

# American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

FEBRUARY 1977/ONE DOLLAR

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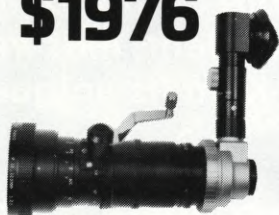
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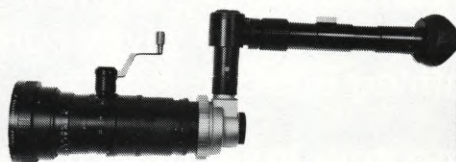


**\$1976**



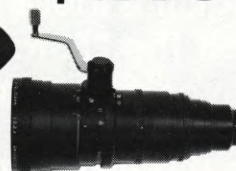
12-120mm F2.2  
WITH 1" VF AV30

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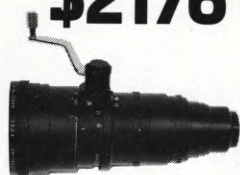
12-120mm F2.2 WITH 7 1/2" VF AVC

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12-150mm T2.3  
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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.*

**FEBRUARY 1977**

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**VOL. 58, NO. 2**

#### ● **FEATURE ARTICLES**

- 150 The Filming of "VOYAGE OF THE HOKULE'A"
- 152 "One-man-band" Cinematography Aboard the Hokule'a
- 156 Recollections of a Time in Honolulu and a Time at Sea
- 158 A Watertight Artificial Skin for a Motion Picture Camera
- 160 Saltwater to Electronic Equipment Is Like Dying
- 164 From Tape to Film to "JAWS"
- 172 Disney Night at the A.S.C.
- 184 The Photography of "ROCKY"
- 188 Technical Imagination Creates a Big-budget Look for "MODEL RAILROADING UNLIMITED"
- 194 The Vth Tehran International Film Festival
- 202 A Word with the Administrator of the Tehran Film Festival
- 204 Awards of the Vth Tehran International Film Festival

#### ● **DEPARTMENTS**

- 124 What's New
- 128 Questions & Answers
- 132 Cinema Workshop
- 136 The Bookshelf

ON THE COVER: A scene from "VOYAGE OF THE HOKULE'A", National Geographic special, produced by the staff of WQED, Pittsburgh, and documenting the epic voyage from Hawaii to Tahiti of a 60-foot, double-hulled canoe, without the use of charts or other modern navigational aids.

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# ROGER CORMAN



*Coppola, Nicholson and Bogdanovich—these are among the major talents that you helped get started. How about your own career? How did you start?*

After graduating from Stanford, I got a job as an engineer. After four days I knew it was a total mistake. What I really wanted was to make movies. So I went to work at Fox as a messenger. It wasn't too long before I was writing screenplays and directing. Then I became an independent producer. And then I opened my own company, New World Pictures.

*What do you look for in a new director or writer?*

Intelligence. The people I am dealing with must be intelligent. They must also have more than just an interest in films. It's more like a vocation. The best filmmakers have a need to make films.

*How about the new young cinematographers?*

Because of our budget restrictions, we want cinematographers who can work rapidly and still give us quality. We've had some outstanding cameramen start with us. Several have gone on to win Oscars. I've always liked to experiment with new types of film. I remember using different emulsions for different psychological effects. If I have any questions about film, I just call your local Kodak office. I'm generally the first in Hollywood to work with each successive generation of Eastman film. The Kodak people have always been very helpful,

Les Baker in particular. He also keeps me up to date on Eastman release print stock. This is important because when we distribute foreign films, we make all our release prints here. This way, I can be sure I'm getting the best quality.

*How would you describe your company?*

New World Pictures, now five years old, has become, somewhat to my surprise, the largest independent producing and distributing company in the country. We've produced and distributed fifty-three pictures. Films that range from "Death Race 2000" to "Cries And Whispers" and "Amarcord." We've won Academy Awards in each of the past two years. Because we distribute fewer films than the majors, we feel we can give each one specialized handling. My lawyer, who is a woman, describes us as a boutique as opposed to a department store.

*Is it true you made a bid for "Cries And Whispers" without having seen it?*

Yes. When it was first offered, all the major companies passed it up.

I've always admired Ingmar Bergman's work, so when I heard it was available, I made a bid. The film was brilliant and went on to win many awards. Bergman was delighted with our distribution pattern. After the art theaters and regular hard-tops, we put it into drive-ins, bringing his work to audiences that had never seen it before. Incidentally, it went on to become the highest grossing film he's had in this country.

*How many projects are on this year's schedule?*

I like to give each picture personal attention, so New World will handle no more than ten to fifteen pictures. Again, they're going to be either very commercial or pure art films ranging from a youth-oriented film starring Ron Howard called "The Car," to the new Francois Truffaut film, "The Story Of Adele H." The average run-of-the-mill film is something I'm definitely not interested in. As for the future—we're working with some extremely talented young people, and feel that our best films are still to come.

*If you have any questions about film, do what Roger Corman does, call your local Kodak Sales and Engineering representative.*

*The people who staff the Kodak regional offices are all exceedingly knowledgeable, involved men and women who are constantly aware of the needs and activities of the industry. They are there to assist in every way they can; to provide information, solve problems, or serve as technical consultants.*

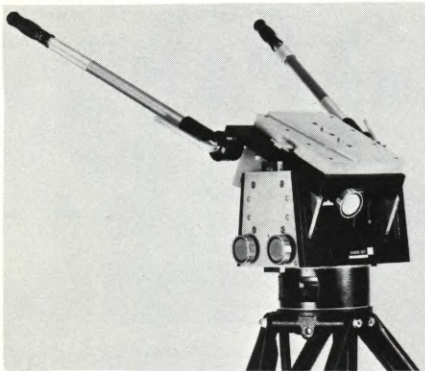
*And for a free copy of this and other interviews, send for our booklet. Write Eastman Kodak Company, Dept. 640-D Rochester, N.Y. 14650.*



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# WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE



## GIBRALTAR CAM HEAD FROM QUICK-SET IS IMPROVED VERSION OF THE FAMOUS HOUSTON FEARLESS HFCH

One of the first things Quick-Set, Inc. did after acquiring Houston Fearless was to redesign the company's well-known HFCH cam head. Now Quick-Set's all-new version has been introduced as the Gibraltar Cam Head (Cat. No. 4-62302-1). Though smaller in size and lighter in weight than the trusted HFCH, it still accommodates camera loads up to 375 pounds!

A precision-engineered roller bearing system provides smooth, flawless, 360° panning. Camera tilt is an effortless  $\pm 50^\circ$ . Interchangeable dual cams (in size range from 3 inches to 10 inches) match the head to most cameras' specific center of gravity, to perfectly counterbalance the load.

A movable wedge plate adapter — now an integral part of the balance system — achieves forward and aft camera balance. The adapter is included at no additional charge.

Optional accessories include a second telescoping control arm and a wedge plate.

A catalog sheet is available, on request, from Quick-Set, Inc., 3650 Woodhead Drive, Northbrook, Illinois 60062.

## BEAULIEU AND TOPCON CAMERAS TO BE ON PERMANENT DISPLAY AT THE GEORGE EASTMAN HOUSE

"The Beaulieu 5008S Multispeed Single-System Sound Super-8 Camera and the Topcon Super DM 35mm SLR Camera will soon be placed on PERMANENT Exhibit in the International Museum of Photography at the George Eastman House (Rochester,

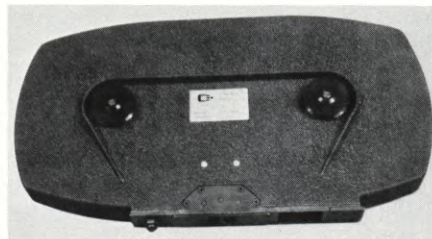
New York)," announced Morton G. Schoncite, Vice President of Hervic Corporation (exclusive U.S. distributor of both product lines).

"We are indeed thrilled to have such an honor granted to not one, but TWO of our products," Mr. Schoncite further stated.

"Each camera was chosen for permanent exhibit at the George Eastman House because of the unique, state-of-the-art design and feature contributions each camera has made within its respective film format.

"Beaulieu brought to Super-8 (right from the beginning) the 'professional touch' with such innovations as Mirror Reflex Viewing, the widest range of filming speeds. Lens Interchangeability, and unmatched optics for Super-8.

"Topcon is a true 'pioneering' brand name in 35mm SLR, responsible for the Auto Wind Concept, Behind-the-Lens Metering and the world's fastest optics (Topcon's 300mm, 2.8 lens)."



## NEW PLC-4A 400-FT. MAGAZINE AVAILABLE FROM CINEMA PRODUCTS

Cinema Products Corporation announces the availability of the new PLC-4A magazine — the most efficient, reliable and silent 400-ft. magazine, made of extremely lightweight, glass-filled Lexan® (a material with greater impact strength than magnesium).

The PLC-4A magazine features an all-new *take-up assembly*, providing steady, positive film tracking. Sound dampening material specially fitted into each magazine door effectively reduces system noise, making the PLC-4A a *truly quiet operating magazine*, and corduroy liners fitted in both film chambers ensure a clean, "fuzz-free" film magazine.

The improved spindle system in both film chambers allows for easy film loading and removal through the use of a positive push-button lock/release

system which permits both supply and take-up core adapters and daylight-load spools to be locked securely during filming, preventing rattle and wobble.

The new PLC-4A magazine is compatible with all 16mm camera systems which accept standard 400-ft. magazines. It is priced at \$210.

For further information, please write to Cinema Products Corporation, 2037 Granville Ave., Los Angeles, California 90025. Tel: (213) 478-0711.

## TRIBUTE TO SLAVKO VORKAPICH

On Saturday evening, March 5th, at 8:00 p.m., the Los Angeles County Museum of Art in association with the American Society of Cinematographers, the Directors Guild of America and the American Film Institute, will present a posthumous tribute to Slavko Vorkapich, about whom Leopold Stokowski remarked "... He is a poet with a camera." Famed for his montage work in such films as CRIME WITHOUT PASSION, WHAT PRICE HOLLYWOOD?, THE GOOD EARTH, ROMEO AND JULIET, MAYTIME, MR. SMITH GOES TO WASHINGTON and JOAN OF ARC, Vorkapich's work influenced three generations of filmmakers. His LIFE AND DEATH OF A HOLLYWOOD EXTRA, filmed with Robert Florey in 1929, was the first expressionistic film made in this country.

For many years the head of the U.S.C. Cinema Department and lecturer at many universities and museums, Vorkapich was determined lifelong to open the eyes and minds of both his students and his audiences to the true potential of the filmic medium.

The tribute will consist of selected montages and screenings of several Vorkapich films including LIFE AND DEATH OF A HOLLYWOOD EXTRA. Several sequences which were cut from the films for which they were originally made will be exhibited publicly for the first time. Among the guest speakers that evening will be many of Vorkapich's co-workers including A.S.C. President Linwood Dunn, Directors George Cukor and Frank Capra, and Cinematographer Lee Garmes, ASC.

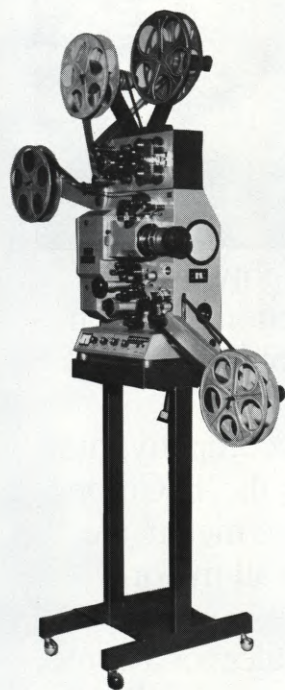
Tickets for this event will be priced at \$2.00, with bona fide students, Museum, and AFI members receiving a 50-cent discount. Tickets may be purchased in advance by mail or at the door from the Leo S. Bing Theater, Los Angeles County Museum of Art, 5905 Wilshire Boulevard, Los Angeles, CA 90036. ■



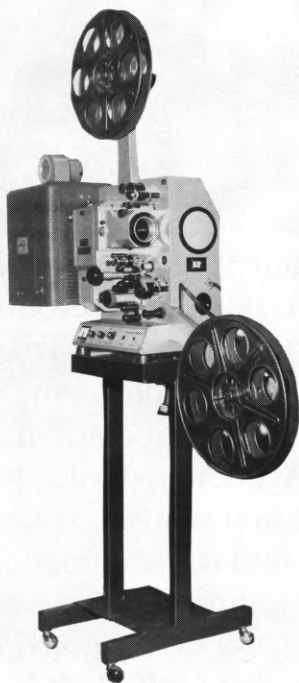
# MP-30

## a lot of projector for the money

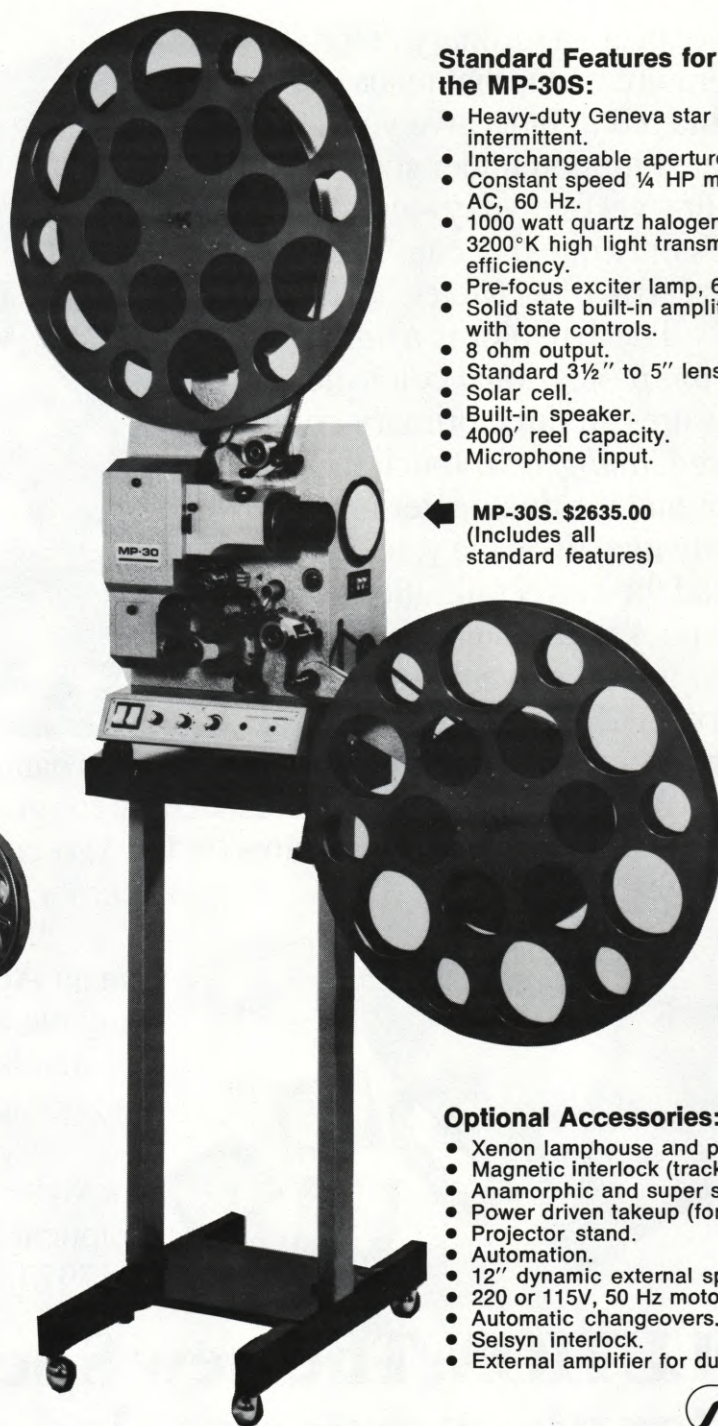
When we introduced the MP-30 Portable 35mm Sound Projector just a few months ago we told you it was a lot of projector for the money. We pointed out its versatility and how it offers top quality professional projection combined with portability for use in almost any type of requirement, from standard theater to screening room. Now, there are even added advantages to owning an MP-30, because in addition to the standard model, the MP-30S, we are offering the MP-30M, with Interlock, and the MP-30X, with Xenon lamphouse, still at prices which are the lowest in the industry. The MP-30 is a precision crafted projector priced to fit your budget. Check with our Projection Department today for details on the MP-30 to fit your specific needs.



**MP-30M. \$4505.00**  
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### Standard Features for the MP-30S:

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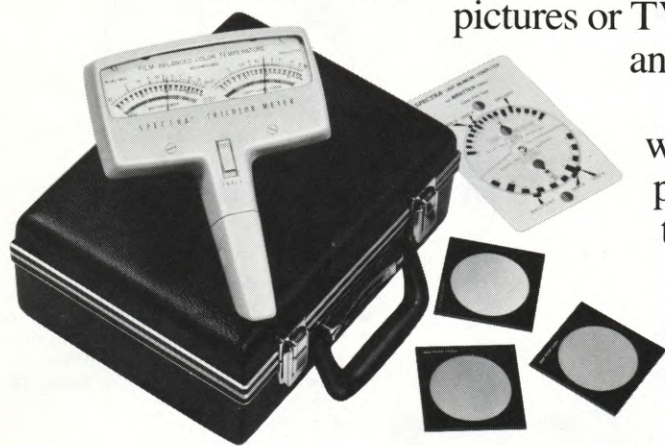
It works in any light—indoors, outdoors, mixed ambients—with any color film. Anywhere, because it's battery powered and lightweight.

Whether you shoot stills (especially for graphic arts reproduction), motion pictures or TV, you can rely on the TriColor to solve any color balance problem.

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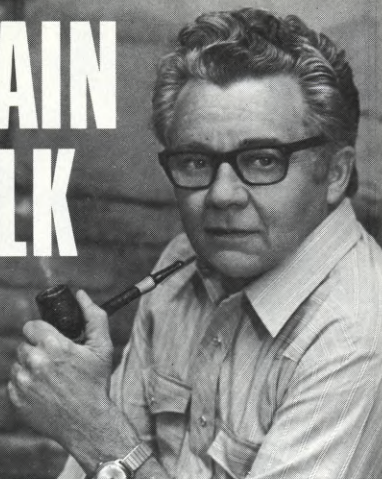
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# PLAIN TALK



by *J. Carl Treise*

**"No man is an island"  
(not even me!)**

We brag about our film processors and take as much credit as we can get away with, but we've got to admit one thing . . .

We get a lot of help from our friends.

To put it bluntly, anyone who thinks he can run a company from an ivory tower and ignore the feed-back from his customers is sadly mistaken.

Engineers and designers are helpful to have around, but it's the guy who's running the processor and the man who's sweating out the "bottom line" who really know the score.

After all, we build the best darn processors we can, in order to make money. And we build these units for customers who need them to make money. So we're really partners. By working together, we can turn out units that are much better than any company could do by itself.

Some of the better features in our processors have come from comments by customers located all over the world (as a matter of fact, from San Fernando to Timbuktu!).

We listen to every customer, big or small. And that includes technicians and maintenance people, as well as the "big wheels."

Believe me, we damn well appreciate the help we've received.

And we thought this might be a nice way to tell all our friends how great we think you are.

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## QUESTIONS & ANSWERS

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

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



**Q** I have found that my light meter is sensitive to ultra-violet. A short while ago I had my meter calibrated and had some direct-readout (ASA) slides made for it. Just out of curiosity I wanted to find out if the cell (selenium) (not CdS) is sensitive to ultra-violet so I placed a glass UV filter over the photosphere. I have gotten up to one stop of extra-exposure reading. Since a conversion filter is normally used to bring the tungsten-balanced film to daylight exposure and the conversion filter has an UV filter in it, it seems to me that I should have a filter in my light meter.

I also wonder about the effects of UV on film, I assume that UV exposes film and effects the basic exposure index of film but by how much? Also does your basic UV filter really take care of all the UV that might be in your shooting environment.

As the light balance of the scene changes so does the content of UV so could it be that sometimes you should use two or maybe three UV filters? The reason I ask is because I generally see very little red or green or brown tone in films, the dominant color seems to be blue and the whites seem to go blue instead of white. Is this because the cameraman does not use proper filtering for the negative? Could blue-whites and poor color tones be caused by ultra-violet "biasing" the stock incorrectly to the "visible" spectrum?

**A** This man is really asking a number of questions, and a detailed reply would take too much time and space. I think we might answer him easiest by taking his questions out of order and start by pointing out that almost all photographic films are sensitive to the long wave ultraviolet, and some even in the short wave region, although most (that *hedgeward*, again) glass lenses do not transmit the short-wave UV.

Now, one of the great problems of exposure reading is that film sensitivity, human eye sensitivity, and exposure meter sensitivity to the spectral output of a source of illumination all differ, and that's what makes the ball-game fun.

Selenium cells generally do not have much variation in response from one

end of the visible spectrum to the other, whereas CdS cells (which can be more sensitive to low light levels) vary greatly and usually don't see well into the UV range (which the film sees), though they may see some infrared. However, cells of all types used in exposure meters are usually chosen and filtered to closely match the films in general use, but even filtered may not give accurate response in all regions.

As to the man's questions of placing a UV filter over the selenium cell, it would indeed indicate a change in exposure. But that's why we have filter factors which suggest how much correction to make for the light absorbed by the filter. He hasn't indicated which UV filter he is using, but a look at Eastman Kodak's KODAK FILTERS FOR SCIENTIFIC AND TECHNICAL USE (Publication No. 8-3) will show how much ultraviolet, violet, and blue the various filters hold back or transmit. It's true that in the mountains or wide open spaces there is more UV which both film and meter (but not the eye) sees. To make the scene look closer to the eye's rendition, additional filtering may be required. But to answer another one of his questions, two or three filters at once are usually not necessary since a single *stronger* filter will hold back the same amount of UV as a combination of weaker ones, in addition to adding only one additional thickness to the optical path instead of several.

As to the use of conversion filters when using Tungsten balanced film out-of-doors, the filter factor for the conversion filter is intended to compensate for the light absorption of the filter. As we've mentioned earlier, the meter already has a filter and selected cell to see and measure light which the film sees and responds to.

As the light balance of the scene changes the UV content does change, but so do the yellow, blue, green, red and other colors as well. These changes occur with the time of day and year, elevation of the sun, cloud cover, and with different artificial sources, too. As we said earlier, eyes, meters, and film all see differently, but good meters, such as the one this man uses, seem to offer a very good compromise. It may

Continued on Page 230



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This microphone's grandfather could drive nails into pine boards and continue to perform unabashedly. The RE20 adds the ability to handle very high inputs. That's durability. We back this claim with the strongest dynamic microphone guarantee in the business.

### CS15 Single-D Cardioid Condenser:

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Output Level (0 dB = 1 mw/10 dyn/cm <sup>2</sup> )	-57 dB	-45 dB
Max. SPL (1% THD or less at 1 kHz)	greater than 150 dB	141 dB
Impedance	50, 150, 250 ohms balanced	150 ohms balanced
Case Material	Machined Steel	Machined Steel
Sugg'd Resale Net Price (Slightly Higher in Western States)	\$315.00	\$225.00

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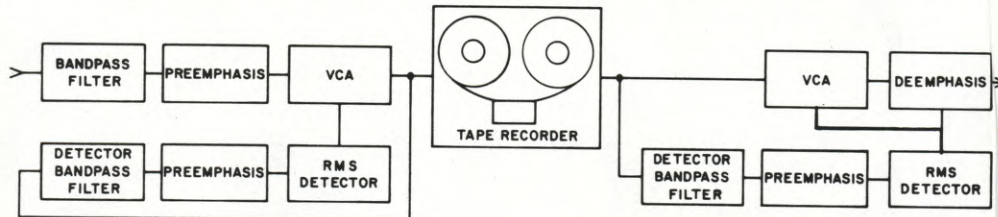


By ANTON WILSON

## AUDIO BASICS NOISE REDUCTION

The term "noise reduction" has proven to be an oversimplification of a more complex phenomenon. The restricted dynamic range of the recording process is the real nemesis of the location recordist. In many instances the recorded subject has a dynamic range exceeding that of the tape. Under these circumstances the problem is similar to the proverbial 10 pounds of material into the five pound can. The recordist will usually employ gain riding and peak limiting to enable the program to fit within the range of the tape. In practice the levels are set slightly high, such that the occasional peak will slightly overload. A peak limiter is activated that will reduce the amplitude of these peaks before the tape actually distorts. This practice can add 3-to-6 dB to the signal-to-noise ratio, but at the expense of having the loudest peaks in the program lopped off.

Gain riding involves boosting the level controls during soft passages to



**FIGURE 2 —** Block diagram of a "dbx" compressor/expander. While this theory appears quite simple, the electronic execution is very complex. The heart of the system is the RMS (Root Mean Square) detector and the VCA (Voltage Controlled Amplifier). The additional circuits prevent any possible side effects (see text).

get these low sounds up away from the noise. While this practice does keep the soft passages out of the noise, it also destroys the original relationship between the quiet and loud passages. After gain riding/peak limiting, the loudest peaks have been lopped off, the quiet passages made louder and the net result is that the original sound with a range of 70dB has now been emasculated to a dull 40dB.

In essence, the peak limiting/gain riding compresses the giant signal, en-

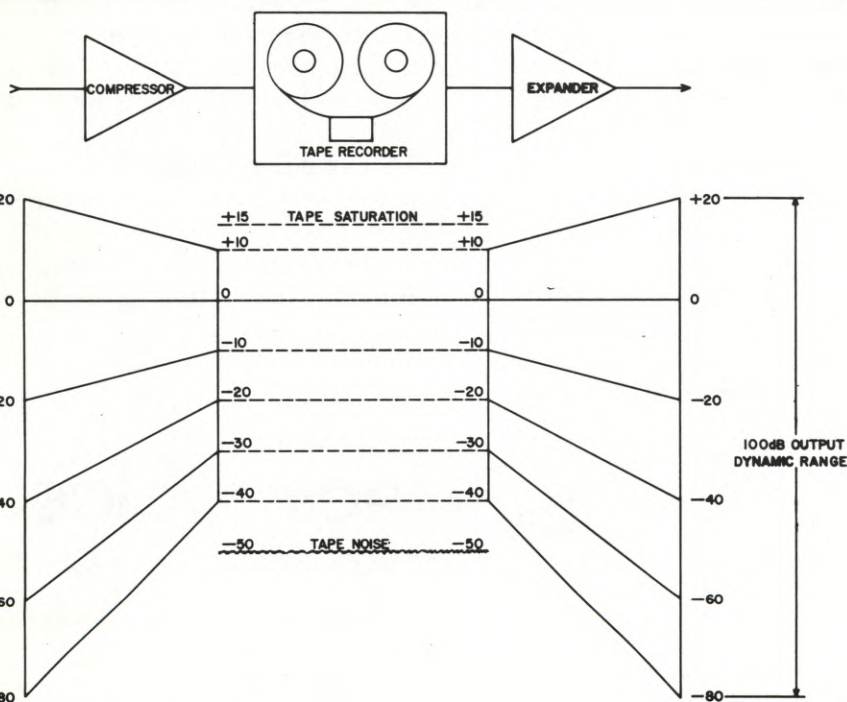
abling it to fit the petite range of the tape. This practice does get the entire signal onto the tape and, in this respect, is better than nothing.

However a second look at this process poses an interesting question. Suppose the soundman could somehow note down precisely when and how much the gain was altered during recording? Now, upon playback, the gain is altered an equal but opposite amount. This would totally negate the gain manipulation employed during recording and restore the original dynamics. Now you have the best of both worlds. The signal is compressed to fit the tape and then the dynamic range is restored by uncompressing.

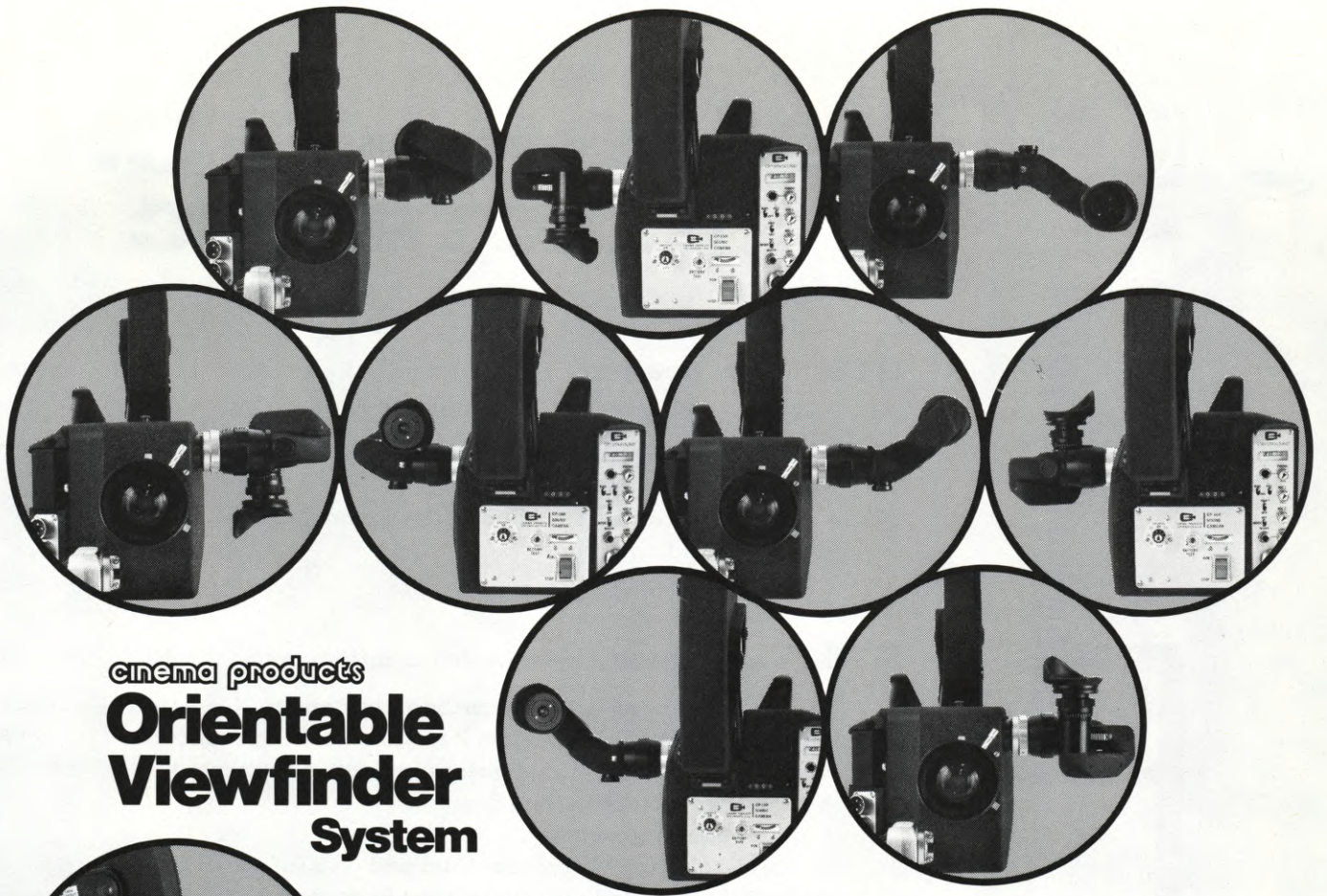
This phenomenon is reflected in FIGURE 1 and is precisely what a "dbx" system does. The original source is compressed 2:1, allowing 100 dB of dynamics to fit a tape with a dynamic range of only 50 dB. If the tape was played back without expansion, the subject would sound dynamically flat, the soft and loud passages would be "closer together". However, when played back through the corresponding expander, the original loudness relationships are restored.

In theory this compression/expansion process seems uncannily simple. While tape and recorder manufacturers are striving for that extra 2 or 3 dB of dynamic range, this simple process virtually doubles the dynamic range and, in most cases, represents an increase of 30-to-50 dB. The results of this process are so impressive, and the idea so logically simple that one can't help but wonder why Leonardo DaVinci didn't think of it (or at least

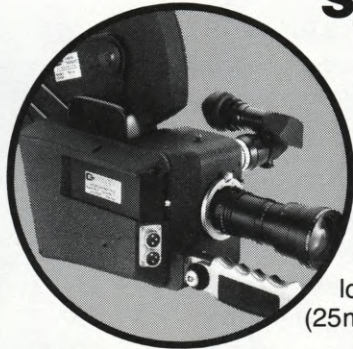
**FIGURE 1 —** The basic concept of the compressor/expander: The 100dB input is compressed down to a dynamic range of only 50dB, which fits nicely onto the tape. Note that the loudest peaks are below saturation and the softest passages are well above the noise. Upon playback, the expander restores the original 100dB dynamic range.







