American Cinematographer
International Journal of Motion Picture Photography and Production Techniques
APRIL 1979 / $1.50

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1968 HANDHELD WIRELESS MIC
1969 TRANSISTORIZED SYSTEM
1971 CRYSTAL CONTROLLED RECEIVER
1972 PORTABLE RECEIVER
1974 HELICAL FRONT END RECEIVER
1976 DIVERSITY SYSTEM
1978 PORTABLE DIVERSITY RECEIVER

1979

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In 1964 Vega developed the first wireless microphone system that offered full-fidelity sound, the first real innovation in microphones in over 50 years. Now we are proud to introduce our latest innovation . . . Dynex!

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American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

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

Editorial—Advertising—Business Offices
1782 North Orange Drive
Hollywood, Calif. 90028
(213) 876-5080

APRIL, 1979 **VOL. 60, NO. 4**

ON THE COVER: The Kilauea volcano on the island of Hawaii obligingly spews its fiery fury 400 feet into the air in a spectacular eruption captured by the IMAX cameras for "GENESIS", a 32-minute film about the origins of the Earth, produced by Graphic Films Corp. for the new William L. McKnight/3M Omnitheater in St. Paul, Minnesota.

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and 10KW Fresnel Lens Fixtures

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New 5KW, 10″ lens

New 10KW, 14″ lens

Here's the new line of lighting equipment that will lighten the load you take on remote broadcasts and save some valuable space in your studio.

The 2KW Bambino has a 6″ lens, but delivers remarkable light output. It's so small and lightweight you can probably use it in spots where you needed a 2KW but where only a 1KW would fit before!

All three of the Bambinos have the same quality and craftsmanship you'll find in all laniro fixtures. The extraordinary attention to detail, advanced engineering and unique use of high quality components have made laniro the accepted standard for durability in television and film the world over.

See how much light you can get from a lighter, smaller, more convenient package.

Ask to see a new laniro Bambino soon.

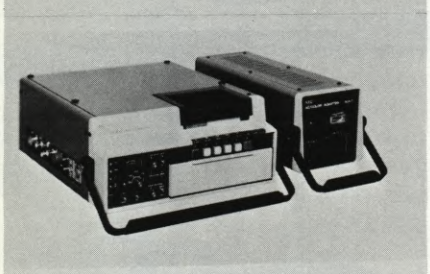
QuartzColor laniro

Strand Century sells and services a wide variety of laniro lighting fixtures for television and film, as well as the familiar Strand Century dimming and control equipment found in all three major networks. For a complete catalog, see your Strand Century representative or dealer, or write to any Strand Century office.

WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE

NEC's TTR-5 1" Helical "D" Format VTR



NEC's TTR-7 1" Helical "D" Format VTR
(Shown with AC/Color Adapter, at right)

NEC'S 1" HELICAL FORMAT "D" PORTABLE VTR'S AVAILABLE FROM CINEMA PRODUCTS

Cinema Products Corporation announces the availability of two outstanding cartridge VTR's manufactured by NEC, Japan—the TTR-5 and TTR-7 one-inch helical broadcast format "D" video tape recorders. Both machines are fully compatible, utilizing NEC's advanced self-threading cartridge design, which eliminates the majority of field handling problems. Designed for rugged use and reliability combined with the ultimate in stability, the TTR-5 and TTR-7 modular construction allows easy in-the-field replacement of video head cartridges.

The TTR-5 was designed for light studio use, mobile van or fixed location remotes where studio-type flexibility of outputs and monitoring are desired with the portability of a broadcast quality machine. Weighing only 55 pounds, and operating from an internal 110/115 volts AC power supply (or optional external 12-volt DC battery), the TTR-5 represents uncompromising quality with the ease of tape handling afforded by the NEC self-threading cartridge.

The TTR-7 was designed exclusively for *portable* operation and rugged reliability in the field. It is a lightweight, *over-the-shoulder* unit weighing under 33 pounds, including tape and battery!

The TTR-7 features an internal battery which will drive a minimum of two 22-minute self-threading tape cartridges on a single charge (continuous run). Despite its lightweight design and portability, the TTR-7 has a built-in video confidence head, edit system, full status indicating system, and will play back in color (with the use of an optional AC/color adapter). The most lightweight of all portable 1" VTR's, the TTR-7 features a virtually foolproof servo-control system. It is ideally suited for the wear and tear of remote use.

The TTR-7 one-inch helical video tape recorder is priced at $35,000. The optional AC/color adapter is priced at $6,000 approximately.

For further information, please write to: Cinema Products Corporation, 2037 Granville Avenue, Los Angeles, CA 90025. Tel: (213) 478-0711 or (213) 477-1971.

•

E-V INTRODUCES LOW-COST MICROPHONE SHOCK MOUNT

A new shock mount clamp, designated the 313A, was announced by Greg Silsby, Professional Products Sales Manager at Electro-Voice. The unit has the outward appearance of being a standard stand clamp, but is actually a whole lot more.

Meant to hold microphones with an approximate 3/4" barrel diameter, the 313A is manufactured from polycarbonate and metal to withstand the abuse commonly encountered in "real world" use. The microphone itself is suspended in the shock mount by four replaceable urethane bands. A hinged metal latch is provided for those applications that require only temporary shock mounting of the microphone, or, when used with a supplied set screw, the 313A becomes an inexpensive semi-permanent shock mount for those applications that don't require frequent microphone changes.

"The 313A is intended to solve an inherent problem in the broadcast and sound reinforcement industries," according to Silsby. "That is, the need for a small, unobtrusive shock mount for cardioid microphones. Cardioids, by their nature, are ideal microphones for broadcast and sound reinforcement applications, but are also more susceptible to handling and mechanical noise than omni's." Silsby adds that "spider-type, boom shock mounts, as effective as they might be in some applications, look a little out of place in front of a lecturer's or broadcaster's face while he is speaking."

The 313A should also prove valuable in the recording studio where there is not only a need for shock mounted microphones, but there is also a need for flexibility when it comes to microphone placement or microphone selection. The 313A should easily solve both problems. This same requirement also would apply to the serious home recordist, and the low cost of the 313A (under $23) makes it an easily affordable addition to any microphone setup.

For further information contact Electro-Voice, Inc., Dept. SH, 600 Cecil Street, Buchanan, Michigan 49107.

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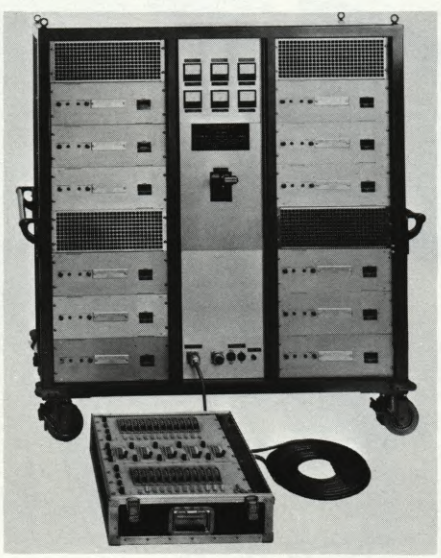


PORTABLE DIMMER FROM MOLE-RICHARDSON

Mole-Richardson Co. (Hollywood, U.S.A.) has recently introduced the new portable Type 8881, 144KW Mole-Control 12-pack Dimmer. The unit incorporates 12 Skirpan Astral® electronic A.C. dimmers each having a capacity of 12 KW. The dimmers are packaged in a steel housing, which has been specially designed for portability. The standard input power to the 12-pack is 120/208 volts, three phase, 400 amps per phase, with separate ground. The unit also has voltage and current meters for monitoring input power on each phase. The power input, located at the rear of the housing is

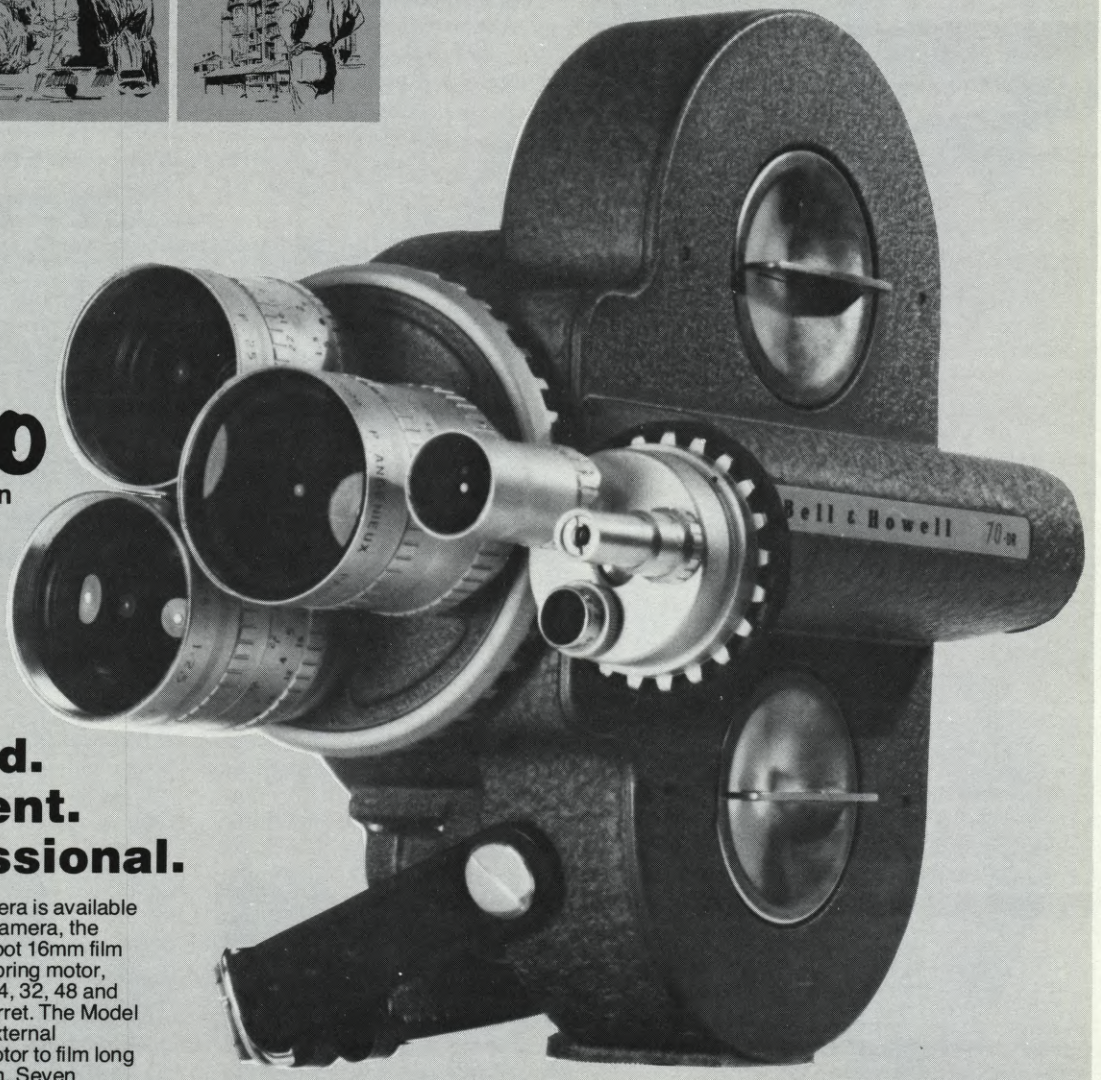
Continued on Page 359

THE BASIC CAMERA

It's true you can find more sophisticated 16mm cameras than the Bell & Howell Model 70 Filmo. But there's no question that the rugged and reliable Filmo can perform with equal efficiency many of the jobs for which those sophisticated and expensive cameras are used. Make no mistake, the Filmo is a professional camera in every sense of the word. In fact, more than 50,000 have been in use throughout the world since the camera was first introduced. The Filmo gives you quality pictures of about anything you might choose to film, from news events to documentaries, athletic contests to industrials, medical films to stock footage. It is a compact, versatile, hand-held 16mm camera and features a three-lens turret that can be fitted with a combination of "C" mount lenses. With the Filmo's convenient ratchet-wound spring motor, you can shoot at any one of seven speeds — 8, 12, 16, 24, 32, 48 or 64 fps. And, you can increase the normal 100-foot film capacity to 400 feet with the addition of an external magazine and motor drive. Brand new Filmos, accessories, parts and servicing are now available from AGE Inc. and through our worldwide dealer network. Call or write today for additional information on Filmo 70-DR and 70-HR cameras and available optional accessories.

Filmo
Model 70 Design 16mm Camera

Filmo 70-DR Camera is illustrated with set of Angenieux 10mm, 25mm and 75mm lenses with companion viewfinder objectives.



It's rugged. It's efficient. It's professional.

The Filmo 70 Design Camera is available in two models. The basic camera, the Model 70-DR, has a 100-foot 16mm film capacity, ratchet-wound spring motor, seven speeds (8, 12, 16, 24, 32, 48 and 64 fps) and a three-lens turret. The Model 70-HR is adapted for an external 400-foot magazine and motor to film long scenes without interruption. Seven filming speeds, Veeder footage indicator and shutter stabilizer are included. Magazine and motor are extra.

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The Precision of Swiss Movement... Is Also in Motion.

Supremely refined, yet unbelievably rugged.

When it comes to creating delicate instrumentation, Swiss perfection is legend. No less so with the impeccably engineered BOLEX H-16 EBM. The product of 50 years of Bolex experience, it achieves a new standard of accuracy for 16mm cameras with a realistic price.

To fully appreciate this accomplishment, consider the imperatives of professional filmmaking. And how superbly the EBM serves them.

The First Imperative: Effortless Handling. The photo shows a fully equipped yet perfectly handheld camera—from its one-amp battery in the pistol grip to its unbelievable 16-100mm f/1.9 Vario Switar automatic power zoom lens with built-in light meter. Total weight of this rugged, ready-to-roam package? An incredible 12½ lbs.

The Second Imperative: Uncompromising Performance. All the essentials for professional results are gathered here: chronometer accurate electric film drive, suitable for synchronized sound with your choice of crystal or sync pulse generator. A diaphragm presetting device that lets you focus and frame with full light coming into the flickerless reflex viewfinder. And all the other niceties that help you refine your technique and your results, including: variable speeds from 10 to 50 fps, built-in filter slot, automatic threading and full rewind.

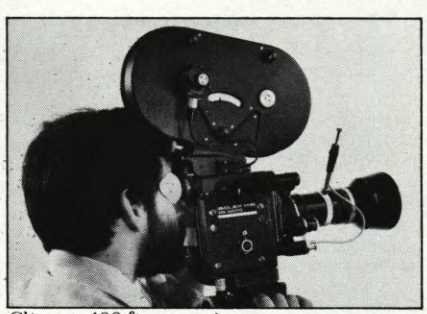
The Third Imperative: Adaptability With its positive-locking large bayonet mount and optional C-mount adapter, you can attach virtually any lens to your Bolex EBM. And for stability under all shooting conditions, choose among our versatile tripod, precision-machined monopod, or shoulder brace.

There are two power supplies available for the Bolex EBM—as much power as you'll ever need for continuous studio or on-location shooting. And with the easy clip-on 400 ft. magazine, your film capacity is sure to measure up to all your shooting requirements.

The Final Imperative: Affordability When we say that you can rig up a quite complete system for less than half the price of other high quality 16mm cameras, you may be astonished. So initially were the many pros who have since discovered that they needn't spend a fortune to own a system which can help them build one.

We urge you to inspect the Bolex EBM carefully before you purchase any other camera. And set the perfection of Swiss movement into motion for you. **Bolex...First in sixteen.**

Large, positive-lock bayonet mount.



Clip-on 400 ft. magazine.

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16MM CAMERAS

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ARRIFLEX "S" w/VS motor, 16mm, 25mm & 50mm Schneider lenses, matte box, 2 ea. power cables & battery belt & case. Rebuilt in excellent condition. **$3595.00**

ARRIFLEX 16BL w/12-120MM Angenieux lens, Universal motor 12VDC, single system module, amplifier, 2 ea. 400 ft. magazines, 2 ea. power cables, battery belt and cases **$8995.00**

ARRIFLEX "M" w/VS motor, 2 ea. 400 ft. gear driven magazines, VS 8VDC motor, 12-120MM Angenieux lens, 2 ea. power cables & battery belt & case. Rebuilt in excellent condition **$5500.00**

Auricon "Super 1200" camera w/2 ea. 1200 ft. magazines, variable density sound with galvonometer, magnetic sound system and magnetic head, auto-parallax view-finder, tele-objectives, and sound & power cables. Used in good condition. **$1995.00**

AURICON "Super 1200" camera w/2 ea. 1200 ft. magazines, variable density sound with galvonometer, magnetic sound system and magnetic head, auto-parallax view-finder, tele-objectives, sound and power cables. Modified for Kinescope recording with TVT shutter. Used and in good condition **$2995.00**

Bolex H-16 Non-reflex with 20-6MM Berthiot zoom lens. Used in excellent condition **$395.00**

Bell & Howell 70 DL with 12.5mm, 25mm & 75mm lenses and matching objectives, filter slotted. Rebuilt in very good condition **$525.00**

MITCHELL 16MM High-speed model, 2 speed transmission 115VAC motor, low speed 24 to 100 FPS, high speed 100 to 400 FPS, special pin register high speed movement, lea 400 ft. and lea 1200 ft. magazines with film brakes, timing light block, 25mm, 50mm & 75mm Baltar lenses. Camera and accessories are in like new condition, variable shutter, directors finder & cases **$5995.00**

MITCHELL 16MM "Professional" 24 to 128 FPS, 115 VAC high speed motor, 24 VDC variable speed motor, 2 ea. 400 ft. magazines, 12-120MM Angenieux with finder & cases. Used in good condition. . **$3150.00**

35MM CAMERAS

ARRIFLEX 35MM IIC, matte box, variable speed motor, 2 ea. 480 ft. magazines, 28mm, 50mm & 75mm Schneider lenses, 2 ea. power cables, battery belt & cases. Rebuilt in excellent condition **$7200.00**

ARRIFLEX 35MM IIB, matte box, constant speed motor, 2 ea. 480 ft. magazines, 28mm, 50mm & 75mm Schneider lenses, 2 ea. power cables, battery belt & cases. Rebuilt in excellent condition **$3995.00**

MITCHELL BNCR, spinning mirror reflex, prime lens housing, 4 ea. 1000 ft. magazines, 220 VAC sync motor & cases. Top condition and fully maintained. **$12000.00**

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9mm THC T2 Kinetal	$375.00
17, 5mm THC T2 Kinetal	$375.00
25mm THC T2 Kinetal	$270.00
37.5mm THC T2 Kinetal	$250.00
50mm THC T2 Kinetal	$275.00
16mm f/2.0 Cine Xenon	$195.00
50mm f/2.0 Cine Xenon	$190.00
75mm f/2.0 Cine Xenon	$275.00
85MM Zeiss Sonnar f/2.0	$295.00
40mm f/2.8 Makro-Kilar	$295.00
90mm f/2.8 Makro-Kilar, WEAR adapter	$510.00
125mm f/2.8 Omnitar	$250.00
135mm f/2.8 Omnitar	$275.00
152mm f/2.8 THC Panchro	$625.00
300mm f/5.6 Kilfitt Tele-Kilar	$275.00

600/400 f/5.6 f/4.0 Kilar tele combi with 2X extender 1200/800 f/11 f/8 conversion in Arriflex mount. Used very good condition **$1770.00**

BNCR MOUNTED LENSES

Set of Super Baltar lenses 20mm, 25mm, 35mm, 50mm, 75mm, & 100mm **$3750.00**

NOTE: Sold only with BNCR camera.

Angenieux 25-250 f/3.2 . . . . . **$4800.00**

ARRIFLEX MOUNTED ZOOM LENSES

9.5mm-95mm f/2.2 Angenieux	$2795.00
12mm-120mm f/2.2 Angenieux	$1750.00
12mm-240mm f/3.5 Angenieux	$4950.00
25mm-250mm f/3.2 Angenieux	$4800.00

"C" MOUNTED LENSES

17mm-68mm f/2.2 w/finder Angenieux	$525.00
12mm-120mm f/2.2 Bolex "C" mount Angenieux with automatic diaphragm	$1450.00
10mm f/1.8 Angenieux	$310.00
12mm f/1.2 Elgeet Cine Navitar	$125.00
15mm f/1.3 Angenieux	$225.00
16mm f/1.8 Switar	$175.00
25mm f/1.9 B&S Omnipon	$ 70.00
25mm f/1.9 Super Comat	$ 60.00
25mm f/0.95 Angenieux SUPER SPEED	$525.00
25mm f/1.5 Elgett	$ 55.00
25mm f/1.4 Cooke Ivotar	$ 75.00
50mm f/2.0 RX Cine Xenon	$150.00
70mm T2.5 Cooke Panchrotal	$140.00
75mm f/2.5 Raptar	$ 45.00
90mm f/2.8 Makro-Kilar	$375.00
100mm f/4.5 Cooke	$ 25.00
105mm f/2.8 Omnitar	$ 50.00
125mm f/2.5 Omnitar	$295.00

16MM CAMERA ACCESSORIES

ARRIFLEX 16MM "New Style" blimp, fibre glass w/ bases for Arriflex "S" or "M," zoom extension for 12-120MM lens. 115VAC motor sync, all optics, remote switch control, and case. In like new condition. **$2575.00**

ARRIFLEX magazine 16mm x 400 ft. "S"	$350.00
ARRIFLEX torque motor for "S" magazine	$360.00
ARRIFLEX magazine 16mm x 400 ft. "BL"	$750.00
MITCHELL magazine 26mm x 400 ft	$125.00
MITCHELL magazine 16mm x 1200 ft	$450.00
ECLAIR magazine 16mm x 400 ft. NPR.	$1500.00
ECLAIR motor crystal Perfectone w/control	$800.00
Arriflex motor 115VAC for 16BL	$250.00
MITCHELL motor 12VDC variable 4-pin	$275.00
MITCHELL motor 115AC/DC 36-144 FPS	$350.00

35MM CAMERA ACCESSORIES

ARRIFLEX IIC motor 24VDC variable speed.	$275.00
ARRIFLEX IIC motor 16VDC constant speed	$375.00
ARRIFLEX IIC wide angle matte box	$250.00
MITCHELL magazine 400 ft. Standard	$ 95.00
MITCHELL magazine 1000 ft. Standard.	$155.00

CINEMA PRODUCTS crystal motor for BNCR with BNCR motor cover. Sold only with BNCR . . **$3750.00**

SOUND ACCESSORIES

ARRIFLEX single system amp & module for 16BL w/ all cables, like new	$1650.00
UHER 1000 Report Pilot	$ 575.00

BELL & HOWELL 1535 Optical sound projector . . . . . **$ 450.00**

BELL & HOWELL 385 Mag/Opt sound projector. . . . . **$ 495.00**

KODAK Pageant ARC sound proj-high intensity . . . . . **$ 900.00**

EDITING EQUIPMENT

MOVIOLA 16mm UL20S large screen, arms, lite well tray, footage counter, bag & frame. Used, excellent **$3200.00**

MOVIOLA 16mm UL20S small screen, arms, footage counter, composit picture head. Used, excellent **$2800.00**

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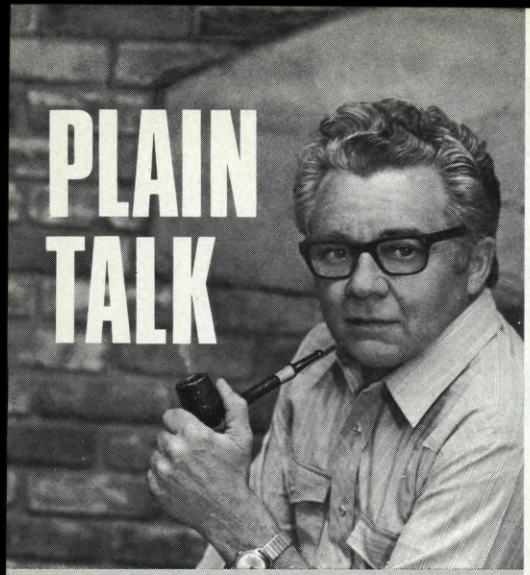


by J. Carl Treise

When your film processor is sick, will the manufacturer make a "house call"?

I get a little tired of hearing film equipment manufacturers talk about how much they care . . . and then not coming to your help, when you really need them.

When you have a problem, can you reach a top man in the organization, or are you shunted aside to some lackey? If your problem is serious, will they hustle someone out to see what's wrong and help you on the spot?

I'm disturbed by the fact that some manufacturers don't seem to give a damn any more, once they make a sale. If the delivery is weeks (or months) late, if the gear arrives without all the parts, if the unit doesn't work as promised, that's just too bad.

If anyone shows up on your doorstep, it's likely to be a salesman full of explanations . . . and that's about it.

A quotation should be more than just a piece of paper. It's a commitment between people. It's a promise by the manufacturer that he will build for you exactly what you need and if the equipment doesn't do everything it's supposed to do, he'll come back and make sure it does.

Anything less is a sham.

QUESTIONS & ANSWERS

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

Q A few weeks ago I shot some 500 feet of 16mm Eastman Color Negative 7251. This is very old stock that I have had for some years and decided to use up.

Unfortunately, I now find that there is not a laboratory in this country that can process this stock as they have all changed over to the new Eastman Color Negative 7247.

Could you please inform me if there is a laboratory in America that will process this film for me. Since the film is of a wedding I cannot reshoot on 7247.

A Sorry, we are quite sure that no lab is processing this material (this type is very old—before 7254—but same process) in the U.S.A.

I suggest you find a small lab that will process your film in "low temperature" positive (not CP-2) baths and get a useful negative that can be printed on an acceptable positive.

Q We continually get questions about becoming a member of the American Society of Cinematographers or have new subscribers tell us to sign them up for membership, the following information should be helpful to these people.

A The ASC is a cultural and educational group of Directors of Photography/Cinematographers who have become eminent in their field and have received screen credit on theater and television features. Having reached this stage, the prospect usually expresses an interest in becoming a member of the ASC.

If the candidate is qualified, then two active members of the ASC write to the Board of Governors sponsoring the applicant. They furnish biographical data, past records of employment of at least five years and a list of screen credits of the prospective member. High moral standards and good fellowship are required.

The Board considers the application and then sends a letter to all members to ascertain if there are any objections to the candidate becoming a member. If none has been received after a lapse of thirty days, then the candidate is invited to membership and is advised of the initiation fees and dues required. Upon receipt of these details, the candidate is then elected to membership.

Our Associate Members are those who are not cinematographers but are in related crafts such as laboratory, film stocks and camera equipment. Like the cinematographers, they are proposed and invited to membership. They represent the outstanding members of the motion picture industry.

These standards have been maintained over sixty years, thus bringing great respect and prestige to the members and the Society.

Q About a year ago I bought the Sennheiser K2U microphone shotgun, cardioid and omni directional. All my filming was confined to interior shooting and the Sennheiser performed well. However, when I started filming exterior shots a very slight air movement would cause severe wind popping even using a windscreen. I was told that by using a 100 Hz. high pass filter that popping would be dramatically reduced, it was not.

What, if anything, can I do to eliminate the popping and still use the K2U? If nothing can be done to use the Sennheiser outdoors, would you please tell me what microphone will solve this problem and where I can purchase same?

A This is a common problem and the best answer is first to improve the windscreen by using a zeppelin-type blimp and, possibly, use some additional windscreening or a so-called wind stock inside the zeppelin, and possibly a layer or two of a woman's nylon stocking on the outside of the zeppelin. Each manufacturer of microphones of this type, namely, Sennheiser, Electro-Voice and Shure, manufacture high-pass filters with various degrees of low frequency attenuation. For best results, the filter should be down 6 to 10 dbs at 100 Hz., and have a slope of 6 dbs or more per octave.

In the early recorders, we found many high-pass filters starting down at about 500 Hz. With step controls, 3 dbs to 10 dbs at 100 Hz. could be selected.

You should probably have your filter checked to make sure that its slope continues down to at least 6 dbs per octave. Some early filters designed for ordinary microphones were satisfactory in that use but would not attenuate low enough in frequency to stop the 102 frequencies and the resulting wind popping. ■

Vilmos Zsigmond looking thru a Tiffen polarizing filter. (Above Left)

"I've been shooting through Tiffen filters for a long, long time —and I intend to keep right on using them." Vilmos Zsigmond ASC

"It's always comforting to know when I'm shooting a multi-million dollar feature that all my equipment is the best there is. That's why I use Tiffen filters. Their colors are stable and do not vary, they match Kodak's gels to the nth degree, they're very well made, and they never come apart...even in the coldest weather.

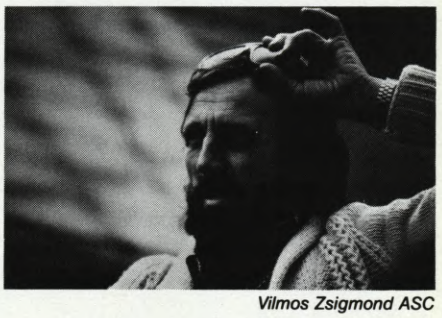
"I've been using them for all my films. Most recently they were used in shooting Close Encounters, The Deer Hunter and The Rose (soon to be released).

"When we shot Close Encounters we made great use of the polarizers, but it was the Tiffen low-contrast filters that really impressed us. We were particularly concerned about maintaining the delicate color balance from generation to generation. We didn't want the normal production footage to look different than the special effects footage which sometimes was one or two generations away. The low-cons made all the generations match.

"It seems to me that your low-cons are more finely graded than most of the others.

"I've been shooting through Tiffen filters for a long, long time—and I intend to keep right on using them.

"I would personally like to thank Nat Tiffen and the entire Tiffen organization for all their help to the film industry."



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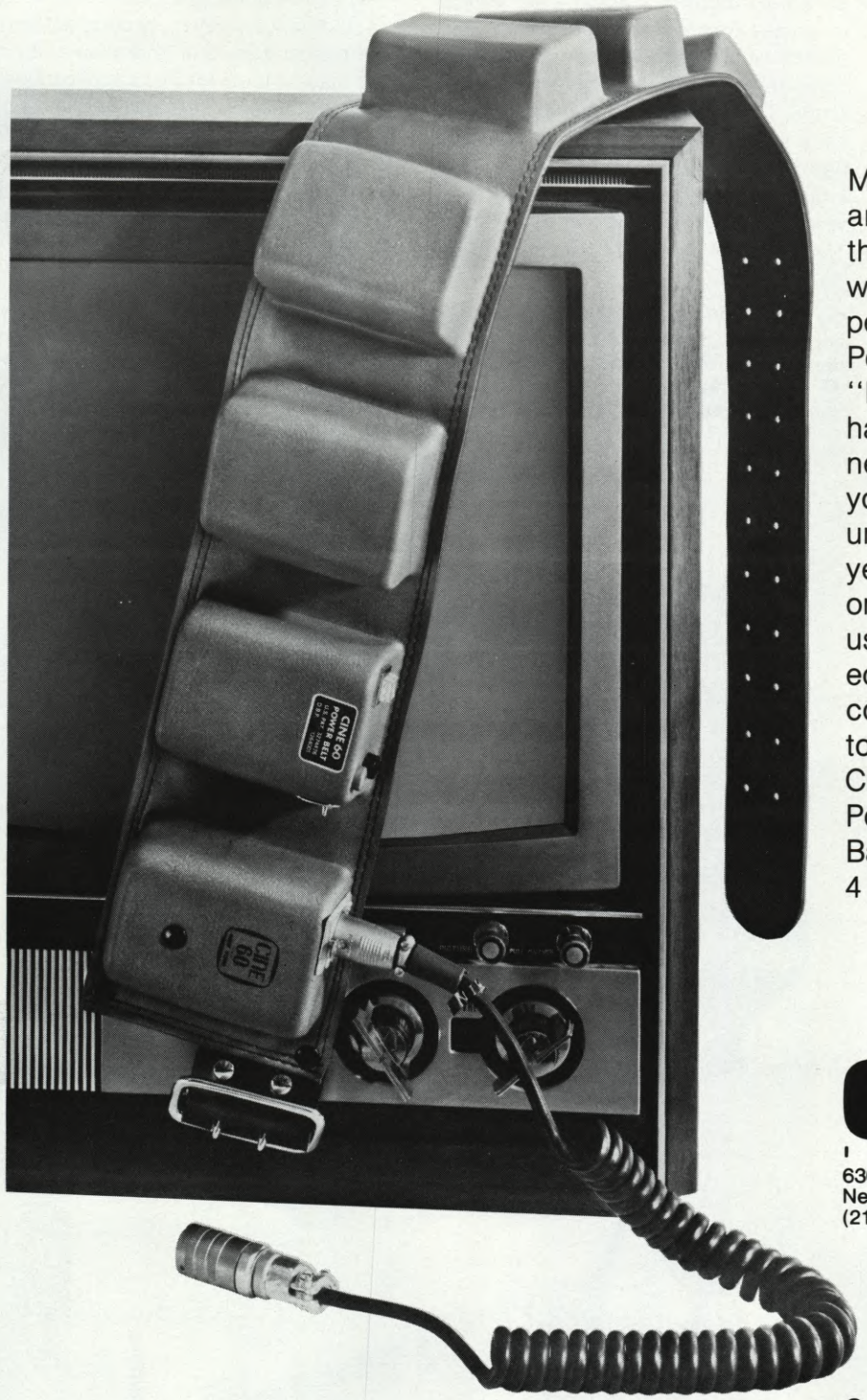

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CINEMA WORKSHOP

By ANTON WILSON

THE VIDEO RECORDER

A television camera and video recorder must be chosen as a system. Ideally each should have the same calibre of quality, as the final video product can only be as good as the weakest link. As with film, there are different VTR formats or types and some definitely deliver superior quality over others. However, the situation is not quite as cut-and-dried as it is with film, such as: "65mm is superior to 35mm which is better than 16mm." Before delving into the technical workings of the VTR, a brief familiarization of the more popular VTR types may prove helpful.

The first acceptable broadcast quality VTR was the 2" quad. Introduced back in the mid 1950's, it is still the backbone of most broadcast television operations. The 2" quad machine has been, and still is, the standard of VTR quality and not until very recently have there appeared new VTR formats to challenge the superiority of the 2" quad. The term "quad" comes from the fact that the video signal is put onto the tape by a high-speed rotating head assembly containing four video recording heads. It was this rotating head concept that was the major technological breakthrough enabling quality video recording. The tape is two inches wide and travels through the machine at 15 inches per second, which requires about a 10-inch reel of tape for a full hour's program. Broadcasters were pleased with the professional quality of the 2" quad and were willing to overlook the extreme size, weight and cost of these machines. Outside of the broadcasting industry, however, these undesirable aspects and the exorbitant costs for maintenance and tape proved prohibitive.

