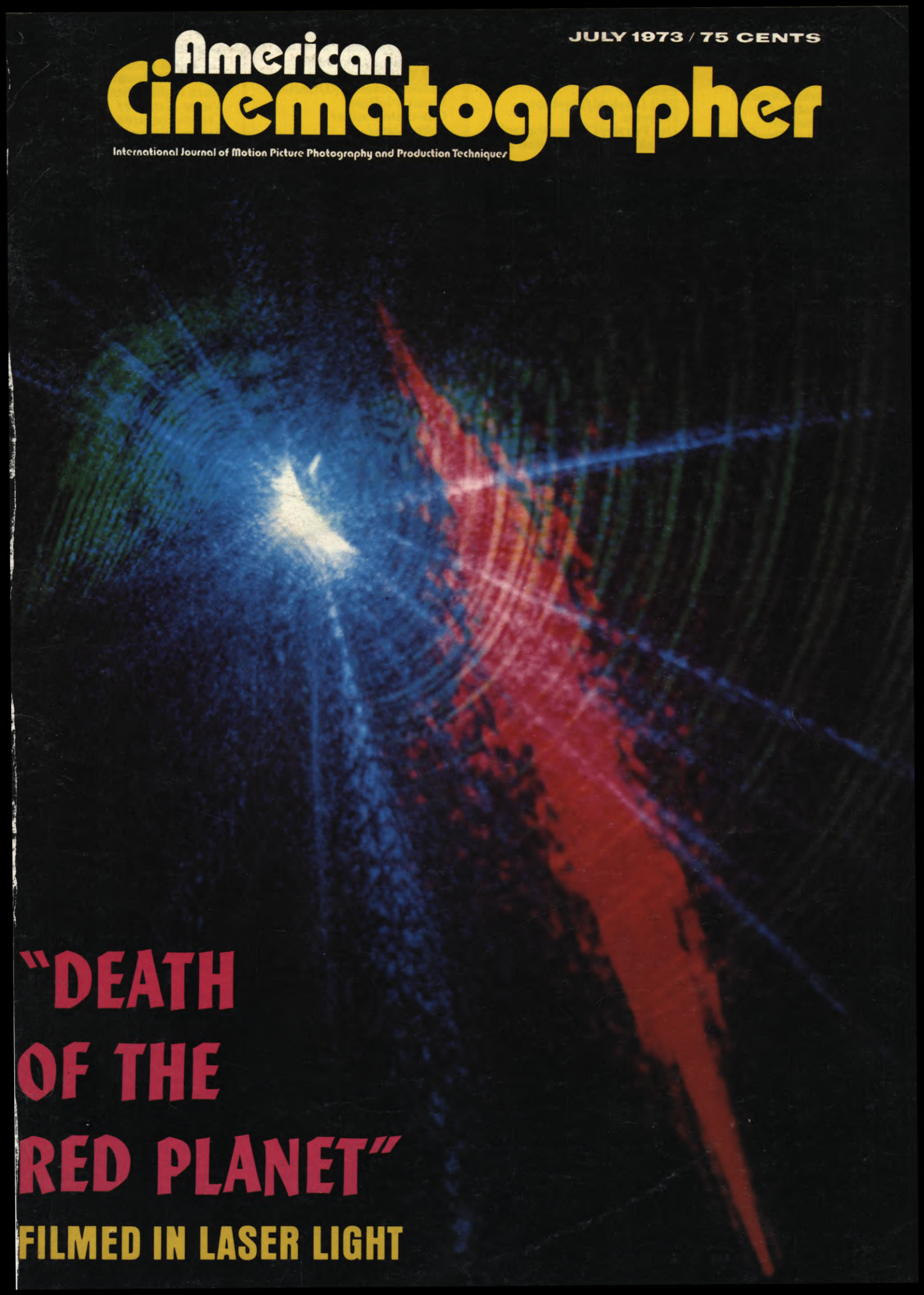
JULY 1973 / 75 CENTS

American Cinematographer

International Journal of Motion Picture Photography and Production Techniques



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We just made it sooner. Gave New York its own ultramodern filmmaking center to keep pace with its imaginations. A total rental-fabrication-manufacturing facility. And a multilevel soundstage complex equipped for everything from commercial to feature.

Making films in New York is a way of life. We understand it. Live it. And designed around it, drawing on years of experience on all types of feature, commercial, industrial and educational work.

Two years, seven stories and 40,000 square feet later

(plus innumerable gallons of blood, sweat & tears spilled on 38th Street and Eleventh Avenue), we have the most complete service-oriented equipment source anywhere. Park (yes, we said park!!!) outside our door, and you'll find a building-full of experts at getting things done. Backed by a huge inventory of the world's finest camera, lighting, grip and sound equipment. Supported by some of the finest optical and machine shops to be found anywhere.

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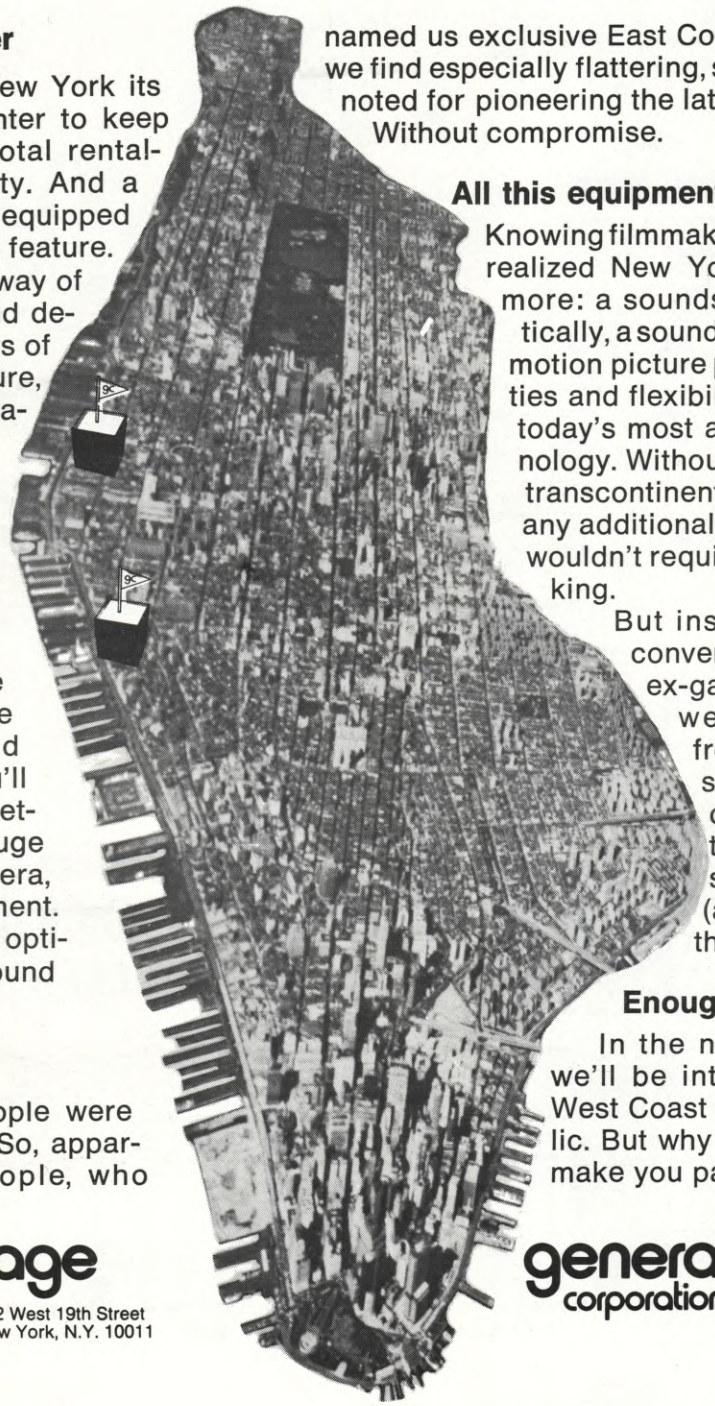
As the building took shape, people were impressed. We were impressed. So, apparently were the Panavision people, who named us exclusive East Coast Distributors. Which we find especially flattering, since they've long been noted for pioneering the latest in cinematography. Without compromise.



All this equipment and no place to go

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

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

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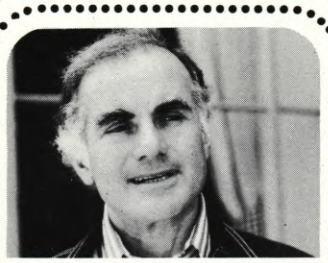

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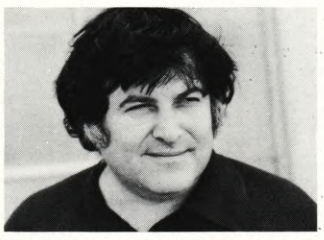
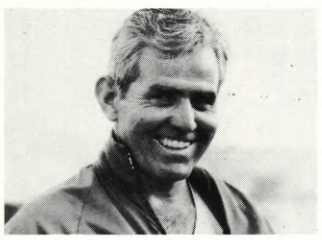
PRODUCER



DICK SARAFIAN
DIRECTOR

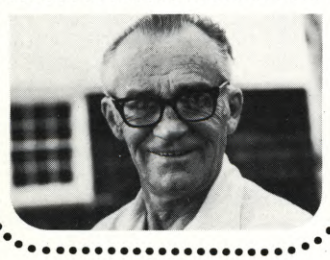
HARRY STRADLING JR.
DIRECTOR OF PHOTOGRAPHY



PHIL RAWLINS
PRODUCTION MANAGER

CHUCK WILBORN
SOUND MIXER

CLIFF HUTCHINSON
GAFFER



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• FEATURE ARTICLES

• DEPARTMENTS

ON THE COVER: Laser-generated light patterns of the type featured in "DEATH OF THE RED PLANET", spectacular short subject written, produced, directed and photographed by Dale Pelton. Laser-generated patterns for cover by Dr. Elsa Garmire, of the California Institute of Technology research faculty. Photograph by Dale Pelton.

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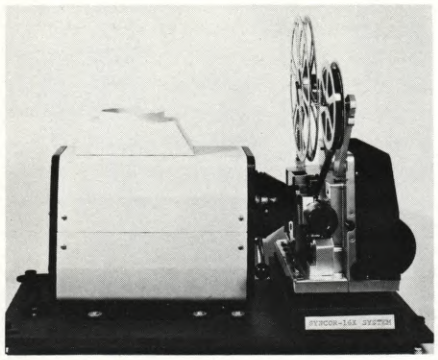
IN PRODUCTS, SERVICES AND LITERATURE



The SYNCOR-16X 16mm PROJECTION SYSTEM

Designed for short and long throws, the SYNCOR-16X is a hybrid comprising a Bauer P6 Synchron and a regulatable, ozone-free ORC-1600W Xenon Light Source.

This system will have applications in recording studios, for auditoriums, screenings and theaters—particularly where a synchronous 24 fps 16mm projector and a long-life (1500 to 2000 hours) xenon lamp is essential.

Featuring the reliabilities of both projector and lamp house, the SYNCOR-16X is a Monad concept. Tests show no appreciable gain in hum when recording equipment is stationed 4 feet from the system—and this, even with integral power supply.

The projector on pedestal and the lamp house are mounted on a simulated walnut 18 x 36" base 3/4" thick. While the four plastic-shoed feet enable independent levelling, a 90-degree swivelable lamp house enables immediate access to both units: for inspection, manual lacing of film and maintenance. Complete dismantling and reassembly are also simplified, and safety features are incorporated.

No special ducting or ventilation is required. Picture shows the SYNCOR-16X which weighs 160 lbs.

The 2000-foot reel capacity projector plays back optical/magnetic and records magnetic on 50 or 100 mil edge-stripe on film from "mix" controllable line and mike inputs; a solid-state 25-watt music power amplifier is also provided with a pre-amp outlet for other amplifier/speaker systems.

Worthy of mention is the fact that the Syncor-16X has been timed, without couplings, to tie in with synchronous 1/4" tape recorder to enhance sound and/or special effects.

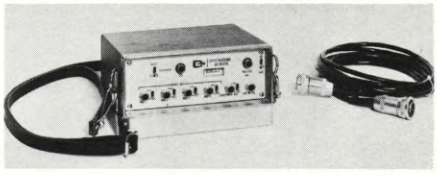
A wide range of projection lenses are also available. This includes zoom lens and Cinemascope anamorphics.

Details of this and other projection systems are available from MONAD ENTERPRISES, 1332 N. Sierra Bonita Avenue, Los Angeles, CA 90046. Tel: (213) 874-4730 or 467-8491.

•

NEW FOLDER DESCRIBES LATEST THRIFTFAX ANIMATION CAMERA STAND

Features of the latest model Thriftfax Animation Camera Stand are described in a new folder available from the manufacturer, Fax Company, 475 South Santa Anita Avenue, Pasadena, California 91107. Information also is provided on Thriftfax components, the revolving disc and platen unit, and those in combination with compound and pantagraph.



CRYSTASOUND AUXILIARY MIXER AVAILABLE FOR CP-16/A CAMERAS

Cinema Products Corporation announces that its Model 6C Crystasound Auxiliary Mixer is a vital part of the highly acclaimed Crystasound Recording System, making the system extremely versatile and efficient.

The Crystasound Auxiliary Mixer is basically designed to handle those particular filming situations where it is not feasible for the TV-news/documentary cameraman to handle the sound recording process by himself. It is also required in situations where additional microphones are needed beyond those which can be accommodated by the Crystasound built-in amplifier. The Auxiliary Mixer is an extremely lightweight (3 lbs. 1 oz.) and compact (6½" X 2½" X 6") unit, designed to accommodate four low-impedance dynamic microphones, one condenser microphone and one line input, with individual mixing pots and on-off switches for each of the six inputs. The Auxiliary Mixer plugs in directly to the mixer socket on the Crystasound built-in amplifier and draws all its power from the very same NC-4 nicad battery pack which powers the entire CP-16/A camera system. It is an integral part of the total Crystasound Recording System for CP-16/A cameras, making it one of the most versatile recording systems for TV-news/documentary 16mm cameras available.

The Crystasound Model 6C Auxiliary Mixer is priced at $850.00. For further information, please write to Cinema Products Corporation, 2044 Cotner Avenue, Los Angeles, Calif. 90025.