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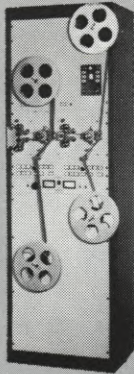
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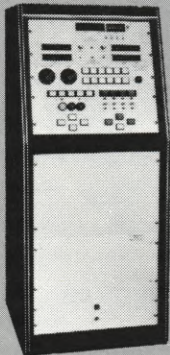
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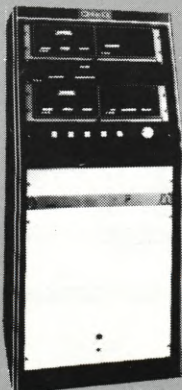
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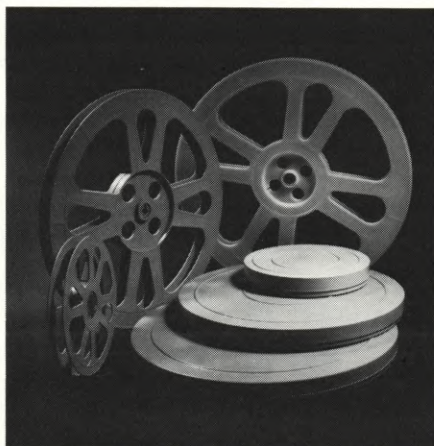
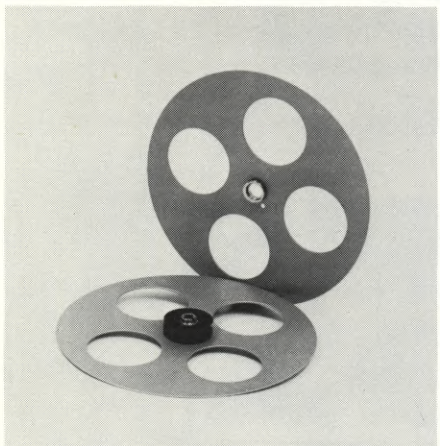
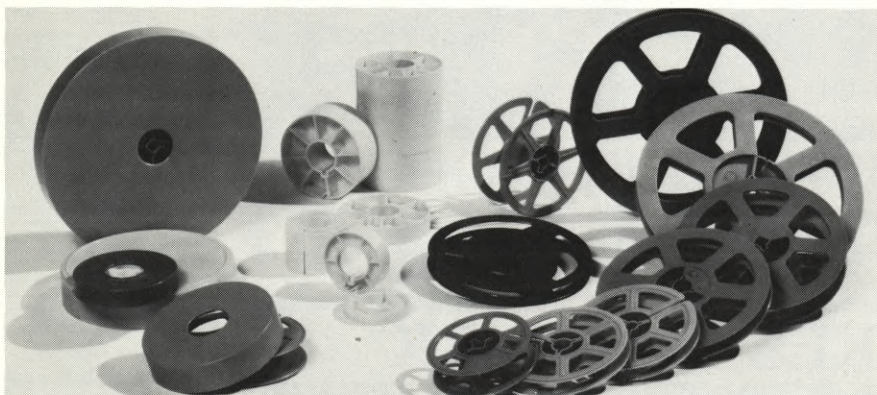
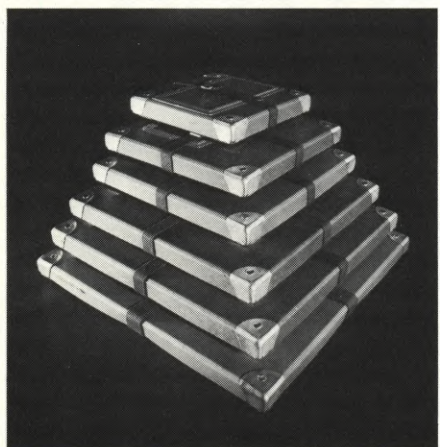


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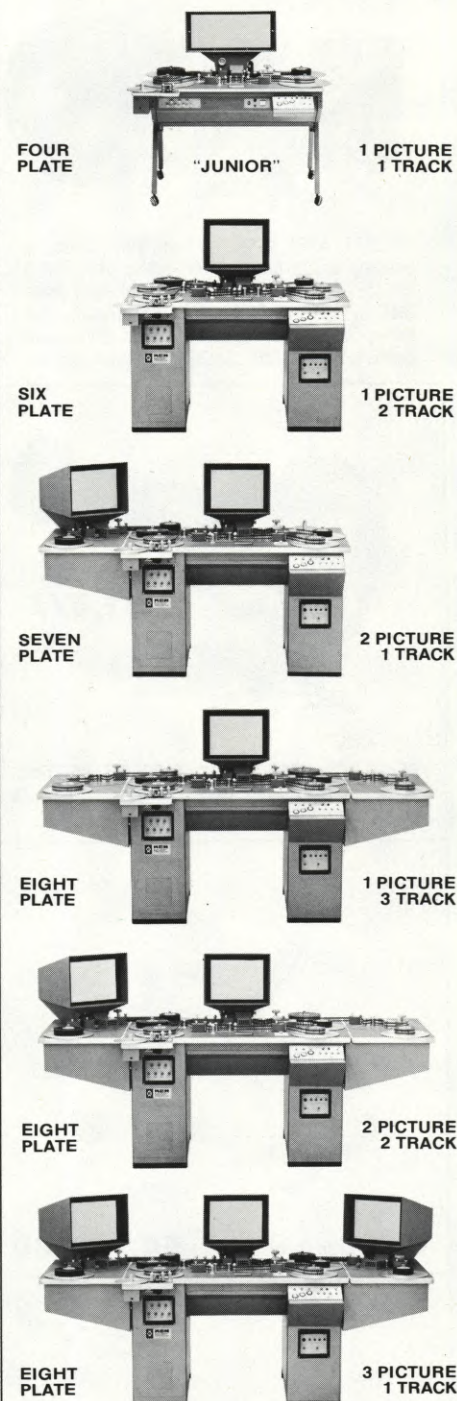
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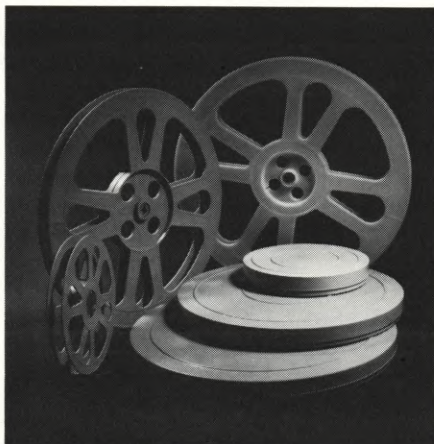
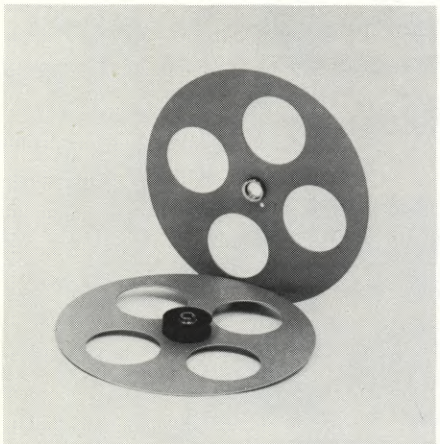
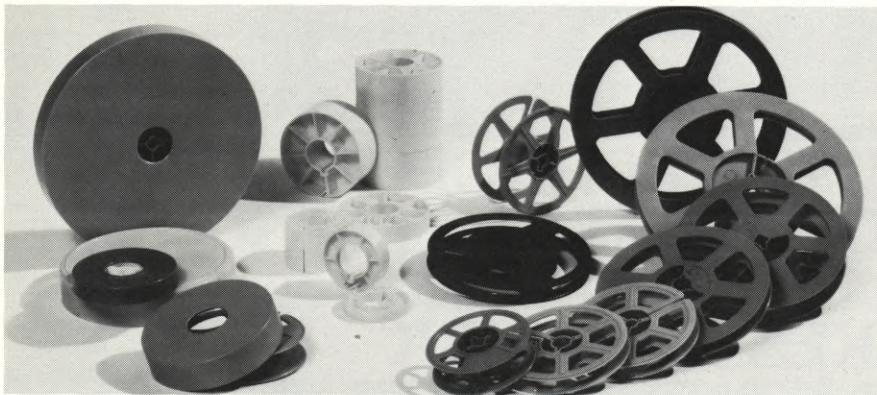
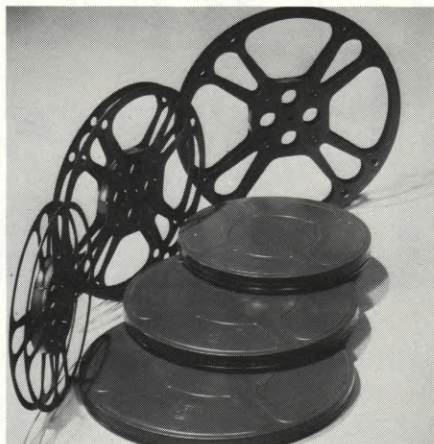
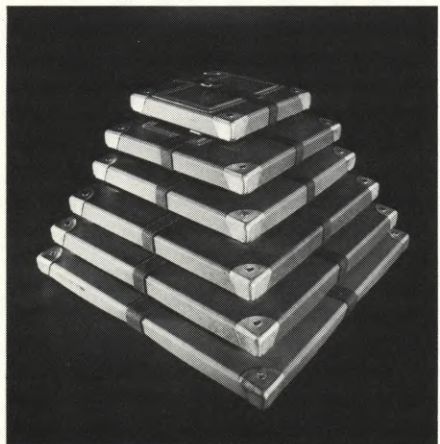
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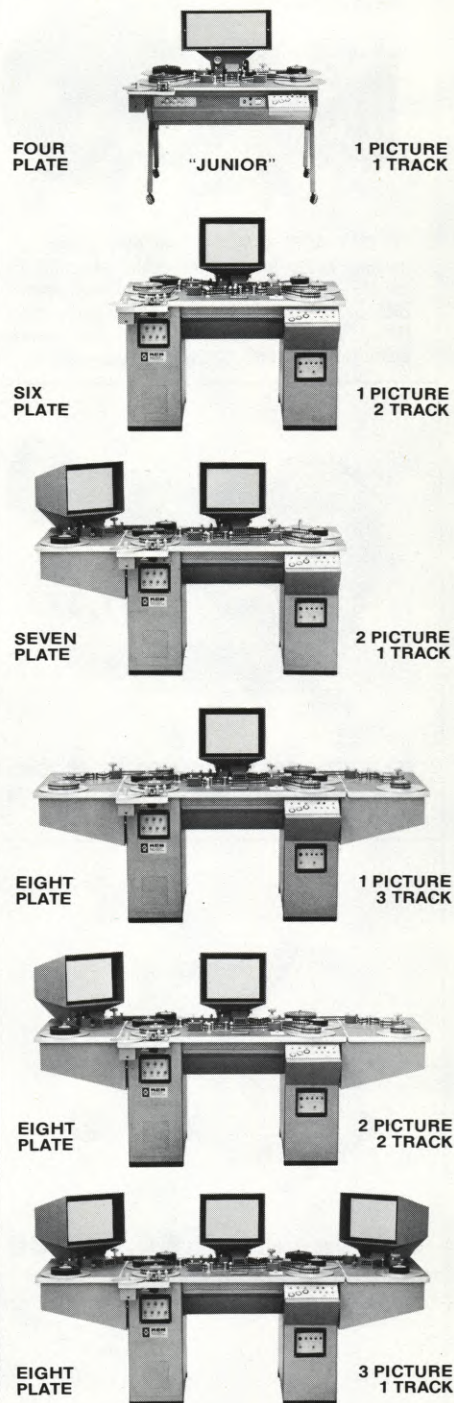
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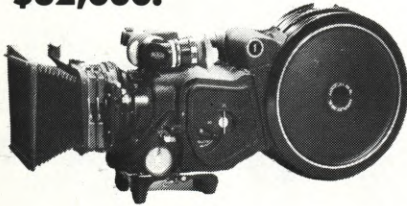
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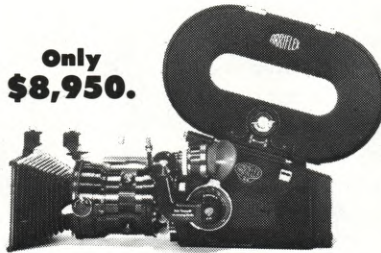
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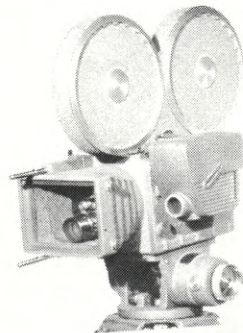
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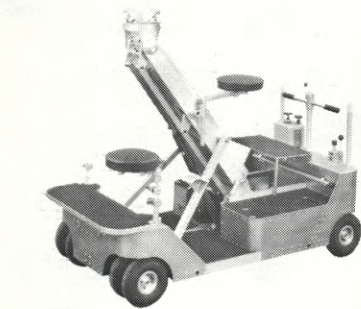
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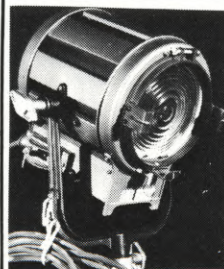


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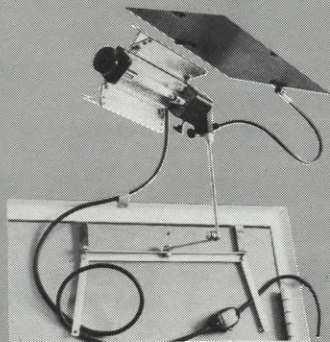


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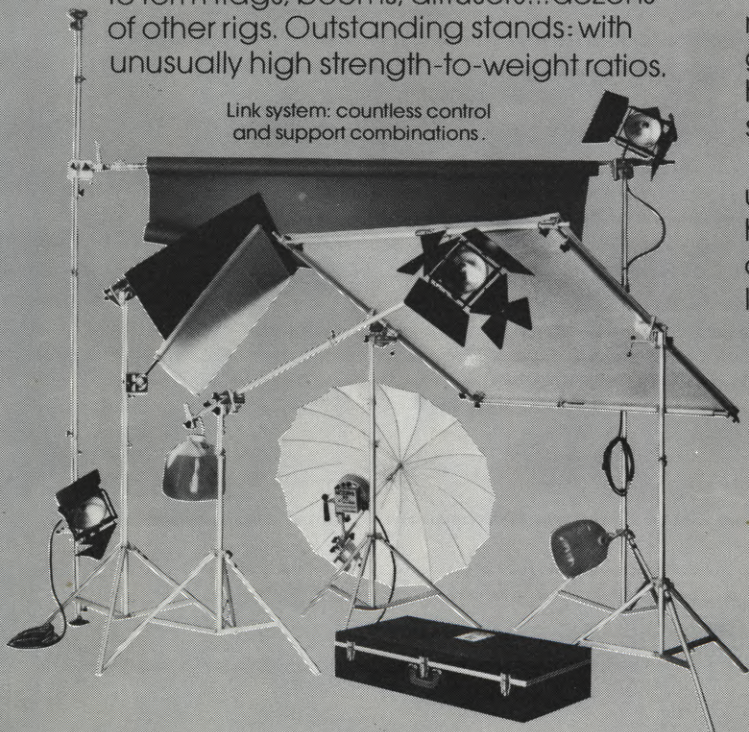
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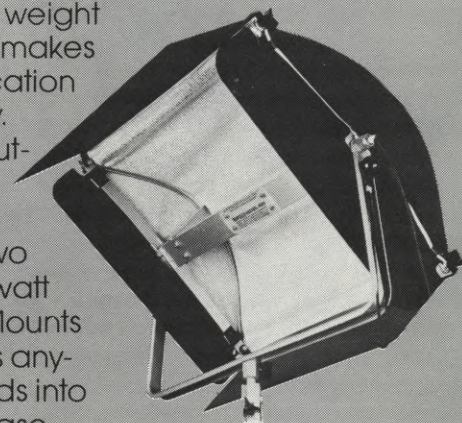
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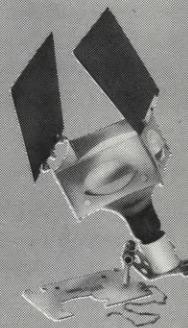
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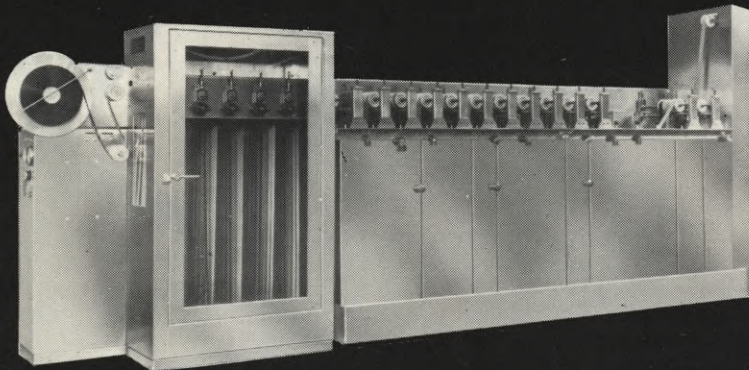
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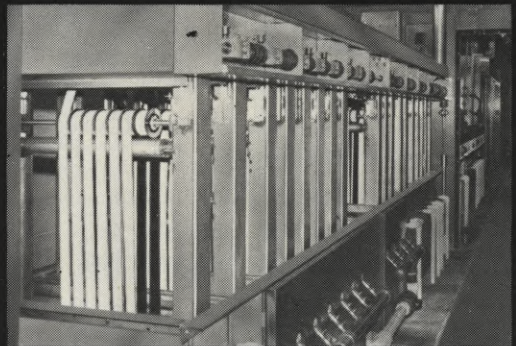
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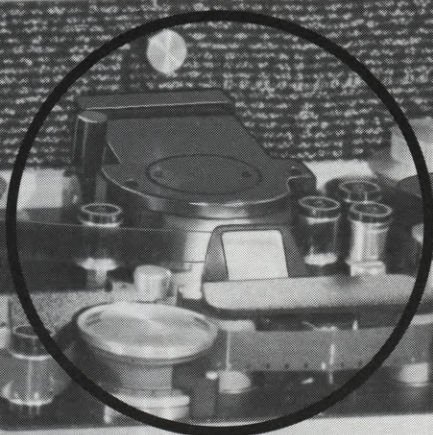
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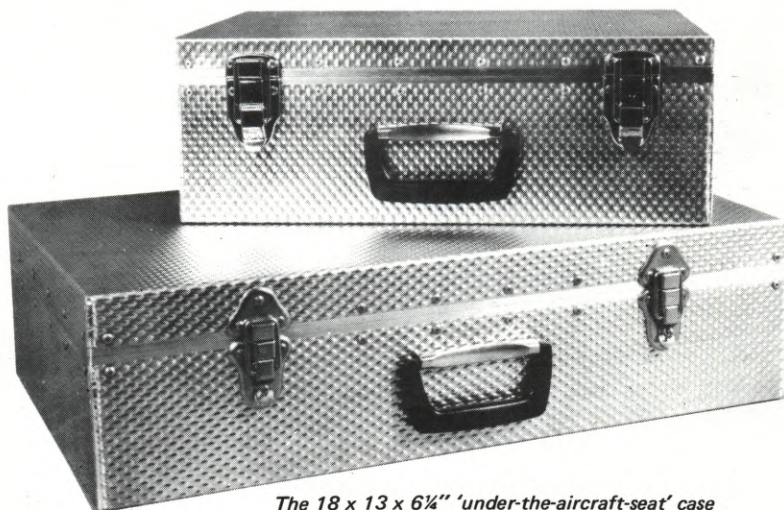
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"What's more, TVC's lab color corrections created a soft, natural look without the excessive contrast and brightness associated with 7247.

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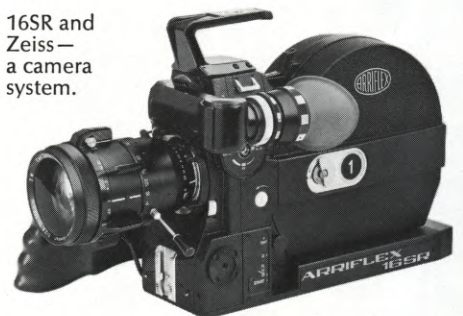
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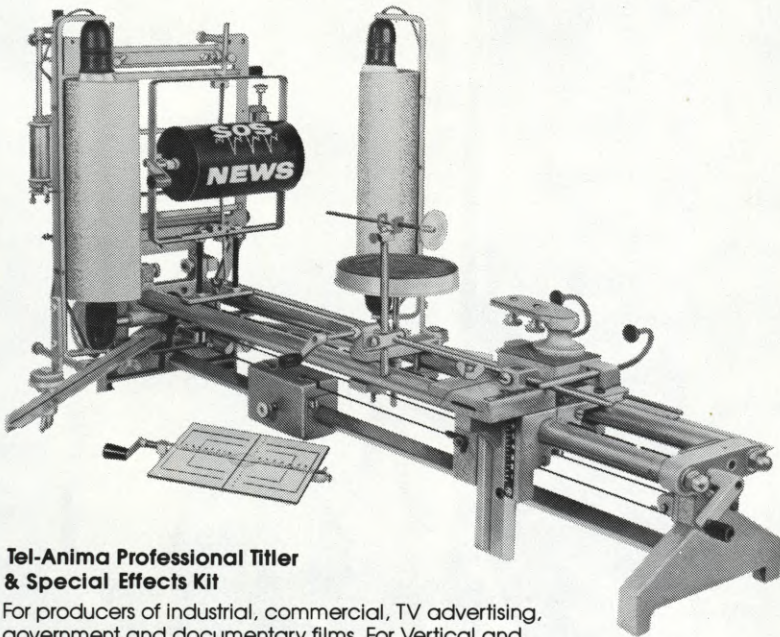
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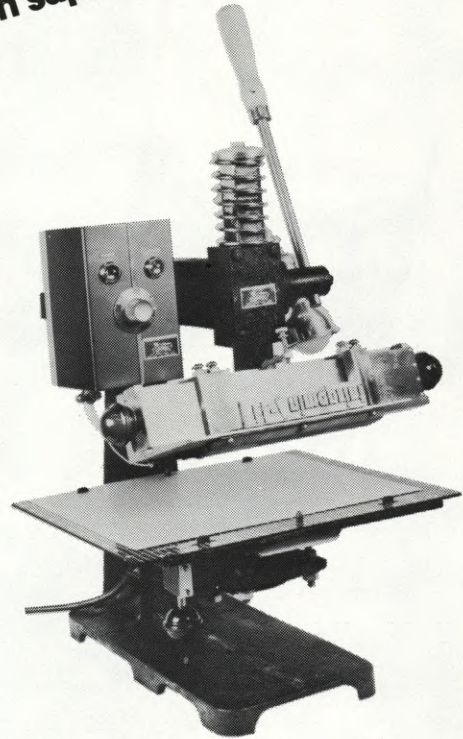
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# THE FILMING OF VOYAGE OF THE HOKULE'A

The challenge of shooting a film of one of the longest open-sea voyages in the world, Hawaii to Tahiti, aboard a sixty-foot, double-hulled Polynesian canoe



By DALE BELL

"So you really want to make a movie in Hawaii and Tahiti?"

Thus had Tom Skinner begun the conversation as we took off from Los Angeles on our way to Hawaii. The time was August, 1975. Just six months earlier, denied commercial sponsorship and commercial network time, the longstanding National Geographic Specials were not being produced. Having established a previous rela-

tionship with the Society in the production of dramatic films, Tom Skinner, vice president at the fast-growing public television station and national production center in Pittsburgh, WQED, sought underwriting funds from the hometown Gulf Oil Corporation.

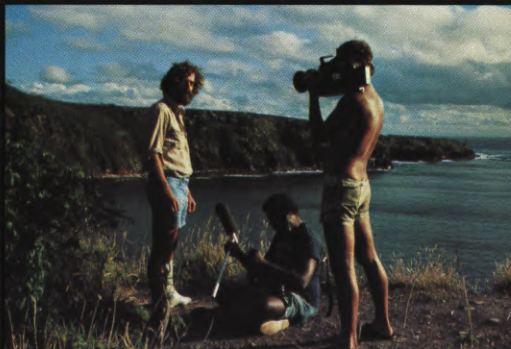
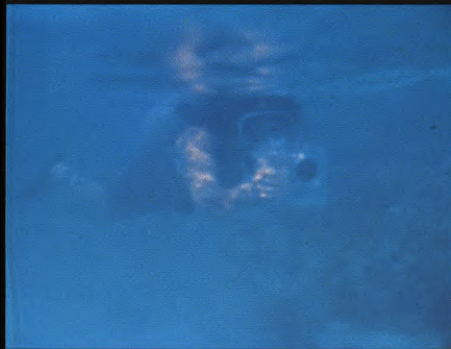
Twenty minutes after the conversation began, the people from Gulf were convinced — it was a rare oppor-

tunity, to bring this award-winning series to *public* television and to begin a prestigious association with the National Geographic Society, PBS and Pittsburgh's own PBS production center. Gulf Oil Corporation would become the underwriter for three years, supporting four productions each year, produced exclusively by Americans for American Public Tele-  
Continued on Page 168



(LEFT) On Big Island of Hawaii's historic city of Refuge, producer Dale Bell and cinematographer Norris Brock film *ki'i*, carved statues marking tombs of 23 ancestral chiefs. (CENTER) Brock documents the uncanny skill of Mau Piailug, as he works with his traditional adz. Piailug would later navigate the Hokule'a from Hawaii to Tahiti with stars and ocean swells as his sole guides. (RIGHT) Brock uses a K-100 camera in rigid plastic housing to film launching of model canoe carved by Piailug.

(LEFT) Brock submerges to shoot a short diving sequence of the Hawaiian crewmen who make their living in the water. Plastic camera housing was built by Romano Zihla of Zihla Enterprises. (CENTER) Producer Dale Bell, with broken foot in cast, delivers a final message for WQED, filmed by Brock and soundman John Butler. A day later Brock was aboard Hokule'a, while Bell and Butler tracked the canoe aboard escort vessel Meotai. (RIGHT) Five days out to sea, incapacitated by broken foot, Bell is evacuated from the Meotai by Coast Guard helicopter.



In October of 1975, while on trial run from Kauai to Oahu in the Hawaiian Islands, Hokule'a came close to being swamped when one of its hulls sprung a leak. It is shown here with starboard hull almost completely under water, while crewmen hack the canoe apart, tying sail and hut to the stern to prevent drifting south out of the channel. As crewmen fought frantically to keep the canoe from going under, Brock continued to shoot. All 23 men aboard huddled on the remaining port hull hoping for rescue, which came five hours later, after the inter-island hydrofoil on its normal Sunday run spotted the stricken craft on its radar and stopped to investigate.



# "ONE-MAN-BAND" CINEMATOGRAPHY ABOARD THE HOKULE'A

**Drenched almost all the time and operating in the most cramped quarters, cameraman spends 34 days aboard sail canoe shooting a double-system documentary of 3,000-mile voyage across the Pacific**

By **NORRIS BROCK**

## THE ASSIGNMENT:

Film the re-creation of an early voyage aboard a Polynesian canoe sailing from Hawaii to Tahiti for a NGS TV special. Be prepared to shoot one-man sync sound for a month or more on the open ocean in all kinds of weather on the exposed, wet and unsteady deck of a 60-foot double-hulled canoe. Share the available space, food and water with 15 other crew members. Don't get in their way and don't ask for anything to be staged or re-created.

## PREPARATION:

The first problem in preparing to film the voyage was to select a camera and recorder rugged and reliable enough to survive the extreme conditions we expected. The second problem was to modify the camera and recorder into a unit that could be operated by one man under these conditions. The third problem was to waterproof the camera/recorder combination against salt water and rain, while keeping the unit small and light enough to be operated handheld.

In setting out to solve the first problem, we looked at every available 16mm sync-sound camera on the market. We wanted a good, tough, hand-held documentary camera — one with a rugged lens and mount capable of taking hard knocks. It had to be easy to load and operate under difficult conditions. It had to be small and lightweight enough to be hand-held for hours at a time. And it had to be 100% foolproof.

When Peter Schnitzler of Ferco in New York showed us the new Arriflex 16SR, we knew that we had found our camera. Peter made arrangements with Volker Bahnemann, Vice President of Arriflex Company of America, for us to take a 16SR to Hawaii for a preliminary trial on one of our pre-voyage shoots. Volker felt that the voyage would be an ideal test to prove the 16SR, and he did everything possible to help us. The trial filming only confirmed what we already knew — that the 16SR was made to order for this job. When the dailies from the first test filming were screened at our Hollywood post-production facility by chief editor Barry Nye and post-production supervisor Linda Reavey, the 16SR again got raves. They called to tell us we were getting excellent image quality

with the camera.

Upon returning from Hawaii, we informed WQED Film Director Roy Brubaker of the success of the trial filming and he initiated the purchase of one 16SR for the voyage, with the rental of a second as a back-up camera through Ferco.

The choice of a recorder for the voyage was much easier, and we put in an order with Leo Chaloukian of Ryder Sound in Hollywood for several Nagra SN's.

The second problem was not so easy to solve. Since space on the canoe was limited, we could place only one person aboard to film. That person would have to operate both camera and recorder. Not difficult for single-system, where the sound system is built into the camera. But for double-system, not so simple. We talked to Ryder Sound about their remote-control radio slate for the SN and also to Stuart Cody of the Cody Company of Boston which has a similar unit. These units make the

**Lacking a third hand, cinematographer Norris Brock holds lens tissue container in his mouth while he cleans salt spray from the lens — a procedure that had to be repeated every few minutes during shooting aboard the Hokule'a. The pouch he is wearing contains Nagra SN recorder and throwaway batteries. Note microphone with wind screen mounted above the lens.**



SN, when placed on the subject to be filmed, a slave to the camera, being activated by a remote-control radio signal. Both units turn on the SN in sync with the camera and place a bloop at the head of the take. Easy enough when filming one or two subjects who can be fitted with SN's. But we were filming a crew of 15 on the canoe. And under conditions roughly resembling that of a wet football game.

Wouldn't it be easier to use just one SN and place it on the cameraman? But what about the mike? Well, put that on the camera just like the news boys are doing these days. But sailing means wind, and wind means bad sound. OK, back up a camera mike with a couple of wireless mikes placed on key members of the crew. And where to place the wireless receiver? Why, on the cameraman, of course. And just how does the cameraman handle the camera along with this portable sound studio? Simple. Just have someone design and build a fully-automatic amplifier-mixer unit to handle a camera mike along with a radio mike or two that the cameraman can monitor but not have to ride gain on. And pack all this into a nice neat package that can be waterproofed and worn by the cameraman. And who will design and build this unit? Why, some nice masochistic engineering company with no overriding profit motive who will take on a one-of-a-kind prototype for an application so specialized that chances of selling duplicate units are slim indeed.

So we called Stuart Cody back and told him we liked his remote-control radio-slate unit for the SN, but what we really had in mind was the automatic unit described above. Stuart said the phone connection must be bad, as he couldn't understand us. So we hopped a plane for Boston and presented our problem. Stuart took on the job, quoted us a price, and in about a month produced what he called an "audio interface unit" that did everything we asked and more. It sounded an alarm fed only to the monitor headset in the event of a tape runout or a loss of sync for any reason. In other words, all the cameraman had to do was load the tape on the SN, and monitor the playback mode. The SN started and stopped in sync with the SR and if no alarm was heard everything was recording alright. And the unit was no bigger than the SN. It didn't take long for us to tag the Cody unit with the tag of COMBO.

Another problem that Cody solved for us was one of power supply. Instead of having several batteries for each of the separate units in the camera/recorder package, he incorporated what



**Brock crouches to get low-angle shot on the pitching deck of the 60-foot double-hulled sailing canoe. The symmetrical finder of the Arriflex 16SR camera allowed him to shoot at any angle from either side of camera. The harness he is wearing was custom-made by a hang-glider shop to hold camera and sound equipment in case he fell down, which he often did.**

he calls his "expedition battery," a non-rechargeable, throwaway, latest state-of-the-art battery that we determined ran about 18-to-20 400' film rolls through the 16SR. That was about 12 more rolls than anyone else's, and perfect for us because it is the size of about five D cells, and lighter. With the additional load of powering the camera, the SN, and the interface unit, the Expo battery, as we dubbed it, would run about 16 400' rolls. To briefly review, we had now put together a sound unit consisting of an SN, an audio interface unit, a wireless mike receiver and a battery. We then faced our third problem, that of putting everything together in a waterproof package that could be worn by the cameraman. We also faced the problem of waterproofing the camera.

To solve the waterproofing problems, we went to the National Geographic Society Custom Equipment Shop, operated by Mike Schaeffer. Mike and his people have extensive experience in designing custom camera and sound equipment for Geographic expeditions. Mike flew out to Los Angeles to meet with us on one of our layovers from shooting in Hawaii. We asked him to design and build a lightweight but rugged waterproof housing for the 16SR camera and the Zeiss 10mm-100mm zoom lens and the Angenieux 5.9mm lens. The camera housing should not interfere with its hand-held operation, yet must offer absolute protection against salt spray and rain and maybe an occasional dunking by a wave. But it did not have to withstand the pressure of submersion underwater.

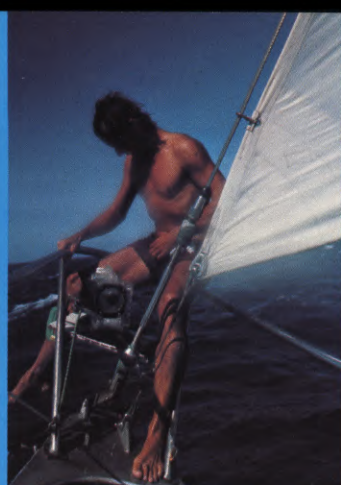
We knew that a conventional under-

water housing was simply too heavy, bulky and restrictive for our purposes. We wanted to protect the camera from water while filming on deck and while being stored below. We did not want to take it underwater. Mike suggested a very lightweight aluminum housing for the camera, but I had an obsession with a soft, flexible housing, sort of a wet suit that would in no way interfere with the very superior handling characteristics of the 16SR. Mike said he might have an answer for that. He also said he had an idea for a lens housing that would waterproof the lens, yet allow for the operation of all three functions.

When we next returned to the East

**Decked out in Tahitian shell leis and flower headpiece, Brock is somewhat lighter in weight than he was when the voyage began 34 days earlier.**





(LEFT) 65 feet long, with steel hull, the escort vessel Meotai was manned by a six-man crew whose main function was to shoot boat-to-boat footage of Hokule'a under sail. (CENTER) Reflectors were rigged outside the cabin of the Meotai to balance light for interior shooting. (RIGHT) Cameraman/production manager Joe Seamans fixes camera contained in housing to bow of the Meotai for rough weather filming.



(LEFT) As far as the eye can see, more than 15,000 people stand on Papeete's beach for hours, straining for a glimpse of the Hokule'a. (CENTER) Crowd awaiting the giant canoe was the greatest gathering in French Polynesia since the arrival of Captain Cook more than 200 years ago. (RIGHT) Bedecked with flower headdresses, Tahitians in outrigger canoes paddle out to meet the Hokule'a.



(LEFT) Joe Seamans checks installation of 50-foot-load gun camera in a waterproof housing mounted on bow of 16-foot canoe. (CENTER) As Tommy Holmes selects a good wave to ride in his canoe, he triggers the gun camera. The first time this sequence was tried, Holmes was flipped out of the canoe when a 20-foot wave broke over it. (RIGHT) Seamans uses the silent Arri to shoot boat-to-boat action.

coast Mike had laid the plan of attack for the housings and took the camera and lenses for several days to begin work. The approach for the camera body was to make a sort of rubber glove out of PVC and the approach for the lens was to make a rigid multi-piece cover out of solid nylon, O-ringed together at the turning joints for focus, zoom and f-stop ring rotation. The front was to be O-ringed to a Tiffen filter holder and rubber lens shade and the back mated to the mount of the 16SR

and sealed to the PVC camera housing. To make the camera housing, the NGS shop made an aluminum plug the exact dimensions of the camera. The plug was pre-heated to 400 degrees and dipped in liquid PVC, then placed in the oven to bake. After removal and cooling, the PVC cover was peeled off. The cover was made white to eliminate heat absorption from the hot, tropical sun. The problem of opening and closing the cover to change magazines was solved by gluing in a Talon air and

water-tight zipper, the kind used on diving suits. A small transparent window was glued in to allow viewing of the footage counter. We elected to let the 16SR viewfinder stick through the cover unprotected on the advice of Arri. We also left the pistol-grip on-off switch on the outside unprotected. Arri agreed to seal the viewfinder and pistol-grip themselves and felt this would be sufficient. They also went over the rest of the camera and sealed it wherever they thought necessary. They also gave the

electronic package an extra protective coating. As for the power and sync cables which ran to the COMBO sound unit, these were run through a waterproof bulkhead connector sealed into the PVC cover. The final camera housing, consisting of the machined nylon lens cover and PVC camera cover, was a thing of beauty.

The waterproofing of the COMBO sound package was a different sort of problem, because not only did it have to protect and waterproof the sound equipment, it had to allow access inside while filming and had to be worn almost as a piece of clothing by the cameraman, supporting the weight of the units inside. I had in mind a sort of vest unit early on and Mike's people pursued this. However, the COMBO sound unit wasn't yet completed and we were only guessing at size and configuration. The NGS shop completed a prototype vest to hold the SN, Audio interface unit, battery, and wireless receiver, which was watertight and shockproof. They also designed an alternate unit to be worn around the waist.

On the way back to Hawaii we stopped in Los Angeles for final preparations and I took the problem of the COMBO sound package to a sailmaker and manufacturer of hang-glider wings and harnesses. The NGS vest worked just fine, but we had over-

looked one concern of mine: how to attach the camera to my person so that I could have both hands free to hold onto the canoe and to protect the camera in case I dropped it.

We solved the problem at the hang-glider shop by making a harness that would hold the camera in front, but cantilevered its weight against the weight of the COMBO package in such a way that the one almost balanced the other.

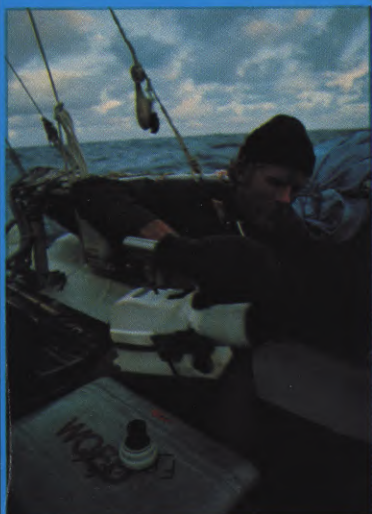
I was pleased with the harness now, but still didn't feel that we had solved the problem of the pouch for the COMBO sound unit. It just wasn't accessible enough or waterproof enough. So, upon arrival in Hawaii a few days later, I was led to a small custom shop that not only made the waterproof pouch I was after, but also made watertight pouches for everything from spare SN's to 16SR magazines to mikes and batteries.

In addition to sync filming on the canoe, we wanted the capability to shoot some underwater footage. With space and weight still a major concern, we turned to Romano Zihla of Zihla Enterprises in Los Angeles, who specializes in custom underwater equipment. He built for us two Plexiglas-housed Kodak K100's for use on the water surface and at shallow depths of 5 to 10 feet. We asked him to make them to minimum specs in order

to keep the weight and bulk down. They were conceived of for filming the canoe from the water by a swimming cameraman and also for filming aboard the canoe in storms too severe to risk the sync-sound equipment. Romano also built us a 50-foot-load gun camera in a rugged aluminum housing to be used for specialized shots, such as running the camera up the mast of the canoe or attaching it to the hull of the canoe. This camera was also mounted on the bow of an outrigger canoe surfing 15-foot waves in Hawaii. It was operated by the canoe paddler and, along with him, survived several wipeouts. These underwater cameras gave us some good footage of the crew swimming and diving off the canoe while in the doldrums.

A Zodiac rubber boat was used on the voyage for boat-to-boat transfers and filming and most of this filming was done with an Arri S. We also filmed canoe and board surfing in Hawaii with this combination. Little attempt was made to waterproof the S and little was needed.

To satisfy the need for night filming on the canoe, Romano built us a portable waterproof light and Ferco got us a couple of Cine 60's new portable lights for slightly drier situations. Ferco adapted these by adding a rheostat to dim the lights down to match the level  
**Continued on Page 206**



(LEFT) Brock scrunches into a tight spot to shoot a scene. (CENTER) 6 feet 5 inches tall, Brock shared deck and compartment space with 16 other men aboard the Hokule'a. Since his allotted space was 5 x 3 x 4½ feet, his equipment and personal gear had to be individually waterproofed and stored in a compartment of the hull. (RIGHT) In the doldrums, the crew swims while Brock shoots.

(LEFT) After 31 days at sea, navigator Mau Piaiug brought Hokule'a into Mataiva, the westernmost atoll of the dangerous Tuamotu Archipelago, 200 miles north of Tahiti. (CENTER) Hokule'a's welcome by the island's handful of ecstatic citizens is recorded by Joe Seamans and John Butler. (RIGHT) Welcomed by the Mataivans, Brock, Seamans, Butler and Ed George proudly display their shell leis and flower crowns.



# SOME RECOLLECTIONS OF A TIME IN HONOLULU AND A TIME AT SEA

By JOE SEAMANS

"I fended off the sharks with the camera itself. It was going to be a great shot." One of my macho dreams of filming in the South Pacific conjured in Pittsburgh in January while we planned and schemed about how we were going to film at sea. As I went about the business of buying up filters, batteries, and lens tissue, I had imaginary visits with Cook, Christian, and the Ancient Mariner himself. The expedition was going to be a first for me; I had to imagine it. In fact, we all did. During the winter months we created a hypothetical voyage that we could outfit ourselves for. Hurricanes, shark attack, sinking ships, ACTION . . . it would have made a great film. Had anything like this happened we could have filmed it in sync sound. Waiting, thinking, and silence, which was more of what the voyage turned out to be, was a lot harder to document than a gale at sea.

Like soldiers going off to war the six of us left Pittsburgh in a snowstorm. It was early March. We were anxious to get to Honolulu because we felt the canoe would be leaving soon for Tahiti. We were well supplied with over fifty cases of equipment, which represented a partial inventory of what we thought we needed. The remainder of our equipment would arrive in Honolulu after we set up shop. Some people thought we might be taking too much. Never having done anything like this, I couldn't evaluate that.

While we waited for the canoe crew to ready the *Hokule'a* for the voyage, we tested and retested the equipment,

trying to simulate the conditions of the voyage. I remember going out to a park on a windy day and running around with microphones strapped to our waists and foreheads to try to figure out how to mike somebody with no shirt in a thirty-knot breeze. I also remember filming surf while the sun rose over the Blue Pacific, testing the camera housings, coming back to the hotel with damp equipment, but slowly learning how to keep our cameras dry.