Recorder manufacturers thus developed the Helical Scan VTR. The low price and relative compact size of these helical machines were designed to fill the rapidly growing demand for VTR's among industrial, commercial and educational institutions. The helical scan machines come in all sizes and shapes and use tape widths of ½", 3/4" and 1". While all helical machines operate on the same basic principles, the method and quality of construction, number of heads, tape paths and recording electronics can vary so widely that the cheapest ½" helical machines are considered consumer electronics while the best 1" machines are considered close to broadcast standards. The U-matic format, which is basically a 3/4" Helical VTR in a cassette, has achieved a great popularity among industrial producers and ENG units of virtually every TV station in the country. The U-matic format was originally developed for industrial applications and in no way can be considered even near broadcast quality. However, its compact portable size and ease of operation and editing made it ideal for ENG applications. It was the development of the "time base corrector" that enabled the U-matic machines to be used in broadcast applications. While the quality is still inferior by broadcast standards, the extreme

Continued on Page 422

The SONY BVH-500 Portable One-inch Broadcast High-band VTR is only one of many models from several manufacturers, including AMPEX and HITACHI, that employ the new standardized SMPTE Type "C" VTR format. This new format, along with the SMPTE Type "B" format, represents a new technological age for video tape recorders, with quality equalling or exceeding that of the venerable 2" Quad.

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Outstanding Performance

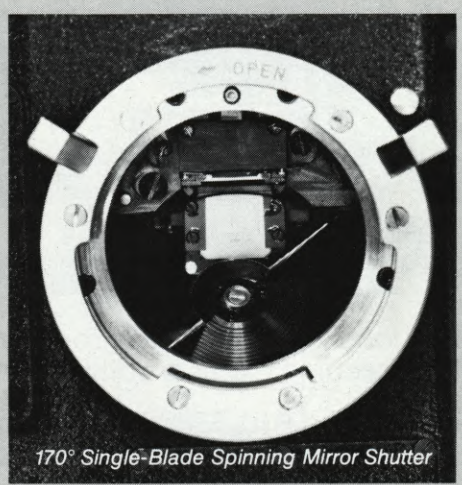
Lightweight, rugged and reliable, the "new generation" CP-16R features a belt-driven, focal plane-type, high-efficiency 170° shutter which delivers approximately 10% more light to the film plane. (And the elimination of one gear pass makes the new CP-16R even more silent in operation!)

Precision engineered and manufactured under the strictest quality controls, all CP-16R cameras leaving the factory are *guaranteed* not to exceed 30 dBA, one meter from the film plane. And, if equipped with Studio Rig, 28 dBA max!

Widest Range of Production Accessories

The CP-16R is the most versatile 16mm camera system designed for fully professional operation, with the widest range of optional important production accessories, all designed and manufactured by Cinema Products:

- *Studio Rig, with full production matte box and professional follow-focus mechanism fully adjustable to accommodate both zoom and prime lenses.*
- *CP Orientable Viewfinder, with 7" extender for convenient tripod operation.*
- *Cinevid-16 video-assisted monitoring.*
- *J-4 Academy Award-winning "joystick" zoom control, or J-5 zoom control packaged into a special handgrip.*



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- *Exposure control systems (fully or semi-automatic).*
- *Fully self-contained single system sound recording capability with Crystasound built-in amplifier.*
- *Comprehensive range of Crystasound recording system accessories such as: auxiliary mixer, pre-amplifier, 3XL-type magnetic heads, etc., plus Crystalink wireless transmitter/receiver systems.*
- *Steadicam™ — the revolutionary Oscar-winning camera stabilizing system which transforms virtually anything that moves into an effective camera platform.*

Ease of Maintenance

The CP-16R has proven itself as the most reliable professional 16mm camera with the least downtime. Certainly, it is the easiest camera to maintain. For instance, the modular rugged design allows the entire CP-16R drive assembly and complete circuit board to be replaced within ten minutes. Even under field conditions!

What's more, there is an extensive network of authorized service centers, well stocked with spare parts, located throughout the world.

Reasonably Priced

For all its sophisticated features, the CP-16R is the *most affordable* quality 16mm production camera available. (And, the shrinking U.S. dollar makes CP-16R prices more attractive than ever!)

So be sure to visit your local dealer and see for yourself what makes the CP-16R the definitive 16mm production camera. Ideal for filming 16mm feature and theatrical documentaries for 35mm blow-up, industrial/scientific films, TV commercials and news/documentaries, as well as all other applications where modern production techniques require the ease and efficiency of shooting single system sound with the quality and flexibility of double system sound recording.

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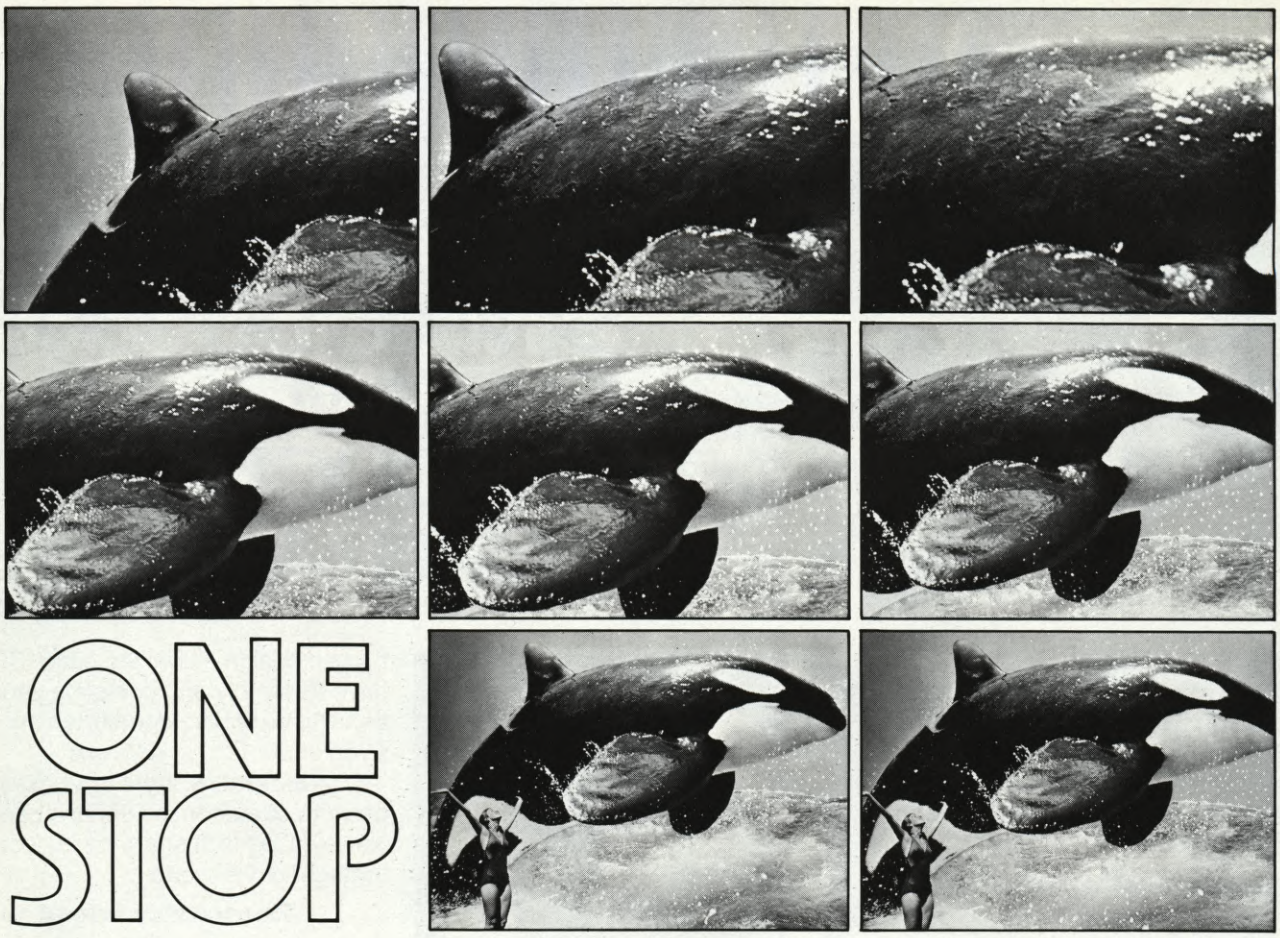

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Phantom or AB powered, the CL42S comes complete with windscreen, shock mount, carrying case and handle for hand-held applications. And it's rugged.

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The CH15S is actually more directional than a mini shotgun mike – in a package that's only 4 inches long that weighs less than 6 oz. Specially designed for boom and fishpole use in TV and motion picture studios, but equally at home wherever working space is small and you have need for a compact, highly directional microphone.

Compatible with phantom or AB power, the CH15S comes complete with windscreen, shock mount and carrying case. And, this microphone is rugged.

The Electro-Voice Warranty

Electro-Voice backs up these two microphones with the only unconditional warranty in the business: for two years we will replace or repair your CL42S or CH15S microphone, when returned to Electro-Voice for service, at no charge – no matter what caused the damage!

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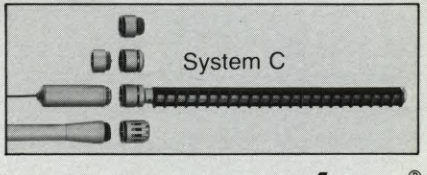

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THE BOOKSHELF

By GEORGE L. GEORGE

FACETS OF THE CRAFT

Film historian Kevin Brownlow's THE WAR, THE WEST, AND THE WILDERNESS celebrates the pioneer filmmakers who traveled far beyond studio walls to shoot features, documentaries and newsreels in authentic locations. Extensively researched and abundantly illustrated, this massive volume brings to life little known facts of historic significance (Knopf $27.50).

A perceptive film critic, Andrew Sarris has assembled in POLITICS AND CINEMA a striking selection of his weekly columns from New York's Village Voice. His outspoken and often controversial views of movies with political or social content abound in shrewd observations and stimulating pronouncements (Columbia U. Press $12.95).

In HOLLYWOOD'S CHILDREN, Diana Serra Cary draws on her own experience as "Baby Peggy" to trace the shocking story of filmland's exploited youngsters, few of whom achieved a screen career after their overworked childhood (Houghton Mifflin $12.50).

Roy Pickard compiles in HOLLYWOOD GOLD a complete listing of all movies that won an Oscar in any category. An excellent reference work, well organized (Taplinger $9.95).

Some 300 films dealing with the film industry's image of itself are extensively examined in HOLLYWOOD ON HOLLYWOOD by James Robert Parish and Michael R. Pitts with Gregory W. Mank, including pertinent comments, plot outlines and cast-&-credits (Scarecrow $17.50).

David Zinman's 50 FROM THE 50s surveys a neglected era of filmmaking, recapturing the mood of a period of growing costs, dwindling audiences, political witchhunts and the impact of television's growth (Arlington $25).

To readers interested in a *complete* survey of all new film, TV and other communication media books, this column recommends the authoritative monthly MASS MEDIA BOOKNOTES (Temple U., Radio-TV-Film Dept., Philadelphia, PA 19122; $5 yr.)

★ ★ ★

FILM LITERATURE CLASSICS

Arno Press has issued further volumes in its substantial series of reprints of significant cinema books long out of print or available only in libraries:

THE MOVIES COME FROM AMERICA by Gilbert Seldes, a 1937 book, examines the worldwide influence of US films ($20); HOW MOTION PICTURES ARE MADE by Homer Croy (1918) outlines film production techniques of the period ($30); CINEMATIC DESIGN by Leonard Hacker (1931) deals with the esthetics of the medium ($16); MUSIC FOR THE FILMS by Leonid Sabaneev (1935) is a handbook for composers and conductors ($15); FOUR ASPECTS OF THE FILM by James L. Limbacher (1968) surveys progress in color, sound, aspect ratio and 3D ($30); and THE BOOK OF THE LANTERN by T. C. Hepworth (1899), "A Practical Guide to the Working of the Optical (Magic) Lantern" ($25).

THE LIFE AND ADVENTURES OF CARL LAEMMLE by John Drinkwater (1931) recalls the early film pioneer who founded Universal Studios ($28); THE GREAT GOLDWYN by Alva Johnston (1937) documents Sam Goldwyn's rise ($15); JOSEF VON STERNBERG by Herman G. Weinberg (1967) is a perceptive study of the director ($22); and CINEMA 1950, 1951, 1952, all three edited by Roger Manvell, survey the world scene from a critical angle ($25 ea.).

MONEY BEHIND THE SCREEN by F. D. Klingender and Stuart Legg (1937; $15) and INVESTIGATION OF CONCENTRATION OF POWER—THE MOTION PICTURE INDUSTRY by U.S. Senate (1941; $15) deals with financial aspect of the industry; ANTITRUST IN THE MOTION PICTURE INDUSTRY by Michael Conant (1960), an economic and legal study ($20); FEDERAL MOTION PICTURE COMMISSION—HEARINGS BEFORE THE COMMITTEE ON EDUCATION by the U.S. House of Representatives (1914), a proposal to regulate the educational aspects of film; and MOTION PICTURE PROBLEMS by William Marston Seabury (1929), advocating international cooperation ($30).

★ ★ ★

NAMES ON THE SCREEN

Three notable additions to G. K. Hall's Theatrical Arts Series: ALAIN RESNAIS and FRITZ LANG, both by John Francis Kreidl, and NICOLAS ROEG by Neil Feineman. Scholarly, informative and insightful, these studies offer perceptive analyses of their films, supported by references and notes, bibliography, filmography and index. Each volume is prefaced by Warren French, the series' editor, with appropriate comments about the director's cinematic contribution and artistic concerns ($9.95 ea.).

Two excellent British Film Institute studies (N.Y. Zoetrope, U.S. distributor): ROBERT ALDRICH, edited by Richard Combs, is a discerning assessment of the director, whose interview reveals a keen view of American social reality ($3.25) and POWELL, PRESSBURGER AND OTHERS, edited by Ian Christie, which examines the nature of the collaboration in writing, producing and directing of these British filmmakers $4.50).

Lauren Bacall, in her autobiography BY MYSELF, comes across as a real person, far removed from the conventional movie star image. Her levelheadedness, sense of values, strong feelings for people and principles give a unique quality of purpose and authenticity to this exciting life story (Knopf $10.95).

In PAUL NEWMAN SUPERSTAR, Lionel Godfrey offers an in-depth study of the actor, throwing in many details about Joanne Woodward's career and their enduring marriage. Newman's acting and directing activities are shown as twin facets of his versatility and his earnest approach to filmmaking (St. Martin's $8.95).

Sophia Loren's rise from a deprived youth to stardom is appealingly told IN SOPHIA LIVING AND LOVING, an amalgam of her own candid confidences, expertly collected by A. E. Hotchner, with recollections by family, friends and coworkers (Morrow $9.95).

As usual in "unauthorized" biographies, Myrna Greene presents, in THE EDDIE FISHER STORY, a romantic version of her idol's downfall, blaming drugs, gambling, and marital problems. Overblown but sincere, it's a typical fan book (Eriksson $12.95).

Joe X Price's hilarious biography, REDD FOXX, B.S. (meaning "Before Sanford"), shows the roots of the comedian's often bawdy ethnic type of humor, a book replete with funky anecdotes and comic routines by Foxx and his fellow nightclub headliners (Contemporary $8.95).

In BLOODY WEDNESDAY, Joel L. Harrison exhumes the rather sordid but fascinating details of the Ramon Novarro 1968 murder by two male hustlers, complete with court records, interviews and confessions (Major $2.95). ■

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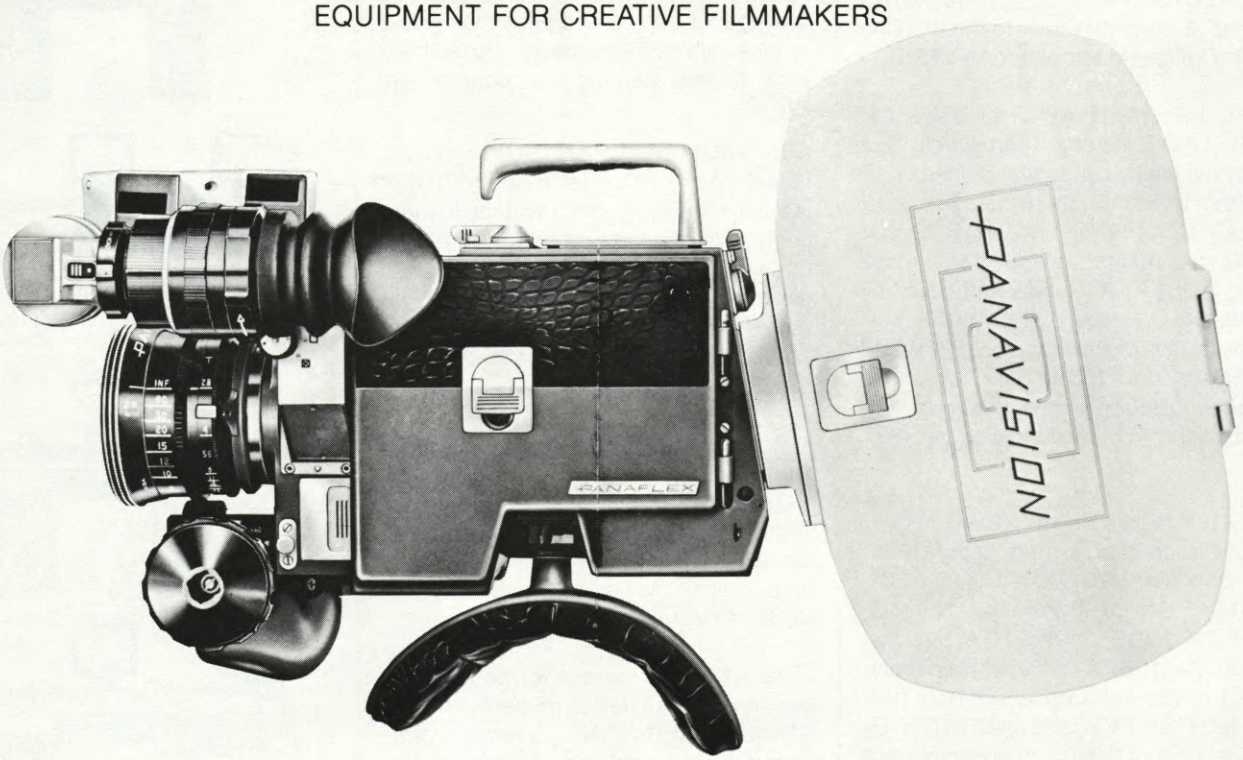

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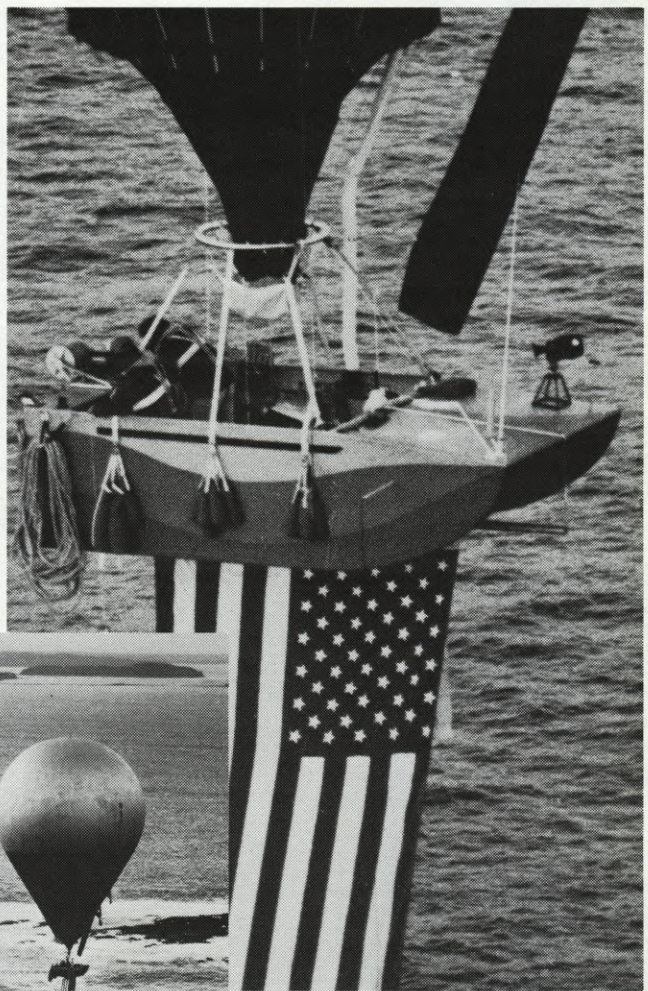
Oak Creek Films chose the FRENCH ECLAIR ACL to fly with The Eagle...



For their CBS Sports Special, Oak Creek Films was to shoot the "Eagle" balloon flight across the Atlantic. This presented a unique set of problems. The camera they chose was the French Eclair ACL ... and for very special reasons:

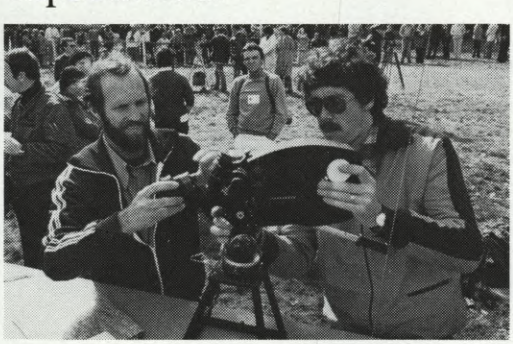
"Shooting in sync sound during the flight of a helium balloon is extremely critical. Since the balloon moves silently with the wind, there is no wind sound to mask camera noise. That's why it was so important to use the STUDIO QUIET French Eclair ACL."

"The instant snap-on magazine was another big asset. And the ACL LED-7 system made it easy to determine exposure quickly and accurately."

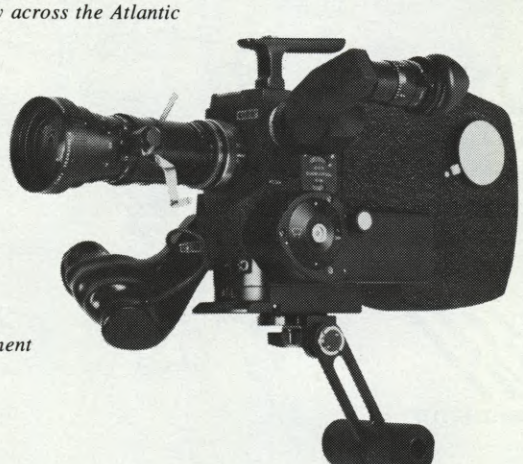
The Eagle starts its journey across the Atlantic

The ACL in position on the gondola

"Every aspect of the French Eclair ACL worked to our advantage, even through the storm and the forced landing in the Atlantic. The French Eclair ACL's rugged performance met the test far beyond our expectations."



Len Aitken and Bill Snider of Oak Creek Films check equipment prior to take-off



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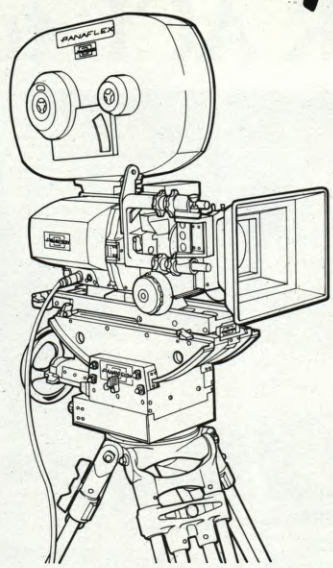
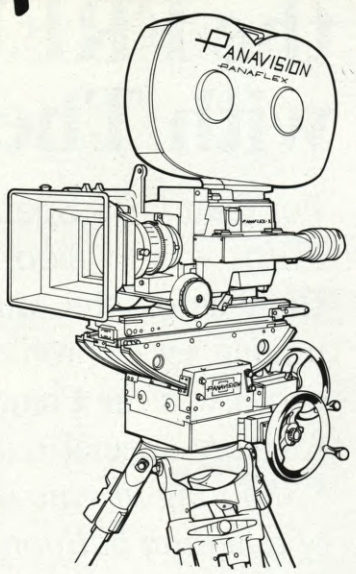




Originally conceived as a low cost, second camera to back up the regular Panaflex now used on the majority of feature films made in the United States and Europe, the Panaflex-X is now available as a principal camera in its own right.

As a 'spare tyre' to a Panaflex principal camera, the Panaflex-X costs only £100 per day, £300 per week*, complete with a standard matte box/sunshade.

As all the regular Panaflex accessories – magazines, lenses and batteries etc. – fit the Panaflex-X, it may also be used as a second camera when necessity demands.

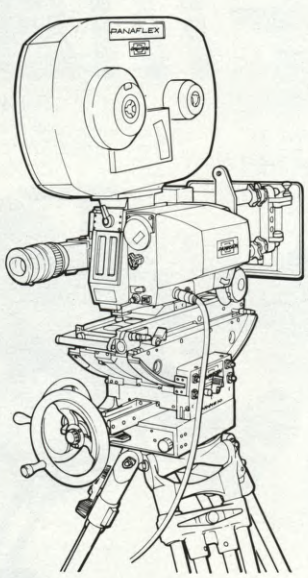
As a 'first camera' the Panaflex-X has virtually all the most desirable features of a regular Panaflex – studio quietness with any lens (zoom or otherwise) and without a lens blimp, a 200-50° shutter adjustable in-shot while the camera is running etc. – except that it is not hand-holdable.

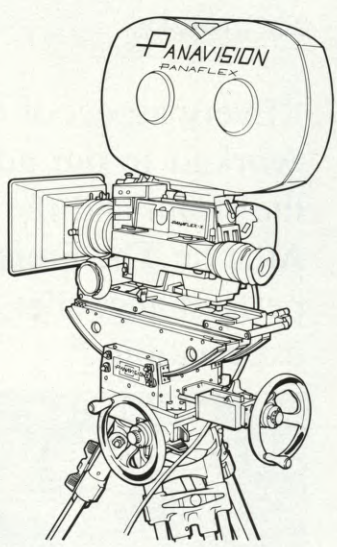
With the new straight-through 'brighter than life' viewfinder Panavision have achieved a remarkable breakthrough in image brightness. It is now possible to see shadow detail in the viewfinder which is not visible to the naked eye.

As an 'on-its-own' principal camera the costs of a Panaflex-X outfit could be as little as £189 per day, £567* per week for the camera COMPLETE with 3x500ft. magazines, Panaflex follow-focus control, 2 x 24V batteries and a charger AND a 20-100mm T3.1 Super Panazoom lens with a suitable matte box and with Silent Electronic Zoom Control.

In popular marketing parlance it is 'X-ceptional' value for money.

*At an exchange rate $2 = £1, subject to change.





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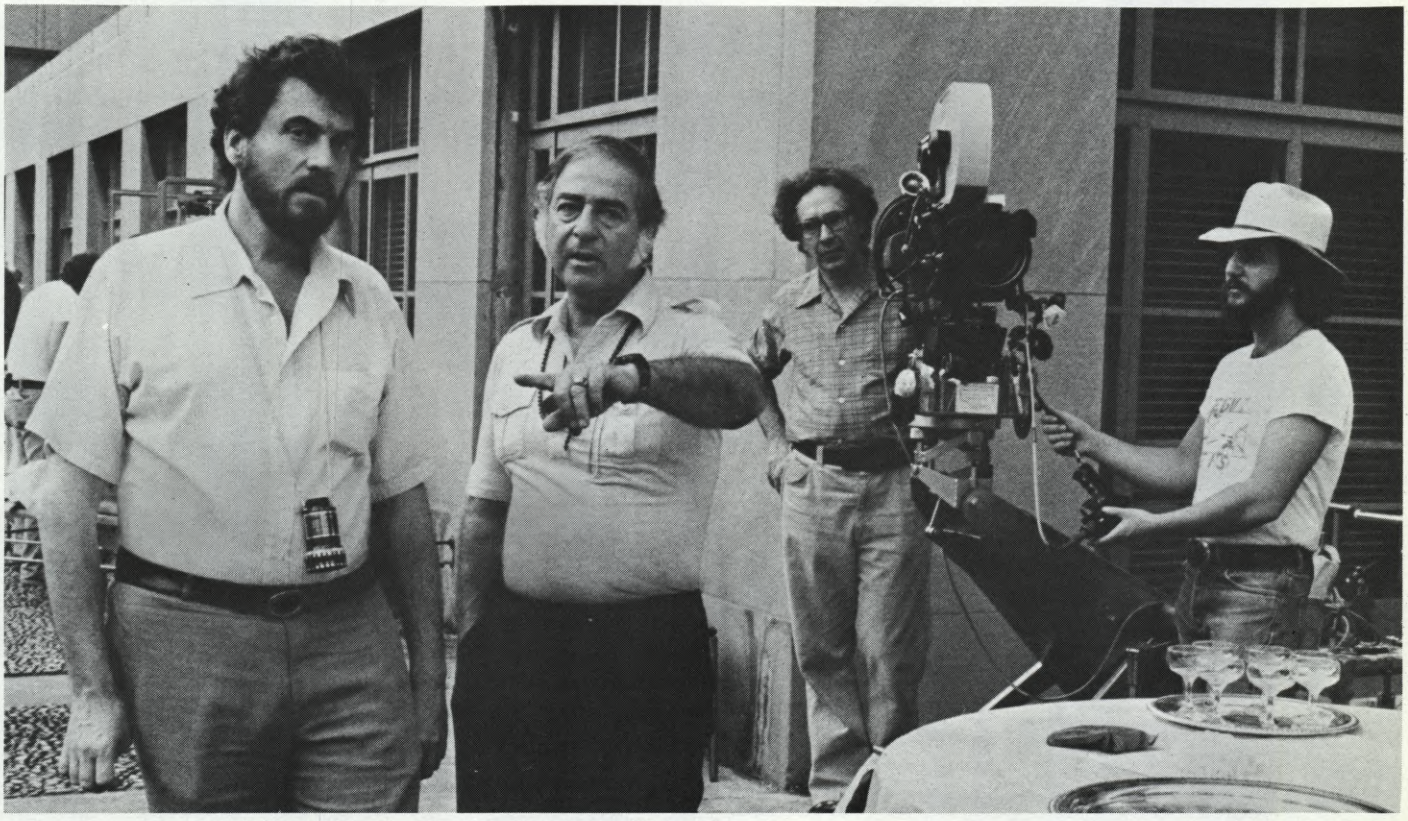
"TVC's Chem-Tone process is a valuable tool for the cinematographer. I'm glad it's in my 'back pocket' whenever I need it." Gerald Hirschfeld, ASC



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"TVC's Chem-Tone process is a valuable tool for the cinematographer. I'm glad it's in my 'back pocket' whenever I need it."

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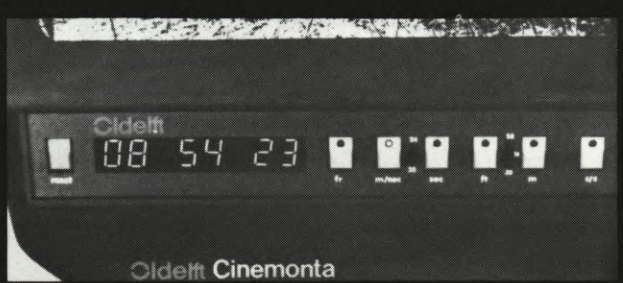

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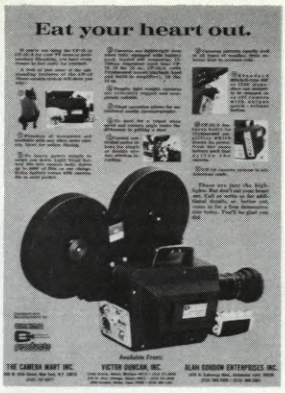

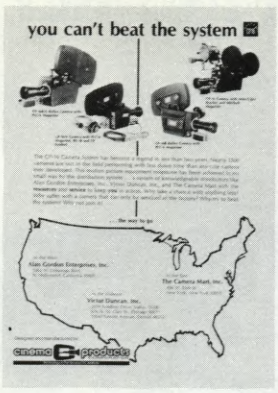

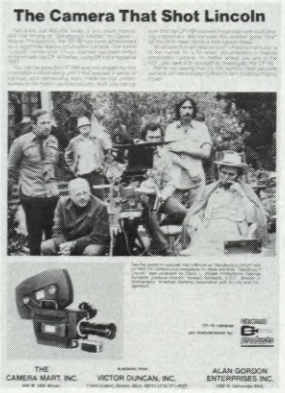

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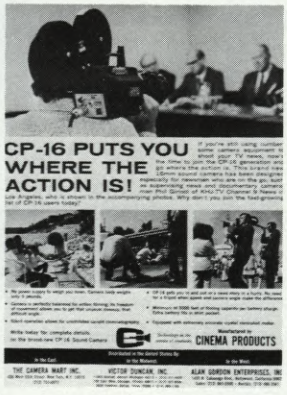

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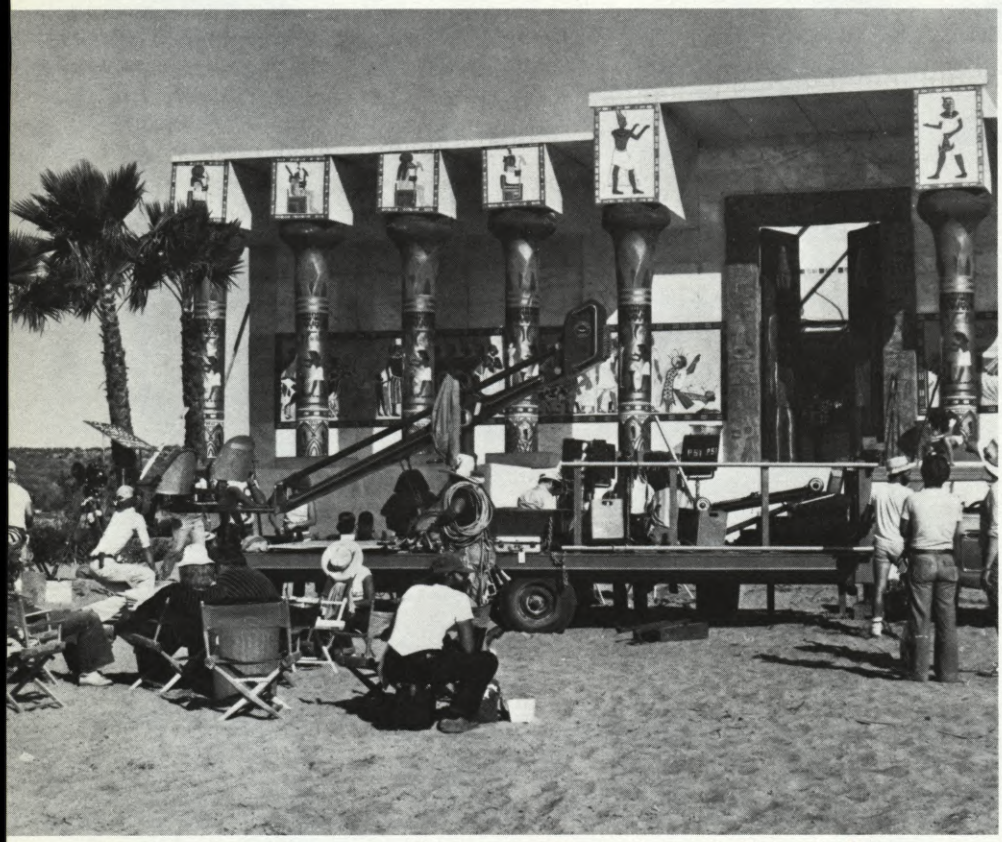
FILMMAKING REPORT FROM PARK CITY, UTAH

Hidden away in a ski resort, this unique production company, dedicated to family-oriented films, thrives on action and makes maximum use of natural locales

By BOB FISHER



Sunn Classic crew prepares to film a scene at Pharoah's temple during the Moses segment of GREATEST HEROES OF THE BIBLE. (BELOW) Lew Ayres, star of "The Story of Noah" segment of GREATEST HEROES OF THE BIBLE, relaxes between scenes with his "sons". Sunn Classic crews average 60 to 70 set-ups daily, running off 4,000 feet of 16mm color negative.