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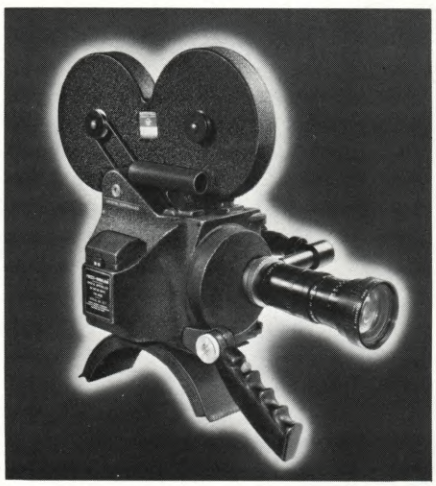


NEW CONVERSION OF FREZZI-CORDLESS CAMERA INTRODUCED

A 13-pound (5.9 kg.) lightweight "ready-to-roll" FREZZOLINI "Frezzi-Cordless^{tm}" DC Conversion of the SS-III professional motion picture camera was recently introduced to the TV and Motion Picture media. The camera conversion is in production at the company plant in Hawthorne, New Jersey 07506, U.S.A.

Well balanced, the weight includes an Angénieux 12-120mm f/2.2 zoom lens & viewfinder, 400-foot Mitchell magnesium magazine and internal 12-volt, 600 m.a.h. quick-change battery that runs 2000 feet of film per charge. A *separate* AC Battery Eliminator/Charger is part of the camera system. It adds the capabilities of (1) re-charging battery while it is still in camera; (2) re-charging battery while it is out of camera; (3) powering camera from 115 volt, 50-60 hz. AC lines (mains) while simultaneously re-charging battery. In addition, the camera can be powered from any external 12-volt DC source.

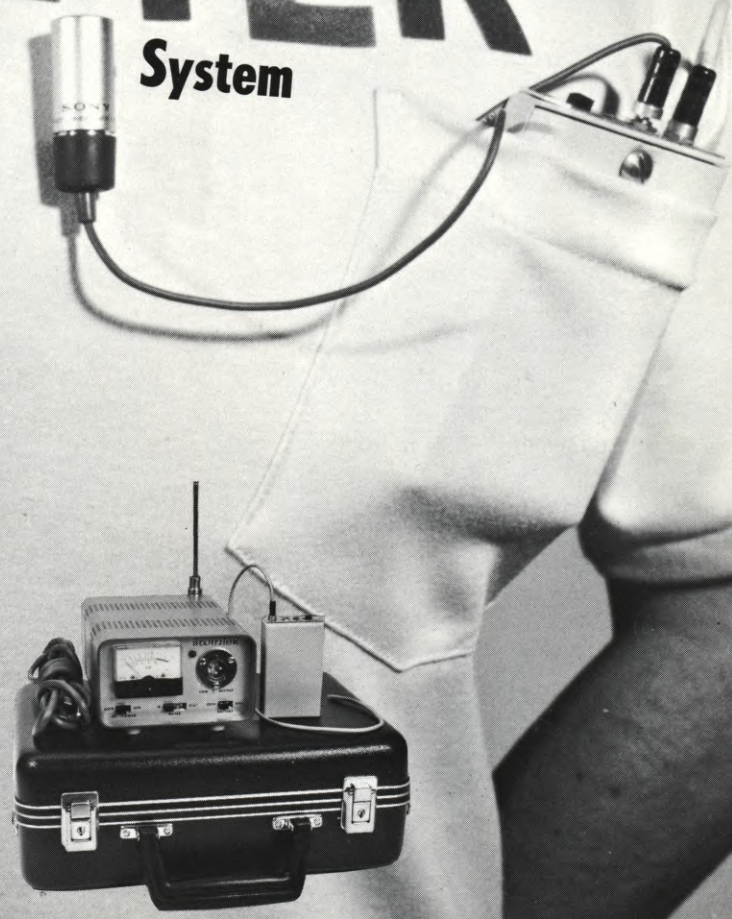
In point of fact, the FREZZOLINI "Frezzi-Cordless^{tm}" DC Conversion of the SS-III can be so "customized" as to seem specifically created for the require-

Continued on Page 916

SWINTEK

Wireless Microphone System

The new Swintek Mark IV Wireless Microphone System meets the most exacting requirements of the professional cinematographer at a price to fit the most stringent budget. Consisting of a transmitter, receiver and carrying case, Swintek guarantees the utmost in dependability and quality sound reproduction. It features a transmitter that is smaller than a pack of cigarettes, weighs only five ounces and can easily be concealed in costumes or shirt pocket and uses any type of microphone. Swintek offers a choice of Hi-Band frequencies from 150 to 220 MHz and is virtually free of static, dead spots and interference. A signal to noise ratio in excess of 60 DB is typical for a distance of 100 feet. Swintek incorporates state-of-the-art solid state circuitry.



Transmitter Features:

- Powered by 9V radio battery.
- Connectors on both transmitter and receiver lock to avoid shaking loose.
- Accepts low impedence input and has internal level adjust.
- Compressor/limiter to prevent acoustic overload.

Receiver Features:

- Crystal IF filter.
- Operates on AC or DC.
- Helical HF front end.
- Monitoring capability: audio, HF carrier level, DC power pack.
- Simultaneous audio outputs: balanced low level, unbalanced, line.
- Transmission indicator light.
- Phone jack and volume control for headset monitoring.

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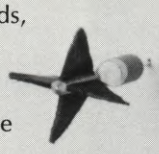
"My competition is starting to notice me."

When I opened Mobius Cine almost two years ago, I received six good luck cards and one potted plant from my competitors.

I've since lost the cards, the plant died, and my competitors treat me like a bad rash.



I can't say that I blame them.

With me around, the competition has had to take a long hard look at their pricing structures on motion picture equipment. My prices are rocking the boat.

They've also discovered that expedience is no substitute for selling the right equipment for the right job. I don't look at customers with dollar signs in my eyes. Now *they* won't be able to, either.

It seems that the more customers who get comfortable with the way I do business, the more uncomfortable my competitors get. So if you're a legitimate competitor, I'll be happy to send you a Sy Cane dart board (at cost, of course). It'll help you get rid of some tension.

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THE BOOKSHELF

By GEORGE L. GEORGE

Ray Harryhausen, who has for 40 years provided three-dimensional animation to such films as *The Beast from 20,000 Fathoms* and *One Million B.C.*, reveals in FILM FANTASY SCRAPBOOK (Barnes $15.) technical tricks of his fascinating craft. Backed by some 250 stills, pre-production sketches and background set pieces, he discusses front projection, traveling mattes, sodium and blue backing, and the Dynamation process for synchronizing live action and dimensional animation, as used in *The 7th Voyage of Sinbad.*

* * *

Publications of the British Film Institute, long an active source of significant writings of various facets of cinema, are now distributed in the U.S. by First Media Press (1121 Carney St., Cincinnati, OH 45202).

On hand are five studies of directors: Richard Roud's MAX OPHULS, containing a biography, an extensive critical filmography and a brief bibliography; MICHAEL POWELL by Kevin Gough-Yates, in England considered second only to Hitchcock; Catherine de la Roche's RENE CLAIR, with a biography, a bibliography and a detailed study of all his films (75¢ ea.); BUDD BOETTICHER: THE WESTERN, a compilation by Jim Kitses based on the premise that "few Hollywood figures raise the spectre of mass culture so vividly;" and ANDREW WAJDA: THE POLISH FILM, edited by Colin McArthur, relating the director's development to Poland's artistic maturity (95¢ ea.)

Other BFI publications include David Meeker's JAZZ IN THE MOVIES ($1.85), an index to the screen work of jazz musicians, listing over 700 film titles, plus some 250 musicians. SOVIET CINEMA 1917-1967, a stunning portfolio of stills from Soviet film classics (95¢); Theodore Huff's standard reference text, THE EARLY WORK OF CHARLES CHAPLIN (50¢), comprising his Keystone and Mutual one and two-reelers 1914-17 (50¢); and SOCIOLOGY AND SEMIOLOGY, edited by Peter Wollen, a scholarly study of cinema's effect on society's structure and its language (95¢).

* * *

Norman Kagan's THE CINEMA OF STANLEY KUBRICK (Holt $7.95) is an engrossing study of the director he considers an outstanding example of the

successful film *auteur.* Kubrick has full creative control over his movies which he generally produces, writes, directs, edits and even photographs (as in his early films) or works in closest collaboration with his cameraman, e.g. John Alcott on *A Clockwork Orange.* Kagan's book is a skillful and perceptive analysis of the various elements of Kubrick's films and their production, plus brief, strikingly visual synopses, pertinent quotes and an outline of Kubrick's working principles.

* * *

A new series of "filmguides", compact studies of key films that crystalized different periods of the development of cinema art, has been launched by Indiana University Press under the general editorship of two expert scholars, Harry M. Geduld and Ronald Gottesman. Initial titles in the series are John Ford's GRAPES OF WRATH by Warren French, Carl T. Dreyer's LA PASSION DE JEANNE D'ARC by David Bordwell, Buster Keaton's THE GENERAL by E. Rubinstein, and Stanley Kubrick's 2001: A SPACE ODYSSEY by Carolyn Geduld.

The five volumes follow a common pattern of providing basic information about the film, its director, cast, and other contributors, an analysis of its contents, a summary of its critical reception, an annotated bibliography, and the director's filmography. Highly readable and informative, they serve effectively the useful purpose of introducing viewers and students to significant films of the past ($5/1.75 ea.).

* * *

Two film genres whose popularity has steadily increased are surveyed in a couple of large-size, profusely illustrated volumes. Dennis Gifford's A PICTORIAL HISTORY OF HORROR MOVIES and Parkinson & Jeavons' A PICTORIAL HISTORY OF WESTERNS chart the cavalcade of memorable movies, stars and directors from nickelodeon days to current television (Hamlyn $4.98 ea.).

* * *

As a guide to the entertainment industry's complex legalities, FILM/TV LAW by Johnny Minus and William Storm Hale is an eminently useful manual, well organized, clearly written and compact (Seven Arts, 6605 Hollywood Blvd., Hollywood, CA 90028, $10.).

* * *

"The sky is not falling" is the reassuring view of today's films by Catholic critic James W. Arnold in SEEN ANY GOOD DIRTY MOVIES LATELY? (St. Anthony, 1615 Republic St., Cincinnati, OH 45410, $1.45). ■

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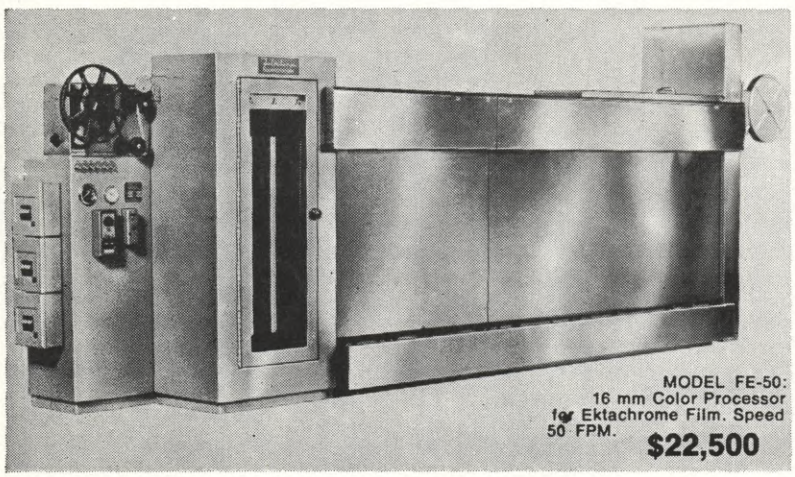
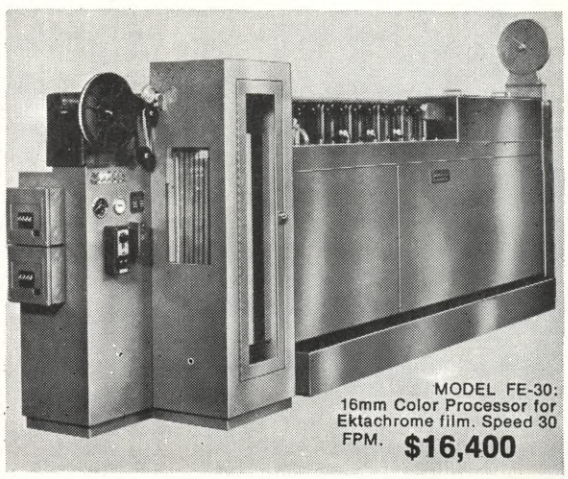


MODEL FE-50: 16 mm Color Processor for Ektachrome Film. Speed 50 FPM. **$22,500**



MODEL FE-30: 16mm Color Processor for Ektachrome film. Speed 30 FPM. **$16,400**

- **"FILMLINE OVERDRIVE FILM TRANSPORT SYSTEM"** This marvel of engineering completely eliminates film breakage, pulled perforations, scratches and operator error. The film can be deliberately stalled in the machine without film breakage or significant change of film footage in solutions. The heart of any film processor is the drive system. No other film drive system such as sprocket drive, bottom drive or simple clutch drives with floating lower assemblies can give you the performance capability of the unique Filmline Overdrive Film Transport System.
- **"TORQUE MOTOR TAKE-UP"** gives you constant film take-up and does not impose any stress or strain on the film itself. Completely independent of the film transport system. This FILMLINE feature is usually found in professional commercial processors but is incorporated on the FE-30 and FE-50 models as standard equipment. Don't settle for less!
- **"TEMP-GUARD"** positive temperature control system. Completely transistorized circuitry insures temperature control to well within processing tolerances. Temp-Guard controls temperatures accurately and without the problems of other systems of lesser sophistication.
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"ZERO DOWN TIME" The reputation of any film processor is only as good as its reliability. The combination of the exclusive and special added Filmline features guarantees trouble-free operation with absolute minimum down-time and without continual operator adjustments. Recapture your original investment in 2 years on maintenance savings alone. Filmline's "Push the button and walk-away processing" allows inexperienced operators to turn out highest quality film.

- **"MATERIALS, CONSTRUCTION AND DESIGN"** All Filmline machines are constructed entirely of metal and tanks are type 316 stainless steel, heliarc welded to government specifications. The finest components available are used and rigid quality control standards are maintained.

Compare Filmline features to other processors costing more money. Feature-by-feature, a careful evaluation will convince you that Filmline offers you more for your investment.

