shooting with straight sun-

light was possible part of the time, but it meant coaxing the insect out into the sunlight, which is contrary to the character of rain forest species. Most of these creatures of the forest love the shadows or darkness and seldom do you find them displaying themselves in the open sun where they can be photographed. Even where sunlight was available it was still inadequate for small apertures, and still other field problems then came into play.

I have found it always advisable to use artificial light with close-up insect photography. I have had a fair amount
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DON'T DO IT!

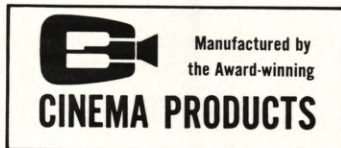


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16mm FOR TELEVISION?

Continued from Page 1001

impression of verisimilitude. This is because today's audience is familiar enough with photography to recognize the effects of having to photograph a subject under conditions which cannot be controlled. Shortcomings such as improper balance in lighting or unsteadiness are taken as implying that the cameraman was having to catch the event as best he could rather than being able to control it and this, therefore, increases the sense of the event's reality. The same applies to a relatively grainy or contrasty image such as one may get with 16mm on television. This aesthetic element is sometimes acknowledged by studio cameramen who, in order to achieve a kind of harsh realism, deliberately create effects associated with documentary photography.

Unless a television series or dramatic program is intended to have the texture of a documentary, the image quality of 16mm will probably be detrimental to the success of the show. Economic considerations may tempt a producer to shoot in 16mm, but he must be willing to accept the reduced image quality as the trade-off for lower costs in production. An independent producer making a program for syndicated television may be willing to make this sacrifice since, in order to show a profit, a syndicated show must be produced for much less than the cost of a network show. In some cases, a syndicated show is produced in 16mm and distributed in the form of conventional 16mm composite prints.

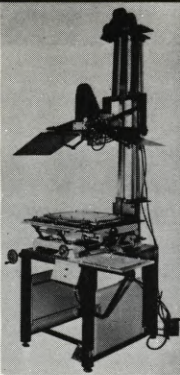
A few years ago, Robert Stabler demonstrated that 16mm reversal film could be used successfully for a syndicated series. His "DEATH VALLEY DAYS" was on the air in 16mm color film for six seasons. He employed ECO film as the shooting stock, cut his original in A and B rolls, made a 16mm dupe and release prints on color positive. The quality—while still below network standards—was the best that has ever been achieved in this system. His success was undoubtedly due to intelligent planning, use of selected lenses, skillful cinematography by such experts as Ernest Bergholz and Irving Lippman, liberal use of close shots and selection of clean-air locations. Other 16mm Hollywood-made series, produced more recently, have been dismal failures because the producers did not follow the example set by Mr. Stabler.

At the present time, there is no regular television series (i.e. non-documentary series) being produced in 16mm for network television in the

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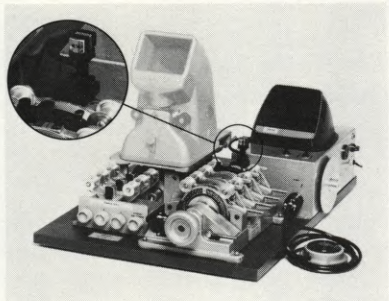
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United States.

It might seem that the best solution would be to make second-generation reversal composite release prints for a syndicated show produced in 16mm. By eliminating the internegative stage, this procedure would seem to offer a means of obtaining acceptable image quality for television from a 16mm original. There are several drawbacks to this approach however. First of all, it is more expensive than printing from an internegative for anything more than four or five release prints. Secondly, it involves a much higher risk, since the original material is used in making each release print. Moreover it produces release prints with a non-standard emulsion position, which can create problems if commercials must be spliced into the print. Another obstacle is the inadequacy of the sound quality.

In Japan and England, 16mm Eastman Color Negative (type 7254) is used for television production, and release prints are made directly from the cut originals. In Japan not more than five prints are made for each show, but in England sometimes as many as 50 prints may be made for a given show. This approach is not used in the United States for several reasons. First of all, 16mm Eastman Color Negative type 7254 has an unfavorable image-to-grain ratio in comparison to the reversal films, since the emulsion for Eastman Color Negative was designed for 35mm use and the individual grain represents a greater percentage of the picture area in 16mm than it does in 35mm—the grain size being constant and the 35mm frame being almost six times the area of the 16mm frame.

Secondly, because of this unfavorable image-to-grain ratio in 16mm, it is not possible to make a satisfactory 16mm dupe negative from a 16mm color negative. The producer of a television show in the United States needs to be able to make high-quality duplicate negatives for protection, for subsequent syndication, and for export. Even with the new Color Reversal Intermediate (CRI), type 7249, it is not possible to make a high-quality dupe negative from a 16mm negative, whereas it is possible to make an excellent 16mm reduction dupe negative from a 35mm negative by direct reversal using this same CRI material. Moreover, 16mm negative film is very delicate mechanically, and the inevitable tiny scratches and abrasions that occur during negative cutting show up as objectionable white screen defects when the print is projected. Splices also present a problem, since the frameline in 16mm is merely a line of demarcation between adjacent frames. Screen evi-

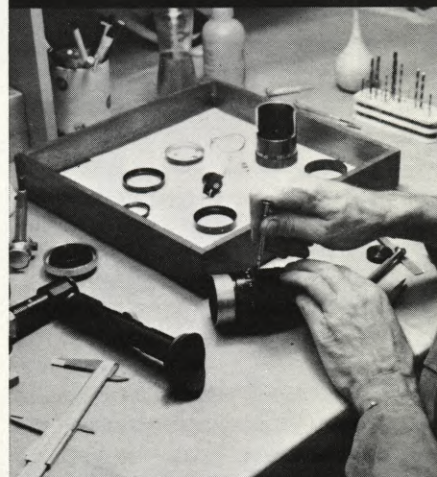
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(LEFT) Cast and crew of "MOONCHILD" filming in Reception Room area of the historic Mission Inn Hotel, Riverside, California. (RIGHT) Tom Ackerman films slate for shot of Victor Buono, while Les Rumsey watches camera speed indicator. Writer/Director Alan Gadney is in foreground.

THE WRITING AND DIRECTION OF "MOONCHILD"

A group of former U.S.C. Cinema students and U.S. Air Force veterans pool their talents to create a lush first feature

By ALAN GADNEY

Writer/Director

On the screen, MOONCHILD is the story of a reincarnate—a young man who is forced to repeat his life every twenty-five years. In this version he has come back for the seventh time (as a 1920 art student) destined once again to replay the bizarre chain-of-events which had originally entrapped him.

Behind the screen, MOONCHILD is the story of a small band of filmmakers who, to date, have played out two lives on two pictures—the first one as cinema students at the University of Southern California—and the present one as new, young professionals.

Actually, the history of MOONCHILD began in our "Student Life" with WEST TEXAS—that is, the associations began there—Dick Alexander as Producer, Emmett Alston as Cinematographer and I, Alan Gadney, as Writer-Director. And this association (and training) carried through WEST TEXAS, through the long, intervening "project

years", and on to the present—MOONCHILD.

In brief, WEST TEXAS was an hour-long, 16mm color, Western drama—one of the largest projects to be made at the U.S.C. Cinema Department. We constructed an entire Western farm set, complete with authentic sod house and corral, on location near Riverside, California (and actually not very far from the Mission Inn where we were to shoot MOONCHILD several years later).

To bring in WEST TEXAS on a non-budget, we borrowed film, processing, props, a stable of horses and riders, nine antique automobiles, and a 32-piece orchestra—and we made the entire project for a little over \$5,000 out-of-pocket. Practice makes filmmakers—and evidently all practiced their filmmaking well, because last summer MOONCHILD was produced with many of the original crew members from WEST TEXAS—Moonchild's editor, Jack

Conrad; assistant editor, Sandra Conrad; costume designer, Jane Alexander; and cameraman, Doug Knapp, among others. In all a dozen former (and some current) U.S.C. Cinema people were included on MOONCHILD.

As a rewarding footnote to our "student days", WEST TEXAS has gone on to become one of the most honored featurettes ever produced at U.S.C. To date the film has won 27 national and international film festival awards, including our most recent, the French National Cinematography Cup at "Little" Cannes.

MOONCHILD, itself, while a completely independent and professional venture, will also double as a thesis film for producer Alexander and myself—actually, the first professional feature length theatrical film to be given direct thesis credit by U.S.C. Cinema. So, like the reincarnate Moonchild of our drama, we are all very much tied to our



(LEFT) Courtyard view of Mission Inn Hotel, showing "Famous Writers' Row" (of rooms). Baroque Spanish Gothic architecture of the famed hostelry formed a perfect background for movie melodrama. (CENTER) The crew filming in the Chapel Patio of the Inn. (RIGHT) Setting up to shoot one of the surrealistically bizarre flashback sequences for "MOONCHILD", an off-beat original screenplay by the author dealing with a theme of reincarnation.



(LEFT) Colorful characters William Challee (Alchemist) and Frank Corsentino (Homunculus) lurk in the tower of the Inn. (CENTER) Gadney (foreground) conducts final rehearsal before filming of the ambitious Inquisition sequence. (RIGHT) William Challee as the old Alchemist being tortured on the rack by black-hooded figures during shooting of the Inquisition sequence. Lavish costumes and props add much production value to the film.



(LEFT) The "Moonchild", Mark Travis, walks through fog down Mission Inn "catacombs" corridor, while director of Photography Emmett Alston shoots the scene with Arriflex 35mm camera. (CENTER) Doug Knapp and Tom Ackerman (left) discuss angle for upcoming scene in Reception Room area of the Inn. Actors Pat Renella and Mark Travis are at the desk. (RIGHT) Silhouetted against an evening sky, the towers of the Mission Inn seem mysterious and forbidding.

(LEFT) Pat Renella, as Hotel Manager, grabs Moonchild Mark Travis around the neck during rehearsal of evening meal sequence. Victor Buono, out of costume, is at left. (CENTER) Cast, which included John Carradine and Victor Buono (left) takes a break between camera set-ups. "MOONCHILD" was a labor of love and dedicated cast and crew worked long hours in extremely high temperatures without complaint. (RIGHT) Victor Buono and Pat Renella, as "Church and State", battle it out during end of Inquisition sequence. Operator Tom Ackerman lies on floor with Arriflex, while Director Alan Gadney and Grip Les Rumsey pull him in circle to follow the movement.



past... at least until we get our thesis...

The story of MOONCHILD was developed with the MISSION INN HOTEL in mind; sort of a case of a script being written to match a setting—and in this case, quite a bizarre setting at that. Now a state historical site, the Mission Inn is a towering, sprawling six-story labyrinth of Spanish gothic architecture spreading over an entire city block of downtown Riverside. It has hundred-year-old stairways which lead nowhere, stained glass windows by Tiffany, lush vine-draped balconies, a Spanish altar hand-carved in gold-leaf, man-sized clock figures revolving above the central fountain-patio, strange Asiatic gargoyles hidden about, and dark catacomb tunnels which wind throughout the basement—a rather perfect setting for a film about the supernatural we thought... So, I wrote MOONCHILD to match the Mission Inn—the student is drawn back into this strange old mission (now a hotel) and forced to repeat his original life as an 18th century acolyte priest accused of various crimes against both church and state. This all leads to a massively bizarre inquisition and from there races into the surreal.

When we moved into production, the occult atmosphere of the Mission Inn captured the entire cast and crew. We lived right in the hotel itself, in the movie setting, and in the mood of the film. And from this sealed environment, we left only briefly for two outside locations—the exterior of the hotel for the opening and closing scenes, and a desolate mountain top for the ending chase; both about ten minutes away in opposite directions. The rest of the picture is virtually the Mission Inn with its endless variety of settings.

In the hotel we had more props available than the MGM back lot—

antiques which belonged to the hotel museum. Furniture, paintings, sculpture, tapestries—it was like a gigantic treasure hunt. The actors would suggest props for their sets... "Alan, I feel I need something here to put my arm on. Now I just happen to have seen this gargoyle down in the catacombs last night and..." And we would go down in the freight elevator and get the gargoyle... We actually dressed the sets to match the actor's blocking.

Script changes were the same way. Although I had a fixed script, we were very flexible with the dialogue, adapting it as the characters developed during rehearsal. We rehearsed on location right in the standing sets themselves, working around the gaffing and set dressing crews. In the two weeks before last summer's production, the old Mission Inn was a beehive of actors and crew. At night I would quietly retreat to my room, a large, dome-like affair with a round red bed in the center, and touch up various scenes to accommodate the day's adventures.