First they waited for snow. Then it seemed like it would never stop falling. And the people working on the production of DONNER PASS—THE ROAD TO SURVIVAL couldn't have been happier.

Key scenes for the NBC Special Event movie staged in Western Utah were produced in some 10 feet of snow, pretty much duplicating the conditions that marooned the original Donner party in the mountains.

Schick Sunn Classic Productions had four motion picture cameras covering the story from every angle. "One day we shot 146 set-ups," recalls Henning Schellerup, a Hollywood ex-patriot who now divides his time between directing and cinematography for the Utah-based company. "That was an unusual day, however. Most of the time we only average 60 to 70 set-ups daily on TV productions."

Schellerup said that as matter-of-factly as he might have said, "Tuesday follows Monday." It is considered routine that Sunn Classic crews will produce at least 4,000 feet of film a day at practical locations. Sunn's two-hour movies for TV are generally scheduled for two weeks of production.

One reason for the speediness is that the company does all of its TV production with 16mm color negative film. "For many purposes the 35mm format is just as mobile as 16mm," Schellerup says. "However, our type of movie usually involves a lot of action and movement. We are almost always in the woods, or climbing a mountain, or canoeing across a lake. The smaller format camera allows us to cover the action quicker and from more angles with more equipment."

During the filming of THE LIFE AND TIMES OF GRIZZLY ADAMS TV series, for example, one camera was usually isolated on the bear while the other(s) covered the scene. There was one story with a 14-foot, 1,000-pound Kodiak bear. Schellerup filmed one scene for this story at the edge of a cliff. "It was just us and the bear, and it was obvious they weren't controlling the Kodiak as well as some of our other animals," he recalls. "He was too big. Yet we were in a very confined area with two cameras, and no place to go except over the cliff if the bear got annoyed. It wouldn't have been possible for two 35mm crews to work in that tight an area under those conditions."

(LEFT) Sunn Classic President, Charles E. Sellier, Jr., and James L. Conway, Vice President of Production, on location in Arrow Rock, Missouri, for the filming of the CLASSICS ILLUSTRATED made-for-TV movie, "The Adventures of Huckleberry Finn". (RIGHT) Sunn Classic crew films the CLASSICS ILLUSTRATED movie, "California Gold Rush", based on the stories of Bret Harte, near Park City, Utah. Originally a distribution company, Sunn Classic went into the production end of the business in 1974.

There are also obvious economic advantages. "When you add up equipment rentals, film and post production costs, we save approximately $35,000 on a two-hour feature," says Jim Conway, vice-president of production.

That was significantly more important when the company was starting out in the production business some four years ago. Its first feature film, THE LIFE AND TIMES OF GRIZZLY ADAMS, was originated on 16mm negative, which was blown up for theatrical release. "That was a practical matter," Conway admits. "The production company only had eight employees."

The biggest motivation, by far, for producing TV films in the 16mm format is the opportunity it provides for packing more production values into a 30- to 120-minute package. "There is no reason not to produce programs designed specifically for TV in the 16mm negative format," Conway contends. "Because of the fine grain and latitude of the 16mm Eastman color negative II film, the image quality on the small screen is comparable to that of 35mm."

Sunn Classic works primarily with Arriflex BL and CP-16R cameras on TV productions. "I prefer the Arris for their rugged reliability and good registration," Schellerup says, "but we also get very good performance from the CP-16Rs, especially under extremely cold conditions."

The biggest potential problem associated with use of the 16mm negative is that "white dirt", such as hair and lint, is much more noticeable on the smaller frame. "Since most of our work is done at practical locations, there is a lot of opportunity for this to happen," Schellerup notes. "The remedy is simple. An assistant blows dirt and dust out of the camera before each take. The only time there is a problem is when we don't do our job."

The only other real limitation is that optical houses aren't geared to working with 16mm originals. The preferred alternative is using A and B dissolves in place of optical effects on television features. "It is a relatively small limitation when compared to the mobility and flexibility we gain by working with the 16mm equipment," Conway stresses. "In a pinch, we can make 35mm internegatives of the portions of film needed for creating an optical effect."

Sunn Classic has roots going back to 1970, when the company started as a four-wall distributor of family entertainment. The company developed sophisticated techniques for predicting the marketability of G-rated films, and for promotion. Finding an unsatisfied demand for entertainment that families could experience together, Sunn Classic entered the production field in 1974 with the making of THE LIFE AND TIMES OF GRIZZLY ADAMS.

The film grossed some $20 million. But that was just the beginning. Under the direction of a new president, Chuck Sellier, Sunn Classic reeled off nine consecutive box-office successes, including such titles as FRONTIER FREEMONT, THE LINCOLN CONSPIRACY, MOUNTAIN MAN, THE MYSTERIOUS MONSTERS, BEYOND AND BACK, and IN SEARCH OF NOAH'S ARK.

All of these films shared three characteristics. They were: (1) aimed at family audiences, (2) packed with action, and (3) made maximum use of natural locations. "We believe people go to theaters to experience films," Conway says. "We do produce theatrical features in the 35mm format, so they can be shown on a wide screen. We look for locations and situations that fill up the screen, and are very aware of the importance of squeezing the maximum visual impact out of every situation."

Continued on Page 366

Two production crews are headquartered in Park City, a famed ski resort located 30 miles from Salt Lake City, where a true "film community" has evolved during the past few years.

THE FILMING OF "GENESIS"

By GEORGE CASEY
Director/Producer/Partner,
Graphic Films Corp., Hollywood

A kaleidoscopic safari to far-off lands, plus many adventures (including a camp-out on the lip of a raging volcano) to film an epic subject in the world's largest motion picture format

Not long ago, a small article—as mystifying as it was illuminating—appeared in *Daily Variety*. It described an unusual theater in Minnesota which had become the "hottest attraction in the state" and where turnaway crowds were "plunking down three dollars a head to see a 32-minute film, GENESIS, which portrays the shifting continental shelves of the Earth projected on a 76-foot-diameter dome."

Lest readers suspect that droves of Minnesotans have taken leave of their cinematic senses, I would like to describe this extraordinary theater and film format which many people are coming to believe represents an exciting direction for the future of motion pictures.

A missed flight adds to the woes during filming of "GENESIS". The author ponders alternatives, after lengthy delays in customs shave another day off the tight live action shooting schedule. (BELOW) Santorini express. A mule train lugs IMAX filming equipment from the harbor 1,000 vertical feet to village on crest of caldera of the volcanic island.

And since I was involved in the production of GENESIS (as producer/director/co-writer), I feel it is worth relating the unique challenges of recently working in this revolutionary film system, both in live action filming and in the shooting of animation and three-dimensional models.

The theater is the remarkable new William L. McKnight/3M Omnitheater in St. Paul, centerpiece of the Science Museum of Minnesota. Its huge dome screen encapsules 330 plush seats which are tiered at a 30-degree incline to "suspend" the viewers within the dome-filling motion picture image.

The spectacular screen image is the product of the unique Omnimax system which utilizes an Imax 65mm camera (with 15-perf horizontal movement and offset-mounted fisheye lens) to produce an image on film which, when projected by an Imax 70mm projector through matching fisheye optics into the inner surface of the tilted dome screen, produces an encompassing, undistorted image of great scale and strongly realistic, three-dimensional quality. No viewing glasses are required.

Because of the size of the individual Imax frame (three times that of standard 70mm), the power of the custom xenon lamphouse (12,000 watts), and the steadiness of the image (pin-registered in projector as well as camera), the image which fills the viewer's field of vision assures a unique filmic experience.

The Omnitheater is not the first of its breed. The highly successful Reuben H. Fleet Space Theater in San Diego was the pioneer and prototype. Similar theaters have opened in Detroit and Monterrey, Mexico, and more are on the way, from the Orient to Europe and in a half-dozen more American cities.

Nor is this our first Omnimax film. Graphic Films Corp. produced both COSMOS and VOYAGE TO THE OUTER PLANETS for the San Diego Space Theater; ALFA 1978 for the extraordinary new Omnimax theater in Monterrey, and has been involved in dome films since producing TO THE MOON & BEYOND for the 1964-65 New York World Fair. (Other articles on the Omnimax and Imax systems and film production can be found in *American Cinematographer* issues of July, 1970; March, 1971; September, 1971; August, 1973; October, 1974; March 1975; July, 1976; and October, 1977.)

But this article is about the mysterious goings-on in Minnesota.

It began for us with a phone call. "How'd you like to do an Omnimax film on continental drift?" The caller was Michael Sullivan, Director of the Omnitheater, and the subject he was proposing for their first film would turn out to be more exciting than it first sounded. It would lead us to location shooting around the world and to new techniques in flat bed animation and three-dimensional model filming.

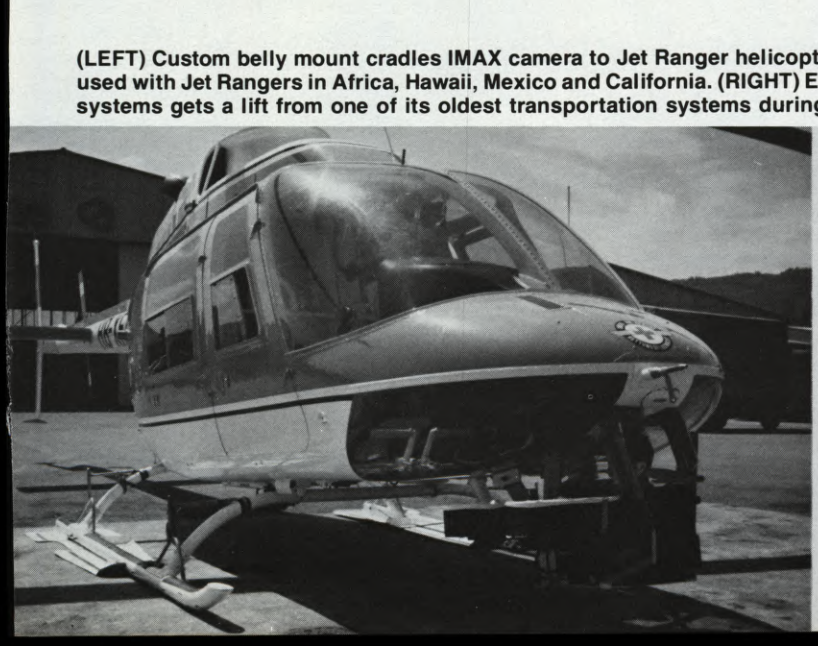
The film was to be a portrayal of the origin and evolution of Earth, with emphasis on the immense tectonic forces and events operating on the crust of the Earth which shape and move the continents and which continue to remake the face of this extraordinary planet.

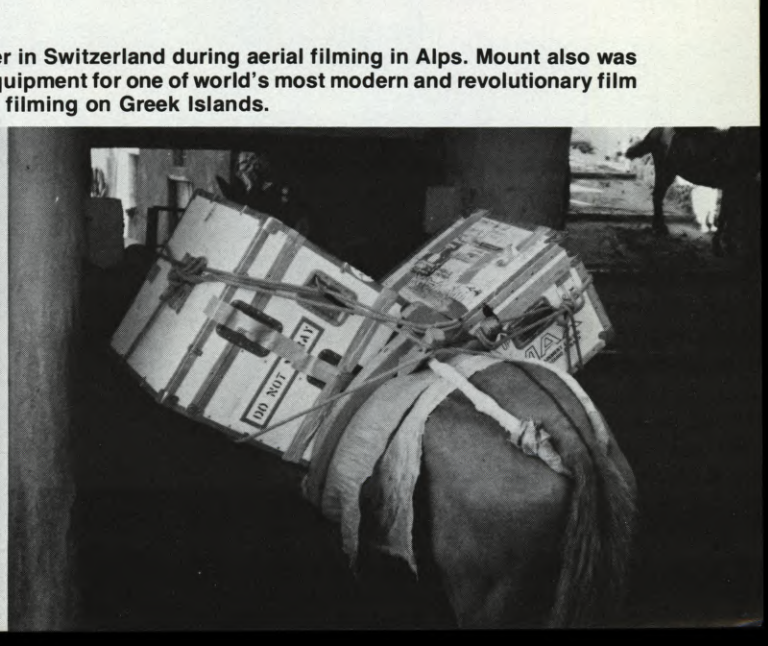
The filmic potential of the subject became obvious after the first of more than 40 books I would read in researching the film. A profound revolution in the Earth sciences had occurred within the past dozen years. Scientists now understood the crust of the Earth to be comprised of gigantic "plates" which were in slow but constant relative movement. The geologic events along the plate boundaries as they collide, separate, override or grind past one another are of fascinating film stuff—of volcanoes, earthquakes, mountain building—and they invite filming in exotic locations: Iceland for its exposed features of sea floor spreading; the Great Rift Valley of Africa representing the fracturing of a continent; the Alps as the heaped wreakage from the collision of two great plates; the island of Santorini as the site of a monumental volcanic eruption which altered the entire course of Western civilization and inspired, perhaps, the legend of Atlantis. Irresistible locations.

I was drawn to the subject, too, because I realized that it was a "natural" for extensive aerial cinematography, a form which works extremely effectively in the

Cameraman Averill Townsend and assistant Bob Elswit prepare for rail shot within the Palace of King Minos on Crete. Ferco rail system was air-freighted to meet the crew in Athens and was used extensively for filming of Minoan ruins on Crete and Thera. (BELOW) Rough going in the Rift Valley. Rain-eroded road impedes progress of equipment van. Crew had better luck with Land Rover, but even it sustained broken springs.

(LEFT) Custom belly mount cradles IMAX camera to Jet Ranger helicopter in Switzerland during aerial filming in Alps. Mount also was used with Jet Rangers in Africa, Hawaii, Mexico and California. (RIGHT) Equipment for one of world's most modern and revolutionary film systems gets a lift from one of its oldest transportation systems during filming on Greek Islands.







(LEFT) Author/director George Casey lines up three-dimensional model shot for IMAX camera. Some model shots in GENESIS required seven passes of negative through camera, which held perfect registration. (CENTER) Cinematographer Barry Herron (center) teams with author (left) and assistant to heft and steer heavy IMAX camera for POV "walking shot" through dense Hawaiian rain forest. (RIGHT) Pack mules on island of Thera lug IMAX equipment from harbor to village on volcano lip, 1000 feet above. Island is remnant shell of great volcanic eruption which changed course of Western civilization more than 5,000 years ago. (BELOW LEFT) Under scrutiny of startled Swiss farmboy, crew changes magazines on belly-mounted IMAX camera after setting down on hilltop during helicopter filming in Swiss Alps. (CENTER) Crew is silhouetted by fiery night eruption during filming of Kilauea volcano. (RIGHT) Night-long eruption fountained lava 400 feet into the sky and was the most spectacular Hawaiian eruption in years.



Omnimax format.

I welcomed the project for another, more selfish reason. In recent years, Graphic Films had specialized in the production of "space" films, heavy with animation and miniatures (three of the most recent, PLANET OCEAN, PROBES IN SPACE, and UNIVERSE had received Academy Award nominations), and I was concerned that people would begin to think of us only as pallid denizens of darkened shooting stages, brewing magic with three-dimensional models, air-brushed cels, and animation cranes. What better way to remind people of our long history and continuing capabilities in live action filming than to film all around the Earth in the world's largest film format? As usual, easier said than done.

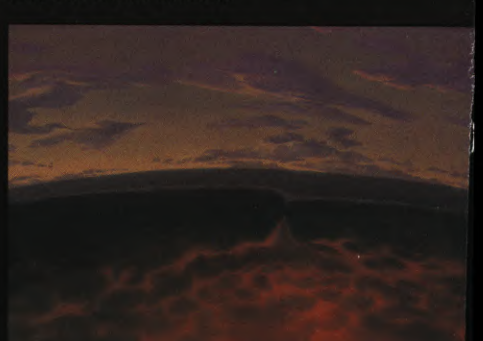
Obviously, a format as unique as Omnimax imposes new considerations upon almost every aspect of production, from choice of subject matter to selection of locations; from frame composition to how many Greek mules are required to lug the cumbersome camera equipment up a caldera wall (seven). And since the negative roars through the Imax camera at the rate of 337 feet a minute, one becomes a quick disciple of low shooting ratios (the shooting ratio on GENESIS was held to five-to-one).

The budget for the film was adequate, but given my ambitions for world-wide shooting, decidedly unlavish. (The Sci-



IMAX frames from the production. Filming of African wildlife in Kenya enriched GENESIS with imagery portraying the influence of "continental drift" upon the evolution of life. Whooping Masai warriors (RIGHT) surrounded IMAX camera for lion's eye view of hunt, but cameraman and camera survived unpunctured. (BELOW LEFT) Excavations of Akrotiri on the island of Thera in the Aegean Sea were an important shooting location. The Minoan city was buried in the ashes of the greatest volcanic eruption in human history, possibly inspiring the legend of Atlantis. (CENTER) Earthquake ruins in Greece supplemented filming of California's San Andreas Fault locations, and contributed to global scope of film. (RIGHT) Complex flatbed animation portraying the collision of plates of the Earth's crust was filmed directly in 15-perf, 65mm format. Artwork contains calculated distortions required for projection on the dome screen.

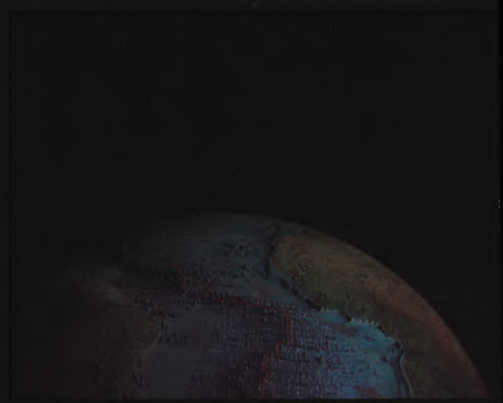




ence Museum of Minnesota, incidentally, earned back the entire cost of the film within the first four months of exhibition.)

We would have to accomplish the filming of the five major overseas locations in six weeks with a lean crew of three (myself, Director of Photography Averill Townsend and assistant Bob Elswit) humping more than 1,000 pounds of gear by airplane, helicopter, boat, Land Rover, mule back and "Shank's mare".

Efficient logistics were critical. An international carnet for the duty-free importation of equipment smoothed our passages through customs (Athens and Nairobi were still exasperating), and letters from stateside embassies and consulates of each of the countries were also useful. The prudent receipt and shipment of negative and equipment to and from



(TOP RIGHT CORNER) The author is silhouetted against the fiery fury of erupting Kilauea volcano on the island of Hawaii. With him can be seen microphones to pick up "live" sound. The volcano sequence, supported by six-track stereo sound, is one of the most dramatic sequences in the Omnitheater exhibition of GENESIS. (ABOVE LEFT) Animation techniques employed in GENESIS ranged from multiple-pass photography of color-dyed astronomical photographs to "standard" flatbed animation creating an Earthrise scene (CENTER) to the building and rendering of three-dimensional models (RIGHT) portraying the shape and movement of the "plates" comprising the Earth's crust.

Extensive aerial filming was accomplished in far-flung locations from both helicopter and fixed wing aircraft. Screen credits list eight camera pilots. Aerial POV footage is not only particularly effective in Omnimax format, but its extensive use was especially appropriate to the subject matter of GENESIS. (BELOW) Long months of vigil were rewarded with a spectacular volcanic eruption in Hawaii which was captured by Graphic Films crew in IMAX format. Non-fisheye lenses up to 400mm were used for the volcano filming, yet carefully composed images play with minimal distortion on the dome screen of the Omnitheater.

our studio at each major location kept our burdens to a minimum.

A practical, adaptable, lightweight camera mount for the critical aerial filming was also essential. We had successfully employed a helicopter belly mount designed by cinematographer Barry Herron in previous aerial filming, using standard 35mm and 65mm cameras, and I knew his simple design (an adjustable mount bolted directly to the airframe of a Bell Jet Ranger helicopter) would yield POV footage as rock steady as from larger, more elaborate mounts.

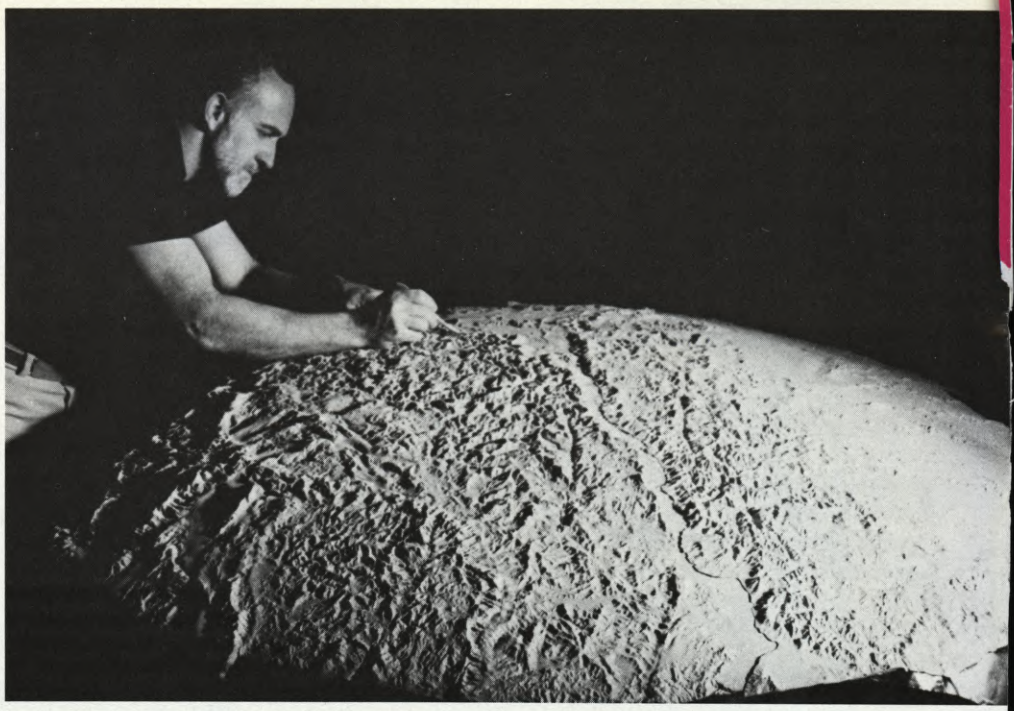
When my four-week location scouting trip assured us of the availability of Jet Rangers in Switzerland and Kenya, we funded the fabrication by Herron of a belly mount of the same design large enough to accommodate the Imax camera. This aluminum mount collapsed to fit into a single, modest case, adding little to our equipment load.

For those locations in which Bell hadn't yet sold helicopters, Averill Townsend turned out to be as remarkable a mechanic as cameraman. Thus we were able to film from the nose luggage compartment of a twin engine aircraft in Iceland, and from an improvised door mount extending out the side of an Allouette helicopter in Greece.

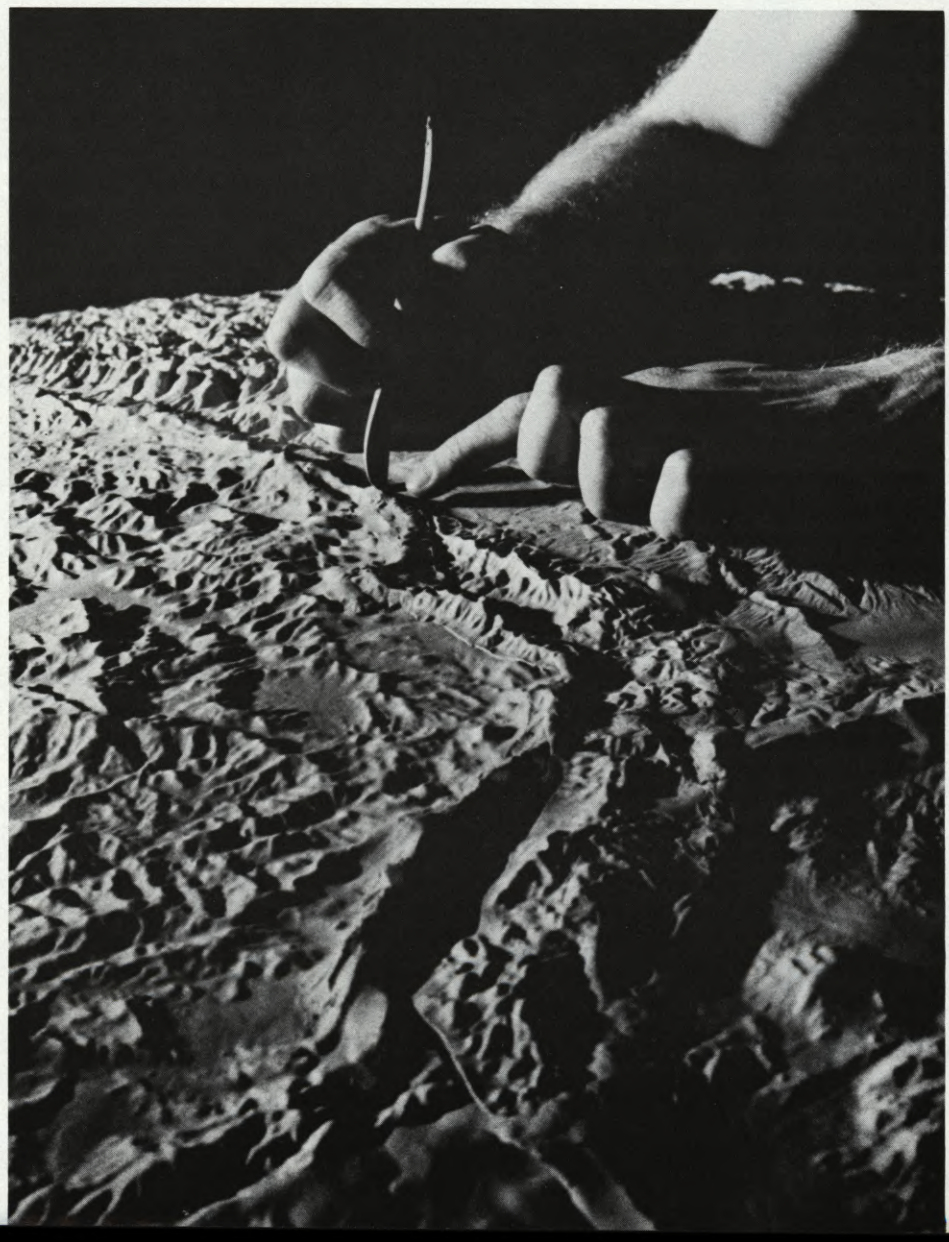
The film credits list eight different camera pilots, each capable and reassuringly familiar with the diverse terrains we filmed. And for all the mountain-shaving, hedge-hopping and flying inside volcanoes we indulged in, the shakiest moment was while strapped in a chopper in Athens, not yet airborne, observing the crew struggle mightily to get the engine started (a change of batteries finally worked), and then watching in amazement as a technician approached with a screwdriver and beat the instruments to life by pounding them, stab-fashion, with the screw driver handle. Preventive maintenance. I search my pockets for the Greek "worry beads" I'd bought the day before.

Location filming—particularly aerials—is made chancey enough by weather. Add to that the vagaries of equipment maintenance far from home, unpredictable air shipments, paralyzing customs procedures, elusive wildlife, out-to-lunch bureaucrats, jet lag, dietary disorders and other cultural shocks, and I must nominate GENESIS to that long rollcall of films (the majority, perhaps) which are made "in spite of . . ."

Back to weather. It's even more critical a factor in Omnimax filming. The reason is the light-bounce which occurs within a dome screen. Allow even a single, sizeable white cloud to intrude in the frame, and a noticeable desaturation is observ-



Author sculpts seams joining latex rubber castings of sections of topographic maps. These "continents" were motorized to represent break-up, "drift", and collision of continents during last 200 million years. (BELOW) Close view of a deep rift in the Earth's surface caused by the unceasing drift of continents over millions of years.



able in the projected image (with 180-degree fisheye coverage, it is often difficult to keep even the sun out of the frame). As a consequence, we waited out six days in Iceland, five in the Alps and four in Kenya for presentable weather in which to film our aerials. Even so, conditions were often less than ideal. We would then contend with cloudy or "hot" skies by mounting trims of neutral density gels (ND 6's, 9's or combinations of gels, depending upon sky conditions) behind the rear element of the fisheye lens to "feather out" and darken the sky portion of the image. Newer space theaters are installing low gain screens of warm gray coloration (the Omnitheater screen is less than .4 in reflectivity) which considerably enhances the contrast and saturation of the image.

A book could be written about the tricks and intricacies of filming for dome screens. A basic, complicating consideration is the fact that the appearance of the image on the dome screen varies greatly with seat location within the Omnimax theater. This creates unique limitations within the format. For instance, a slow pan shot may be acceptable when viewed from the center or rear of the theater, but is disturbingly disorienting when viewed from seats near the screen. An image of a planet viewed from the rear of the theater may appear pleasingly spherical, but from the closest seating, may "flop" into a concave image. The same horizon may appear low to a viewer in the uppermost row of the theater, but too high to someone seated in the lowest row. (Ironically, the more popular the film or successful the theater, the more pronounced is this problem, since capacity crowds fill every seat and not just the best ones.)

While it may be prudent to idealize an audience seated at the focus of the dome screen and to shoot for that audience, I tried to develop the discipline of evaluating each shot—in editing as well as in filming—as to how it would appear to viewers from every position within the theater.

This concern with distortion on the dome screen is heightened when filming for Omnimax with non-fisheye lenses, which becomes necessary when it is impossible to get close enough to the subject (African wildlife or a volcanic eruption), or when the subject (e.g., a three-dimensional Earth model against a starfield) requires filming techniques difficult with the fisheye lens. On GENESIS we employed additional lenses of focal lengths ranging from 80mm to 400mm. In using such lenses, the utmost care had to be taken in the composition of the image

Continued on Page 376

Cameraman Averill Townsend discusses flight tactics with Greek helicopter pilot Nicolas Sarris between magazine changes during filming on island of Santorini in the Aegean Sea. (BELOW) Helicopter takes off with remotely operated IMAX camera mounted under forward section of the cabin.

Color still from "Magic" filmed by Vic Kemper with HMI light.

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Costs have gone up in every category of filmmaking. That's why cinematographers and production managers everywhere have turned to HMI.

OSRAM HMI lights are incredibly efficient. For every watt of energy you buy, you get only about 16 lumens with tungsten-halogen. *You get 85-100 lumens of light with OSRAM HMI.* In addition, HMI light is rated at 5600° Kelvin. But other sources have to be color-corrected to get up to 5600°, thus cutting down the light from these sources even more.

OSRAM HMI lamps are now available in five different wattages: 200, 575, 1200, 2500 and 4000. A number of different manufacturers offer fine floodlights and Fresnels. Rental houses everywhere in the country now carry inventories of both fixtures and bulbs.

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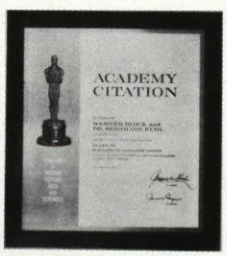

1978 ACADEMY CITATION

The inventors of the OSRAM HMI bulb, Dr. W. Block and Dr. B. Kühl, were honored by the Academy of Motion Picture Arts and Sciences with a Citation For Technical Achievement.

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fed into 4 bus bars and thru a 400 amp circuit breaker. Each phase of the input service powers 4 dimmers. The output connections from each dimmer are two 50 amp and one 100 amp grounded straight pin-plugs. Each output connector is protected thru a circuit breaker. The 12 dimmers are controlled by a independent console which is connected to the dimmer housing by a 100 ft. detachable cable. The console is independently powered from a conventional 120 volt A.C. house plug outlet.

The Control Console is a 12 channel, 2 scene arrangement, with two submasters for each scene and a grandmaster. By operating an internal switch, the console may be changed to a 24 channel, single scene console. Scene 1 submasters will then control channels 1-12 and scene 2 submasters will control channels 13-24.

For additional information contact Mole-Richardson Co., 937 North Sycamore Avenue, Hollywood, California 90038, U.S.A.

•

LAVEZZI ISSUES SPROCKET CATALOG FOR PRECISE CONTROL OF PERFORATED FILM AND TAPES

LaVezzi Machine Works, Inc. has just released catalog L70-2 that describes their line of standard sprockets for persons interested in the precise control of film, tape, and other flexible media using square perforations according to American National Standards Institute specifications.

The 20-page catalog illustrates over 65 standard sprockets and provides information on custom-manufactured sprockets. Media supporting parts, i.e., rollers and roller assemblies, studs, and pad rollers, are also included. A drawing of each part provides detailed dimensional information necessary to design the part into any system.

Manufactured in a wide variety of designs, the sprockets are categorized as 8mm, Super 8mm, 16mm, 35mm, and 70mm. The sprockets are pitched at .150", .1667", .1870", .234", .300" and .333". Diameters range between .378" and 3.80". Sprocket teeth vary from 8 to 72-tooth configurations. Materials include magnetic and non-magnetic stainless steel, alloyed steels, aluminum, and engineered thermoplastics such as Delrin and Acetal.

Special emphasis is given to the LaVezzi Posi-Trol positive control 35mm sprockets that are used to precisely control lateral film movement, and can simplify equipment design.

The brochure will prove to be of particular interest to design engineers, systems and control engineers, purchasing people and others who are involved in the design and specification of still and motion picture cameras and projectors, film processors, editors, and viewers, printing and recording applications, synchronizers and measuring equipment. The sprockets are also used to maintain the precise control of numerical display tapes, belts, and other flexible media perforated according to ANSI standards.

The brochure provides valuable information for motion picture theater owners, managers, and projectionists, and for theater service organizations who order replacement parts for projection equipment.

A price list is included for all standard sprockets and parts illustrated in the catalog.

LaVezzi Machine Works, Inc., located in Elmhurst, Illinois, is a manufacturer of precision sprockets for xperforated film, tape and charts. They also manufacture custom components for the motion picture industry, aerospace, graphic arts and scientific applications, and for applications where a high degree of precision and reliability are necessary for the performance of the equipment.