As production manager I felt very strongly that the volume of equipment should not interfere with the filming itself. With all of our voyaging gear we had the look of a circus train as we went out to film the simplest thing. It became a concern that we all shared. The canoe's departure was repeatedly delayed to indefinite future dates. We were spending much more time doing routine documentary work than we had planned, with the epic voyage hanging in the future like a darkening cloud on the horizon. The film was turning out to be a difficult one to make. It was no longer a travelogue, as I had originally thought. In Honolulu the Hawaiian canoe crew was taking a very difficult interior voyage, rediscovering and dealing with their cultural roots, as they readied the boat. This process was causing the delays and frustrating our goals as filmmakers which were to get out to sea and document the voyage. The group's conflicting relationship with the non-Hawaiian group which had conceived of the canoe project in the first place was growing into a stalemate; conflicts over how the canoe

should be outfitted and who should be the captain. The struggle was important, and we had a lot at stake in it. At times I was convinced that the canoe project would flounder, and that it would never leave, and we would never have the chance to make our film.

But while the voyage seemed more and more part of an uncertain future, we realized that it was critically important to document what was occurring in Honolulu around the canoe. It required great flexibility on our part because events were spontaneous, unpredictable, and often explosive. At that time we needed a flexible system more than a water-tight technology. We had to learn to work as a group, and we tried to develop a sense of shared anticipation and expectation of events which we could often not understand or express in words to each other, events which would take months for me to feel I understood.

We left Pittsburgh to go on the high seas with sophisticated equipment, and now we were filming *cinema verité* in downtown Honolulu. And the delays continued week after week. To maintain our flexibility and our sanity we had to keep the voyage equipment and our continuing work on it separate from the land equipment and its continual, heavy use. But the difficulty was that much of the equipment being used on land was also going to be used at sea in some modified form. Although the functions and specifications of the equipment were entirely different for each situation, there were many shared elements. In the confusion it was conceivable that we might have filmed a heated argument between two people with a camera in an underwater housing. To prevent this from ever happening and to make sure that we would get the best use of our incredibly versatile equipment, it was a full-time job to know what equipment was in what case and what its status was for current filming on land and for future use at sea.

The concern about interfacing equipment was due not only to our reorientation to subject matter and to filming conditions, but also because we were using custom-made equipment which we were redesigning up to the last minute. A small modification in design, changing a power cable, for example, might have serious repercussions if we were to find out too late that the connector for the recharge-

**Production manager Joe Seamans, who also doubled as second cameraman aboard the escort vessel, could communicate by walkie-talkie with Norris Brock on the canoe. Seaman's camera, weightlessly suspended on the ship's rigging, enabled him to obtain incredibly stable footage of *Hokule'a* sailing, despite lack of actual stabilizing device.**





able batteries we were using on land might not fit the expedition battery we intended to use at sea. A change of lenses in our inventory would probably mean that a different interface with the camera housing would be necessary, but it might also mean a change in filter size, or a new adaptor ring. I had a recurring nightmare that something small would be overlooked, and that an essential piece of expensive equipment would be rendered useless at sea for want of a small, inexpensive part.

We had no idea when the canoe was going to leave, but we had to be ready when the time came, moving our land operation to sea. In the middle of the last week in April, it was suddenly decided that the canoe would leave the upcoming Sunday, May 1st. We did as much prepacking as we could, but since most of the equipment would be in continuous use before, during, and after the moment of departure, our move really had to be made at the last minute. In one day we would have to close down our land base, move equipment from the hotel to two different boats in two different harbors, and shoot the departure, finally ending up at sea with modified equipment. On Sunday, plans changed. Twice the canoe crew moved the departure to other days. Finally the canoe left late that day, as originally planned. Somehow we managed to film it all and leave with the canoe.

I could not possibly have packed all the equipment cases on the chase boat, a 60-foot ketch. I had to pack individual items wherever I could find space and ship the cases to Tahiti. I also shipped things ahead that we wouldn't need, like tripods, which I could only see as dangerous weapons in a tossing boat. I did keep one tripod on board in the event that we landed someplace other than Tahiti, God forbid. By the time we got to Tahiti, some thirty days after departure from Hawaii, we were knee-deep with equipment inside the cabin. Finding things wasn't a problem, though, the real problem was making sure it was on board in the first place. I planned to write a list of things we forgot, but I ended up making a list of the things we didn't need, a useless list for future reference since the next time things would, no doubt, happen differently. To our great satisfaction the voyage equipment was working well.

Of all the things we brought to protect our equipment, I feel one of the least exotic but most important things was a vast assortment of ziploc bags because they had so many versatile uses. When we landed on Mataiva, a small atoll 200 miles north of Tahiti, the



After arriving at the atoll of Mataiva, the first landfall of *Hokule'a* on its voyage from Hawaii to Tahiti, Joe Seaman films welcome of the tiny island's sparse population. The crew and their equipment were moved back and forth between boat and land through the surf-pounded reef on Mataivian boats, like the one shown here, which tip over very easily.

ziplocs were the items that the people there wanted most of all that we offered them for their hospitality.

Norris had a substantial job to do on the canoe, but since there were no major equipment breakdowns, we on the chase boat didn't have to do much except repair the COMBO unit once or twice, which John Butler did in heroic fashion on hot and rough days in a closed cabin. Routinely I made up film and equipment shipments, packing materials in ziplocs inside sealed buckets, and taking them to Norris in a Zodiac. He sent us back exposed film and audio tape. The high quality he was getting was exciting. When we wanted to hear music we would play the Hawaiian music he had recorded on the canoe, blasting it through the monitor out of the cabin onto the deck.

The filming on the chaseboat included boat-to-boat shots of the canoe and navigation sequences on board. The boat-to-boat perspective would have been a real test of the Steadicam or a Tyler gyro mount, but these things were unavailable to me. The roll of the boat, a small monohull, was thirty to forty degrees; I never measured it, but it felt at least that. The forward motion into the waves was sudden and jarring, and the up and down motion was also constant. Without a visual foreground reference on the chase boat, it was hard to justify any horizon motion in the film frame at all. My solution was to tether myself at the waist to the mast to give me something to lean against. With both hands free I could bend over and hold the NPR which was hung from a shroud by a series of bicycle inner tubes and bungee cords. By leaning forward or back at the waist I could give a controlled movement to the camera which

would counter the motion of the boat. The solution was embarrassingly crude and far from perfect, but the rig was quick and easy to move around, which was important on a boat that small, and in a situation where the relative positions of the two boats were constantly changing. With practice I was able to get the required shots.

The filming that I did in the interior of the cabin necessitated boosting the light level. I did this with small, waterproof reflectors fastened to the cabin window exteriors with suction cups. The additional fill looked more natural than artificial light because it moved with the motion of the boat.

I had no death struggle with *JAWS*. The week we spent in the Doldrums was a struggle of sorts . . . I thought we would drift aimlessly forever . . . but it was memorable for its lack of eventfulness more than anything else. The voyage itself was quite uneventful for me, which was due in part to the fact that we were well prepared, as it turned out. We had had so much time to rehearse and get ready in Honolulu. For me the real events seemed to have already occurred on land. That was a much busier time. Life at sea was very routine by comparison.

On the thirty-first day the canoe spotted land, and we were busy again, running around the coral atoll of Mataiva filming the beautiful and unexpected events which were unfolding there. We moved ourselves and our equipment back and forth between boat and land through the surf on the reef in the tippy Mataivian boats. I could speak no Tahitian, and the Mataivians spoke no English, but I felt home again. Things were jumping . . .

Three days later the canoe would arrive in Tahiti, and it would all be over.

# A WATERTIGHT ARTIFICIAL SKIN FOR A MOTION PICTURE CAMERA

To protect the camera and lens from the ravages of rain and sea spray to which they would be subjected aboard the *Hokule'a* required not an underwater housing, but instead an ingenious custom-designed, form-fitting "wet suit"

By MIKE J. SCHAEFFER

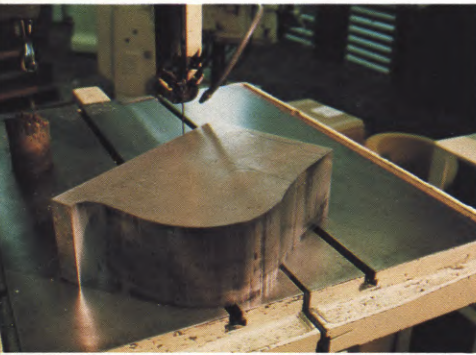
In 24 years of designing specialized equipment for the National Geographic Society I have had some pretty unusual requests: unique lighting features for rare exhibits; deep-cold weather housing for delicate sound systems; and a 12-projector revolving drum for photographic displays.

But what do you do when someone asks you to design a wetsuit for a motion picture camera? Not an underwater housing or a pressure chamber,

but an actual wetsuit such as many of us wear for snorkeling, surfing, or kayaking? In a sense you do what any good tailor does — choose your materials, get our your tape measure, invite the subject in for a fitting, and start to work. In this case the tape measure was a set of highly sensitive dial calipers, the subject was an aluminum model machined to thousandths-of-an-inch accuracy, and the material was a substance once labeled as a cancer-

producing agent — polyvinyl chloride, better known as PVC.

The project grew out of one of the most exciting television concepts in recent years: re-creation of the ancient Polynesian voyages of navigation and discovery in replica of the great *kaulua*, or double-hulled canoes, that roamed the Pacific more than a thousand years before Christ. With sponsorship by Gulf, and in conjunction with the National Geographic Society's Tele-



At the National Geographic Society custom shop in Washington, D.C., Mike Schaeffer and his staff create a "wet suit" for the Arriflex 16SR to be used aboard the *Hokule'a*. (LEFT) A mold of solid aluminum, an exact replica of the camera form, is machined to tolerances of thousandths of an inch. (CENTER) The aluminum mold is heated to 380 degrees Fahrenheit. (RIGHT) The heated mold is then dipped in liquid Polyvinyl Chloride (PVC).

(LEFT) The PVC, which, in its liquid state, has the consistency of house paint, adheres to the heated mold, resulting in a "skin" roughly an eighth-of-an-inch thick. (CENTER) After having been placed in a 380-degree oven for 5-10 minutes to "cure" or solidify the coating, the coated mold is withdrawn from the oven and the newly formed skin is slit along one surface and peeled from the mold. The result is a flexible tough skin that exactly fits the contours of the camera. (RIGHT) Following roughly the same process, a separate skin is created for each exterior control.



(LEFT) After the separate skins for the external controls have been joined to the main skin with a watertight seal, access to the camera inside is made possible by "welding" a special Talon zipper across the initial slit in the skin by means of a powerful adhesive called Loctite 404. (CENTER) A plate of optical glass, set in a similar watertight seal, will protect the lens. (RIGHT) The final result is a totally original, lightweight, flexible protective casing for the valuable camera and lens. Not a single piece of camera equipment suffered from water damage or moisture during the voyage.



vision Department, documentation of the voyage was undertaken by the talented staff of WQED television studios in Los Angeles.

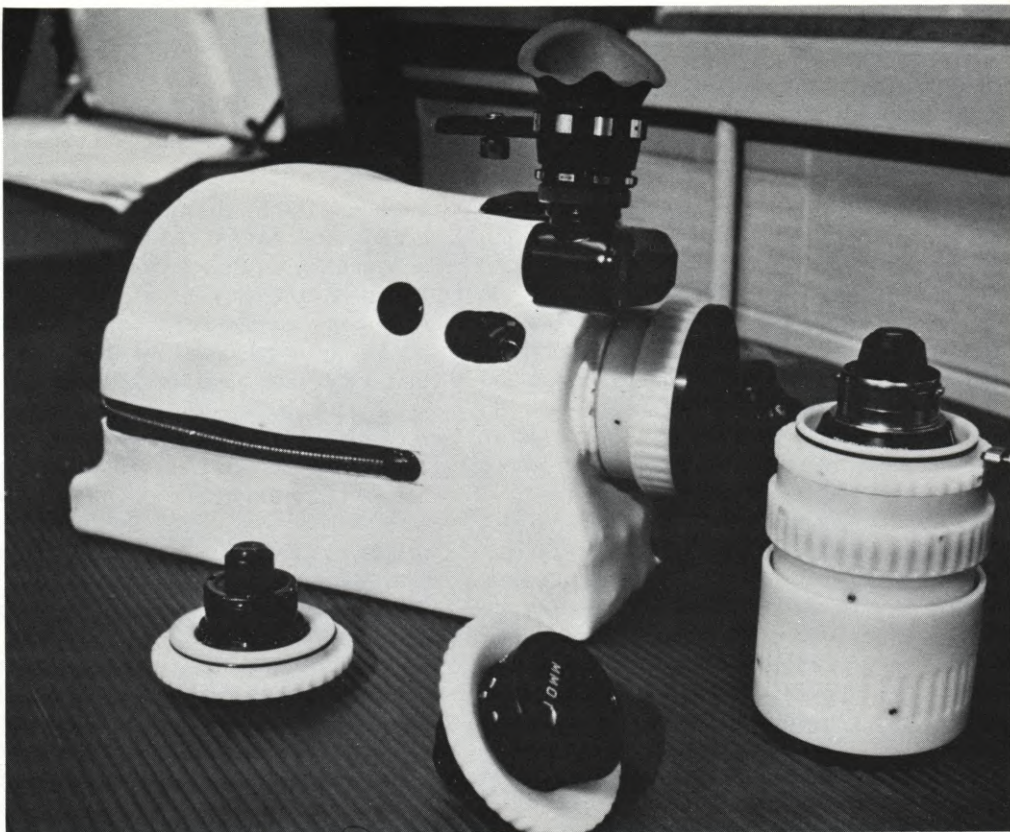
The spectacular results of that project were broadcast in an hour-and-a-half program over the Public Broadcasting System January 18, and the film speaks eloquently for itself. My own small contribution, and that of the staff of the National Geographic Society's Custom Equipment Shop, began with Dale Bell's and Norris Brock's request for the unusual wet-suit.

Dale is a producer-director for WQED and Norris is one of its highly skilled cinematographers. Faced with a 3,000-mile voyage between Hawaii and Tahiti in an open canoe, both men foresaw serious problems with equipment. Frequent saltwater immersion and constant spray would damage and probably destroy complex and costly camera gear. Could the National Geographic design and build adequate wet-water protection for the cameras?

Rigid housings of plexiglas or other material would not do in this case. They are not only cumbersome aboard a crowded boat, but they tend to rob the cinematographer of the "feel" for his camera, a vital factor in recording an essentially human drama. What we needed was a strong but pliable material that lent itself to waterproof seals and was immune to corrosion. I had already worked with such a material in designing an experimental globe for the National Geographic and it suddenly came to mind — PVC.

With a supply of polyvinyl chloride from Plast-O-Merics, Inc. of Brookfield, Wisconsin, we set to work in our combination laboratory and machine shop at the National Geographic in Washington, D.C. The first order of business was a working mold — an exact replica of an Arriflex 16 SR motion picture camera down to the very last detail of housing, lens and exterior controls. Naturally one does not dip a \$15,000 Arriflex in a bath of PVC, so we built the mold of solid aluminum, machining it down to tolerances of thousandths of an inch, and provided exact-dimension outlets for the exterior controls as well as an aperture for the lens.

To produce a PVC "skin" roughly an eighth-of-an-inch thick, we then heated the mold to 380 degrees Fahrenheit and prepared a bath of PVC for dipping the heated mold. At that level polyvinyl chloride has the consistency of house paint and will adhere to a mold in the desired thickness. After approximately 20-30 seconds in the bath the coated



A closer look shows the camera in its "wet suit". On the advice of Arriflex engineers, the viewfinder was not covered with PVC. For the lens (left) a rigid multi-piece housing was machined from solid nylon, O-ringed together at the turning joints for focus, zoom and f-stop rotation. The front of the lens housing was O-ringed to a Tiffen filter holder and rubber lens shade. The back was sealed to the PVC camera housing.

mold was withdrawn and placed in a 380-degree oven for 5-10 minutes to "cure," or solidify, the coating. After the material had cured we removed the mold from the oven and slit the newly formed skin along one surface, peeling it from the aluminum mold inside almost as one peels off a rubber Halloween mask.

We followed roughly the same process for each exterior control, fashioning a separate skin for each item and joining it to the main skin at the proper point with a watertight seal. A plate of optical glass set in a similar watertight seal protected the lens. To provide instant access to the camera inside we "welded" a zipper across the initial slit in the skin by means of a powerful adhesive called Locktite 404.

No one, I'm sure, ever kept track of the hours we spent on developing our unconventional wetsuit. It absorbed the waking thoughts, and I've no doubt the dreams, of five colleagues as well as myself: Louise Blosser; Henry Levy; Luther Dillon; Darwin Helmendollar; and Steve Mamakos. Our one regret is that none of us could accompany the new invention on its maiden voyage — space on a *kaulua* is in short supply. But over weeks of punishment from Pacific storms and the ocean itself, the new housing held up even beyond our expectations — not a single piece of

equipment suffered from water damage or moisture.

"The equipment," Dale Bell wrote me after the voyage, "worked, was protected, and lasted for 34 grueling days. Please express my gratitude to the other very capable members of your staff who contributed to the success of the voyage, and thereby to the first 90-minute special for the National Geographic Society."

Since that initial success we have adapted the new housing to still cameras, tape recorders, and other types of equipment for National Geographic expeditions. On a recent voyage down the Grand Canyon, whose hazards are perhaps greater than those of the Pacific, photographic equipment remained dry and in perfect working order beneath its protective artificial skin.

One of the members of that expedition is a longtime friend and colleague, Gilbert Grosvenor, Editor of the National Geographic Magazine, who is an ardent scuba diver. "Thanks to you and your staff," he told me afterward, "our cameras stayed a lot drier and snuggier than I ever felt in a wetsuit. Now that you've solved that problem, what about a waterproof housing for your friends?"

Unhappily that takes a little larger mold. ■

# SALTWATER TO ELECTRONIC EQUIPMENT IS LIKE DYING

Despite devastating effects of seawater, miniaturized, custom-built recording unit endures to provide sync-sound for every foot of film

By JOHN BUTLER

It is almost impossible to record continuous sync sound on a moving boat. On a sailboat, it's easier — no man-made noise. But the sea, the sound of the waves, wind, saltwater spray, rust, humidity — all these things can cause failure to microphones and recorders. This is the time when you put sound gear away. As for a storm, what sound or dialogue can you record that can be used anyway . . . ?

I discussed with our producer/director, Dale Bell, the formidable problems of keeping the recording equipment dry. We could not risk our good equipment recording in these conditions. I was informed that I was to shoot sync sound in any kind of weather, 24 hours a day, day or night — "I don't care how you do it, but do it!"

The voyage canoe *Hokule'a* presented an impossible situation. It was an open double-hull canoe with a platform between the two hulls without shelter — not even for the crew. Hence, there was no way to keep the equipment dry.

Our first trial sail was to Kauai the next day. We left the mainland with all conventional sound recording equipment. We expected this voyage of *Hokule'a* to Kauai to take a day or so in which we could test our conventional sound gear. We had plastic bags to keep our equipment dry.

Ryder Sound and Larry Johnson had spent some time putting together a mixer to be used with the SN recorder, knowing that the Nagra IV would be too

large and bulky to carry around the neck at sea. We elected to use an 815 mike that Ryder Sound built for us. The Nagra IV system was to be used on land only, for standard documentary filming. In short order we discovered that our plastic bags were not enough to keep the SN mixer or the SN recorder dry. We had problems of changing tapes and the wind noise was too great for the 815 windscreens. The wireless receiver gave us moisture problems, too. Our past experience with this equipment had worked well. All we had to do was keep it dry and we could get good sound. But our editor could not find slates, and mike taps were not enough to do the job of slating on the double-hulled canoe.

Our next trip to Hawaii was to be our proving ground. For our new slating system, we now had a waterproof case for the SN and mixer, thanks to Mike Schaeffer and the NGS Special Projects Department which had built underwater housing for cameras and an SN recorder. We now had a waterproof system. For slating, we chose to use Cody's wireless start-and-stop system and the old standby 815 with new windscreen. Our sail back to Oahu from Kauai through the Kauai Channel turned out to be the proving seas for the Polynesian Voyaging Society and the film crew. The canoe swamped. Again, we got our list to count our sound casualties, lick our wounds and find out who's winning — the sea or us.

Electronic equipment is destroyed

On board a 75-foot ceremonial canoe, Tahitians wait in the morning sun for *Hokule'a*. Organized by the Tainui Association of Tahiti, thousands of Tahitians feverishly prepared a festive welcome for their Polynesian brothers from the north. The voyage, verifying an ancient mode of open-sea migration, held great symbolic significance for the island people.



Conch-shell trumpets blare a traditional farewell as adventurous Hawaiians set forth on historic voyage 3,000 miles across the open Pacific, unaided by charts or instruments.

by saltwater. Immediate effects are to be heard in frequency response, pattern and sensitivity. The deterioration by rust continues unabated. With some help and proper waterproofing, these problems could be solved. As a result of the PVS Board of Inquiry findings as to why the canoe swamped, the number of people on the canoe was reduced, and we could only have one cameraman aboard. (Our original plans were for soundman, cameraman and producer/director.)

We began again. Record sync sound, double-system without a soundman. This was fine for the cameraman — no microphones in his shots. At last the cameraman could shoot without worrying about a soundman telling him, "Camera noise." Again our producer, Dale Bell, spoke. "I want sync sound double-system on every foot of film — and it better be good!"

Roy Brubaker, Director of the Film Department, told Joe Seamans (Assistant Cameraman), Norris Brock (Cameraman), and myself, "You have 30 days to solve the problems. Let me know if I can help." If only we could have replied, "You solve the problems."

Chuck White, WQED Post Production Center, our best critic who always gave us feedback on what was



wrong, suggested using the Nagra SN cables that would start and stop with the camera, plus one mike. It would take five pages to list the other suggestions we got from various experts. The one we all liked was, "Forget the whole thing — it can't be done without a soundman." What we were looking for was a one-man operation. After a million suggestions, again Ray said, "Well, what do you have?" At this point, we had nothing but a lot of thoughts.

After my talk with Leo Chaloukian of Ryder Sound, and the Cody Company, all of us agreed on the Nagra SN Recorder for our recording. Next step was to build an interface unit to perform the following functions:

1. Two mike inputs with selection mike I or mike II or both with roll-off filters, a passive mixer.
2. Start-and-stop recorder and slate with camera.
3. A warning system if sync is lost.
4. Audio level indicator.
5. A warning system when tape runs out.
6. Monitor before and after at all times.
7. Choice of camera sync inputs or crystal.
8. Manual operation of recorder without using camera.
9. Waterproof.
10. Size no larger than the SN.
11. Self-contained power from camera supply.
12. Microphones level adjustments.
13. Alarm for power failure.
14. The interface with Arri 16SR must work with any camera without any changes.
15. To be fitted to a vest assembly.

This interface unit would take commands from the camera, roll the recorder and slate the recorder in sync with the camera's slate light, without any other operational function from the cameraman.

The success of this system of shooting double-system sound without a soundman was like shooting single-system without a soundman's know-how of what microphones to use and when to use them. The performance of the SN Nagra was excellent. We now had sound that transferred to mag film just as in the normal double-system operation. Correction could be made in the transfer if needed, without damage to the negative or original film one would use on a single-system audio. In some of our shoots, all cameramen say they would still like to have the soundman present.

Our timetable would not allow for our fabrication, nor could we tie up Ryder Sound for one unit. The Stuart R. Cody Company was selected to put these



Shooting sequence of children singing the Marsellaise, with sound recorded by the Nagra IV, which was the equipment used on land only for standard filming. Insistence by the producer on total sync-sound for the voyage, despite impossible conditions, led to development of new fully-automated, incredibly sophisticated miniaturized recorder/microphone/amplifier/mixer combination.

suggestions into a working unit called Arriflex 16SR SN/Nagra interface, nicknamed COMBO, (for Cody One-Man Band Operation). The project began on February 20th. First unit was ready for test on March 5th. The system worked fine for our test. With a few modifications, we were able to make this system work. We were to use a microphone shock-mounted on the camera for sound pick-up and a wireless to be placed on any crew member for additional sound. Mikes used were the EV RE 16 Swintex Wireless. Since we would be at sea for 30 days, we chose to carry with us five SNs, 3 wirelesses, 2 COMBOS — (we were using the concept of Noah's Ark — "use two of everything"). From our past experiences, we knew we would lose something to the elements. We were too far from Ryder to get replacements and we

didn't know how reliable the SN would be. Thanks to Nagra, it proved to be very reliable. We only used one SN for the whole voyage, and our COMBO unit proved to be just what we wanted for our sound on the canoe. We did have some minor problems but they were easy to solve. As a result, we never had any film exposed without sync sound. No complaints on how to sync the footage up. Only one big problem — we forgot to add an alarm for the cameraman to let him know when he had a film run-out.

This system was designed to record sync sound on the canoe, not to replace the soundman, only a tool to help the soundman do his job. For there was no take two on any of the scenes, only a prayer that we had it in the first take. COMBO made that possible. ■

The film crew saw *Hokule'a* for the first time on Makaha Bay before an overnight sail from Oahu to Kauai. Producer/director Dale Bell, Cinematographer Norris Brock and soundman Larry Johnson, together with 18 crew members, made the crossing in 16 hours. On the return trip the canoe was swamped when one of the twin hulls sprung a leak.



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# FROM TAPE TO FILM TO "JAWS"

At a time when some film cameramen were pondering a possible switch to video tape, this man did just the opposite — and went on to become one of America's top cinematographers — and an Academy Award nominee, as well

By LOUISE WYNDHAM

For Bill Butler, ASC, life truly began at forty, when he made the transition from tape engineer in a Chicago television station to become one of the top-ranking cinematographers in America today.

In the few short years since his arrival on the west coast, Butler has worked with such eminent directors as William Friedkin, Francis Ford Coppola, John Boorman, Jack Nicholson, Bill Sargent, Lamont Johnson, Steven Spielberg and Milos Forman, to name a few. The outcome of these associations has been a roster of feature films which includes "THE RAIN PEOPLE", "THE CONVERSATION", "DRIVE HE SAID", "THE EXECUTION OF PRIVATE SLOVIK", "HUSTLING", "FEAR ON TRIAL", "LIPSTICK", NBC's three-hour "RAID ON ENTEBBE" and "DEMON SEED".

Two films photographed by Butler, "JAWS" and (with Haskell Wexler, ASC) "ONE FLEW OVER THE CUCKOO'S NEST", have between them grossed over one-quarter-of-a-billion dollars.

Bill Butler certainly has come a long way from those early days in video tape, and I was determined to find out what kind of person he is, what his filmming philosophies are and what effect his

success has had on him and his career.

I finally caught up with the soft-spoken Butler at MGM on the set of "DEMON SEED". He asked me to screen his most recently completed film, "THE BINGO LONG TRAVELING ALL-STARS AND MOTOR KINGS", about which he was very excited. We set up a time to talk, and the following is our conversation:

**QUESTION: You started out as an electronics engineer at Station WGN in Chicago. You had been highly trained in that field and, for over 20 years, had made it your career. What caused you to change careers in mid-life . . . to leave a successful career in tape for an uncertain future in film?**

*BUTLER: It all started with this kid in the mailroom at WGN; he was just a high school kid then and, at first, I mostly just hollered at him. One day the station needed a floor manager, so we took this kid, put earphones on him and told him where to point. The next thing I knew he got a show to direct. The kid's name . . . Billy Friedkin. Well, Billy and I became friends and we started doing experimental tape shows for the Television Academy. We would go out to the educational television station and*

*use their equipment, which they were inclined to let us use for free. We would get someone to compose the music for it, solicit any singer who was in town at the time to appear in it, put together a group of musicians to play for it, and we would have our big extravaganza — all at no cost. Billy was great at doing this. It wouldn't cost anybody anything and, best of all, it would come out looking great. We would conjure up these ideas and do them just for the fun of doing a production. Pretty soon we ran out of adventure like that, so one day Billy said, "Let's shoot some film." Now, I had never shot film in my life, but Billy had this idea about some ballet dancers dancing up and down the streets and fire escapes of downtown Chicago. I told him to get me a camera and we'd do it. God knows what the exact idea was, because Billy never did anything about it, but he did succeed in exciting me about the possibility of working in film.*

**QUESTION: The seed was planted, obviously, but how did you get a chance to cultivate it?**

*BUTLER: As a public service the station would tape a different religious service each Sunday. While working on these tapings, I got to know some of the people from the Church Federation, an organization responsible for all the publicity and advertising of the various religious groups in the Chicago area. They called me up one day and asked if I would shoot a film for them for free. They said they had only \$500 with which to make the film, and could it be done for that? Billy and I talked it over. Well, \$500 was more money than either of us had seen in a long time and, as neither of us had ever shot an inch of film, we figured it had to be enough. So we started shooting our first film. We took the \$500 and bought film stock and talked a good editor into cutting it. All quite logical, but now the money is all gone and we don't even have a camera. So we go out, rent a camera and charge it off to this religious outfit. The same with the lab — we charge it all off. We just about have our final cut and the roof falls in. The bills have finally reached the group that hired us and, instead of \$500, we are up to \$2,000. Well, they are screaming at us and all we can say is: "Look at the film. Look at the film." They do — and love it. Never-*

**Bill Butler, ASC, for 20 years a video tape engineer in Chicago, decided at the age of 40 (and with a family to support) to take the Big Gamble and switch careers to film. The gamble paid off. In a relatively short time he has piled up an impressive list of theatrical and television features and has become recognized as among the top echelon of American cinematographers.**





theless, they still can't believe what we've done. I'm scared to death. I'm going to jail . . . I just know I'm going to jail. But there sits Billy, not quite sure what he is going to say to them, but knowing he is going to handle it. "Well," he says, "why don't you fellows take this film to WGN and get them to pay for it?" So they do — WGN is only too glad to pop for it — and we win an award at the San Francisco Film Festival. It's a good dramatic film and, you know, more people have probably seen that film than any film I've ever made — outside of "JAWS", of course. Every television station in the United States has, I think, played it at one time or another.

**QUESTION: What next? That one taste of film couldn't have made the transition from tape to film for you, could it?**

**BUTLER:** No. You would have thought the television station would say: "Okay, Butler, you've done enough tape. Go make films." They loved the film but made no plans for my future in film. By now I had film fever, but knew I wasn't going anywhere there. The wall showed up. I'd been against it for some time, but was just now beginning to see it. I wasn't going anywhere and my salary wasn't going anywhere. On top of that, I was bored with doing the same thing every day. I got to thinking that, for the sake of my own head, I ought to do something about it. At which point Billy said: "Let's go make documentaries." I said: "Sure, that's okay for you, but I've got a family and I'm 40 years old. No way!" But Billy, with his need for a cameraman and his ability to get inside your head and inspire you to greater things, induced me to shoot a documentary, but not leave my job yet. So we shot nights and weekends on "THE PEOPLE VERSUS PAUL CRUMP", knowing full well that when the station found out we would be fired, for it was prohibited to shoot film while working live television. Anyway, we took "PAUL CRUMP" to the San Francisco Film Festival! We got a huge award, which was very flattering. In the meantime, bills were piling up and it became necessary to find a sponsor. We found one at ABC Television — a man named Red Quinlan. He paid the bills and we kept working. During this time we made a number of documentaries and one of them, "A TALE OF TWO CITIES", is in the Library of Congress as part of its permanent record. About this time, I was beginning to realize the undeniable power of film. Meanwhile, Billy got an agent, moved to the west coast and went to work for Wolper. I stayed on in Chicago



Butler rigs a spring-wound Bell & Howell Eyemo camera to be used for photographing a "walking closeup" of Gene Hackman in Francis Ford Coppola's "THE CONVERSATION". Butler had worked with Coppola before, when he was asked to shoot additional scenes for "THE GODFATHER", after that picture's Director of Photography, Gordon Willis, ASC, had gone on to another assignment.

shooting documentaries and eventually went to work for Wilding Films.

**QUESTION: You continued to work, doing such things as the titles and outdoor footage for "THE FOX", a feature in Australia, and then your first really big break: a low-budget feature entitled "THE RAIN PEOPLE" with a young director named Francis Ford Coppola. How did you get that job?**

**BUTLER:** Basically, the thing that got me the job was Friedkin's recommendation to Coppola that he hire me. Billy had met up with Coppola and they had become good friends. Coppola was having some difficulty in getting "THE RAIN PEOPLE" started, inasmuch as it was his first feature after having done a big studio musical and this was a very personal film of his which he wanted to do with a small crew in a small way. Billy knew I could pull that off. He had worked with me and knew that I could work very lightweight, with very little equipment. So, with just a few quartz lights, two cameras and one little van carrying all of the electrical and grip equipment, we roamed across the country shooting this feature, which turned out to be a rather good-looking film. I mean, lightingwise you would not realize it was lit only with open-faced quartz lights. There wasn't a light used on the production that had a lens in it, except for a couple of little inky-dinks (maybe four). The rest were quartz lights —

harsh, cold, unattractive — and to learn how to use them gently was the trick.

**QUESTION: You continued to do feature work in the midwest, eventually working your way to the west coast, where you did several movies for television and then the critically-acclaimed "THE CONVERSATION" . . .**

**BUTLER:** Not exactly. Prior to "THE CONVERSATION" I did some shooting on "THE GODFATHER" — the first one — for Coppola. Gordon Willis and I were friends and, as he had gone on to another picture, he thought I would be a good choice to do the west coast shooting on the project. So I ended up finishing "THE GODFATHER" for Coppola, and then went on to do "THE CONVERSATION".

**QUESTION: From there you went on to work with yet another young director, Steven Spielberg. How did you happen to get involved in shooting "JAWS"?**

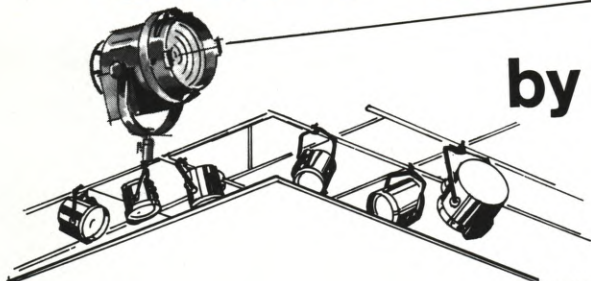
**BUTLER:** I had worked with Spielberg before on a television show. I heard he was going to do "JAWS" and it sounded like an exciting project, an original idea, so I went after it. Oftentimes you don't know beforehand how good a script is or how well anyone is going to do it, but if you've worked with an exciting director that you feel is talented, and I certainly felt that way about

Continued on Page 176

# diffusion



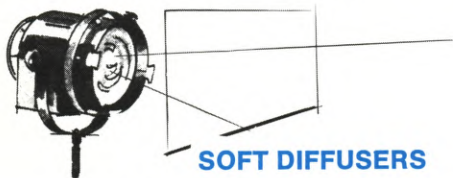
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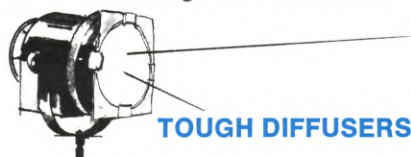
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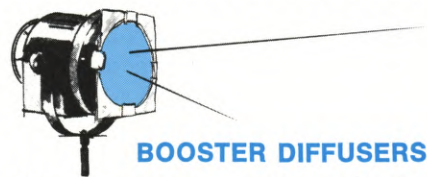
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## VOYAGE OF THE HOKULE'A Continued from Page 150

vision. And Tom Skinner would join with Dennis B. Kane, chief of the television division of the Society, as executive producer of the new project. The two would have equal authority in the creation and supervision of the new series. Within the year Gulf would announce massive and unprecedented promotional support for the National Geographic specials, and the first four programs would become the four highest-rated programs in public television history.

Early in their planning, WQED and the National Geographic decided to avail themselves of the talent pool built in Los Angeles over the years when the Geographic specials were being produced for commercial television. Quickly and enthusiastically, relationships were established with such veteran producers as Nicolas Noxon and Irwin Rosten of Ronox Productions. But WQED, as part of the new arrangement, was to produce one of the four new specials every year with its Pittsburgh-based staff.

I had joined WQED just three months earlier. My previous credits included *WOODSTOCK*, *MEAN STREETS*, and *THE GROOVE TUBE*, as features, dozens of commercials and industrials, and numerous documentaries for public television. My job at WQED was to set up and supervise the production of the specials, and already, by August of 1975, we had several WQED/NGS

**The author, Dale Bell, producer of "VOYAGE OF THE HOKULE'A", wet suited for a trial run aboard the modern-day replica of an ancient vessel.**



film crews on location throughout the world.

Dennis Kane had been to Hawaii more than a year earlier, sniffing out the television prospects of a project which had already been committed to the National Geographic magazine. But because the Hawaii project was going to take place over the period of three years, and because the specials had not found a commercial home, he had reluctantly put the idea on the shelf. The new alliance with WQED and Gulf Oil Corporation now altered his original thinking. As Tom and Dennis were deciding which special WQED would produce with its own staff technicians, the Hawaii project began to crystalize once again.

I was asked if I wanted to make this film in Hawaii. Tom said I could have equipment available at WQED, and any of the personnel. With Barry Nye and Linda Reavely, I had been helping to establish our new post-production facility in Hollywood, WQED West. Having met only a few of the people in Pittsburgh, and without an equipment inventory in hand, I nevertheless readily accepted the challenge. Although Tom, Dennis and I had discussed the production, we could not possibly have anticipated the outcome of the project.

This was my first trip to the Hawaiian Islands. Tom had been earlier, establishing our relationships with people on the islands. Like most westerners who visit Hawaii for the first time, I came with my own preconceived baggage of impressions. Surf, Waikiki Beach, hulas, syrupy music, guitar strings and steel drums. Beyond that was a void.