The entire communal spirit of the project was something I can't say enough about. It was a joy. And it had a tremendous effect upon the eight actors of the drama: Victor Buono, John Carradine, Bill Challee, Janet Landgard, Pat Renella, Mark Travis, Frank Corsentino, and Marie Denn. For them, living and working in the same location was strongly reflected in their performances—they became their parts. It was like living a play life in a closed setting. Victor told me that even though we had only been shooting for a little over three weeks, he felt as though he had been traveling with this repertory company for six months.

The crew had the same feelings. Rick Alexander, our prop master, scouted the hotel from top to bottom, all six stories

—breaking into rooms which had been closed for years in search of bells, books, and candle-holders. Emmett Alston (Director of Photography), Tom Ackerman (Operator) and I would walk the hotel mornings, evenings, and weekends, looking for camera angles which we had not yet utilized—and the variety was endless. Our only limit was the time to get them all on film.

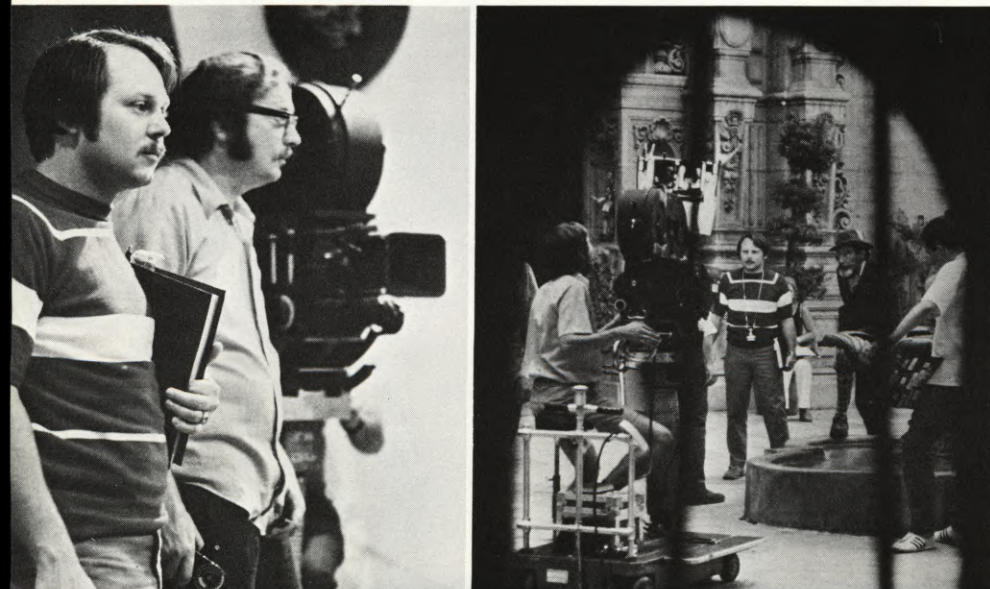
During several exterior rooftop chase sequences, I used two Arriflex-35 camera crews shooting in different locations at opposite ends of the hotel—but with the same two actors. This way I could save time filming with one crew while the other was setting up, and vice versa. This worked extremely well with the daylight chase material, since the action was simple and primarily graphic in content. When we ran the actors through the inside hallways and staircases, Emmett filled in with sun-guns and photo-floods—especially down in the basement catacombs where he simply screwed the photo-floods into the overhead light sockets which were recessed up in the rough brick ceilings. The spotty lights with an occasional flare gave just the right bizarre-horror mood to the winding tunnels.

Outside we shot quite a bit of the chase through the stained-glass windows, with some rack-focus from the foreground window images to the girl and boy running in the background. This gave us several interesting color and prism effects which cut in well and sparked the chase.

Another exterior portion of the MOONCHILD chase was photographed on a gigantic swirling stone staircase—but had to be filmed without the usual daylight correction filters because of a lack of sunlight fill at the bottom of the huge rotunda. However, this bluish (day-for-night) quality added greatly to the strange overall effect. Later, in the lab color correction process, we began to slowly crank in red for the "approaching dawn" as the runners reached the top of the stairway and broke for the desolate mountain top. The timer continued to increase the red intensity so that at the point of the Moonchild's very bloody death, the screen becomes very bloody red. Then as the various characters realize their mistake in killing the boy (they will all have to wait another quarter of a century), the color quality changes to that of a cold, overcast, and very sad new day.

Movement of the sunlight caused some interesting problems on the Chapel Patio, a small confined area where the ornate walls rose three and four stories straight up. Since we shot on the patio for one entire day, dawn to dusk, we

(LEFT) Writer/Director Alan Gadney and Director of Photography Emmett Alston watch rehearsal of a scene for "MOONCHILD". (RIGHT) Shooting on the patio of the Mission Inn Hotel, Gadney gives instructions to Camera Operator Doug Knapp, while actor John Carradine waits at right to do his scene.





(LEFT) Doug Knapp operates Mitchell BNCR camera for breakfast-eating scene of Victor Buono and Pat Renella on rooftop patio of the Inn. (RIGHT) Cast and crew shooting on roof of Mission Inn, which overlooks downtown Riverside. Gadney follows script, while boom operator Bill Blaylock picks up sound with the microphone. Most of the sound was so good that it did not require post-dubbing. Overall technical quality of the feature is first-rate professional.

had to keep shifting our action to accommodate the shifting shadows. It was like a gigantic game of hide-and-seek. In fact, when we came back from lunch to find our previously brightly lit chapel door now completely in the dark, I had to do a quick bit of unexpected restaging of the entire rest of the sequence. Fortunately, I could reblock the action and punch in for close-shots to cheat us back out into the sunshine.

Emmett's largest lamp for the production was a "Senior" and so we were quite limited when it came to filling in large shadow areas such as on the patio. Inside, his gaffing of the massive "Inquisition Chamber" was sheer magic. He kept moving the one Senior, four Juniors, and six baby lamps as the action itself moved. (Most of the blocking for Victor Buono and the twenty-four players and extras was restricted to one end of the chamber, the judgement bench, where the lighting was to also be quite low key. This sort of staging helped Emmett out considerably.)

The sound crew stripped just about every bed in the hotel of their mattresses and stacked them outside all the windows of the inquisition room to block off traffic noise—and the padding worked great—although passersby on the street must have figured the Mission Inn folk had either gone crazy or were dabbling in some strange new art happening. The mattresses held out the noise but also held in the 120-degree Riverside summer heat.

Heat proved to be one of our biggest problems. We fried on the "Mountain Top" and baked in the "Inquisition". The sun was so intense for one outside eating scene that the fruit on the table top wilted. And in the "Alchemy Cham-

ber", a small red brick and stained glass room enclosed dead center in the hotel, (with little air conditioning), the combination of dry heat and carbon dioxide build-up left several crew members drained to the point of exhaustion. Several large fans and the hotel air conditioning did help at times, but in the Alchemy Chamber, there was nothing left to do but rehearse in the dark and take frequent fresh-air breaks.

The majority of MOONCHILD was shot with a Mitchell BNCR and Arriflex-35 locked to tripod and dolly. However, near the end of the story, as the "Inquisition" sequence reaches a climax, I needed to show the characters going berserk and fighting amongst themselves, allowing the boy and girl to escape. So we opted to go hand-held for the "Inquisition Freak-Out" and subsequent escape from the mission—and the effect was right-on. Emmett added a touch of purple gel to the key lamp and it took the Mission-Madhouse right over into the surreal.

Throughout the film, Jack's fast cutting added greatly to the overall cinematic. Early in the piece we establish a technique of quick cut flashbacks which begin to show off the student's "deja vu" mental process of thinking that he has been to this old mission some time before. These flashbacks (actually they flash forward to events which are coming) pay off in the inquisition and bring together the end of the drama.

Ever since I first saw "EXTERMINATING ANGEL" and "ORPHEUS", I have been fascinated with the surrealist films of Bunuel and Cocteau. In MOONCHILD I wanted to combine this dream-world with elements of the supernatural (specifically the fields of astrology and

alchemy) into a sort of occult-fantasy drama. (In some respects, MOONCHILD becomes more an allegory, even an absurdist-satire—especially as the film progresses and the Moonchild is drawn back into the bizarre events of his past.)

Emmett and I discussed how to bring this theatricality to the screen in terms of color, light, sets and costumes. With Jane Alexander, our costume designer, we settled on increasingly loud, primary colors with sharp lighting and exaggerated make-up: Homunculus has only one side of his face developed, the other half is blank (for he is only half a man). The monks in the inquisition have red and blue faces, depending upon whose side they are on—church or state.

The extreme characters and dialogue of the drama also express this insanity—after all, none of them are real anymore. They all have to wait in limbo until the Moonchild comes around so that they can perform their little psycho-drama upon him in hopes of redemption. And so far, they've been through this same inquisition a total of seven times in the last one-hundred-fifty years . . . I think this sort of waiting would make anybody a bit extreme . . .

On the screen, as the film ends, the characters have to wait it all out again—the Moonchild loses and has to come back a quarter of a century later for try number eight. Meanwhile, behind the screen, we don't have to wait—we can go right on to number three . . . ■

LIGHTING AND PHOTOGRAPHING "MOONCHILD"

By EMMETT ALSTON

Director of Photography

Alan Gadney (Writer-Director of Continued on Page 1056

JUNGLE ADVENTURE

Continued from Page 1035

of experience taking still pictures of insects prior to my introduction to the movie camera and learned very early that a strobe auxiliary is an absolute requirement for all close-up work, even when the subject is in full sunlight.

Photofloods are no solution. They are difficult to set up, and the heat emanating from the lamps quickly cooks the subject or so radically alters its behavior that the photographs are worthless as a record of the insect's normal activities. Photofloods also require a heavy power source, and this is not convenient in working in the humidity of the forest. What is needed is a lightweight easily-charged portable stroboscopic or high-intensity light similar to a stroboscopic light. These can be attached to the camera and will always be in place and ready to allow the photographer complete control over lighting. Smaller apertures then can be used and depth of field maximized. Insects are never (or seldom) cooperative in having their picture taken, and their very slight movement can throw them out of focus. The more depth of field that a photographer can get, the better.

To circumvent some of these light problems with close-up work, I devised ways of confining the insect subject so that I could direct sunlight on it in the desired way. This meant designing and constructing cages which could be used

as a movie set. My first successful innovation in this respect was a "cage set" which I made on an old table, found in the station. I covered it with a half-cylinder of screen wire, Conestoga wagon fashion, leaving the front and back open. At the front the camera was brought in and at the rear various artificial backgrounds placed or left open so that the natural forest background in the distance could provide an out-of-focus backdrop. The reason for having a cage is to prevent the insect from escaping while you are working with it. The sun's heat and light both stimulate the activity of rain forest insects and their first reaction is to escape. Being in the cage set they were not able to fly away, and I could quickly remove them from inside of the cage where they would land and place them back on the substratum. Using this methodology, I was able to work in the full sunlight and thus have a maximum light.

Unfortunately, however, the main insect actor in the film, the army ant, was not adaptable to this procedure. Army ants are incredible creatures of the rain forest and have been the subject of many sensational but fictional accounts of their voracity. They are displayed as horrendous, giant, crawling ants that spread over the forest floor by the millions, stinging and biting, and killing any living animal in their path. This aspect of the biology of the army ants has been grossly exaggerated—and thank heaven, because attempting to photograph them were this the truth

would be a little too much to ask of any biologist-cinematographer, however dedicated.

Much of my time was spent in locating the ants. They are not abundantly common and finding a colony is difficult. The best way is to walk the trails or along the stream beds which run through the forest. Fortunately at Rincón there were a number of native trails and small streams that I used in this manner. Eventually, during a day's scouting, if enough miles are covered, the searcher will stumble across a column of these ants. These columns are connecting links between the raiding party of swarming ants at one end and the main colony at the other end. Unlike most other ants these have no permanent place of abode and alternately move from one locality to another depending on the stage of development of immatures in the colony. During one period of two to three weeks, the colony remains stationary at night, taking the form of a huge mass of intertwining bodies, secreted in a well-protected place, usually underneath a fallen log. This mass is called a "bivouac," an analogy to the human military counterpart. Following the stationary phase, the entire colony moves to another locality, each day migrating through the forest, and a new bivouac is made each night in a new place. This migratory phase lasts a period of time approximately equivalent to the previous phase.