For further information, please contact: Mr. Worth Baird, Sales Manager, LaVezzi Machine Works, Inc., 900 N. Larch Avenue, Elmhurst, Illinois 60126. Phone (312) 832-8990.

•

NEW P.E.S. IMAGE EXPANDER

The P.E.S. Image Expander permits an animation or filmstrip/slide copy stand or camera to pan and zoom on as small an area as an 8mm section, or larger, of a 35mm slide while it maintains focus from the stand or camera's auto focus cams.

The P.E.S. Image Expander is easily placed on and removed from tabletop without disturbing the copy stand or camera in any way. Panning and zooming on 35mm slides for motion picture photography is simplified too.

It projects a high-resolution image from a vertical or horizontal 35mm slide onto a grainless screen in a size range from 7-field to 14-field using its standard lens. Resulting image is, generally, superior to that obtained by direct-copy techniques.

An even field of light comes from the custom-designed lamphouse, which uses a separately-fused 1,000-watt quartz lamp. When measured with a

Gossen Foot-Candle Meter (Model 115-25) on a projected solid medium-blue image, the meter reading varied less than ± 1-line marking center to edge.

An efficient heat-dissipation system leaves slide holder only slightly warm after a full day's operation.

Two new accessories will be available shortly for the *P.E.S. Image Expander.* One is a split-screen device to provide sharp-edged split-screen effects, the other a 35mm and 16mm motion picture transport device that will permit a stand to function as a motion picture printer.

The P.E.S. Image Expander is 36 inches long with 16 inches required from center to right of table, 14 inches high to top edge of mirror, and 15 inches wide. Overall weight including floor-placement blower is 31 lbs. Power requirement is 20 amperes, 110-115 volts, 60 hz AC.

For more information write to P.E.S. (Photographic Equipment Service), Inc., 695 Main Street, New Rochelle, New York 10801 (U.S.A.) or telephone (914) 235-2720.

●

POPULAR SHURE SPEAKER NOW AVAILABLE WITH WOODGRAIN CASE

Shure Brothers Inc., Evanston, Ill., is making its popular SR112B high performance speaker available in a handsome simulated woodgrain case with contemporary sculptured grille. The new speaker is especially ideal for use in discos, nightclubs, lounges, churches, auditoriums, or anywhere the installation demands good looks as well as good sound.

Designated the SR112W, the speaker now combines the SR112B system's wide-range frequency response, high-power handling capability and compacted size with a new classic look. Constructed of 12.5 mm (1/2") particleboard, the SR112W is covered in woodgrain, scuff-resistant vinyl. The grille is constructed of rugged, brown acrylic fabric with pull tabs for easy access to the speakers.

Unlike most loudspeaker systems in its size class, the SR112 system is designed for maximum broadband efficiency and wide range frequency response. It produces a sound pressure level of 95.5 dB (at 4 ft.) with an input of only one watt, and provides a full range frequency response without the need for a frequency-correcting equalizer.

Frequency response of the SR112W speaker is virtually flat over the usable response range of 45 to 16,000 Hz. This uniform, peak-free response results from the use of two heavy-duty eight-inch bass speakers and a high frequency compression driver coupled to a 120° radial horn. Low frequency performance is achieved through the front-ported bass reflex design of the enclosure.

User net price of the SR112W is $350.00.

For further information, write: Shure Brothers Inc., 222 Hartrey Avenue, Evanston, Illinois 60204.

●

NASA LEWIS RELEASES VIDEOTAPED TV PROGRAMS

Fourteen NASA film titles on two-inch quad videotape and u-matic cassette are now available for distribution to TV Stations and cable TV in a six state area. The NASA Lewis Research Center in Cleveland, Ohio, is providing the tapes through a contractor to broadcasters on request in Ohio, Indiana, Michigan, Illinois, Wisconsin, and Minnesota only.

The videotapes were made from good prints, according to NASA-Lewis TV Information Specialist John Bluck. He said the beginning of videotape distribution comes during a period of several anniversaries: October 1, 1978, is the 20th anniversary of NASA; December 17, 1978, is the 75th anniversary of Powered Flight, and July 16, 1979, is the 10th anniversary of the first manned landing on the Moon.

Most of the films are related to the anniversaries. Titles are: APOLLO 9: THE SPACE DUET OF SPIDER AND GUMDROP; APOLLO 10: GREEN LIGHT FOR A LUNAR LANDING; EAGLE HAS LANDED: THE FLIGHT OF APOLLO 11; APOLLO 12: PINPOINT FOR SCIENCE; APOLLO 13: "HOUSTON . . . WE'VE GOT A PROBLEM", APOLLO 15: IN THE MOUNTAINS OF THE MOON; APOLLO 16: NOTHING SO HIDDEN; APOLLO 17: ON THE SHOULDERS OF GIANTS; THE TIME OF APOLLO; APOLLO/SOYUZ; THE MISSION OF APOLLO/SOYUZ; MEALS FROM SPACE; THE HOUSE THAT NASA BUILT; and FLYING MACHINES. All the tapes but THE HOUSE THAT NASA BUILT and MEALS FROM SPACE fit the half hour format.

The 14 titles can be obtained by writing or calling Audience Planners, Inc., Blair Building, Suite 830, 645 N. Michigan Avenue, Chicago, Illinois 60611. Telephone: (312) 787-7584. (A film list describing the tapes in more detail has been included with this press release. Further information or pictures can be obtained by writing or calling John Bluck, Mail Stop 6-3, Educational Services Office, NASA Lewis Research Center, Cleveland, Ohio 44135. Telephone: (216) 433-4000, ext. 721 or 708.) ■

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AATON CAMERAS INC.
(Alima Morse, Guy Genin)
1697 Broadway (at 53rd)
NEW YORK N.Y. 10019
Tel. (212) 541-8181

Over 50 Aäton 7 16 mm cameras in Sweden
Thirteen feature productions in 1978

To date, over fifty cameras have been sold in Scandinavia, nineteen of which to the Swedish Broadcasting Corporation, who purchased theirs once they had subjected two Aätons to intensive tests for a period of six months.

A few words from Rune Ericson, the father of Super 16 :

« For both 16 and Super 16 films to be blown up to 35, Aäton has become *the* camera in Scandinavia : the long aperture plate and high precision claw movement produce excellent image stability, making the images eminently suitable for enlargement. The blow-up results from Super 16 to wide screen 35 are extraordinarily good. »

« I would say that Super 16 shot on ECN II 7247, blown up to 35 mm CRI, exhibits the same visual quality as an original exposure on the old 35 mm ECN 5254 negative — a fact which should give some cause for thought to producers and cameramen the world over. »

In Mo and Rana North Norway, a feature produced by Marcus Films was filmed under difficult conditions. This is what chief cameraman Erling Thurmann-Andersen had to say :

« Generally speaking there is much good to be said about the Aäton camera. It is the most amiable and functional camera I have ever worked with. The times we used it as a hand held camera, we could feel how perfectly the camera was constructed for practical use. »

Technical Notes

To obtain sharp images in moving picture cameras, each successive frame must superpose the preceding frame with precision corresponding to the smallest detail (i.e. 2-3 microns); for this type of microsteadiness, there must be no vibrations within the camera, and absolute registration from one frame to the next.

The film path in the Aäton is such that the natural position the film tends to take is exploited rather than counteracted. The loop is long and twistless, and moves smoothly against the aperture plate over a long trajectory — no spring effect. With this, plus the claw pull-down movement from a point *in* the film plane, the Aäton 7 LTR produces **vertical steadiness** superior to that obtained with registration pin systems (1/2000th of frame dimensions).

As the film is brought to the gate in a natural manner, there is no need to press it hard to keep it flat and accurately positioned. This allows the horizontal bars traditionally set above and below the gate to be eliminated. The cameraman is now sure that his images will be **free from hairs and micro-scratches.** A boon to 16 mm blow-up, not to mention Super 16, which takes up the whole frame.

A logical consequence of this type of fluid and vibration-free system is **quietness.** And the Aäton is the quietest hand held 16 mm camera ever made (on special request down to 23 dB; average cameras 27 dB). Another reason for choosing it for high quality film production.

To summarize : steadiness, clean images, and quietness. The making of a feature production camera.

AATON

THROUGH THE MIDDLE-EAST AND EUROPE FOR "TRANSFORMATION"

An exhausting six-week shooting schedule with hundreds of locations characterized this first sync-sound documentary from Saudi Arabia

By ROBERT JAYE

TRANSFORMATION began with a help wanted ad in the *Los Angeles Times* classifieds. I sent my resume to a box number in Los Angeles and a few weeks later Dick Jesperson of the Fluor Corporation called me about a position which involved extensive shooting in Saudi Arabia and Iran. After preliminary discussions with Dick and writer/producer Jim Wasson, I accepted the position of cinematographer.

Filming in Saudi Arabia was to begin in three weeks which was just enough time for preparation. The importance of adequate preparation for Saudi Arabia cannot be overemphasized. The tedious work of obtaining immunizations, reservations, passports, and visas must be handled way ahead of time, as many complications arise, especially with Saudi visas.

Hotels and airplane space are at a premium in the Middle East and must be booked well in advance. Insuring that equipment is in good shape is another important job. There are no rental houses in the Middle East and equipment from the USA or London can take several days to arrive and can easily spend another week clearing customs.

A basic understanding of Saudi customs is of utmost importance. No alcohol, no cinema, strict religious customs, and veiled women are all unusual situations for western-oriented people to deal with. One of my main concerns was film handling, due to the fact that it is *very* hot and humid in Saudi and that I had to keep the exposed stock (ECO) with me until I returned to the USA. I called the Kodak technical people in Hollywood for advice and they recommended normal film handling procedures (keeping film cool, taking only a day's worth of stock when shooting, no long periods of direct sunlight, etc.). Of special interest was their recommendation to definitely *not* use silica gel for humidity due to the fact that what often happens is that the silica gel will absorb the moisture from the edges of the film but not from the center causing an uneven density to occur across the film plane making the film unusable. Kodak's recommendations were correct and the film arrived back home in good shape.

"TRANSFORMATION" DIARY

All equipment, film, visas and tickets in hand, I arrive at the British Airways ticket counter for check-in to be informed of $1,300 baggage overweight charge! Too late to ship air freight, which is about one-third the cost.

First-class flight to London very smooth. Arrive at Heathrow, check in at hotel to sleep for flight to Jedda, Saudi Arabia, next morning.

Saudi Airlines frequently overbooks—today no exception; boarding requires "tip" to ticket agent. Five hours later arrive in Jedda; film equipment is immediately confiscated by Saudi customs. The next three days are spent obtaining proper papers from the minister of Information to release equipment. Equipment remains in airport lobby during negotiations.

Proper papers are obtained and equipment is released. A notation in Arabic in my passport from the Saudi Embassy would probably have prevented this problem.

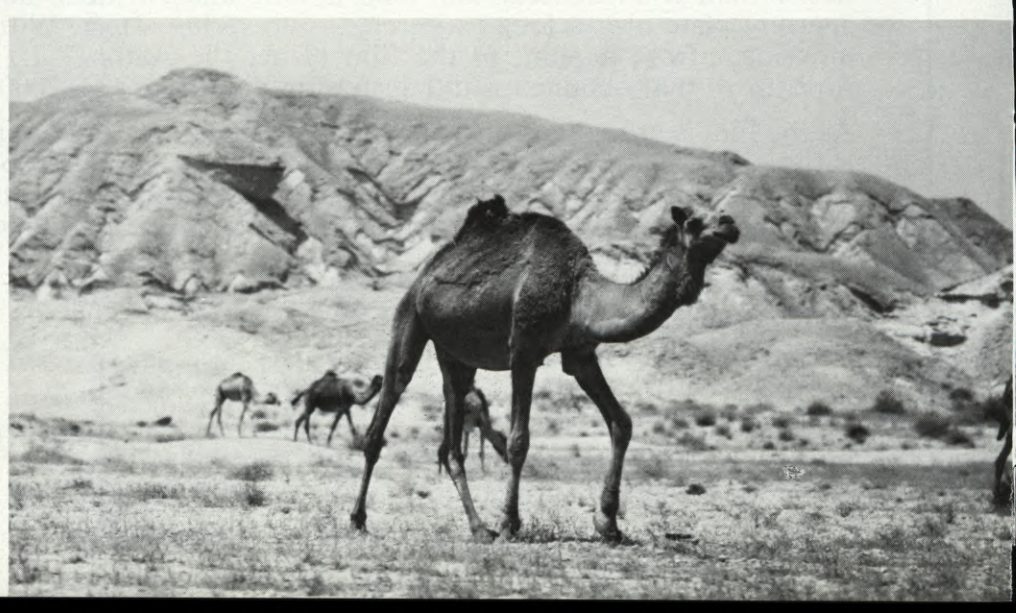
Begin filming in Yanbu, 100 miles north of Jedda, the next day. Very hot and very humid. Warned not to shoot mosques and veiled women.

Depart Jedda the next day for Dharhan to meet with writer/producer Jim Wasson. Begin negotiations to obtain permits to shoot various locations in Eastern Saudi.

Negotiations taking much longer than anticipated. Begin scouting various areas for possible shooting. Unfortunately, Saudi Arabia is probably the least picturesque place in the world. Flat unattractive desert with massive oil refineries pouring huge amounts of black smoke into the air; very challenging!

Jim is finally able to obtain the necessary permits and we begin filming. Our plan of shooting early in the morning and late in the day is a very good idea, but for one reason or another, it doesn't work out. As a result most of our shooting takes place during high sun and bald sky. This, along with shooting generally unattractive oil refineries and equipment, makes things pretty tough from a cinematographer's point of view. I decide upon a graphic approach to try and take advantage of the massive size of this equipment and minimize the generally

Photographing mosques, veiled women, military installations and airports is strictly forbidden without permission from local authorities in Saudi Arabia. (BELOW) "Ships of the desert" are everywhere and are still a popular means of transportation with the nomadic tribes.



unattractive locations and lighting conditions.

The next several days are spent driving all over the country—refineries, construction camps, offshore pipelines, bazaars, ancient cities, sand dunes, virtually every possible location in Eastern Saudi.

Jim and I decide that some sync interviews would help the film become a little something other than a hard core industrial but we have only our Arri S, which is obviously too loud for any sync work. We have a Nagra SN and all we need is to find a 16mm blimped camera in Saudi Arabia. We contact the Aramco photo department for help in locating one and, as it turns out, they just happen to have an Arri BL that they never use and are happy to lend to us for a few days.

Sync shooting goes well and as it turns out, TRANSFORMATION contains some of the first sync sound footage to come out of Saudi Arabia.

All of our filming completed we depart (gratefully) for Iran.

Conditions begin to improve immediately. Much cooler climate, better food, a more westernized country make our week of filming very enjoyable.

Depart Tehran for London to begin filming several Fluor locations in Europe for two more weeks. Conditions drastically improve. Filming almost a vacation compared with Middle East.

Anxious to get back home. Six weeks on location somehow seems much longer than it actually is.

Six countries and hundreds of set ups "in the can", we depart Amsterdam's Shiphol Airport (great duty free store) for Los Angeles.

Smooth flight and very glad to be home. Having registered equipment serial numbers with customs in Los Angeles, we have no problems clearing customs—at LAX.

SOME MIDDLE EAST SHOOTING REMINDERS

Begin obtaining passports, visas and reservations at least 4-6 weeks in advance.

Obtain customs clearance for equipment from Saudi Embassy before leaving USA.

Carry only the minimum amount of equipment needed to get the job done.

Try to avoid using cameras with coaxial magazines to minimize jamming and scratching due to film emulsion expanding from the humidity and heat.

Prepare for hot, humid and dusty climate, plenty of baggies, plastic bags and Dust-Off.

Thoroughly test equipment before departure.

HAVE A GOOD SHOOT! ■

Robert Jaye preparing to photograph the massive Ras Tanura oil refinery (the largest in the world) at the "magic hour". (BELOW) Wherever the film crew went it was mobbed by kind and curious people. Saudi Arabia does not have movie theaters and, as a result, the people were always anxious to "help" the film crew in some way.

Cinema Products' own

Ultra T ultra-fast prime lenses for 16mm cinematography.

9mm (T1.35)

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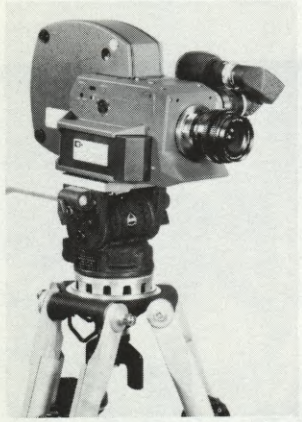
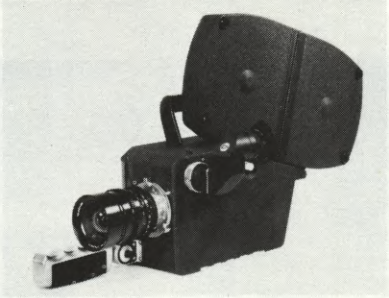
Especially designed to meet our own rigorous specifications for 16mm cinematography, and exclusively manufactured for Cinema Products, *Ultra T* high-speed lenses are the finest 16mm prime lenses available today. Regardless of cost!





Ultra T 9mm (T1.35) prime lens shown with "new generation" CP-16R/A 16mm single/double system sound camera.

Ultra T 25mm (T1.25) prime lens shown with "state-of-the-art" GSMO 16mm camera (with 400' quick-change cassette-type coaxial magazine), CP orientable viewfinder and Universal 16FX fluid head tripod.

Cinema Products' ultra-fast *Ultra T* lens series consists of four prime lenses: 9mm (T1.35); 12.5mm (T1.25); 16mm (T1.25); and 25mm (T1.25). *Ultra T* lenses are remarkably suited for filming night-for-night with available light, providing extremely sharp definition and high resolution, with excellent contrast, good depth penetration and well balanced color saturation... which makes them ideal for all professional 16mm production applications.

Outstanding design features include:

- Helical focusing mount utilizes an intermediate, fine-pitch, close-tolerance brass ring for *aluminum-brass-aluminum* thread contact for minimum wear characteristics and *zero focus shift!*
- Focus and iris rings with integral gears for motor drive operation.
- Iris ring marked in "T" stops only. Optional free or click-stop operation.
- Precisely calibrated focus scale is removable to permit change from footage scale to optional metric scale.
- Precision spacer shims under all mounts permit "fine tuning" by user, if desired.
- Easy interchangeability between CP mount and other lens mounts.

Ultra T prime lenses are presently available in CP, Arri B and Eclair CA-1 mounts. *Ultra T* lenses may be purchased singly or as a set of four.

For further information, please write to:

cinema products CORPORATION

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20.11.78

"SUPERMAN" OPTICALS

TO: DAN DAVIS
CINEMA RESEARCH CORP.
6860 Lexington Avenue
Hollywood, CA 90038
(213) 461-3235

We want to thank you all at CINEMA RESEARCH for your participation over the past nine months in the Optical work of "Superman."

The final results really demonstrate your expertise, in first class "super" quality opticals.

We would like to offer personal thanks to Peter Donen whose incredible dedication has made the illusions for the illusionists possible.

Let's not forget Joe Wallikas and Rocky Mahoney who 'fly' your printers so beautifully.

It is terribly reassuring to have the backup of such people as you have at Cinema Research.

Looking forward to your magic on Part II - Did we say Part II???

Roy Field
Optical Supervisor

Richard Donner

Thanks Dick Donner and Roy Field
for letting us "fly" with "SUPERMAN"

Cinema Research Corporation
6860 Lexington Avenue
Hollywood, CA 90038
(213) 461-3235

All of the theatrical films are also produced with stereo sound in the Dolby format for the purpose of broadening the experience.

Sunn Classic's venture into television started when the original GRIZZLY ADAMS film rated well during the family hour. That led to the production of the TV series, which ran through two seasons. The production company currently has three on-going mini-series projects in conjunction with NBC. One series of features is based upon the Classics Illustrated comic books; another on the lives of famous Americans is "hosted" by Mark Twain; and a third, GREATEST HEROES OF THE BIBLE, tells stories from the Old Testament.

All of this has led to a rapid build-up of a film community in Park City, a ski resort located 30 miles from Salt Lake City, Sunn Classic's production headquarters. Two production crews are headquartered in Park City, where there is also a 20-acre backlot with Western, New England and Midwestern streets, and two sound stages. One of the latter is set up for blue screen process photography.

The company's post production facilities, including sound recording and mixing, and film editing, are located in Salt Lake City. Initially, crews were hired on a picture-by-picture basis. Mainly, they came from all over the country.

It wasn't long before the company started to build a permanent staff. "We believe there is more creative interplay when our people work together picture after picture," Conway asserts. "It also gives our crews more of an opportunity to learn our way of doing things."

Initially, one production crew was organized which evolved to two, headed by Directors of Photography Schellerup and Paul Hipp. Both cinematographers started their careers shooting documentary and industrial films for an aerospace company in Los Angeles. Later, both worked for independent producers.

Schellerup's credits with Sunn Classic include GUARDIAN OF THE WILDERNESS, several episodes of THE LIFE AND TIMES OF GRIZZLY ADAMS TV series; THE LINCOLN CONSPIRACY, Classics Illustrateds' THE LAST OF THE MOHICANS, BEYOND AND BACK and THE BERMUDA TRIANGLE. His decision to move his family to Park City and take a staff position was motivated by factors ranging from the quality of life in the area through the opportunity to work on what amounts to an around-the-clock schedule.

Continued on Page 398

Director of Photography Stephen Gray, Director Henning Schellerup and Executive Producer Charles E. Sellier, Jr., during the filming of CLASSICS ILLUSTRATED movie, "The Time Machine". Schellerup, an ex-patriot Hollywood cinematographer, now divides his time and activity between photography and directing.

Executive in charge of production James L. Conway, actor Jack Kruschen, Executive Producer Charles E. Sellier, Jr., and Director Henning Schellerup during the filming of a scene from "The Time Machine" set in Salem, Mass., during the time of the Salem witch trials.

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Visit us at Stand Nr F-10 in Film '79, London, 2-6 July 1979

MULTI-CHANNEL DIALOGUE AND EFFECTS RECORDING DURING FILM PRODUCTION

By JAMES E. WEBB, JR.

A sound system specially designed to accommodate intentional dialogue overlapping and certain off-screen sound effects

BACKGROUND

Multi-track recording for location film sound came about because of Robert Altman's desire to have more freedom in shooting style on the pictures that he makes. Mr. Altman encountered certain frustrating restrictions in the area of sound during the filming of McCABE & MRS. MILLER. Before beginning the film CALIFORNIA SPLIT, Mr. Altman wanted to put together a sound system that would allow: (1) improvisation of dialogue during the scene, (2) the overlapping of dialogue as it naturally occurs in real conversation, (3) the ability to record all off-screen dialogue as well as the on-screen dialogue, and (4) the capability to record certain sound effects and "sub-conversations" in the scene that were normally lost in the effort to record the main dialogue. Especially noteworthy in this area are the "closed-circuit" phone calls that we recorded during the scene, as opposed to the "laying in" of the off-screen filtered voice later during some post-production phase. Many location electronic or mechanical sound effects are candidates for this category.

SYSTEM DESCRIPTION

The heart of the system is a Stevens Electronics 1-inch 8 Track Recorder. It runs at 15/30 ips. Naturally we use it at 15 ips which gives us about 25 minutes of recording time on a 10½" reel of 206 tape. Of the eight tracks, one of the tracks is set aside for sync, leaving the remaining *seven* tracks for audio. The machines (Mr. Altman owns three) were modified for these additional functions with the installation of: (1) a 50/60 Hz quartz crystal, (2) a special resolving circuit, (3) a V.S.O. so accurate in controlling the speed of the machine that we once used it to replace the sync in a scene where the crystal reference had failed, and (4) a special power supply enabling us to run the machine off a 12-volt D.C. battery pack. Machine current is 6 amps in record mode and 2 amps in stand-by. We get about a day's shooting time before having to recharge the battery. The other machines are held as back-up machines and are also used in transfer to mag-film, which is quite often done right on location.

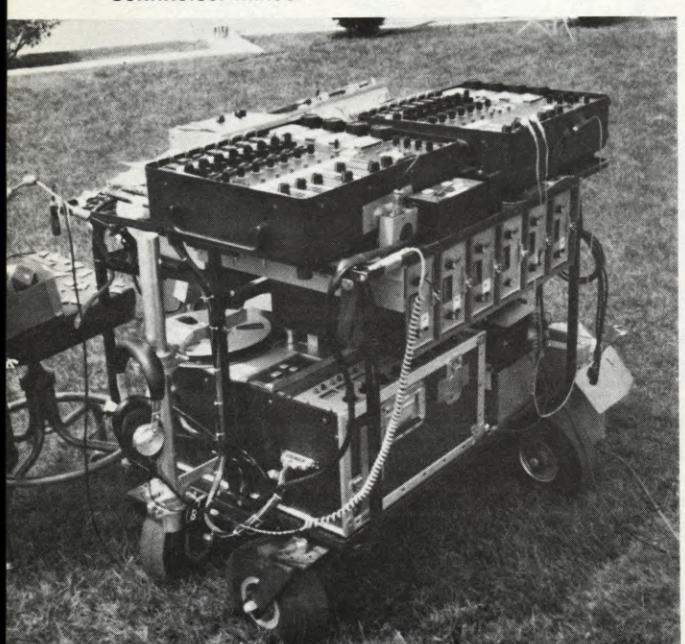
MIX PANEL

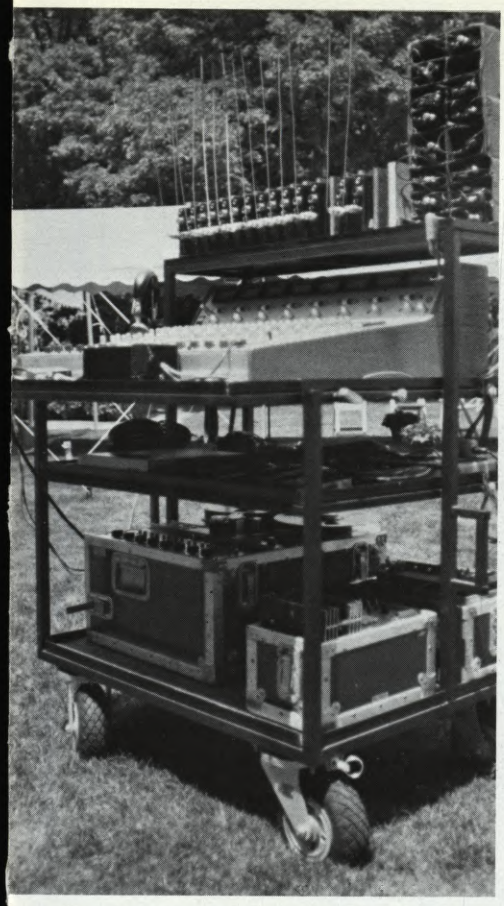
The console system has undergone one evolutionary change. System I was composed of two 8 input/4 output consoles in order to "get" the eight tracks. This console system was used on CALIFORNIA SPLIT, NASHVILLE, BUFFALO BILL, WELCOME TO L.A., and THE LATE SHOW. Unfortunately, this system lacked certain sophistications that we found useful in this type of recording. By September of 1976 we were able to build our own specifically designed console to include the many special features that we found lacking in the other system; i.e., four separate monitor busses with solo function in the "Mixer's" monitor only, special equalization designed for dialogue and not music, a slating buss and tone osc. geared to film transfer procedures, and console-based powering for Sennheiser mikes. This equipment (see picture of system II) was used on production for 3 WOMEN and *both* systems were used (simultaneously) on A WEDDING, totaling out some 16 radio mikes.

MICROPHONES AND MIKE TECHNIQUES

Because of the audio requirements mentioned earlier, it became apparent that radio microphones on the actors were the only way to fully utilize the benefits of the system. We use an English-made radio-link from "Artech" with a Sony ECM-50 electret lavalier as the actual microphone. This combination seemed to give us the best person-to-person isolation. Improvised dialogue makes it nearly impossible for a mixer to get an acoustic balance much of the time

(LEFT) The SYSTEM I model was composed of two 8-input/4-input consoles, in order to get the eight tracks. It was used on CALIFORNIA SPLIT, NASHVILLE, BUFFALO BILL, WELCOME TO L.A. and THE LATE SHOW, but lacked certain sophistications that were desired. (RIGHT) The SYSTEM II model includes four separate monitor busses with solo function in the Mixer's monitor only, special equalization designed for dialogue (and not music), a slating buss and tone osc. geared to film transfer procedure, and console based powering for Sennheiser mikes.





The sophisticated SYSTEM II model, shown here, was used on THREE WOMEN, and it was used in conjunction with the SYSTEM I model on A WEDDING, totalling out some 16 radio microphones.

with all these mikes "open" on the set. Problems such as acoustic phasing (occurring when actors shift positions and/or speak into each other's mikes) or clothing noises are all isolated (more or less) on their own respective tracks.

These are the things that have to be dealt with during the post-production phase. Although it is indeed a mass of information, these problems are handled in *this* format far more easily than if they were *all married* onto one sound track. This is not to say that great care is *not* taken to insure that problems such as clothing noise are kept to the minimum when placing the mikes on the actors. This technique is very important because the tracks are basically only as good as the mike work. It also means getting involved on certain levels of wardrobe planning. Not all miking is radio-linked. Hard-line "plant" mikes are also used when appropriate.

POST-PRODUCTION NOTES

(TRANSFER) The basic sound 'work-unit" used in editing is the 3-stripe 35 mm magnetic film. The seven audio tracks from the 1" original master are transferred off in separate passes onto two 3-stripe magnetic film rolls. The extra track, if any, is single-stripped and set aside for later use. The "assignment" of tracks from the master to its appropriate 3-stripe mag film unit is usually obvious from the scene. If it is not, then a determination must be made by the director. It is sometimes useful to consult the editor in order to avoid combinations (chosen for dailies) which are difficult to work with on the editing bench. When these combinations conflict, then some re-transferring and rearranging of the audio combinations are necessary. A special log sheet is kept of all track descriptions during production and its *accuracy* is the *only* post-production record of what you have done with each actor's voice etc. These logs are heavily referred to during the different phases of editing and dubbing. It has always been my personal feeling that someone from the editing phase should be involved with helping to keep this log during the production.

(EDITING) Mr. Altman owns two specially converted K.E.M. editing tables whose audio-electronics have been modified to include nine separate preamplifiers, each controlled by its own volume control centrally located on the editing table. Thus, an 8-plate K.E.M. can run up to three separate 3-track sound units with the picture. "Rough" audio-mixdowns to 1-track are possible from the K.E.M. when it is driven by an optional sync motor drive. All other sound editing equipment such as moviolas and sound readers etc. have been similarly modified to handle the 3-track format.

OTHER POST-PRODUCTION NOTES

Since some of the audio in certain scenes gets split into two 3-track work reels, it becomes necessary from time to time to mix these units back together in order tr screen them on more conventional projection/sound-interlock systems. (Most of these systems are geared to handle only one track.) Mr. Altman owns two portable projectors equipped to run one 3-track sound reel with the picture. There are usually additional 3-track work units with each picture reel, so it became necessary to add extra 3-track mag-film playback machines in interlock with the projection system in order to view and/or combine all the tracks for a screening. These tracks are mixed through a small utility console and the "rough" combined track is then used for occasional screenings. Of course, as the picture changes this mix must be updated.

FINAL TRACK PREPARATION FOR RE-RECORDING

Once the picture and tracks reach the

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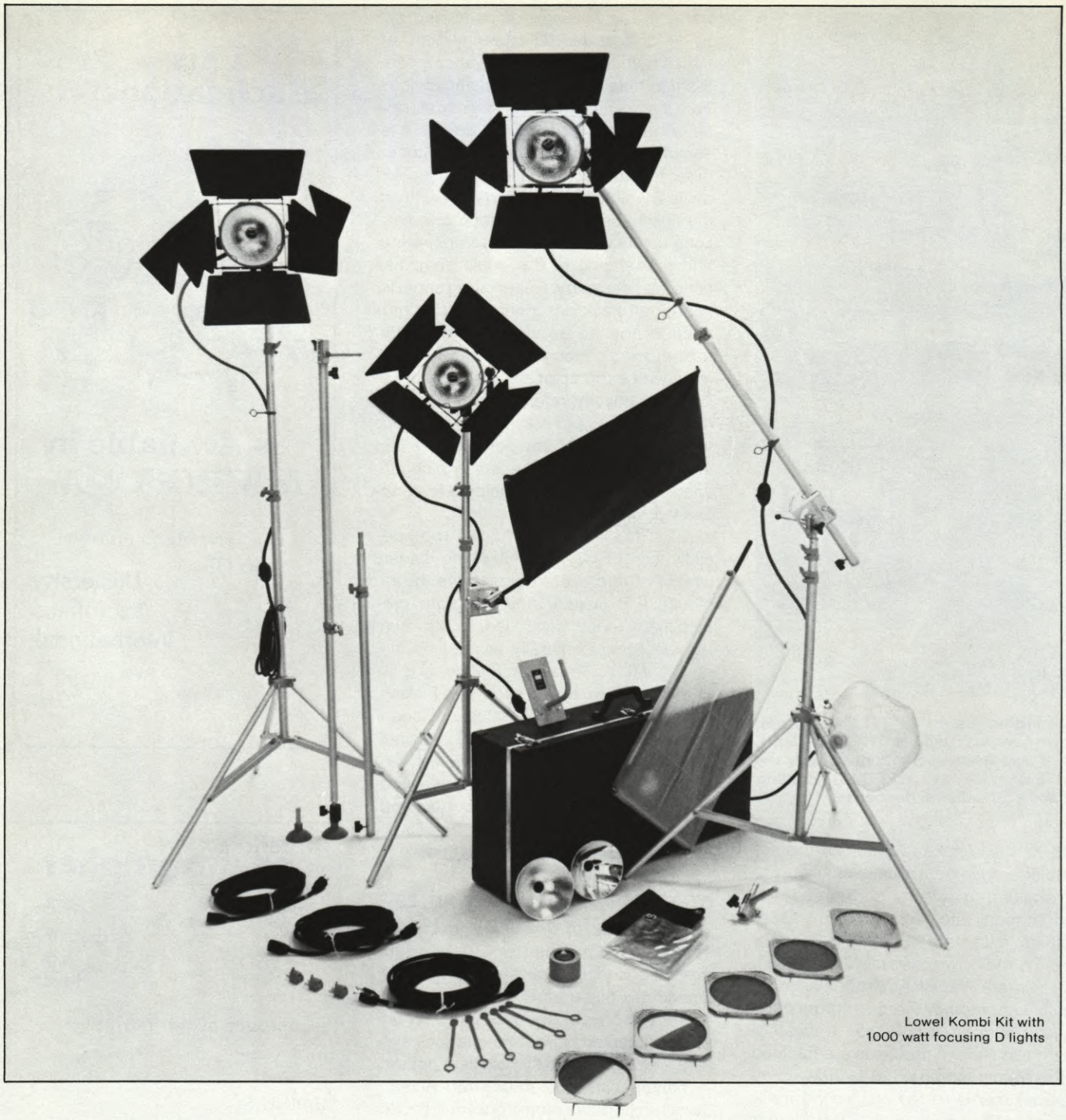

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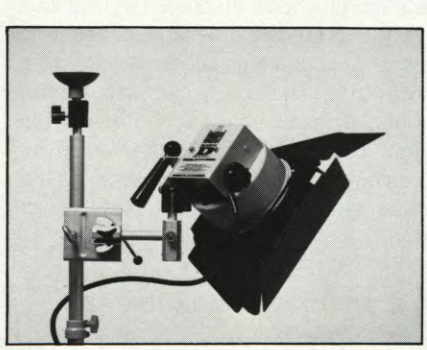

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GETTING (AND HOLDING) IT TOGETHER IN THE WILD AND WACKY WORLD OF SPECIAL EFFECTS

In a world of hyperbole and spectacular illusions to be created on film, a special kind of adhesive keeps everything where it should be

By JAMES MARKS

For Gary Zeller and Joyce Spector, it's a mad, mad world of cars that eat people, breakaway bottles, would-be bullets that shoot like the real thing, internal organs big enough to walk around in, and things that go "boom!" in the day and night.