As we quickly flew to the island of Molokai, my first impressions changed. For there, at Kaunakakai Harbor on the south shore of Molokai, tugging eagerly at her anchor lines, lay *Hokule'a*, the huge double-hulled replica of an ancient Polynesian voyaging canoe. *Hokule'a*, and the people devoted to her, was to be the focal point of this new Geographic special. Sixty feet long, held together with miles of lashings, she looked majestic, awesome. An artifact from the past, although built of fiberglass and plywood, she seemed a stranger in contemporary, westernized Hawaii.

*Hokule'a* was the dream of three men from Hawaii: a Hawaiian artist, a "haole" (non-Hawaiian) waterman, and a "haole" anthropology professor. The three men formed the non-profit "Polynesian Voyaging Society" and raised more than \$100,000 to build and provision the canoe. The round-trip Hawaii-to-Tahiti route was selected because it represented one of the

longest open-sea voyages that ancient Polynesian mariners had taken in their discovery and cultivation of myriad tiny islands dotting the Pacific Ocean. The project had begun with specific motivations. But after the canoe was built by Hawaiians, and haoles alike, it became a symbol for Hawaiians, in proportions far greater than its original creators had intended.

*Hokule'a* attracted many people to her decks, all from diverse backgrounds. The first voyaging canoe to be built in hundreds of years, she represented different things to different people.

My first sail off the shores of Molokai taught me several lessons clearly: filming on board was going to be wet, potentially dangerous, and crowded. Although her overall measurements were 60 feet by 20, the platform of useable space was 40 by nine, usually inhabited by the sailing crew of Hawaiians and haoles. Her shallow hulls enabled her to ride the tops of the waves and swells, but few waves did not splash heavily over the bow. The sailing crew was incredibly energetic, but few of them had any great sailing experience. And *Hokule'a*, being of somewhat unorthodox design, was constantly instructing them.

Already I could see some of the struggles going on behind the scene among the men and women who had been attracted to the canoe. While the film was to be about this voyage of rediscovery, it seemed quickly apparent that much of this proposed sea voyage would take place on land, among the men.

As Tom and I left Hawaii after several days of research and meeting people, I had evolved a plan. The building and launching of the canoe had taken place six months earlier. It had been filmed by a local cameraman, on negative film, and we had arranged to purchase it for possible inclusion in our special. *Hokule'a* was in the process of completing inter-island sails, training and recruiting crew members for the voyage to Tahiti. The date of their departure for Tahiti was set for April 1, 1976, more than six months away.

I would return to Hawaii in early September, ready to shoot the last inter-island sail, from Oahu to Kauai. There, the canoe would remain for three weeks, conducting practice sails for those expectant crew members aspiring to be selected for the voyage to Tahiti. Then, *Hokule'a* would be sailed back to Oahu, refitted during the winter. Final crew selection would be made. Crew training would take place in March on the island of Maui. It looked to me as though we would be

able to schedule four two-week shooting periods over the next six months. Our last scheduled shooting period would coincide with the departure of the canoe to Tahiti. We had decided that we would not film the return voyage.

Now, back on the mainland, in our post-production offices in Hollywood and in the production center in Pittsburgh, I had only a few short weeks in which to make my production plans more specific. From WQED, I would take Norris Brock as cameraman, John Butler as soundman. Larry Johnson, the expert soundman who worked with me on *WOODSTOCK* and other productions, would coordinate the assemblage of equipment on the west coast. We viewed several films which had been produced on the open sea, and quickly determined that if we were to make this film distinctive, we would need sync sound on the voyage portions. The land-based photography would be routine enough. But between the sails on the open sea, and the land filming, there lay a vast middle ground.

All of the crew of the *Hokule'a* were in one way or another "watermen." Surfers, or canoe paddlers, or divers, they were never far from the water which surrounded them. While we didn't necessarily have to find equipment which could be used underwater, we did have to be prepared to board any water craft or to shoot at water level whenever the occasion demanded it. Another preliminary judgment required that we shoot everything possible with sound, call it *cinema verité* if you will.

The WQED equipment inventory available for the project yielded one NPR and a Nagra. Beyond that, nothing that would suit our needs. Roy Brubaker had recently joined WQED from WGBH in Boston. His mandate — to beef up the WQED film department and specifically to help support field production for the "specials". Consulting with him, Norris, and Tom, we decided that if we wanted to make this film in a professional manner, if we wanted to upgrade the station's film department, WQED would have to invest heavily in new, specialized equipment, tailored primarily for this production, but flexible enough so that it could be used on subsequent productions. Both Norris' and John Butler's documentary experience had been confined primarily to local and/or dramatic endeavors. Making this film was going to be a great challenge for everyone.

We had decided to shoot in Kodak negative, #7247. In its dramatic productions, WQED had already enjoyed previous experience with #7247. Some



A vessel 60 feet long and 20 feet wide sounds big enough for all practical purposes, but when staffed with a crew of 16 (plus a "one-man-band" cameraman) and all their gear, it gets pretty crowded during a 3,000-mile open-sea voyage. Those aboard were almost constantly drenched by rain and salt spray.

of our early material was shipped to Los Angeles for processing, but soon thereafter, we were shipping everything from Honolulu directly to TVC in New York. Although the film's voyage was twice as long, no time in synching dailies was lost in our post-production facility. And the quality reaffirmed our confidence in Dan Sandberg.

In early September, we returned to Hawaii to shoot the sail on *Hokule'a* from Oahu to Kauai. The first overnight sail in the last six months, it was deceptively simple. Norris and Larry Johnson and I shared meager deck space that night, our hastily assembled WQED gear wrapped in plastic bags and stored in one compartment in the twin hulls. Ryder Sound had designed and hastily built a small mixer for the Nagra SN Recorder. Larry's microphone was a Sennheiser 815 in a zeppelin windscreen. Having hoisted anchor at Makaha Bay in late afternoon sunlight on a Friday, we arrived at picturesque Hanalei Bay on Kauai, hours earlier than expected, at 9 the following morning. Our support crew, which had flown over, had not yet arrived.

After a short week of land filming at Kauai, we returned to the mainland. The return sail to Oahu, against contrary winds, was scheduled for two weeks away, and it promised to be more difficult. We would be out for two nights, possibly three, as we tacked north above the channel to make headway against the prevailing east winds.

We returned to Kauai, still with the

NPR and the Ryder SN mixer, but this time, both were encased in splash-proof housings. The condensation damage we had incurred in the first sail would theoretically be eliminated. Joe Seamans, another cameraman from WQED, now joined us as assistant to Norris, and production manager to me. He headed the support crew of John Butler and Tip Davis, a local cameraman. Again, Larry, Norris, and I, joined the other twenty crew men and women aboard *Hokule'a* for the return sail to Oahu. The support crew was to meet us two days later. Leaving Hanalei Bay on a Friday, the canoe headed north in 15-knot winds across the sometimes treacherous channel which separates the two islands. As the crow flies, the distance is one hundred miles. Tacking would make our voyage more like five hundred miles. At the end of our first twenty-four hours, we surprisingly found ourselves only ten miles off the shore of Kauai. Resolutely, we tacked again, still further north, in an effort to make more headway.

But by daybreak Sunday, we were just twenty miles off Kauai. A disappointing performance. Immediately after we had awakened, we found that the starboard hull was almost completely under water! Disaster! A jib was tried, but failed. The canoe was hacked apart, the sail and the hut tied to the stern to prevent us from drifting south, out of the channel. Fortunately, we had elected to store our gear in the port hull for the trip. Most of it was still  
**Continued overleaf**

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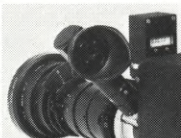
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intact. We had three magazines loaded! And one underwater camera! While the *Hokule'a* crewmen slashed away at their artifact, trying to prevent it from going under completely, Norris continued to shoot. Larry's sound gear was either lost or irreparable.

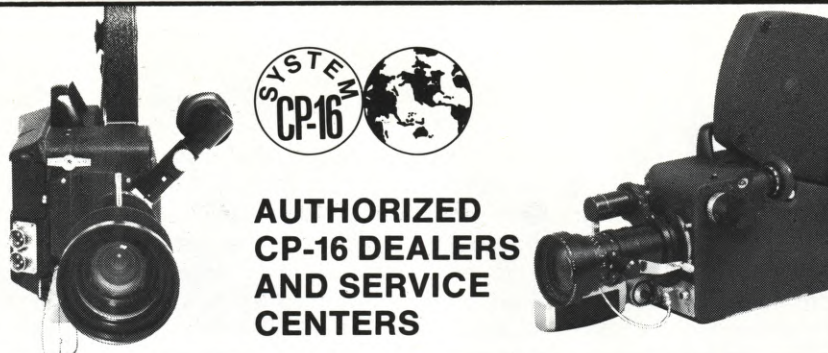
We were in better shape than the canoe. Without radio or flares aboard, crowded with all twenty-three of us huddled together on the one remaining hull, there seemed little chance that on a Sunday morning, we would be discovered. One of the crewmen took a surf board and began the paddle to shore, twenty miles away. All the rest of them could do was wait. Shooting sparingly, for we didn't know whether we would be there for hours or days, we amazed the crewmen with our determination to document their fight for survival. As I sat there on the hull, I recollected a conversation I had on my first trip to Hawaii, just weeks before. When asked by the *Hokule'a* captain what I would do once on board the canoe, I had told him that we would not act as crewmen to him. "If there is threatened loss of life," I replied, "we will help you. But if the canoe is going down, and we can film it, that's exactly what we will do. You do the sailing, we do the filming." That echoed now in my head as we waited for the paddler to get to shore.


Five hours after the swamping, we were rescued. The inter-island hydrofoil, on its normal Sunday noon run between the islands, had spotted us on its radar and investigated. Soon thereafter, the canoe was towed to shore by the Coast Guard, and the paddler picked up.

The swamping changed everything. The captain dropped out of the project temporarily, the crew almost disbanded. The canoe, barged back to Oahu weeks later, lay on oil drums, waiting for a voyage that might never take place.

Instead of spending only two weeks filming, we doubled it after the swamping. The sponsors of the canoe project were somewhat in disarray. People were shuffling for new power positions. The voyage of rediscovery was now taking place on land, among the men. The Hawaiian crew members began to see *Hokule'a* as their own, excluding the leaders of the project. News of the swamping traveled quickly throughout the islands via the media. The behind-the-scenes hassling traveled even faster by the "coconut wireless." *Hokule'a* became a symbol, dry though she was, of a past which had only been a vague image to the many westernized Hawaiians. Throughout the

Continued on Page 180





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# DISNEY NIGHT AT THE A.S.C.

A great innovative artist of the cinema is awarded posthumous Honorary Membership in the American Society of Cinematographers, and a mini-museum of his art and artifacts is dedicated in his memory at the A.S.C. clubhouse

On the evening of November 29th last, at a dinner meeting of the American Society of Cinematographers, held at the organization's clubhouse in Hollywood, two important events took place. First, a posthumous Honorary Membership in the Society was awarded to the late Walt Disney and, second, the A.S.C. announced the formal opening of its new Walt Disney Room; a lounge of the main building in which animation art and photography from the Disney studios will be placed on permanent display.

A.S.C. President Lester Shorr, who was unable to be present at the affair, sent the following message: "Walt Disney contributed so much to our industry and to the cinematic art. Our tribute is heart-felt, and comes from the entire membership."

In Mr. Shorr's absence, A.S.C. governor Stanley Cortez presented the

plaque of Honorary Membership to E. Cardon Walker, President of Walt Disney Productions.

"This is the first time in the 57-year history of our organization that this Society has so honored anyone in the motion picture industry," Cortez noted.

In dedicating the new Walt Disney Room, he went on to say, "To the best of my knowledge, this is the only room of its kind in existence. Its importance lies in the fact that it will help to preserve the image of Walt, his artistry and what he stood for. Speaking for the American Society of Cinematographers and its Board of Governors, I am proud and honored to officially dedicate the Walt Disney Room and to present to you, Mr. Walker, as President of Walt Disney Productions, this plaque representing the posthumous award honoring our dear friend, Walt."

In accepting the plaque, Mr. Walker

said: "It is a great honor for me to accept, on behalf of the Walt Disney family and the Walt Disney Studio, this one-of-a-kind posthumous award from a group as distinguished as this.

"When I started with the old Walt Disney Studio back in the late 30's I was a cartoon cameraman and I was privileged to work on 'FANTASIA', a picture which, I'm sure we'll all agree, was way ahead of its time. I had the night shift and worked 12 hours a night, seven days a week, photographing that picture. So, even though I don't know a great deal about photography, I kind of feel, in a way, like I am part of this group.

"I'd like to say that my 20 years of working fairly closely with Walt after World War II (he died in 1966) was the most exciting and challenging thing that ever happened to me as an individual. He was a tremendous man, and he was never satisfied with something that was merely okay — it had to be the best. The principle that Walt had of running a business wasn't really complicated. According to his philosophy, there were two things that were important. One was quality and the other was good taste.

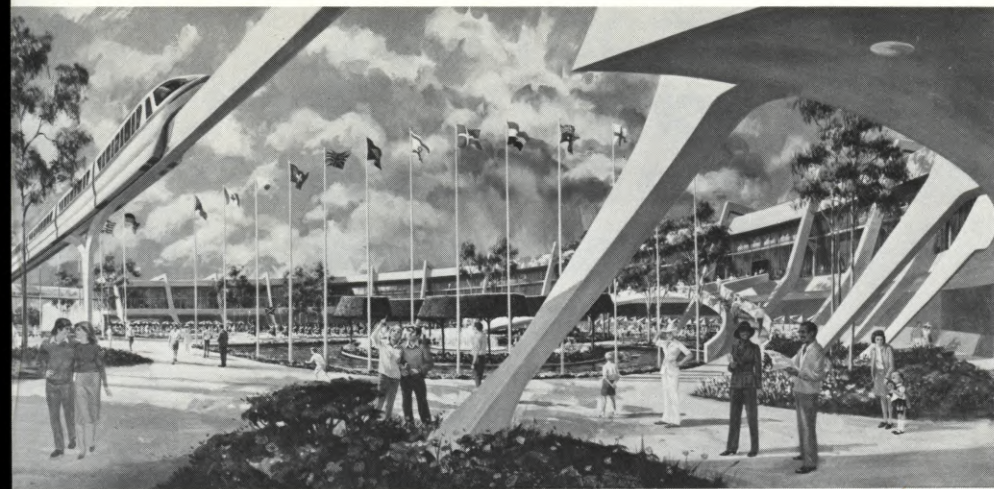
"He was an innovator, and one thing led to another ... from the early "STEAMBOAT WILLY" (which was the first sound cartoon), to the first cartoon in Technicolor, to the first animated feature, to the first multi-plane camera production, to the first really bringing out of the excitement of nature in this True Life Adventure films. And he was bored as could be with yesterday's success. That was the whole pattern of Walt Disney, the man."

At that point, Mr. Walker began to discuss an idea that held his listeners fascinated: "I can remember that as early as 1960, Walt wasn't much concerned about his films, about television or about new rides at Disneyland. He was planning a new project called Walt Disney World, to be built somewhere in Florida. Meanwhile, in looking at a lot of places in search of a site, he began to worry about the problems of cities. He was hung up on energy — the lack of it. He was concerned about how cars get in and out of cities, what would happen in areas of solid waste disposal, what would happen in regard to the health problems of the world. We really didn't quite know what Walt was talking about at the time,

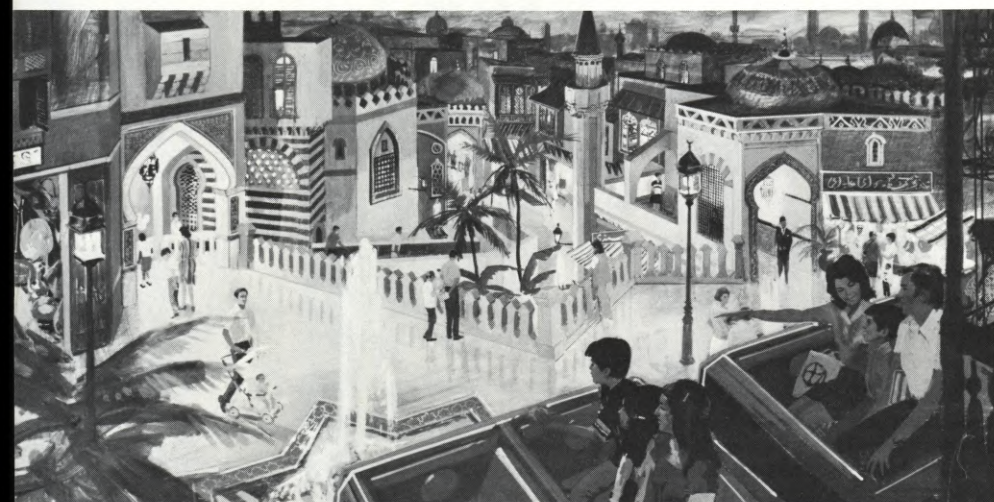
At a recent dinner meeting held at the A.S.C. clubhouse in Hollywood, Stanley Cortez, ASC, presents to E. Cardon Walker, President of Walt Disney Productions, a plaque conferring posthumous Honorary Membership in the Society on the late Walt Disney. The occasion also marked the dedication of the new Walt Disney Room at the clubhouse.







Two sketches for "Experimental Proto-type Community of Tomorrow" (EPCOT), "Walt Disney's Dream". (ABOVE) A concept of the central plaza or courtyard of World Showcase, as indicated in this drawing by an artist at WED Enterprises. The scene shows visitors in an area near the entrance to pavilions, with the monorail cruising above. (BELOW) Beginning concept for the World Showcase Pavilion for the Arab nations shows a shopping bazaar and "magic carpet" ride carrying guests on a trip through the wonders of ancient lands.



but he kept talking and thinking about it as we planned Walt Disney World.

"Then, in 1966, as you know, we lost Walt Disney. But about two months before he died, we asked him to put some of his new ideas on film. He was determined to do something different in Florida and, in that film, he finally told us what he had in mind. He called it EPCOT — 'Experimental Prototype Community of Tomorrow'.

"As an artist, he didn't try to go into all of the ramifications, but in this film he built a kind of model city and described how it would have a central core containing businesses, hotels and industry. Then, as you moved out, as on the spokes of a wheel, there would be the cultural center, with auditoriums, etc. Then, even further out, there would be the living areas.

"He believed that automobiles shouldn't be in front of houses on the streets; they should come in behind. There would be greenery and parkways and the city would be furnished

with supplies from underneath. Cars would come into the center of the city and park underground, and the people would be moved around to different parts of the city on monorails and people-movers.

"This was his kind of artistic way of describing what he had in mind for this Experimental Prototype Community of Tomorrow. He said at the time that once we got Walt Disney World on the road, we could think and talk about EPCOT more in depth. Then, unfortunately, we lost Walt.

"However, about two years ago I had the privilege of talking with a group of marketing managers of leading American industry and I felt that would be a wonderful opportunity to find out if we could get hold of what I call 'Walt Disney's greatest dream — EPCOT'. So I took everything that Walt had done on the idea and tried, with the help of our creative people, to explain to those marketing managers what we had in mind. That was about two years ago

and since then we've talked to people in about 50 leading American corporations and 30 foreign countries, and we've finally come down to about four principles of what EPCOT can do. I can honestly tell you, at this moment, that I think there is a way we are going to get it done.

"We feel that EPCOT is going to be a place to test prototype systems. It's going to be a place to find out new things about technology — things that will make the world a better place to live in. As an example, we have an experiment going on right now with a very unique solar energy process from a company in the midwest. We think we've got something that nobody else has. But it's not for us. This is something unselfish — a non-profit idea, and it's being sponsored by the energy arm of the federal government.

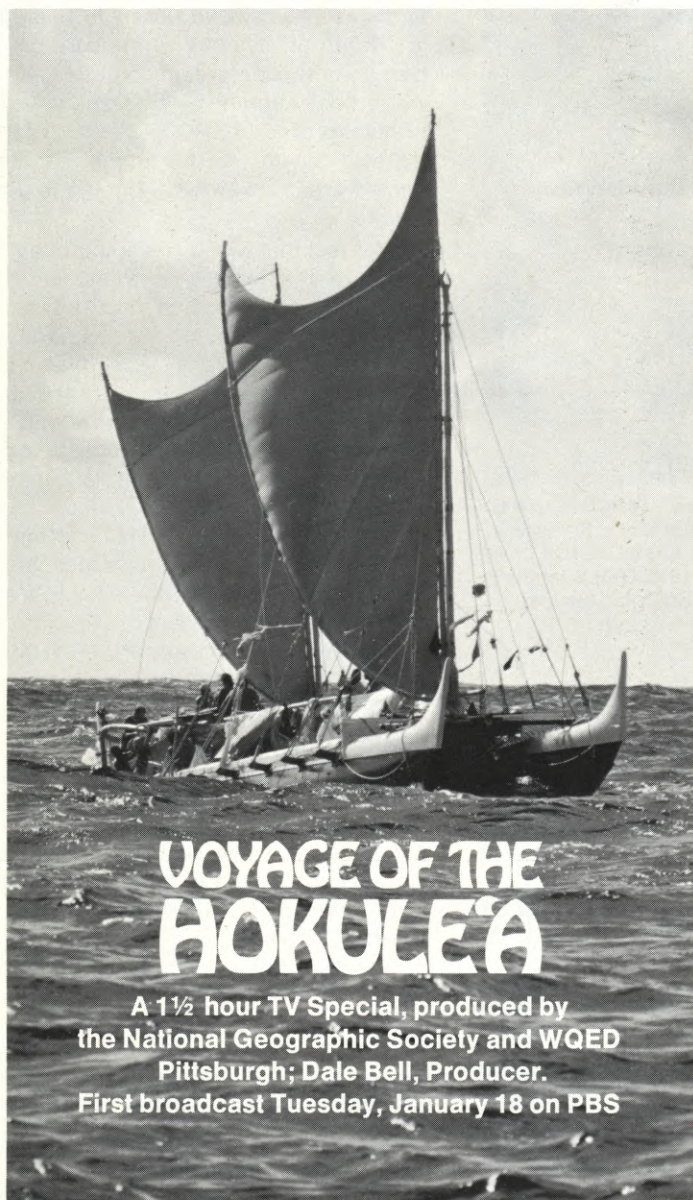
"We've brought aboard Gordon Cooper, the Mercury and Gemini astronaut, who is kind of a nut on methane gas and alcohol and new ways to make cars operate. We are playing around with new ways of raising fish and shrimp. We've found a way to grow cucumbers in water six times as fast as you can grow them in the ground. This is the kind of technology we're interested in developing.

"We also believe that, as a second aim of EPCOT, we should bring together in Florida the brain power of these different fields — health, education, energy or whatever — from academia, government and industry. We've already had an energy seminar and a food production seminar. In March we will have a seminar on health education.

"Lastly, EPCOT will be a people-to-people, built around a kind of permanent World's Fair. We will start with maybe 10 or 12 countries and tell about their history, heritage and what they are doing today — and we will design a show for each country.

"We've checked out a system whereby two or three hundred young people from various nations would come to stay for a year. They would live in an international village and would take courses in finance, marketing, hotel operation, food management or whatever — and then take their newfound skills back to their respective countries. We really believe that, in a small way, this kind of 'Junior United Nations' could be a tremendous influence in bettering what is happening in the world.

"All of these plans for EPCOT are pretty much on target, and I think the contribution to mankind of 'Walt Disney's Greatest Dream' will be incredible." ■



## VOYAGE OF THE HOKULE'A

A 1½ hour TV Special, produced by the National Geographic Society and WQED Pittsburgh; Dale Bell, Producer. First broadcast Tuesday, January 18 on PBS

PHOTOGRAPHS BY NICHOLAS DE VORE III, ED GEORGE AND ALASTAIR RIACH.

**3,000 miles across the Pacific in a sail canoe. Drenched every day, even sleeping wet. Humidity. Salt. One-man film crew, room for one sync-sound camera: Arriflex.**

Cinematographer Norris Brock wore a vest and harness that let him operate the camera, recorder, mike, battery, wireless receiver and mixer, and *still* have both hands free to reload or to prevent himself from falling overboard. The camera wore a wet suit.

**W**ithout charts or navigation instruments, could the early Polynesians have sailed deliberately between Tahiti and Hawaii?

### Ancestors

That was the question this voyage set out to answer. If successful, it would help to prove that 15,000,000 square miles of the South Pacific were methodically settled by the islanders, centuries before Columbus crossed the Atlantic.

### No staging

*Hokule'a* was a reproduction of an early Polynesian voyage canoe. For 34 days, Norris Brock's job was to shoot on board. Filming was *not* the pur-

pose of the voyage, so he had to keep out of the way. Nothing could be staged.

### Cramped

Space was in short supply. Mr. Brock had to sleep and store his equipment in a space 5ft x 3ft x 4½ft. The upper (sleeping) level was soaking wet. The lower (storage) level leaked badly. Both were hot and humid.

### Wet

Except for some sunny periods in the doldrums, everyone on board was permanently soaked by spray, waves, and rain. From the first day out, Mr. Brock reloaded the Arriflex's magazines with wet hands, inside a wet changing bag.



Shooting one-handed and keeping out of crew's way. Note custom-made harness.

### Negative

"Having used 7247 negative for the pre-voyage sequences, we wanted to use it at sea, too," says Mr. Brock. "Negative meant double-system; and we originally planned on a three-man film crew?"



Crowded and laden canoe meant sync-sound filming had to be done by one man.

### One man

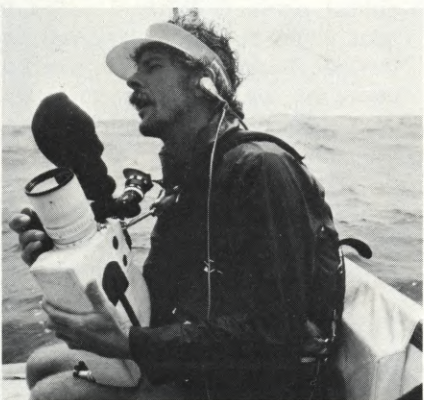
"But after a trial sail, during which we nearly sank, we were told we must lighten the load. *One* man would have to shoot and record the sound, with only one sync camera on board."

### Stars only

"There would be a radio-equipped escort boat following us at some distance, to plot with instruments the course our navigator set by the stars. But we had no guarantee of access to it."

### No radio

"As it turned out," says Mr. Brock, "*Hokule'a's* walkie-talkies were done in by the physical battering and the salt water, so we sometimes lost contact for several days. I had a 50ft load gun camera in an underwater housing. And I had four Nagra SNs. And *one* Arriflex 16SR."



Norris Brock, wet. Note mike mounted above lens.

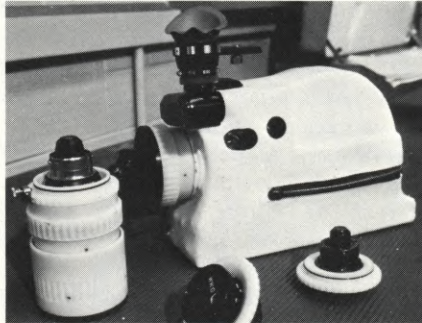
### Gamble

"For this job, WQED had looked at every camera on the market. The 16SR was a new and, for us, untried camera. But we figured that the cameras we

*did* know would not hold up. We decided to bet on Arriflex's reputation for reliability."

### Wet suit

"The National Geographic Society made an amazing PVC wet suit for the camera, with a watertight zipper so I could change magazines. The finder and handgrip with its on-off switch we left uncovered."



Arriflex 16SR in custom made PVC wet-suit, lenses in solid nylon housings.

### Nylon blocks

"I chose two lenses," says Mr. Brock, "The Zeiss 10-100mm zoom and the Angenieux 5.9mm. National Geographic machined housings for them from solid blocks of nylon, with waterproof O ring seals."



Symmetrical finder let Mr. Brock shoot at any angle on either side of camera.

### Harness

"National Geographic also made me a vest with pouches for recorder, camera battery, wireless receiver, audio control unit — and a lifetime supply of lens tissue! And I had a harness made for the camera at a hang-glider shop in California."

### Knocks

"Once at sea, I didn't dare put the camera down on deck, so I had to wear it (with the harness) for hours and days on



Wiping off salt spray every few minutes. Throw-away battery in pouch.

end. I fell down countless times. Having both hands free let me save myself and the camera from the worst knocks."

### Quick

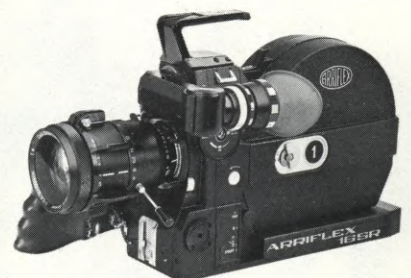
"The Arri's built-in meter really saved the day, too," says Mr. Brock. "The action was unpredictable. I couldn't walk around taking readings. I'd just start shooting and set the f/stop simultaneously."

### Corrosion

"After two weeks at sea, the rotating finder froze up from salt-water corrosion. I oiled it and coated it with silicon... worked perfectly. Other than that, *no camera problems.*"

### Delivered

"I shot about 12,000 feet on the voyage," says Mr. Brock. "We had all our eggs in one basket with that camera — and it delivered."



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## TAPE TO FILM TO "JAWS"

Continued from Page 165

*Spielberg (one look at "DUEL" and you know you've got a genius working behind the scenes), then you want to work with that kind of people again. They are young and full of ideas. They tend to create out of the moment, and I still have a love for those early days of documentary work when you had to do just that — create out of the moment.*

**QUESTION:** But as a cameraman, doesn't this spur-of-the-moment creativity sometimes create problems for you?

*BUTLER:* Not really. One of my plus qualities, I feel, is my ability to invent on the spur of the moment, and I like to exercise that ability. It is exciting for me to use my mind that way. Young directors challenge that ability in me. This kind of creativity does not cause pressures for me — I enjoy it. I enjoy meeting an impossible challenge and, by being creative and inventive, getting around what to some people would be stumbling blocks or impossibilities.

**QUESTION:** Can you give me an example of what you're talking about?

*BUTLER:* On "JAWS" we had it every single day. We literally had a constant challenge — the weather, the physical

Framed by a chilling symbol of the film's deepsea nemesis, Director of Photography Butler and Director Steven Spielberg talk on location for "JAWS". Of directors like Spielberg, Butler says: "I like to work with them. They are young and full of ideas. They tend to create out of the moment — and I still have a love for those early documentary days, when you had to create out of the moment."

*impossibility of holding boats still, plus the desire not to shoot this picture from a normal point of view. At the same time, we did not want to do sensational things with the camera, but rather find a point of view that would make the film successful. We met that challenge and, judging by the grosses, quite successfully. As for the point of view — we shot most of the picture at water level, even though people are not aware that we are that close to the water. We put the camera in a waterbox (a piece of equipment originally designed by Panavision for use on "DELIVERANCE") that could be submerged to a point where the lens itself would barely be above water, but if a wave came along it wouldn't cover the camera; it would cover only the lens, which was protected by a piece of glass. Thus, the whole point of view of the film keeps you so close to the water that, after you watch the film for a while, you begin to get the feeling that there's something out there in the water and, in the ocean, that could only be menacing.*

**QUESTION:** Your photography does not seem to have a specific look, but rather you would appear to have the ability to create visually in a variety of styles. Can you explain this?

*BUTLER:* Well, I change the look of

*each picture I do quite a bit in terms of lighting style because I love lighting. I love to create different moods with lighting — to take off in different directions. Before you can do what you want artistically, you must be in full control of your tools and understand them technically. I am strong on composition. My pictures must be beautiful for me, even if the subject is a little revolting. It may be corny to say that you really have to see through the eyes of a child, but there is a kind of beauty to be seen in everything, if you have an eye for it. I try to understand what each director wants and put it on film in a way that is faithful to his inspiration, yet add to it my own ability.*

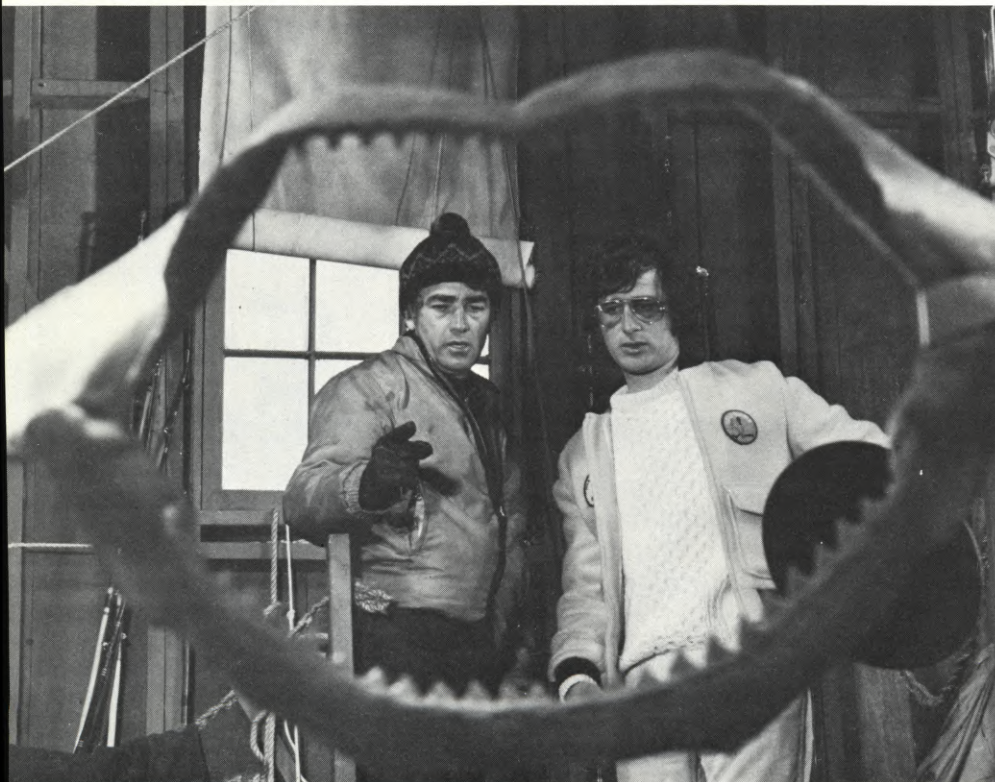
**QUESTION:** Earlier on you said you liked the challenge of working with young directors because of their creativity . . . their fresh approach to film-making. Did this philosophy prove valid on "BINGO LONG" when you found yourself working with yet another young director, John Badham?

*BUTLER:* Yes, John certainly was very creative and daring, which is heartening to see in someone who is directing his first feature picture. He has the gambling spirit and the confidence to try his own ideas, and that is important. In this instance, his ideas ran along the vein of reviving the old techniques used in the pictures of the Thirties, Forties and Fifties — dissolves, wipes, headlines spinning on the screen — old techniques that we have almost forgotten. In those days, during the period of transition from silent to sound, they had just discovered the optical printer I think, because they used all the optical devices they could think of. Today they are considered so corny that we never think to try them. John used them all, and very successfully.

**QUESTION:** Besides the optical effects, did you use any other devices to reinforce this period feeling?

*BUTLER:* Yes, I suggested to John that, in order to set the period, he might use an old newsreel at the beginning of the picture. He bought that, and so the picture actually starts off with a newsreel. Also, in order to continually reaffirm that period feeling, we faded the color and warmed it, not exactly to a sepia tone, but to a sort of golden look, which gave you the feeling of age.

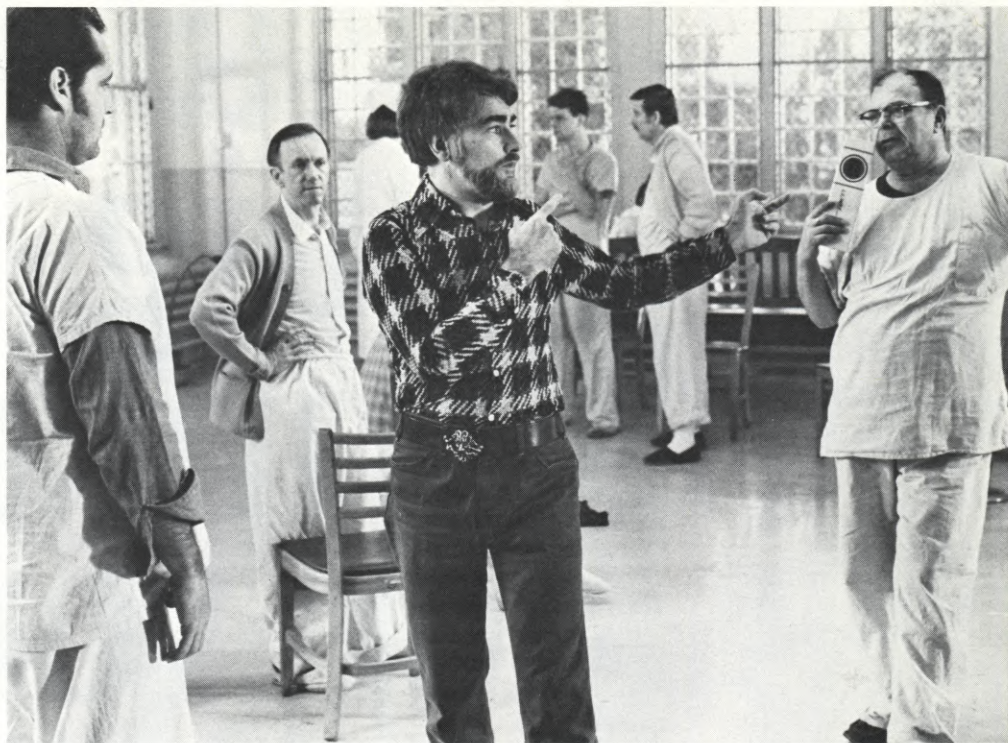
**QUESTION:** Was this alteration of the color quality accomplished in the lab or did you do it in the camera?