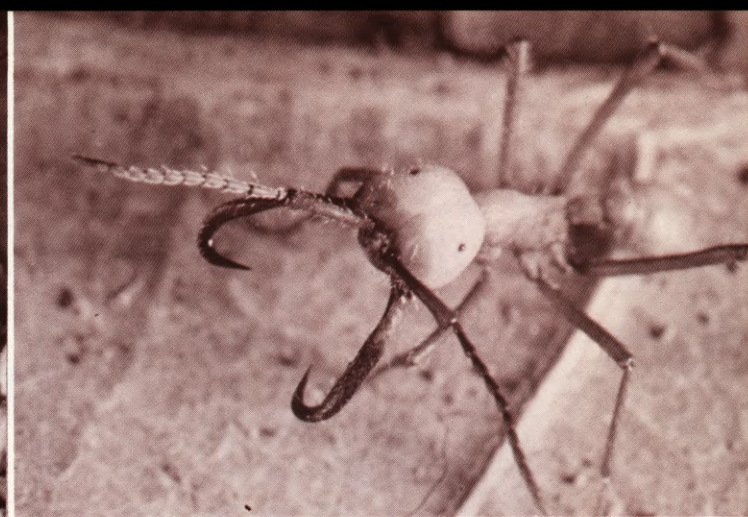
During both stationary and migratory phases each day a raiding party, or swarm of ants, emanate from the biv-

(LEFT) In the morning, clouds of mist hang over the forest. The same effect is seen after a heavy rain, when the moisture rises from the vegetation and condenses in the cooled air. (CENTER) A leaf-cutter ant (*Atta*). The workers of these ants cut semicircular pieces of leaf with their sharp mandibles and carry them back to the nest where they are made into a mulch on which grows a special fungus that forms the diet of the colony. (RIGHT) Hogue used the 40mm Macro-kilar lens on the Beaulieu for all close-up work. Most subjects were sufficiently enlarged without the need for additional closeup tubes.



(LEFT) The *cecropia* tree is a characteristic tree of the American tropics. The species favors the edges of clearings and rivers where the sunlight is intense. (CENTER) An army ant trail crosses a dry stream bottom. Following the rapidly moving individuals requires a steady position and constant focal distance, which can only be maintained by hand-holding the camera. (RIGHT) The *Centrolenella*, a tree frog with a transparent belly. Through the stomach skin the heart may be seen pumping blood into the also clearly-visible blood vessels.





(LEFT) The medium-sized and small workers of the army ant attack other insects. The katydid shown here is a favorite prey. After it is killed by the stings of its attackers, it is dismembered and the parts are carried back to the bivouac. (RIGHT) Face to face with an army ant. This fellow is a major worker or soldier. He uses his sting and ice-tong jaws to discourage enemies.

ouac for the purpose of catching and gathering prey. The prey consists of small insects that live on the forest floor and the lower branches of the vegetation, insects such as grasshoppers, katydids, cockroaches, spiders, and so on. A favorite food of the army ant at Rincón were the larvae and pupae of paper wasps. The ants raid a wasp's nest and rob it of all of its juvenile occupants in just a few minutes. The adult wasps flee in terror and if they attempt to ward off the attackers are stung and instantly killed.

This is the personality of the actors with whom I was to work. How do you resolve the problems of producing a film with a subject like this? A subject which, number one, lives in a remote, inhospitable place, where temperatures and humidities are high. Two, which are very tiny. Three, which move with great rapidity and agility in and out of focus, in and behind obstructions and over a wide area. And four, to be photographed by an inexperienced cameraman.

The biggest step towards surmounting these barriers is to choose the right camera. In my opinion the Beaulieu R16 made it possible for me to do what had to be done to make this film. Several features of the Beaulieu adapted it for work in the hot, humid climate. First, is its light weight. Very shortly after my indoctrination to photography in the rain forest I had myself stripped down to the very barest minimal paraphernalia. Nearly always it was necessary for me to carry everything I was going to need for a day's shooting on my back and hike through the forest some distances; I could tolerate no extravagances. Eventually I worked practically all the time with just one of the cameras and interchanged the lenses between the most powerful zoom and the close-up 40mm Makrokilar. Carrying

two cameras, one for close-up and one for macrophotography presented an impossibility as far as I was concerned. The Beaulieu is a very compact and reasonably small camera, and it fits usually into a pack or is easily hand-carried directly or when mounted on a lightweight tripod. When you are sweating like a pressure cooker and baking in the sun like a pig on a spit, you try to keep your metabolism down to a minimum and every pound to be carried is important. The less weight you are carrying on your back and the fewer items you have to bother with, the more time you can pay to the job at hand and also keep a necessary eye out for a ten-foot fer-de-lance or other trail companion who might bring an abrupt end to all of your worries.

My normal field pack for a day's outing consisted of my camera, usually carried affixed to a lightweight Japanese-aluminum tripod (Slick), a supply of both fast and slow-speed films (usually

about a thousand feet), my spot meter, four or five extra batteries for the movie camera, a 22 cal. pistol loaded with dust shot (one or two slugs for big emergencies), my snakebite kit, and some plastic bags for carrying back insects to serve as subjects for controlled photography later.

The smallness of the army ants required the close-up lenses and, above all, through-the-lens viewing which the Beaulieu has. The field of view is very bright also and this becomes an important factor with the poor lighting in the forest. The rapidity with which the lenses can be changed, batteries replaced, speeds controlled, and film loaded, all make for tremendous versatility—and versatility is the most important of all of the requirements of a tropical close-up camera in my opinion.

The army ants move with incredible speed. Their swift jerking movements when running and attacking prey are

Hogue at the work table in the station. A transceiver radio (right rear) was used to keep in touch with the outside world. The objects hanging on the wall at left are bird nests woven of moss and roots by a species which suspends its nest from aerial roots dangling from trees.



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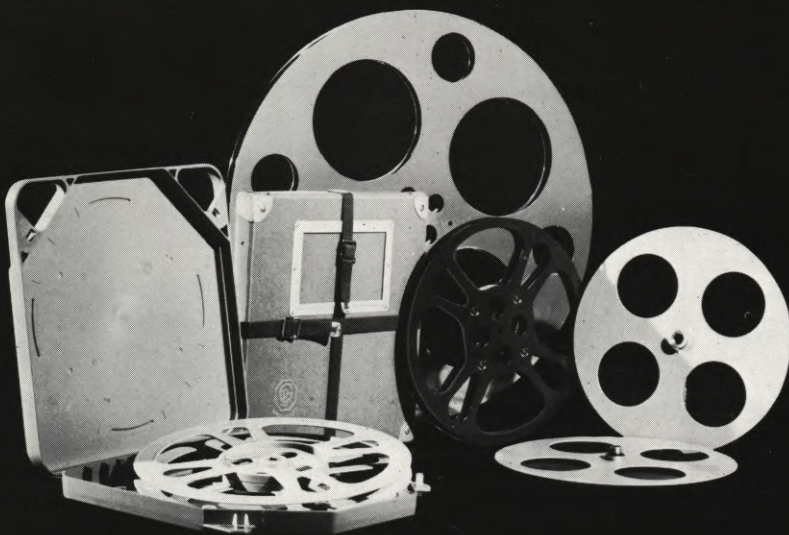
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dence of splices may be eliminated by the use of A and B roll printing, but this type of printing results in reduced output and is, consequently, more expensive. It is worthy to note, also, that in England, the TV system utilizes a 625-line structure (as compared with 525 lines in the United States) so that a 16mm image will be displayed with higher quality.

Given the film stocks and laboratory processes available today, it is not possible to produce a network television show in 16mm with an image quality which is competitive with that of shows produced in 35mm. Whether or not 16mm will become the predominant medium for television production in the future depends on several factors.

First of all, there is the possibility that a totally electronic system will replace film altogether as the production medium for television. Shows are currently being produced and broadcast entirely on videotape with great success, but the cost of converting to the use of videotape on an industry-wide basis would be astronomical. Undoubtedly, as more videotape production facilities become available, more and more production work will be done with videotape rather than film, but it is difficult to predict the rate of this conversion.

Even to convert to 16mm production on an industry-wide basis would require substantial investments in equipment and facilities, but the main obstacle to the adoption of 16mm as the production medium for television is the absence of an entirely satisfactory set of film stocks. There is also an additional factor which must be considered in speculating about the use of 16mm for television production. The primary attraction of 16mm is the lower cost of rawstock and processing as compared to 35mm. Sixteen millimeter rawstock will always be less expensive than 35mm rawstock, but laboratory costs depend on a variety of factors. The prices for 16mm processing are a reflection of the fact that 16mm has primarily been used for educational film production in which as many as 3,500 release prints of a picture may be made over a ten-year period. A laboratory can afford a loss in the processing of originals and dailies and in the making of a 16mm first trial print if it is later going to make hundreds or thousands of release prints. Thus, the cost of the front-end laboratory work on a 16mm production can be spread out over the life of a picture.

The labor which goes into the making of a first trial print, for instance, is by far the most expensive laboratory operation, and it is the same regardless of whether the film is 16mm or 35mm.

It takes the same amount of labor and skill to "time" a 16mm scene as a 35mm one, but laboratories now charge about a tenth as much for a 16mm first trial print as for a 35mm first trial print of equal running time. In order for a laboratory to stay in business on 16mm productions, each production must account for an order of at least fifty to a hundred release prints. Since most network television shows require only two to seven prints, it is clear that the present price structure for 16mm would have to be adjusted upward if there were an industry-wide conversion to 16mm production. At present, many of the laboratory's services are supported by the 35mm work that the laboratory offers and, to the extent that a 16mm production enjoys the benefit of these services, it is being subsidized by the 35mm work going through.

All this is by way of saying that the current price structure for 16mm work is deceptive from the point of view of contemplating a total conversion to 16mm production for television. Even today the producer of a 16mm television show will probably find that the laboratory cannot afford to offer him all the services he is accustomed to getting for a 35mm production. In the same way that a sound recording company charges by running time rather than footage, ultimately the laboratory's rates will have to reflect the amount of work being done on a time basis, and a full-scale conversion to 16mm production for television would result in either an increase in rates for 16mm laboratory work or a drastic curtailment of the services and facilities a laboratory could afford to offer.

Nonetheless, there might be other factors which would make it worthwhile to adopt 16mm as the standard for television production if a new 16mm negative camera stock were introduced which had a good enough resolving power and fine enough grain combined with sufficient speed and latitude.

[The introduction recently by Eastman Kodak of its new "Pocket Instamatic" camera system revealed the utilization of a new negative film of extremely fine grain, high resolving power, and improved color fidelity. It is inevitable that in a year or so Kodak will make this emulsion, which incidentally requires completely different processing techniques (new machines, new chemical formulas), available as a 16mm motion picture negative. This film, conceivably, could start a whole new ball game.]

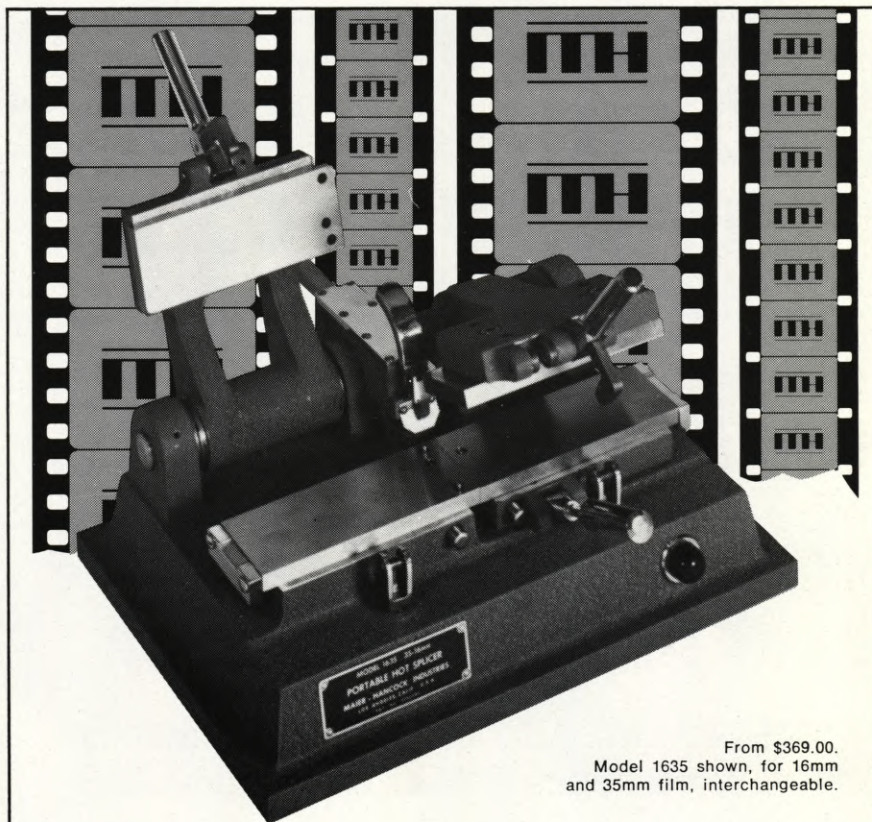
Accompanying this article is a series of diagrams showing the various routes that can be followed in producing pro-

grams for showing on television, together with some pertinent remarks. They are arranged in approximately the order of descending quality. In order to make this a comprehensive survey, all forms of production, including videotape, are included.

For the time being the existing 16mm materials are not good enough to meet network standards for anything other than documentary programs or news.