They're the imaginative duo who operate The Plastics Factory, a bustling emporium in Manhattan that creates an almost limitless array of special effects for motion pictures, television commercials, theatrical productions, advertisements and special events.

On a recent visit to their gimmick-laden factory, a giant hand designed to lift an automobile was under construction. It would be transported to Tennessee for use in an automotive safety film. On the other end of the size scale, plaster noses for bullets were being molded, while Mr. Zeller and Ms. Spector checked plans for 107 different special effects and props that were needed for a motion picture to be filmed in Utah.

It's a fast-paced business of approaching deadlines where time is money and saving time is essential. On shipboard location off Bermuda recently, a key prop in the day's filming was a working styrene model of a harpoon gun. With shooting barely underway, the gun was broken.

"There we were in the middle of the ocean on an expensive rented boat with all kinds of expensive talent standing around and a day's shooting time about to go down the drain," said Gary Zeller. "But in this business you learn to come prepared for the mishaps. I pulled out my bottle of Eastman 910 adhesive and had the gun bonded together and working again in a matter of minutes."

In fact, the fast-setting cyanoacrylate adhesive, supplied by Eastman Chemical Products, Inc., is a mainstay in Plastics Factory operations. Eastman 910 adhesive is used to mend the fragile "sugar glass" breakaway bottles (a mixture of a sugar derivative and plastic intermediates), to attach fuses to pyrotechnic devices, and to join bases, stems and cups of breakaway goblets. It is also used to secure the plaster-and-extender bullet noses in their metal casings, to mend inflatables, and for a variety of other uses.

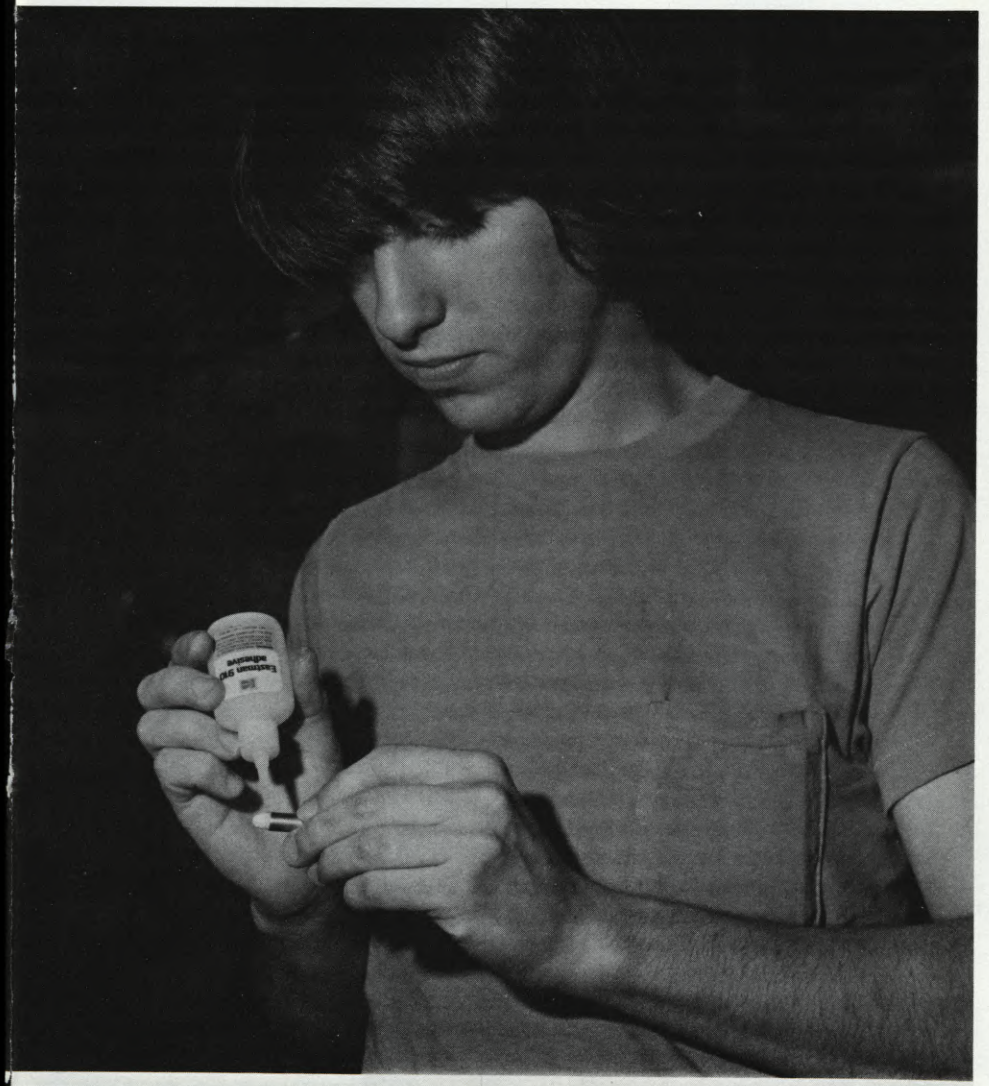
"It's a fast-setting, one-component, easy-to-use adhesive, and when you're utilizing highly skilled craftsmen as we do, you don't want to waste time mixing an adhesive and waiting for it to bond," said Ms. Spector. The thin bonds dry clear, another asset in a world of prying cameras where neatness definitely counts. The ability of Eastman 910 adhesive to bond together a wide variety of materials used in the business is another advantage.

Among the more familiar creations of The Plastics Factory are two items used in TV commercials. The organization created the flexible plastic torsos used in a widely shown Hanes commercial and the pulsating jug used for the Dowgard coolant/antifreeze commercial.

The Plastics Factory designs most of its own molds and is equipped to fabricate plastic items into any form, with a variety of molding and casting equipment and a complete formulation and testing laboratory. It also has a fully-equipped woodworking shop and a machine and metal shop. Owners Zeller and Spector, who also serve as design consultants to manufacturers, recently expanded their facilities to include a 35-acre site in upstate New York which is used for large scale constructions, manufacturing, research, development and experimentation. ■

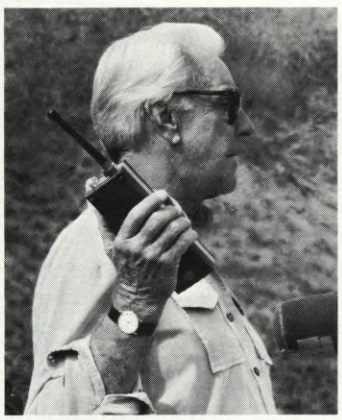
Breakaway "sugar glass" goblets, a favorite staple in scenes of movie mayhem, are molded in two or more sections at The Plastics Factory, depending on goblet size and design. Joyce Spector, who operates The Plastics Factory with Gary Zeller, joins stems and cups of goblets (made from a mixture of a sugar derivative and plastic intermediates) with a drop of Eastman 910 adhesive.

Joyce Spector goes over plans for an exhibit designed by The Plastics Factory for an Atlanta convention. (BELOW) Bullets that fire and eject like the real thing (unlike blanks) are manufactured by The Plastics Factory. Special Effects Technician Andrew Lasky secures the plaster-and-extender nose of each bullet in its cartridge with Eastman 910 adhesive.



"Why we switched from tape to 16mm film halfway through."

After shooting 11 of 24 episodes, "The Next Step Beyond" switched to film for better images and lower cost.



John Newland

"Proctor & Gamble were used to 35mm film. It took me a year to persuade them to go with tape for *Next Step Beyond*," says John Newland.

"The shows go to the affiliate stations on tape. And I had used tape on location before. Estimates we got suggested that tape would be less expensive for *this* series, too."

"But on those previous location tape shows, I had directed and edited mostly in the monitor truck," says Mr. Newland. "*Next Step Beyond* had to be shot on more remote locations – and movie style. Directing from camera position, editing later."

Multiple cameras

"I started out, years ago, in live television. I'm used to the time-saving rapidity of shooting with multiple video cameras and editing on the hoof. And I've often carried the multiple-camera method over into shooting film for television."

"Our idea was to use the most efficient medium and style for this job. Tape *seemed* to add up... but there was no precedent for using it this way. After we started, we got several calls from other producers asking: *How's it going?*"

"That was a hard question to answer – because, early on, I knew we'd made a mistake. We allowed ourselves to be persuaded that it would get better; but the eleventh show was as intractable as the first."

Long walks

"It hit me one day that both Mike Sweeten and I were spending up to *two hours* of the ten-hour day walking back and forth from the set to the monitor truck. At one beach location, the truck was 100 yards away! That's 300 feet of *sand*."

Camera "B" crew (Bob Isenberg and Rick Nervik) covers another angle.

"We also shot in gullies, forests, skyscrapers and goldmines... Everywhere, the video setup turned out to be impractical for our purposes," says Mr. Newland. "*Working from a booth with standing sets would have been a different story.*"

"We had to make these repeated journeys to the truck because only there could you really see the shot. And, in any case, we had to explain what we wanted to the engineer."

Thin patience

"The video outfit we were working with were all real pros – but the camera operators weren't used to motion-picture work. Mike would have to tell one of them: *Pan left a little... frame a little tighter* ... That wore my patience thin, because I was used to cameramen *improving* on what I ask them for."

"The other major problem was the time and money spent editing the taped material. *It took more than twice as long as estimated.* The video people, again, were real pros. But it was hard for them (and for us) to make accurate estimates on these half-hour shows to be edited movie-style."

Gossamer sheen

"We had spent a lot of time working with the video people to replace the flat electronic look with a gossamer sheen reminiscent of film. At first, the affiliates had been nervous about that effect – but they had grown to love it. So had Proctor & Gamble."

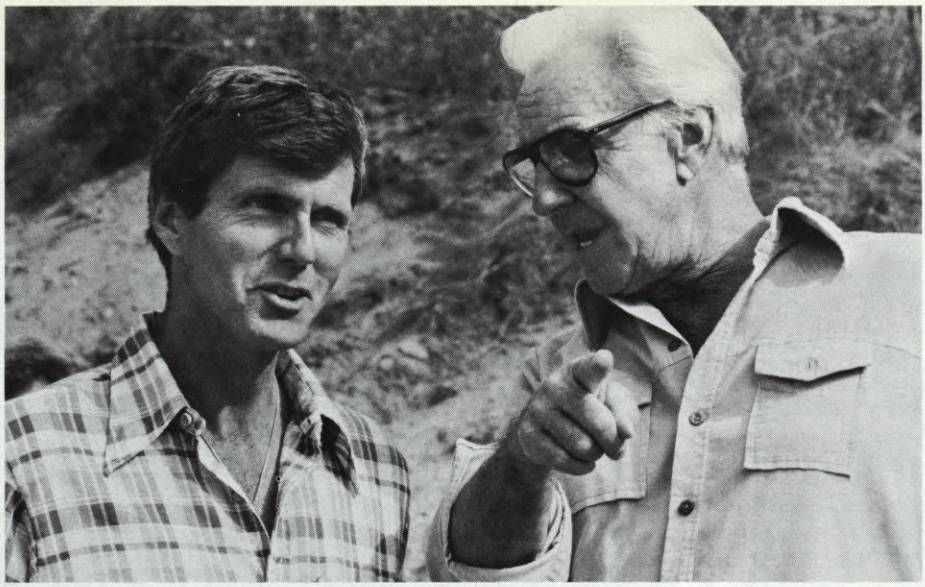
"Now, after eleven shows, I had to tell P&G we had changed our minds! We wanted to revert to film. *OK*, they finally said. And we wanted to go to 16mm. *What??* they said."

"Eventually, I persuaded them to let me shoot *one* show in 16mm. If I'd had my druthers, I'd have gone with the high-priced 35mm gear and paid the tab. But I wanted two cameras..."

Useful lesson

"I was leery of sixteen, then. *But I learned an invaluable lesson.* After using those incredible little Arri cameras, I realize I don't *need* 35mm! For what I'm doing now, I wouldn't use 35mm if I had a billion-dollar budget."

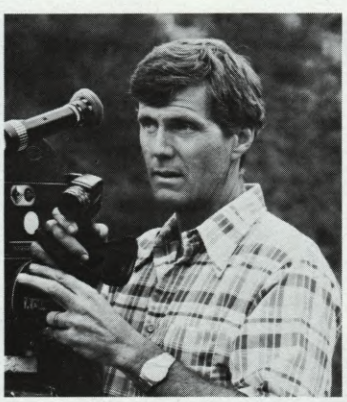
"The SR's instant magazine change saved us endless time and rawstock. With two cameras running, we would deliberately let one run out *during a scene.* Speed and spontaneity are what I'm always after – and those cameras gave me all I wanted and more."



Director of Photography Mike Sweeten (left) with Producer/Director John Newland (right): Two perspectives on the same tape/film story.

"We went with 16mm partly because the lower rental costs let us keep the two-camera system. But we discovered that faster setups were saving us a day's shooting on each show, at around $2,000 a day," says Mr. Newland. "In post-production, 16mm film was costing us *five or six times* less than tape."

"With this equipment, I'm sold on 16mm. When I screened the first 16mm show for Proctor & Gamble, I said: *Just remember one thing. The room is smaller. The screen is smaller. But the quality is identical.* They bought it."



Mike Sweeten

"I had never used tape before," says Director of Photography Mike Sweeten, "And I wasn't crazy about the idea."

"But John Newland wanted a *film* look . . . so it began to seem a challenge. The first setup was exactly that. A dimly lit bar interior up in Fillmore – about fifty foot-candles and a high contrast ratio."

"To the video engineer, our methods must have seemed strange. Low-key lighting, not much fill, plus diffusion and low-contrast filters! But that guy was a genius."

"With his expert help, we began to get a pleasing quality. It wasn't film – but it had less of the sterile look of tape. It was, really, a *new* look. People liked it."

Slow setups

"But the time-consuming setups began to wear us down," says Mr. Sweeten. "Cables all the way back to the truck. Fifty-pound cameras that needed color calibration for fifteen minutes every morning. Color charts every time we changed tape reels."

"And you couldn't judge color quality through the video camera's finder, or even on the portable monitor. To make sure, we had to go back and look at *every shot* on the big screen in the truck."

Unhelpful finder

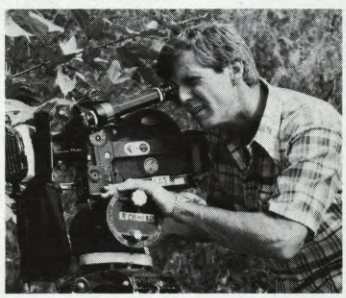
"The video finder doesn't help the operator make subtle visual choices. They're made by the engineer in the truck. The way it looks in the truck is the way it's going home. You have to *be* there."

"I'd say our reasons for switching to film were 25% aesthetic and 75% financial. 16mm was definitely cheaper – but at first I thought the equipment might be less than professional. I was wrong."

Friendly gear

"We rented a pair of Arri SR cameras, and I was delighted with them. After the video equipment, the Arris seemed *friendly* – helping you see was was going on, helping you get the *feel* of it," says Mr. Sweeten. "I felt much more at home, I can tell you."

"Moves were faster. Setups were faster. Magazine changes were faster. The new operators were used to film. With two small, lightweight cameras shooting simultaneously, we got more footage and better footage. *And the look of film.*"



Mike Sweeten lines up a shot with Camera "A."

"With the Zeiss T1.3s, we never had to push the film. Once, we shot inside an enormous theater at twelve foot-candles! Underexposure looks a lot more believable on film than it does on tape."

Any location

"We used the T1.3s on night exteriors, too. In fact, *whatever* the script called for, I could go to the location and just plunge right in. I knew that Eastman, Zeiss and Arriflex could handle it."

Fragile lean-to built by the author on desolate lava wasteland surrounding the volcano of Kilauea did little to alleviate the discomfort of two drizzling soaked-sleeping bag nights spent waiting out the hoped-for eruption. At midnight of the second night the vigil was rewarded by a spectacular fountaining of red-hot lava 400 feet into the air, the most dramatic Hawaiian eruption in years. At dawn, after the entire display had been recorded on film, the activity obligingly ceased.

FILMING OF "GENESIS"
Continued from Page 357

to minimize anticipated distortions on the dome screen.

In filming the three-dimensional models required for GENESIS, we were on very familiar ground. Not only is our shooting stage thoroughly equipped for the filming of miniatures, but a number of appropriate models existed from previous productions.

New models were required, however, to portray the break-up, "drift" and collision of continents. We solved this by creating large assemblages of three-dimensional landmasses cast in rubber latex from accurate, plastic relief Government topographic maps, the undersides of which we used as direct molds. The completed "continents" were filmed as they were motorized about the surfaces of large, concave plexiglass sections simulating Earth's curvature. Computer animation portraying the last 200 million years of continental drift was created especially for GENESIS at the facilities of the University of Illinois by Christopher Scotese, and was opticalled over major sequences of the continent model footage.

Flatbed animation techniques were used to accomplish some important and complex sequences. These were the first to be filmed directly in Imax and several scenes required six and seven passes of the negative through the camera. This also required the conversion of a large animation crane and platten at Film Effects of Hollywood which would accommodate their 15-perf 65mm animation/optical camera.

Unlike live action filming where the necessary distortion of the image on negative is accomplished by the fisheye lens, in flatbed animation all the required distortion must be designed into the artwork and movement of the cels beneath the camera.

Dietrich Friesen headed the animation task, devising complex systems of pivoting artwork elements, *moiré* patterns, ripple and diffusion glass, and properly distorted art to simulate the action of the Earth's crust and interior. Gordon Legg accomplished other major animation sequences portraying the formation of the primordial solar system. Don Moore contributed his usual superior rendering of the finished artwork.

While all these tasks were in process, my concern about the missing, most important live action sequence in the film continued to grow.

A spectacular volcanic eruption was essential to the film, and time was running out. For 18 months I had awaited a filmable eruption, and the disheartening vision of 16mm or 35mm stock eruption footage optically blown up to Omnimax was beginning to audition across the

Three-dimensional model of Earth is prepared for filming. Graphic Film's long experience in animation and miniatures was put to extensive use in the creation of major sequences of GENESIS. When projected on the inner surface of the Omnitheater's tilted dome screen, such models provide images of great scale and a strongly realistic three-dimensional quality.

(LEFT) Six-track soundtracks for Omnitheater films are fed to theater's exotic surround speaker system from separate 35mm 6-track magnetic reproducers at right. (RIGHT) Futuristic projection facilities of America's newest Omnimax theater feature huge IMAX 70mm projector (right) and 10,000-foot print (foreground) fed from horizontal platter. (BELOW) In a "push-button" operation, Chief Projectionist Joe Edwards activates Omnitheater equipment from console. Omnimax projector (rear) elevates two stories to projection port at center of theater for performances.

more desperate screens of my mind.

I had established alert arrangements with volcanologists and laboratories around the world, but it was a slow period for vulcanism and the alert calls were few and unpromising. Etna belched politely several times. Iceland managed an eruption so small it looked like a chocolate sundae the following day. Niragongo in Africa had cooled from a spectacular eruption the year before and its extraordinary lava lake had drained back into the Earth's plumbing. La Soufriere threatened to erupt spectacularly—some scientists predicted it would decapitate the island of Guadeloupe—but steamed itself to sleep while we stood vigil a continent away.

Then came the middle-of-the-night call from the Hawaii Volcano Observatory: "We have an eruption for you, Mr. Casey."

A rift eruption of Kilauea Volcano had begun a half hour before. The scramble was on.

Eighteen hours later, we stared down at the eruption from the air, our crew ready and equipped—with one sad exception: our Imax camera, air freighted by its genius-creator, Bill Shaw, from Imax in Canada that morning, had been misplaced during a change of planes in Chicago.

For two days we filmed in 35mm, helplessly watching the eruption die, while I placed volcanic telephone calls to an airline which shall remain nameless.

When the camera finally arrived, the eruption had ceased altogether. Our allies at the Volcano Observatory assured us that magma was still moving beneath the Kilauea Rift and that it might erupt

Continued on Page 380

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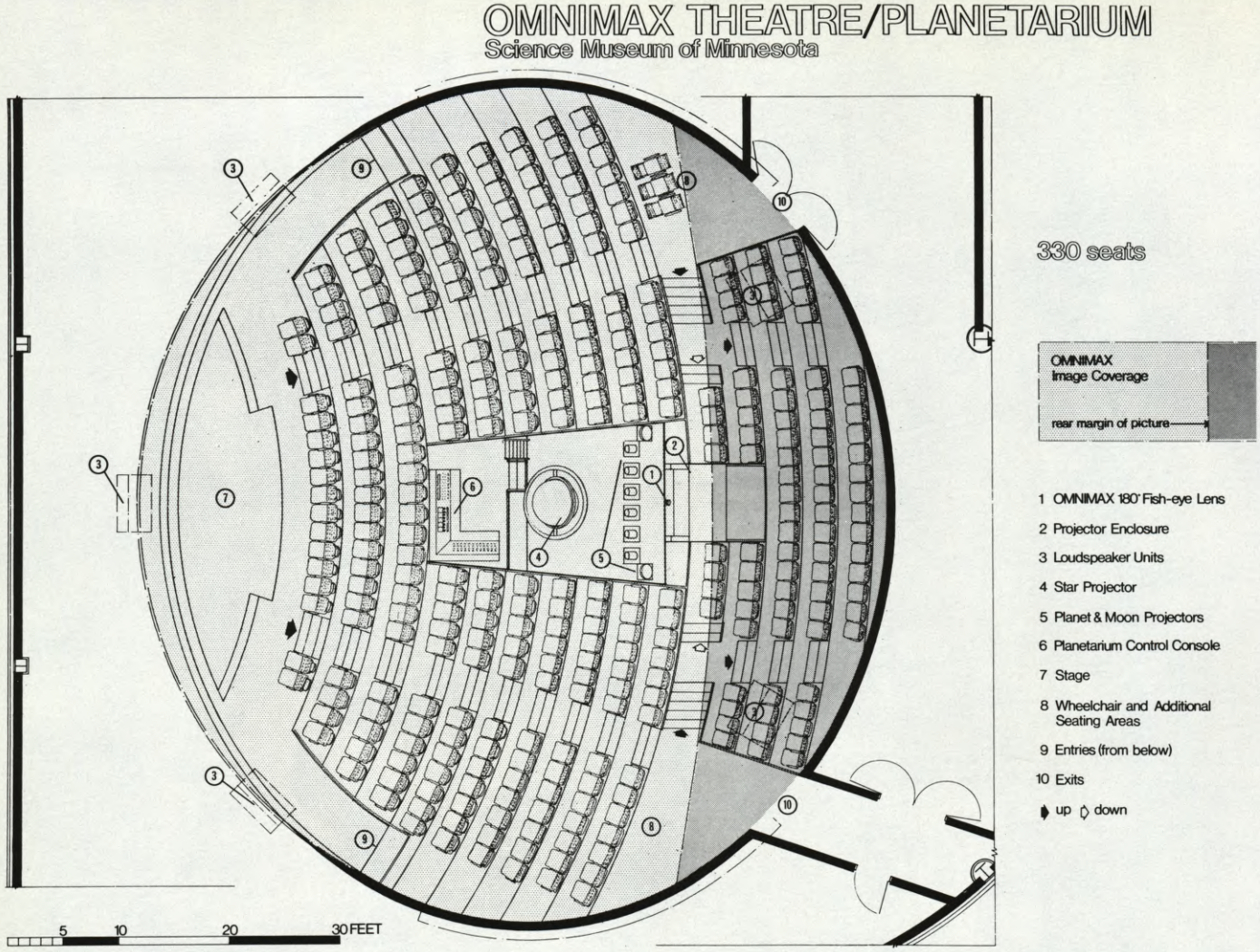


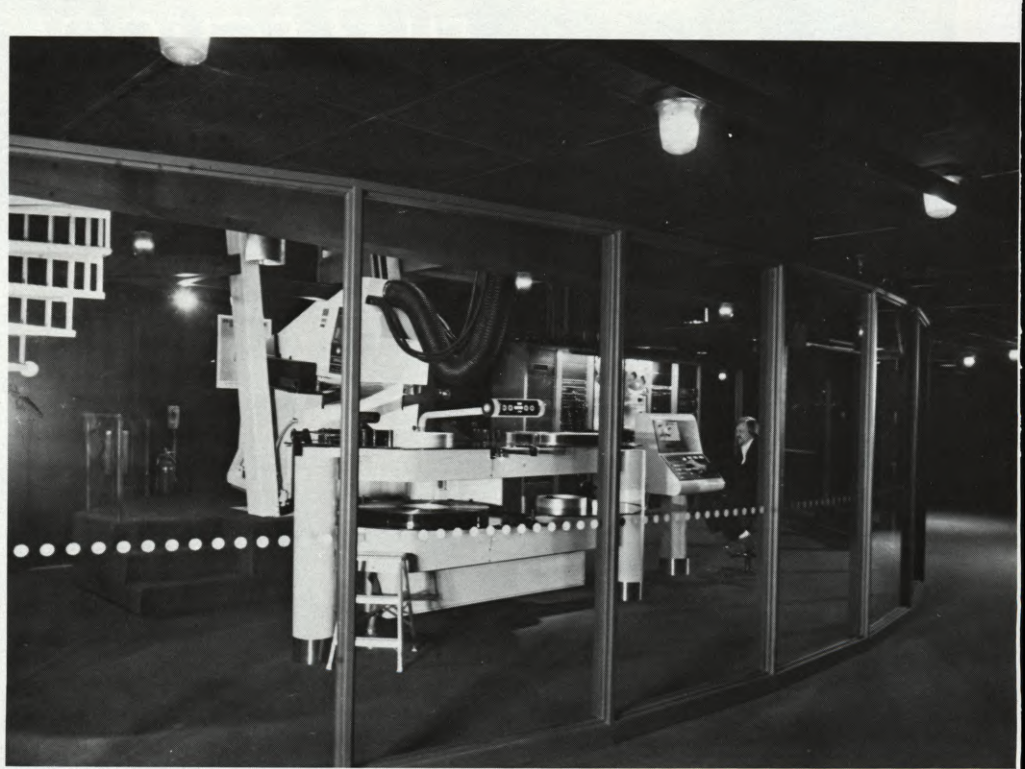
Schematic floorplan diagram of auditorium interior of the new William L. McKnight/3M Omnitheater in St. Paul, centerpiece of the Science Museum of Minnesota. The auditorium, of tilted dome design, seats 330 viewers at each performance. (BELOW) The futuristic projection facilities of the Omnitheather can be viewed through floor-to-ceiling windows by audiences entering the dome theater.

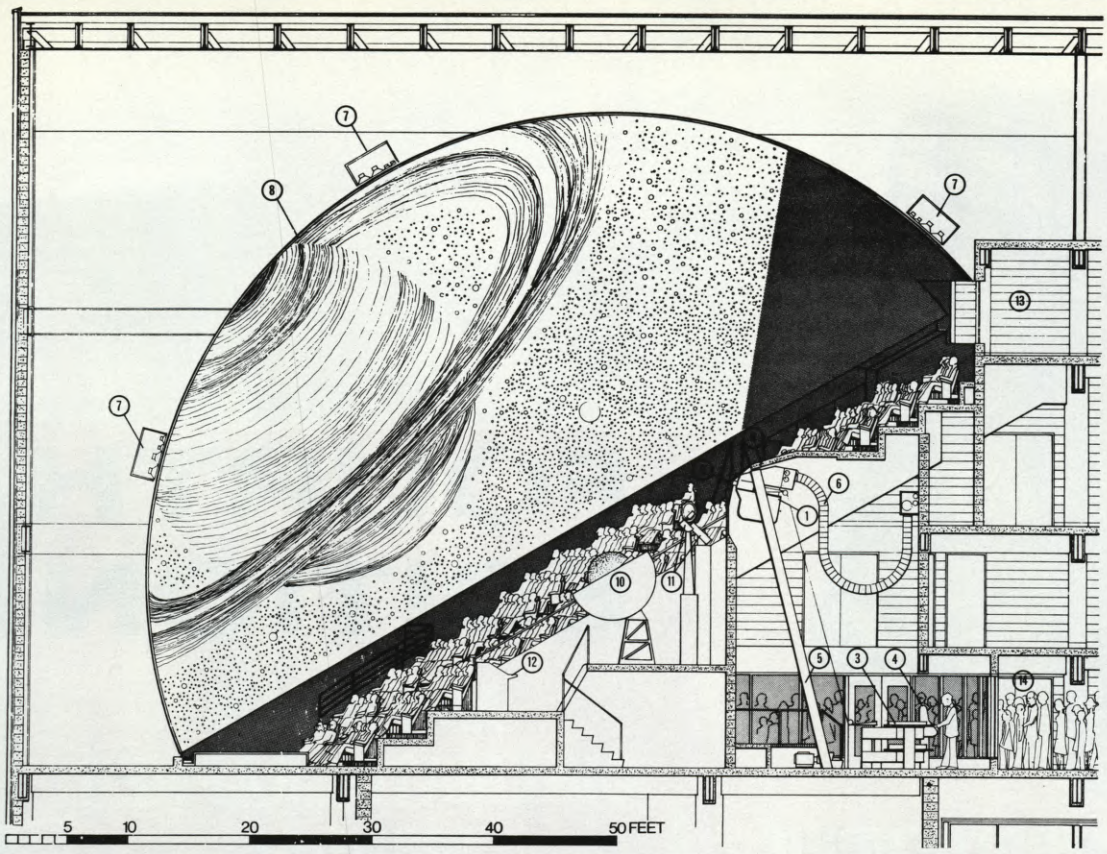
FILMING OF "GENESIS"
Continued from Page 377

again. But where? Already the volcano had erupted at three different sites along the rift which extended half the length of the island, most of it inaccessible even by helicopter.

Arrive "Sullivan's luck". Mike Sullivan flies in to help with the shooting as he did all through the roughest of the overseas filming, bringing with him that other quality of a perfect client: the sunny optimism that "everything's going to turn out just fine". He turns out to be right again.

We helicopter into a remote spot, site of one of the previous eruptions, and wait through two drizzling, soaked-sleeping bag nights. At midnight of the second night we are awakened by a growing roar and lava begins to spurt from a point several hundred yards directly before us. Presently the eruption is fountaining 400 feet into the air (see cover), the most spectacular Hawaiian eruption in years. The eruption continues until dawn while





Schematic cross-section view of the Omnitheater auditorium, graphically illustrating its tilted dome structure. In addition to the Omnimax presentation, versatile facilities allow for conventional projection, plus planetarium shows. (BELOW) Interior of the Omnitheater features sharply-tiered seating facing a full hemispheric screen. The Omnimax projector elevates to centered projection booth to project dome-filling image in the world's largest film format.

we film exultantly (Barry Herron is cameraman on this shoot), moving back three times from the advancing lava. At dawn, the eruption ends as abruptly as it began; and other cameramen helicoptering in by daylight find nothing but cooling lava and a small, grinning crew with an oversized camera.

Finally, we had the makings of a film.

Gone was my rage at the airlines which had misplaced the camera.

Gone was my anger at the Greek official who had cancelled the greatest aerial sunset shot of Athens five minutes before we were aloft (he pled national security, but I suspect his *souvlaki* was getting cold at home).

Gone was the pique at the room attendant of the Nairobi hotel—man and fly sprayer inseparable—who relentlessly sprayed my bed for insects—whether I was in it or not.

Forgotten was the anxiety that the encircling, whooping, spear-jabbing Masai warriors (who had been coached through four layers of interpreters that the Imax camera was a lion) might indeed spear the camera—or, worse, skewer my trusting cameraman.

Softened was the grief over unyielding clouds, the scratched African negative, and the wondrous night aerials of San

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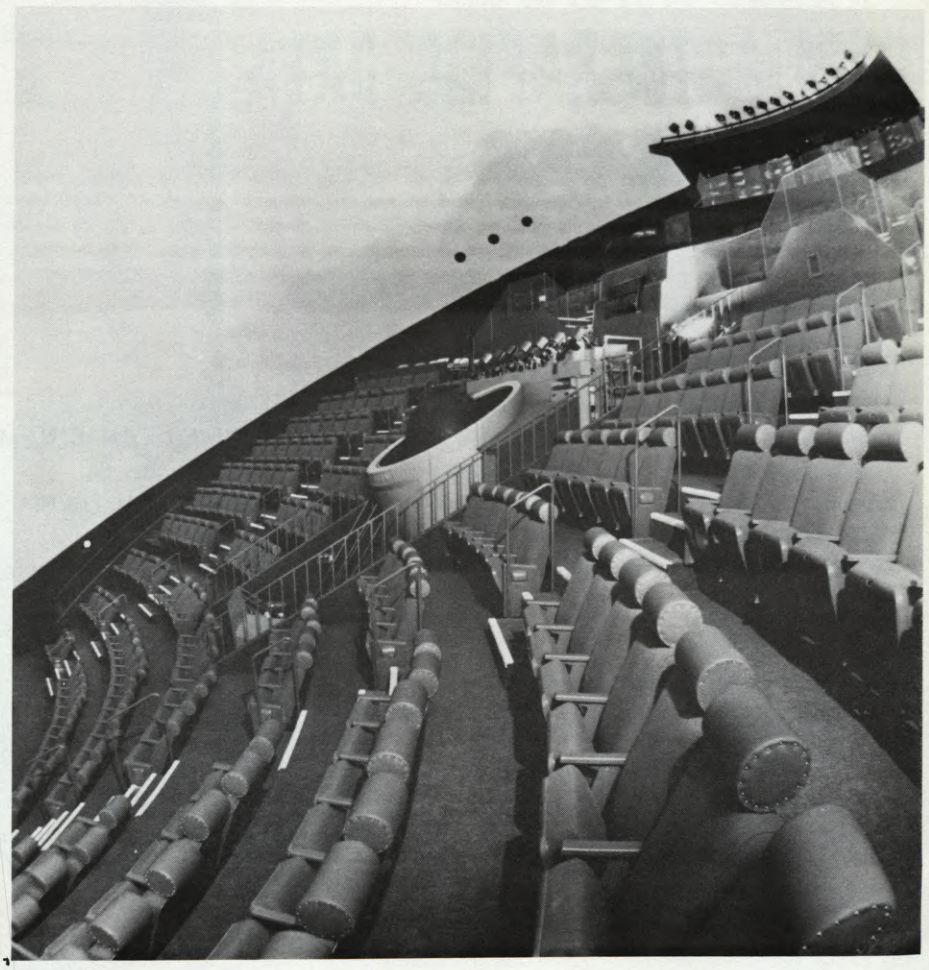

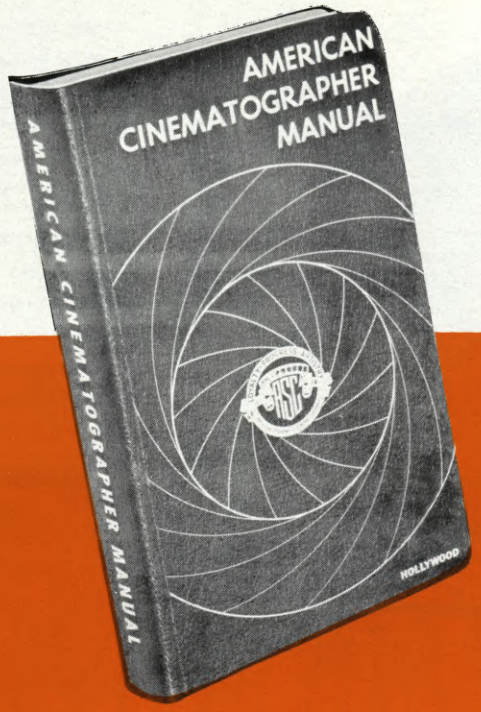

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AN AMERICAN FILM INSTITUTE SEMINAR WITH JAMES CRABE, ASC

A cinematographer who started out as a magician shares his considerable expertise with student filmmakers of the A.F.I.