**BUTLER:** We hear a lot of talk today about special color filters used on the camera, especially salmon (or coral) filters, but I find it totally unnecessary to do that when the lab has the ability to do it all. You can change the color in the lab in just about any way that's within the range of the color balance of the film. The lab should be able to do as much for the color of the film when it gets there as you do for it when you photograph it. And if you photograph it knowing ahead of time what you are going to do with it, you will set your exposures accordingly and you can help the effect. In this case, by giving the lab proper detail in the shadow areas, it was possible for them to color tone it so that those shadow areas would be as right and golden as we wanted them to be. I try to have a dialogue with the lab so that they understand what it is I want. I pick my lab, to a great extent, according to their ability to understand what I am trying to get out of their capabilities. When you are trying to make a feature film, you don't want something that is just turned out; you want something that has an artistic touch put to it. And now you are talking about a talented timer like Bob Van Andle, who has the eye and the ability to get the colors that you want onto the print. It is possible to have an excellent negative and get a very poor print — and it is also possible to have a very poor negative and, with the help of a skilled timer, pull a good print. There is so much a good lab can do and, believe me, their "artwork" on a film should be as great as the work the cinematographer puts into making the film. On "BINGO LONG" I dealt with Technicolor and Skip Nicholson. Skip is especially helpful and has the ability to understand what you are trying to do with a film, even if it is out of the ordinary.

**QUESTION:** Your lighting on "BINGO LONG", which has an all-black cast, is particularly effective. Do you have a special technique you use when lighting blacks?

**BUTLER:** My philosophy in lighting blacks is that they should look as natural as possible. In the past, cameramen have found that if they get into a tough spot lighting a scene that involves both light-skinned and black-skinned people, the approach is to backlight them and glance light off their faces. I don't think that technique creates a very pleasant look, because the light bouncing off the face comes back to you as almost pure light. It doesn't bring back with it any of the look of the person, any of the detail of



**Bill Butler discusses an upcoming camera angle on the set of "ONE FLEW OVER THE CUCKOO'S NEST", the enormously successful comedy/drama on which he shared the Director of Photography credit — and an Academy Award nomination — with Haskell Wexler, ASC. This picture and "JAWS" (the box-office champion of all time) have jointly racked up a gross of almost a quarter-of-a-billion dollars to date.**

the face, any of the color of the skin. So I approach it in an entirely different way. I like to use direct soft light — which is the very thing that many cameramen would avoid. They would be afraid to trust the exposure reading they're getting. One of the methods I employ to make sure what I'm getting is to use a spot meter and read exactly what the skin is giving back. When shooting a black picture, you find that everybody's skin is different. In the same scene you may have several black people, some of whom have a blue-black cast to their skin, while others have a warm-brown cast. So how do you compensate for this with your light? I simply use the spot meter, which tells me exactly what I'm getting back from each face. Then I try as best I can to balance out each face to the extent that I get enough exposurable light on each one, but not so much that they come into exact balance and look exactly the same, rather than the way they would look to the human eye. I don't pound so much light into a black face that it bleaches out. Instead I let it fall underexposed, so that it takes on the deep rich tones that it should have — so that it looks very natural.

**QUESTION:** There is one sequence in the film where you have James Earl Jones sitting at a table in a bar that seems to be lit only by candlelight. How did you create that soft, natural, moody look?

**BUTLER:** I planned that scene while reading the script long before I left Hollywood. I took with me to Georgia specially-made lamps that I had built in the Universal lamp shop. Each lamp was designed to look like the typical candle with a glass envelope around it that is set in the middle of a table. Inside of this envelope I placed a quartz light. I set one of these lamps on each table, thus creating the illusion that the entire room was lit from what appeared to be candles. I then placed several layers of Tough Frost inside each of them, so that I had control of their brilliance. This enabled me, from the camera side, to tone them down so that they didn't burn up too badly. This gave the scene its natural, but moody look.

**QUESTION:** Where do you go from here? All of your success in recent years must have changed your life — isn't that so?

**BUTLER:** Success changes your life and must be dealt with. Fortunately, I've dealt with it before — I'm on my third career. Mainly, success offers you many opportunities; the trick is to opt for the things that will let you and your talent grow. I want to do a lot of things I haven't touched yet. I want a binocular reflex finder to save cameramen's eyes. I have in mind a revolutionary type of theater I want to build . . . scripts I've written, yet to be made into films . . . dreams to be made into reality . . . ■

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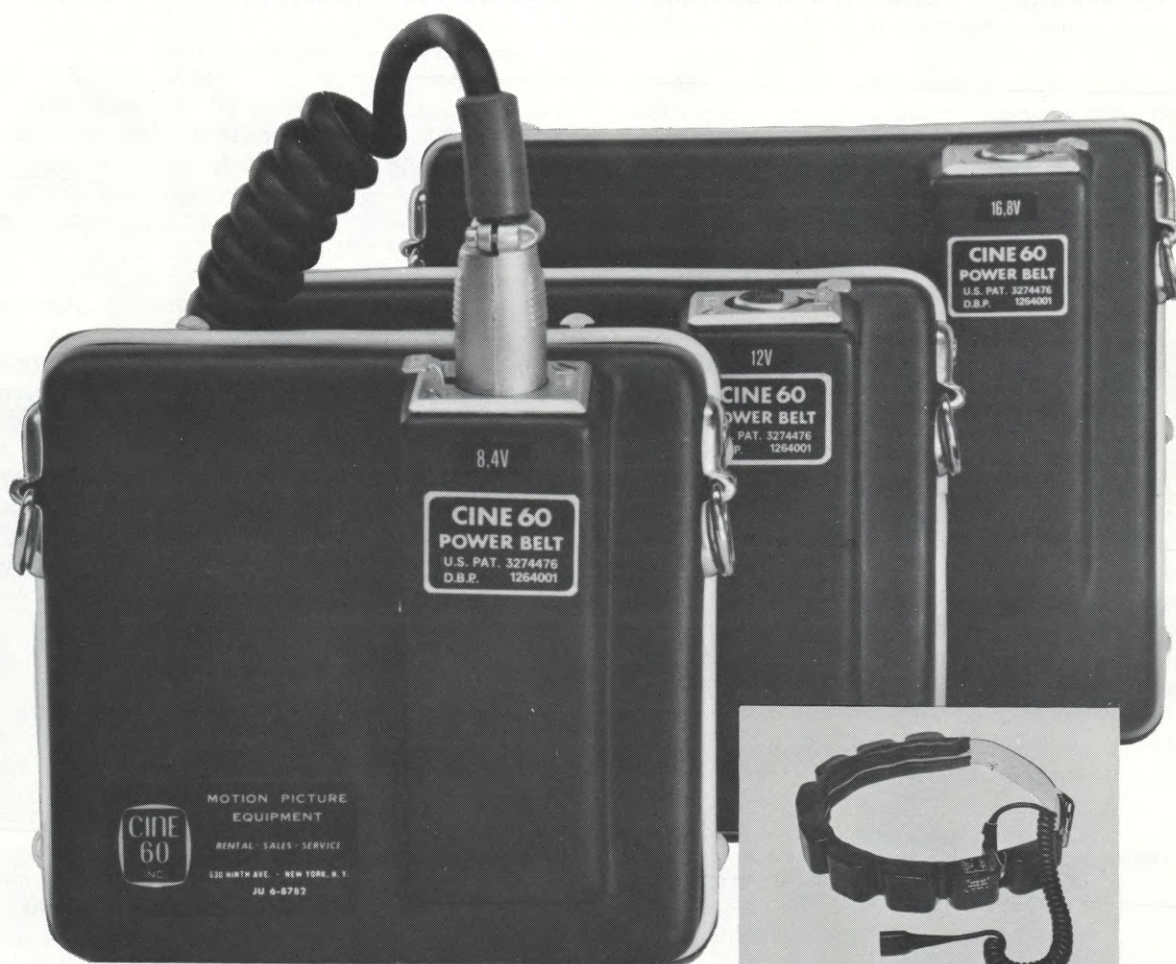
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**VOYAGE OF THE HOKULE'A**  
Continued from Page 171

islands, she became a rallying cry.

Most of our photography between the end of October and the end of March was land-based. Larry Johnson's duties completed, he went off to work on other projects. The WQED crew of Norris, John, Joe, and I handled this part of the filming. We visited the islands twice more after the swamping for two-to-three-week periods.

With the memory of the swamping still vibrant, I was determined to produce a one-hour special, even if the canoe never sailed again. I could see that she meant so much to so many people that the story of her fight for survival could easily comprise the basis of the one hour.

During this time, we prepared the equipment for the voyage, should it ever take place. Our first rule of thumb was to find two of everything. Originally, we had planned to have a cameraman and a soundman on board *Hokule'a* for the trip to Tahiti. The swamping changed that, too. We could only have one person. Hopes for sync sound faded. Everyone told us it was going to be practically impossible to get sound if there was no soundman on board. (Because we were using delicate negative, we had decided not to go the single system route.)

We selected the camera from the many available possibilities. The new ARRI SR was the overwhelming choice. Compact, with extremely up-to-date electronics, through-the-lens metering, light weight, it boasted a shape which could be waterproofed. But could we get two of them? All of them were in Austria, covering the winter Olympics. None had been tested in this country on

long productions.

The manager of the National Geographic custom shop, Mike Schaeffer, a pioneer in the manufacturing of plastics, designed and built the housings for the camera.

Our cameraman, Norris Brock, would have to take sound himself, double-system. He, John Butler, Joe Seamans and Roy Brubaker posed the problem to Stuart Cody in Boston, renowned for his ability to miniaturize any piece of gear. They developed COMBO, the Cody One Man Band Operation. It would permit Norris to record from a microphone atop his camera, wiring the microphone to an SN he would carry on his person in a waterproof vest. Further, COMBO would enable him to place wireless microphones on various subjects, listen in on conversations through his headsets, and elect to record either those conversations, or those closer at hand to the mike on his camera. Warning signals were built into COMBO to alert Norris to possible malfunctioning of gear or signal. Cody's battery, nicknamed EXPO, allowed Norris to run more than twenty four-hundred-foot magazines before he threw the disposable battery over the side. SN tapes were prepared in "cassettes" to permit Norris easy loading capability. Three K-100's were purchased and housed in rigid plastic by Romano of Zilla Enterprises. He found us a 50-foot-load gun camera, and housed it as well. John Butler tested a dozen different kinds of microphones and windscreens to determine which combination would eliminate background ocean and wind noise. Wireless mikes, transmitters and receivers were purchased from Swintek, all on the same frequencies, so that Norris could record from one or all of them simultaneously.

So busy were they all with the

preparation of the gear that it seemed unlikely they would be able to get it, test it, and bring it to Hawaii in time for the departure of *Hokule'a*, now slated for mid-April. To give them more time, I brought David Myers, another cameraman with whom I had a long association, to Hawaii with his crew to shoot for a week in mid-March.

Finally, towards the end of March, the WQED crew returned to Hawaii. We had added Ed George as assistant cameraman from WQED. He was to help Joe get Norris' gear ready for the voyage, pack it, provision him, while we continued to shoot the story which never seemed to stop.

I had settled on an escort vessel for the voyage. Sixty-five feet long, of steel hull, it was to be the support base for the canoe. Tracking the canoe from a distance, the *Meotai* would enable us to get exposed film on and off *Hokule'a* on a once-a-week schedule. We purchased a zodiac and outboard engines to effect these transfers.

In early April, amidst ceremony, *Hokule'a* was hoisted off oil drums and gently placed in the water again. Working for months on the refitting of the canoe, the Hawaiian crew now claimed her as their own. A widening rift had grown between the leaders of the project and the crew. The navigator of the crew, Mau Piailug, had arrived from the distant Micronesian island of Satawal. One of the few men in the world who can sail on the empty ocean without compass, sextant, or any instrument, it was his job to navigate the canoe to Tahiti against the prevailing trades, using only stars, ocean swells, cloud formations, and the flight of birds as his guides.

As *Hokule'a* conducted her test sails off Waikiki Beach, we tested out our new equipment. Except for minor repairs and adjustments, it appeared to be in fine working order.

On April 24, we broke our bond with Oahu and sailed eastward for the island of Maui. There, traditional ceremonies, not practiced for centuries, would be conducted for the men who would relinquish their ties with land and become men of the ocean. From Maui, *Hokule'a* would sail still further east and north, so as to put her in better position for making a southeasterly direction against the prevailing trades. Tahiti lies some 250 miles to the east of the longitude of Hawaii. The canoe would have to effect a curved course into the wind in order to make a proper landfall three thousand miles away.

Norris' gear was loaded aboard the canoe. At six feet five inches tall, he would have to sleep in an area which was no larger than five feet eight.

**At Hanalei Bay on Kauai's north coast, outrigger canoes come to visit *Hokule'a*, and to help transport the film crew from canoe to shore. On the Hawaii-to-Tahiti official run, the impressive craft was sailed against the prevailing trades, using only stars, ocean swells, cloud formations and the flight of birds as navigational guides.**





Luckily, he had one puka (one compartment) in the hull for himself and his equipment. He had spent weeks fashioning the shelves and racks for his puka, which measured 3 feet by 3 feet by 5½ feet. These would enable him to have every piece of gear directly in front of him, each individually watertight. Tools, stock, silica gels, plastic . . . everything off the floorboards in case the canoe continued to leak. He would have to eat the same food as the 16 crew members: ancient Polynesian foods such as taro, poi, dried fish and bananas, so as not to diminish the food experiment which we had always accepted as part of the voyage criteria.

It was not going to be easy for Norris. An experienced long-distance sailor, he did not have to worry about seasickness or the confinement of a boat. His main preoccupation was that of maintaining the gear, loading, logging his exposed material, being cameraman, soundman, assistant, all at the same time. He would have thirty days at sea in which to photograph as many aspects of life on the canoe as he could. His gear was versatile enough to permit him to get shots in any kind of weather. Repairs on equipment could be done on the escort vessel.

On May 1, 1976, *Hokule'a* pulled anchor from Honolulu Bay in Maui. It was a month later than they had originally intended. It was almost seven months after she had swamped off Kauai. We had shot almost 90,000 feet of 16mm, enough so that even if the canoe swamped again after only several days at sea, we would still have an hour show in the can. Followed by the *Meotai*, with Joe, John, Norris' son, Robert, and myself on board, *Hokule'a* started her tack for Tahiti. Joe, who had been doing some of the filming during the last few days before departure while Norris was finalizing his puka, would shoot the boat-to-boat footage, and the relevant navigational scenes on board the tracking vessel. I could be in touch with Norris with the various walkie-talkies we had on board. The captain of the *Meotai* could speak directly to the captain of *Hokule'a*.

Five days out, as we were making our last tack northeast of Hawaii's Big Island, I decided to get off the *Meotai*. Two weeks earlier, I had broken my foot. And although my leg was in a fiberglass cast, I found it extremely difficult to work on board. The Coast Guard lifted me off by helicopter. Ed George, almost airborne on his way back to the mainland, was flown in from Oahu. As the Coast Guard evacuated me, they left Ed in my place. The voyage continued.

Through Bill Myerson of the U.S.



A temporary "two-man-band". Producer Dale Bell holds the COMBO, a fully-automated amplifier/mixer unit, designed by Stuart Cody to work in conjunction with the miniature Nagra SN recorder and handle a camera microphone, along with a radio mike or two. Cinematographer Norris Brock holds the Arriflex 16SR, neatly shrouded in its custom-made "wet suit".

Navy Marine Corps MARS radio network, I was able to be in touch with the *Meotai* from the islands and the mainland. In the middle of the voyage, I returned to Hawaii to film some short segments which could be inserted by Barry Nye, our editor, into the voyage section. Ten days before the anticipated arrival of *Hokule'a* in Tahiti, I flew there to set up final filming arrangements with Sylvain, a French-speaking cinematographer I had met in Hawaii months earlier.

The anticipated arrival of *Hokule'a* was the sole topic of conversation in Papeete. On French television, I would give updated position-reports in French. I lined up the only helicopter, and various boats. The French government declared a holiday, *Hokule'a* Day, for her anticipated arrival. The Tainui Association in Papeete had summoned all the paddling canoe clubs to the beach at Papeete. Once *Hokule'a* made her first landfall at the remote island of Mataiva, 175 miles northeast of Tahiti after 33 days at sea, we knew it would be only a matter of a day or so before she would sail triumphantly into Tahiti.

On June 5, at nine in the morning, *Hokule'a* accepted a tow to speed her towards the waiting crowds. No one expected such a gathering, least of all the exhilarated crew on the canoe. As *Hokule'a* approached the harbor, she saw people wading in the water on coral reefs, straining for a glance at the canoe. And on the beach, less than a half-mile distant, had assembled the largest crowd ever since the arrival of Captain Cook, nearly two centuries

before. More than 15,000 people were packed onto Papeete's shoreline. Fifty paddling canoes escorted *Hokule'a*. The big 75-foot long ceremonial canoe from Tahiti, with a band on board, welcomed her.

On deck, Norris was shooting the arrival with the same ARRI SR and the same Nagra SN with which he had left Hawaii. As Tahitians say, "No problem!" Joe Seamans and John Butler, who had arrived the previous evening aboard *Meotai*, were shooting from land. Sylvain was in the helicopter. Ed George was shooting from water-level in the harbor. I was filming from the speedboat I had rented for the morning festivities.

We had shot almost 20,000 feet on the voyage alone. Uneventful though it was, without storms or danger to life, we had succeeded at what we had set out to do. We had shot double-system, *Cinema verité* style, on the open craft for 35 days. Norris immediately shaved his beard. We took the film back to Los Angeles, for shipment to TVC in New York.

"VOYAGE OF THE HOKULE'A" is probably the most difficult film with which I've ever been associated. It aired nationally on the 256 stations of the Public Broadcasting Service on January 18, 1977. With extra grant-support from Gulf Oil Corporation, Tom Skinner and Dennis Kane authorized expansion of the show to 90 minutes. Barry Nye and Ted Strauss, the writer, have helped enormously to make this the first ninety-minute National Geographic special ever. ■

# *Masterpiece of Accomplishment*

Producer/Director  
DALE BELL

Sound Supervisor  
JOHN BUTLER

Sound and Picture  
NORRIS BROCK

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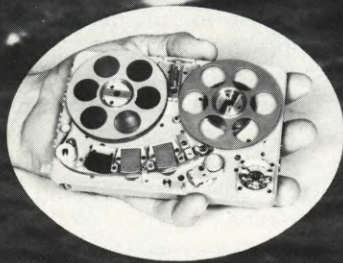
Production Manager  
JOE SEAMANS

Produced by  
WQED/Pittsburgh and the  
National Geographic Society

## VOYAGE OF THE HOKULE'A

We salute  
the dedication  
and spirit  
that resulted  
in this inspired  
undertaking!

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# THE PHOTOGRAPHY OF "ROCKY"

By **JAMES CRABE**

*Director of Photography*

I was first contacted about photographing "ROCKY" by director John Avildsen, with whom I had worked before on "SAVE THE TIGER" and "W.W. AND THE DIXIE DANCE-KINGS". "We've got a fight picture," he told me. "It's sort of like an old-fashioned movie." Both of those elements appealed to me.

I think everyone knows by now that Chartoff-Winkler produced the picture and sort of went into hock by mortgaging their homes in order to complete it, but Sylvester Stallone, of course, was the real genius behind the project.

When I first met with Sylvester and John we talked about the picture and went down to the Olympic Auditorium to watch some boxing matches, just to get an idea of what boxing was like. Neither John nor I had been very much into that kind of thing. It became obvious that our biggest problems would have to do with the big crowd scenes, the fight itself — how it would have to be choreographed so that it could be filmed.

Very often — and this has consistently been the case with the pictures I've been involved in — the cameraman reads the script and visualizes it in his own mind as a certain series of images. But I sometimes wonder if all that homework is worth the time it takes, because quite often when you get to doing it (unless it's a big production that can be storyboarded), you find that the ideas you formulated when you first read the script simply won't work, because the reality of the situation is totally different.

I don't know what the actual budget was on "ROCKY", but it was very much of a budget-conscious picture. We really weren't aware of its potential success or that it would take off the way it did until we were halfway through the picture. Then it became evident to everyone that this really would be a "sleeper" picture.

The locale of "ROCKY" is Philadelphia and everyone thinks the picture was made on the East Coast. In reality, most of it was shot in Hollywood, but when I came onto the picture, John Avildsen, who is a cameraman himself, informed me that they had already shot about eight days of footage in Philadelphia. My first connection with the picture was the photography that was done in Los Angeles.

**This low-budget feature about an over-the-hill boxer — which has become the "sleeper" hit of the year — offered exciting action and several stimulating cinematographic challenges**

John is a low-keyed director and, being a naturalist, he has a preference for photography that has a kind of natural look. A lot of the people he used on "SAVE THE TIGER" were also on the crew of this picture, so it was a happy kind of group — a crew that John felt comfortable with. He is after all, a film-maker of the kind of shoot-it-and-cut-it-yourself variety, so when he comes to Hollywood and gets involved in one of those things where there are a hundred trucks and honeywagons and so forth he tends to stand off a bit.

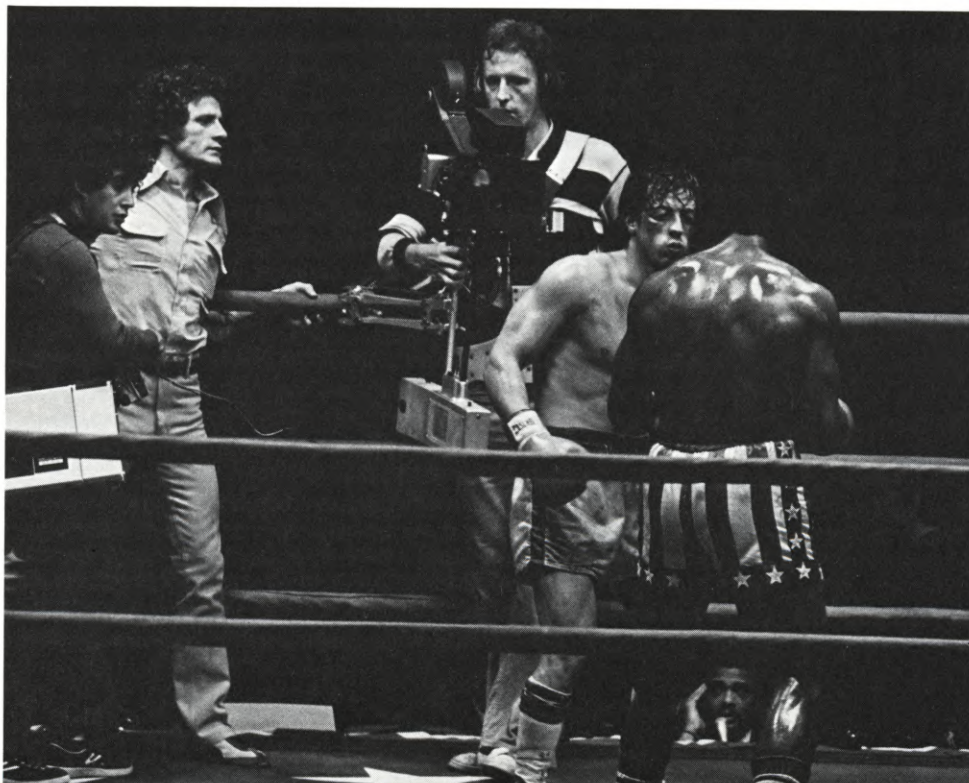
Our shooting schedule was seven weeks, but the picture came in under that time. We used the 5247 negative throughout without any special manipulating techniques, except that we pushed all of the interiors one stop, which is not uncommon.

The fight scenes, when we got to them, had to be very carefully planned, because we had only one day of shooting with the large crowd, 11,000 people. That meant that it was expedient to really have our act together. A kind of storyboard had been prepared for the whole fight sequence and it served, as those things often do, as a good initial plan — although, when we actually got to shooting, we diverged from it quite often.

The way we shot the picture originally wound up with a semi-cop-out ending. Rocky loses the fight and the girl never does come to him. But after mulling that a bit, they realized that they really needed a kind of socko ending to fulfill the desires of all those people on Rocky's side. So we went back to the Sports Arena and spent very little money on one extra day's shooting with about 20 extras. On that day we shot the new ending in which the girl runs up into the ring and they embrace and so forth. One is always impressed by what editing can do — and, of course, there's nothing new about that fact — but the film, in one of its earlier edited versions, left a lot to be desired, until the new ending was added and other things were pruned to make it come out as effectively as it did.

There are no studio sets in "ROCKY". The whole picture was shot on local locations, some of which were very small rooms with sagging floors that caused the flags and cutters to move when anyone walked across the floor. And, of course, we had the usual problems of taping lights up and attaching things to walls. One of the more interesting experiences was shooting in the Main Street Gymnasium downtown, which is one of Los Angeles' old established fighters' gyms.

**Garrett Brown steers his invention, the very fluid camera-stabilizing device, STEADICAM, into the thick of the fray, to shoot fight scenes for "ROCKY" — probably the most realistic boxing action ever staged. The author credits Brown and camera operator Jack Willoughby with superior camera handling in this film.**



Originally there was going to be a lot of 16mm footage in the picture which the old coach, played by Burgess Meredith, would show like training films for our hero. So we shot a lot of stuff in 16mm, but I think most of that was chopped out of the final cut.

For the fight sequences we used three cameras almost constantly. We found out that, more often than not, low cross-angles with the lights in the background were the most exciting. They were also necessary because, in actual fact, the arena was quite empty most of the time — but it also meant that we had to shoot with backlight and flares in the lens and that sort of thing.

The two fighters, Sylvester and the actor who played Apollo, were really terrific. Obviously the picture would have added up to very little without their efforts. They had the fight all choreographed to the nth degree and could just repeat and repeat any segment of the action. They knew where Round 13 was and where Round 5 was and just where they would be in the action for each round. Also, they were both in great physical condition. I think that the bane of so many fight films is that the guys who are portraying the fighters are really unable to take that kind of punishment. I don't mean getting hit — because they were actually pulling their punches — but the sheer physical grind of repeating such action over and over again effectively in front of the camera. These two actors made it just a matter of recording what they did. I don't remember what our shooting ratio was, but, of course, we shot lots of film.

As far as lighting was concerned, our main problem was just one of getting into those small rooms and finding places to hang lights. We often had scenes where we had to back the camera right up to the walls in order to get coverage. We used conventional lighting units — miniature quartz lights and Babies and things like that. We tried to put 2 x 4 spreaders across most of the rooms and hang our key lights from them. Sometimes we'd use bounce light, but more often than not in his apartment, which was kind of



Director John Avildsen (left) studies the action in the ring, while Director of Photography James Crabe views it through the finder of the Arriflex 35BL camera. "ROCKY" is the third film on which this team has collaborated, the other two being "W.W. AND THE DIXIE DANCEKINGS" and "SAVE THE TIGER".

sketchy and low-key, we would just hang lights. We used a lot of photo-floods with snoots, too.

Occasionally, in larger rooms like the dressing rooms of the arena, we would bounce light off the walls, but basically I think the techniques could be described more as traditional motion picture lighting practice — key-lighting the people so they would have modeling and shadow sides to their faces, rather than relying on soft-light techniques throughout. My gaffer, Ross Maehl, who also worked on "SAVE THE TIGER", made it a lot easier. When you've got a gaffer who can understand what you're trying to do and executes it without having to discuss every light, it helps a lot. In that respect, we were very fortunate that Ross could do the picture.

The interior locations were really difficult to handle because they were so small and cramped. Sometimes it almost seems as though people go out and try to choose the toughest locations they can find. The room in Rocky's apartment where we did the most shooting was the smallest, and it probably could have been another room someplace else. We were shooting in a really crummy part of

downtown Los Angeles and outside the windows of the apartment was the wrong view, so we ended up building a phony brick wall outside a real building in order to not see what was there. Sometimes you wonder how they pick locations.

Besides Rocky's apartment, we had the house where his girlfriend lived, which was also tiny. We also had quite a bit of shooting that involved photographing action on television screens, especially in the sequence where Rocky sees himself in the newsreel. These were all put on video tape and photographed off a regular TV set, using a 144-degree shutter. This is supposed to be the magic angle where you don't get floppover or flicker bar. As I

**Continued on Page 205**

**Cinematographer James Crabe, who started out as a teenage magician, now tries to work his magic from behind the camera.**



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(ABOUT THE AUTHOR: JAMES CRABE, the son of a film cartoonist and avid film buff, had his interest in the motion picture medium awakened at an early age. While still in high school he began making amateur films, while, at the same time, filling engagements as a professional magician. Following an appearance with his magic act on the late Art Baker's "YOU ASKED FOR IT" TV show, he was offered an opportunity to do some of the daredevil cinematography for that program and continued to do so from 1952 to 1958. At the same time, he began filming documentaries for Wolper Productions and Bill Burrud productions, as well as commercials for Film Fair. His major television film credits as Director of Photography include: "LOST FLIGHT", "SOLE SURVIVOR", "SWEET, SWEET RACHEL", "THE AUTOBIOGRAPHY OF MISS JANE PITTMAN", "F. SCOTT FITZGERALD IN HOLLYWOOD", "SISTER AIMEE" and "ELEANOR AND FRANKLIN: THE WHITE HOUSE YEARS". His theatrical feature credits include: "ZIG ZAG", "THE HONKERS", "SAVE THE TIGER", "RHINOCEROS", "W.W. AND THE DIXIE DANCEKINGS" and "ROCKY". He is currently engaged as Director of Photography on the Mae West starring feature, "SEXTETTE".)

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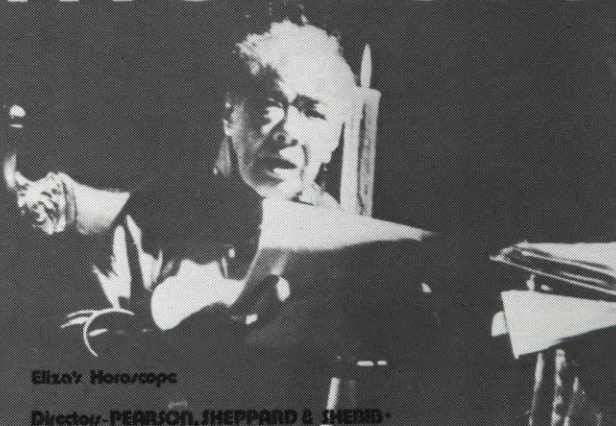
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# TECHNICAL IMAGINATION CREATES A BIG-BUDGET LOOK FOR "MODEL RAILROADING UNLIMITED"

Little money, but limitless can-do ingenuity, a high degree of technical skill and lots of sheer determination produce a wonderfully creative, witty and entertaining short film that has won an armload of awards

By ROBERT E. ROGERS

A thirty-minute 16mm film on model railroading sounded like a dream assignment, at first.

I'd been called to the home of Liberty Pictures' producer Mike O'Connell who was obviously very excited as he described it. "It has to be an attention-getting, upbeat celebration of the hobby. The sponsor, the Kalmbach Publishing Co., wants to update the company image with a highly entertaining film and they've given us a free hand in creating it."

Mike had been searching for a creative team that wouldn't fall into the cliché approaches traditional to close-up model photography. Mike wanted to develop a totally new, breathtaking look. He found the perfect director in Rick Harper. I'd collaborated with Rick on several projects following our days together at California Institute of the Arts School of Film. I had found Rick to be a dynamic director and an outstanding cinematographer. The winner of several dozen film-making awards, Rick also designs attractions for Disneyland and Walt Disney World. At Rick's suggestion, Mike had contacted me to write the screenplay and suddenly things were popping.

Although we were determined to create an exciting new visual approach to our subject, our first location

scouts gave us a healthy respect for the challenges ahead.

The greatest difficulty would be a complete lack of working space. The best train layouts were permanently installed in remote attics or basements where ceilings were always low. They were nailed to the floor; moving them to a studio was out of the question. Most were built solid against a flat, uninteresting wall. Furthermore, there was never any floor space. Winding through the layout, the narrow aisles were rarely over 30 inches wide and frequently as narrow as 18 inches. Access was limited; one of the best layouts was up three flights of stairs and through a door that could only be entered on hands and knees. The claustrophobic feeling was seasoned with the keen awareness that one careless move or one falling light could smash some scale model invested with hundreds of hours of meticulous work.

The cramped space would limit our photography, preventing us from putting our lighting instruments and camera exactly where we wanted them. It was a bit like trying to shoot inside a two-man submarine.

Achieving realism would be a prime goal, yet low ceilings and unavoidable walls were visible in every potential angle.

**A Rube Goldberg contraption manned by two of the Three Stooges? Not really — just the acrobatic author doing a balancing act aboard a moving dolly rigged with homemade "Fluid Boom Arm", as he films scene for a musical sequence of cuties tippy-tapping their way through a hobby shop for "MODEL RAILROADING UNLIMITED".**



For realism we also wanted good depth of field (nothing gives away a model faster than shallow depth of field). Yet, to use a smaller f-stop would require higher light levels, the heat from which would blister the special model paints, melt plastic parts and risk combustion of the flammable materials used to create scale foliage.

Most of our challenges could have been easily solved with a few truckloads of money. However, as with all budgets, this one was limited. Therefore, what we could not afford had to be improvised using some technical imagination.

Some of the crazy techniques described below may seem like Rube Goldberg nonsense. Yet spare parts, bailing wire and a little creative imagination gave "MODEL RAILROADING UNLIMITED" exactly the visual dynamics we wanted. The result is an exciting professional look that appears to have cost four or five times the actual budget.

Although this was to be Mike O'Connell's first film, as a producer he's a natural. Problems seemed to melt away in front of his calm, soft-spoken approach. Of course, a producer's real measure is the finished product, and I sincerely wish my first film had won a few of the awards Mike earned with "MODEL RAILROADING UNLIMITED", among them:

CHRIS STATUETTE — Columbus Int. Film Festival

BEST BUSINESS AND INDUSTRIAL FILM OF 1975 — San Francisco Int. Film Festival

BEST COMMERCIAL FILM OF 1975 — Photographic Society of America; — American International Film Festival

BRONZE MEDAL — BUSINESS AND INDUSTRIAL — Int. Film and Television Festival of New York

1975 SPECIAL JURY AWARD — Long Island Film Festival

Aware of the technical demands from the start, Mike had chosen me to write the project, partly because my background allowed me to serve as a special effects advisor in addition to screenwriter. At Cal Arts I'd collaborated with instructor Kris Malkeiwicz writing the text *CINEMATOGRAPHY*.



RAPHY, *A Guide for Film Makers and Film Teachers* published by Van Nostrand Reinhold. Since school, I'd sold one original screenplay to Disney and written an adaptation for them in addition to running a small but active television production studio.

Larry Wright, another Cal Arts Film School graduate, became the fourth partner in our team. He was assigned complete charge of the film's editing, scoring and all post-production work, yet he contributed to the project from the very beginning.

## TESTS

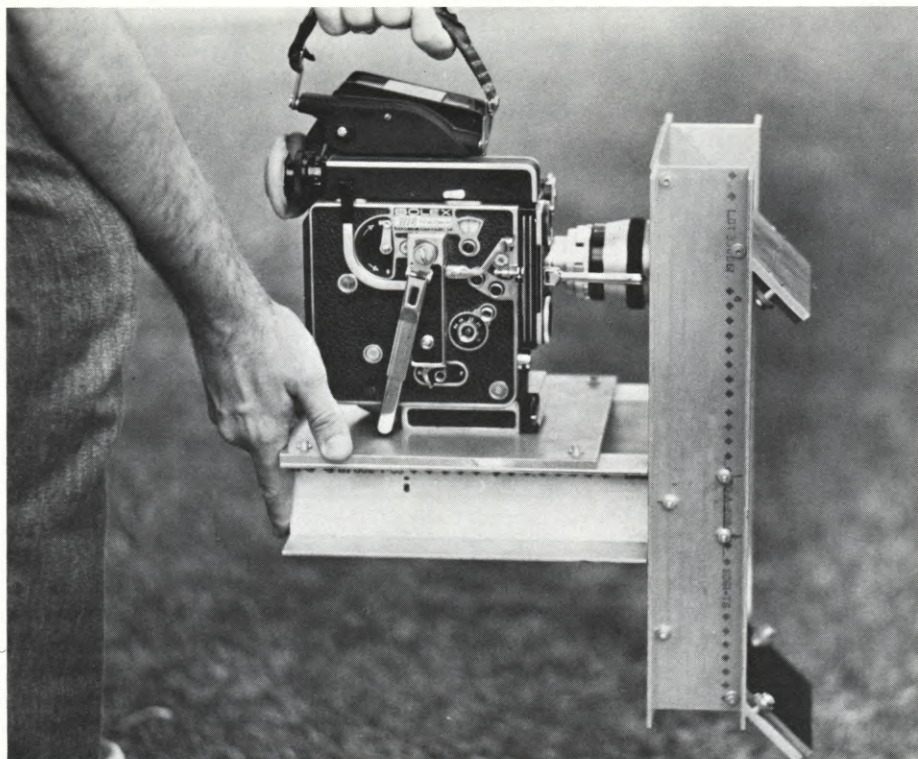
Turning out a slick product with a limited budget meant there would have to be few false moves, so we began production with a series of tests. Experimenting with different films and lighting for model photography, we generated some surprising results.

Three films had been tested: EF flashed, EF double flashed and ECO. It all looked terrible. But then, on the end of one roll, we discovered a six-frame scrap that looked beautiful. We suddenly realized we were looking at a bit of the EF that had not been flashed. We had been so sure that unflashed EF would look poor that we hadn't even tested it. Yet it looked so good that we decided to shoot all our interior model work on EF with no flashing. The resolution was remarkably superior, and for the miniatures this was extremely important. The higher contrast and richer colors enhanced the dramatic effects we were developing with our lighting.