By the time these remarks appear in print, however, Kodak will probably have announced plans to make available Kodacolor II negative film as used in the

"Pocket Instamatic" camera in 16mm format and will probably have disseminated the technical information concerning its processing. It is predicted that a CRI made from original negative on Kodacolor II will produce a print on the new fine-grained Kodak positive, type 7381, that will be superior to a print made directly from the present 7354-16mm negative onto the same type of positive. When this procedure becomes a reality—probably in time for the 1973 TV production season—then the flow chart shown as FIGURE 8 will probably move up to a position just below 35mm negative. ■



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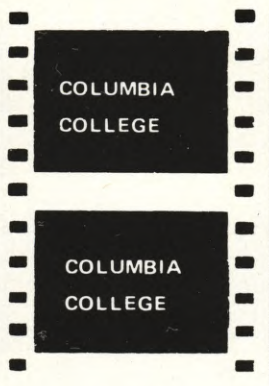
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FILM ON A BUDGET

Continued from Page 1013

quire. All at a price we could afford.

Then we thought of the compositional problems and advantages of widescreen. As it happens, there is an organization in England called the Widescreen Association devoted to anamorphic photography on an amateur level. With their help, we now have a 1.5X squeeze ratio lens to give us a final aspect ratio of 2:1. We could have had a 2X squeeze lens, but for the moment, these were out of our price range. There were other considerations as well: a) increased image spread of 2.66:1 over 2:1 reduced light even further, b) increased spread reduced quality of image more. It is surprising, though, how good the image is after this spread. With our 2:1 ratio, we can get experience in widescreen and still maintain good quality.

Which brings us to projectors. Our main unit is the Eumig Mark S 712D, a dual-gauge sound projector. While we have used it to project an adequate image in a 600-seat auditorium, we thought more light would be better, especially with our anamorphic lens. Thus, we removed the standard 8-volt, 50-watt bulb and made a bracket for the 21-volt, 150-watt EJM bulb. We also had to disconnect the usual transformer and wire up a new external one to handle the different values. This has made quite an improvement and normal cooling handles the stronger bulb. We are also considering replacing the zoom lens that comes with the projector with a Bolex Hi-Fi fixed-focal-length lens.

Our next big problem was sound. With the complexity of sync equipment (not to mention the expense) it is no wonder that most amateurs rarely get to experiment with sound. Once again, we turned to England. A company called Films In Miniature had just what we wanted (*American Cinematographer*, January 1970). They told us to get in touch with Optasound, N.Y., who told us to get in touch with Peter Elliot Services, Toronto.

It took 1½ years after my initial enquiries to obtain the system, but it's a little quicker now. It works quite simply; sprocketed tape (we use 24 sprockets per 7½ inches) is looped around a sensing unit which has been placed on a reel-to-reel tape recorder and sends pulses to an electrical camera that has had a frame-by-frame contact installed in its motor. This sensing unit is on a box about 6"x2"x2" and is usually mounted on the side of the tape recorder. The tape passes around the head of the unit on its way from feed to

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take-up reels. Because the tape then extends outside the dimensions of the tape recorder, the covers on portable machines couldn't be closed without cutting them up. This could be quite awkward in the field.

We decided that since many people would be borrowing this unit (most of them not experienced), we would make it as simple and compact as possible. The unit was dismantled and the pieces spread around inside our Uher. Now, the sensing unit and the light are the only visible parts and, as the tape path is within the dimensions of the recorder, the cover can be closed for maximum convenience and safety. The addition of a switch on the front panel enables the camera to be operated from the recorder or the recorder operated from the camera.

With the camera exposing one frame for every sprocket on the tape, these two can be lined up in a synchronizer for editing. The Edisync playback unit is like a tape deck with sprocketed gears and is operated mechanically from the projector. With the 1/4" tape going 7 1/2 ips, the quality is better than a 16mm optical track. Several playback units may be connected for stereo or mixing and everything may be transferred to the stripe on the film. The beauty of this system is that you can fit it to your existing equipment and so buy the cameras and tape recorders that you want. Thus, we can use our Uher 4000 with our Electro-Voice 644 instead of some cassette.

While the Edisync normally comes with just a playback head, we have made modifications there as well. The playback head has been removed (1/2 track) and has been replaced with a stereo record/playback head. An erase head has been added as well. This means a) we can post-sync dialogue and effects and b) we can use another track.

So, out of necessity, we have developed a training unit in Super-8, demonstrating techniques similar to those used in 16mm and 35mm film production, and at a fraction of the cost. Our battered Bolex is collecting dust. This is not to say that we only offer a technical playground; when the craft is learned, then the art is applied. Those not interested in such technical sophistication aren't even aware of some of our capabilities.

As for the future, we will be experimenting with interlocked projector and camera for front and rear-screen projection, experimenting with homemade printers and pre-fogged raw stock, trying to modify one of our cameras for bi-pack work, and also perhaps stereo cinematography. ■



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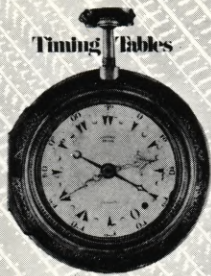
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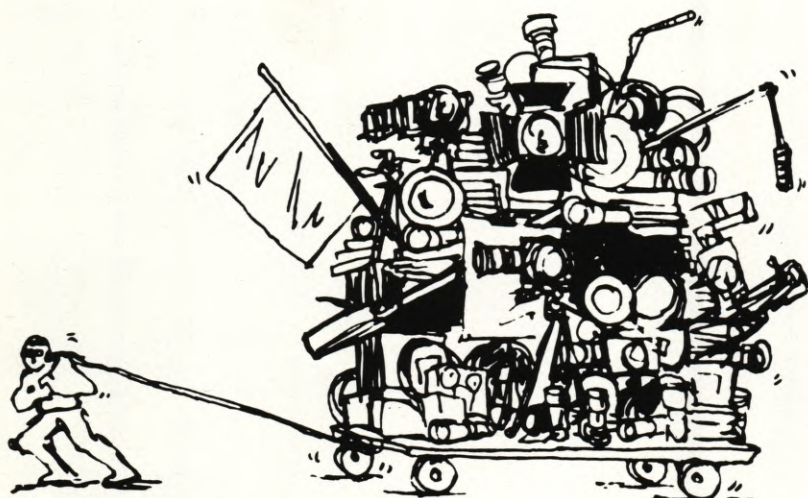
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FILMING "THE CANDIDATE" ON LOCATION

Continued from Page 1023

The 2,400-square-foot office and editing facility was rented for only \$550 a month. It was outfitted with couches and chairs purchased from a thrift shop for \$300, and with desks and other office furniture that were rented for \$150. The wardrobe room was a sparsely furnished, uncarpeted storage area.

Shooting began on November 29, with six-day weeks and time out only for the Christmas holidays. The principal photography was completed in 41 days on January 22, precisely on schedule. Rigorous as this was for everyone else, it was probably hardest on Ritchie.

In October, he had completed shooting another feature, "PRIME CUT", starring Lee Marvin and Gene Hackman; then he started the preliminary shooting for "THE CANDIDATE". Throughout the six-day production stages of the second movie, he spent his Sundays in Los Angeles supervising post-production on the first, which was scheduled for release on June 19.

All told, Kemper estimated, "THE CANDIDATE" used 220,000 feet of Eastman color negative film. Every evening, a courier flew with the canisters to Los Angeles and delivered the film to the Metro-Goldwyn-Mayer, Inc., processing laboratory in Culver City. The next afternoon, she flew back to Mill Valley with the dailies.

Film editors Richard Harris and Robert Estrin, immediately went to work, aided by Marsha Lucas and Jill Godmilow. Their task was facilitated by the fact that the original quarter-inch Nagra sound track had already been transferred with a Magnasync/Moviola machine to synchronized 35mm full-coat magnetic film. The machine, like most of the equipment used in Mill Valley, was purchased for one-time use and later resold.

"By 6:30 or 7:00 p.m. every day," Coblenz relates, "the previous day's dailies would be ready for viewing, just about the time Kemper, Ritchie, myself, and the rest of the production crew got in from the day's shooting."

Such location editing of dailies is no longer unusual for feature motion-picture production. What was unique was the completeness of the Mill Valley facilities, and the fact that they were staffed by largely local personnel.

"This was one of the factors that kept our costs down," he continues. "It's routine for a Hollywood crew to go on location and take skilled craftsmen along. But 'THE CANDIDATE'

was produced essentially by a Mill Valley film company, with the major exceptions of cinematographer Kemper, who is from New York, and film editor Harris, from Hollywood.

"All other personnel were local, including Mike Ritchie, who is a Mill Valley resident. We estimate, in fact, that about half of our budget (\$750,000) was spent for goods and services within the San Francisco Bay area."

Does this mean that Hollywood no longer has a role in the production of today's motion pictures? Not at all, replies Ritchie. For one thing, he says, on March 5, after work had been completed in Mill Valley, the production company moved to Studio City for post-production.

"Hollywood still has the finest technical facilities in the world," Ritchie comments. "This includes such things as sound dubbing, special effects, titling, music, and all the other requisites of the end product. The craftsmen are in Hollywood, and that's where you go for such services."

Coblentz also notes that it was a Hollywood firm—Fouad Said's Cinemobile Systems—cameras, lighting, grip, sound equipment, and van, that enabled the shooting crew to set up quickly, regardless of location, and then knock down equally fast for the speedy move to another filming site.

"About half of the time," cinematographer Kemper comments, "we used the Panavision cameras in the 1.85 aspect ratio format, with the spherical, instead of anamorphic, lenses. They provide the stability that you get with sound stage equipment, and the built-in blimping is magnificent for delicate sound work."

"For the rest of the work, we used Panavision-modified Arriflex cameras blimped for the hand-held sound sequences. These, too, are superior cameras because of the excellent blimping design. They also are so well balanced that the operator can use them in simulation of a dolly-mounted studio camera. In that case, the resulting footage is virtually undistinguishable from film produced under the controlled conditions of a Hollywood set."

With all its advantages, filming on location does have its drawbacks, Coblentz admits. One is the company's relative remoteness from conventional sources of supply. But even here, he says, jet aircraft and the expertise available on little or no notice facilitate the work of today's filmmaker.

"As I mentioned earlier," says Kemper, "help from Kodak engineers was never much more than a phone call away."

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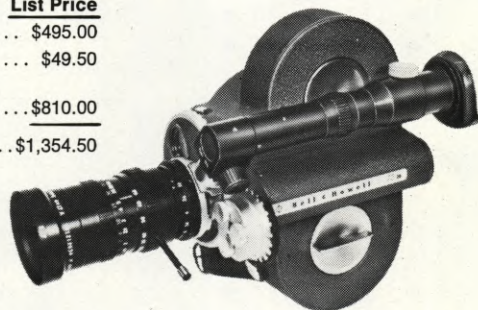
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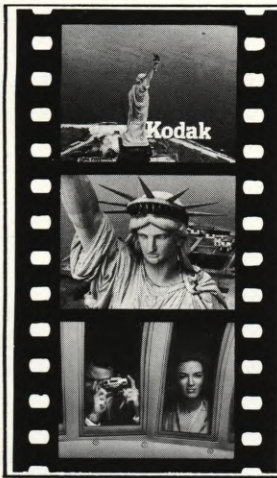
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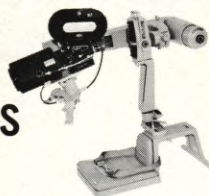




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"There were also a few times when Kodak people at the distribution center in Palo Alto got out of bed in the middle of the night to make sure that we had film for the start of shooting the next morning," he adds.

Summing it up, Director Ritchie says:

"Sure, there are motion pictures I'd make on a Hollywood sound stage. The big-scale musical is certainly one example. Where else could one have produced 'HELLO, DOLLY!'?"

"But the creators of contemporary motion pictures enjoy a freedom previously unknown. In part, that's because they are no longer shackled with a rigid philosophy that, in the old days, dictated the 'right approach' to every situation.

"Even more important, however, is the technical flexibility now available. This permits the filmmaker's creative imagination to soar to whatever heights are necessary. The result, one hopes, is a motion picture that captures an artistic distillation of reality—an end product that is really greater than the 'sum of its parts.'"

SAN FRANCISCO FILM FESTIVAL ANNOUNCES DATES FOR 1972

The 1972 San Francisco International Film Festival will run from Thursday, October 12 through Sunday, October 22, it was announced by Claude Jarman, executive director of the 16th annual film event.

The Festival's 11-day format of film presentations will offer two films per night—one opening night—and two mid-night films of unusual, contemporary cinema variety.

Five retrospectives will also be included in the San Francisco Film Festival program. These retrospectives are designed as tributes to noted film personalities and filmmakers.