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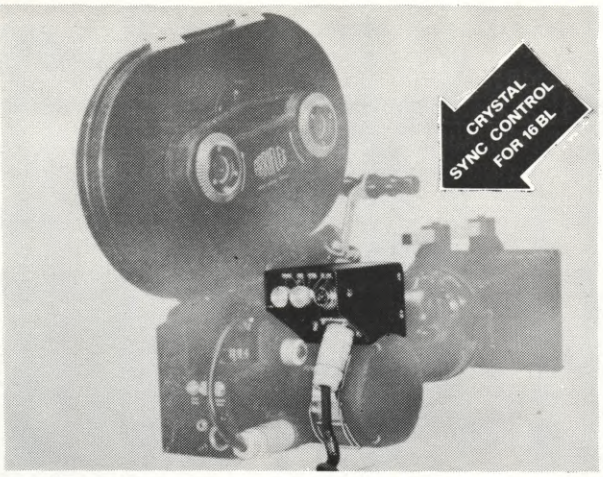

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- ★ *External sync input (slave your BL from any pilot source).*
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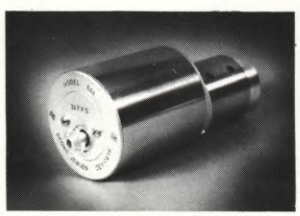
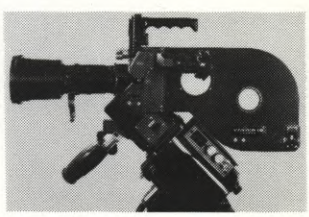
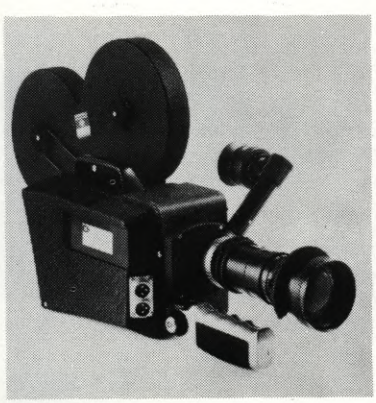


Crystal Motor for Arri S or M Model 504



Eclair Ciblo Retrofit Model 508

News/Doc cameramen everywhere:



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CINEMA WORKSHOP

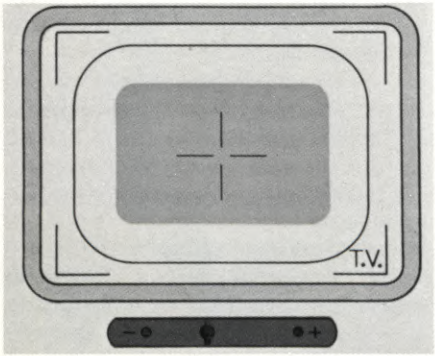
By ANTON WILSON

LIGHT METERS—PART IV

The incident meter seems to have achieved the greatest popularity among cinematographers. Its basic design ensures accurate exposures and guarantees scene-to-scene matching of skin tones. There are several instances, however, where it is either impractical or impossible to obtain an incident reading. For example, the subject may be a great distance from the camera, as when using a telephoto lens. In some cases the cinematographer may feel that the taking of an incident reading may disturb the subject, as when working with children, animals or politicians. Certain manufacturing processes in a factory may prohibit the close proximity necessary for the incident reading. Other cases where an incident meter would be impractical include: shooting sports from a press box at a stadium; concerts or other performing arts that are spotlit and the lighting changes during the performance; subjects which are luminous or translucent and backlit, such as neon signs, a lighted Christmas tree, stained glass windows, etc.; subjects with an extremely high ratio of highlights to shadows. In almost all these cases a spot-type meter will provide the easiest and most accurate exposure.

The spot meter is essentially a reflective-type light meter and everything we have discussed about reflective-type meters will pertain to the spot meter. The main difference is the angle of acceptance. Most spot meters will have an acceptance angle of ½° to 5°. However, the most popular units seem to be those with the most narrow angle, usually around 1°. Because the measuring angle is so small, there must be a critical method of aiming the meter. All spot meters must have a viewfinder, in many cases, one of single-lens-reflex design.

FIGURE 1—Most TTL metering systems are center-weighted, the effective angle of acceptance covering approximately half of the frame.



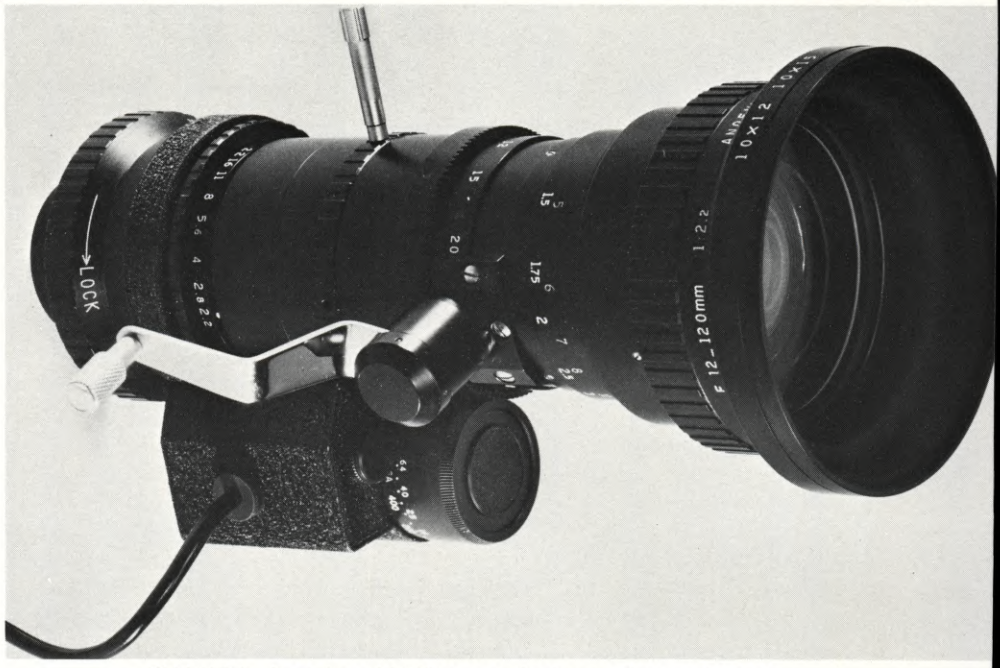


FIGURE 2—Angenieux 12-120mm professional automatic-iris lens

In practice, the cameraman can take a reading from the camera position by sighting the critical areas of the subject in the measuring area of the viewfinder. As with any reflective meter, the color and brightness of the subject must be taken into account. If a reading is taken from the face of a fair-complexioned performer on the stage, the cameraman should *open up* approximately 2/3 to 1 full stop from the spot reading. A light-complexioned person reflects about twice as much light (1 stop) as medium gray (18% reflectance).

The TTL metering systems actually belong in the spot meter category. These through-the-lens or behind-the-lens systems are just beginning to appear in the professional motion picture field. I am, at this point, referring to the professional-type match-needle configuration and not the fully automatic iris. The match-needle system allows the cameraman full control of the iris, such as the APEC system for the Arriflex 16BL camera. This match-needle system has been most popular with professional still photographers for over ten years. The fact that cinematographers have been deprived of this great device until just recently is merely another blatant indication of the technical lag that has always plagued our industry.

These new TTL systems are of fully professional quality and are capable of the most accurate readings. I have no doubt that, like the still industry, every professional motion picture camera designed in the future will incorporate a TTL system. This is not to say that the TTL replaces the incident reading. Simply stated, there are many cases in normal everyday shooting where the TTL system will provide the quickest, most accurate or *only* method of obtaining correct exposure. For documentary or *cinema verité*, the TTL is almost a necessity. Essentially, all the cases stated above for use of a spot meter are equally suited to the TTL system. By zooming in to the longest focal length, a 12-120 zoom lens (16mm) or a 25-250 (35mm) lens will have an acceptance angle of only 4°. Most TTL systems are center-weighted, that is, they read only the center portion of the frame area. Thus, the effective angle of acceptance

Continued on Page 904

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When it comes to film, a little ingenuity can go a long way. For us, it's created a reputation of achieving the difficult with less weight, in less space, and often at far less cost. Some of the reasons why are illustrated below.

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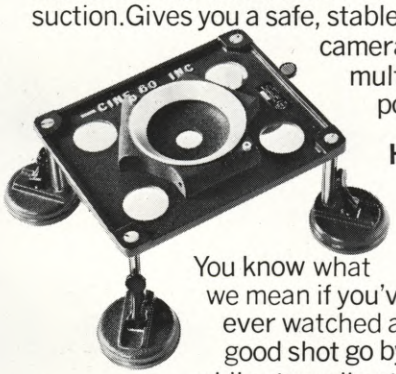

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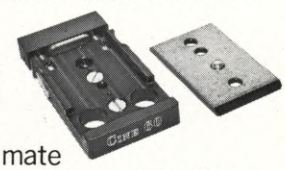

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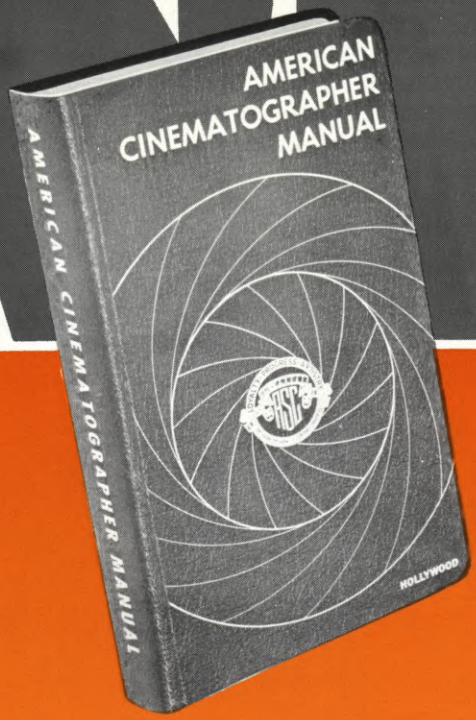

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Reflection media

Reflection

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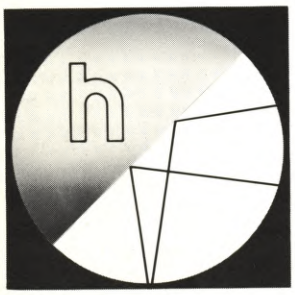
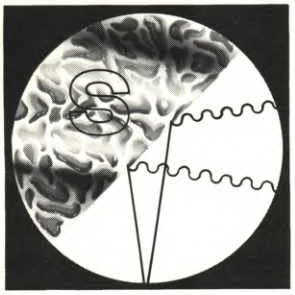


roscoflex-h (hard)

A "hard" reflector material that is strongly directional. It tends to retain the character of the light source, producing hard shadows, but firm, sharp light. Available in 48 in. x 30 ft. rolls and 20 in. x 24 in. sheets. (Rolls 1.22 x 9.14 meters. Sheets 0.51 x 0.61 meters.)



roscoflex-s (soft)

The ideal material for soft, diffuse reflection. It's perfectly suited for applications where large washes or small spots of soft light are needed. For boards it most closely matches the character of traditional leaf, but has the strength and durability of the Roscoflex laminate. Available in 48 in. x 30 ft. rolls and 20 in. x 24 in. sheets. (Rolls 1.22 x 9.14 meters. Sheets 0.51 x 0.61 meters.)

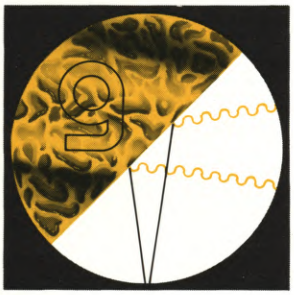
roscoflex-ss (supersoft)

Today's emphasis on very soft light dictated the need for a reflector that would provide the softest possible reflection. Roscoflex "SS" meets that need. Available in 48 in. x 30 ft. rolls and 20 in. x 24 in. sheets. (Rolls 1.22 x 9.14 meters. Sheets 0.51 x 0.61 meters.)

media

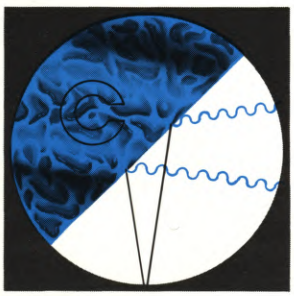
roscoflex-m (mirror)

This tough, durable plastic material has a mirror finish for long throws of reflected light or intense reflection. It offers the advantages of mirror reflections but it is easy to transport and won't crack or break. Available in 48 in. x 30 ft. rolls and 20 in. x 24 in. sheets. (Rolls 1.22 x 9.14 meters. Sheets 0.51 x 0.61 meters.)



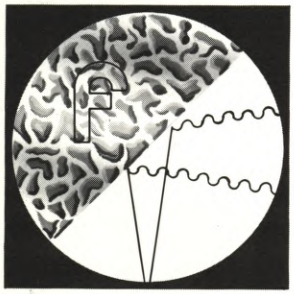
roscoflex-g (gold)

For certain characteristics of warm reflected light, cinematographers used gold-tinted materials on their boards. Now the modern movie-maker can duplicate this same quality anywhere, with or without a board, by reflecting with Roscoflex "G". Available in 48 in. x 30 ft. rolls and 20 in. x 24 in. sheets. (Rolls 1.22 x 9.14 meters. Sheets 0.51 x 0.61 meters.)



roscoflex-c (cool blue)

Most reflecting surfaces tend to warm the light since, when used outdoors, they reflect the sun and not the sky. Roscoflex "C" boosts the Kelvin of the reflected light and is particularly useful in the early morning or the late afternoon when the sun is lower and redder. Available in 48 in. x 30 ft. rolls and 20 in. x 24 in. sheets. (Rolls 1.22 x 9.14 meters. Sheets 0.51 x 0.61 meters.)



roscoflex-f (featherflex)

Virtually weightless, Roscoflex "F" (for featherweight) is strong and tear-resistant. It can be used to bounce light into inaccessible locations like the tops of closets or the underside of dashboards. So lightweight, it can be affixed to an entire wall or ceiling with just spots of glue or tape. You can carry it with one hand and use it and re-use it anywhere. Available in 48" x 30 ft. rolls only. (1.22 x 9.14 meters.)