PART II

What follows is the concluding segment of a seminar sponsored by the American Institute (West) for Fellows of its Center for Advanced Film Studies.

The seminar, moderated by Howard Schwartz, ASC, featured cinematographer James Crabe, ASC, and was preceded by a screening of SAVE THE TIGER, on which he functioned as Director of Photography.

QUESTION: Could you talk a bit about the final scene in ROCKY, the fight scene? It was a really good sequence all the way around. Where was that shot?

CRABE: At the Sports Arena.

QUESTION: In addition to the Steadicam, did you use two other cameras a lot of the time?

CRABE: Actually, the Steadicam was used very little in the fight, probably a few cuts. The Steadicam, of course, is a terrific thing, and Garrett Brown, who operated it in ROCKY, is terrific, and I presume he is one of the best Steadicam operators around.

SCHWARTZ: He is actually the guy who invented it.

CRABE: But the fight had a lot of good things going for it, not the least of which was the fact that both Sylvester and Carl were so good. I mean, they really looked like they could fight, whereas if it had been some goosey-necked actor from Schwab's it would not have played nearly as well.

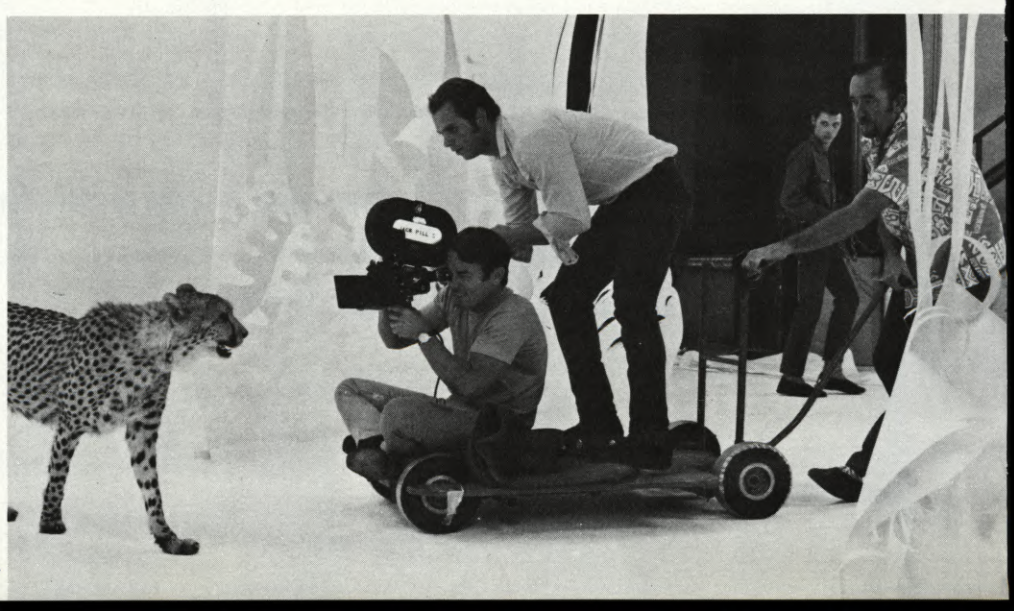
COMMENT: That punch that Rocky lands in the first round when you have the feeling that he's just going to get slaughtered and everybody's getting sort of uneasy and then he comes off with this left, it's pretty convincing. I mean, he's a little off balance but—

CRABE: Well, of course, you know, when you're shooting fights, unless someone is really hitting somebody on the chin, you can't see the angle in profile where the chin and the jaw connect, so you get over a little bit to one side and it looks like a hit. And they would choreograph the fight in rounds—these guys went to a gym every weekend and would practice the whole thing—so when you said, "O.K., into the 11th," or whatever, they would be able to go to those positions and do what they were going to do, which of course made it a lot easier.

SCHWARTZ: It was a terrific job of preparation.

CRABE: And they also were really in great shape and could do it and have the stamina to do it again and again and make that part believable. And John Avildsen, who is a great amateur movie nut, has a little Super-8 Nizo camera that he shot a lot of little tests on, and when they were doing their stuff he shot quite a bit of film to try to get ideas about angles and things. I went down one morning to the gym with him and we played around

With youthful James Crabe behind the camera, Jeep backs into the surf at San Diego *circa* 1954 to film scenes of underwater demolition team for "YOU ASKED FOR IT" TV series. (BELOW) Shooting a commercial at Film Fair with an actor that can't be expected to hit marks while walking through a white paper sculptured jungle.



with a little videotape thing, because he likes gadgets, too. And we shot videotape and saw some playbacks which were probably helpful. Of course, in actual fact, when you get into the ring the problems are somewhat different. Among other things, we're shooting a fight where there are supposed to be 11,000 people and there's maybe 50 up there in the audience. For some of the shots we had large groups, but for the balance of the fight where we couldn't play around with masses of people in the background, we shot against basically black backgrounds. What we tried to do, so we wouldn't have to show large areas and to generate a little more feeling of excitement and moving backgrounds, and just to expedite getting it done, was use longish lenses on at least three cameras rolling simultaneously—one from one side, one from the other side and one from the back or front or whatever angle seemed most appropriate to the particular round we were shooting. We would place them strategically with some forethought, but still accidents do happen and you don't really know until you see the dailies exactly where those bodies are, and by getting that kind of coverage, maybe getting a couple of takes of each round—and these guys, as I said, could perform over and over again—we got terrific coverage.

COMMENT: I really liked the microphone shot.

CRABE: The microphone shot? That was a happy accident. They had a production design man whose name is Bill Cassidy—he is a very talented guy—and he did a lot of production design sketches and stuff for the fight and the new ending. I'm sure it was John's idea as well, that looking right down on the flag, on the red-white-and-blue where this black man and white man are having this bicentennial battle, would be an interesting graphic. It just happened that very close to where we had to look down through the overhead rig was the microphone pulley. It worked out very nicely.

QUESTION: On that same end of the fight, John Avildsen came here last spring and showed the film before it was completed, and there seemed to be a great deal of question at that time as to how the end of that picture would go, and I was curious since we saw it again a couple of weeks ago as to how it differed between how it ended up and how it started out and how the photography and the approach to the actual drama changed and how you might have done it differently if you had known the ending.

"YOU ASKED FOR IT" viewers demanded to know what the circus audience looked like to a clown, so Crabe obligingly donned clown gear and makeup and filmed the unsuspecting crowd with an Eyemo camera concealed in a package. (BELOW) For the same show, he prepared to shoot speeding Fire Ladder Truck sequence depicting "A Day in the Life of a Fireman."

Crabe poses with shy, dignified Masai ladies in Kenya (1964) while filming ABC "AMERICAN SPORTSMAN" show. (BELOW) Shooting helicopter aerials at Cooks Inlet, Alaska, for a commercial on energy conservation. The crew lived and worked aboard the oil drilling rig in freezing weather.

On location in Santa Cruz, California, for filming of "THE ENTERTAINER", Crabe takes a light reading, while the star of the film, Jack Lemmon, applies his makeup. Crabe has a special rapport with Lemmon, whom he also photographed in "SAVE THE TIGER" (for which Lemmon won the "Best Actor" Oscar), and the currently-in-release "CHINA SYNDROME".

CRABE: I don't know how we would have done it differently, although there is a possibility that we might have made changes. But what you say is very interesting and very true. The picture was in fact finished without an ending. We had an ending, more or less of one, but the ending pretty much left Rocky at the end of the fight without the girl having ever seen the fight at all. We just left her in the dressing room. After all, doesn't the mother of John Garfield, who's always fighting, at least hear it on the radio? Or see it and cry a lot? In fact it seemed like sort of a cop-out ending. It ended with Apollo Creed being carried away by the throngs and Rocky is alone and a loser. You're absolutely right about the ending. So what happened–I don't know exactly what happened; I wasn't inside of the cutting room and executive offices; I can't say who decided what–but it was apparent that there was no satisfactory ending to the film that resolved the relationships.

QUESTION: Was the fight going to end in the same way, with Rocky going the whole 15 rounds? Was that the basic concept?

CRABE: Yes! He might have been a little bit of a bum, but he had a great heart and he went the distance–that was the story.

SCHWARTZ: The thing I don't understand is—did they go back and shoot an extra day or two? How much later was this?

CRABE: The picture shot from January 9 to February 12, 1976. The new ending was shot on June 2, almost four months later. You can really see in retrospect, how important that was. They realized they really didn't have it together, because we didn't know what happened to the estranged brother, we didn't know what happened to the relationship between Rocky and Talia after he went the distance. So we went back to the Sports Arena, this time with about 25 extras and Talia and Sylvester, but without Burgess Meredith who wasn't available, and shot the new ending in one day, those intercuts which would work with the existing film. We got shots of Talia coming through the curtain, and seeing the final rounds. Now of course you've got it made. Now you've got a shot which relates the feelings of the people concerned–then we see Rocky in the ring still slugging. Now we see Talia going through the throngs–of 25 people shot with a long lens so it looks like there's more. And now we're at the side of the ring where there's pandemonium, and

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FILMING OF "GENESIS"
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Francisco, for which pushed development could not compensate for the slow fisheye lens.

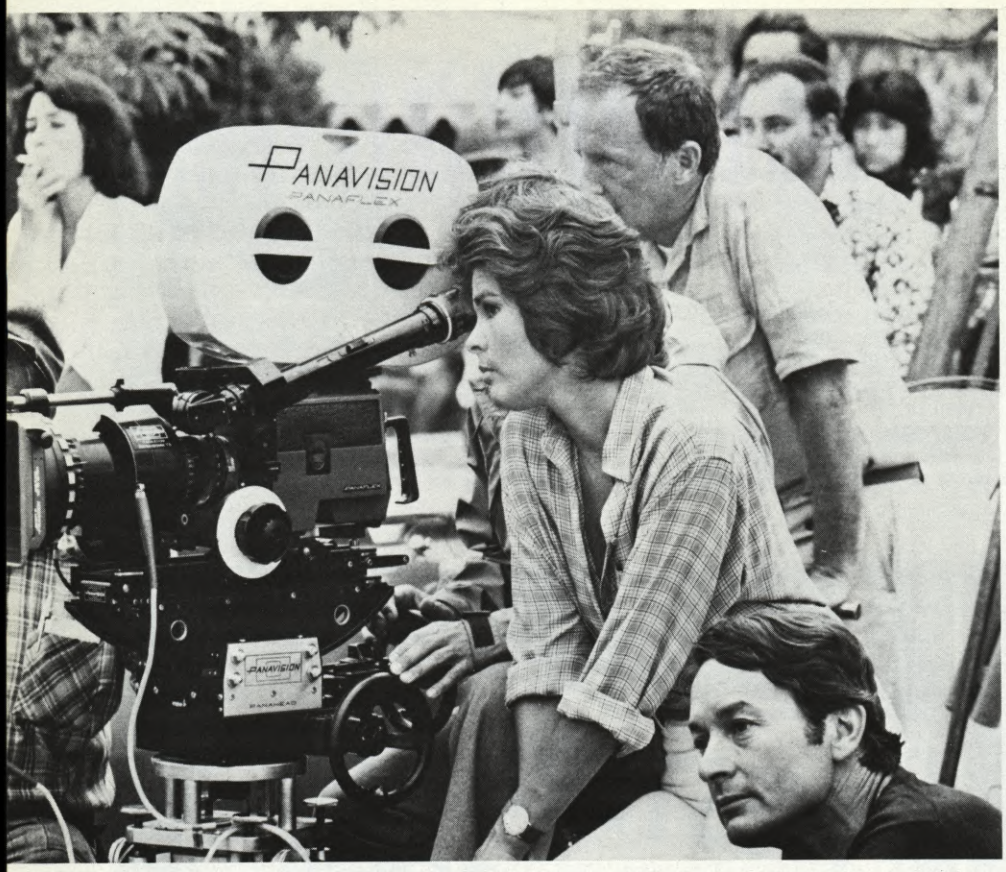
We had the makings of a film. Looking back, it all seemed even fun.

More importantly, the film has been a gratifying success at the Omnitheater. Mike Sullivan phoned several days ago to report that every performance had been sold out the previous week, 22 weeks after GENESIS opened. The film also opened this week at Detroit's Space Theater and will open at Easter at the San Diego Space Theater.

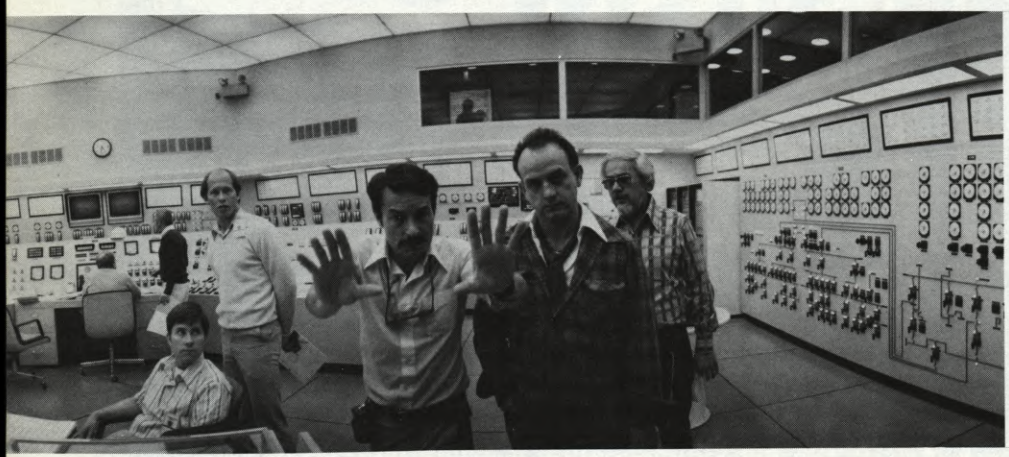
Many contributed to the film: Paul Novros for a beautiful score performed by the National Philharmonic Orchestra of London; Malachi Throne as narrator; writer Tom McGrath for the better half of the script; Jay Connor for multiple talents; Les Novros, president of Graphic Films, for keen judgement and unfailing support; that great old-timer, Cecil Love at Film Effects of Hollywood who handled the opticals; timer Bill Pine at MGM Lab; the good guys at Imax Entertainment, Ltd.; and the Science Museum of Minnesota, as supportive and trusting a client as one could wish for.

We're off to our next Omnimax film, TOMORROW IN SPACE, about the future of Man on our newest frontier. Story boards are sprouting. Animators humming. The darkened shooting stages, animation stands and miniatures beckon. We'll again be creating fantastic, familiar worlds: Mars, Jupiter, Saturn and the rest of the Solar System; space craft, space stations and space colonies; missions to asteroids and comets; the future's the limit. Goodbye, real world.

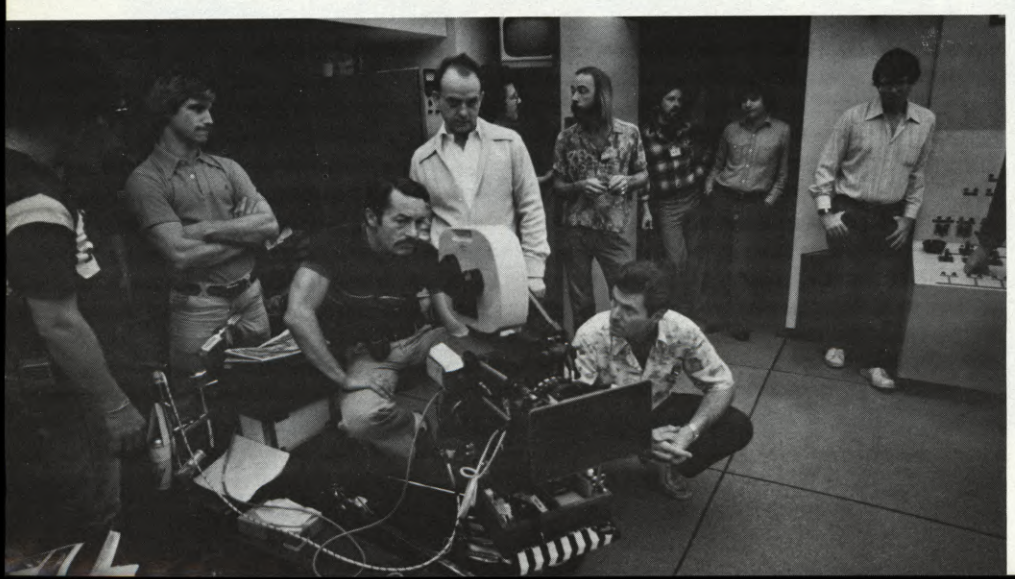
But how I'll miss those exotic Earthly locations. And the fire, roar and stench of the volcano. ■



Director Anthony Harvey, Ali McGraw and Director of Photography Crabe (lower right) on the set of "THE PLAYERS", recently completed in locations that included Wimbledon, England, Monte Carlo and Cuernavaca, Mexico. Also starred, as a young tennis hustler, is Dean Paul Martin.



Lining up a camera angle with Director James Bridges on the control room set of "THE CHINA SYNDROME", a thriller about possible nuclear disaster. (BELOW) Preparing for a dolly shot in the same set. The room was primarily lit from a diffused plastic ceiling that simulated fluorescent light.



AN A.F.I. SEMINAR WITH JAMES CRABE, ASC
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now we see the brother, who's been sort of a bad news character, open the ropes so his sister, Talia–that relationship is now a little bit better–can sneak through and get past the cops to get to Rocky. Now we see Rocky again: screaming for the girl, searching for her. And she now winds her way through the crowded ring and they embrace, "I love you. I love you." And at last–It all works. And the music was really pretty terrific, too, which I didn't realize until I played the album separately after having seen the film. It's amazing what the scissors can do. It was a thrill to see an audience react to the final cut. A kind of mass demonstration.

QUESTION: The shot in SAVE THE TIGER in the theater—when you were told that you had to produce a shot like that—here you've got an enormous theater that you've got to cover but it's supposed to be dark and really the only illumination is coming off the screen. You had one shot there near the end where Lemmon was leaving and going out and some other shots where you covered an awful lot of it. In your own mind when you were thinking about how you were going to do that, what did you do and how did you do it?

CRABE: Well, in motion pictures, of course, photographically, just because the scene looks dark doesn't mean that there's less light on the people. It's usually just coming from different angles and there are more areas left dark. How a movie theater really looks in actuality and how it looks in film are probably two different things. I suppose if you took a time exposure of a crowd watching a movie it would be very flat and very lit and that you'd see the walls of the theater and they'd all be very bright maybe. I don't know–I've never done it that way exactly–but usually the attempt is to create the effect of light coming from the screen, which in my opinion doesn't usually flicker–scene changes affect the reflected light but we don't usually notice flicker on people–we used lights that were crosslights and backlights and tried to position our actors, too, so that we never had front-on shots, which would be rather flat and uninteresting from the screen-light. We raked the angle somewhat and then cheated the raked angle of the light on the far side so that there would be a shadow side in the foreground. And then up in the balcony where one usually expects for there to be

Continued on Page 404

SUPER-GRIP AND THE FILMING OF A RACE CAR SPINOUT

The problem was to devise a mount that would hold the camera to the car body at the proper angle all through the action of a spinout

Asking a race car driver to deliberately spin-out his automobile is like asking a golfer to miss an easy putt or a basketball player to blow a crib shot. But when cameraman Don Shoemaker and director Larry Kamm asked driving champion Jackie Stewart to spin his race car so the action could be recorded on film for ABC Sports, Stewart went against all his natural instincts and had a go at it.

What Shoemaker wanted was a unique point of view angle which would show the car spinning out not only from inside and outside the car, but also from just outside the front wheel, certainly angles that the average non-professional race driver would never hope to see.

"Setting up for our master shot was relatively simple," Shoemaker says. "We did our filming at the International Race of Champions in Riverside, California, and used a Photosonics camera at 200 frames per second for the overall shot."

"The other angles were not as easy. We had two Arri Ms inside the car and, naturally, they not only had to be angled correctly, they had to be mounted so they would be secure enough to withstand a tremendous amount of centrifugal force while a powerful racing machine went into a violent spin at almost 100 miles per hour. Also, the inside mounts had to be small and light, so we went to our friends at Alan Gordon Enterprises Inc. in Hollywood, with whom we have worked on many special filming assignments such as this, and asked what they could come up with," Shoemaker says.

The inside mounts, which AGE Inc. had used on other similar filming assignments, many of them with Shoemaker at the camera, were small, aluminum plates which were mounted inside the race car so that the two Arris could record a clear angle from the driver's point of view.

"The outside mount, to hold the camera which would give a closeup of the front wheel, was even a more intriguing problem," Shoemaker says. "Not only did we need a mount that would undergo all the stress of the spin-out, but it also had to hold the camera onto the car body at the proper filming angle throughout all the action we were trying to record."

Again, Shoemaker went to AGE Inc. for this mounting equipment and used a Super-Grip, a rather small, simple looking device whose appearance belies its tremendous value in mounting situations such as the one Shoemaker was faced with.

"The Super-Grip resembles an oversized suction cup, but that hardly does it justice. In actuality, it's a powerful gripper with a bracket that allows you to mount and angle your camera with unbelievable precision," Shoemaker reports.

"We mounted an Arri S on the Super-Grip, attached it to the car door on the driver's side, angled it at the front wheel, and we were in business. We left the Super-Grip in position overnight to see if it lost any pressure and when we checked it the next day it was as tight and secure as when we first put it on. It's an amazing piece of equipment, small enough to pack in a handy carrying case, yet powerful enough to do a number of seemingly impossible mounting jobs," Shoemaker says.

The car used in the film was a Chevrolet Camaro and Shoemaker reports that Jackie Stewart spun it out for six separate takes. "We wanted Jackie to get the feel of the spin-out and also wanted

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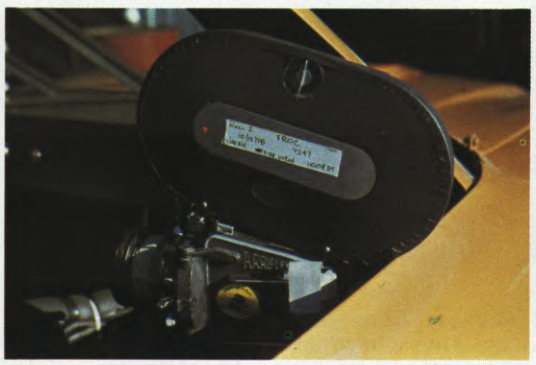


What was wanted was a unique point of view angle that would show the car spinning out, not only from the inside and outside of the car, but also from just outside the front wheel—angles that the non-professional race driver would never hope to see. Alan Gordon Enterprises Inc. of Hollywood solved these problems by using small aluminum plates to mount the cameras inside the car and the powerful Super-Grip to mount the cameras outside the car.

BEHIND THE SCENES OF "TILT"

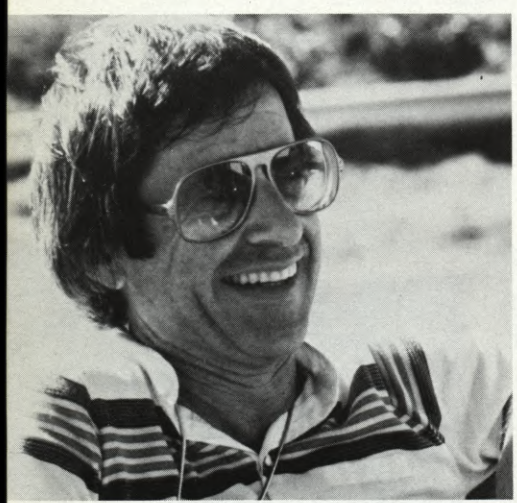
After ten years of blood, sweat and tears to get it into production, this sensitive, contemporary feature film, backgrounded against the nationwide pinball craze, finally reaches the screen

Written, produced and directed by Rudy Durand—and photographed by Richard Kline, ASC—TILT is set against the colorful background of pinball competition.

For Durand, the completion of filming of TILT (his first time out as director) marks the realization of a ten-year dream, since it was that long ago that the idea for the film was conceived. Ironically, the start of production came right on the heels of the current revival of pinball interest sweeping the country.

But from concept to actuality was not an easy road for Rudy Durand.

"At first I hired several writers to write the script," explained Durand, "but none of them managed to capture what I wanted. This took a lot of time. Then someone tried to sue me to get the copyright to the title."



But the drive to make TILT remained steadfast. Finally, Durand took off to write the screenplay for TILT himself. One hundred and eighty-eight pages later, the script was completed.

Things began to happen with TILT. NBC's vice president Mike Grossman offered $900,000 for a two-showing deal based on the screenplay. During these negotiations, unbeknownest to Durand, Mel Simon had gotten hold of the script and read it. Not only did he like it, but offered full financing. Durand and Simon made their deal; TILT was now off the ground.

Then, TILT's future took a dramatic leap forward when famed filmmaker Orson Welles, appearing on the *Tonight Show,* turned to host Johnny Carson and some million viewers and said, "TILT is the finest screenplay I have ever read for one particular reason—whether it be film, play or book, it is always the good guys against the bad guys. But in TILT, every single character has a redeeming factor."

The next day Durand had offers from several of the major studios to buy the script. But he wouldn't sell.

Actually, it was Durand's original intention to cast Welles in the role of "The Whale" (being played by Charles Durning) that brought the two together. What was to be a fifteen-minute meeting turned into a five-hour dialogue. Concluding their talk, Welles said to Durand—"From all you've told me, I think you should direct it yourself." With this advice, Durand was now into another aspect of TILT—he would direct.

Durand quickly started to assemble the best possible creative-technical crew he could find in the film industry. "I wasn't going to settle for 'just a production crew'," explained Durand. "I wanted the best; I wanted a group, talented people, who could work as a unit, a family. Moreover, I wanted them to believe in the project. I'm grateful I got what I went after."

Everything started to come together. But for Durand, bringing TILT to this point was not an easy road. There were times when, in order to pay those working with him on the project, he had to sell everything he owned. And, there were the promises, the deals, the set-backs, the periods of famine and frustration. Determination ruled.

"People thought I was crazy," said Durand. "The very idea of TILT ever reaching the screen became a running joke to them. Oddly enough, there were always the offers to buy the script."

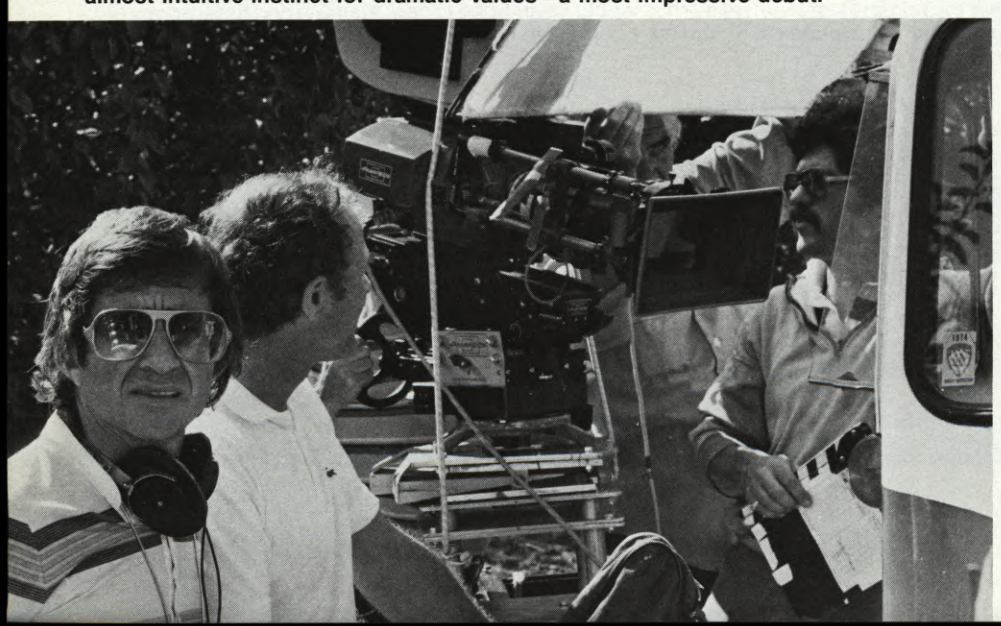
Durand held out. Fortunately, because Mel Simon gave him creative control in the running of the show; from casting to final cut—total creative control.

According to Mel Simon in a recent *Variety* interview, "In many cases the studios wanted certain creative control. In every development deal we've made, the people had absolute confidence in their product and felt very strongly they were going to be successful—I have to rely on my instinct—I feel very strongly for people and their belief in the project. You take a Richard Bush or Rudy Durand. These people have lived these projects for years. They have what I call the instinct that gives me the gut feeling that they're going to be successful."

With Mel Simon's support, phenomena began to happen. Dell Publishing agreed to publish a paperback novelization of TILT with an initial 300,000 printing. Their decision being based on reading the screenplay. Normally, it is the policy of the publishing companies to wait until the film is completed and seen before making such a decision, much less a commitment.

Other major promotions are presently in development to coincide with the picture's release. A national pinball championship throughout the United

For writer/producer/director Rudy Durand, the filming of TILT represents the fulfillment of a dream maintained over the past decade. (BELOW) In his first time out as a director, Durand displayed on the set an incredible grasp of the mechanics of filmmaking, plus an almost intuitive instinct for dramatic values—a most impressive debut.



States; sportswear, motorcycles and numerous other product merchandising tie-ins in conjunction with TILT are in the works. Rarely, if ever, are these promotions so carefully planned this far in advance.

Originally, Durand planned to film TILT on location in Texas with a second unit in Santa Cruz, California. He changed his mind, however, in favor of the latter when discovering the city quite by accident; his car broke down returning to Los Angeles from San Francisco, forcing him to spend the day in Santa Cruz.

"It was an ironic situation," explained Durand. "The script called for several scenes to be shot in Santa Cruz, the remainder in Texas. But, after one look at the Victorian homes, the beauty of Santa Cruz; the surrounding flatland towns with their Mexican population and culture identical to that found in Texas (which the story calls for)—I was sold on shooting TILT in Santa Cruz."

Santa Cruz became the location.

Durand added, "Aside from the excellent sites, the people of the town, especially the university students, offered the exact type of extras we needed."

Veteran production manager Carl Olsen (taking time off from STARSKY AND HUTCH) and his crew moved to Santa Cruz to begin scouting locations to be used for specific scenes.

Olsen, who has worked numerous film locations, remarked, "Rudy was right on target with his decision. We found sites that are perhaps the most unique and artistic I have ever seen. To create the houses, the streets, etc., we found in Santa Cruz on a studio sound stage or backlot would be impossible without incurring an astronomical cost."

Dale Cline discovered *Margarita's,* an abandoned disco, on the outskirts of town. "It was an incredible find," added Cline. "The place was so large that we were able to construct several of the various covers sets under one roof." For Production Designer Ned Parsons, there was another discovery to be made. Packed away behind an obscure door in a large storage room he found nearly all the props needed to create the desired authenticity he wanted for the sets. "It was astounding luck," said Parsons. "Most of the objects, which we used in *The Whale's Place,* a bar, are collector's items."

The start date for TILT was announced in the industry trades (*Daily Variety* and the *Hollywood Reporter*) with a full-color double center page ad. The production office moved from Hollywood to the Holiday Inn in Santa Cruz. Within hours, offices were set-up, sets started to be built; costumes, props, cameras, sound equipment, lights arrived. Production was in motion.

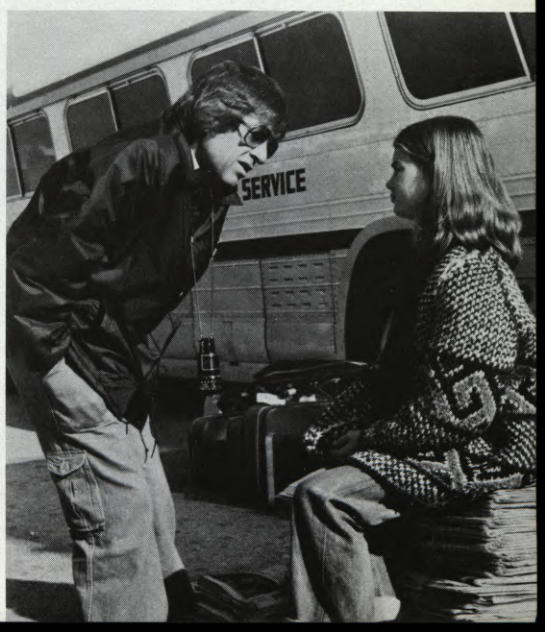
Academy Award nominee Richard Kline, ASC (KING KONG and THE FURY) was assigned as Director of Photography; another nominee, editor Bob Wyman (ROSEMARY'S BABY and THE GRADUATE) was also assigned. Rounding out the key production jobs came Pat Kehoe (KING KONG) as 1st Assistant Director; Rick Simpson, Set Decorator; Lon Bentley, make-up; and Ned Parsons, Art Director.

The call for extras in Santa Cruz was announced. Literally hundreds of people converged on the Holiday Inn. Durand, with his compulsion for detail, personally interviewed every potential extra.