"We are returning to the 11-day schedule," said Mr. Jarman, "and feel this format will prove as interesting, exciting and successful as it has in years past.

"The longer schedule of last year was initiated to coincide with the celebration of British Week in San Francisco, and the visit of HRH Princess Alexandra," concluded the executive director.

The 1972 San Francisco International Film Festival will be presented at its permanent home, the Palace of Fine Arts Theatre.

Albert Johnson, program director of the Festival, is currently in Europe attending international festivals in his efforts to secure films for the San Francisco Festival.

A SYSTEMS APPROACH TO LIGHT CONTROL MATERIALS

Continued from Page 997

uable. "On 'Fuzz', we tucked the material into areas where a light couldn't be placed, and then we'd bounce light off the surface into the set," said Mr. Marquette. "The ROSCOFLEX-F is a very versatile tool for the cinematographer," he added.

COLOR FILTERS FOR CARBON ARCS

Rosco is presently meeting the need for a long-lasting, heat-stable polyester material for this application with ROSCOLAR in Y1 and YF. These are the equivalent to the Y1 and YF-101 which have been the basic color correction filters for arcs. These are supplied in 30" wide rolls which provide for minimum waste in cutting filters for the Brute arc.

COLOR CORRECTION FILTERS FOR "BOOSTERS" AND INCANDESCENT-TO-"DAYLIGHT"

In recent times, the most popular means for filtering incandescent sources so that the light is a match to "daylight" has been the use of dichroic filters. The Macbeth, or absorption type filter, made of blue glass, had been the accepted standard for this conversion for many years, but the dichroic was claimed to do the same job with less light loss. The dichroic filter is made up of many extremely thin layers of metals deposited on a glass plate. The accuracy of the filter relates largely to how well the thickness of these metal films can be controlled during deposition. These coatings have been applied directly to some sealed beam lamps such as the PAR-36 and PAR-64. This has made these sources into convenient, relatively high efficiency sources of "daylight". These are the lamps used in the Mini and Maxi-Brute type of fixtures.

Throughout the history of the use of these filters, there have been serious problems of consistency and uniformity from filter to filter. In addition, both the durability and stability of the coatings have given rise to serious problems. The coatings undergo some changes with time due to the heating and cooling of the filter over many cycles of use, as well as progressive deterioration. This last is particularly so in the case of the PAR-36 lamps used in the Mini-Brute or FAY-lamp fixtures. In spite of the very significant improvement in these coatings, they still tend to break down as the lamps are used—which results in the color temperature being continually

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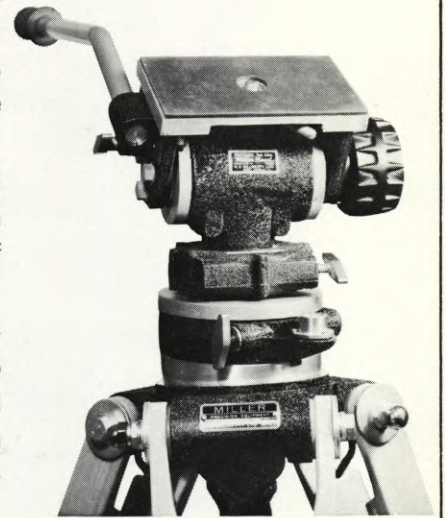
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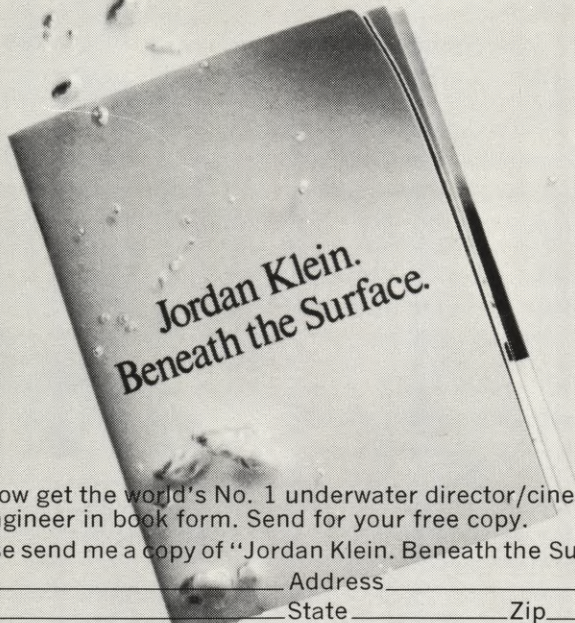
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lowered.

Several directions were suggested by our analysis of this information. First, it seemed to us that a heat-stable plastic filter for accomplishing the daylight conversion would be practical. We had been marketing a ROSCOLENE filter for this purpose as TD-25. This had been successful, but it seemed to us that even greater staying power was necessary. This resulted in the creation of ROSCOLAR TOUGH BLUE 50, a polyester-based filter. This filter gives excellent "daylight" color balance from 3200° Kelvin sources, and has tremendous resistance to fading.

John Alonzo, on the same production noted above, has used the TOUGH BLUE 50, and says, "The material gives a solid conversion to the 'daylight' quality which I prefer." Dick Hart, gaffer on this production, spoke highly of the durability of the material on the 9-light FAY fixtures.

The problem of the fading dichroic bulbs, combined with the fact that many cameramen prefer a "colder" correction than is typical of these bulbs, gave rise to the "Booster" colors. These were created in both the ROSCOLENE and the ROSCOLAR materials, and in both cases in two degrees of boost. The "booster" color such as the ROSCOLAR TOUGH BOOSTER BLUE raises the color temperature of an incandescent source about 800° Kelvin. The half-booster color, such as TOUGH ½ BOOSTER BLUE raises the color temperature about 400° Kelvin. The ROSCOLENE equivalents to the polyester material are CINE BOOSTER BLUE, and CINE ½ BOOSTER BLUE. In addition, in the acetate material line a different shade of blue was also offered, which had about the same effect on the source color temperature, but which tended to keep skin tones warmer. These are the CINE 26 BLUE and the CINE ½ 26 BLUE.

Gordon Willis, Director of Photography on "THE GODFATHER", used the booster colors throughout the production. "The TOUGH BOOSTER BLUE and the TOUGH ½ BOOSTER BLUE give me just the degree of additional coolness I prefer when using the dichroic coated lamps," says Mr. Willis, "and the durability of the material was a tremendous asset on our location work."

Gene Polito, Director of Photography on "ALIAS SMITH AND JONES" and on the feature "PRIME CUT" (see American Cinematographer June 1972), uses CINE ½ BOOSTER BLUE on new dichroic lamps. He has been making considerable use of the PAR-64 dichroic coated lamp types, in

which the fading is not such a great problem, but which Mr. Polito feels are basically under-corrected. "The use of the CINE ½ BOOSTER BLUE provides the right amount of additional correction, with minimum light loss, to satisfy my requirements for the color balance from the dichroic PAR-64's."

Ralph Woolsey, ASC, currently Director of Photography on "THE BOUNTY MAN", has been utilizing the CINE ½ BOOSTER BLUE on Maxi-Brute Six fixtures to provide extra correction. Gaffer George Holmes reports that, "The material, in addition to giving the kind of color correction Ralph wants, holds up remarkably well. We had the same piece on a Maxi-6 for about three hours a day burning time for 6 or 7 consecutive days, and we could not detect any change in the material."

We have been told of other instances of the use of the TOUGH BLUE 50 and the CINE BOOSTER BLUE materials being used for weeks at a time on Maxi and Mini-Brute-type fixtures, without deterioration of the color or the basic material. More and more, we hear of cameramen who are making it a policy to use a ½ booster material on new dichroic lamps. In some instances, they keep monitoring the color temperature, and when it has dropped too low, they go to the full booster color. In one instance, the full conversion color was used on dichroic lamps which had burned the entire coating off the center of the lamp face. In this way it was possible to utilize these bulbs to the end of their burning life.

We are beginning to find that the use of dichroic lamps is starting to fall off with those who become familiar with the conversion and booster colors described above. The economics of the uncoated lamps, including lower first cost and longer operating life, combined with the reliability and durability of the ROSCOLAR materials such as the TOUGH BLUE 50, make this a highly desirable approach. It has the further advantage that if it is necessary to go from a daylight to a 3200° Kelvin shooting situation, it is only necessary to remove the conversion filter.

CORRECTING DAYLIGHT TO 3200° KELVIN . . . WINDOW FILTERS

The materials in this category are required to modify the daylight coming in through windows into natural interiors. This is typically a location photography problem. The need for materials to accomplish this function increases constantly, since the amount of location photography continues to increase. The use of an 85 type filter over the

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windows or other openings which may admit daylight to the interior setting permits the use of 3200° Kelvin lighting in the interior situation. This allows the use of the small "quartz" fixtures, and other incandescents at their highest efficiency level; that is, unfiltered.

The neutral-density types are included in these materials, since it is rare that the intensity of the filtered and "corrected" daylight would be at a tolerably low enough level to permit the cinematographer to balance his interior lighting without being totally dominated by the incoming daylight. For this reason, the neutrals are an inseparable part of this family of filter materials.

Rosco Labs expended great efforts in the development of a very complete range of materials for this requirement. It became our feeling, after discussions with many cameramen, that it was important to offer a broad selection of materials to meet the great variety of situations encountered on location.

The ROSCOLENE line offers an 85, and three values of neutral density. This is the acetate material, and is one of the established and familiar materials to the grips and cameramen in the industry. We felt that our contribution in entering the market with this material, in addition to producing a high-quality product, would be to provide the material in 48"-wide rolls rather than 41" as has been the custom. Our contacts with the people who use this material indicated that any increase in the width of the roll would represent an easier application situation for them, due to less seams and the fact that many of the new glazing installations are 48" wide. This material is clear, and usually must be framed.

ROSCOVIN is a soft, self-adhering window filter, and is supplied as an 85, three values of neutral density and three combination filters, 85N3, 85N6 and 85N9. ROSCOVIN is supplied in 54" wide rolls. The material is best applied to windows by washing them, and applying the ROSCOVIN to the wet window with a squeegee. The material is quickly and easily trimmed to exact size with a knife or razor blade. This material is not clear enough to permit carrying sharp focus through it to exterior objects.

One applications experience was related to us by Ron McLeish, gaffer to Gene Polito on "ALIAS SMITH AND JONES". He was describing the application of ROSCOVIN 85N6 and 85N9 on the windows of a house in Ventura. "This is a seaside community," said McLeish, "with all that moisture and salt air implies. We put up the ROSCOVIN very easily, and it stuck to the

windows without a single piece coming loose for the entire week's shooting. It was great to be able to apply the correction and the neutral density as a single material."

To complete the range of materials for this requirement, Rosco has developed a line of acrylic panels called ROSCOLEX. These are supplied in 48" by 96" pieces, and are rigid and clear so that photography may be done through them. We were offered some "gray" panels for neutral density, which is what we understand has been placed on the market by others. Upon examination, we found that the so-called "gray" actually transmitted too much red, and was really not a true neutral density. The dyes for ROSCOLEX were especially compounded by us for the 85, and the N6 and N9 neutral density as well as the combination filters. The two combinations presently available from us are 85N3 and 85N6. These dye combinations were matched to the Wratten equivalents for standardization purposes.

The ROSCOLEX panels may be literally leaned against the wall, and no framing is necessary. The rigid character of these panels makes the handling during set-up and striking quick and efficient. They were recently utilized on a moving train by lashing them to the outsides of a passenger car.

AN ACKNOWLEDGEMENT AND A LOOK AHEAD

We at Rosco Labs have made our commitment to the field of "light control" for motion picture production. The CINEGEL line represents a continuing involvement, and we are thoroughly convinced that the success of this program depends on the intimacy of our contact with the Directors of Photography as well as their gaffers and grips.

We feel that our success so far is due in no small measure to the efforts we have made to be good listeners, and to being able to translate the needs of the cinematographer through our capabilities and capacities into materials which will continue to solve the problems facing the creative artists in this field.

(NOTE: for further information, technical assistance or swatch books relating to materials mentioned in the foregoing article, readers may contact the Rosco organization at either of the following addresses:

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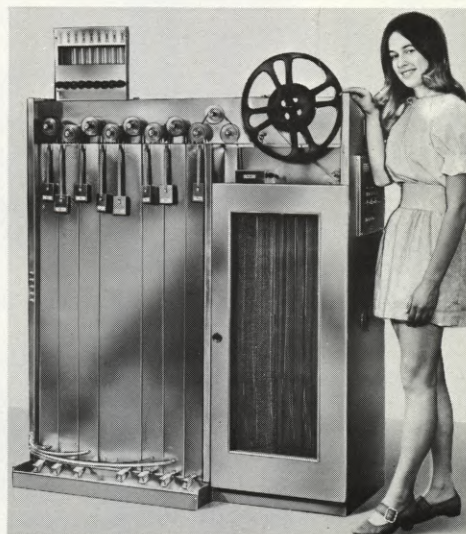
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FILMING "MOONCHILD"

Continued from Page 1041

MOONCHILD) and I were cinema students at the University of Southern California. There we worked together, planned and shot an ambitious film called WEST TEXAS, which I photographed and he wrote and directed. Dick Alexander was producer of the picture, and in the Spring of last year, the three of us formed American Media Productions for the purpose of making our second film, MOONCHILD.