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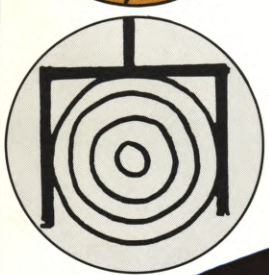

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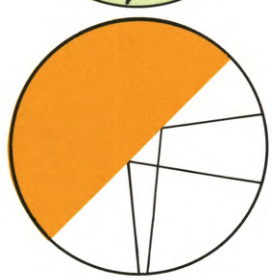

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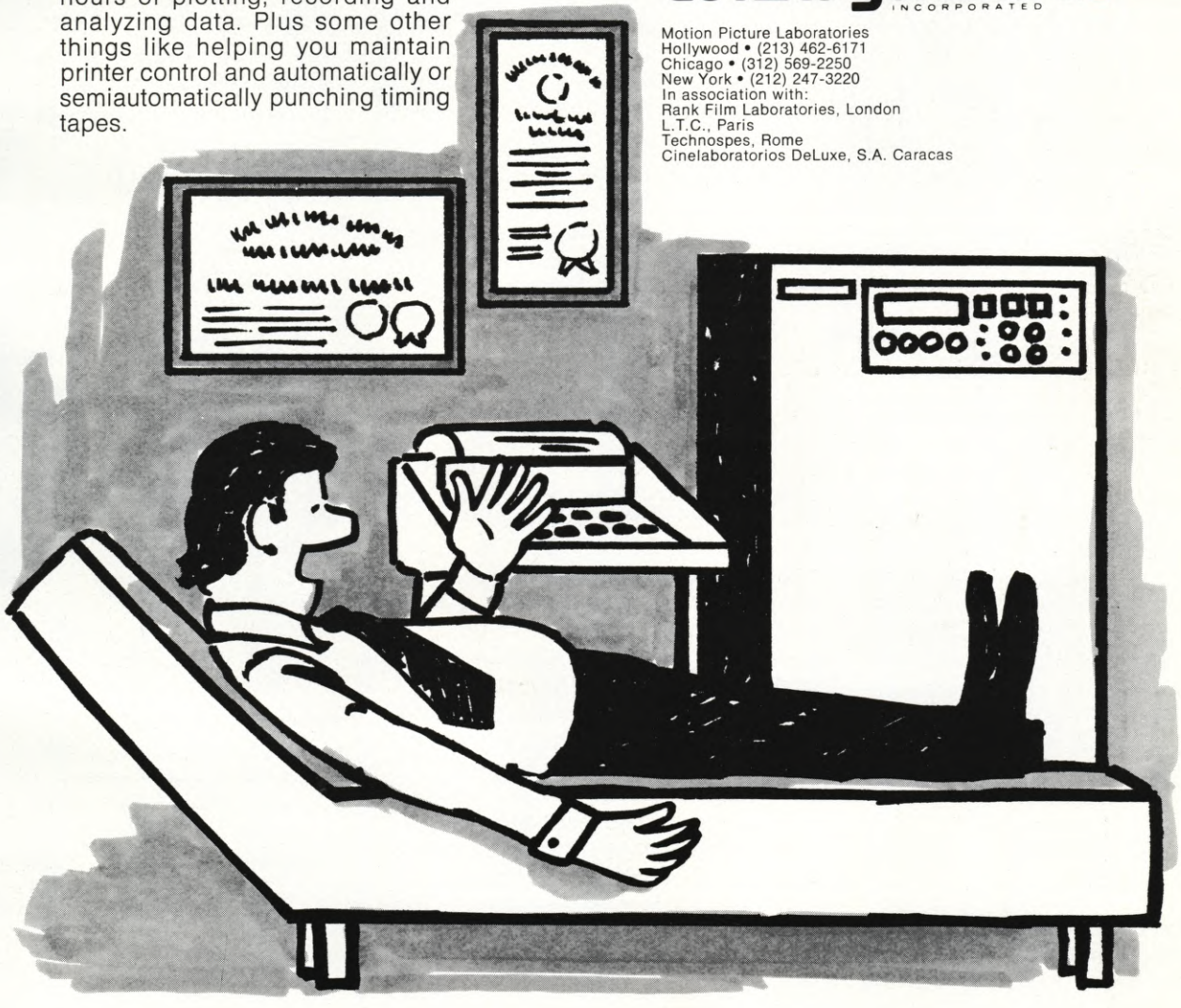
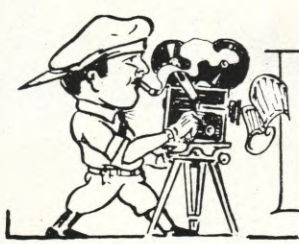




THE HONOR ROLL

KARL STRUSS, ASC.

Karl Struss started shooting still pictures for Cecil DeMille on St. Patrick's day in 1919, and among his many laurels was the first Academy Award (with Charles Rosher) for "Sunrise", made in 1937. Over the years he has received nominations for the "Sign of the Cross", and "Aloma of the South Seas". He was also instrumental in shooting scenes from the original "Ben-Hur".

Although Struss left the operation of the camera to his operator, he concentrated on lighting, camera angles, sets, and other preproduction work.

Struss began his camera career as a still photographer studying art photography for four years at Columbia University. During the early years he did portraits for magazines, advertising and illustration. He also was involved in a lens manufacturing firm and, to this day, a lens is still manufactured which was perfected by Struss in the early days of still photography.

During his early career he made two pictures with Marshal Neilan and spent three years with B. P. Shulberg making Preferred Pictures. In 1927 he photographed "Sunrise" which received the first Academy Award for distinguished photography in 1927-30, with D. W. Griffith and made all the sound pictures with Mary Pickford at Paramount from 1930 to 1947. In 1931 he became a cinematographer with Paramount making such films as "Sign of the Cross", "Dr. Jekyll & Mr. Hyde", "Aloma", "Happy Go Lucky", "Bring on the Girls", "Great Dictator", many of the Tarzans, "Limelight," "Atilla", "Cavalleria Rusticana", "Mohawk", "The She Devil", and "Kronos".

Karl Struss has the gift of an insatiably inquiring mind. He was never satisfied until he knew, from personal experience, the why and wherefore of things. That inquiring mind of his has been responsible for a lot of useful things in photography. As one of the nation's foremost commercial still photographers, Karl decided he wanted a soft-focus lens of a certain quality that lens-makers told him was impossible to make. Karl tackled the problem himself, experimenting with the theories and using every possible optical combination until he finally got the results he wanted . . . a soft-focus lens which provided a foundation of an essentially sharp image.

As a U.S. Army photographer during World War I, Struss advocated the idea of using natural-color photography as a means of seeing through camouflage. His superiors were less farsighted—but, during World War II, aerial color-photography was one of the "latest developments" in penetrating camouflage.

Struss' experiments with lighting both in conjunction with cinematography and make-up have enhanced the skills of the cinematographers through the years.

One innovation was the "Lupe", a funnel-shaped, focusing reflector carrying a tubular, 1000-Watt frosted globe and mounted on a multi-jointed arm so it could be placed in any conceivable position, which has become extremely popular in face lighting. And the other cinematic development, which was used in such widely differing productions as musicals, and horror films, was turning a normal-appearing make-up into blackface by means of carefully coordinated make-up and filtering, using a long, graduated filter shading from red at one end to an absolutely complementary green at the other end. Then, making-up the artist's face with cosmetics, which, when viewed through one end of the filter—say the red end—photographs white, while through the complementary-colored green filter—photographs black, the change is made with no more effort on the part of the camera-crew than sliding the long filter across the lens.

One particularly difficult scene in his career was in the Paramount film "Aloma of the South Seas". The scene begins with Aloma, as a child, sitting beside a lagoon and singing. The camera dollies up to her, around and down to show her reflection in the still pool. A nut drops into the pool, breaking up the reflection. When the water quiets down, Aloma, now grown to womanhood and played by Dorothy Lamour, is mirrored in the water.

Doing this in synchronism to prescored music, with the lighting complications of a big-stage-built exterior set, and the added physical handicap of the big and somewhat unwieldy Technicolor three-film camera made it one of the most difficult single scenes in his career as a cinematographer.

Karl Struss' career ran the gamut from the old-time ortho-film "flickers" to Television and he is hailed as one of the industry's most versatile camera-artists.

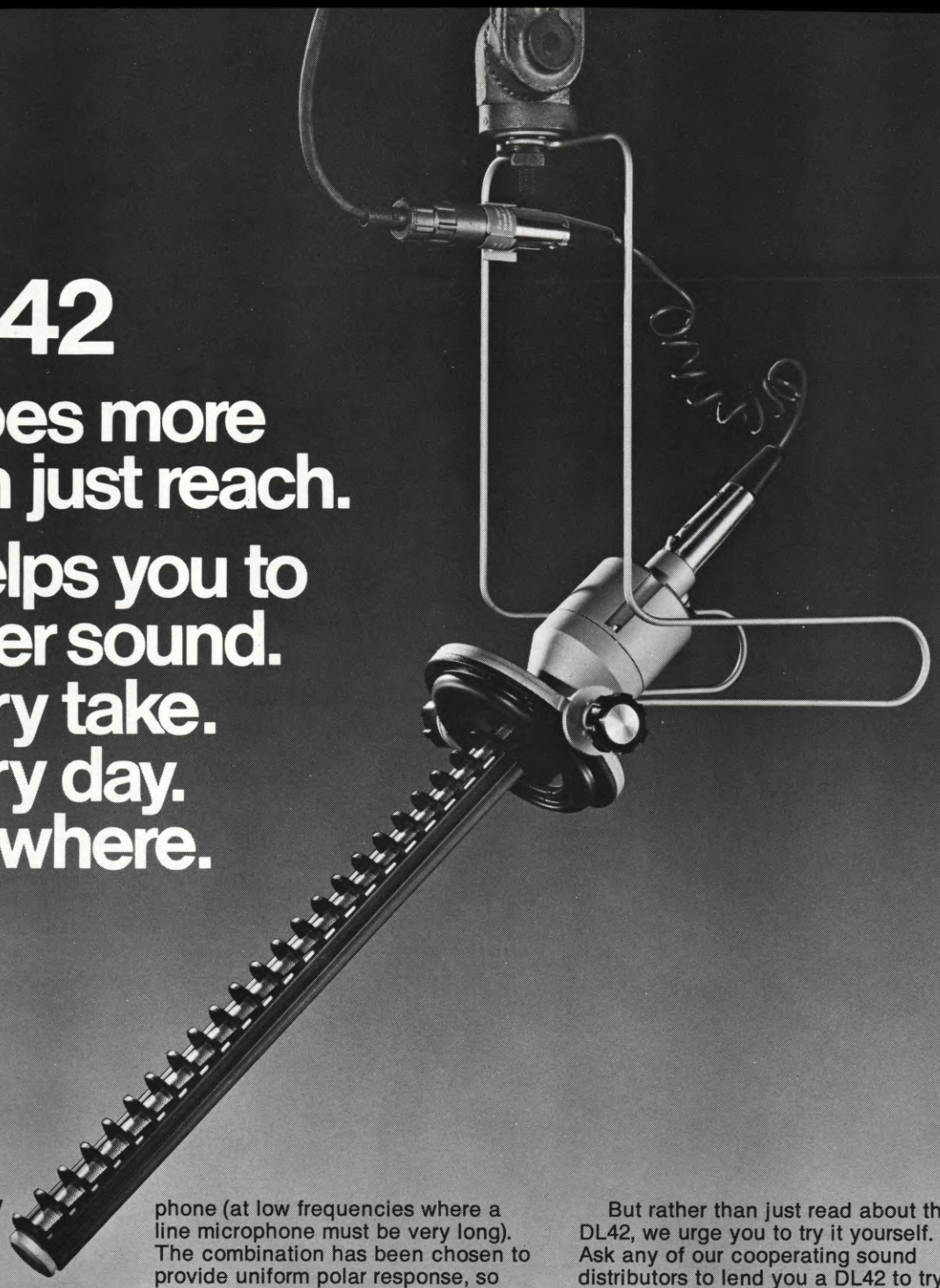
Struss was one cinematographer whose work was never typed. With the possible exception of Westerns, every conceivable type of feature production flowed through his cameras. He went from DeMille spectacles to horror melodramas and Marx Brothers' comedy. He took over a year to bring Chaplin's "The Great Dictator" to the screen and for many years did the Mae West pictures bringing his special talent for softly sparkling, high-key cinematography into play.

During the origins of Technicolor, he was one of the very few "production" cinematographers qualified, in the opinion of Technicolor, to take complete and unaided charge of filming a Technicolor production.

His transition to Television was made with little effort and he worked on "My Friend Flicka", "Broken Arrow", and commercials bringing his flare for quality camera work with him.

He won two Cannes Festival awards, one in 1959 and one in 1960 for commercials.

Today, Karl Struss is retired, but in retirement he rises early each morning to work out on the tennis courts using the fine lens built into his eye to follow the ball and stun his opponents with his adept handling of the racket.



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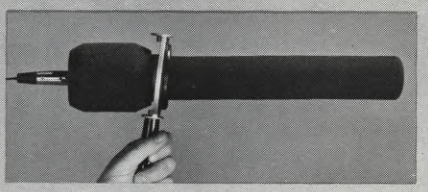
But rather than just read about the DL42, we urge you to try it yourself. Ask any of our cooperating sound distributors to lend you a DL42 to try on your next production. No cost or obligation to serious professional users. Write today for a DL42 technical data sheet. Good reach with good sound. We think you'll like what you hear.



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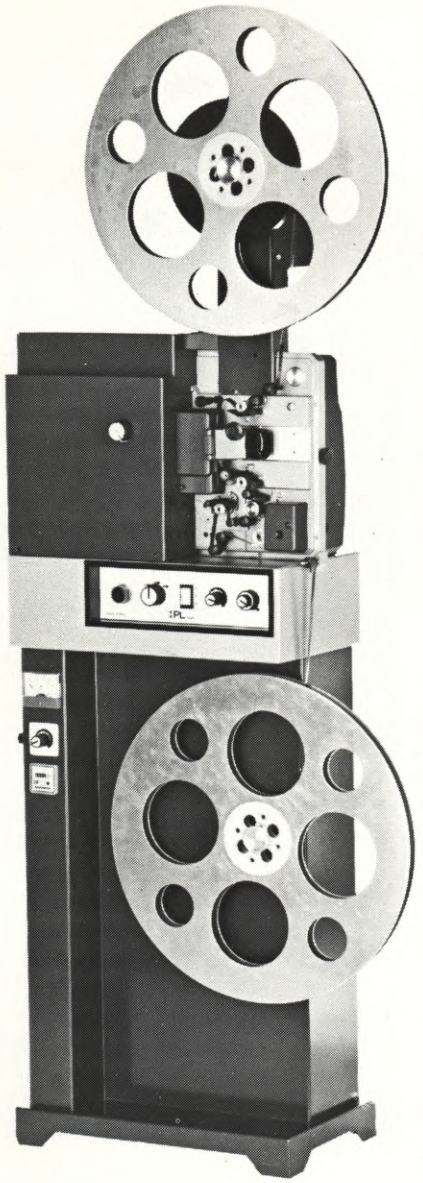

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QUESTIONS & ANSWERS

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

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

Q How do professional cinematographers get those beautiful and dramatic cloud effects in black-and-white?

A Where panchromatic film is used and the sun is bright and the sky clear blue, a red filter, such as a 23A, will produce the necessary over-correction to render cloud formations fleecy white against deep, dark skies. Such contrasts can rarely be obtained where there is haze or fog present in the atmosphere. The use of any filter on the camera, of course, makes it necessary to compensate for the light held back, by opening up the lens.

Q Should color film for television use be handled differently from that shot for standard motion picture release?

A Generally speaking, a color film that is satisfactory for theatre projection will reproduce well on a television tube. However, color broadcasts are often seen on black and white television sets so due consideration must be given to colors of sets and costumes in regard to their monochrome transmission. Trouble may be encountered if the gray values of the colors used are so nearly alike that proper separation or contrast is lost in the black and white reproduction. Negative/positive-type color film, such as Eastman Color, is more satisfactory than reversal films for color television, since reversal duplicates from reversal originals are generally of too-high contrast for good television reproduction. However, original reversal color films will usually reproduce satisfactorily, if correctly exposed and properly color-balanced.

Q What is the recommended brightness for projection of 16mm and 8mm films?