We were looking for a dynamic/fantasy mood in our lighting, something that would make each shot excite and involve the audience. During our tests we tried almost every kind of lighting ratio on the models. But the effect that pleased us most was a combination of colored lights. An orange or straw gel colored the key light which would be placed at a 60° to 90° angle. Where space allowed, other kickers and back lights were used and also given warm colors. The fill light was then given a blue gel.

The way we exposed this went against everything we'd ever seen or read. Using an incident meter we would set the key, back lights and kickers about equal (within a stop). Next the blue fill would be set about 2 to 2½ stops brighter than the key. Then we would expose *for the key light alone* — not the key-plus-fill. This left the blue fill light a full 2 to 2½ stops overexposed, yet it looked beautiful. The EF seemed to soak up the blue and we could never give it too much.

The overall effect of the colored



To make the miniature trains appear larger by photographing them from below, John Franke designed and built this custom periscope adaptor to work with a 55mm macro lens and the Rex-5 Bolex. With it, the cinematographer could actually lower the apparent optical point of view to below ground level. Many such innovations were developed for the filming.

lights gave the scene a sunset/sunrise mood which we thought was very exciting.

During post-production the timers at C.F.I. were very helpful in balancing the color in shots where there was often no white for reference. With their help we went through the entire film on the video analyzer shot by shot three times: once before the first trial, once after the first trial and again after the inter-negative. Again we discovered the blue had to *appear* too oversaturated on the video analyzer in order to look right on film.

During the tests we developed one other great trick. We knew that in every scene we would be fighting with set limits. The low ceilings and walls seemed to intrude into every scene. We had been told by several "experts" that the only solution was to painstakingly suspend sky blue seamless photographic paper up along the wall and arching across the ceiling. During installation we were supposed to do our best not to destroy the delicate models below. This monstrosity would have to be illuminated evenly to hide wrinkles and dents.

Dissatisfied with this cumbersome solution, we began developing our own technique. We bought dozens of samples of different grades and colors of gauzes and all sorts of crazy things before trying vaseline. That did it. We simply painted the ceiling out!

The shot was lined up and the camera locked down. The lighting was arranged, the camera focused, f-stop set and then all the lens settings were taped so they couldn't be inadvertently moved.

A series 9 clear or UV filter was placed over the lens. A Johnson & Johnson Q-tip (39¢ per box) was dipped into a jar of Johnson & Johnson Vaseline (economy size, 69¢ per jar) and the cameraman looked through the reflexive view finder while dabbing vaseline on key portions of the front of the filter, fogging the image of the ceiling and wall.

The vaseline had to be applied with the focus and f-stop set, to make certain the depth of field wouldn't be great enough to betray the vaseline. Another reason for having everything else ready was that the vaseline gradually lost its diffusing strength over an 8-to-10-minute period. This may have been due to the heat from all our lights blazing away in a closed-up attic. When this happened, the filter would be removed, cleaned, put back on the camera and then given a fresh vaseline job.

The effect was a knock-out. The vaseline blurs looked like dreamy fingers of mist rolling over the mountains, giving the scene atmospheric depth and tremendous mood. We liked the effect so much we even used it on several scenes that had no ceilings or



One of the fringe benefits of being a producer. Mike O'Connell is recruited into the chorus line by the bevy of beauties involved in the Musical Sequence. In his first time out as producer, the mild-mannered O'Connell solved the endless problems in his easygoing way, minus the usual hysteria.

walls to hide. Talk about innovating slick effects on a limited budget, this one had cost one dollar and eight cents.

Pre-armed with these conclusions, we continued to build our bag of tricks as we negotiated the complicated logistics that characterized the production.

#### LIMITED SPACE

As production began, space continued to be one of our biggest headaches.

In limited space a small camera would be easier to work with and we were delighted to discover that our Bolex Rex-5 registration was superior to that of the Beaulieu and Eclair. Therefore, although the other cameras were available, most of the footage was shot with our dependable Bolex.

Similarly, all of our equipment was selected for its small size. This was doubly true of our lighting equipment. Not only was space cramped but most of the layouts were in older buildings where electricity was limited and ventilation almost non-existent. Most locations offered no more than 100 amps on five circuits of 20 amps each. The budget did not allow for a generator and, besides, the ventilation couldn't have supported any more lights anyway. With everything fired up in such a small space it would quickly become suffocating.

We generally used four 1000-watt open-faced Mole Richardson quartz lights. Always at least two had to be used for fill light to give us enough blue. The gels were mounted in frames and held several feet in front of each light with Century Stands.

A half dozen 500-watt Mini-Moles were used because their small size allowed us to stick them into places the

larger lights would not fit. Using the highly directional Mini-Moles, a few of which had focusing lenses, we could create pools of light, alternating with shadow. This increased the visual depth and made the models seem as large as life.

#### LENSES

As we began filming, our 5.9mm Angenieux wide angle became the most popular lens. Shooting H O scale, in which one inch equals 7¼ feet, the extreme wide angle lens created perspective and depth while a "normal" lens of 20 to 25mm would give the scale scene a flat, almost telephoto look. We concluded that the 5.9mm had the

psychological effect of a "normal" lens in this scale.

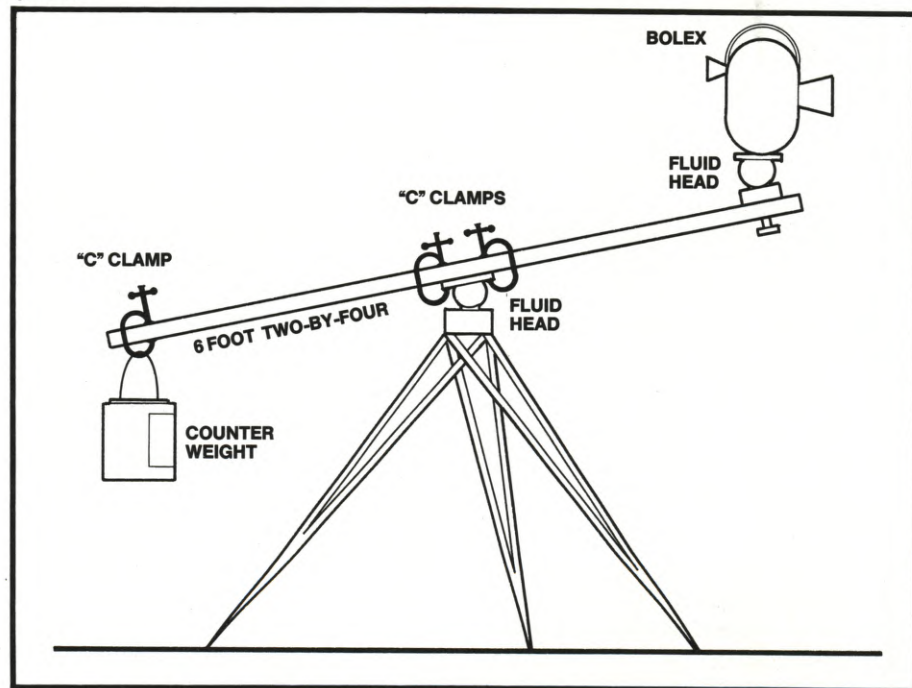
The 5.9mm lens offered an additional advantage with depth of field. Customarily one never thinks about the depth of field of such an extreme wide angle lens, but our subjects were almost always closer than six inches from the lens. Naturally, no depth of field tables existed for this lens and so we calculated one, using the lens formulas found in the *AMERICAN CINEMATOGRAPHER MANUAL*. It showed that anywhere we could get f/8 we would have everything in sharp focus from one inch to infinity.

However, we often lacked the light for f/8, or couldn't use it for fear of melting our subject. In such cases we wanted to focus for a closer distance. Unfortunately, the 5.9mm lens is designed with a fixed focal length which cannot be adjusted. Due to its retro-focal optical design, extension tubes are unusable and the front element is so wide that it would not accept a close-up diopter. Fortunately, we found that by slightly unscrewing the lens from its "C" mount, we could achieve a slightly closer focus.

During such situations, the lens would be somewhat loose in the socket. It had to be very closely protected as the slightest jar could have wrenched the delicate threads of the mount.

One drawback of the 5.9mm was its physical size. We wanted to put the camera on the eye level of a scale-size person, thus projecting the viewer into the scene. However, with a front

FIGURE 1 — Born of necessity, the "Modular Fluid Boom-Arm" was created out of spare parts — including a can of paint as a counterbalance for the camera. Despite its bizarre construction, it made possible many steady and effective boom shots filmed in impossibly close quarters.



(LEFT) The team of young film-makers that created "MODEL RAILROADING UNLIMITED" were resolved to make an attention-getting, upbeat celebration of the hobby — a film with a "totally new breathtaking look." All three pictured here are graduates of the California Institute of the Arts Film School, where they had worked together on other projects. They are (left to right) Rick Harper (director/cinematographer), Larry Wright (in charge of editing, scoring, all post-production) and Robert E. Rogers (screenwriter/special effects cinematographer). The fourth member of the team (not pictured here) was producer Mike O'Connell. With each of them taking on two or three major functions, and filling in anywhere else they might be needed, this small crew was able to create a highly entertaining, witty and visually stunning film under conditions of enormous technical complexity.



(LEFT) Mounted aboard a moving dolly, the Fluid Boom Arm sweeps the camera over a layout by John Olson. (CENTER) This photograph shows only about one-fourth of the train layout of the Pasadena Model Railroad Club which covers the entire floor of a former bowling alley. (RIGHT) Dollying the camera through narrow aisles was a constant challenge.

(LEFT) Director Harper puts a finishing touch on his title rendering. The lettering is lit from behind to give the title a luminescent matte appearance. (CENTER) The "Kitchen sequence", showing a train tunneling through a loaf of bread, is a decided audience pleaser. (RIGHT) Directed with a mixture of tribute and satire, Larry Wright's musical sequence naturally has to have a Busby Berkeley-type overhead "human flower" shot.



element about four inches in diameter, the center of the lens could never be lower than about two inches off the ground. In H O scale this gave our point of view a scale height of 14½ feet. Even when using other smaller lenses, the problem persisted due to the bulk of the camera. Unless we cut a hole in someone's layout, we could never have a low-angle shot.

It is well known that when you photograph an object from below, it will appear larger. Conversely, when photographed from above, it will appear smaller. Obviously, to prevent the models from looking like models, we would have to develop a way of getting low angle shots.

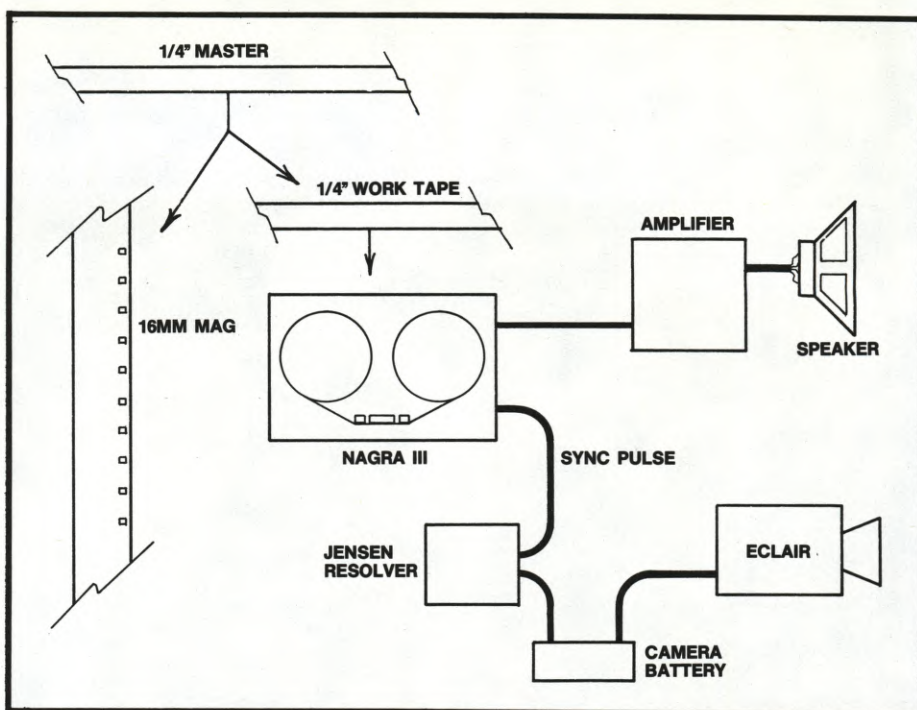
To solve this, special effects designer John Franke designed and built a custom periscope adapter to work with a 55mm macro lens and our Rex-5. With it, we could lower the apparent optical point of view to below ground level.

Although rarely used in traditional model photography, we found that telephoto lenses could also look good. The camera would be placed on the other side of the room and the lens focused through a forest of model trees placed in the foreground. We also applied other "traditional" telephoto shots such as a long focus pull on a subject coming toward the camera.

## MOVING SHOTS

"The shots must move." Everyone was definite about that. My earliest scripts and storyboards called for trucking shots, dolly shots, crane movements and pseudo-helicopter shots, all to be accomplished on H O scale. All previous model railroading films had used predominantly static

Front shots for Mission Control sequence were filmed in garage studio against a background of junk, props and video monitors, but in order to lend credibility to the sequence, the reverse over-the-shoulder cuts were shot at the main console in an actual television studio control room.



**FIGURE 2 —** Of several possibilities, this was the method selected by soundman Glenn Barker for shooting playback scenes of the Musical Sequence. On location the Jensen resolver adjusted the speed of the Nagra III recorder to match that of the Eclair NPR camera, without crystal sync.

shots and as we began production we quickly found out why.

Moving shots face three problems: 1) keeping focus is hard enough when the depth of field is often as shallow as 1/8 of an inch. Movement makes it almost impossible; 2) the aiseways, rarely as wide as 30 inches, cannot be negotiated by the smallest professional dolly (Colortran-29 in. wide); 3) in H O scale a "two block" dolly shot would travel only 15 to 20 inches. Have you ever tried to push a dolly at exactly one inch per second and keep the speed consistent? How about across the uneven floors of the basements and attics where we found all these layouts?

Although adaptable to almost every situation the Colortran Dolly at 29 inches wide and 270 pounds was just too bulky and heavy.

The beautiful Kenworthy snorkel camera was unusable under such low ceilings.

The outstanding monorail dolly system by Ferco was too bulky and too expensive for our limited budget.

Again, John Franke came to our rescue, designing a 26-inch-wide dolly Steering from either end via a detachable "wagon tongue", its no-nonsense design allowed us to attach either a regular or sawed-off tripod and a removable seat. The 32-inch wheel-base turns sharp corners and the wheels at either end can be locked at any angle. In one application the wheels were locked straight and the dolly pulled by rope through the underside of a huge layout during the Run-away Layout segment. The cameraman laid on his stomach, hand-holding the camera for a very exciting ride.

The single most important feature of the Franke dolly was its flexibility. The seat and tripod could each be mounted on the frame in any of a dozen places. Therefore, we could literally rebuild the dolly, customizing it for the unique demands of each shot.

Dolly shots alongside moving model trains were especially challenging as the area being photographed was often only four to five inches wide and sometimes as small as one inch wide. It required that both train and dolly pusher move at exactly the same pace.



Unfortunately, the trains simply could not maintain an even speed. The model railroaders tried to explain something about different circuits controlling different sections of track along a straightaway and varying electrical resistance in the rails. For whatever reasons the trains were always speeding up and slowing down. However, the faster they went, the steadier their speed, and so, in order to keep the dolly and train together, we ran both at a gallop down the narrow aisle.

As if this wasn't enough, there were occasional layout control boards and other obstructions extending out into the pathway. The dolly would frequently clear with less than an inch on either side, while our camera operator would have to remember to lift the elbow of his focusing arm as they passed an obstruction.

The depth of field was usually about 1/4 to 1/8 of an inch deep and the slightest variation in camera to subject distance would throw the entire scene grossly out of focus.

The solution was a combination of practice, multiple takes and the delicate skill of our camera operator, most often Rick, who somehow managed to hold focus and remember to lift his elbow. Luckily for us, Rick has an absolutely magical touch with a camera.

Some of the most breathtaking moving shots were created with a homemade crane. One day Rick and I were frustrated by our inability to crane smoothly over and through the layouts. We declared lunchtime, sent the crew to lunch and then went to work with a few of the odd materials at hand: an extra fluid-head tripod, some "c" clamps and a number of two-by-fours. A few minutes later, we had an ugly but effective crane.

A six-foot-long two-by-four was clamped teeter-totter style across the fluid-head on our tripod. A 1/2-inch hole was drilled in one end of the two-by-four and there we mounted the Miller-F fluid-head taken from our extra tripod. In turn, the camera was mounted on top of this extra head. We looked around for a counterweight and *presto!* An old bucket of paint was "C" clamped onto the other end of the two-by-four.

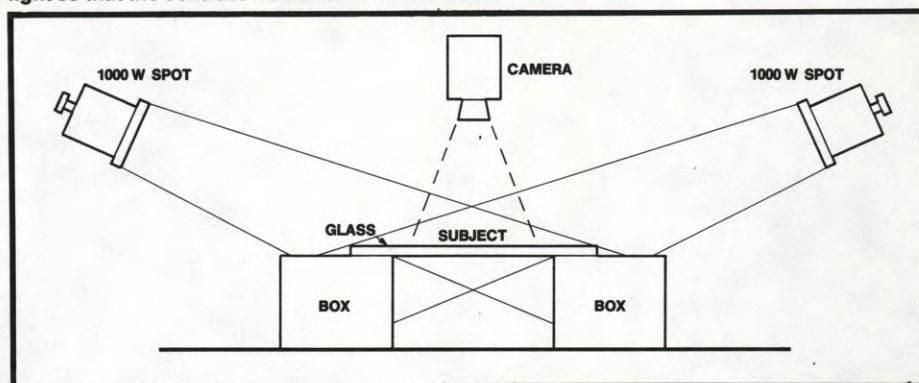
The beautiful double-fluid-head action of this assembly allowed the camera to weightlessly glide through some of the least accessible layout areas, producing some of the film's most outstanding shots.

The effect was so luxurious we began referring to this conglomeration of spare parts as our "Modular Fluid Boom Arm with Hydraulic Counterweight — Hydraulic Counterweight  
Continued on Page 199

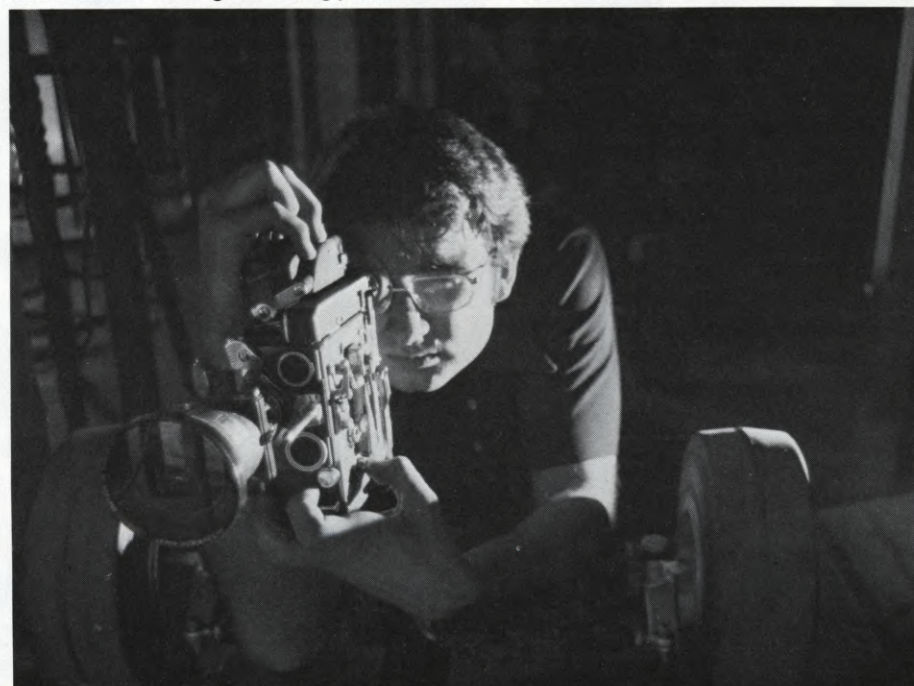


**Doubling as cameraman, screenplay writer Robert E. Rogers lies flat on the Franke dolly, as it is pulled by a rope under a huge model railroad layout. To film this scene, the seat and tripod were removed from the dolly. The four basic crew members doubled and tripled in various functions to get the job done.**

**FIGURE 3 — In the musical sequence, superimposed musical notes bounced across the scene in time to the music. The "dancing notes" were animated on a piece of glass and shot with high-contrast Kodachrome Type B film. The black background was lowered out of the light so that the contrast would remain maximum.**



**An expanding layout plan visibly grows from a basic oval into this complex labyrinth of routes. It was shot in reverse, a frame at a time, with the transparent lines of a three-foot-by-four-foot Kodalith negative being painted out a few millimeters for each frame.**





# 5th TEHRAN INTERNATIONAL FILM FESTIVAL

By **HERB A. LIGHTMAN**

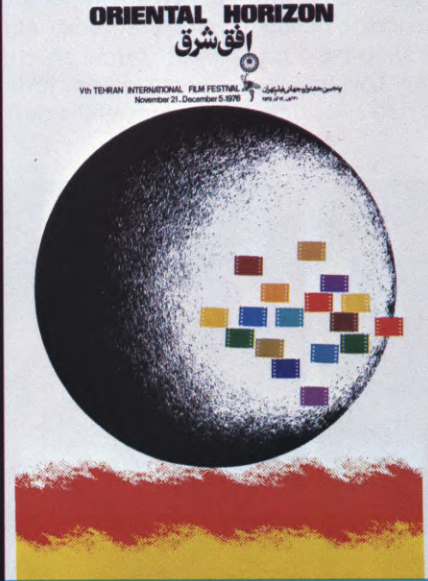
## **TEHRAN, Iran**

All international flights that touch down at Tehran Airport, it seems to me, do so in the dead of night—for such has been the case during the last three years that I've been coming here. This time it's the same—late. But there's nothing somnolent about the Tehran air terminal. It's lively and bustling, crowded with travelers arriving and departing. I check in at the special Film Festival desk, where I am given a warm welcome by the courteous, neatly uniformed Festival personnel. Some of them recognize me from previous visits and speed me through the entry formalities in record time. It's the same at the Hotel Intercontinental when I check in—familiar faces, welcoming smiles, the warmth and

**Continued overleaf**



(LEFT) With the flags of many nations fluttering in front, the Paramount and Cinemonde theatres in downtown Tehran, two of six major screening sites for the Festival, take on a festive air. (RIGHT) Banners publicizing the Festival were displayed all over the city.



As in years past, the various screening series of the Vth Tehran International Film Festival inspired the creation of colorful posters, each of which may be regarded as a work of graphic art in its own right.



(LEFT) A distinguished jury composed of outstanding film personalities from 10 different countries judged the Festival entries in competition. (RIGHT) Among the luminaries present, Marjoe Gortner and Susan Howard, stars of "SIDEWINDER ONE", shown at press conference with the film's producer, famed former Hollywood studio head Elmo Williams.



friendliness of the Iranian people. The Vth Tehran International Film Festival marks my fourth consecutive annual visit to this vibrant land — and it's beginning to feel like home. I'm glad to be back.

The Vth Tehran International Film Festival is launched in a glittering formal opening ceremony at elegant Rudaki Hall, attended by Minister of Arts and Culture, His Excellency Mehrdad Pahlbod, and a distinguished gathering of national and international personalities, cinema figures, film critics and officials.

The opening presentation, a fitting tribute in this year celebrating the 50th Anniversary of the Pahlavi Dynasty, is "THE MAGIC LANTERN", a film

directed by Bahram Reypour and produced by the Ministry of Arts and Culture to document the history of the film industry in Iran.

#### Tehran in Transition

When I have a chance to catch my breath and look around, I am stunned to observe how the city of Tehran has changed just in the past year. With its population now swollen to 4.4 million, it is no longer simply a booming metropolis, but an almost frantic one. There are now, I'm told, almost 2,000,000 automobiles on the streets, and they ooze along coagulated in a vast bumper-to-bumper clot that doesn't seem to thin out much during any time of the day.

Everywhere one looks there is construction going on — buildings being torn down and new ones being built. There is a surge of activity and an accelerated beat to the pulse of the city. All of this denotes progress, I'm sure, but in terms of the Film Festival, I get the impression that this great crush of humanity and vehicles may create a problem for those of us film freaks who must rush from cinema to cinema all day and part of the night in order to view our daily quota of films.

It becomes evident early on that my fears were not unfounded. Even though the Festival Organization has provided an ample number of buses to run frequently and continuously over a shuttle route connecting the various hotels, the Festival Center and the several official cinemas, these vehicles must crawl along in in the amoeba-like embrace of the general traffic jam. This coupled with the fact that the cinemas are more widely spread out than in years past, leads some of us to be late for a screening now and then — and there is no admittance (rightfully) once a screening has started.

Be that as it may, there are positive elements to the scene. I am delighted to see once again the very amiable Bahram Reypour. He is a film writer and director of note, but during the Festival, he lends his talents to the demanding (and thankless) task of functioning as Press Officer. A marvelously kind and patient man, it was he who performed the mind-boggling feat of assembling the numerous film clips and directing the new scenes that went into the opening ceremony presentation, "OUR MAGIC LANTERN", which reviews 50 years of Iranian cinema.

Then there is a warm reunion with Hagir Daryoush, Secretary-General of the Festival, who is by now an old and cherished friend. He is the operating



Among those present: (LEFT) Film actress Dyan Cannon, in Tehran because she had in competition a short film, "NUMBER ONE", which she wrote and directed as part of an American Film Institute project. (RIGHT) Famed American film director Mark Robson (whose most recent production was "EARTHQUAKE"), in Tehran as the Jury member representing the United States.

(LEFT) Crowds of people (as in years past, all young and mostly male) line up outside the Paramount cinema to buy tickets to one of the screenings. Iranians are avid moviegoers and most screenings were quickly sold out. (RIGHT) Black-tie audience begins to fill Rudaki Hall for the glittering opening ceremony. Unable to be present, due to an indisposition, was the Empress of Iran who, as patroness of the Festival, traditionally opens the event.





head of this sprawling event, and it's an ulcer-producing job. I can only marvel at how well he manages it year after year — confronting one crisis after another, solving multiple (and simultaneous) problems, coping with assorted prima donnas and soothing inevitable ruffled feelings. I don't envy him the chore.

#### A Feast of Film

A perusal of the Festival program reveals that there are many top-drawer elements to this year's event. The jury itself is "Blue Ribbon" in every respect, and it is comprised of: Shabana Azmi (India), Mario Cecchi Gori (Italy), Andre Delvaux (Belgium), Bert Haanstra (The Netherlands), Arthur Hill (Canada), Andras Kovacs (Hungary), Vladimir Naumov (USSR), Emanuelle Riva (France) and Mark Robson (USA), with Abdol-Majid Majidi presiding.

The roster of individual film programs this year is particularly impressive. These include "Flight of the Winged Ixob" (the 23 features and 28 shorts in competition), "Cinema Has Eyes and Ears" (14 features and three shorts of a documentary or semi-documentary nature), "Oriental Horizon" (14 features and six short films from countries to the east of Iran), "America: A Self-portrait" (a salute to the United States Bicentennial, comprised of 14 classic American features), "Federico Fellini: The World of a Magician" (16 features by the famed Italian director), "Douglas Fairbanks, Sr.: Dream Factory Idol" (16 features and six short films featuring the swashbuckling star) and "Buster Keaton: The Sentimental Face" (11 features and 23 short films starring Keaton). Grouped under the latter program are five features and four short films of Harry Langdon.

All in all, it's a mouth-watering *smörgåsbord* of film fare.

Continued on Page 210



The Empire cinema (LEFT) and the Atlantic cinema (RIGHT), two of the six theaters designated as screening sites for Festival films. A major problem this year was the lack of uniformity in quality of projection. In some of the cinemas it was fine; in others, unsharp and too dim. Festival authorities, aware of the problem, hope to have better control of the facilities next year in Isfahan.



Among those present: (LEFT) Director Otto Preminger and his son Eric. Preminger had two of his best films ("ANATOMY OF A MURDER" and "ADVISE AND CONSENT") screening in the "America: A Self-Portrait" program. (RIGHT) Welcomed on stage was American director Richard Lester, following the screening of his film shot in London, "THE RITZ".

(LEFT) At the opening ceremony in Rudaki Hall, foreign guests receive a warm welcome from Minister of Arts and Culture, His Excellency Mehrdad Pahlbod. (RIGHT) Noted Iranian writer/director Bahram Reypour (on phone at left) assumed his annual chore as Press Officer of the Festival. He also directed "OUR MAGIC LANTERN", the opening presentation which highlighted 50 years of Iranian film production.





One of the greatest problems in shooting "MODEL RAILROADING UNLIMITED" arose from the sharply restricted working space available. The best train layouts were permanently installed in remote attics or basements where ceilings were always low. These photographs illustrate one approach to solving the problem. (LEFT) BEFORE: Low ceilings and ugly wall in the background would have ruined a scene such as this. (RIGHT) AFTER: The unsightly ceiling and wall were effectively eliminated from the scene by selectively applying Vaseline to a front-mounting filter, creating an ethereal effect.

(LEFT) Writer/cameraman Robert E. Rogers runs the camera, which is equipped with a video parallel system during a dolly shot in which the girls dance alongside the moving train. Musical sequence director Larry Wright watches from the right. (RIGHT) Actor Mitchell Giannunzio doesn't appear to be too sure about Ward Kimball's lesson in symbol crashing. Academy Award-winning animator/producer Kimball, an enthusiastic train buff, has restored three full-size steam engines which he runs on a short span of track in his large backyard.



(LEFT) Extreme closeups often brought the 5.9mm lens within an inch of the subject. (RIGHT) Working in close quarters, Rogers checks the framing for a "crane" shot. Filming the model train layouts was a constant challenge. The installations were invariably nailed to the floor, so that moving them to a studio was out of the question. There was very little floor space. The aisles winding through the layouts were rarely more than 30 inches wide and frequently as narrow as 18 inches. Still, the camera was kept moving, lending the entire film a great feeling of fluidity.



## "MODEL RAILROADING" Continued from Page 193

Fluid available in 31 colors." We made jokes about hypothetical rental prices for the assembly.

The "M.F.B.A." became part of our standard equipment and was used several times in our Musical Sequence, mounted aboard the moving dolly.

### BACKGROUNDS

Another example of on-the-spot technical imagination involved the creation of backgrounds for our sets. In one case where the layout was small and portable we created a night scene, blacking out the background and using a 250-watt Mini-Mole with a top hat pointed at the camera to create a moon.

In another instance, a sunset was created by rear projecting a 35mm slide of sunset clouds onto a suspended sheet of drafting vellum. In keeping with our no-frills budget, we used a standard Ektagraphic slide projector. Because the size of the projection was small (about three feet wide) the image cast by the Ektagraphic was bright enough for an excellent exposure. The effect was outstanding and the only out-of-pocket costs were the slide and the sheet of drafting vellum.

On at least one occasion a background sky scene had to be created. Here in a void between two mountains we intended to create a sunrise. As usual, we improvised with the materials at hand.

The camera with the 5.9mm lens was securely locked in place and a white bed sheet was stretched behind the mountains, just filling the void. The sheet was steamed to remove the

wrinkles and then Rick gave it a few horizontal strokes of black spray paint to create a suggestion of clouds.

Slowly ascending over the horizon, our rising sun was portrayed by a common photo spot bulb, fitted with a "coffee can" and pointed directly at the camera. This "sun" was attached to the handle of our extra fluid head tripod to make its rise smooth and steady.

As usual, all the key light sources were given amber or straw colored gels. A few orange sources were focused onto the black-streaked sheet and a few others pretended to be sunlight on the mountains. The fill lights were colored blue and set at 2½ stops brighter than the incident readings of our key sources. The exposure was set for the key lights alone, leaving the blue fill 2½ stops overexposed.

On our white sheet background the blue fill and orange key light mixed. Because the orange key was placed close to the bottom of the sheet, its intensity fell off toward the top of the sheet. As the two colors mixed, this created a color graduation that ran from pink at the top, to orange, to yellow, to white at the bottom, creating a very convincing sunset.

The overall levels of our lighting were kept as low as possible so that a 6-watt lamp in the headlight of a 1½-inch-high engine would seem bright as it chugged past the camera.

Although it runs for less than thirty seconds, the sunrise took a full day to film, due mainly to the problems of space. For example, to get from the "sun" side of the set to the camera side we had to crawl under the layout on hands and knees. We made about twenty takes, each with slightly different lighting. When we saw the finished product, we knew it had been well worth the effort.

Serving as host for the film, producer/ animator Ward Kimball appears as the Old Railroader, a retiree who relives the old days through his hobby of model railroading. Shown here in his "roundhouse", Kimball steams up one of his smaller engines, so that the girls can be filmed dancing alongside it in the Musical Sequence.

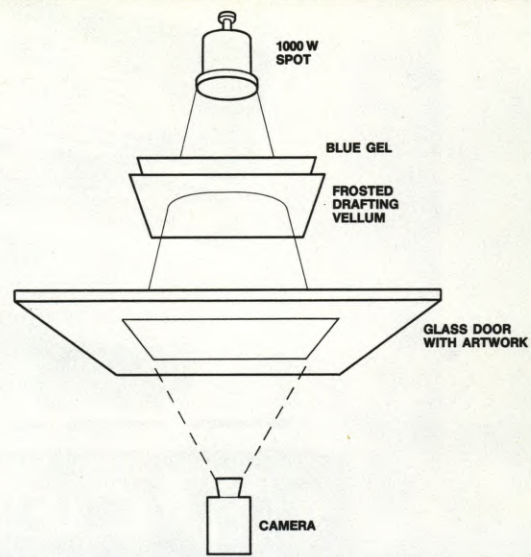


FIGURE 4 — The "Expanding Layout" animation was shot in reverse, with the art work mounted on a glass door.

### RUNAWAY LAYOUT

The most difficult segment to film was "The Runaway Layout" in which the world's largest computerized super layout goes haywire, sending all its trains out of control, careening toward mutual self-destruction. Throughout the film we've watched as our "Beginning Railroader" (played by Mitchell Giannunzio) starts out in the hobby and gradually develops until now he is the Chief Dispatcher of the super layout. The runaway crisis provides the climax of "MODEL RAILROADING UNLIMITED".

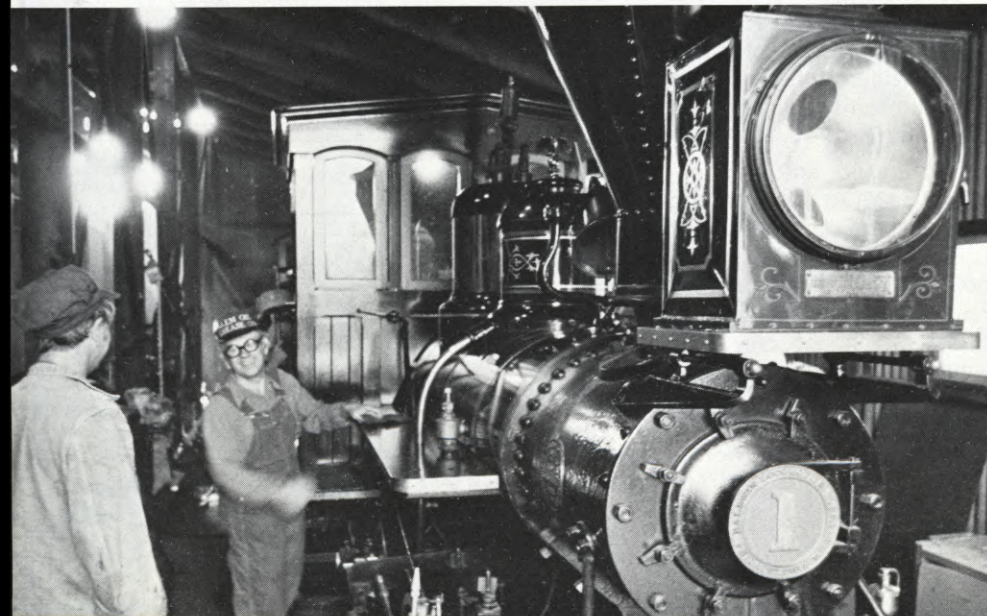
In retrospect my screenplay has a dramatic structure unintentionally similar to "SINGING IN THE RAIN". It begins with comic blackouts and outright nonsense, eventually becoming a full-on musical comedy, then pauses for a brief touch of Art with a capital "A", before climaxing in high melodrama. There's something for everyone.

In the melodramatic climax, our Beginning Railroader must single-handedly avoid all collisions and save the huge Super Layout.

Actually, the larger layouts *do* have many miles of track and can require up to seventy or more people running as many as 100 trains during full operation. These layouts cover vast areas, such as the Pasadena Model Railroad Club which takes up the entire floor of a former bowling alley in Alhambra, or the Pomona Railroad Club which fills the giant cavern under the stadium at the Pomona State Fair Grounds.

Lacking the light to cover a layout the size of a bowling alley, we instead used pools of light, which created more depth.

In the wider shots the trains had to be carefully choreographed to run through the shot at the right moment.





Academy Award-winning producer/ animator Ward Kimball proudly displays one of the miniature railroad cars from his sizable collection. A genuine train buff, who has actual full-size locomotives running around his vast backyard, he enjoyed participating in this filmed tribute to his hobby.

About eight "engineers" ran two or three trains each. These had to be lined up at pre-calculated starting points so that when they were all started at once, each would arrive in the scene when wanted.