With my USC Cinema Department background, and several years with the Air Force Audio-Visual Service, it is not surprising that the bulk of the MOONCHILD crew was made up of either cinema graduates and current USC students, or ex-Air Force motion picture production people who had benefited from their military experience.

On WEST TEXAS, under the guidance of Gene Peterson, I came to understand a little of the complex art of motion picture photography. In those student days, our films were the lowest of low budget, but a good spirit of competition existed between production crews, and the game was "how to get the most production value on the screen with what we had to work with."

Our main MOONCHILD location was the MISSION INN HOTEL in Riverside, California. It began originally as a small adobe brick guest house in 1876, and since that time has grown into a monstrous building covering a complete city block. It was visually ideal for the strange kind of film MOONCHILD was to be. I had made numerous planning trips to the site and was aware of the various problems I faced in the hundred-year-old structure.

The only reliable power source available was far down in the basement, accessible only through a nightmare maze of passageways. Age had left much of the hotel wiring questionable, and it became obvious that most of the power requirements would have to be supplied from this main breaker buried in the basement catacombs. Our budget did not allow for a truck-mounted generator, and so, by means of "power clip-ons", I was able to feed 120 VAC either side of center along three-wire feeders and numerous spider-boxes to each setting we selected in the hotel. Fortunately the Mission Inn was undergoing a management change and not functioning as a public hotel and we did not have to worry too much about hazards to the public. Thus, the power ran along balconies, hallways, and even up the outside walls of the building to reach

the top sixth floor. With the help of my best boy I ran cables for nearly a full city block in order to reach the far side of the hotel.

In order to try and save money, I at first considered the use of Super-16mm, but later chose 35mm instead. The difference in ASA was a major factor in the decision. There were a lot of interiors planned and with ECO my lighting package would have at least doubled. I also had to consider my space limitations in the small rooms with the extra heat from the lamps. Finally, I thought of the tremendous latitude that ECN has over ECO in exposure. This was to show up much in our favor later during the timing and color correction stage.

For the main production camera I chose the F&B CECO BNC Pellicle Reflex Conversion, an excellent piece of equipment. The camera operator has a bright, sharp, steady image to look at without a bothersome intermittent mirror. It is easy to note if the focus goes soft during a take. The 1:1.85 ground-glass markings are easy to read. And the eyepiece is situated so as not to interfere with the gearhead wheel.

On MOONCHILD we used the Colortran Dolly. While it took up less space than the conventional dolly and was easy to move from room to room, still it tended to wobble slightly on long trucking shots with the heavy BNC mounted topside. When our auxiliary Arriflex 35mm camera was used for silent coverage, however, there was no such problem at all.

I had to tailor my lighting package to fit exactly the requirements needed on each set. This is where advance planning is essential, as our budget could not allow for extra equipment standing around unused. Lighting was a most critical phase of the production, for lighting is what cinematography is all about. I have known many cameramen who are quite capable with a camera, but fewer who bother to learn to light well.

For MOONCHILD I chose conventional stage lamps over the popular lightweight quartz. While the quartz lamp has certainly proven itself to be ideal for the documentary and industrial format, for the precise control I wanted, incandescent stage lamps were the only answer. To shoot MOONCHILD, our lamp package consisted of 1 Senior, 4 Juniors, 6 Babies, a 4K Fill, 2 Small Quartz, 4 Nooklites, and a dozen or so #1 Photo Floods. With these, a handful of nail-on plates, and an Interior Grip Kit, I went to work on our first set of the production, the Moonchild's Bedroom, actually the one location that turned out to be the most difficult to

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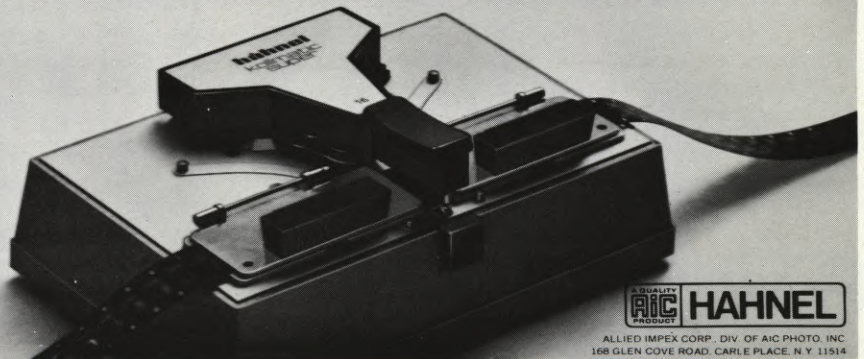
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work in due, again, to heat and lack of space.

It may have been fortunate that our hardest technical set-up came first. This clued us in early to future problem areas and established an immediate crew-to-crew and cast-to-crew camaraderie which carried throughout the production. It was a determined bunch that squeezed into that little room. Tom Ackerman, a talented ex-Air Force cinematographer, took time off from Guggenheim Productions in Washington D.C. to operate. Assisting Tom were Doug Knapp and Bill Waldman, both from USC Cinema. The production staff, a couple of grip-gaffers, and Ken Robinson (sound recordist) and Bill Blaylock (boom operator) made up the rest of the crew.

The set had a large bed in the center of the room, with some space provided for the actors to move around it. One wall was left dead, which is where the crew and equipment were situated, while we focused on the other three walls and the air conditioner ran full blast. The heat outside sometimes went as high as 120 degrees; the hottest summer in twenty-seven years.

During takes, of course, the air conditioner was shut down and we roasted. All other sources of fresh air were blocked by mattresses used to baffle the sound from traffic on the street below and police helicopters in the sky above. Still, with the help of the Mission Inn mattresses, Ken Robinson managed to get a track clean enough so as to require very little ADR work during post-production re-recording. We later cured some of our heat problems partially through auxiliary exhaust fans, and partially by turning off all lamps except when they were absolutely necessary. Alan Gadney, the director, rehearsed his actors with only the regular 100-watt bedroom illumination.

I had selected stage lamps of the lowest heat dissipation and physical size as possible, but still I needed a bright enough intensity to balance the outside daylight that poured into the room through several large windows across the back of the set. One of these windows opened onto the terrace and was to be used as a means of entrance and exit for the Moonchild's (Mark Travis) mysterious girlfriend (Janet Landgard). It seemed impractical to gel the windows as the time and effort involved did not seem worth it. I did experiment with some ND gel but found that it tended to curl and turn brittle in the intense sunlight. And as most of my lights were mounted low on stands (with the backlights suspended by the nail-ons from wooden beams), this gel reflected the

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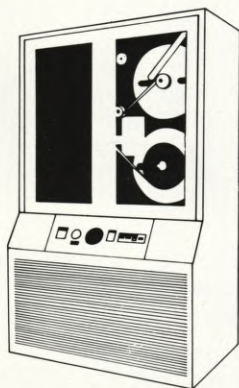
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key and large fill lamp. However, the outside blue saturation did not prove too bothersome, as many of the exterior building walls facing the terrace were of red brick, which compensated nicely. Heavy draping on the windows as much as possible and some black sky netting added a final cure to the lack-of-gel problem.

Many of the rooms and corridors had light-colored walls. This posed a severe problem that had to be dealt with from the very beginning. In some of the cramped quarters I was often unable to place my lights in optimum positions to avoid hot spots on the white walls. I tried to keep the actors away from the walls as much as possible and place the light so that an actor was moving along a path at an equal distance from the light source. Barndoors, scrims, and flags also helped; but with lights mounted on floor stands and fairly low, you are always faced with problems. The lighting looks "flat" and is often unacceptable. Not only does the actor's shadow fall flush against the back of the set, but his face burns up as he nears the lamp. On a soundstage, lights are mounted overhead and at convenient distances, thus avoiding these problems.

Our shooting schedule had been designed so that interiors would alternate with exteriors. This way, we were able to strike one interior in the evening after shooting was finished, and then move the same group of lights and camera equipment to our next interior set. The next day was spent on exteriors, and then after the evening meal, all the crew would help gaff the next day's interior set. In actual practice, the evenings did turn out to be the most appropriate time for this heavy work as it was much cooler and made the work less tiring. So, in the final analysis, we did beat the heat.

The rigorous schedule of extra-long days was at times quite exhausting but almost unavoidable because of the three-week (sound filming) production schedule. (A fourth week with a "short" crew and actors was spent on small MOS scenes and insert/cutaway material.) Throughout it all we were blessed with a dedicated and hard-working crew that stubbornly refused to give up under some of the hardest conditions. On MOONCHILD each had something to contribute, but we also worked as a complete team, using these talents to create a film which goes far beyond the budget. And on MOONCHILD, as in our student days, we put the most production value on the screen with what we had to work with. This is where it counts. The careful production planning and ability to improvise did pay off. ■

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JUNGLE ADVENTURE

Continued from Page 1043

much too fast for filming at normal film speed, and I found myself using 64 frames per second quite frequently in order to slow the motion down. Even at this rate of slowed-up motion many of the movements are still too rapid to be followed by the human eye. Many times I found it necessary to switch back from normal speed to fast and back again to slow on a single 100-foot roll in order to take advantage of a brief moment when something was occurring that had to be captured. The alacrity with which this can be done and accuracy with which film speed can be calibrated endeared my Beaulieu to me all the more.

Close-up photography of moving insects requires hand-holding. Various types of dollies and tracking devices I had tried—none with great success. Nothing can match the ultimate and exact control and maneuverability of the human fingers and arms. This again requires that the camera be lightweight to minimize the fatigue in holding it, sometimes for long periods. Tracking an army ant along its trail for a distance of five or ten feet is equivalent in difficulty, in my opinion, to filming the ball in a three-dimensional tennis match. The special design of the Beaulieu, which allows the photographer to hold the camera with the palm of the hand around the battery and driving the motor with the index finger, to me, is a much more comfortable arrangement than possible with the usual squarish, boxy cameras.

Try changing the film in a Turkish bath, and you will have another reason to appreciate the Beaulieu. So many times in a flurry of activity and excitement, I have found myself sweating profusely and with my hands shaking over some event which was going to last but a few moments and probably never reoccur. Trying to change film with your body in this state is sheer folly. Droplets of sweat fall into the camera and onto the film, and agile fingers become clumsy stubs. I usually avoided the moisture problem by loading the camera in a vertical position on a tripod but even then my moist fingers would gum up the film emulsion and fail in the simplest adjustments. However it is only with a little practice that one is able to load this camera. Two or three easily-learned tricks permit perfect threading every time.

The Beaulieu was completely reliable during the whole expedition, and I had no trouble with the breakdown of any system. The only serious difficulty I

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encountered was one which was not the camera's fault, but was due to the film type and the high humidity. Acetate-based films soften up in high humidities and when film is allowed to remain in the camera for long periods of time, overnight or longer, the softened emulsion acts like glue, sticking the film to the film gate behind the lens and jamming the mechanism. After several exasperating episodes, I learned the source of the difficulty and from then on solved the problem by never allowing the film to remain in the gate for more than a few hours. To encourage this I switched almost exclusively to the one-hundred-foot rolls in preference to two-hundred-foot magazines. This was partly to reduce the weight and also because it was easier, and less wasteful, to run out 100-foot rolls at the end of the day in order not to have them remain in the camera overnight and possibly stick. I preferred to reload the camera more frequently than to add the burden of the 200-foot magazines.

One of the other difficulties was not being able to see dailies. Film shipped out of my base at Rincón would not arrive in Los Angeles until one to two weeks later, and there was no way for me to see whether or not my exposures were correct or that I had covered the subject adequately. I just had to shoot away and hope for the best. Again, having reliable cameras made it easier to live with myself and not worry about spoiled footage. Out of the approximately 30,000 feet of film which I exposed, less than five percent was sufficiently poor to be totally without potential use. These mistakes also were due to my own shortcomings and not of the equipment.

Tiny sweat bees are a constant nuisance. They swarm about your head and your eyes and ears, apparently attracted to perspiration which is ever-present. They also show an affinity for shiny areas on the camera and crawl over the name plate as if infatuated by the metallic name "Beaulieu". Many was the time that I encountered one of these bees in the rubber eye cup of the camera when I placed my orb against it. It is an exhilarating sensation to find a bee swimming under your eyelid and disturbing your field of view.