"I needed the right faces, the right types," explained Durand. "I wanted

On location in Santa Cruz, California, the hand-held camera moves in for a close shot of Ken Marshall, who plays an aspiring young rock singer in TILT. (BELOW) Director of Photography Richard Kline, ASC, (in sweater) sets up a shot on location. Santa Cruz, with its Victorian structures and university student population, gives the film an interesting atmosphere.

Director Durand formed a very close rapport with teen-age star Brooke Shields, who plays a pinball wizard in the title role of TILT.



people who could be alive, animated and follow instructions, I didn't want a crowd for the sake of a crowd in the background; I wanted extras who would make the scene work, enhance it."

Meanwhile, Durand went to New York for final casting of the title role. Enthusiasm ran high on the location when word came from Durand—Brooke Shields was signed to play TILT.

Everything was ready to roll in Santa Cruz. The Holiday Inn quickly took on the look of a mini-studio with production, accounting, casting and publicity offices on the ground level, bedrooms were converted into editing rooms, wardrobe, camera and sound departments. The cast and crew alone occupied more than one hundred rooms in the hotel. The final touch was the converting of one of the meeting rooms to a screening room complete with wide screen and 35mm projectors.

In the days that followed, the TILT cameras made their way through the Santa Cruz area. The daily process of operation was well organized and became the routine throughout filming: out by 7:00 a.m., back by 6:00 p.m.—call sheets went out, dailies arrived from MGM labs, the actors prepared, the crew planned and there were the numerous things to be looked after.

While the shooting was going on in one part of town, the Art Department was busy at another location site; they were one step ahead. Under the direction of Production Designer Ned Parsons and Set Decorator Rick Simpson, Dale Cline's unique discovery of the former disco *Margarita's* began to be utilized. The place was converted into a studio sound stage.

But this was not a simple job. By a careful and completely utilitarian design, they were able to squeeze seven sets in a space that would traditionally hold one. Under one roof came Texas, Arizona and California.

There were other sets—Tom Coulter's *Edgewater Inn* in Capitola became *Phil's Club* where Ken Marshall recorded the theme song for the film *"Long Road to Texas"* live with Sam Neely and his group and Morgan Stoddard; *Mona's Gorilla Lounge* became *Mickey's Place;* and in Felton, one of the most incredible sets was built for *Warjac's* bar.

Meanwhile, back at *Margarita's,* a rather unusual phenomenon began happening. The construction crew soon discovered they were not alone in the place. Strange things would happen—lights would blink on and off, doors would slam shut when there was no wind, windows would close when nobody was around to close them, objects would be moved when there was no one in the room to move them—and, on the second floor, footsteps could be heard, but there was no one there. A little investigation came up with an explanation—two months before the TILT crew moved in, a young man hung himself there. It was obvious, there was no doubt, the inhabitant was a resident ghost.

On set and off, Rudy Durand and Director of Photography Richard Kline formed a working relationship that was more than professional; it was a creative sharing.

"Rudy is really what I would call an experienced director, even though he had never before directed a film. He has

The photographic style of TILT, very carefully preplanned by Rudy Durand and Richard Kline, runs a gamut of varying visual moods that range from low-key understatement in the pool hall belonging to "The Whale" (Charles Durning), to monochromatic motel rooms (RIGHT) to the brightly colored, flashing "acrylic" world of pinball (BELOW). The entire film was shot in actual locations, including interiors, with no studio sets involved.

sensational instincts, and is a great student of the cinema. He has his director favorites, and not that he's copying, but they have planted certain visual attitudes in his mind that I personally agree with," said Kline.

From a cinematographer's point of view, Kline found Santa Cruz an ideal location.

"It's so picturesque there," said Kline. "It's almost unique—you could make a lot of stories that fit Santa Cruz. I personally think period films could be shot there very well because of the architecture, Victorian and so forth. Santa Cruz has an ideal sky. We're always endeavoring to tone the sky down, but the conditions up there have done it for us."

More than five-hundred extras from the Santa Cruz area were used in the filming of TILT. Wardrobe Supervisor John Anderson, with twenty-seven years experience (having worked such films as THE TEN COMMANDMENTS, THE GREATEST SHOW ON EARTH, several of the Elvis Presley pictures and more recently, THE CHEAP DETECTIVE), had the job of outfitting these people properly. And, for the local casting department, the paper work alone became a full-time job.

The day came to shoot scenes for TILT on the Mall in downtown Santa Cruz. There was the natural concern about crowd control. But all fears quickly subsided through the cooperation of the local police department. Lt. Tom Marketello exercised an option the police have to close off the street—the Mall was closed for filming. Between the Santa Cruz city and Sheriffs Departments the cooperation continued throughout the production. In many ways, they became part of the TILT family.

Commenting on the close director-cinematographer relationship that developed during the filming of TILT, Durand explains: "I tried in this, my first film, to capture not what I was seeing, but rather what I was feeling, and so the most important factor, aside from the script, was the vision that was in my mind. That being the case, I spent an awful lot of time interviewing many Directors of Photography, but the moment I met Richard Kline I knew that he was the one to photograph TILT.

"Avco Embassy made a print of Lelouch's AND NOW MY LOVE available to me and I showed Dick Kline the picture and told him what I thought was nice about it. We discussed how some of these things could be applied to my film, and that was the beginning of a great friendship and mutual respect.

"I regard the camera as a witness,

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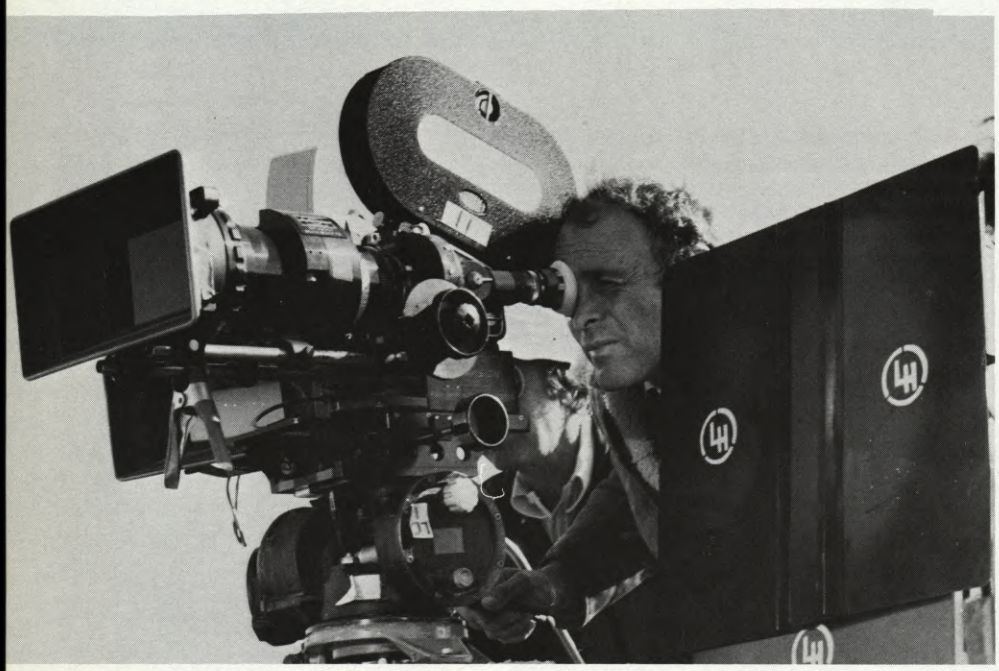
THE CINEMATOGRAPHER TALKS ABOUT "TILT"

A wide range of visual moods centering about the bright, snappy colorful "acrylic" look that characterizes the pinball world

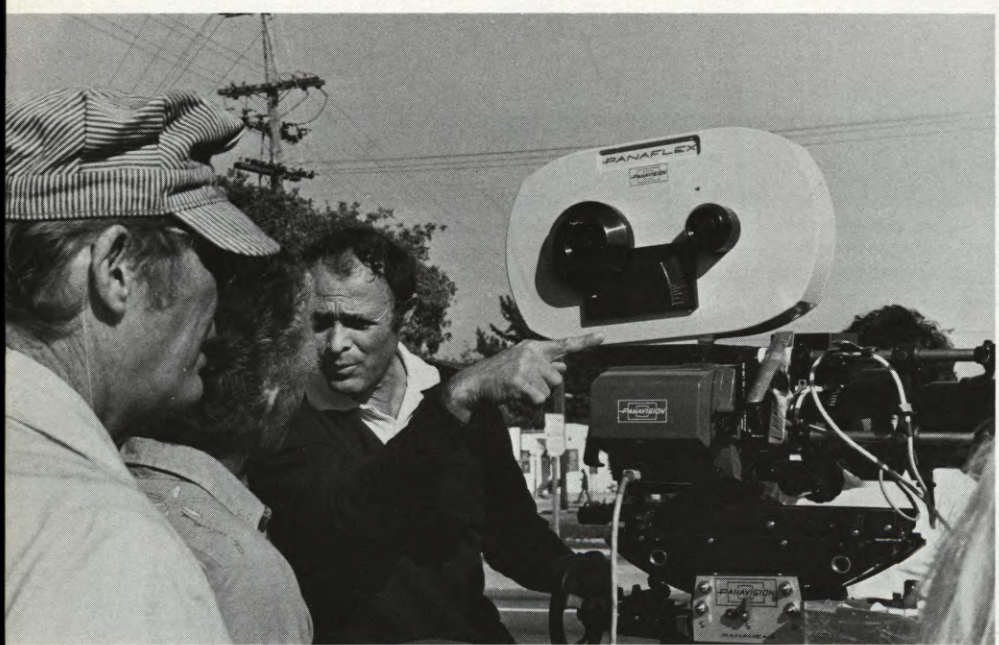
Selected by Producer/Director/Writer Rudy Durand as Director of Photography on TILT was Richard Kline, ASC, whose credits include: CAMELOT (Academy nomination), GAILY, GAILY, THE BOSTON STRANGLER, THE ANDROMEDA STRAIN, KOTCH, THE MECHANIC, THE TERMINAL MAN, KING KONG (Academy nomination), WHO'LL STOP THE RAIN? and THE FURY.

In the dialogue that follows, Mr. Kline details some of his approaches to the photography of TILT:

QUESTION: What led up to your becoming Director of Photography on TILT?



His versatility attested to by the varying demands of his assignments—including such diverse subjects as CAMELOT, THE ANDROMEDA STRAIN, KING KONG and THE FURY—Richard Kline, ASC, welcomed the somewhat more subtle challenge of functioning as Director of Photography on TILT. Filmed entirely on location and mainly inside actual buildings, it provided many opportunities for expressive cinematography.



KLINE: When Rudy Durand first contacted me I had just completed three solid years of going from picture to picture without a day off and, frankly, I was due for a vacation. But because of his enthusiasm, his great spirit and the fact that he had struggled for ten years to get his picture financed, I felt that he deserved all the attention he could get—and I wanted to be a part of the project. I'm glad that I was, because he turned out to be a man with sensationally keen instincts. He could read quickly; he had a way of interpreting situations rapidly and grasping something that had just happened on the spur of the moment. Even though TILT is his first picture, I swear that he must have been a film director in his previous life, because he knew exactly what he was doing. He is also a student of films and a great follower of people like Lelouch, who is a personal friend.

QUESTION: Can you tell me a bit about the actual shooting of the picture?

KLINE: Except for a few days in Corpus Christi, Texas, all of the shooting took place in Santa Cruz, California, and we were there for about six weeks. Santa Cruz is an extremely visual city, and it has a kind of Old World atmosphere. Also, it actually does resemble Corpus Christi. Rudy Durand was driving through it one day when his car broke down, and he said: "Hey, I'm home again—Corpus Christi, where I was raised." Actually, Santa Cruz turned out to be a better location bet for us because of its proximity to Hollywood and more dependable weather. I found the city to be very cooperative. The people did whatever we requested and responded very favorably in every respect.

QUESTION: What sort of sets did you have in Santa Cruz?

KLINE: There were several exteriors, but even more interiors. The main interior set, on which we shot perhaps a quarter of the picture, was the pool hall belonging to "The Whale", the lead character played by Charles Durning. In there we shot a night sequence and two day sequences, one of which was actually late afternoon. This offered me the opportunity to give a different look to each spe-

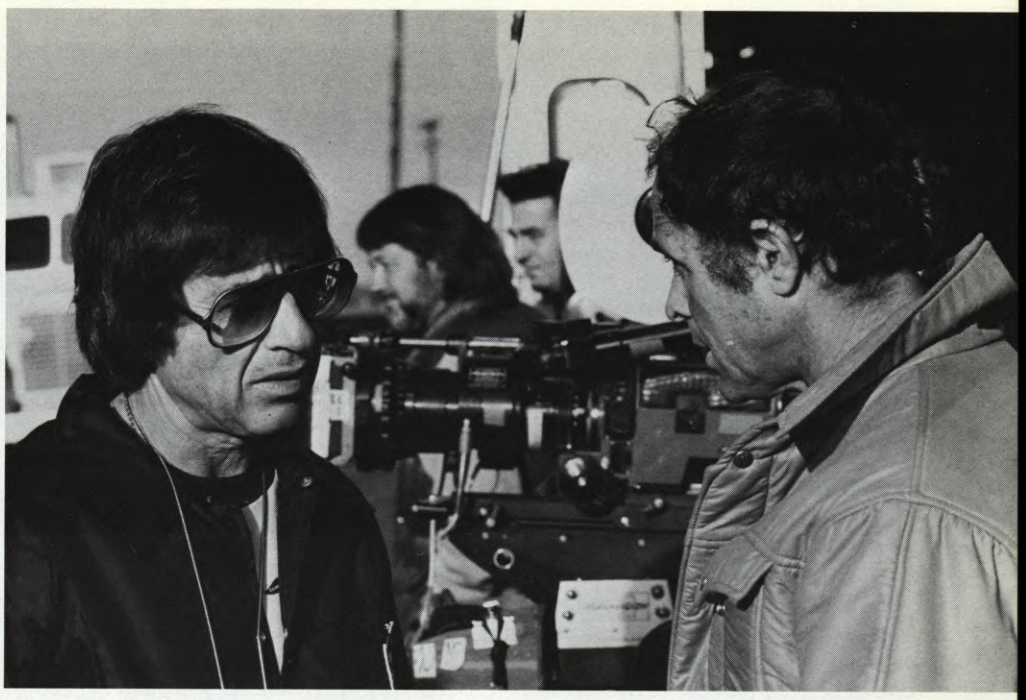
cific sequence, so that there was no repetition or monotony. The set was beautifully laid out by Production Designer Ned Parsons. He did an excellent job with Rudy, the director, in designing this set and it had great realism. Consequently, we were able to achieve the various looks we wanted with no great difficulty. The rest of the picture was shot in various interior and exterior locations around Santa Cruz.

QUESTION: Usually, when a director is making his first picture, there is the understandable tendency for it to take longer than with an experienced director at the helm. Was that the case on TILT?

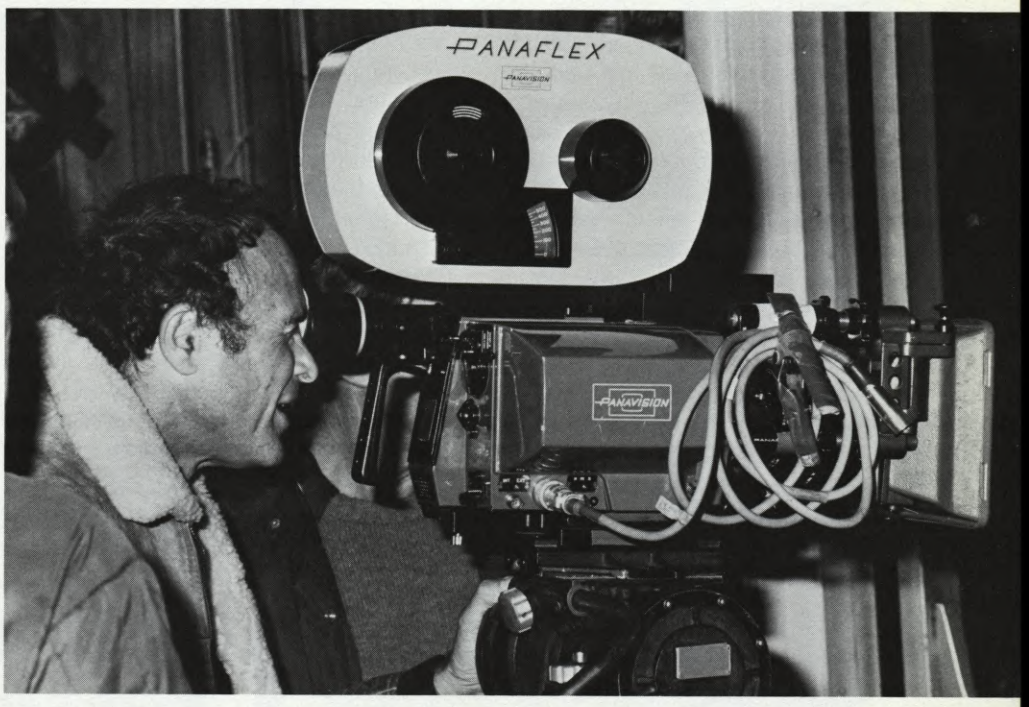
KLINE: Surprisingly, no. Again I must emphasize that Rudy Durand's instincts are superb, and that's what counts. As a result, the picture was made on schedule and on budget, even though we did have to fight some weather up there. Unfortunately, it was one of the wettest years we've ever had. Anyway, one of the amazing facts about the film was that we shot, as I recall, at a ratio of two-and-a-half-to-one. That is the result of Rudy's having selected a cast of people who fit right into their roles—especially Charles Durning and Brooke Shields. He had his choice of many well-known teen-age stars, but he insisted on Brooke and I believe that he was totally correct. That's another plus of Rudy Durand—the fact that he fights for what he believes to be right. He did it with story, he did it with casting, he did it with the locales in which he chose to shoot the picture. He's a fighter from the word go—but he'll listen and if he's wrong, he'll alter his opinion. He's not stubborn, but he seems to be right most of the time. Our relationship has become a brotherly love association and we're still very friendly.

QUESTION: Did you consciously plan the photographic style for TILT, or did it just sort of evolve?

KLINE: With regard to The Whale's pool hall, it was preplanned between Rudy and myself to give it a kind of "acrylic" look, similar to the playfield of a pinball machine. It has that bright, snappy, plastic look—which is what we tried to achieve in the pool hall, where most of the main action takes place. The same thing was true in other areas where pinball took place, even though they might be photographed in low key. There was still the acrylic look and bright colors. In contrast to this were the sequences which took place in motels, which usually have a dank and dark look to them. We were able to get a myriad of visual moods, including the variation of a more bland, monochromatic look, so that when the desired acrylic, snappy, bright, colorful look came onto the screen it would have more meaning and would actually jump at you more. That planning held also with wardrobe and set decoration.



After interviewing several cinematographers, writer/producer/director Rudy Durand selected Richard Kline, ASC, to photograph TILT and their close rapport in working together resulted in a kind of "mutual admiration society". Of Durand, Kline says: "He turned out to be a man with sensationally keen instincts . . . He had a way of interpreting situations rapidly and grasping something that had just happened on the spur of moment . . . He must have been a film director in a previous life."



QUESTION: That pool hall set had very low ceilings. What kind of lighting problems did that create for you?

KLINE: Actually, it gave us the opportunity to utilize the low ceiling as a compositional element. Usually, when filming in real interiors, you have ceilings that are never seen, but they're always in the way. You can't hang lights or get a sound boom in there. Such ceilings are usually just a nuisance, but here we were able to take advantage of the fact that the ceiling was always in the shot in order to get

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FILMMAKING REPORT FROM PARK CITY, UTAH
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"I love making films, and I didn't see any reason to sit around Los Angeles waiting for my telephone to ring when I could work all of the time here," he says.

Like most of the other people we met at Sunn Classic, Schellerup puts a big premium on the fact that the company targets on family audiences for its theatrical and TV productions. "I am not judging anything done by anyone else, but I feel providing entertainment families can view together is a very satisfying thing to do," he says.

Another plus is the production company's willingness to experiment. One manifestation is the use of the more portable 16mm cameras on TV productions. "We take a lot of chances," he says, "and most of them have paid off." Schellerup recalls one sequence in the GRIZZLY ADAMS TV serial where the script called for a low-angle shot of two cougars racing by the camera, one on either side. "I was lying on the ground hand-holding the camera," he recalls. "The shot went perfectly. Then one of the cougars came back to check me out. I just held still until he went away. I can't believe that shot could have been gotten by a 35mm crew."

During the filming of "Beyond and Back," Schellerup was able to experiment with a special effects technique "that I had been dreaming of for a long time." The story had several scenes where the "soul" of a recently dead person was seen walking through solid objects ranging from walls to other people. To create the illusion, Schellerup set up a 50-percent mirror at a right angle to the subject. The subject was lit against a blue screen background. By painstakingly positioning the camera lens on the same axis as the light beam, the cinematographer created the illusion of the reflected image passing through solid objects.

"There are probably all kinds of ways to achieve the same effect," he says. "However, the point is that I was given the opportunity to try it my way."

Lately Schellerup has divided his time between directing and cinematography with Steve Gray, an operator, stepping up to the first camera role. "I love both kinds of work," Schellerup comments, "and I am glad I don't have to choose one now. My cinematography experience provides a perspective which I think makes me a better director. I visualize scenes and think of the photographic possibilities rather than just focusing on the performances. It is also an opportunity for Steve Gray to try his hand at first camera. This company is assuring its future by providing these kinds of opportunities."

That is another interesting thing happening in Park City. People are sensing something unique and important is happening, and they are lining up for the opportunity to participate. While many of the initial employees came from Los Angeles, the company has recently widened its range of hiring, and with some surprising results.

Dick Staley, for example, was bureau chief for a Scripps-Howard newspaper in Orange County, California, when he was asked to join the Sunn staff by another transplanted Orange County journalist who headed research and creative development efforts at the time. He is now director of product acquisition with the responsibility of finding and developing treatments and screenplays.

Preparing for a dolly shot on location. In Park City the company has a 20-acre backlot, with Western, New England and Midwestern streets and two sound stages.

Ideas come from everyplace. One free-lance writer who read about Sunn Classic in *Writers Digest* submitted a treatment for BEYOND AND BACK. A retired judge living in Texas contributed the concept for the mini-series called MARK TWAIN'S AMERICA.

Staley and his staff screen some three to four films a week for possible distribu-

Director James L. Conway, cast and crew during the filming of "The Story of Noah" segment of GREATEST HEROES OF THE BIBLE, featuring Lew Ayres as Noah, on location near Page, Arizona. The company's post-production facilities, including sound recording and mixing and film editing are located in Salt Lake City. One of the two sound stages in Park City is set up for blue screen process photography.

tion, read around 20 scripts and books and review scores of treatments every month. The ideas they like are routed through the company's sophisticated market research system, which combines in-depth field interviews with computerized analysis.

The market research method has been refined over the years to the point where Sunn Classic can predetermine if audiences will like stories, what kinds of twists or endings they want, and who should play key roles. The company also depends upon its computer analyses to determine where and when films should open, and how they should be promoted.

"We have been accused of selling entertainment films the same way ad agencies market soap," Staley notes, but the charge doesn't bother him. "There is nothing wrong with producing entertainment the public wants to see. If a story isn't going to interest people, why put it on film?"

As for the production company's focus on G ratings, he is quick to point out that pretty much everything produced during Hollywood's "Golden Era", including such classics as CASABLANCA, would probably earn a G rating today. "We see a need, and we are filling it," he says.

Staley's role is particularly important, Conway says, since one of the biggest obstacles the company faces in its continuing growth is the availability of sufficient properties. "Our two crews can produce at least 50 hours of entertainment films for theaters and TV a year," he says. "Our next goal is to develop enough properties to get a third crew working."

In the meantime, very little seems to be left to chance. The company, for example, retains a meteorologist, who is responsible for long-range weather predictions. "We take long-range weather predictions into consideration when we decide which stories will roll at what time," says Allan Pedersen, vice-president of administration.

"We also try to plan for the unexpected," he continues. "When it didn't snow on schedule during the filming of DONNER PASS, we had an alternative plan to shift to interiors. As soon as the snow started, we took advantage of the backgrounds nature provided."

Sunn Classic has become something of a mass media attraction. During the past year, many newspapers, including the *Wall Street Journal,* sent reporters to find out about the company's use of computer technology in its market research. The more perceptive reporters are discovering that some things perhaps even more significant are happening.

Sunn Classic crew prepares to shoot a scene from "The Time Machine", while director Henning Schellerup consults with star John Beck. Initially crews were hired on a per-picture basis, but it wasn't long before a permanent staff started to form. Now two permanent crews are kept busy.

For sure, there is a sense of crisp efficiency characterized by such things as the computerized survey analysis, long-range weather prediction, and, not the least, a $500,000 modernistic communications systems that links a fleet of some 90 vehicles with production crews, administrative and postproduction facilities.

But there is also a pervasive sense of camaraderie. People with unfulfilled visions are finding open minds and doors. They come to make a movie, and stay to build a career. ■

Sunn Classic crew films a scene from the CLASSICS ILLUSTRATED made-for-TV movie, "The Deerslayer", based on the novel by James Fenimore Cooper, locationed on Deer Creek Reservoir near Park City, Utah. One of the company's most recent successes was the theatrical feature documentary, THE BERMUDA TRIANGLE, which was produced on an ambitious scale.

BEHIND SCENES OF "TILT"
Continued from Page 395

rather than a reporter—and that's how I like to use my camera. I tried to film TILT in such a way as to capture emotions, rather than motions, and Dick Kline gave me that. His lighting would show that it was four o'clock in the afternoon and autumn, without anyone having to say it. He photographed the interior of the parents' home like a Rembrandt painting or a piece of Flemish art, whereas, when he focused on the pinball machines, there was great carnival-lit wave of color. In this particular film I like to think that Dick Kline—and only Dick Kline—could have given me what I wanted, because it's all there."

Aside from Richard Kline's mood-filled photography of the "live action" sequences, some of the most spectacular images in TILT involve the pinball machine by itself and were filmed on the insert stage after principal photography had been completed. These take the form of super-closeup "tracking" shots of the ball as it races up the trough of the machine toward the playfield.

In explaining how these shots were made, Durand comments: "TILT is the second film that has been made about pinball—the first having been TOMMY. But in TOMMY you had a total of a minute of pinball and it was a long shot of Elton John playing, photographed with an extreme wide-angle lens. In TILT I wanted to put the audience right into the pinball machine, so we spent three months filming it that way. I didn't want to go to an oversize ball and 'set'. We could have taken a cue ball and painted it silver and made believe it was a pinball, photographing it through a mirror to hide the camera, but I preferred to film the actual-size pinball as it runs parallel on the playfield, swallowing up the colors.

"As we've filmed it, the ball fills almost the entire screen while it travels up the trough, and you see no reflection of the camera. I'm very proud of the fact that you can't see the camera. In the beginning, I tried to actually run the Snorkel camera behind the ball as it rolled up the trough, but I couldn't stay with it. The f-stop kept changing because there wasn't a constant light, and I had depth-of-field problems. So what I finally did was weld the top part of one of the balls to an arm extended at an angle over the Snorkel camera. Consequently, the camera must have been an inch to an inch-and-a-half away from the ball in certain spots and in other spots, more than six inches away. The arm hanging over the camera apparatus made it possible for the camera to be mounted on the same mount as the ball.

"I remembered that when you are flying at 40,000 feet, there is no sensation of going 600 miles an hour—but if you're close to the ground, the speed becomes obvious. Using that kind of reference, I applied it to putting the ball next to the playfield, so that when we were running the Snorkel up the playfield, with the colors being 'eaten up' by the ball, it gave the effect that the ball was on the playfield, when actually it wasn't. It was two or three centimeters from the playfield, but nevertheless the effect is there.

"I also did something else that I think is unique. I had told my editor and Dick Kline: 'I want the audience to *hear* what they think they are *seeing*.' In other words, the addition of sound to the photography made the pinball 'appear' to be doing what it actually wasn't.

"We took the nine most difficult pinball shots and photographed them in closeup, shooting a total of more than 30,000 feet in order to get the 2,000 feet that appear in the picture. That called for a lot of painstaking work on the insert stage. As I said before, I could have used an oversized machine. I also could have made the machine level and used trick photography, but I wanted to film the game honestly. The pinball machine never speaks, but I think that in TILT it's obvious that the machine is a character. That impression was made possible by the way we photographed it, and I'm very proud of that.

"Maybe the pinball machine will even get an Academy nomination as 'Best Supporting Actor'.

"I'd like to go for it." ■

ASC CINEMATOGRAPHERS AVAILABLE FOR SEMINARS, LECTURES, INFORMAL DISCUSSIONS AND QUESTIONS & ANSWERS SESSIONS

The following members of the American Society of Cinematographers have indicated their availability to appear for seminars, lectures, informal discussions and questions and answers pertaining to motion picture and television photography, lighting, special photographic effects and production in general: L. B. "Bud" Abbott, Lloyd Ahern, Taylor Byars, Stanley Cortez, Victor Duncan, Linwood Dunn, Daniel Fapp, George Folsey, Richard Glouner, Burnett Guffey, John L. Hermann, Gerald Hirschfeld, Winton Hoch, Michel Hugo, Richard Kelley, Milton Krasner, Vilis Lapenieks, Andrew Laszlo, Ernst Laszlo, Jacques Marquette, Richard Moore, Sol Negrin, Frank Phillips, Owen Roizman, Joseph Ruttenberg, Howard Schwartz, Richard Shore, Frank Stanley, Alan Stensvold, Mario Tosi, Ted Voigtlander, Harry Wolf, and Vilmos Zsigmond.

Arrangements as to availability and other details are to be made directly with the individual A.S.C. member. For further information, contact: American Society of Cinematographers, P.O. Box 2230, Hollywood, California 90028. Telephone: (213) 876-5080.

THE CINEMATOGRAPHER TALKS ABOUT "TILT"
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some interesting low angles. A normal set-up would usually include the ceiling. As for the lighting, it was generally the actual fixtures that created the source of the lighting and it was just a matter of enhancing the illumination those fixtures provided by way of exposure. Also, they supplied the logical source, the direction of the light. In that sense, TILT is sort of "au naturel", as far as lighting is concerned, but is a little fuller than a mystery-type film. There is no mystery lighting in the picture–just very honest, graphic photography. As I said before, there are three distinct visual moods to the sequences shot in the pool hall. One of them is low-key, because it's after hours, late at night. Another is late afternoon, which is moody, with rich, deep textures. Then there is a full day sequence, where the light seems to be streaming in, pouring in through a bank of windows that were created on the set. One could actually believe that there was a street out there, even though we built a false wall with windows that we were able to light independently in order to have total control. In other words, as the sun shifted, we didn't have to worry about the changing direction or intensity of light.

QUESTION: There was quite a bit of dolly movement in those pool hall sequences. Did that require extensive laying of dolly tracks, or were you able to use the floor as it was?

KLINE: We built our own very suitable special floor for rolling the dolly, so that we never had to lay track. This gave us great fluidity of movement, which is something the picture does have. Rudy and I developed a kind of unspoken affinity for the overall usage of camera movement. We would both look at each other and know what we were going to do in moving the camera–then we'd go ahead and do it. Very little dialogue was ever wasted in deciding what to do. It just seemed to happen without any kind of rationalization. It just came by instinct.

QUESTION: In the sequences where they're playing pinball, the light from the machines seems to reflect on their faces. Did you have to put that in or was it actually picked up from the machines?

KLINE: The majority of it was not put in. Since we were working at a very low key, it is actually the reactive light from the pinball machines themselves.

QUESTION: Does that mean that you were using ultra-high-speed lenses?

KLINE: The whole film was shot with Panavision's superb Panaflex camera—which I am in love with—and we used the high-speed lenses with very wide-open stops. The whole picture was shot in the areas of T/1.4 and T/2, which was one way of making the lights on the pinball machines appear to be bright. They had to appear that way, because the pinball machines were the star architecture of the picture. Quite often, in real life, what you see on the faces of pinball players is the flashing light from the activity of the playfield.

QUESTION: Did you do some pushing of the development on this picture?

KLINE: The whole picture was force-developed one stop by the MGM Lab, which did an excellent job of it. The prints are by Technicolor, which also did a fine job of reproducing the fine front work that MGM did. I'm very happy with the results achieved by both of these labs.

QUESTION: What about the sequences in the house where the girl lives before she takes off? Where were those shot?

KLINE: That actually was an existing home in Santa Cruz and very little was done to change it. I believe that even the furniture belonged to the people who lived there. We just went in and shot it on a given day during very late afternoon. The residual light from the sunset filtered through in a very red fashion and kept the parents in a sort of semi-silhouette and I thought it was quite effective. Then there was one night sequence upstairs which was a one-shot sequence of roughly five minutes in duration. The camera was hand-held by my operator, Al Bettcher. It was lit with just one additional light that was bounced off the ceiling and illuminated the room with the needed fill light. The practical lamps themselves created the overall lighting. It was shot at T/1.4, hand-held with a Panavision 28mm lens, as I recall. The shot encompassed 360 degrees—plus a few more degrees on top of that—back and forth and back around. It was extremely effective. Bobby Odessa did the focus-pulling on that and he certainly couldn't just leave the camera alone, because Brooke Shields was all over the place. The focus was very critical, because there is very little margin for error at that f-stop. ■

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little indirect lighting bursts on walls so that people don't walk into the walls when they're looking for the john and stuff, we would put lights on the floor and splash color. We did a couple of things I didn't think worked too well. We put some red spotlights down there, aisle lights.

COMMENT: It was very obvious.

CRABE: Yes, it didn't work so well. The idea was that if we had seen the little red practical lights in the balcony, if we had seen them all over, then that little effect might have worked. Otherwise, we just tried to use raking, crossing lights and provide large expanses of areas that were not overly-lit. Also to silhouette things against bursts of light. We tried to use back-crosslight to texturize as much as possible.

QUESTION: Did you wash those seats with some light just to bring them up a little bit or did you just throw in lights for texture?

CRABE: If we were to do it again—looking at it again, I suppose we might in some instances have added a couple more. Of course, sometimes you sweeten the picture up to a point where it's overdone. As I recall, the seats were leatherette and they're usually shiny, so even if you turn on an inky-dink someplace over there, even though it doesn't have enough footcandle value to give you a full exposure in that area, the seats would reflect and you'd get little crescents of light on them. We used hard light in all those sequences, those low key, sketchy sequences. We would use spotlights as opposed to bouncing things off cards.

SCHWARTZ: I liked the softlight you used in the opening sequences. It was real nice—the stuff in the bedroom and the light changes.