In spite of their sophistication the actual control panels of these layouts didn't look sophisticated to a layman. Therefore, we created a "Mission Control" in Larry Wright's garage, using an odd assortment of props and junk.

The back wall of this set consisted of a bank of video surveillance monitors, courtesy of Charles Malcolm and Associates. The monitors showed footage taken at one of the large layouts.

Above the monitors we created a "Big Board" track diagram. A large cardboard box was painted black and track lines were made using yellow masking tape. Junction points were numbered with press-on letters and a string of flashing Christmas tree lights were poked through from the back side. A few shadow boxes completed the scene. These were covered with drafting vellum on which an electronic-looking pattern, or in one case some red numbers, had been painted.

We put a headset on actor Mitchell Giannunzio, sat him in front of this collage and it looked great.

To insure that the audience would "buy" this set we shot two over-the-shoulder shots of Mitchell seated at the main console in a television studio control room under identical lighting. Once this setting had been established, audiences accepted our home-made background. The overall effect on film is totally convincing; it really looks like a \$20,000 set.

## MUSICAL SEQUENCE

The "Musical" sequence was one of the most enjoyable to shoot. It occurs early in the film and shows the Beginning Railroad wanderer into a hobby shop, only to be overwhelmed by a dozen dancing girls, singing about the delights of model railroading. Refusing to be bound by the hobby shop setting, the sequence director, Larry Wright, had girls tapping their way down hobby shop aisles, dancing on full-size trains and even hoofing alongside a full-size moving steam train.

As we began planning the scene, our first move, as usual, was to look through our back issues of *AMERICAN CINEMATOGRAPHER* for technical help. Mainly we wanted to know how to set up for shooting on playback, allowing the girls to dance to the pre-recorded music being played in sync with the camera.

Surprisingly, no one was sure exactly how this should be done and apparently there are several approaches. For the benefit of other readers who may have the same problem, here's how we did ours:

Our music and vocals had been mixed down to a ¼-inch original with a sync pulse. From this our sound man, Glenn Barker, made two ¼-inch work copies, with duplicate sync tones resolved to the original during their transfer. Although only one work tape would be used, Glenn made the second as a precaution against possible damage on location.

On location, the work tape was played back over an amplification

system while a Jensen resolver compared the sync pulse coming from the Nagra III with the sync pulse from the Eclair. The Jensen then resolved the two by adjusting the speed of the tape recorder to match the camera.

Instead of the above, had budget allowed it, we could have used crystal sync camera and recorder and eliminated the Jensen resolver.

Larry elected to sync the scene up by eye although instead we could have placed a "One, two, three, 'clap'" on the master recording. Then, while shooting the scene, we would have closed a slate to match the pre-recorded "clap" as it was played back.

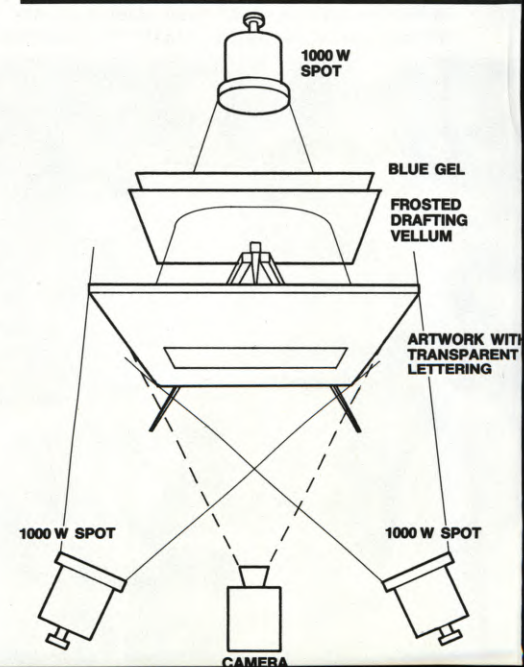
During the Musical sequence we depended on a very economical video parallel system by Charles Malcolm and Associates of Costa Mesa, California. Using a special mounting plate a Sony Portapack camera was attached to the side of our Eclair. Although the arrangement was not reflexive, the two fields of view were adjusted to match as nearly as possible. The Malcolm system wasn't designed to show the exact image recorded on film but it admirably accomplished our two goals; it allowed a quick check of the action and provided a reference for later synchronization of picture and sound.

In addition our stage choreographer, Shelli McReynolds, doing her first film, found the video an excellent aid. The video let her see the perspective tricks played by the unfamiliar camera. She was then able to adjust her choreography to the camera's advantage.

The back yard of Academy Award-winning animator/producer Ward Kimball provided the most interesting

**Continued on Page 224**

FIGURE 5 — The luminescent matted title effect utilized colored back light showing through cut-out letters.





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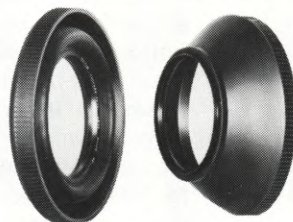
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# A WORD WITH THE ADMINISTRATOR OF THE Vth TEHRAN INTERNATIONAL FILM FESTIVAL

A man of outstanding taste, intelligence and sophistication, Hagir Daryoush, Secretary-General of the Tehran International Film Festival, has been actively instrumental in elevating Iran's annual film-fair to the very top ranks of international cinema events during the four years that he has been its chief administrator.

The urbane, cosmopolitan Mr. Daryoush, who speaks English and French fluently in addition to his native Farsi, has the requisite world-view to head a significant artistic happening that is "international" in the very fullest sense of the term. But more important than that, he harbors a deeply felt passion for the film medium itself.

Since the age of 15 Hagir Daryoush has been almost completely absorbed in the film industry, contributing to it in a variety of ways — as writer, editor, director, bureaucrat and administrator. As a director, he is represented in the review of Iranian cinema's first 50 years by three films — two shorts and one full-length feature film. One of the shorts, entitled "THE SACRED PIT", presents a picture of the Zurkhaneh or "House of Strength", a traditional Persian show of athletic exercises performed to the accompaniment of religious chanting. The other two, a short called "THE SNAKE SKIN" and feature called "BITA" deal with the problems of women in a traditionally male-dominated society.

In the following interview for *American Cinematographer*, Mr. Daryoush discusses the progress of the Tehran International Film Festival to date and his hopes for its future:

**QUESTION: I'd like to ask you how you feel the Tehran Film Festival has developed during the past year and where you think it's going from here.**

*DARYOUSH: It has grown too big for Tehran. Speaking in terms of the future, we intend to move it to Isfahan definitely for next year. But as for this year's festival, I have never before been so satisfied with the overall quantity and quality of the film programs. Especially in the Competition section, I feel that we have been able to present the best general level of quality of any film festival in 1976 — and this in spite of tremendous difficulties.*

**QUESTION: What sort of difficulties?**

*DARYOUSH: The Festival tries to bridge the gap, so to speak, between the advanced film industries and the emerging film industries. But now, more and more, we are confronted with two major problems. The advanced industries are becoming increasingly controlled by lawyers and bankers, not by people who have any passion for films. This affects the general quality of production, because the lawyers and bankers, of course, do not give a damn about whether a film is bad. They just care about whether or not it makes money. Of course, it is essential to make money with films, but in the past there were those heroic, legendary tycoons in the Hollywood film industry who had a real, profound, burning passion for films. Now you just don't see that sort of people anymore. The second problem is that in the emerging film industries — those belonging to the so-called "Third World", for example — there is such a tremendous gap between the mentality of the film-makers, those who are trying to say something valid, and the official mentality. Bear in mind that in those Third World countries the government mentality affects the film industry in a way that you could not imagine in the States. This, I understand, may seem like Chinese to your readers, but it is an actual fact. As a result, the creative output and the nervous energy of film creators in the Third World countries is wasted in this confrontation with the official mentality. I'm not talking about a lack of adequate equipment or lack of technicians (which, after all, aren't really important), but rather this other factor, which is important in a negative way — so much so that this year, apart from one or two exceptions, we haven't had anything valid from the new film industries. But it is also a fact that in countries like the United States and Italy, to cite two examples among several, there is a new surge of creativity, in spite of all the lawyers and bankers — which is fantastic! I congratulate and salute these film creators and I hope that the Festival this year has been able to show that in these two countries, and several others, a new golden era has started in Cinema.*

**QUESTION: I have had the strange feeling this year that the Festival has been conducting a sort of "holding**

**action" against the booming growth of the city of Tehran itself. Is that valid?**

*DARYOUSH: Yes it is. Many of the problems have been imposed by the city of Tehran and some, perhaps, by the fact that we inside the Festival Organization have not, unfortunately, been able to cope on an organizational level with the rapid growth of the Festival within the framework of the rapid growth of Tehran.*

**QUESTION: If things could be arranged in an ideal fashion for this Festival, what would you like to see done to improve it?**

*DARYOUSH: The very things we hope will be effected when we move to Isfahan. For example, Isfahan is an artistic city, and by "artistic" I don't mean simply the architecture and art that are evident everywhere in the monuments and buildings. I also mean that the population is artistically inclined. For instance, many of the traditional Persian arts, even today, come from Isfahan. And so, theoretically, Isfahan is a better frame for a film festival than*

**Continued on Page 222**

**From stage of Rudaki Hall, Secretary-General Hagir Daryoush offers progress report during opening ceremony of Vth Tehran International Film Festival.**



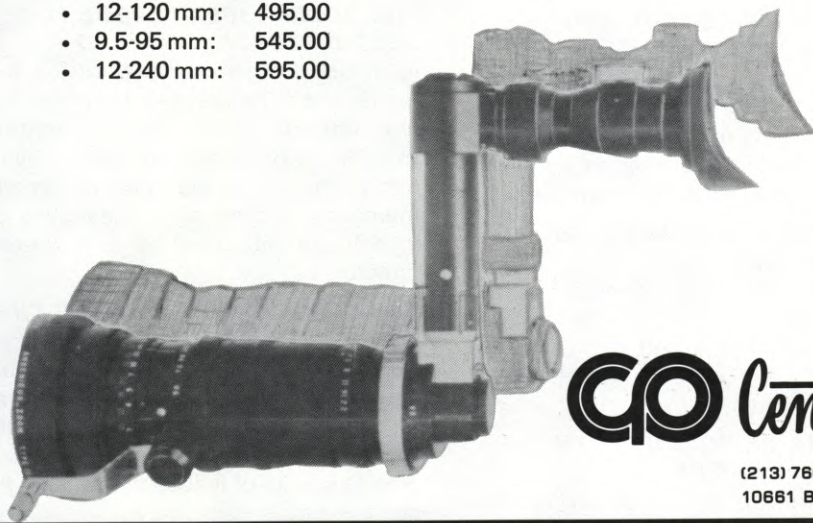
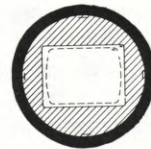
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# AWARDS OF THE V<sup>TH</sup> TEHRAN INTERNATIONAL FILM FESTIVAL

The Jury of the Vth Tehran International Film Festival, composed of:

*Shabana Azmi* (India), *Mario Cecchi Gori* (Italy), *Andre Delvaux* (Belgium), *Bert Haanstra* (The Netherlands), *Arthur Hill* (Canada), *Andras Kovacs* (Hungary), *Vladimir Naumov* (USSR), *Emanuelle Riva* (France), *Mark Robson* (USA), and presided over by *Abdol-Majid Majidi* (Iran), viewed 28 short and 23 feature films in competition.

According to the Festival regulations, up to eleven Prizes and Diplomas of Honour could be awarded. However, finding that a greater number of films deserved recognition, an increase in the number of Diplomas of Honour was recommended by the Jury.

The Jury decided to award the following prizes:

## SHORT FILMS

### DIPLOMA OF HONOUR WITH SPECIAL MENTION

to the Belgian film *Agulana* directed by *Gerald Frydmann* for its expression of modern anxiety through a powerful surrealistic style.

### DIPLOMA OF HONOUR WITH SPECIAL MENTION

to the Czechoslovak film *The Island of Crabs* directed by *Vaclav Mergit* for its cinematic maturity in describing, with strident humour, the dangers of mechanized life.

### DIPLOMA OF HONOUR WITH SPECIAL MENTION

to the Yugoslav film *Overture 2012* directed by *Milan Blazekovic* for its technical prowess in treating the contemporary problem of noise pollution.

### DIPLOMA OF HONOUR WITH SPECIAL MENTION

to the Yugoslav film *One Day of Raiku Maksim* directed by *Zlatko Lavanic* for its success in depicting the lyrical simplicity of the life of a man at peace with himself and his environment.

### THE SPECIAL JURY PRIZE OF THE GOLDEN IBEX PLAQUE

to the Polish film *Fire* directed by *Witold Giersz* for the novelty of its technique and material in the art of animation, and its contribution to the ecological struggle.

### THE GRAND PRIX OF THE GOLDEN IBEX STATUE FOR BEST FILM

to the Dutch film *Shadow of a Doubt* directed by *Rolf Orthel* for its penetrating investigation of a human tragedy through which problems of collective guilt and personal respon-

sibility are vigorously posed.

## FEATURE FILMS

### DIPLOMA OF HONOUR WITH SPECIAL MENTION

to the American film *Welcome to LA* directed by *Alan Rudolf* for its fresh look at one of the most photographed of all cities, the novelty of its organic blending of music and image and the quality of the performances.

### DIPLOMA OF HONOUR WITH SPECIAL MENTION

to the Bulgarian film *Doomed Souls* directed by *Vulo Radev* for its profound understanding of the emotional and spiritual problems of man trapped in a specially poignant human conflict.

### DIPLOMA OF HONOUR WITH SPECIAL MENTION

to *Marta Meszaros*, director of the Hungarian film *"Nine Months"* for her command of style and expression in depicting the intimate problems of modern woman.

### DIPLOMA OF HONOUR WITH SPECIAL MENTION

to the Iranian film *The Divine One* directed by *Khosrow Haritash* for its forceful rendition of a philosophical tale and the visual brilliance of its ritual style.

### DIPLOMA OF HONOUR WITH SPECIAL MENTION

to the Belgian film *God Wills it So* directed by *Luc Monheim* for the magic the director has brought to an unusual tale set in medieval Belgium and his keen eye for scenery and composition.

### THE GOLDEN IBEX PLAQUE FOR BEST PERFORMANCE BY AN ACTOR

to *Alain Cuny* in the Italian film *"Irene"*,

for his originality and singularity of expression in a role demanding great dignity and serenity.

### THE GOLDEN IBEX PLAQUE FOR BEST PERFORMANCE BY AN ACTRESS

to *Lily Monori* in the Hungarian film *"Nine Months"* for her total involvement and richness of expression in portraying the life of an independent woman.

### THE GOLDEN IBEX PLAQUE FOR BEST DIRECTOR

to *Nikita Mikhalkov*, director of the Soviet film *"The Slave of Love"* for the fine control of the film's complex rhythm, the originality and sensitivity of approach, the daring spirit of experimentation, and the superb handling of a delicate situation by this young director.

### THE SPECIAL JURY PRIZE OF THE GOLDEN IBEX PLAQUE

to the Dutch-Indonesian film *Max Havelaar* directed by *Fons Rademakers* for its unusually balanced and exquisite treatment of the true adventure of a man in search of justice during an ugly colonial era.

### THE GRAND PRIX OF THE GOLDEN IBEX STATUE FOR BEST FILM

to the American film *The Front* directed by *Martin Ritt* for the superior overall quality of the film, its success in effectively communicating its universally accessible message of liberty, never losing its sense of humour while treating an extremely grave and tragic historical event. The Jury wishes to point out that the superb script by *Walter Bernstein* and the quality of the performances, specially that of *Woody Allen*, have rendered the film all the more efficient. ■

At the closing ceremony of the Vth Tehran International Film Festival, held in Rudaki Hall, Empress Farah Pahlavi presents the coveted Golden Ibex statuette, awarded to the American production, "THE FRONT", which the international jury chose as the best feature film in competition.





## PHOTOGRAPHING "ROCKY" Continued from Page 185

said before, we pushed all the interiors one stop and worked at a level of 100 footcandles, shooting at f/4.5.

At the Sports Arena we supplemented our lighting with the high-intensity follow spots which they already had installed there — incredibly huge things that they use for ice shows and such. It was a boon not to have to get involved in installing our own follow spots. In the fighting sequences we used quite a bit of the existing light that comes from the overhead units that are built into the ring, and we augmented with some photo-flood bulbs and Babies that we stuck into the drape of the ring. We used only incandescent light inside the arena and never went beyond pushing one stop. The only arcs we used were Brutes for booster light outdoors.

Since we had our huge crowd for only one day, we had to plan our shots pretty carefully in order to make them intercut. Some days we had as few as 50 people, but we had to produce the effect and create the impact of the Coliseum filled with thousands of people. That was probably one of our biggest problems.

We used the Cinema Products XR-35, which I like, as our production camera, plus some Arriflexes. We used the Arriflex 35BL for almost all the dialogue sequences in the ring where the fighters are talking to their seconds in the corner. There was not as much hand-held shooting as I thought there might be. Then Garrett Brown showed up with his STEADICAM, which is quite spectacular, and what he shot represents the only really substantial hand-held footage that appears in the picture.

In order to photograph some of the fight scenes, Garrett Brown, wearing his STEADICAM, was pushed around the ring in a cart.



Director Avildsen and Cinematographer Crabe pose for the still photographer on the set of "W.W. AND THE DIXIE DANCE-KINGS".

The meat-packing sequence was shot at one of the big plants in east Los Angeles and there we used a little more bounce light, because the nature of the beast was overall illumination. That was one of the places where the STEADICAM was used extensively and the lighting had to be a little less directional in order to avoid camera shadows. The plant interiors had a lot of fluorescent lights already installed, so there were occasions when we had to use blue light to balance and to avoid getting involved in a lot of filtering of the fluorescent sources. We used the fluorescents and blue lights and we bounced a few lights around and used some cross-lights and kickers.

One thing that we tried to do always was avoid that kind of one-source soft-light effect. We tried to work in whatever kind of light seemed appropriate to the mood of the sequence. When working with John Avildsen previously on "SAVE THE TIGER", I did a lot of things with just bounce light, using white cards and nine-lights, but on "ROCKY" we were striving for a little bit more of a key-light look and modeled effect.

Each time you do a film you try to embroider it with something a little new and just a bit different from what you've done before. So often, when I am prepping a picture in advance, I find myself thinking about a certain effect and searching for some way to get it — maybe even designing some special lighting units that might work — but when you come down to the nitty-gritty of it, you usually end up using conventional lighting units, with maybe an umbrella light standing by. I don't mean to say that we are always emulating the older techniques, but there is something to be said for key-lighting and the use of harder lighting units. I think that the trend now is to find an average between the very soft-light "natural" look and what might have been termed the "Hollywood key" look. It's just a little bit of everything. All of these various techniques are tools, and there's nothing to dictate that one must always use one kind of lighting and not the other. I think that the main thing to say about "ROCKY" is that we were always prepared to do anything. We could have gone into a place and just thrown up soft lights and bounced stuff around, but the nature of most of our interiors — which were, after all, moody night interiors — was such that we chose key lighting and used small quartz units and Babies to achieve those effects.

A lot of our most effective and exciting shots were done with long lenses, which tend to compress the

action. There were a couple of the classic long lens shots, one in which he's training with his dog and running toward us, for example. That one was done with an 800mm lens, as I recall. We also found that in the filming of the fight sequences, the long lenses enabled us to shoot with three cameras without photographing our own cameras, since we sometimes shot with cameras surrounding the ring on three sides. Even though the action was carefully planned and choreographed, a certain amount of accidental things do happen when people are in the fury of the fray. We kept our cameras pretty far apart, but we shot on three sides at the same time, because you never knew if a blow was going to connect or not on the screen. By having different angles, we were able to get proper connection of the fist with the jaw, and shots that looked right without having to plan all of them. In the one-camera situation, you have to have your camera in exactly the right place to get a proper angle, but this kind of action is so fast and furious that even though the actors did repeat their action remarkably well, there was no such thing as being able to put marks on the floor and have them hit exact positions.

We used zoom lenses on all of our cameras and I don't believe we ever took them off. Nowadays that's more or less standard technique, since the quality of zoom lenses is evidently approaching that of hard lenses. I'm aware that statement is debatable and probably refutable in terms of sheer mathematics, but what actually worked out in practice was that it was very expedient to use 10-to-1 zoom lenses on our cameras, so that during the

Continued on Page 221



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"ONE-MAN-BAND" ON HOKULE'A  
Continued from Page 155

of existing light sources on the canoe, such as cooking fire, flashlights, etc. We were counting on Dan Sandberg's Chemtone 500 at TVC Lab in New York to pull us through the dark nights.

Somewhere during the planning stage of the project we became obsessed with the *two-of-everything* policy that we were to follow all the way through to the end of the project. In addition to the second 16SR to be carried on the escort boat as a back-up, we acquired doubles and triples of almost every item of equipment we had. Our reasoning was that the middle of the Pacific Ocean was no place to get a quick replacement. We even provided a second cameraman. Joe Seamans, who worked through much of the project as assistant cameraman, went along on the escort boat to do the boat-to-boat filming, but more important, to take over as canoe cameraman in case of emergency. Since he was so close to the project and so familiar with the specialized equipment, he was the natural selection as alternate for the canoe. And to back him up we took along assistant cameraman Ed George, who also did much of the in-the-water filming, as well as production stills. If the cameramen were the offense of the team, however, then our sound-man, John Butler, was the defense. What we broke, he fixed. What we lost he replaced. When all else failed, he came up with something. If our two-of-everything didn't work, he was the final fall-back position.

### THE VOYAGE

Final packing of the canoe for the voyage was done in Maui. I had the same problem everyone else on the crew did, too much stuff. My compartment was approximately five feet long, three feet wide and four-and-one-half feet high, and was split into two levels. The top level was for sleeping and the bottom level for storage, with a hatch connecting them. With the hatch secured, the lower compartment was supposed to be watertight, but in fact it wasn't, with small leaks everywhere. The sleeping compartment above was quite wet. All camera equipment and personal items were stored below on shelves which kept everything above the bilgewater, and below the splash and runoff above. Everything was damp all the time and the compartment could get very hot.

In order to have the camera and sound unit ready for action, I tried to keep it on deck in a case, but this really was never very successful, as the case

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was always in the way and in danger of being knocked around. Also, it was just too wet on deck. I finally settled for keeping the camera and sound unit at the ready below and hauling it up when I wanted to shoot, but this took a couple of minutes and I was always in danger of losing the beginning of an action sequence. This sometimes meant holding the camera and sound unit on deck for long periods. The camera harness helped a lot during these periods.

#### PERSONAL LOG:

*Sat, May 1:* The canoe departed Maui this afternoon. Shot about 200' of departure, including shots of crew pumping water out of the leeward hull. My sleeping compartment is very wet but the storage area below is dry. Camera seems safe. After dark, can see lights of Lahaina in distance.

*Mon, May 3:* Canoe is not sailing well. Too much water leaking into the hulls and too much weight forward. We are trying to clear Big Island. Crew still pumping out hulls. Filming is difficult. The deck is crowded with crew and food and gear. Also, it's hard to get in and out of my compartment with camera and sound rig. Just not enough room.

*Wed, May 5:* Trying to keep camera on deck for quick access, but not working. Everything gets piled on it and it's being drenched with water.

*Friday, May 7:* Rope support broke on port steering paddle last night but could not get film, as portable light was inaccessible below. Will try to store light on deck. Also missed shots of crew repairing leaks in starboard hull as I was asleep.

*Sat, May 8:* Transferred film and tape to escort boat today, and Joe reports that I am getting good sound on COMBO unit. That's a relief. Sleeping wet is getting boring. Must find a better way.

*Wed, May 12:* Discovered maggots crawling out of the hard poi stored in my compartment today. Poi was dumped overboard. Crew has repaired many of the leaks in hulls and canoe is now lighter in the water and sailing better.

*Sat, May 15:* Having trouble with both COMBO units. Trouble seems to be with the wiring. I guess two weeks of hard shooting has taken its toll. Camera is working OK. I have taken some hard knocks. Will have to take it easier.

*Sun, May 23:* Crossed equator today, and after three weeks have mixed feelings. On one hand I wish the voyage would end soon. But on the other, am afraid it will be over too soon. Crewman John Cruz put it well today. Said

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*Wed, May 26:* Awakened to find crew in water scraping growth off hull. Got gun camera ready to go into water but crew was scared out by four white-tipped sharks that came in for a close look. Missed another one.

*Friday, May 28:* Tomorrow makes fourth week. Everyone is getting edgy. Speed OK but course is bad. Might miss Tahiti, then what? Caught tuna for lunch. COMBO not working. Tried to transfer to chase boat for repair but too rough. Finally made transfer. Hope John can fix it this time.

*Mon, May 31:* Rotten night. Wet and rough. Fish for breakfast. Got good bow shots with gun camera. Tahiti getting closer but we are still on bad course. May have to tack back and try to find the island. Food and water getting low. This could get interesting.

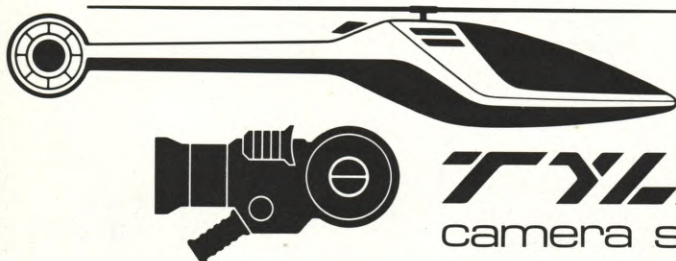
*Tues, June 1:* ISLAND: Came upon low atoll about 4:00 a.m. — can't identify. Sunrise — island is Mataiva, westernmost in the Tuomoto chain. Terrific. Navigation experiment a great success. Tahiti now to leeward about 130 miles. Islanders come out to welcome us ashore. Spend whole day eating and racing around island. Getting good film. Like a scene out of "MAD, MAD, MAD, MAD WORLD".

*Wed, June 2:* Leave for Tahiti. Wind fair and course good. Plan to arrive Tahiti Friday, national holiday has been declared. Big welcome planned. Should be a great spectacle.

*Friday, June 4:* French Naval destroyer out to meet us. Helicopters also. Now many planes and boats. And here comes a fleet of Hobie-Cats. Island getting larger and larger. Then into harbor and met by outrigger canoes. I have never seen so many people, and boats. We have prior agreement to only shoot the arrival and the greetings. Have to stop somewhere. And suddenly it's all over. And we go ashore.

### SUMMARY:

In the final analysis, the canoe voyage was successful and so was our attempt at filming it. Just about everything went wrong that could but we still got the film shot. I sometimes wish we could have gotten more exciting film of the voyage, but then, the voyage was not that exciting on the surface. The real excitement exists in the minds of the crew who made the journey. And as it so often does, it will fall to the editors to tell their story and their excitement. I feel we were as true to the real story of the voyage as it is possible to come with the documentary approach. ■



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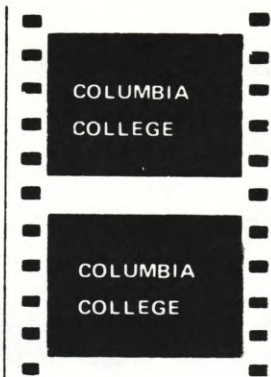
**CINEMA WORKSHOP**  
Continued from Page 132

Thomas Edison).

While the compressor/expander is a relatively simple and direct concept, the electronic execution of the theory is quite complex. Manipulating the signal with a 2:1 compression and a corresponding 100% expansion can get quite hairy if precautions are not taken. A block diagram of a "dbx" unit appears in FIGURE 2. The heart of the system (and a breakthrough for "dbx") is the Voltage Controlled Amplifier (VCA) and the Root Mean Square (RMS) detector. Essentially the RMS detector monitors the incoming signal and controls the VCA. For example, if the RMS detector senses that the signal has just increased in volume by 10 dB, it calls for the VCA to *reduce* its gain in such a way that the 10 dB louder passage comes out of the VCA being only 5 dB louder. Likewise *any* change in level going into the VCA comes out with only half the original change in level. Thus, the original dynamic range is compressed 2:1. The expansion during playback works in a similar but opposite fashion.

While the VCA and RMS detector circuits are complex in themselves, there are other equally complex considerations. One of these is the problem of residual tape "hiss". All tape has a certain amount of background noise. Because this hiss is essentially a constant, the playback expander could cause this hiss to become louder or softer as it goes about its job of uncompressing the signal. This effect is sometimes referred to as "pumping" or "breathing". The "dbx" system virtually eliminates these effects by introducing a high-frequency "preemphasis" circuit before the VCA. This boosts the high frequencies during recording by about 12 dB. A similar deemphasis circuit is employed during playback which attenuates these same high frequencies by the same 12 dB. As a result the program is unaltered, but the hiss is reduced 12 dB, rendering it inaudible. Notice also that similar preemphasis circuits must be employed before the RMS detectors to preclude the possibility of high-frequency overload of the tape.

It should be obvious that this system depends upon perfect "tracking" between the compressor during recording and the expander during reproduction. Certain subsonic signals could possibly cause the expander to mistrack. To preclude this, bandpass filters are employed on the RMS detectors as well as the input. These filters do not affect the audible range,



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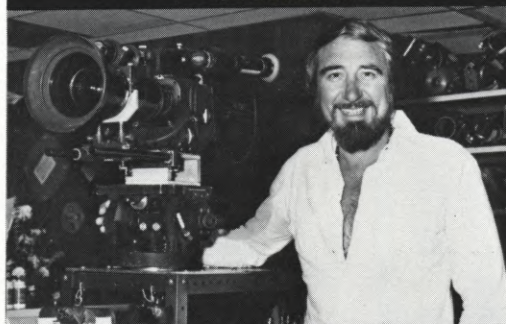
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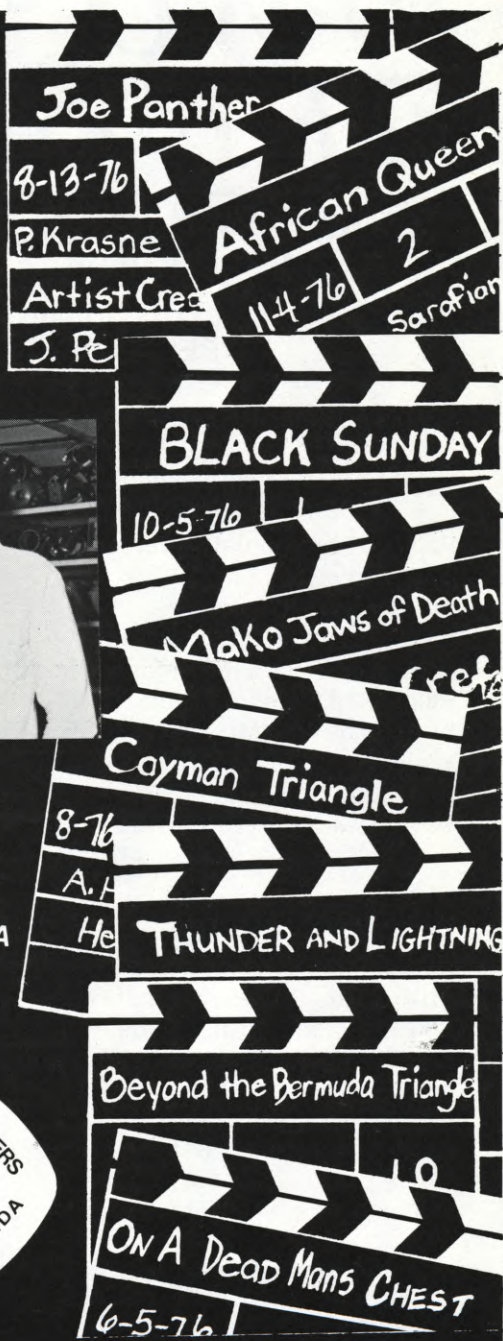
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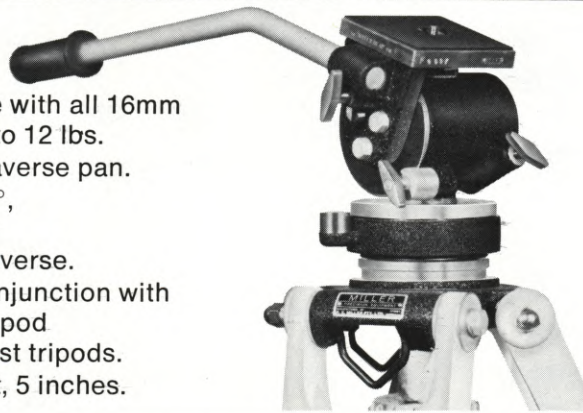
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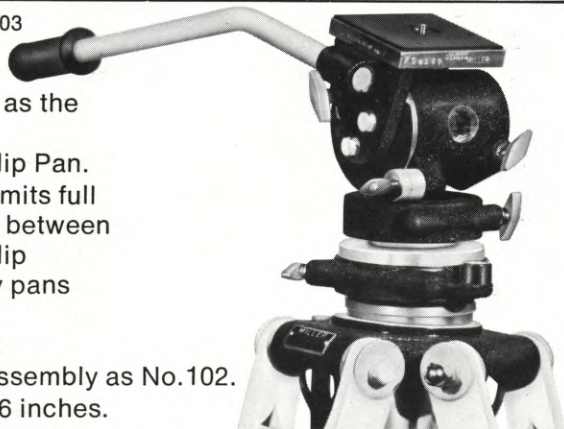
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## Vth TEHRAN FILM FESTIVAL Continued from Page 197

### History Brought to Life on Film

Almost before I have a chance to sink my teeth into this tasty filmic feast, I receive a phone call from another old friend, Dr. Mehrdad Azarmi. He is an Iranian film-maker who spent 15 years in California working in the Hollywood film industry and earning his doctorate in Cinema from the University of Southern California. Now he has returned to his homeland to participate most actively in the burgeoning Iranian film industry.

Mehrdad is calling from Persepolis, where he is on location as co-producer of an eight-part David Frost film series on the history of Iran, tentatively titled "CROSSROADS OF CIVILIZATION". He tells me that they are about to stage for the cameras the ancient battles of 2,500 years ago and he wants to know if I will come down there and visit the location. It is an offer I can't refuse — especially when I learn that the Director of Photography on these sequences is Michael Davis (one of Mike Samuelson's merry crew), with whom I have shared rollicking adventures during the filming of four separate Olympic Games. Without any hesitation, I board a plane for Shiraz and, upon landing, hire a car to take me to the Hotel Darius at Persepolis where the company is being accommodated.

Persepolis, for those who may not know, is one of the most famous archaeological sites in the world. Called *Takht-e-Jamshid* (Throne of Jamshid) in the Persian language, it was a magnificent temple built by King Darius and later destroyed by Alexander the Great — but not quite completely, thank God. The ruins of Persepolis, which, archaeology addict that I am, I have visited twice before, are breath-taking in their grandeur — especially the huge sculptures and exquisite bas reliefs that remain intact. It is here that, several years ago, the Shah of Iran staged a fantastic pageant

celebrating the 2,500th anniversary of the founding of the Persian empire.

The Hotel Darius is a stunning modern structure with overtones of ancient Persian architecture which stands almost in the shadow of Persepolis, and it is here that I join Dr. Azarmi for what turns out to be an airlift to the shooting location. It seems that the site is so remote that, although it can be reached by a two-hour drive over rough roads, the best way in is by means of the huge Chinook helicopter that the Iranian Army has thoughtfully provided.

En route, as the helicopter chops its way across awesome terrain, Mehrdad tells me that the ancient battles are being staged with 400 young Iranian paratroopers playing the roles of the warriors — 50 of them on horseback. These sequences are part of the "Reconstruction" (historical re-enactment) phase of the filming — and easily the most colorful.

When we land I see the troops lined up on the battlefield, resplendent in the authentic multi-colored costumes of the period. There are two opposing armies: the Lydians (trying to look ferocious in basic yellow, while wearing black Shirley Temple wigs) and the Achaemenians (ancient Persians), sporting metal helmets and miniskirts. Despite the somewhat campy drag, they make a rugged-looking group of warriors.

Another warm welcome, this time from Mike Davis, who, as Director of Photography on these sequences, plans to use four cameras for most of the filming. He's short a cameraman and wants to know if I'll fill the gap. I thought he'd never ask.

I'm delighted to be behind a camera again, and especially with such wild subject matter to photograph — all of which looks fantastic through the viewfinder. Mike Davis flatters me by giving me the key angle to shoot on several scenes, instead of sticking me off in the boondocks with a wide-angle lens.

As for the paratroopers, they're a playful pack of pussycats who sing and dance with joyous abandon during the lunch break. But when the director yells "ACTION!" on the battle scenes, they turn into raging tigers, falling upon each other with what looks like a genuine vengeance. When the director yells "CUT!" the battlefield is strewn with real casualties — although, thankfully, not major ones. There are a couple that seem quite serious, however. In one case, a professional stuntman (from London) falls off his horse unexpectedly when his saddle girth snaps. He lands on his head in a spectacular fall right in front of my lens and remains unconscious for quite a long

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time, later to be evacuated to the hospital in Shiraz by helicopter.

On our way out of the location by helicopter there is, riding with us on the floor of the craft, a teenage paratrooper who seems to have suffered a broken thigh bone. Though heavily sedated, he is moaning and groaning in obvious great pain. He is not a camera casualty, I'm told, but fell off his mount while "horsing around on the way back to the stable." With typical producer-like *sang froid*, Dr. Azarmi says; "He'd get a lot more sympathy if it had happened in front of the camera."

Filming with this great crew (and tigerish cast) turns out to be one of my more exhilarating recent adventures and I know I shall never again be able to watch a battle between Lydians and ancient Persians without feeling a certain nostalgia. As for the footage I have shot, a later telegram from Mike Davis informs me that it looks great — which makes me feel very good indeed. Space limitations preclude telling more about the "CROSSROADS" filming at this point, but an early issue of *American Cinematographer* will carry a full report.