Inexperience is no excuse for poor results with the Beaulieu. I had opportunity to practice with the camera only for two or three days prior to applying it in the project and found that I had absolutely no difficulty in understanding the controls and the basic mechanism. As far as I am concerned the camera is ultimately simple but still capable of giving completely profession-



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The through-the-lens metering system came in very handy in some difficult close-up situations. As I have mentioned, lighting is very misleading and one cannot always trust even his external meter unless he knows how to analyze the readings. After a while one learns what the needle means inside the Beaulieu and having instant readings available made it possible for me to capture scenes that would have escaped me had I needed to stop and take a spot meter reading. The meter in the camera gives general readings of wide areas but, when used in close-up work, functions much like a spot meter and with a little practice can be used with complete reliability.

The automatic system worked for most macro-scenes. Difficulty arose as already mentioned, in the deeply shadowed forest interior, where I found that the lag in the aperture control drive motor was unacceptably long when following objects (falling leaves, birds) moving rapidly among differently lit surroundings.

The batteries take a charge very well, and I had no difficulties with them. However, being in a remote area limited my gasoline supply and thus limited my generator time, so I had to utilize my batteries to the fullest. I found that at least ten batteries were needed—charged alternately, with only three chargers, at night—to run the camera as much as I required. A fewer number of batteries would not suffice; towards the end of my expedition I found myself filming so much that I reached a stage where I ran out of battery power early in each day.

Working with insects as actors requires compromise. It is not possible to do all of your shooting on insects in their natural environment in an undisturbed state. Likewise everything cannot be shot or posed or staged specimens. In the study of the life of a particular insect, such as the army ant, both arrangements have to be followed. To concentrate on communication by antennal movements with the army ants I found that I had to bring certain individuals indoors and isolate and confine them somehow so that I could hold focus on them when they were carrying on their rapid acts. To do so, I devised another type of cage which I christened the "shooting gallery". It consisted of two chambers, one made of a plastic cup, the other a plastic box, connected by a cylindrical plastic tube. One wall of the tube I removed and replaced with a clean microscope slide, giving me a perfectly flat, transparent surface through which to photograph. I introduced large numbers of army ants into the cup

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chamber and after a short while they adjusted to their new surroundings and began migrating back and forth through the inter-connecting tube. On the tube I had aimed the lens and focused in on a very narrow, shallow area through which the ants were traversing. I was able then to follow their most detailed and intricate movements without loss of sharpness, and because of the convenience of being indoors I could control my light to a fine degree. This method was very successful in producing an interesting record of army ant antenation.

Most of the other aspects of army ant biology, behavior of raiding columns, formation, positioning, and activity within the bivouac, migration of the colony, etc., had to be done on "location," i.e., in the natural environment of the rain forest. As already mentioned abundantly, lighting was the foremost problem. Here it was solved in two ways—one, by cutting down trees or—two, by bringing in artificial light. Both proved unsatisfactory. Cutting down trees obviously is very time-consuming and destructive, not to say anything about the work involved, and the alternative requires transporting heavy equipment on your back in addition to the camera gear.

One time, with the help of an associate, I took the Honda 2000 generator into the forest by harnessing it to a rope sling and carrying it on our shoulders with two poles slipped through the sling. The generator and other gear added up to a very full load and by the time I arrived at the scene of the army ant swarm I was nearly exhausted and had little left to put into the film work. This kind of photography is a far cry from the Hollywood scene where the cameraman has a large crew of backup men to haul his gear around for him and keep him supplied and free of any worries except his photography.

Again, using fast film was no solace in the close-up work, particularly because it, too, was inadequate even with an ASA of 160 to pick up enough light for proper exposures. Graininess also became an important factor and especially troublesome in dealing with microscopic objects, taking away considerably from the sharpness of fine images, such as the edges of body structures, fine bristles and other minute portions of the insect's anatomy. The realization is again evident that close-up photomicrography demands a high-intensity artificial portable light to permit the use of fine-grained film and small apertures.

Among some special successes which I feel were made possible by the versatility of the Beaulieu equipment was the

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capture on film of an extra-large boa constrictor. The snake had secreted itself in a deep shadow beneath a small bush and was unfilmable at the normal film speed, but by slowing the camera down to two frames per second and using the tripod I was able to obtain a very satisfactory sequence on the snake. The snake was very quiet and moved very little so there was no problem of jerking action on the film. Only because the Beaulieu was easily switched to this film speed and I could quickly load fast films at hand in my shoulder bag was I able to get this picture before the snake escaped.

Time-lapse sequences are also easily set up with the Beaulieu. A group of paper wasps began constructing a large carton nest on the side of the station one day, and I brought out one of my second cameras and set it up on the stationary tripod and adjusted it for exposures at several-hour intervals. The shutter was released by hand; over a period of a week I obtained an interpretive record of the stages of the construction of a wasp's nest.

Many of the insects of the rain forest walk with a peculiar gait. Their advance motion is not regular and smooth but rather broken into a series of short jerks to the front and half jerks to the back so that the two steps forward are taken in couple with one step backwards. The perambulation is more similar to a dance than to a walk. It is sort of a rhumba-like motion carried on at a slow speed by the animal. I have surmised that way of walking has some survival value to the insect, perhaps giving it the appearance of a twig or leaf moving in the breeze rather than a live insect, and thus escape notice by a passing predator. I was able to get some very interesting effects by speeding up the action of this rhumba walk by shooting it at 16 frames per second.

Like my predecessors in the New Explorer series I found myself acting in a multiple capacity as the photographer, set arranger and designer, light man, technical consultant, and in part, one of the actors. This presents a unique challenge to any film maker. I think that only because of the ease with which I was able to adapt to the Beaulieu made it possible to accomplish the task. The big difference between the work in Alaska and mine in Central America was the amount of the close-up work that was included. Practically all of my real problems lay in this area and shooting with 16mm solved at least one of the major problems; that is, magnification of the image without tremendous light loss. With 16mm, shorter extension tubes are required to fill the frame than

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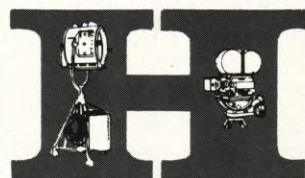
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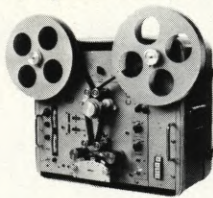
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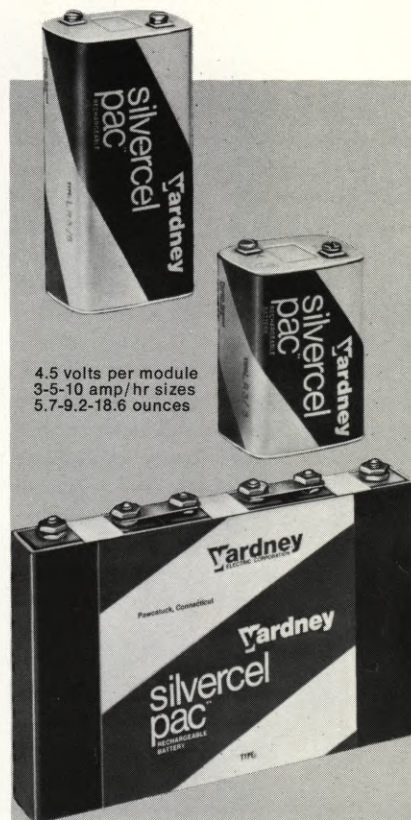
Nature has gone on rampage in the rain forest. She has produced a multitude of unbelievable objects of beauty—in Costa Rica alone a thousand varieties of orchids. She has produced incredible shapes and forms with her gigantic horned beetles and exercised all means of inventiveness in giving her creatures a greater survival ability. With her luminescent fireflies a nightly walk through a virgin rain forest is like a walk on the surface of another planet. Alice's wonderland becomes real. So much is strange. Even a biologist with training in the identification of the native trees of North America is like an ignorant child before the immense variety of the plant-life in the jungle. Trees take on the form of weeds, weeds mimic vines and vines become trees. One cannot trust his own eyes and experience half of the time. All this provides a completely new place for the eye of man and the camera.

Alan Landsburg, himself, came to visit me at Rincón, and I saw after a short time of only one day that he felt this awe and estrangement that so many other visitors feel. He brought a professional crew consisting of Jeri Sopenan, camera, and Glenn Winters, sound.

Up until the time of Alan's arrival my luck in finding army ants was very limited. I had heard that Alan was one of those rare persons who seems to be a perpetual bearer of good luck wherever he goes, and this was proven to me to be true. Even on the day of his arrival we stumbled across a healthy colony of army ants in the migratory phase and were able to get some interesting footage. I had walked the same trails for two weeks prior without seeing a single ant.

We had planned to go back and work more with the colony the next day but because of a rainstorm we had to stay indoors most of the day during which time sound-sync sequences were completed. I had given up hope of finding the colony again on the third day, thinking it would have marched off in some other direction, but Alan's luck would not let this happen. On the morning of the third day we ran into the same colony of ants right outside the station. Instead of going in the opposite direction they had come our way, unbelievably so, and were actually crossing an open space in the full, bright sunlight which is very unusual for them. Not only were they making themselves available for study and photography but were interacting and crossing paths with another kind of ant, the leafcutter ant which was another subject desired for the project. The unique opportunity

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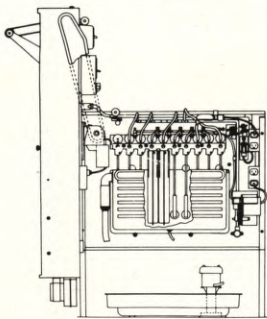
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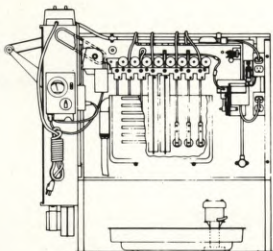
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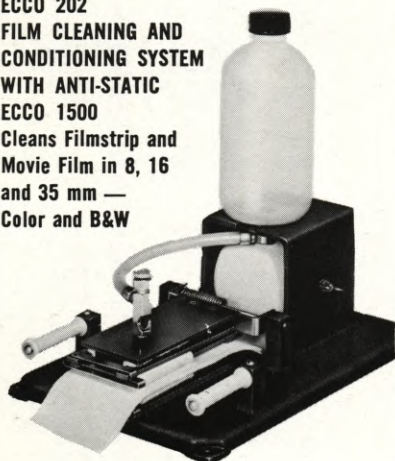
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that we thus had to work with and photograph the primary objects of our search left me astounded. Here I had a professional camera crew on hand and even a director to make the actors do precisely what they were supposed to do.

Some of our sequences were taken indoors with flood lights and the ol' Honda 2000 had a tough time keeping our 500-watt flood lamps burning brightly. Jeri would set up his camera and position himself ready to film. I would assume my place as actor, and Glenn was ready with the sound equipment. Alan directed and listened for the choking of the generator as a signal to unscrew a light bulb quickly before the power plant shut down from overload. But, improvised as it was, the inventive ability of these technicians overcame the problems and the results were completely rewarding.

The experience of living for an extended time in the rain forest and being able to use this unexcelled camera equipment has stimulated me tremendously. I look upon the adventure as a high point in the past, and it makes me hungry for a chance to do it again. Next time I will investigate lighting apparatus for close-ups much more extensively than was done for this episode and look to the possibility of having the newer model Beaulieus with the built-in power zoom and prefocus control and other implementations.

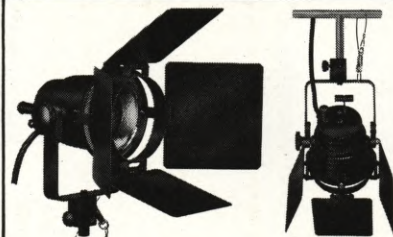
I argued with the Landsburg people at the beginning that the proper way to make a documentary on army ants was first to acquire a biologist who specialized in this type of ant, and secondly to hire a well-equipped team of professional photographers trained in close-up work. This seemed obvious to me. But they convinced me that what they wanted was neither of these things, because they wanted to prove a couple of points. First they wanted to give the scientist a chance to learn something new that he had always wanted to learn but never had the time or opportunity before and secondly, to test the Beaulieu in the hands of a relative novice in cinematography. For both of these aims I was eminently qualified. As I look back upon my reluctance, I am glad that I was talked out of my objections and shown the rationale of these objectives.