CRABE: It worked out really nicely. I was really pleased. The light changes were made with nine-lights bounced onto cardboards but with a flag in front of the nine-light, and then as someone would open a shutter we'd unflag that light and you'd get a kind of blossom. Of course, everything in that picture, and ROCKY as well, was all done on natural locations and in real rooms, which often means that you have to do things that you wouldn't otherwise. I mean, since you don't have wild walls and since you don't have the space, you sometimes use

lenses that are shorter than would be considered good technique otherwise. But as a result of that handicap, the effects are kind of interesting. I mean there are a lot of times when, with a lens that's a little too wide, a hand gets too big or something is not in proportion and it can be ugly, but sometimes the limitation imposed by a location can be beneficial in the final analysis. It can establish rules for lighting and staging—given fewer options—and the solutions are simpler. Other times real locations can be a drag.

QUESTION: There was a great precision of composition and moods to making the points within the frame in SAVE THE TIGER, whereas ROCKY was a lot looser; it didn't have the same exactness about it in the sense that the success of the film depended a great deal on the story and the performances, but in SAVE THE TIGER the camerawork is so clean in many ways. Since you worked with the same director on both projects, my first guess is that maybe either the magic was a little different or maybe you had more money and time on SAVE THE TIGER. For example, the light on the phone, that detail jumps up, or when he's going to make that call to that girl, he has to do it himself, so he dips into the desk for the telephone book, plops it down on the table, you know, and then the camera moves with his body to the phone, and there was a lot of that kind of thing in the film, which I think is marvelous camerawork. ROCKY is not that way.

CRABE: That's interesting. I wouldn't have thought of it. In fact, seeing the film again this morning was really quite an experience. I really enjoyed it, because now I'm seeing it under no pressure whatsoever. The last time I saw it everyone was going crazy because it was costing too much money or something terrible was happening. But now it's fun to see, really, and I noticed more of those touches than I had previously. Now those things were certainly not all planned in advance. They develop as you go, you know. You suddenly say, "God, I can't hold the phone. Well, what if we were a little tighter and he shifted and then it would show?" Things like this, of course, are a lot easier when you're working with somebody like Jack Lemmon who can help you. By the way the telephone button light was a commercial trick—a piece of broken mirror behind the plastic key reflecting a small inkie light.

COMMENT: Let me make a comparison. In ROCKY there is a shot where he's in the pet shop with Talia, and I

think he's asking her for a date, and the camera starts on a two-shot over his right shoulder and we see her face, and then as it pans a little more it changes focus to a mirror where we can see his face, so we get the whole thing in one shot, and then it pans back in a full circle. So we have the whole relationship, and it's almost like we want to keep the purity of the moment, so we're not going to cut to a reverse two-shot. It seemed to me like I was more aware of it this time around.

CRABE: Well, I think you're right. I can knock that shot because I didn't make it. No, but I remember what you're talking about. When you're looking through that lens you can just twist it and do a rack focus–

COMMENT: SAVE THE TIGER is much cleaner in that respect. It's there, that kind of thing, but things are self-indulgent when you become aware of them.

CRABE: Yes. I can only say that as far as SAVE THE TIGER is concerned–people, of course, always attribute the look of a film to the cameraman, and we kind of like it–it's great that they do–but on the other hand, what's in front of the camera is placed there by a lot of very talented people sometimes, like art directors, and, of course, just the placing of the subjects. Some directors have a wonderful mastery of making compositions with people. They know how to work with actors well enough to develop situations where they can somehow get those great shots and great scenes too. Others depend more heavily on cameramen.

COMMENT: There are a lot of really great shots in SAVE THE TIGER, and the ones that aren't so great really jump out. In ROCKY there was one sequence that personally just didn't work for me, and that was the scene with Apollo Creed in the promoter's office.

CRABE: The promoter was the same guy who was the arsonist in SAVE THE TIGER.

COMMENT: But that sequence both times I've seen the film seemed very different to me in lighting—

CRABE: Well, it's interesting. There were two situations in ROCKY that were kind of crazy photographically and setwise. One of them was Rocky's apartment, which was a little joint in downtown Los Angeles that was on a street with too much noise for sound. It had all the bad

things going for it. It was just a crummy little apartment. Now I presumed that we were going to see outside the window, because if you go all the way downtown to do that stuff—but it turns out that they didn't like what they saw outside the window, so the studio brings down a huge brick wall, and we put the brick wall out on the sidewalk with stands and policemen, so that in fact our effort to go out and find reality outside is totally wiped out, although I must say that the brick wall was probably a good idea. You mentioned the manager's office. Well, that was the producer's office, and since the producer's office at the MGM studios—and here we are doing nothing on stages or sets whatsoever—the producer's office is so oriented that in looking out those windows you see the Irving Thalberg building, which is the big moderne cement building next door, so we got a phony-baloney painted city backdrop and stuck it up there outside. There was only about three feet of space behind the window, and it's tricky to light a backdrop if it's right up against your window; we had lights up all over the place and had to tarp it in so the sun wouldn't hit it. As a result of all that, the scene might have had a certain amount of theatricality to it, the way the light comes in, and the kickers. It doesn't bother me. I like phony stuff anyway. I mean, I think life should be more like the movies. But you're right. That was entirely a situation against reality as far as the lighting was concerned.

QUESTION: In SAVE THE TIGER there were two sequences which took place in a car, one with Jack Gilford and the other with the girl, and I'd like to ask you how you lit that and also how you treated the fire effect in the beach house.

CRABE: Well, the fire in the beach house—we actually put the light through some flame. It doesn't always work but it seemed to work there for some reason. Usually when you have a fire and you use the fire as a gobo the flames come out rather opaque and it doesn't work—it becomes very dense—but whatever kind of fire we had—I think we had little extra auxiliary gas jets or something—the area about the flame where the vapors and all that jazz are trailing off the top of the flame gave us that effect. So instead of using strips of cloth and shaking a stick or a gobo and rotating it or whatever, we actually did use the heat from the flame if not part of the flame itself to get that look, which I would rather do if at all possible. In the car stuff in SAVE THE TIGER—and John has shot a lot of films himself, things in the East where they probably

used little if any light. I mean, John would really want to come into this room and shoot just the way it is with no light at all, and I can sympathize with that, and it probably could yield some very effective things. But what tends to happen is that when you really get there with all the stuff and equipment you start fixing things a little bit and you start using lights. You make it better, hopefully. But in the day sequences in the cars we used bounce light. We used pretty much the natural light that would come into the car. In the sequences, for example, with Jack Gilford and Jack Lemmon we put neutral density filters only on the window that showed in the shot, the window that showed behind them. Any window that was not in the shot was left unfiltered, so when you drive through the shadow of a dark building everything gets dark, and then when you come out of it, it gets lighter again. So you have a natural effect, which you augment a little bit with some bounce fill from the front, so that when it's dark it's not so dark that you've got no legibility at all. That's the way the daylight stuff was shot. And the car was towed for that one shot. That's the only shot we towed the car for. The shot on the Sunset Strip where he picks up the girl was done similarly, but it was more tricky because we had two operators on the car—hanging out both sides of the car, which was very treacherous on Sunset Boulevard with traffic going against us in the middle lane. One man hangs out about 36 inches with the camera rig, and the cameras were getting criss-cross angles simultaneously, so they could get in the car and do the whole scene without stopping. John wanted to do it that way, and I think ultimately it was right, even though it was a lot more difficult to do. Again, we had every window that was photographed by Camera A or Camera B covered with a neutral density gel filter—I forget whether it was a one-stop or two-stop—and we would have to cut holes in the gel if we were shooting through the wind wing area of the side windows. We'd cut the gel away from that particular area where the camera was shooting through, and the opposite camera would be photographing the same window, but the part that was covered—so it was like a big float lumbering down the street. And that was pretty much natural light, too, except there probably was a white card or maybe diffused light on the hood—I don't really remember. The night stuff in the car, some of which worked pretty well and some of which wasn't too sensational, was kind of interesting because again we didn't have to worry about depth of field. If there had been someone in the back seat we had to carry focus with we

would have been dead. We shot it at maybe eight or ten footcandles, which made the streetlights brighter by comparison, and we had a piece of cardboard again on the hood of the car. It didn't work out as well as I had remembered. I remembered it looking terrific. Maybe it was that they didn't use all the cuts that I had originally seen—a typical cameraman's cop-out. But I would have a spotlight aimed at the cardboard and every once in a while drop in a double, take a double out, put in an orange filter, take it out, as if the soft light that's coming in is from restaurants or streetlights or practicals or whatever.

QUESTION: What types of lights did you use on the daylight sequences in the car?

CRABE: Very few. Maybe it would have been a 2K quartz with a blue filter if it was direct, but since most was bounce I would rather suspect some FAY lights bouncing off a cardboard or something. Or quite often, since the inside of the car was in shadow anyway, if there was sun outside we did some stuff with a white cardboard where we got a terrific amount of light inside from just a white cardboard. And that, too, would vascillate and fluctuate with the outside light.

QUESTION: How was it to work on SEXTETTE?

CRABE: It was a terrific experience. I'm a film nut anyway, so to work with Mae West was an incredible experience.

QUESTION: Did you go softlight bounce. Did she ever make any comments about seeing her lights?

CRABE: No. It's interesting—I'm not often happy with the things I do; I see them later and I hate them, although I like SAVE THE TIGER—but in thinking about SEXTETTE now I think that maybe we would have done some things another way that would have avoided the diffusion we used, which was a Harrison sliding diffusion. It was very much like a fog filter or like a low contrast filter. Any white areas would just pick up and desaturate the whole image. I was not happy with that. I think some kind of Mitchell diffusion would have been better. But what often happens is that you don't have time to test the things you'd want to do or get the things you want to get. And we couldn't get sliding glass diffusion big enough to cover a 6:1 zoom lens of the Mitchell variety, that we knew of, in time. We found out that if you're doing that kind of remedial work with ladies, just like in the old days, you'll

probably use a harder light and put it closer to the lens, rather than softer light around. I haven't had that much experience with remedial stuff with softlight. I've done softlight things with beautiful models in commercials, and when you're beautiful you're beautiful and it simplifies a lot of things in pictures. I remember working with Faye Dunaway and Bette Davis in a picture called SISTER AIMEE, which was sort of a turkey, but photographically it was interesting because you're dealing with two very heavyweight ladies in the looks department, and I got a royal eating-out by Bette after a test we shot of her, and after that I just did what you're supposed to do and put the light where it looks a little better. And I recall that Faye Dunaway—she's quite an expert on lighting in her own right—commented that she had had some very bad experiences with bounce light stuff because sometimes the face itself, particularly if it develops a little sheen, starts reflecting the bouncing surface in a skeletal way that isn't always too attractive if you're not careful. So with Mae, getting back to SEXTETTE, whenever you found the lens you looked right above it and you found the light. The thing about it is, in terms of beauty coming on the screen or youth or whatever it's supposed to all be, when she was bubbling from within she would light up and look great. If she was confused or puzzled or tired or whatever, then it just didn't happen. I must say, though, that Mae is an incredible little lady. She was always there and ready to work, a real pro. She was pleased with the photography and very cooperative in every way.

QUESTION: How do you work with your gaffer? Do you use one particular gaffer or a variety of people? Do you have a particular way of letting him or her know what you want from them?

CRABE: Well, of course, that's a very close and important relationship that a cameraman has. I would think that it would be beneficial in a lifetime to be able to work with a variety of different men and women gaffers. I haven't worked with a woman gaffer yet. I think that you might learn a little bit of something from each person you might work with, because we all learn and we all borrow. Just like our guy in SAVE THE TIGER who steals his designs from other people once in a while. On TIGER I worked with Ross Maehl, who I think is very good. He's also cooperative and doesn't suffer from a heavy ego. It must be a collaboration. A gaffer is a very important person, and so is the camera operator. Those two people are really your right hands. So I have always tried

to, first of all, get involved with someone I can relate to on a basis that's not too heavyweight in terms of egos, someone who maybe will try a little something or maybe will suggest to me where my ideas are lousy. I won't always tell a guy exactly where to put a light. In a commercial I would be more likely to do that, but in a feature film you'll say, "Well, the light is coming from the left," and you'll talk about it and it happens. So I try to get someone who is pleasant and knows what they're doing, and I've usually been successful in that. There are some wonderful people in this business, and very few really realize what contribution the gaffer does make to the look and style of a film, and certainly there have been instances where a cameraman worked with the same gaffer for many years—not to say that the cameraman couldn't do as good a job if that gaffer suddenly wasn't there and he placed the lights himself. It's conceivable that a lot of gaffers have made a lot of cameramen look a lot better than they otherwise might look. I like to work with people that I'm comfortable with and that I've worked with before; as I said before, I think that it's also nice during the course of a career to work with different people.

QUESTION: You've got a gaffer and you've got an operator. The gaffer will set your lights and the operator will move your camera. They're probably quite good in their own right and would be able to carry on if you didn't show up one day. Do you ever feel, "Why am I making all this money?"

CRABE: Yes, sometimes I do.

QUESTION: Is it a very subtle thing with your gaffer, then, that you just guide him where you want him to go?

CRABE: Well, I have to qualify that. I do feel that way only because my earliest experience was in doing a lot more of it myself, which would have included degaussing the soundman's tape before we went out on location, schlepping the camera down the hall and putting it in my station wagon, so that as the years have passed I still think of myself as being in there doing all the stuff. So part of it is just the fact that I'm relieved of a lot of the things that I used to have to do and don't have to do anymore. But in terms of control and what would happen if you weren't there, I ultimately feel that my relationship with directors and with talent is such that I hope it comes off a little better when I'm there than when I'm not. I had an experience on ELEANOR AND FRANKLIN—I just got sick one day,

which is unforgivable in this business, but I just did, and I just couldn't go to work, and didn't, and somehow it happened, and I think when the film is all finished and edited and on the screen nobody can tell when I was there and when I wasn't. That's because you do so many setups. Once you get into a film everyone sort of sees how you're going to work. You don't always know what the tone of the picture is going to be or how the relationships are going to be from the very beginning, but after working a little while you sort of can see that this is the way it's going to be. So any good gaffer or good crew will pretty much pick up on those things so that they can carry on pretty well. But I think certainly the cameraman has a lot to say and is a lot more important on some kinds of films. I've worked on films, too, with some people where the cameraman has to remind the director all the time or suggest cuts or what will cut or what won't or the nature of the camera movement and all these sorts of things. Other times, working with a director such as Dan Petrie—who did ELEANOR AND FRANKLIN and also did LIFEGUARD and several other films—he's a very, very methodical guy who knows pretty much where he wants the camera and when he feels the camera should start moving on a scene or something. When you're working with someone like that a lot of the work is done by the director.

SCHWARTZ: I think Jimmy sort of sets the style through the camera. He sets the style and then the gaffer follows the style. Jimmy has been very modest about the whole thing because he is a low-key guy. He may not come on too strong, but he still manages to make his desires known to the gaffer and the way he wants it done.

CRABE: It's interesting how it works out in films because even though people work with different crews, over the long haul if you look at the films of Surtees or some of those people and even though they might have worked with different gaffers and different crews and different directors they certainly bring something in there, and a lot of it with a cameraman I think is a willing attitude and a certain flexibility and a desire or at least the impression that you're really helping the director as much as you can and being as collaborative and as cooperative as possible without injuring anyone's ego.

QUESTION: Don't you often run into a conflict between the amount of time that it takes you to do something and wanting to do something a certain way?

CRABE: Oh, always.

QUESTION: Could you talk a little bit about that? What strategy do you use? How do you deal with that?

CRABE: Well, I guess I'm somewhat of a producer's man myself. I feel if you accept a film and the guy says, "We've only got five days to shoot it," that somehow—if you take the job—you try to do it in the time that's allowed. But the problem about compromise and time is ever present. In fact, sometimes I think it's exciting and makes the film go a little better. I think I'd rather work with a certain degree of urgency than to have someone say, "Take as much time as you want and call me at the club when you're ready," or something. So you're always dealing with compromise. I think there are probably great cameramen who have taken great amounts of time on things and gotten bad reputations. In the old days or on some types of big productions it's expected that a great amount of time will be taken. I suppose if one were doing a picture with Streisand—or even in the case of the Mae West thing—that when you take time it's sort of understood. I don't know what to say about it other than the pressure always exists.

QUESTION: What about the film we saw today?

CRABE: Not too much. I had the feeling even at the time that what we shot probably could have been done in other circumstances in a week or two weeks' less time maybe. And of course there were some sequences we shot that did not end up in the picture. When Jack Lemmon is going into work he stops and sees his girl friend and has a little fling with her. Not his girl friend but this gal he kind of keeps and has an apartment. But that is an example of a whole sequence that wasn't even used. But generally speaking SAVE THE TIGER was not done under great stress timewise.

QUESTION: A film like ROCKY which has a 28-day shooting schedule, do you go to the unit manager or somebody and ask how much time you have and then figure something like, "It's 9:00 now and I've got to get this lit and shot by 12:00? I mean, is that how you do it?

CRABE: No, I don't think so. Of course, you have a schedule usually. In a well-run, well-organized machine, which I usually don't get too close to myself—you have a production schedule, a breakdown, and everyone has it, so you know

that today you're going to shoot scene 83B where he goes down the hall, and so forth. The wardrobe person knows what clothes will be worn for those sequences; the cameraman knows how many scenes you're supposed to do that day. So you presumably kind of gear yourself to getting that done, whatever that means. Of course, if you get to the place and you can't get in the building or something terrible happens, then you're in trouble. But you try to pace yourself as realistically as possible for that. I think probably if the cameraman were into the situation and that schedule was just ridiculous from the beginning that he would just have to say, "Listen, honestly I will try to do everything I can but I just don't think I can do that." But no matter how it goes, if you're shooting an exterior day it seems like the sun is always setting and you're scrambling for the last shot. I don't know why that is. The job expands to fit the time, I guess.

QUESTION: There were two ELEANOR AND FRANKLINS. Did you shoot both of them?

CRABE: No. Paul Lohmann did the first one. It got 11 Emmys.

COMMENT: I don't know if this sounds right or not but it was a totally different style. It was beautifully done. The sets were really sumptuous. I just wanted to say that because it was such a different style from SAVE THE TIGER and ROCKY. But I'd like to talk about the bread and butter of doing commercials at FilmFair. When you're doing a feminine protection spot or something like that, what are the combinations of filters and diffusion that you often use for that?

CRABE: Well, of course, television commercials, particularly those dealing with glamour, are pretty much reliant on techniques that still photographers have used for a long time. I don't know how many years ago it was—15 years ago—when the softlight became the rage and everything was going to be single-source light from the side and that kind of effect, which is now used commonly in theatrical film. Softlight and those techniques were not originated by any means in commercials. But quite often still photographers seem to have used those techniques before they become popular in motion pictures. Of course softlight techniques were used widely in the silents before the movies even came to Hollywood. Commercials are sort of like the fashion business, I guess, or a style thing, because things come in and

go out very quickly. The star filter comes in and everyone uses star filters and then it disappears. Then maybe you'll see it used in a TV movie or something. Then the next thing is a real wide angle lens look. And there are all kinds of people, some of whom have a lot of taste and talent, who are into the look and the graphics of the photography of television commercials.

SCHWARTZ: Sun flares aren't as popular as they were for a while.

CRABE: Yes, they were really big at one time and everyone wanted sun flares. Of course, things eventually become relegated more to their own proper position in the total picture. I mean, when the helicopter rigs came out everybody wanted to do the world's longest helicopter shot that would start as close as you could get and end up as far away as you could get—another kind of self-indulgent exercise if the play's the thing or whatever they say. But commercials I find are really interesting because they are little exercises in photographic theory and style, and the photography and the look is probably more important in the total analysis of commercials than maybe it might be in some kind of feature filmmaking. That is, a client might really have a specific idea that they want an orange bath of morning sunlight coming through a window, and the storyboards are drawn that way and the conception is that way and it must be that way, whereas in a feature film the pre-conceived idea of the look might be a little less pre-designed; it might be a little more spontaneous sometimes.

SCHWARTZ: The time pressure isn't as great either. You have more time.

CRABE: That's right. It's not uncommon on a commercial, in key scenes involving Junior's reaction to his first taste of the new cereal, to shoot 30 or 40 takes. I mean, you won't just do it once or twice, whereas in a picture if Jack Lemmon walks in and he's ready it's, "O.K., Mr. Lemmon," and we'll do it once or twice or three times or whatever, but not like a commercial where you always do more and more and more and more coverage and everybody is nervous about the look and that sort of thing. Because of present economics and costs, however, many commercials must be done quickly and under pressure.

QUESTION: Do you have several days for pre-planning of your lighting?

CRABE: No, not really. Perhaps in some really lavish commercials, but most of

the ones that I do—last week I did a dog food commercial, worked two days on that, for Ken-L Ration. In instances like that—or most of the time—I will maybe have a little talk with the client, probably with the director, look at a storyboard and talk about it a little bit. If it were a job for Revlon or someone like that who already had established a particular kind of look or style in some print ads that they had done, some stills or something, then they would say, "We want you to look at all this because this is the look we want." Then of course it's kind of spelled out a little more in advance. In some instances, in some of the bigger commercials we've done, we have maybe done a test or two, but usually not. Usually you just get there and carry enough equipment.

QUESTION: What kind of difficulty do you have regarding work which the client says isn't what they wanted?

CRABE: Well, so often it's difficult for clients, unless they're photographers themselves, to really explain what it is they want to see. They'll say, "We don't want that movie lighting," but when they see that movie lighting it's what they really want. It's very difficult. Everyone likes to be chic and "in" and to discredit certain things that they think went out with the old days. But the old days are ever with us. In a commercial stage, like our studio out at FilmFair, we've got all the plastic and the diffusion stuff and the bounce material, so we can do almost everything that we're called upon to do, unless it's a big huge, wide shot which requires softlight, which then becomes a whole different problem of having to have enormous masses of light bouncing or diffusion material. And of course we're always looking at magazines and seeing shots of food and people and models, and if you're into photography you can't help but notice some of the things you see and think about how they're done. So it's something that I think you kind of pick up and go with.

QUESTION: Is there a certain syndrome in commercials in terms of large numbers of takes? It seems to me that I've heard a cameraman saying once that he just starts with take 11 on the slate because it's a psychological thing, that the advertising people will just never look at the third take and say, "Hey, that's great, we'll use that one."

CRABE: A great story about that is that there have been times in commercials—I've never seen it happen myself—where they'd have one good take and just make

three or four prints of it and run it to the client. He sees the same thing and says, "Take three is terrific," so at least he gets to do his thing. But there are reasons for doing a lot of takes. The little nuances of how the lady says something are pretty important to advertising people who sit there for months after the shooting is over, answering to their clients.

COMMENT: Because the same cameraman was saying that he was so proud of himself because he did the whole day's work with one magazine, and he really felt that he had saved the company money and time, and they never used him again.

CRABE: Yes, that could be.

COMMENT: I have a soundman friend who was working on a ketchup commercial, and in the middle of the day they started doing a close-up of the little girl who was putting ketchup on her hamburger that her father had fixed for her because her mother was sick, and she takes a bite and goes, "Mmm," and they did 40 some takes of it and fired the girl because she couldn't get it right.

CRABE: Only the operator sees what gets on the film as it is shot. When the hamburger comes up to that happy little face, everything must be perfect. Or when the Marlboro man pulls the cigarette away and it sticks briefly to his lip, you do see those things, and they're really big on the screen, and when you're selling all those dirty old cigarettes and all that other stuff you get into knowing all those little no-nos. In cereal commercials the kids always spit it out. You know, they take a big bite of the wonderful flakes and say, "Mmmm," and then the director cuts and another guy comes in with the can and they go, "Yecch." Because otherwise you'd stuff them after 10 takes. And then you get into undercranking sometimes and overcranking—maybe a little bit of slow motion the closer you get on a shot. I've seen love scenes in pictures where the guy comes in for the big kiss, and I know it's been double-printed, because when they shot it the people moved so fast that on-screen it looks like a freight train, out of keeping with the romance of the scene. So you get into a lot of situations where you've got bellows extension factors, close-ups, long lenses, and speed factors. Food and product photography can get tricky. There's lots to learn.

QUESTION: I'm interested—you mentioned earlier that you liked to work on pictures whenever possible that you

thought would be good, and then to hear that contrasted with the way you talk about commercials—how do you rationalize that?

CRABE: I have no real conscience. I was just lying before. I like to do both, actually. Commercials are wonderful little studies in moviemaking. You work for a day or two on something that's an entirely different style from what you might do the next day, a different subject completely. The business of feature picture-making is wonderful. I love it. The only thing I don't like about it is that the hours are sometimes really tough, and commercials are kind of a refreshing little escape from that. If a commercial cameraman is quite busy it might mean he is working three days a week. It gives you a little space in between. And I must say that although I speak in jest somewhat of the commercials, commercials have been good to me, and I have enjoyed doing commercials, and the people I have worked with, a lot of them, have been very talented people, very sensitive people, a different breed of people than you would probably find in feature films, but a new experience. I like to do both. I like to do a little bit of everything. It makes it more interesting.

SCHWARTZ: I remember one of the fellows you used to work with, a director by the name of Fred Gadette who has since passed on. The one thing I remember more than anything else about him was that he was the first one I ever heard use the expression, "Woof!" It's a live TV expression meaning stop. We were doing a commercial, and he was "Woofing" all over the place as he would set the camera.

CRABE: Fred was a wonderful guy who at one time was the director of the YOU ASKED FOR IT show, so I go back a long way with Fred. We used to hang off precipices shooting people jumping off cliffs and other crazy stuff. We also had two fabulous safaris in East Africa for AMERICAN SPORTSMAN, which was strictly off-the-hip documentary, walking through the jungle with a hand-held camera shooting sound, crystal motor—this was 1964—so when you mentioned Fred I can't help but think of some of the things we did together. But that too was a wonderful experience. It was totally, diametrically removed from either commercial-type shooting or average feature-type shooting. It was a very loose kind of cinema verité.

QUESTION: Do you have any criteria that you use to select a lens focal

length when shooting a commercial? Since you could get the same composition from different lenses depending on how far or close you are, I'm curious about what criteria you might use.

CRABE: Well, I can't think of any criteria necessarily, except that by the manipulation of different focal length lenses you have scale control. You can shoot a close-up here and have something that's that big occupy a lot of the screen in the background. In other words, you can foreshorten and get different effects by stacking up images and so forth. Of course, the criteria would be what the client or the sponsor wants, what the idea of the shot it. But we've got so many shots. We've got a 500mm lens and somebody is running at us and not advancing too much and the background is a wonderful out-of-focus blob. So the selection of lenses is usually more predetermined probably than in other things.

QUESTION: Predetermined by the client?

CRABE: Well, just predetermined by the look.

SCHWARTZ: By the sketches maybe, by the storyboards.

CRABE: And by the reality of the situation. An artist drawing a storyboard always draws what he wants to draw, but when you come to photograph it it may not work exactly as planned. A client would come to our company because they might make suggestions to improve the thing. They might say, "Well, why not do it this way instead?" We don't shoot specifically to storyboards unless it's a commercial involving a lot of opticals or tricky things that really have to interlock precisely. We try to work freely enough that if suddenly a spectacular lighting effect or something comes up unannounced—you know, the rainbow comes out and the light comes through the trees—we might quickly change our mind and go that way, too. On a picture you might get in trouble for ordering an extra lens for a week because the guy says, "Listen, this lens is five bucks a day and you haven't used it," and it's a big production, whereas in commercials you probably have a little freer hand in getting the equipment you want. I'm comparing this not with the big, big, big pictures but the kind of pictures that I usually work on where they're usually pretty much budget-conscious. But in commercials they'll say, "Well, do you want a 1000-millimeter? Do you want a zoom?" Usually you're equipped with a

lot of equipment.

SCHWARTZ: That was a real nice shot with a 500mm lens—we think—through the window of the girl's beach cottage and bringing Jack Lemmon out of the water and up into the house. It was a hell of a shot.

CRABE: The shot downtown was kind of fun, too, the one where they're in the street. I couldn't understand the sound as well today as I thought I should have. I must be going deaf or something. Where Gilford and Lemmon are saying, "How do you know about a porno movie?" They're talking and walking, surrounded by a sea of people and traffic. It was just a very long lens shot; we stole that in downtown Los Angeles. I think we had about ten or 15 extras, around Lemmon and Gilford so that the most recognizable faces, later when you get sued, would be kosher people. That was shot with an Arriflex with a crystal motor—I don't think we had a blimped camera—and we built a little partition like a "men working" shed or something, and we stuck the camera in there and tried to look cool and shot it during the noon rush hour period. It worked out pretty well. It was a radio mike.

SCHWARTZ: Which reminds me of something. I worked a number of times on TV things where the director said, "I'm going to go with a hidden camera," but they never took the time to prepare anything like putting up the shed or anything, so they ended up with everybody in the world knowing that the camera was there.

CRABE: It's funny. I did a pilot one time with hidden cameras which was kind of interesting. It was going to be like a CANDID CAMERA type of show, trying to hide cameras in offices and making holes in walls and shooting through one-way mirrors—I also worked a long time ago with Tom Laughlin. He tried to shoot either with a hidden camera or more often than not, as many directors will do, rolling the camera without the actors knowing it, pretending it's a rehearsal, figuring the anxiety factor that manifests itself when people realize that all that Eastmen Kodak film is costing money, will be cool and you'll get a normal performance. Sometimes it works.

SCHWARTZ: Well, it looks like everybody has had their questions answered. We want to thank you very much, Jimmy.

CRABE: Well, it's been my pleasure, gentlemen and ladies. Thank you. ■

SUPER-GRIP AND SPINOUT

Continued from Page 391

to make sure we had enough footage to get exactly what we needed," Shoemaker says. "It wasn't an easy task for driver or equipment, but I'm pleased to report everything went perfectly. The segment of film is for a special show which precedes ABC's Wide World of Sports, and it runs a total of about three minutes," according to Shoemaker, "but it required a tremendous amount of precision on both the part of Stewart and the camera equipment."

All cameras in and outside of the car ran at 100 fps, Shoemaker says, and he used 5.9mm Angenieux lenses on the Arris inside the car, a 10mm outside, and a 12-240mm on the Photosonics which recorded the master shot. A Nagra SN was inside the car to record sound. Film was EK 7247.

"It was really a team effort that paid off," Shoemaker says, "from Jackie Stewart inside the car to the work of Producer Ned Steckel, Director Larry Kamm, Soundman Jan Schulte and Jimmy Williams and all the technicians at Alan Gordon Enterprises who helped us solve our mounting problems."

For Cameraman Don Shoemaker, who heads up Don Shoemaker Films in Dana Point, California, it was another job well done. And for the millions of ABC television viewers who will see the feature, it was another magic moment in the world of sports that could only have been recorded by the expert eye of today's modern filmmaker and his unique filmmaking equipment. ■

Continued from Page 336

portability and efficiency of the U-matic system is attractive enough to make it the first choice of most broadcast ENG operations.

The latest development in VTR's is the "broadcast quality" high-band 1" helical scan recorders. Recent technological advancements in the field of servo mechanisms and micro electronics have resulted in this new generation of ultra-sophisticated broadcast machines that exhibit quality equal to, and in most cases superior to, the long-revered 2" quad machines. This high quality comes in a significantly smaller, lighter and much less expensive package with far greater flexibility and features—not the least of which is film-style editing, including still-frame, slow motion, frame-by-frame jogging and the ability to maintain an image at even 30 times normal speed. These 1" Broadcast High-Band recorders have virtually made 2" quad machines obsolete and while quads will be around for a long time due to the shear number of machines in existence, broadcasters have already begun the changeover to the more flexible and less costly 1" format.

It should be mentioned at this point that there is no compatibility among helical formats even if they use the same tape width. Every manufacturer uses its own design for angle of the tracks, tape speed, writing speed, placement of the audio and control tracks, placement of the heads, etc. Thus, a tape had to be played back and edited on the same type of machine upon which it was recorded. Imagine if all film shot on an Eclair could only be projected on an Eclair projector, and so on with each camera/projector manufacturer. The helical VTR market was and is quite hectic. Not until the overwhelming popularity of the U-matic did standardization begin to create some order. The developers of the U-matic format allowed franchises to other manufacturers and a standardized format was created.

Because of pressures from the broadcasters a similar standardization now exists with the new 1" Broadcast formats through the efforts of the SMPTE. Unfortunately, there are currently two popular and totally different and incompatible one-inch broadcast formats—the SMPTE Type C and the SMPTE Type B—and so there is still controversy within the industry, with the usual compatibility problems. The SMPTE Type C format is exemplified by the Sony BVH 1000 and the Ampex VPR-2, both of which are also available in portable models. Hitachi is

also scheduled to produce a 1" Type C portable. The SMPTE Type B format is also called the BCN format and was developed by Bosch-Fernseh. The BCN system not only includes studio consoles and a one-hour reel-to-reel portable, but also a 20-minute cassette portable, all with the same high broadcast quality. The choice between the Type B or Type C format is a difficult one. Specific features must be carefully compared and compatibility with other systems must be considered. The BCN Fernseh Type B system has a very good four-year track record and is quite popular in Europe, as well as in the States. While the Type C format is relatively newer, it appears that the major U.S. networks are fairly well committed to the Type C system.

The industrial and educational markets still support a wide variety of video tape recorders. However, in the area of professional and broadcast production, the choice will most assuredly be either 2" Quad or the new 1" Type B or Type C formats. Where portability and budget are paramount, the U-matic 3/4" cassette system still enjoys an unprecedented and enigmatic acceptance among professional producers and broadcasters, despite its blatantly inferior image. I suspect, however, that as the Type B and Type C portables become more available, most EFP and documentary style ENG operations will switch for the superior broadcast quality of these one-inch formats, leaving only the hard news ENG units and low budget industrial producers using the U-matic system. ■

MULTI-CHANNEL DIALOGUE AND EFFECTS RECORDING

Continued from Page 369

"final cut" stage, a team of experienced sound-effects cutters take the 3-track work elements and *re-order* each of the final tracks *re-transferred* from the original 1" tape master onto *single stripe* 35 mm magnetic film. Only these new fresh single track elements, matched against the old work tracks and work print, go to re-recording. The single stripe process is necessary for some of the following reasons; (1) the cleaning of unwanted noises or sounds from in-between the desired dialogue of each actor and (2) the ability to shift or otherwise separate out each track physically during re-recording should problems arise. Additional dubbing elements such as music or extra-effects tracks are prepared and added in the normal manner.

RE-RECORDING

Although this "mass" of individual track elements sometimes means a massive and lengthy pre-dub of dialogue, the following advantages are possible: one can individually equalize each voice/track, deal with the overlapping/improvised dialogue in terms of balance, and sort out the technical problems of microphone phasing. It becomes almost as important to be able to "throw away" certain parts of the track(s) when they interfere, as it is to be able to emphasize other parts for a desired effect. All this becomes an important factor when you've left the choice of "tipping" the emphasis of a scene (audio-wise) until this stage of post-production. Although complete isolation of tracks is a rarity, enough isolation exists so that audience attention can be shifted or re-directed even in complex multidialogue scenes.

Altogether, the system is a tool designed to give a director certain freedoms in production. But like all specialized tools or new techniques, it requires adaptations and adjustments in procedures which the user must take into account. It is hoped that these notes have shed some light on these matters. ■

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