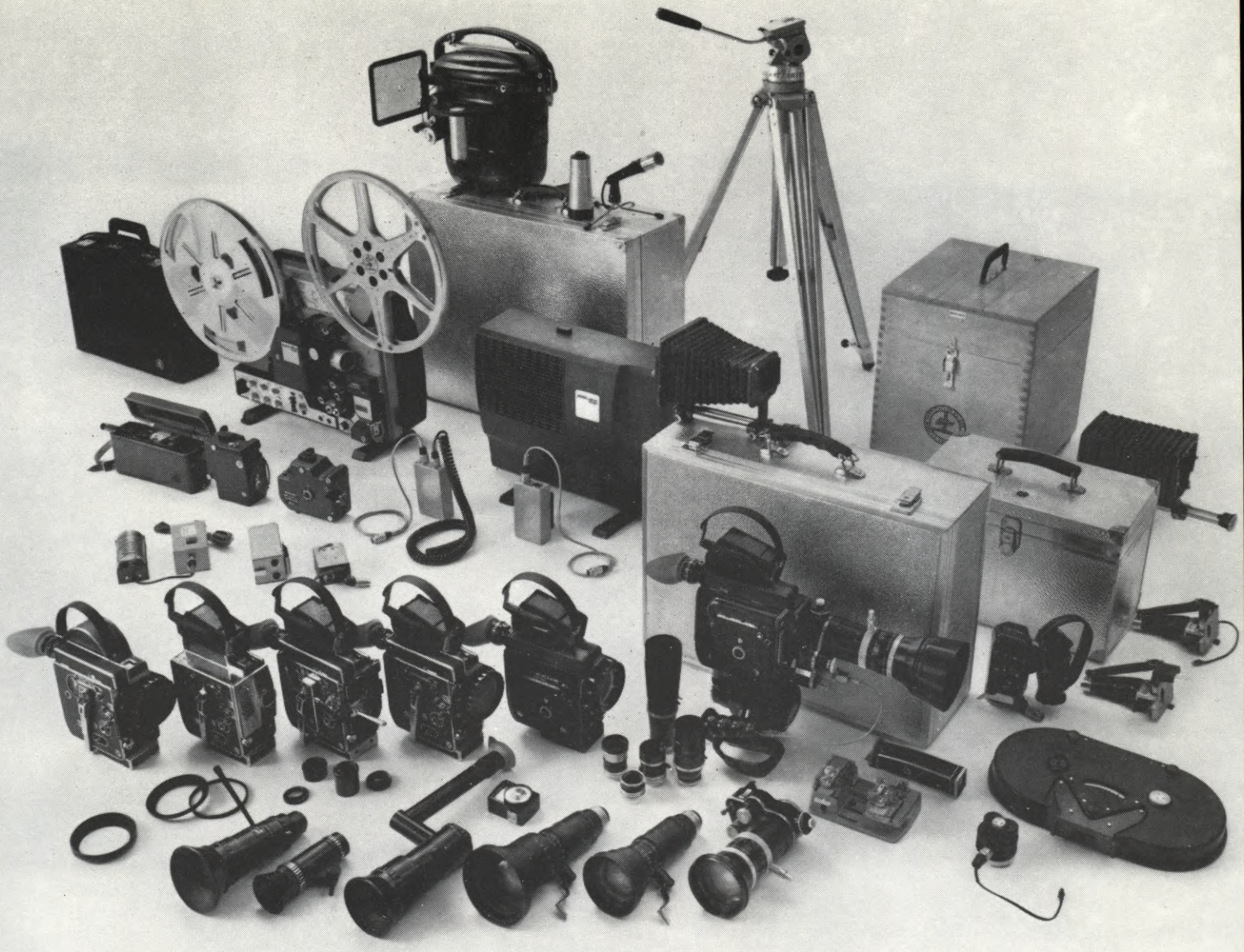
A The accepted screen brightness for studio projection-room screens varies between 12 and 15 foot-candles. While 12 foot-candles is considered ideal for theaters, screen brightness for 16mm films should be the same as for 35mm, the above figures will give you something to go by. We know of no standard established for 8mm projection.

Q Does low-key lighting mean low intensity of the key light? How is adequate depth of field maintained under this condition?

A Low-key lighting does not mean lowering the intensity of the key light. Low-key lighting employs very little fill light in relation to the key light, so that a high-ratio lighting balance results. Low-key lighting is used for night effects, special effects, and for dramatic scenes where dark predominates. An adequate negative with sufficient printing density is required, the same as in normal or high-key photography, so low-key scenes are not underlighted or underexposed except for special effects. Depth of field is no problem in low-key scenes, since it is always possible to work at the required light level for the f-stop in use or to employ follow-focus, in which the subject is kept in sharp focus as he moves, by the assistant cameraman, who changes focus as the subjects move during the scene.

Q Can 16mm black-and-white or color originals be blown up to 35mm for theatrical release? Is a 35mm sound track required?

A It depends on the sharpness, registration and graininess of the 16mm original. Generally speaking, 16mm black and white, particularly the ultra-fast variety, will not blow up too well. Excellent results are being obtained, however, in blowing up 16mm Eastman Ektachrome Commercial using the new "liquid gate" optical printing technique, in which the film is coated momentarily prior to entering the printing gate. Individual cameras of the same type vary a great deal, so it is best to make a test blowup with the camera that will actually be used to film the production. Best results will be obtained with a pin-registered camera. A 35mm optical negative sound track will be required for the final release printing. This can be obtained, however, by recording a 16mm magnetic track or a 1/4-inch tape track recorded with a sync pulse signal. Either of these may be re-recorded to obtain the 35mm optical negative.



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The works: You can extend your basic equipment almost indefinitely with a wide range of accessories.

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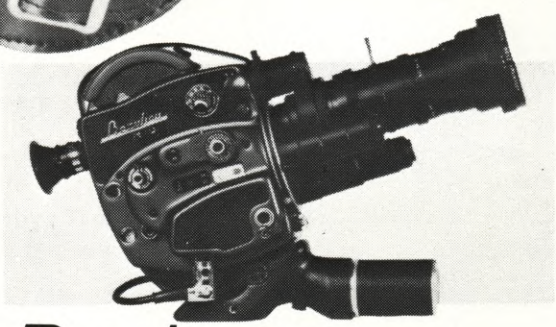

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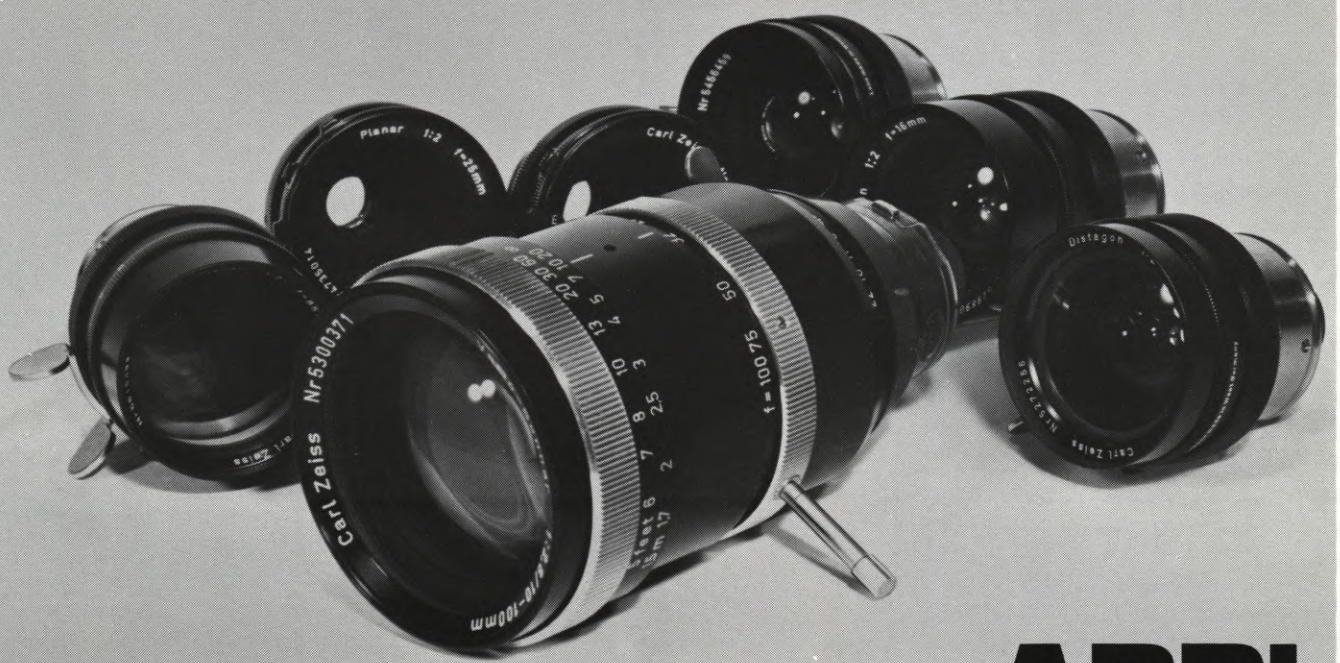

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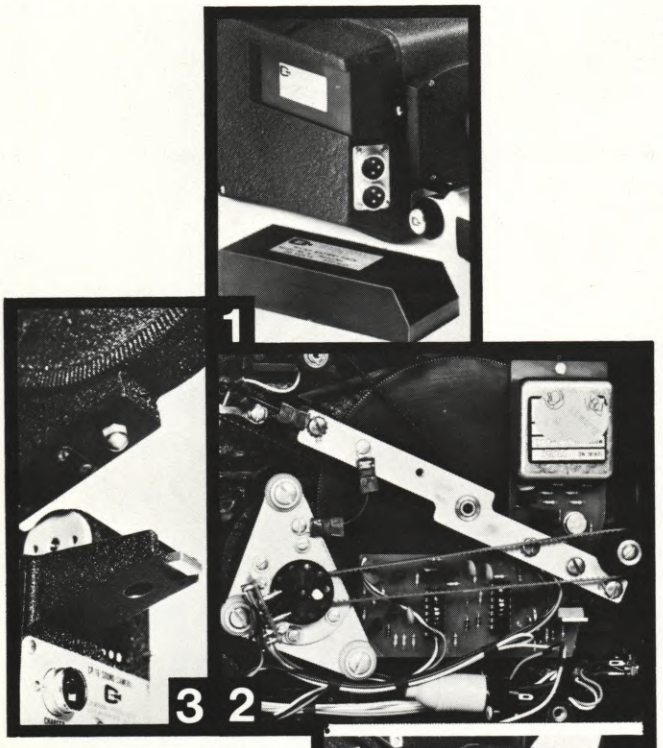

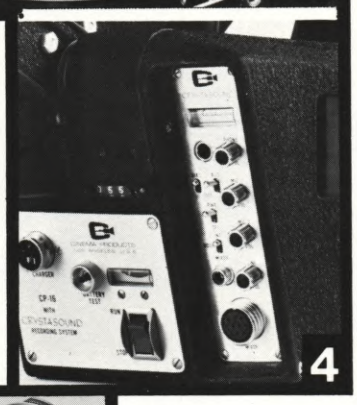

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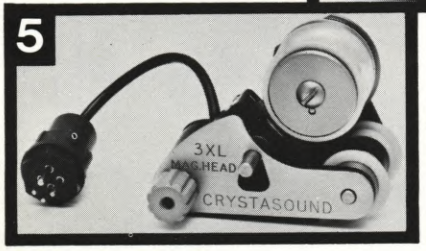

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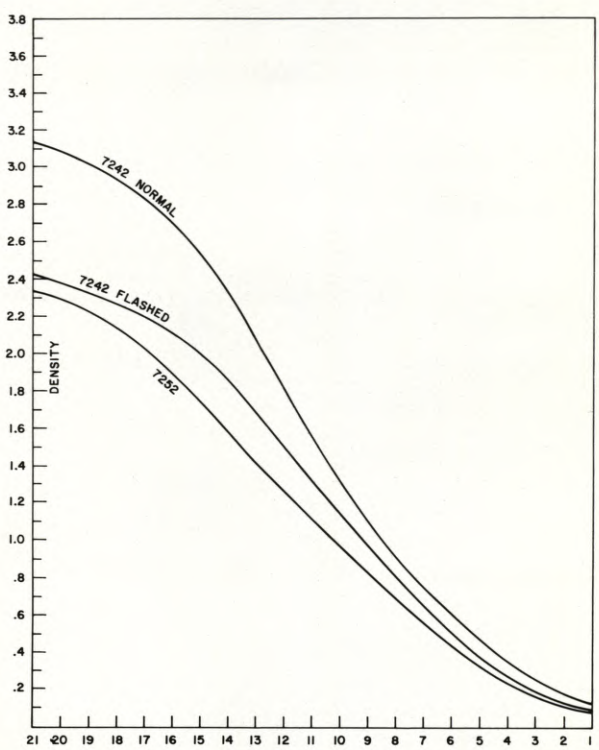

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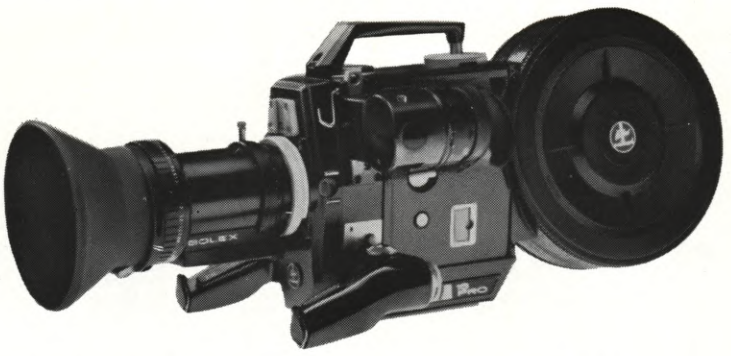

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BOLEX 16 PRO

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PRIZE-WINNING COMMERCIALS TO BE SHOWN WORLD-WIDE

Films and tapes of the trophy-winning commercials from the 13th annual International Broadcasting Awards are beginning a world tour with showings in Japan, Australia, Brazil, Mexico and Puerto Rico, according to John J. McMahon, president of the Hollywood Radio and Television Society, which has sponsored the awards since 1960.

McMahon, who is vice president, programs, West Coast, for NBC Television, said the commercials, selected as the "world's best" for 1972, also are being made available for showing to major American advertising agencies and production companies.

Later showings outside the United States are scheduled for England, France, Germany, Ireland, Spain, Canada, Argentina and Venezuela, McMahon said. The trophy-winning commercials were chosen from more than 3200 entries from 42 nations.

Television sweepstakes winner is a series of three public service announcements for the New York Drug Addiction Services Agency from Young & Rubicam International and Horn/Griner Co., both of New York. Trophy winners in 11 other television categories are included in the film.

The radio sweepstakes winner is a series of three humorous commercials for Schieffelin & Co.'s Blue Nun Wine featuring the voices of Jerry Stiller and Anne Meara. It was produced by Della Femina, Travisano & Partners of California, Los Angeles, and the National Recording Co., of New York. Radio trophy winners in eight other categories are represented.