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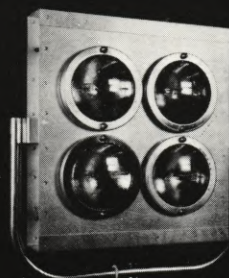
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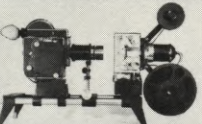
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"THE NEW CENTURIANS"

Continued from Page 1031

the car, there was sometimes a distracting little bounce—especially when using long lenses—no matter how rigidly the mount was rigged. Then, one day, Marty noticed what looked like a big formica tabletop, about six feet long and an inch-and-a-half thick and two feet wide. He laid that across the hood of the car with some furniture padding under it and tied it down to the fenders. He mounted the Super-grip to the surface and put on a little drop-down bracket that keeps the base of the camera very low—practically touching the hood of the car. This worked out very well, because you could slide the Super-grip anywhere on the smooth surface of this tabletop thing and lock it where you wanted it.

We also used the Dynalens on several occasions, when we were doing running shots across railroad tracks or very rough streets. It was especially valuable in smoothing things out in that chase that takes place under the bridge. The operator tried it once, just in rehearsal, without the Dynalens switched on and he said that he couldn't even follow the action until he turned it on.

The wildest part of that chase we weren't able to light at all. It took place down the middle of Broadway about 4:00 o'clock in the morning. We had control of a stretch eight blocks long, including the intersections, and there was absolutely no way to light the street. The stunt drivers were doing crosses and all sorts of things with, once in a while, an unexpected car that wasn't supposed to be there getting into the act. I rode in the back seat of one of the cars and the director rode up front—and those were some *hairy* rides, believe me.

The toughest problem with those shots was determining where to put the point of focus. If you are shooting straight forward like that with the lens wide open, you see a plane of sharp focus moving along with you. The question is, where do you throw that plane so that it will most effectively cover the action you want to show? We apparently picked the correct spot, because it seemed to hit the other cars just right as it went along.

All of the interiors in "THE NEW CENTURIANS" were the real thing, and lighting them presented some stimulating challenges. Fitting into this category is the opening sequence where the officers are briefed in the squadroom by the sergeant. We shot it on the second floor of the old Hollenbeck Police Sta-

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tion in a big room that had one entire wall of windows. Dick Fleischer agreed to shoot toward the windows, which gave me a nice backlight. The soft light hitting across the desks and the people produced a very realistic, almost documentary, look.

The main problem was the sergeant in his so-called blue uniform (which I'm sure was black), sitting in front of a blackboard. This was almost too *cinema verité*, because there was no place to put any light to help separate him from the background, without it looking obvious. On the widest shots it was impossible to hide lights, but when we moved closer we were able to sneak in a few kickers—sharper lights with fresnel lenses—and these provided a bit of separation. I don't like to see unmotivated backlights or kickers, but we did use them on the uniforms for separation and they made a tremendous difference.

In preparation for shooting this sequence, the Art Director had taken all of the old dirty screens off of the windows, thinking this would be helpful, and he was going to replace them with brand new screens. I told him: "It will really help me if you will put the old cruddy screens back on and even spray them a bit so that they're a little denser, because we've got North light and, at certain times of day, it gets pretty hot out there." Being a very knowledgeable Art Director, he did this and it helped a lot.

It was a pretty big room and, on the opening shot, we took in a 180-degree angle of the damned thing, so there was nowhere to hide lights. The problem was that we had to carry the window-light effect clear across the room. We hung some one-by-two's on the flimsy supports of the old fluorescent lights, which were still in there, and used these to hang a lot of Masterlights and other focusing quartz lights. Then we draped a lot of Velon—which is a very soft, pure white, flexible plastic—to diffuse the light. It cuts the illumination down by a little more than half, but it produces a marvelous soft light with no shadows at all. We used it a great deal in front of the lights throughout the entire picture, when we wanted a soft light effect for an interior.

The cables from the Masterlights were spread out across the ceiling, with each one going to its own transformer pot. We directed each light toward a certain part of the room. If we needed an intense beam in a particular place, we would use a spot-type lamp. We used the wide-beam lamps in closer. All of the lights had Macbeth filters on them for daylight balance. If we needed a little more light in a corner, we would

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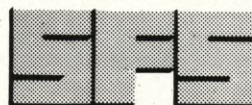
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just goose up that particular light from its pot on the transformer.

This type of lighting arrangement extended, in a very natural way, the effect of the window light, which actually came only 10 or 11 feet into the room. We started with the available light and then amplified it with matching artificial light coming from the same general source.

In tiny rooms, such as those inside the wetbacks' apartment, there was usually no place to hang any lights at all. In cases like this, we would drape the ceilings and walls with highly-reflective "space blanket" material and bounce the light from wherever we could hide a few lamps.

There were several interiors that were lighted with fluorescent lamps, where you saw the ceiling and the fixtures. When you photograph fluorescent lamps without any correction, they go rather green, but I was able to get a new type of fluorescent lamp which Sylvania makes that has a correlated color temperature of just under 3200° Kelvin and we replaced the existing units with these. The new lamps give out quite a bit of light all by themselves and, in many cases, we had to add only a couple of soft, focusing quartz lights, which did the job nicely and carried out the feeling of soft light. In large areas, such as the bank used in the silent-alarm robbery sequence, we replaced the fluorescent lamps with the color-correct units and augmented their light with a few 10K's—which are a godsend for large areas.

When we used to work mainly in studios, the photography (which was regarded as very beautiful at the time) was lighted mainly from the tops of the sets and we used to place shadows around the rooms where there would not be any shadows in an actual day-time situation. The object was to make everything and everybody look beautiful. But things have changed greatly since then and the object now is to make things and people look the way they really are.

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"THE POSEIDON ADVENTURE"

Continued from Page 1027

"Broadway"—we have lights hidden in the floor and in doorways, and the end wall is lighted to at least silhouette the people when they are otherwise out of the light.

QUESTION: What kinds of lighting units have you been using to achieve these effects?

STINE: We've been using mostly small quartz lights that we can tuck away in corners, and they've worked out fine. In some cases we've let the practical lights in the set show and also illuminate the people, and this has also been very satisfactory.

QUESTION: I noticed on another part of the stage a high tubelike shaft. Can you tell me how you managed to shoot inside that thing?

STINE: It wasn't too easy to light. The tube is about eight feet in diameter and 32 feet high. It is in three sections, each of which has a vent coming into it. There is one practical light burning in the wall and all the other lights are out. We had to take that one practical light and let it be the source for all of the light in the tube as the people are climbing up it and we're following them all the way with the camera. To further complicate matters, there is water running down the sides of the tube and steam coming out at various points along the way, which makes it quite menacing. I had an Arriflex camera shooting straight down from the top of the tube, with two lights right alongside the camera. I took one lamp and snooted it, so that the light from it would not illuminate the circumference of the tube, but would penetrate right to the bottom and hit the water that was rising below. The other light at the top flared out in a broader pattern and illuminated the area near the camera. These two lights were all that I used and they worked out very well.

QUESTION: What about the problems of shooting in that inverted engine room set, with all the smoke and fire and steam raging about?

STINE: Just getting everything to click at the same time in such a sequence is a continuous hassle—putting a new gas tank into the jets for the flames, making sure the arcs are loaded with full carbons, wetting the actors down to just the right degree. There are about fifteen little things that have to be coordinated

UNDERWATER

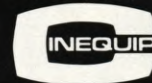
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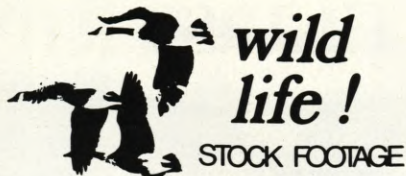
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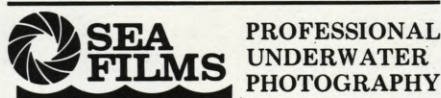
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to work together simultaneously. As far as lighting is concerned, I started out by using 10K's and this worked out very successfully for the closer shots. But in order to get the longer shots in the engine room, it was necessary to go to arcs. It's a huge room with lots of plumbing and tubes—which tend to cut down the illumination—and the walls are coated with a paint that looks like streaks of oil. In order to get a good basic exposure at T/4.5 under these conditions, it was essential to use arcs. The intensity of light at the point of exposure—where the people are—is 250 foot-candles, but the flames and the smoke that we have in front of the arcs cut it down to between 100 and 150 foot-candles a lot of the time. When the flames dissipate and let the full lighting come through, we have the 250 foot-candles again. This makes it a bit difficult to maintain consistent exposure. Parts of the scene may be a bit over or under-exposed, but with the flickers flashing through, you won't notice it—and it makes for a great effect. Since there is so much fire flaming about in these scenes, we've had to warm up our lights. We've been using MT-2 filters on all of the incandescent lights and yellow carbons in the arcs. The MT-2's produce a light that is almost exactly the color of fire—which is actually rather orange. Fire doesn't go red until it's underexposed about three stops.

QUESTION: On a picture as complicated as this, there are bound to be mishaps. Have you had any catastrophes yet—aside from those in the script?

STINE: We had one experience that was a little bit exciting at the time. Out on the backlot there is a water tank that goes down to about seven feet at the deep end. They can build part of a set on a wheeled platform that rolls on tracks down into the tank, and we've used this several times to show sets going underwater when the ship turns over. One day we were shooting a scene in which the water is supposed to rush in on the actors. I was using two cameras—the Panavision camera up high and an Arriflex down on the water. They had given me a "safe" waterline for the Arriflex and we set it up as close to the water as possible. When it came time to do the shot, the set was lowered into the tank and the water came rushing through—but the platform didn't stop lowering where it was supposed to and we ended up with the water going clear up over the Arriflex and around the magazine. That was quite an experience—but otherwise, things have been going very smoothly. ■

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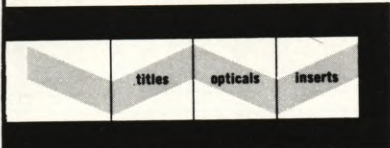
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CINEMA WORKSHOP

Continued from Page 964

periods between takes, the camera should be put in the shade or other cool spot.

I have been stressing the desirable effects of storing film at reduced temperatures. However, it is *not* desirable to shoot with film that is very cold. At temperatures below freezing, the film becomes very brittle. This not only increases the probability of the film breaking, but it also increases the film's "plastic memory." All film has "plastic memory," that is, it retains the shape it was formerly in. If film was on a spool, one can straighten it out, but it will curl up again when it is let go. The pressure plate and aperture plate in the camera must keep the film perfectly flat during exposure, even though the film naturally wants to curl up. At low temperatures this effect is magnified and it is possible that the curling forces in the film may cause "breathing" in the gate. In low temperature filming, it is a good idea to keep extra cans of film in pockets close to your body. Where possible, keep film indoors until the last moment. ■

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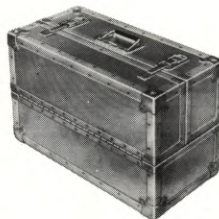
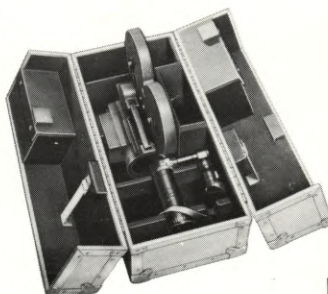
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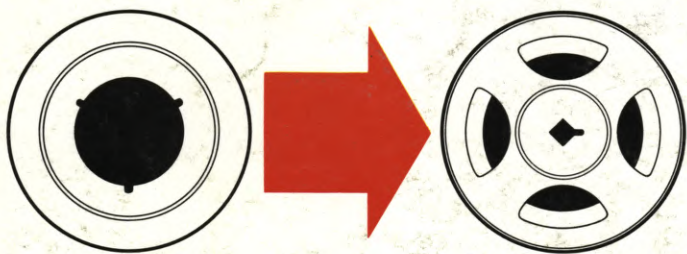
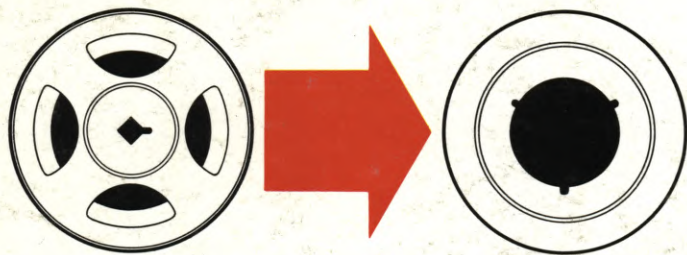
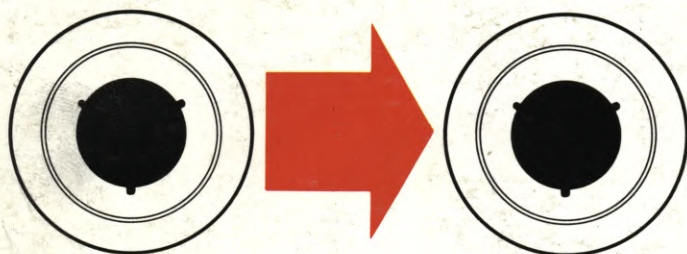
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