### Meanwhile . . . Back at the Festival

The screenings are in full swing when I get back to Tehran, and the

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parties are piling up thick and fast, also, even though the huge all-encompassing formal banquets that have been a Festival tradition in the past have been eliminated this year.

In the hotel restaurant I encounter an old friend, American director Mark Robson, whom I haven't seen since he was knocking the world down on the Universal backlot for "EARTH-QUAKE". A member of the Festival Jury, he and his wife have managed to remain cheerful, despite the grind of sitting through three features and three short films each day. On the other hand, I am averaging five of each per day and surviving it.

More old friends arrive — this time Michael Samuelson and his lovely wife from London. They are here for the World Premiere of Mike's and Tony Maylam's Innsbruck Winter Olympics Official Film, "WHITE ROCK" (see *American Cinematographer*, April, 1976).

"WHITE ROCK" is to be shown with full stereophonic sound, so that the effect of Rick Wakeman's inspired rock score can be optimized. Michael spends the day before the first screening in a careful checkout of the equipment, including a trial run to make sure that everything is as it should be — but the Premiere itself turns out to be a disaster soundwise. First all of the sound is on the right; then it is on the left; finally — and incredibly — it's actually *behind* us. Michael is understandably upset, as we all are, but his spirits brighten considerably when at the second screening (held in a different theater) they get it all together with the stereophonic sound and the young audience accords the film a rousing reception.

During the course of my wall-to-wall film-watching over the run of the Festival, I manage to see a great many features and shorts (though by no means all I'd like to see) and the overall level of quality is very high indeed. Space limitations, unfortunately, permit comment on only a few of those that impressed me the most:

"PALLIETER" (Belgium) — In Flanders, early in the present century, a young man devastated by his fiancée's suicide, returns to his beloved countryside and slowly emerges from his tragedy to bloom as the free spirit that he really is. A delightful film, brilliantly acted and superbly photographed, that captures in Breughel-like images the spirit of Flemish village life.

"IRENE, IRENE" (Italy) — A brilliant character study of a 60-year-old magistrate who, after his wife deserts him, retreats to a rest clinic to try to put the pieces of his shattered life together.

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"MAX HAVELAAR" (Holland-Indonesia) — A stunning picture of almost epic scope, filmed on Java and detailing the struggles of a young Dutch assistant-resident who bucks the System in his attempt to ease the lives of the exploited and impoverished natives. The film is a triumph in every phase of production, a truly fine achievement.

"THE LOVE SLAVE" (USSR) — A wonderfully evocative film that covers the dramatic range from wacky comedy to violent tragedy, it deals with the addle-pated members of a film producing company who, in attempting to ignore the reality of the October revolution, flee from Moscow to a small town in the south, where reality finally caves in on them.

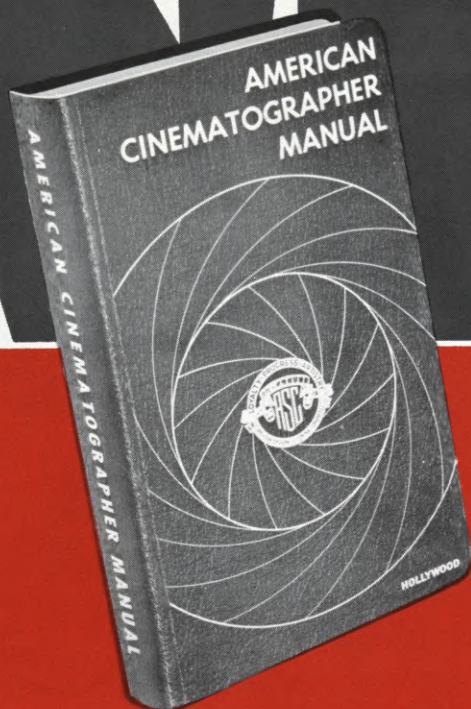
"THE CHESS OF WIND" (Iran) — A heavy drama with "LITTLE FOXES" overtones about a thoroughly unpleasant group of family members and retainers, all struggling to get their greedy hands on an inheritance. Sometimes a bit slow-moving (and with its plot convolutions difficult to follow without sub-titles), its action is well staged and it has been magnificently photographed in misty low key by Hushang Baharlu.

"DESERT OF THE TARTARS" (France) — An ambitious production with an all-star (and all-male) international cast, the film deals with a garrison stationed on the edge of a desert, waiting to be attacked by an enemy, an attack that is only suggested at the fadeout. A cerebral story of what such a life does to men, it is curiously devoid of physical action, but is notable for its flawless production and breath-taking location site: a deserted ancient village and huge fortress located at Bam on the edge of the Kerman desert in south-eastern Iran.

"OH SERAFINA" (Italy) — A wonderfully entertaining and evocative film that manages to mix screwball comedy and tender romance. It deals with a bumpkin who inherits a button factory after his father is driven to suicide by a shrewish wife (even that comes out funny). Preferring to spend his days talking to birds, this overdue male virgin is seduced by the village tart who marries him and, in her attempt to get her hands on the factory and all those buttons, has him confined to a lunatic asylum. There he meets an ethereal creature and they fall in love, get sprung from the cuckoo's nest and start a new life with their beloved birds. Absolutely top-grade in every respect.

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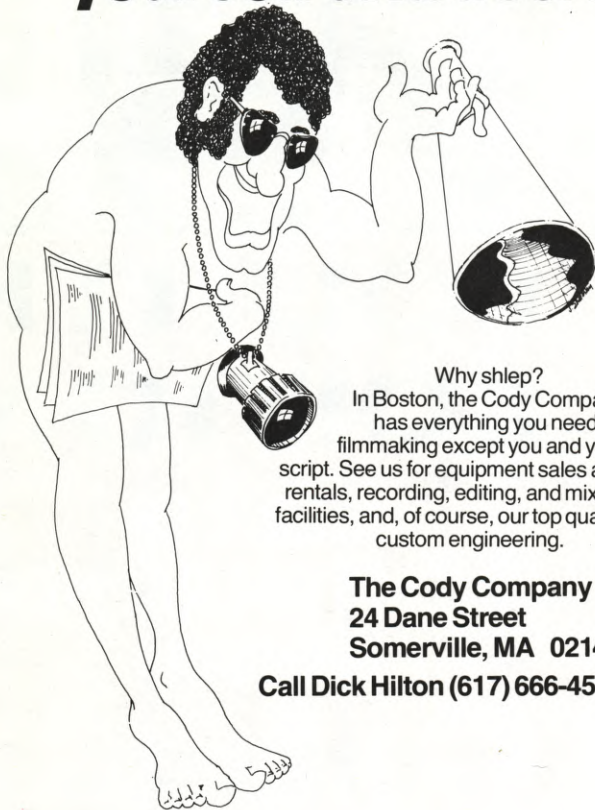
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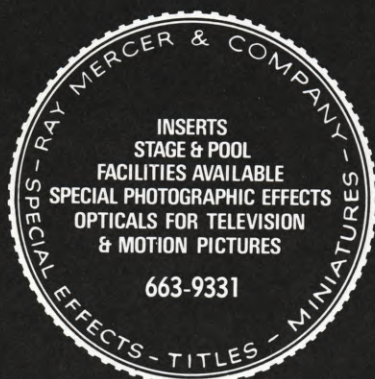
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there are a couple (in addition to "WHITE ROCK") which, in my opinion, are superlative:

"MYSTERIES OF THE GODS" (Federal Republic of Germany) — There have been several features based on the thesis of Erich von Daniken ("*Chariots of the Gods*") that ancient astronauts from outer space visited Earth and left their mark, but this is by far the best. Having travelled over 120,000 miles in research and filming, director Harald Reinl presents stunning evidence that von Daniken's premise may well be accurate. A spellbinding film.

"VOYAGE TO THE EDGE OF THE WORLD" (U.S.A.) — One has come to expect only the best from Jacques-Yves Cousteau, but this time the multiple-Academy Award-winning aquanaut/film-maker has outdone himself. The film record of his expedition to Antarctica is a *tour de force* of heart-pounding adventure, strikingly photographed. Whether the camera is in a diving saucer filming creatures never seen before, gliding through the frigid fairyland under an ice shelf, or exploring the surrealistic innards of a giant iceberg, the results are thrilling to watch.

In addition to the features shown at the Festival, there are many excellent short films and only a couple of them make you wonder how they got into the roster.

The Vth Tehran International Film Festival reaches its finale at the colorful closing ceremony in Rudaki Hall, with Empress Farah Pahlavi presenting the awards. The top honor goes to the American film "THE FRONT", starring Woody Allen and directed by Martin Ritt.

Obviously, the Jury must have had a difficult time choosing one from among so many excellent films. This assumption is borne out by the fact that they have seen fit to add several extra awards this year.

One can look back at the Vth Tehran International Film Festival with a certain mixture of emotions. The city of Tehran, by virtue of its sheer dynamic surge toward "progress", fought it all the way, and the Festival facilities sometimes buckled under the strain. But the quality of the film presentations was the best yet — and that's what a film festival is all about.

One feels confident that things will only get better — next year in Isfahan.

## FIFTH TEHRAN INTERNATIONAL FILM FESTIVAL IN RETROSPECT

The Fifth Tehran International Film Festival officially ended Dec. 5 at a closing ceremony held in Roudaki Hall

in the presence of Her Imperial Majesty, Empress Farah Pahlavi.

The highlight of the evening was the presentation of the festival jury's report and the award of prizes to competition winners by Her Imperial Majesty.

This year 74 countries were represented in the festival, 20 more than last year, and 302 films were shown in the main programmes open to the public, a new festival record.

In addition, 200 features and 150 short films were shown in 200 scheduled sessions during a 10-day period at the parallel film bazaar which was attended by a total of 150 buyers and distributors from five continents.

The number of festival guests reached almost 400 this year, consisting of directors, producers, actors and actresses, critics and cineastes from 74 countries.

The countries taking part (in alphabetical order) were:

Afghanistan, Algeria, Argentina, Australia, Austria, Bahrain, Bangladesh, Belgium, Brazil, Bulgaria, Canada, China, Colombia, Costa Rica, Cyprus, Czechoslovakia, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, France, East Germany, West Germany, Greece, Hong Kong, Hungary, India, Indonesia, Iran, Iraq, Ireland, Italy, Jamaica, Japan, Jordan, South Korea, Kuwait, Lebanon, Liberia, Malaysia, Mexico, Mongolia, Morocco, The Netherlands, New Zealand, Nigeria, Pakistan, Panama, Philippines, Poland, Portugal, Puerto Rico, Romania, Senegal, Singapore, Spain, Sri Lanka, Sudan, Surinam, Sweden, Switzerland, Syria, Tanzania, Thailand, Trinidad, Turkey, United Arab Emirates, United Kingdom, Uruguay, USA, USSR, Venezuela, Yugoslavia.

#### FILMS IN COMPETITION

The 23 feature-length films competing in the Flight of the Winged Ibis were in order of screening: "Pallietter" (Belgium), "The Legends of the Army Intelligence School" (Japan), "The Ritz" (UK), "Second Wind" (Canada), "Emergency Exit" (Austria), "Welcome to L.A." (USA), "Doomed Souls" (Bulgaria), "Irene, Irene" (Italy), "God Wills it So" (Belgium), "The Chess of Wind" (Iran), "The Duchess and the Dirtwater Fox" (USA), "Nine Months" (Hungary), "Max Havelaar" (Holland-Indonesia), "Ode to Billy Joe" (USA), "A Game of Solitaire" (France), "Passion According to Berenice" (Mexico), "Return of the Prodigal Son" (Algeria), "The Slave of Love" (USSR), "Oh Serafina" (Italy), "The Betrothal" (Spain), "The Front" (USA), "The Divine One" (Iran), "Agnes is Going to Die" (Italy).

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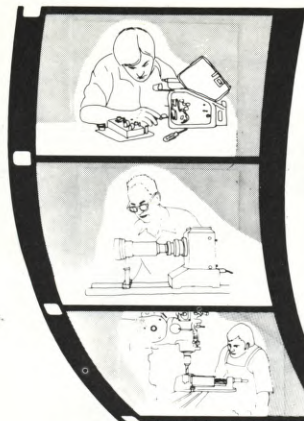
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The 28 short films in competition were "Shadow of a Doubt" (The Netherlands), "Leisure" (Australia), "Agulana" (Belgium), "The Singer and the Dancer" (Australia), "Report Finished" (The Netherlands), "Number One" (USA), "One Day of Raiku Maksim" (Yugoslavia), "Kick Me" (USA), "For a More Human World" (Belgium), "Leonina" (France), "The End of the Game" (UK), "Time" (Iran), "Shattered" (The Netherlands), "Stone Exercise" (Czechoslovakia), "Gas" (Australia), "A Train for Christmas" (New Zealand), "The Island of Crabs" (Czechoslovakia), "High Fidelity" (UK), "Dance Macabre" (Germany F.R.), "Of Motion, Sand and Blood" (France), "Hugo and Bobo" (Czechoslovakia), "Fire" (Poland), "The Waiting Room" (UK), "Overture 2012" (Yugoslavia), "Donna Clara" (UK), "Trio" (Yugoslavia), "Prague of a Jugendstil" (Czechoslovakia), "The Circle" (Iran).

This section also featured 5 Hors-Concours presentations as follows: "The Son of Iran Has No News of His Mother" (Fereidun Rahnama, Iran), "The Desert of the Tartars" (Valerio Zurlini, France), "Barry Lyndon" (Stanley Kubrick, UK), "Murder by Death" (Robert Moore, UK), and "Magic Lantern" (Bahram Reypur, Iran).

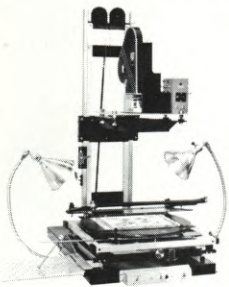
## FESTIVAL OF FESTIVALS

A documentation of honours that have been bestowed on some of the most outstanding samples of film makers' creative efforts in the past year with the following 28 films: "Dersu Uzala" (USSR), "L'Argent de Poche" (France), "Summer Guests" (Germany F.R.), "Lina Braake" (Germany F.R.), "The Female is the Deadliest of the Species" (Italy), "Taxi Driver" (USA), "The Omen" (UK), "The Judge and the Killer" (France), "Identification" (Hungary), "Next Stop Greenwich Village" (USA), "One Flew Over the Cuckoo's Nest" (USA), "Poachers" (Spain), "Harry and Walter Go to New York" (USA), "Stone Garden" (Iran), "Lost Life" (Germany F.R.), "The Inheritance" (Italy), "L'Affiche Rouge" (France), "The Legend of Ubirajara" (Brazil), "Picnic at Hanging Rock" (Australia), "Xala" (Senegal), "Nights and Days" (Poland), "Triumphant March" (Italy), "The Bus" (Switzerland), "Dear Michael" (Italy), "Aces High" (UK), "The Long Vacation of 36" (Spain), "Seven Beauties" (Italy), "All the President's Men" (USA).

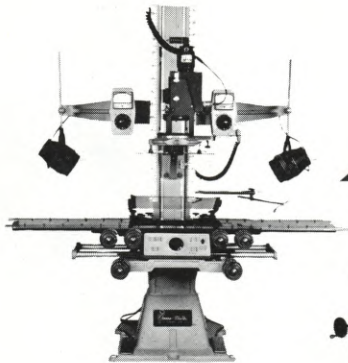
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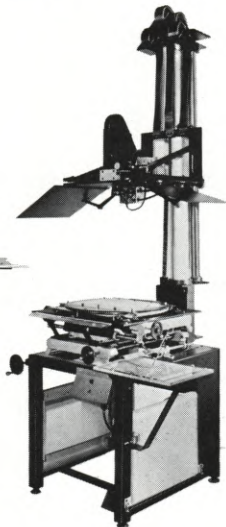
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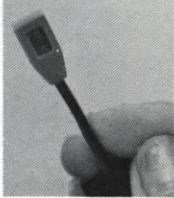
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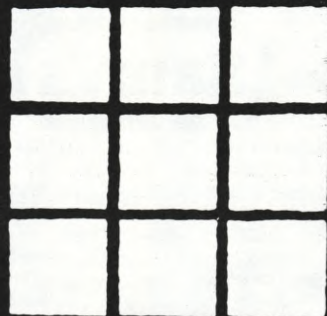


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comprised of 14 feature and 3 short films as follows: “The Strongest Karate” (Japan), “The Secret Dossier of the Mafia” (Italy), “Youthquake” (USA), “Kenji Misoguchi: The Life of a Film Director” (Japan), “Photography” (Hungary), “The Fabulous Fifties” (Italy), “Claws and Teeth” (France), “Well-Spring of My World” (Denmark), “Voyage to the Edge of the World” (USA), “White Rock” (UK), “The Animal Festival” (France), “Savage World” (Italy), “Holiday in Britain” (Hungary), “Mysteries of the Gods” (Germany F.R.), “The Building of the Trans-Iranian Railway” (Belgium), “A Festival in Paris” (France), “The Incredible Machine” (USA).

**ORIENTAL HORIZON**

This section comprised of 14 feature-length and 6 short films from countries that lie to the east of Iran, paying homage to the variety and achievement of the film industries in these countries. They were: “The White Steamer” (USSR), “The Devil’s Playground” (Australia), “Hiroshima 28” (Hong Kong), “The Middle Man” (India), “Caddie” (Australia), “Home from the Sea” (Japan), “National Games in China” (Hong Kong), “Blue Campus” (Indonesia), “First Experience” (Korea), “Restless Youth” (Malaysia), “From Victory to Victory” (People’s Republic of China), “Maynila” (Philippines), “Hulawali” (Sri Lanka), “Games 74” (New Zealand), “Fishing Song of the South” (People’s Republic of China), “Malaysia” (Malaysia), “Three Women” (New Zealand), “Taekwondo” (Republic of Korea), “Harvest from Ponds” (Malaysia), “A Sense of Involvement” (New Zealand).

**RETROSPECTIVES**

This year there were six separate retrospective sections, “America: A Self-Portrait, Salute to the US Bicentennial”, “Federico Fellini: The World of a Magician”, “Douglas Fairbanks Sr.: Dream-Factory Idol”, “Sentimental Faces: Harry Langdon”, “Sentimental Faces: Buster Keaton” and “Our Magic Lantern, Fifty Years of Film Making in Iran”.

“America: A Self-Portrait” comprised of the following 14 films: “The New Land”, “How the West Was Won”, “Cheyenne Autumn”, “From Here to Eternity”, “Bonnie and Clyde”, “On the Waterfront”, “The Last Picture Show”, “They Shoot Horses, Don’t They”, “The Arrangement”, “Anatomy of a Murder”, “Advise and Consent”, “The Sweet Smell of Success”, “Singin’ in the Rain”, “2001, A Space Odyssey”.

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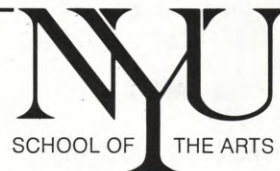
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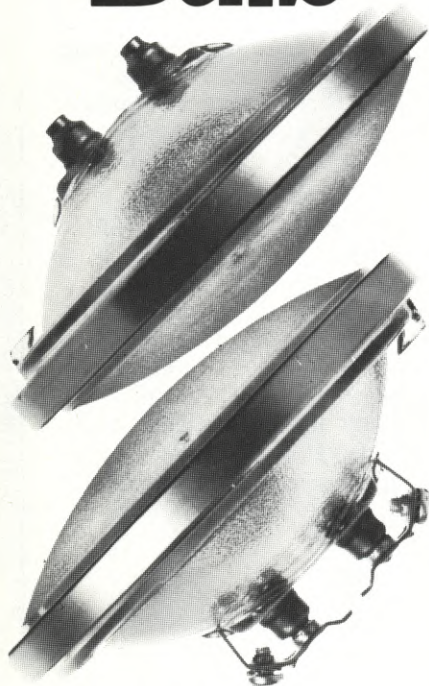
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Federico Fellini were presented as follows: "Luci Del Varieta", "Le Sceicco Bianco", "I Vitelloni", "La Strada", "Il Bidone", "Le Notti di Cabiria", "La Dolce Vita", "Otto e Mezzo", "Giulietta Degli Spiriti", "Tales of Mystery" (comprising 'Tobbi Dammit'), "Satyricon", "Le Tentazioni del Dottor Antonio", "I Clowns", "Roma", "Amarcord", "About Fellini's Casanova".

To highlight the genius of actors whose outstanding personalities and innovative techniques provided a foundational influence on subsequent generations of film makers, 16 feature-length and 6 short films of Douglas Fairbanks Sr., 5 feature and 4 short films of Harry Langdon, and 11 feature and 23 short films of Buster Keaton were presented.

Fairbanks films were: "His Majesty, the American", "When the Clouds Roll By", "The Mark of Zorro", "The Nut", "The Three Musketeers", "Robin Hood", "The Thief of Baghdad", "Don Q., Son of Zorro", "The Black Pirate", "The Gaucho", "The Iron Mask", "The Taming of the Shrew", "Around the World in 80 Minutes", "Reaching for the Moon", "Mr. Robinson Crusoe", "The Habit of Happiness", "The Lamb", "The Mystery of the Leaping Fish", "In Again, Out Again", "Wild and Woolly", "The Molly-Coddle".

Langdon films were: "The Strong Man", "Tramp, Tramp, Tramp", "Long Pants", "Three's a Crowd", "The Chaser", "Saturday Afternoon", "Soldier Man", "Lucky Star", "Fiddle Sticks".

Keaton films were: "The Saphead", "The Three Ages", "Our Hospitality", "Sherlock Jr.", "The Navigator", "Go West", "Seven Chances", "The General", "Battling Butler", "College", "Steamboat Bill Jr.", "The Butcher Boy", "Convict 13", "The Bell Boy", "The High Sign", "Coney Island", "The Scarecrow", "One Week", "Cops", "The Boat", "The Balloonatic", "The Goat", "The Blacksmith", "The Haunted House", "The Paleface", "Good Night Nurse", "Backstage", "My Wife's Relations", "Neighbours", "The Playhouse", "Day Dreams", "The Frozen North", "Out West", "The Electric House".

"Our Magic Lantern", which provided a panorama of cinematic creation in Iran during a fifty-year period, presented 83 feature and short films.

The festival also had three special screenings: "Chronicles of the Years of Embers" (presented by Algeria), "The Challenge: A Tribute to Modern Art" (USA), and "The Marriage of Figaro" (presented by the festival on the anniversary of the death of Wolfgang Amadeus Mozart).

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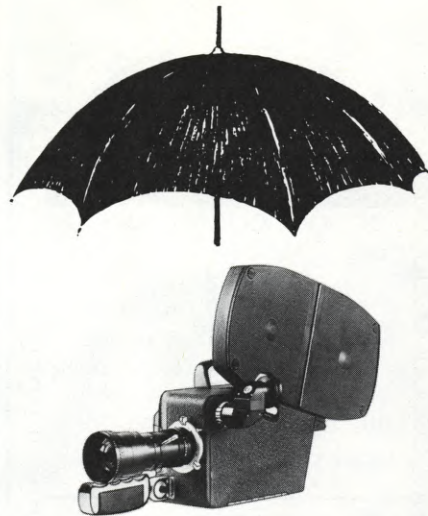
### PHOTOGRAPHING "ROCKY" Continued from Page 205

course of a scene we could easily change focal lengths. For example, if Camera A were covering the main pattern of the action, Camera B could zap in for a closeup, much as a documentary unit might shoot.

The two actors who did the fighting put in a lot of time rehearsing every Saturday and Sunday morning at a gym in Santa Monica. John Avildsen had a little video camera and we went there one morning and photographed some of the action from angles that we might consider using. We could play the tape back right then and there and get some ideas as to what would work effectively. That was an interesting approach and it paid off somewhat. John also used his Super-8 camera as a notebook and shot a lot of stuff with it during rehearsals to get ideas about how later to photograph the fight.

In "ROCKY" we kept the camera moving quite a bit, mostly through the use of the miniature Stindt dolly, which can move in very close quarters. However, John is a very naturalistic type of director who tries not to get involved with a lot of fussy effects that would stand out like a sore thumb. He works a lot with combinations of pans and zooms to try to use the zoom lens without making the audience aware that the lens is zooming, which, of course, is everybody's objective. In "SAVE THE TIGER" we had some very lengthy camera moves, where we would dolly in and around the factory and do some very long takes in one shot, but "ROCKY" was a little more conventional, in that sense. We would stop and go and the scenes often did not dictate lengthy moves. We would simply move the camera whenever it seemed appropriate, while attempting to keep the dolly moves as unobtrusive as possible.

Of course, when it comes to camera movement, the film will be remembered mainly for the STEADICAM shots, which were quite spectacular. Garrett Brown, who invented the device, is a very tall, kind of lanky, gazelle-like guy who was able to achieve some extraordinary effects. I'm sure there are other operators who can use the equipment effectively, but in this film Garrett runs up and down the steps of the library with Rocky and does a 360-degree move and it's really incredible watching him use his equipment. I was most impressed, and I'm very grateful that Garrett made the picture look as good as he did with the contributions that he made. They were very important ones. ■



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**WORD WITH ADMINISTRATOR**  
Continued from Page 202

Tehran is. While it is by no means a small city — the population is approaching a million and the traffic is starting to get as bad as in Tehran — all of the Festival facilities will be within walking distance. This means that even if the traffic is bad — even if there is a bumper-to-bumper situation — you still won't need to take a car. You'll just walk — and it's a pleasure to walk in Isfahan; whereas, it is not a pleasure to walk in Tehran.

**QUESTION: Can you tell me a bit about what facilities will be provided in Isfahan for the screenings and Festival guests?**

**DARYOUSH: The same as in Tehran, except that the whole thing will be more pleasant and will work better transportation-wise. We will have the same number of movie theaters — which is six — and there are plenty of hotels in Isfahan. Of course, we can foresee one problem, which is more of an ego thing, and that has to do with the fact that there is one hotel in Isfahan which is very unusual, not like other hotels around the world. Of course, everyone will want to stay there, but this hotel has only 220 rooms, which means that the rest of the people, including my colleagues and myself, will go to other hotels. The others are as adequate as the Intercontinental or Hilton in Tehran, so it won't be a question of comfortable accommodation facilities; it will just be a question of ego.**

**QUESTION: Do you intend to make any changes in your philosophy of programming for next year?**

**DARYOUSH: No, not at all. We have been experimenting, but now I think we have found the correct formula. According to that formula, there are three permanent sections. The first is the Competition category, which is devoted to the selection of new films which have not been shown in other competitions. The second is the Festival of Festivals, which is a pick-up of what we consider to be the best of what has been happening in other festivals. The third is the section entitled Cinema Has Eyes and Ears, which is for feature-length films of a documentary or semi-documentary nature. Then, as we have had last year and this year, we will have three regional programs. This year we have a program devoted to America, as a salute to your Bicentennial. For this we chose 14 themes representing various sociological aspects of life in America.**

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We don't pretend that this selection is all-encompassing, but it was all that the Festival format would permit. This is something that we may try to do again for other areas of the world on special occasions, hopefully. This year another regional section is the Oriental Horizons program. By "Oriental" we mean everywhere east of Iran (which makes Australia Oriental, but not Egypt). On the occasion of the Golden Jubilee of the Pahlavi Dynasty, we have tried to provide an historical panorama of what has been done in Iranian films since the first time a movie camera recorded scenes for public showing in Iran, which is exactly 50 years ago. That program is entitled: "Our Magic Lantern: 50 Years of Film-making in Iran". Incidentally, the term "Magic Lantern" is derived from a poem by Omar Khayyam, the Persian poet, who wrote in the Rubaiyat: "This round in which we humans are constantly turning reminds me of the Magic Lantern, in which the lamp, the source of light, is the Sun and the focal distance is the Universe. After the show we will all be back in the boxes (an allegory of Death)." He wrote that almost scientific description nine centuries ago — three centuries before Leonardo daVinci. So, in honor of Khayyam, we have named this program "Our Magic Lantern". Again, we have three retrospectives honoring great film artists. One is devoted to the films of Fellini and, again on the occasion of the Bicentennial, two American performers of genius, Buster Keaton and Douglas Fairbanks. Next year we will have the same formula: three permanent programs, three regional programs and three retrospectives in honor of individual artists. Already I am thinking of doing a series of American musicals next year as a regional program. That would be devoted to one of the most fantastic branches of the American film art. Another regional program will be devoted to films of the Third World, which is part of our mission. The third regional program has not been decided on as yet. But we will stick to that format — the nine programs, as I have explained.

**QUESTION: Do you have any further comment on this year's Festival?**

*DARYOUSH: Only that I wish to thank the American film companies. They gave the Festival a tremendous boost this year, all those companies that do cooperate with us — with the exception of Paramount and Universal, which don't. They all gave me a free hand and I'm grateful to them and I want to thank them.*

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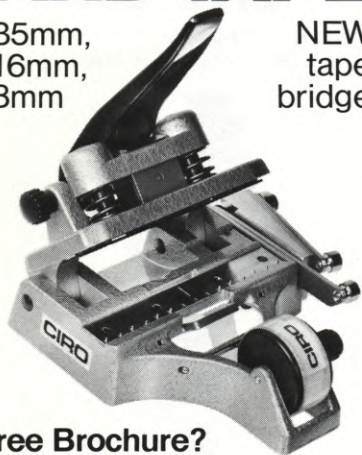
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## "MODEL RAILROADING"

Continued from Page 200

scenes in the Musical. In addition to owning one of the world's largest collections of rare old toy trains, Ward has restored three full-size steam engines, one of them over a hundred years old. He runs them over a short span of track in his large back yard. A full-size roundhouse, a turn-of-the-century station house built for a Disney picture, a half-dozen large railroad cars, a water tower, windmill and two hand-cars complete his "Grizzly Flats Railroad".

Delighted with the idea, Ward agreed to appear in the opening scenes as the Old Railroader. He plays the film's host, a retiree who relives the old days through his hobby of model railroading.

For the musical sequence, Kimball consented to steam up one of his engines and let us film the girls dancing alongside as it puffed down the track.

Although filming an actual wood-burning locomotive seems romantic, it felt more like one of those boy scout cook-outs where the inescapable campfire smoke always seems to be blowing in *your* face.

The earth trembled as the engine moved and the noise was so deafening that the girls could not hear the music until sound man, Glenn Barker, improvised a more powerful playback system. Luckily, the video parallel set-up was patched directly to the Nagra, giving us a clear sound track when we played back each take.

Much of the musical Sequence was shot at Traveltown, the outdoor train museum in Griffith Park. With the girls dancing around and on top of the huge locomotives, we were afraid someone might fall or turn an ankle. Ironically, the only injuries were from the girls accidentally kicking each other during the high kicks.

Most of the Musical was shot inside Frank's Hobby Shop, in Orange, California. Open seven days a week, we had it from 9 in the evening till seven the next morning for two red-eyed nights in a row. Each evening the heavy display cases had to be moved out of the way to create open floor space and then moved back in time for the shop to open. There always seemed to be one or two wherever Larry wanted to put the camera, so we were playing "musical display cases" all night.

## GRAPHICS AND ANIMATION

As the final scenes were shot we turned our attention to the graphics and animation. By this time the budget was exhausted, so as usual, our approach had to be long on imagination.

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For example, throughout the film several "chapter titles" were originally to have been matted over color renderings. Matting isn't cheap and the money wasn't there. Instead, we achieved the luminescent matte appearance without even using an animation stand.

Rick created the renderings and hand-lettered the titles across them, painting a black drop shadow along the bottom and left side edges of each letter. Now the face of each letter was carefully cut out, leaving the black-painted drop-shadow in place. This title would be front-lit with white light and rear-lit with colored light, successfully achieving the look of a matted title.

The back of each rendering had to be covered with opaque black tape to prevent light from going through anywhere but the cut-out letters. The graphic was mounted on a sheet of frosted drafting vellum and the cut-out islands, such as the hole in an "O" were glued in place against the vellum.

Remember the old joke about shooting the artistic scene through the bathroom window? Well, these graphics were shot on Rick's kitchen window. Removed from its track and placed on a ten-dollar easel it became ... *ta da* ... the Harper-Rogers Animation Stand. It wasn't exactly an Ox-berry but the price was right.

The titles were lit with three 1000-watt Mole Richardson spots, two from the front and one from the back. The rear light was given a colored gel and spotted a stop or two brighter than the front illumination. The ratio of front to back light varied with the color of the gel — more for blue, less for warmer colors.

The result was a near-perfect imitation of matted titles, luminescent letters with a neat black drop-shadow, at a fraction of the cost of laboratory-matted titles.

Each of the animated scenes posed a different challenge.

In the Musical sequence we wanted superimposed musical notes bouncing across the scene in time to the music. Matting was too expensive, yet to superimpose them we would run the risk of fogging, if animation background wasn't completely black. Therefore the super had to be in high contrast, clean and in sync, yet the budget would only cover film and processing.

It was shot using Kodachrome Type-B because of its deep contrast. I rigged a camera over a desk, using an old broken tripod and some wire while Rick cut dozens of musical notes out of white paper. To maximize the contrast, we placed the notes on a sheet of glass

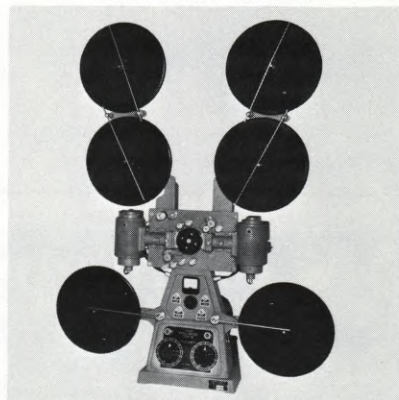
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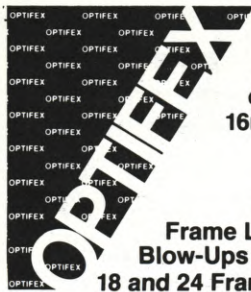
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supported on either side by a pair of boxes. Black cloth was draped through the valley in between and the two side lights were lowered so the notes on the glass would be illuminated but no direct light could reach the black background in the valley below.

Now the cut-out white notes were animated by hand according to a breakdown sheet. Shooting single frames instead of doubles increased the work, but we had never been pleased with the jerky movement of high contrast animation that had been double-framed.

The superimposition worked well. The contrast was high enough and there was no fogging of the live action scene. The effect of the musical notes bouncing across the scene is a knock-out.

Another bit of animation depicted an expanding layout plan that visibly grows from the beginner's basic oval to an intricate web more complicated than an L.A. roadmap. Again the budget would not support full animation, but nearly the same effect was achieved by animating it in reverse.

Rick drew up the full track diagram in black ink on white. This was made into a four-foot-by-three-foot black and white Kodalith negative in which the track lines were clear and the background was black. This was hung *upside down* on a living room sliding glass door. It was lit from the patio outside using a single 1000 watt spot with a blue gel. The camera was loaded with Kodachrome Type-B, set up inside the living room, framed on the full diagram and locked down. That night we shot one frame at a time while slowly painting out the lines, shortening them a few millimeters between frames.

When the resulting film was run *tail first* the action was reversed and the white lines radiated out from the center like independently growing roots of a plant. The effect looks expensive and is perhaps the most striking piece of animation in the film.


By turning the footage tail-first we would have had an image that was upside-down, but since we'd photographed the artwork upside-down the image came out right on film.

Before filming this scene we were careful to check the frame line positioning peculiar to the camera. If the frame line is not opposite the exact center of the sprocket hole, the frame line of the tail-first footage won't match any head-first footage. This would have produced a visible shift of the frame line when the tail-first footage came on the screen.

The most exotic animation problem was posed by the Runaway Layout. It

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The machine that was available was said to be capable of anything. It could calculate a course for Mars or beat you at computerized football. What the computer people hadn't told us was that the football program required about 10,000 steps.

As we began programming we found that a simple blink required 20 steps, pauses took 40 and to get a display to appear one line at a time required over 300 steps. The problem was that the machine was designed to produce your answer before you can finish pushing the button. Getting it to do things slowly for the camera went against its nature. We had to slow it down by making it cycle several times through meaningless steps, wade through unnecessary garbage, etc. before printing the next item.

The computer screen was photographed with a Bolex at 15 frames per second in order to be compatible with the 60-cycle power supply. The screen wasn't light enough to expose at 30 frames per second. Shooting at 15 frames per second gave us enough exposure but forced us to program the computer to run even slower.

Blinking, flashing, sweeping back and forth across the picture, the exciting video readouts seem to unite the sprawling super layout into one delightfully ominous entity.

**POST PRODUCTION**

By the time the animation was complete, Larry was well into post-production. At one point he was writing music by day, recording the music that evening with a 15-piece orchestra in his living room and then editing all night on the Moviola Flatbed, until it was time to start writing music the next morning.

It is a tribute to Larry's perseverance that the film is heavily scored yet contains only one small scrap of "canned" music.

With the exception of the Runaway Layout music written for Larry by composer Randy Woltz, Larry composed and arranged the entire score himself. He used a style authentic to early thirties American jazz and bluegrass that beautifully complemented the down-home Americana mood created by the models. In several places, where

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## QUESTIONS & ANSWERS

### Continued from Page 128

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The comments about blue being the dominant color in his films is a difficult complaint to diagnose without actually seeing the film and original scene. Although some of the difficulty might be corrected by use of a different, stronger UV filter, it might also be caused by particular lenses, aged or faded filters, film stocks, processing, printing or a host of other factors. We suggest that he run some tests with a small assortment of UV filters to see whether he can get results which he thinks are better.

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8 Mag. Color Positive Print  16mm Ekta-  
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chrome Prints  16mm Kodachrome Prints  
 16mm Color Reversal Intermediate   
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