The film and tape are touring Japan under the auspices of Tsuneji Hibino, president of Dentsu Advertising, Tokyo. In Australia, Jack Pettett, of Leo Burnett Pty., Ltd., North Sydney, will present the film and tape in major advertising centers.

J. Natale Netto, director of the Bureau de Propaganda advertising agency, Sao Paulo, Brazil, has arranged showings throughout that country. E. Guillermo Salas, president and director general of Nucleo Radio Mil, Mexico City, is sponsoring the Mexican tour. Edward Rapp, president of the Federacion Publicitaria de Puerto Rico, is presenting the trophy winners there.

The 14th annual International Broadcasting Awards will honor the "world's best" radio and television commercials of 1973. Winners will be announced and trophies presented at the Century Plaza Hotel, Los Angeles, in March, 1974.

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VIDTRONICS AND TELEVISA OF MEXICO COMPLETE UNIQUE GLOBAL VIDEOTAPE/FILM PRODUCTION ASSIGNMENT

The Vidtronics Company, Hollywood, and Televisa, S.A., the television network of Mexico, are completing post-production on a complex videotape/film assignment covering three continents and six countries throughout the world.

The companies cooperated in disseminating films of the historical trip taken by Luis Echeverria, President of Mexico, who visited government leaders in North America, Europe and Asia to develop and further trade relations between Mexico and these countries.

Announcement of the unprecedented international cooperation was made jointly by Lic. Miguel Aleman Velasco, executive vice president of Televisa, S.A., and Milton T. Raynor, executive vice president of The Vidtronics Company, who also revealed that communications satellites were utilized to transmit the programs from the country of origin to Mexico City where the important meetings held were taped. The master tapes were then flown from Mexico City to Hollywood where Vidtronics provided post-production and transferred the tapes to 16mm film.

The sub-master tapes were scheduled for telecast over the nationwide Televisa network, and the 16mm prints pro-

(ABOVE RIGHT) A few witty words from spry and spunky pioneer producer Sol Lesser, honored at recent dinner meeting of the American Society of Cinematographers, together with Hal Mohr, ASC, to whom Lesser gave his first job as a cameraman long years ago. (BELOW) Honored guests at dinner meeting chat with A.S.C. members. (LEFT) Charles G. Clarke, ASC, with Dr. Bernard Kanter, Head of the Department of Cinema, University of Southern California. (CENTER) Noted Los Angeles Times Film Critic, Charles Champlin, with Sol Halprin, ASC. (RIGHT) Famed Swedish cinematographer, Sven Nykvist, talks with Milton Forman, Associated Producer of his new American film assignment, "HERE THERE BE DRAGONS".

Pick our brains.

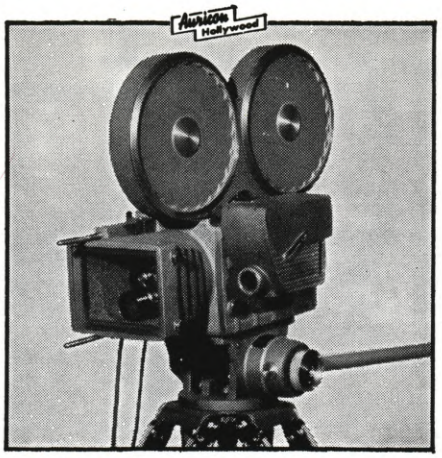
Let's say you're stuck with a special shooting problem. We want you to know you can bring your dilemma to us for some further thought. FERCO's grey matter is worth considering: A staff that includes three top professionals with a wealth of on-the-job experience in documentaries and features. And a batch of equipment innovations and inventions that include the FERCO monorail dolly system, the FERCO helicopter camera mount, the FERCO pistol grip, the FERCO radio-controlled G.S.A.P., the "Fercovan."

We could go on and on with a list of new developments resulting from the specific needs of our film-making customers. You see, we do much more than rent or sell you equipment. We're dedicated to serving you well, and we *think* about what we're doing. So bring in your problem and let us show you how we can keep our minds on our work. **New York:** 419 W. 54th St., 10019 (212) 581-5474. **San Francisco:** 1300 Sansome St., 94111 (415) 398-2307. **Santa Fe, N.M.:** 1626 Canyon Road (P.O. Box 493) 87501 (505) 983-4127.

Film Equipment Rental & Sales

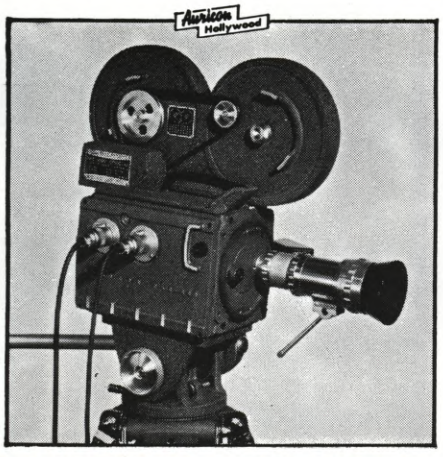
AURICON 16mm Sound-On-Film for Professional Results!

"CINE-VOICE II" 16 mm Optical Sound-On-Film Camera.
★ 100 ft. film capacity for 2¾ minutes of recording; 6-Volt DC Convertor or 115-Volt AC operation. ★ $1180.00 (and up).



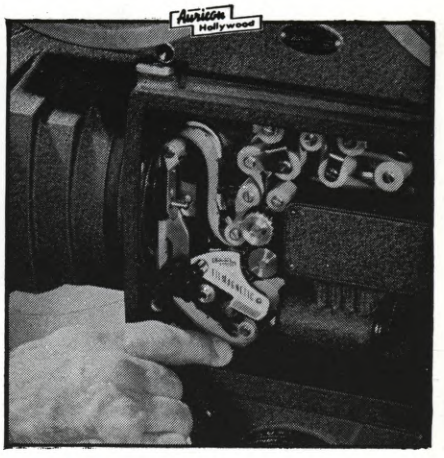
"AURICON PRO-600" 16mm Optical Sound-On-Film Camera.
★ 600 ft. film capacity for 16½ minutes of recording. ★ $1820.00 (and up) with 30 day money-back guarantee.

"SUPER 1200" 16 mm Optical Sound-On-Film Camera.
★ 1200 ft. film capacity for 33 minutes of recording. ★ $6425.00 (and up) complete for "High-Fidelity" Talking Pictures.

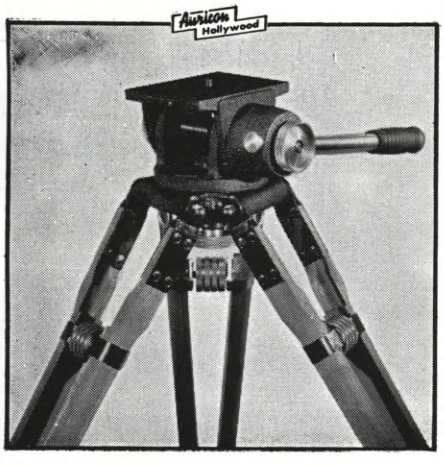


"PRO-600 SPECIAL" 16mm Light-Weight Camera.
★ 400 ft. film capacity for 11 minutes of recording. ★ $1620.00 (and up).

PORTABLE POWER SUPPLY UNIT — Model PS-21... Silent in operation, furnishes 115-Volt AC power to drive "Single System" or "Double System" Auricon Equipment from 12 Volt Storage Battery, for remote "location" filming. ★ $337.00



FILMAGNETIC —Finger points to Magnetic pre-stripe on unexposed film for recording lip-synchronized magnetic sound with your picture. Can be used with all Auricon Cameras. ★ $1325.00 (and up).



TRIPOD — Models FT-10 and FT-10S12...
Pan-Tilt Head Professional Tripod for velvet-smooth action. Perfectly counter-balanced to prevent Camera "dumping." ★ $406.25 (and up).

Strictly for Profit
CHOOSE AURICON

If it's profit you're after in the production of 16 mm Sound-On Film Talking Pictures, Auricon Cameras provide ideal working tools for shooting profitable Television Newsreels, film commercials, inserts, and local candid-camera programming. Now you can get Lip-Synchronized Optical or Magnetic Sound WITH your picture using Auricon 16 mm Sound-On-Film Cameras. Precision designed and built to "take it."

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Write for your free copy of this 74-page Auricon Catalog

★ Auricon Equipment is sold with a 30-day Money-Back Guarantee. You must be satisfied.

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It's a better machine

Here are 14 reasons why...

TYPE 316 STAINLESS STEEL
Type 316 stainless steel tanks except bleach, which is titanium.

LOW FILM TENSION
Bottom tendency drive uses "Wobble Rollers" for low, even film tension. "Soft touch" tires available on all rollers.

IMPERVIOUS BEARINGS
Ball bearings in solutions are stainless or plastic with glass balls. Gears are nylon.

HEAVY INSTALLATION
Tanks are heavily insulated to assure most precise temperature control.

FINEST PLUMBING
Chemical plumbing is PVC or polypropylene.

WATER AND AIR LINES
are copper or brass.

FLOWMETERS
provide constant replenishment of chemical solutions and visual monitoring of water flow.

TACHOMETER
assures continual, correct indication of film speed.

TEMPERATURE CONTROLS
assure precise control of developers and secondary solutions as necessary.

RECIRCULATION PUMPS
are finest U.S. make.

IMPINGEMENT DRYING
is accurately controlled.

REMOVABLE RACKS
for easy threading and maintenance.

BREAK ALARMS
and end-of-film alarms allow technician to relax.

ACCESSIBILITY
Components, controls, indicators and transport systems are in the open.

These are the features that make Houston the world's leading motion picture film processors. Every part of every Houston machine has been engineered to perform its function efficiently and dependably—in strict accordance with the film manufacturers' specs—and utilizing the best possible material and components for each particular need. After building processors for over 40 years, Houston knows virtually all the answers. Write us regarding your requirements.

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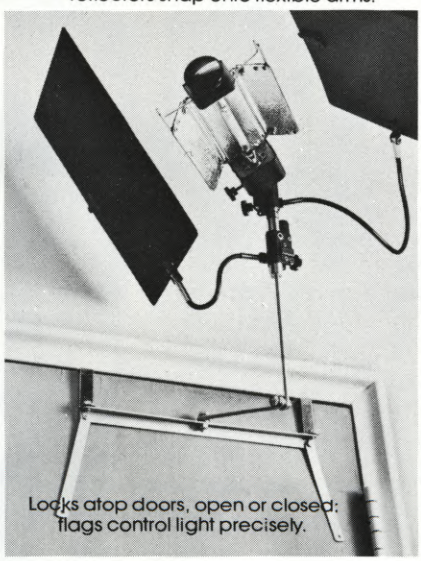
Now, your location lighting problems are no bigger than this.

Tota-Light.* More than just a new light, it's a new lighting concept. Compact 1000, 750 and 500-watt quartz lighting with an integral system of lightweight, modular mounting and light control components. Providing almost limitless location flexibility.

With Tota-Light, a room is more than just an area to be lit: it becomes part of the lighting system.

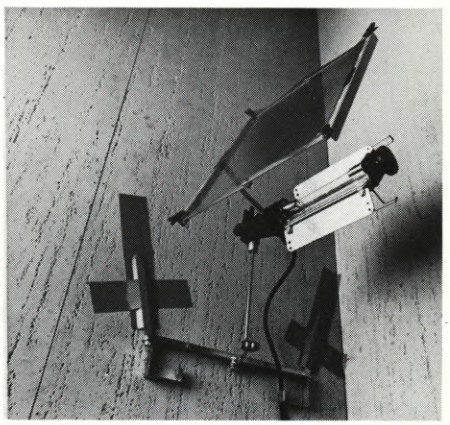
A system where three walls can be lit smoothly and evenly from a single light mounted on the fourth wall. Or four walls, ceiling and floor can be covered from a corner.

Snap-together flags and reflectors snap onto flexible arms.

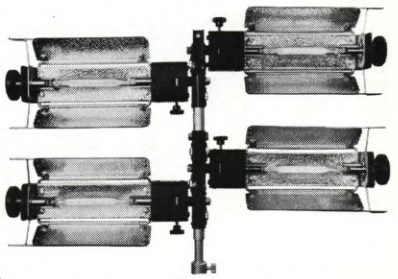


Locks atop doors, open or closed: flags control light precisely.

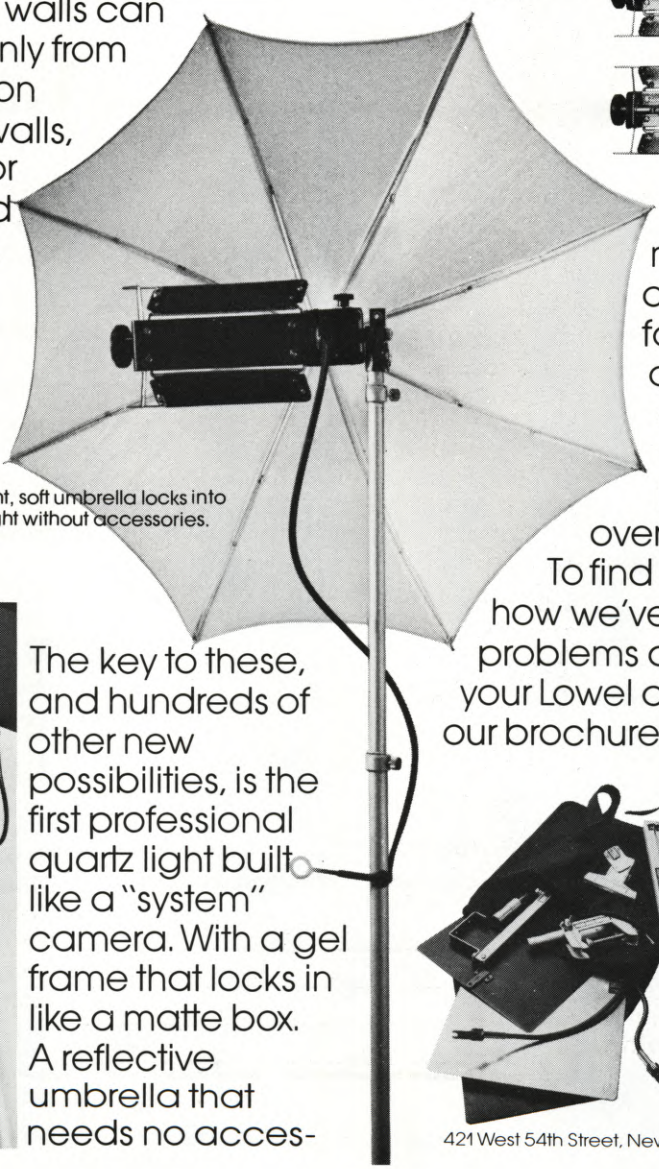
The key to these, and hundreds of other new possibilities, is the first professional quartz light built like a "system" camera. With a gel frame that locks in like a matte box. A reflective umbrella that needs no accessories. And a family of snap-together flags held by flexible arms. Using these and other components, Tota-Light can be stacked, diffused, converted in seconds to a softlight,



Tota-Light tapes to walls and windows; frame holds precut conversion and diffusion gels.



Stacks on stand or clamp.



Bright, soft umbrella locks into light without accessories.

mounted atop open or closed doors, fastened to virtually any surface...and closed compactly to fit a kit or canvas pouch that loops over the belt.

To find out more about how we've cut location lighting problems down to size, see your Lowel dealer or send for our brochure.

*TM Pat. Pend.

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"DEATH OF THE RED PLANET"
FILMED IN LASER IMAGES

Unbridled imagination, ingenious technology and a lot of hard work combine spectacularly to capture the "creatures of light" on film

By DALE PELTON

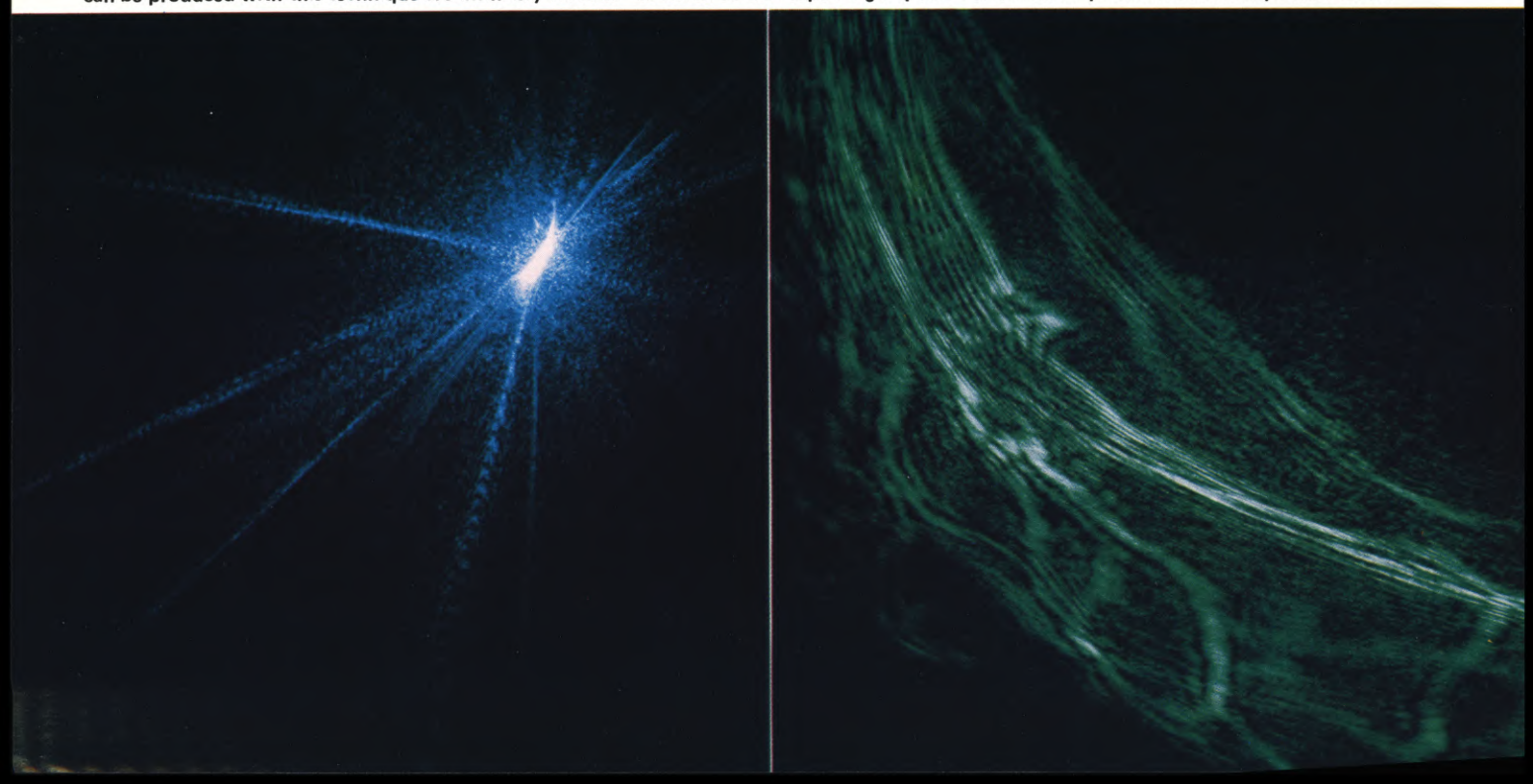
Two-and-one-half years ago, I was shooting a documentary on the contemporary city. During the course of my explorations of various technologies, I met Dr. Elsa Garmire, a member of the research faculty at the California Institute of Technology. I visited her at the Caltech physics laboratory, witnessed a laser demonstration and was amazed by the laser-generated random flashes of delicate, sometimes spidery, sometimes globular, fiery light patterns. The laser images never had the appearance of mechanical or computer-generated images. They did not look like products of our humanoid technology. While they were abstract, they were also organic, at once microcosmic and macrocosmic. The constantly evolving forms sometimes appeared as living tissue and, at other times, like creatures found in some distant unknown part of the universe. I was so enraptured that I decided to make a film solely of these creatures of light.

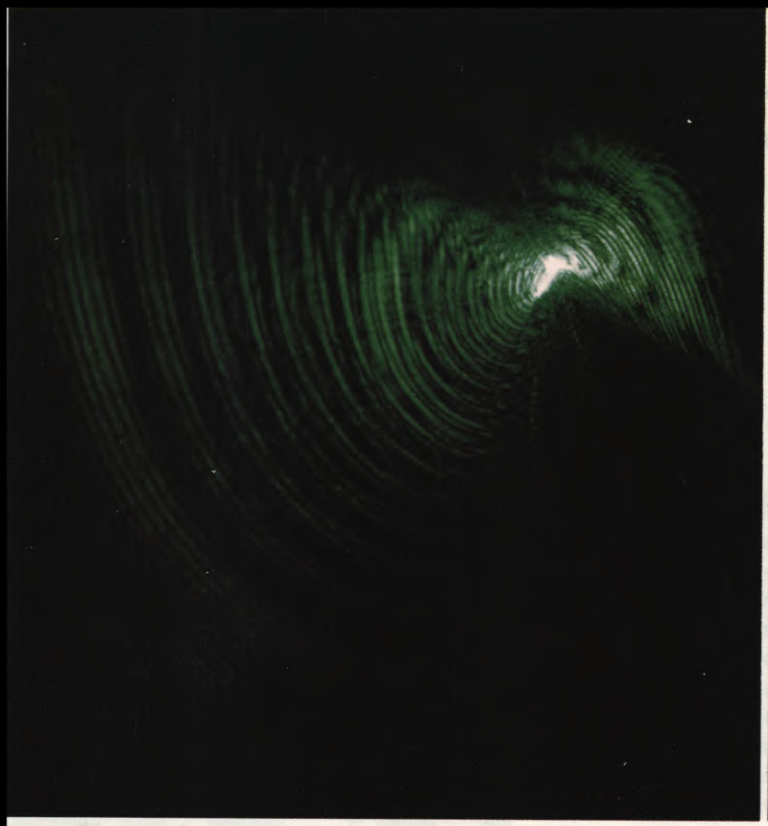
The film came into being over a long time. It was a case of a post-stylized film. It was shot much like a documentary; that is, letting things happen in extemporaneous shooting sessions and then shaping and forming the material afterwards. After a couple of sessions, I screened the workprint and found that the raw images suggested the release of energy. My initial editing was without a script. I cut without pre-conceived reasoning, by allowing the images to come and go as they seemed to dictate. Yet, at this point, the film was not a film and had no direction or structure. Gradually, I became more aware of the strife implicit in these kinetic forms. Much like the process of life where opposing forces are operative in creating new life forms, I decided that the film would be about this conflict, a cosmic struggle between the forces of blue and the forces of red. In the manner of absurd 1950 science fiction flicks, I entitled the film, "DEATH OF THE RED PLANET".

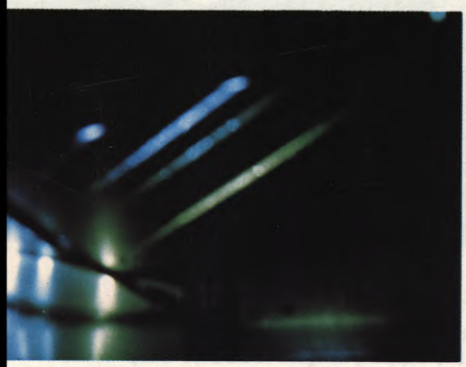
At this point, I began developing a script, choreographing the interactions between the opposing energy forces. Most often the blue energy force and the red energy force were shot separately to be later combined in complex ways to achieve the appearance of action-reaction. After several thousand feet of film had been shot and the film had begun to take shape with various movements, as in a music composition, another inspiration arose. Why end the film with the death of the red energy-matter? What is death but another transition, another event in the continuum? Simple in structure as the Hegelian thesis, antithesis, synthesis, the film would bring a re-creation of life out of the destruction of life, harmony out of disharmony. The end would not be an end, but only a new beginning.

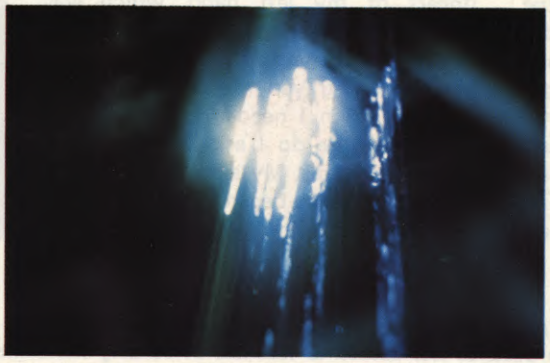
We used a two-watt Argon laser primarily. Its intense white beam was split by a prism into a band of three color beams: yellow, green and blue. A 250 milliwatt helium-neon laser (which produces only a red beam) was independently employed for forming the red planet. A 16mm Arriflex M camera with a 400' magazine was equipped with a

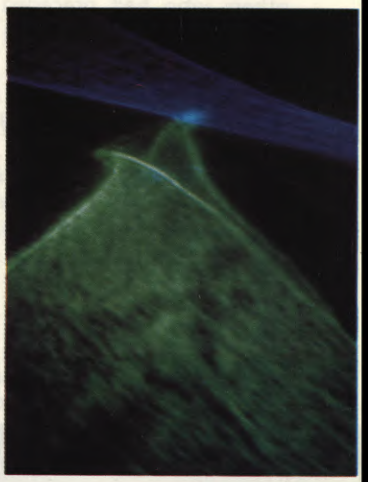
Laser-generated light patterns of the type which inspired the author to utilize the technique for creating "DEATH OF THE RED PLANET". The laser images never have the look of mechanical or computer-generated patterns, but are "organic" as well as abstract in character. The images which can be produced with this technique are infinitely variable—so much so that repeating a specific effect exactly at a later date is quite difficult.











The constantly evolving laser-generated forms sometimes appear as living tissue and, at other times, like creatures found in some distant unknown part of the Universe. They do not look like the products of our humanoid technology. Aware of the strife implicit in these kinetic forms, the author decided to depict the cosmic struggle between the forces of blue and the forces of red.

variable-speed motorized Angenieux 12-120mm zoom lens and mounted on an extremely smooth O'Conner fluid head tripod. The laser beams were directed by first-surface mirrors onto a ten-foot-square rear-projection screen. The camera was positioned on the opposite side. We found this superior to our original front projection screen which induced a graininess to the light patterns and afforded much lower light levels. Since the light was spread over a large area and we were shooting with a slow F/2.2 lens, the light level became critical.

Patterns made by the laser beam covered a wide scale of brightness, from faint delicate traces to extreme magnitudes when focused. We achieved entirely different results by both overexposing and underexposing. The eye has a greater dynamic range than film and what we saw was vastly different from what was recorded on film. Again, the spectral sensitivity of the film stock (7241 and 7242) was quite different from our own perceptions. I required a light meter that could reliably deal with these variables. The color sensitivity of the light meter was important because the monochromatic color of the laser beam could easily result in a false reading. This was particularly true when reading the red light produced by the helium neon laser. After experimenting with various light meters, I found that the Honeywell spot meter was best suited for our situation. Rather than reading for general illumination, we took precise measurements of that part of the composition which was the brightest.

Dr. Garmire had previously experimented with hundreds of samples of patterned glass and plastic and different thicknesses of aluminized mylar. The uniqueness of laser light, its stabilized frequency, was dramatically exploited by directing it through or bouncing it off of these various substances, thus making images by reflection, refraction (the bending of a ray or wave of light as it passes obliquely from one medium to another of different density) and diffraction (the breaking up of a ray of light into dark and light bands caused by the interference of one part of a beam with another when the ray is deflected at the edge of an opaque object). No filters were used because laser light cannot be filtered. The single frequency must remain the single fre-

Continued on Page 902

HOLLYWOOD IN A HOLE

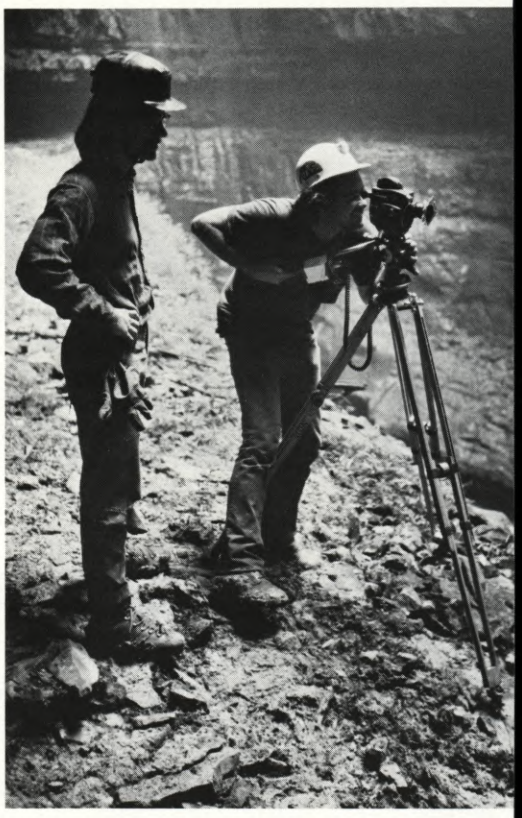
Filming the "Inner Space" of a vast cave system involved some mountain-climbing techniques and an ingenious lighting system

By VICTOR GOSS III

I backed over the edge, carefully placing my Vibram soles in the slippery limestone mud so as not to fall flat on my face, tangled in the taut Bluewater line, really embarrassed. Somehow I had avoided looking down to see where I was headed. I knew what it would look like and I knew that, if I looked, I wouldn't want to continue. My courage among friends was at stake. No matter what my body felt, all depended upon the smooth and strong Bluewater line. If it broke I had no recourse anyway. So I launched myself over the side and took pride in my first brave *rappel,* so much control I had!

With five braker bars on my rappelling rack, the clean dry Bluewater line refused to feed so easily as with the others who had preceded me into the pit. As I launched, I swung out a bit, did not recede down the line, but slammed face and elbows into the wet and cold muddy stone wall. Losing my pretense of composure, I grasped the rack and line desperately and, in mortal curiosity, wondered why, after that tearing impact, the rack and sling didn't fall apart and send me to the bottom. I couldn't believe what I was doing, hanging on this 7/16" rope one hundred sixty feet above the dark and damp floor of this incredible abyss in the middle of Alabama, a place avoided for hundreds of years by people less intelligent than I!

And then it happened—what I had carefully prepared myself not to allow to happen. A hot sensation began in my shoulders and flushed throughout my entire body. Exactly as it had happened four years earlier on perimeter guard in Vietnam when I heard those automatic weapons fire near us out there in the tree line. *Fear!* There was a distinct possibility of me, myself, dying a violent death. And it continued spreading through my body to the very tips of the fingers of my left hand, which was holding the lifeline of Bluewater. Incredible weakness. Violent trembling. My body betrayed me at that crucial moment when I needed it to save me. *No other time* do I ask it to perform, and now it fails. My arms were rubber. And the Blueline began slipping through my fingers. Another flash poured



(ABOVE RIGHT) Jay Arnold and Victor Goss line up shot with Beaulieu R16EE 16mm camera on circular "balcony" halfway down limestone pit cave. Light-weight equipment such as the Beaulieu was needed to facilitate descending and climbing the slippery ledges. (BELOW) Deep in the bowels of Falling Cave, Alabama, with a damp and primal fog hanging just above the floor, the intrepid two-man crew sets up lights and camera to shoot a third man paddling about in a rubber raft.

through my body as this reality spoke. I gathered the strength left and yanked up on the rope. I stayed for a moment, but I was still hanging there, with one hundred and sixty feet yet to contend with.

"How ya doin'?" Jay asked from over the top, amusing himself with my difficulty.

In complete terror now, I tried to calmly express what the problem was with the stuck rope. "I don't go down!" I finally screamed when I got my voice back.

"You'll have to force feed the line from the bottom of the rack," Jay replied with little concern that I was about to die.

"What?" I yelled, perfectly understanding him, but needing his voice again to console me as I plunged to my death.

"Five bars are too much friction for the top of the pit; take one off," Jay answers.

Little chance of that! I wasn't going to take anything off now. I force-fed as fast as I could, trying to eliminate that odd gap between my feet and the ground far below.

Each time I stuffed about six inches of Bluewater into the rack, I dropped and jerked, straining that gossamer thread I felt was ready to break. Six inches at a time; that's a lot of jerks before the bottom.

I was concerned about the stresses on the crude but simple mechanism holding me in mid-air. Bluewater is tested for a couple of thousand pounds and, despite its thin character, I had great faith in it. *Love,* even! Besides, in the few months preceding this inevitable trip I had spent more time learning about cave exploring accidents than actually practicing on *rappel.* I knew that ropes have good odds. The rack is an elegant but puzzling contraption, and it is easy to thread backward, especially for a beginner, and I'd never used one before this moment (My god, how did I ever get into this?). Perhaps if I checked it to see if I threaded it right . . . but then what if I made a mistake! Maybe one more of those jerks will set it flying apart. The little caribiner, a little oval of aluminum, I remember, when I first looked at it, was scored and scratched because aluminum is so soft and weak. It really wasn't a very big thing to be holding me so high up there. But then that conspicuous nylon webbing wrapped around my legs was tied in a knot behind my back that I could not watch come apart.

Fighting for that heavy body to become mine again, I somewhat succeeded in getting the rappel rig to slide down the line without force-feeding.

Because of the size and weight of 110-volt "super batteries", the original use of the 12-volt system was for automobile running shots. Alligator clips connect directly to car battery. Because the color temperature of lamps is close to 3200° Kelvin, a piece of Rosco Tuf-Blue #50 is used to convert it to daylight color temperature.

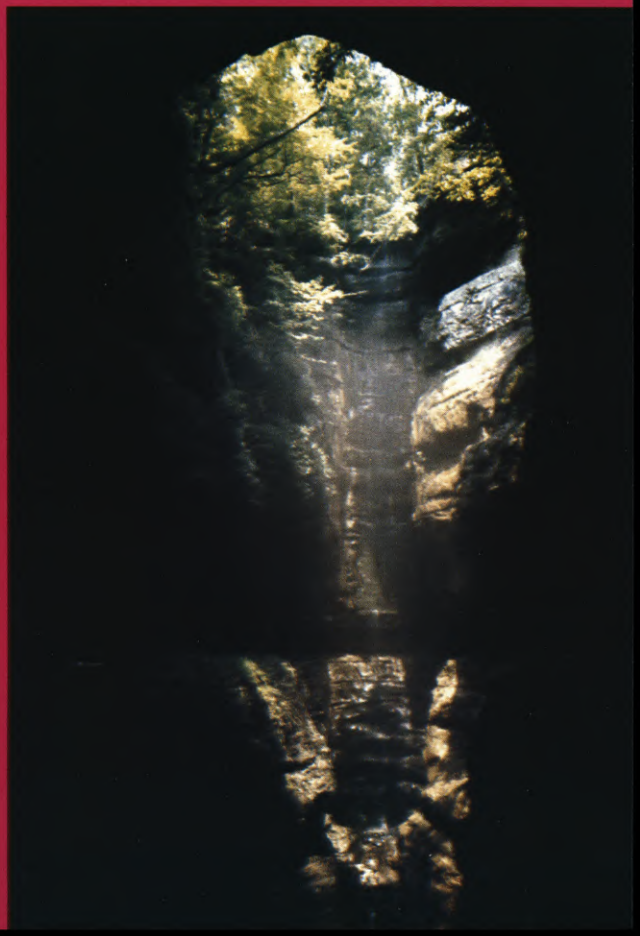
This technique is smoother, and the jerks aren't as abrupt or scary. I gained enough control of myself and the rig so that, after a few moments of sliding and floating, I stopped when I felt I was nearing the floor. This was to catch my breath and to get some enjoyment from this funny perspective. It looked like I'd come a long way down that brown wall and it was a lot cooler here. The massive earth that I faced from the inside now looked quite different from any I'd seen before. Then I carefully turned and looked down. Incredible as it seemed, the floor was not much nearer here than it was at the top. A cold pang gripped my stomach, but I forced myself to relax.

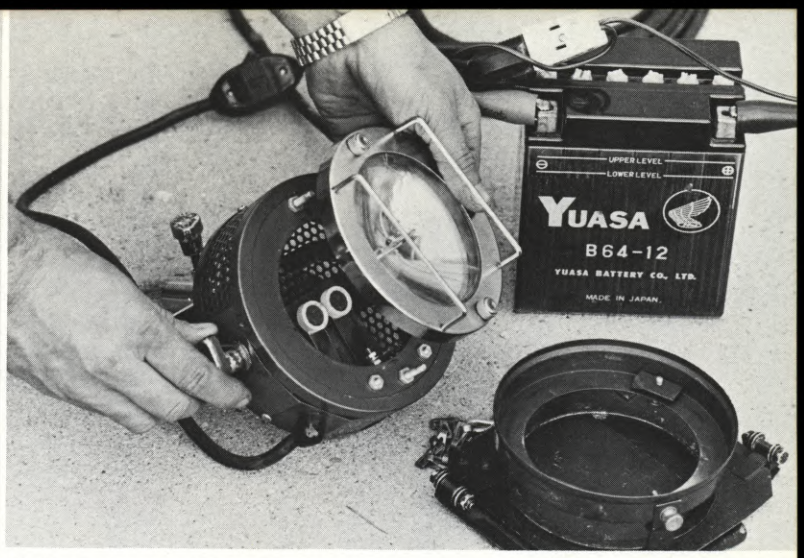
It's an odd feeling, hanging in the air in a place where few people have ever been, here in this little space I occupied in this strange and secret hole, but I am surprised and glad to discover a little pocket of life hanging precipitously on the wall of the pit. A dewy spider web and little green moist blades call this same place their home! I didn't even know they existed before this happenstance moment, and I am calmed by being a breath away from something so vital and familiar. I look down for the third time and notice that the bottom is obscured by a damp and primal fog hanging just above the floor. You know, the universal consciousness was really there that morning in that green, dewy, waterfalling Garden of Eden called Falling Cave, hidden away in Alabama. Aware of death, I feel very alive. This feeling stayed with me throughout the five days that we toiled in that wonderful and relentless pit, and I feel it even

Director of Photography Goss and Director Arnold watch intently as actor takes position on rope. The crew and actor had to lower themselves hundreds of feet into the earth by means of mountain-climbing procedures involving a rapelling rack and nylon ropes. The crew descended each morning and climbed back up each evening.

(LEFT) The pit opening is about 60' X 250' across and allowed direct sun light into pit only in very small, fast moving areas which complicated exposure problems. Bounce of direct sun off pit walls provided a soft side light on action. Frank Binney descends to lower level while director Jay Arnold awaits turn on Bluewater line. (RIGHT) Director of photography Victor Goss jumps over the side of the pit wall on his very first rappel attempt into Falling Cave. Equipment was lowered into cave by rope each morning.

(LEFT) Director of photography Victor Goss lines up shot of cave wall flora through Beaulieu R16EE camera which was chosen for its high portability during shooting from precarious and difficult angles. Lens on camera is a 105mm Nikor through Nikor to C-mount adapter. (RIGHT) The crew of "WILDERNESS BELOW" discusses camera placement on "balcony" halfway down waterfall in Falling Cave. This incredible pit is a hole in the forest floor near Huntsville, Alabama, and is totally inaccessible except by free-falling rappel on nylon rope. The angle depicts a depth of 140' from the top to bottom of waterfall.





(LEFT) The early Mole-Richardson one-light FAY lamp, subject of 12-volt lamp experiment. Later model will also work, as well as any PAR 36-type lamp. (RIGHT) The 12-volt system consists of Mole-Richardson one-light FAY head, any 12-volt battery and an aircraft landing light globe. Diffusion and gels can be used conveniently. (BELOW) The one-light FAY will accept any PAR 36 globe. (Front row, left to right:) GE 110-volt dichroic lamp, FAY 650-watt; GE 12-volt aircraft light #4509, 100-watt; Westinghouse 12-volt aircraft light #4415, 100-watt. (In back row:) A 12-volt hand-held light in amateur movie light housing, and PAR 36 connectors.

today. Falling Cave is a part of me. And it is part of every one of the makers of the film, "THE WILDERNESS BELOW".

Five filmmakers converged on Falling Cave July 19th, last summer. All of them were experienced sport cavers with the exception of myself. I was included because of my experience in professional cinematography, and because I had a particular idea (with Jay Arnold and Frank Binney) about low-budget film production, and this was a chance to try it out.

I had worked in films of different kinds in various capacities including theatrical features, documentaries, television commercials and educational films. I had long known that when one of these ventures succeeded, it was not because hundreds of thousands of dollars were involved, but because money obtained highly talented and skilled professionals who not only did a job right, but did it with conviction. In other cases, the same money was available, but poor taste and indiscriminate choice obtained *ersatz* filmmakers and faulty ideas. But the reason for success or failure was usually the same throughout: people and concepts.

Any undertaking requires a sound concept. In a film, this idea must be translated into film language by carefully showing a story through the viewfinder, which is comparable to the process an architect employs to project his feelings of a structure through 2x4's and nails to make a plan for construction. Once these recommendations are followed, a finished house arises. And so would a film.

People, ideas that make sense, and sound planning—as simple and mundane

Continued on Page 935

The filming of a rafting sequence in underground water system in Talley Ditch, Alabama. In foreground can be seen 12-volt FAY light, powered by motorcycle battery. Several of these units were used throughout remote underground locations and proved to be very portable. (Photographs by BILL DEANE.)

JAVELIN NIGHT VIEWING DEVICES

New light-weight, compact night vision instruments that can "see in the dark" open up a whole new world of still and motion picture photography

Night viewing devices that can "see in the dark" are nothing especially new. They have been around for several years now and have been used in specialized areas of police surveillance and military observation work. The large size and heavy weight of these somewhat cumbersome devices have, in the past, all but ruled out their general usage in still and motion picture photography.

Recently, however, Javelin Electronics in Los Angeles has introduced night vision equipment of its own manufacture which is small and compact enough to be attached conveniently to most movie, SLR still and television cameras. These devices permit photography at night that was heretofore impossible. Photos can now be achieved at illumination levels as low as 0.0001 foot-candles (¼ moonlight).

The night viewing device does not operate on an infrared principle. It is a light amplifier that electronically amplifies the image presented by the objective lens to a level that can be photographed. The Automatic Brightness Control (ABC) automatically increases and reduces the gain corresponding to the scene illumination level, so that panning from bright to dark areas does not require adjustments.

Adaptors are available to attach the viewer to Bolex, Eclair, Arriflex, Nikon, Pentax, Canon, Minolta, and many other cameras. It can be used with all television cameras that have a standard "C" mount.

Several models of the Night Viewing Device are available. These include the rugged model 221 now used by numerous government agencies and the smaller distortion-free model 222.

The Javelin Night Viewing Device is a passive device that permits an observer to see at night as if it were daylight. The lens collects and focuses the light, the viewer converts it from light energy to electrical energy, amplifies it, converts it back to light energy, and then presents the reproduced image on a screen on the rear of the unit. The operator observes this either through his eyepiece lens or through a single lens reflex camera, TV camera, or biocular viewer.

Night Viewing Devices do not need supplemental illumination like infrared or spot lights. They are capable of operating with illumination that is always available at night such as starlight and moonlight. Even on cloudy nights, the sky glow or city lights reflected from the clouds back to earth is all that is required for excellent photography and observation. Night Viewing Devices are adaptable to TV cameras, 16mm motion picture cameras, and 35mm photographic cameras for recording evidence through video tape recordings, motion picture film, or still photographs.

The model 222 is a second generation Night Viewing Device. It offers features that are not available on any other viewer such as small size, very low distortion, and reduced blooming when a bright light is in the field of view. Its reduced size makes it easy to attach to both movie and SLR still cameras. The model 222 was designed to have approximately one-tenth the distortion of other available viewers. It provides a uniform reproduction of the scene being viewed at all times, and the operator does not have to make a single adjustment other than focusing the lens.

The short length of the model 222 reduces the weight suspended from the end of the camera. The photographer will hardly be aware that he is holding anything more than his own camera. Police officers will not be burdened with extra weight and can hold it steady for longer periods.

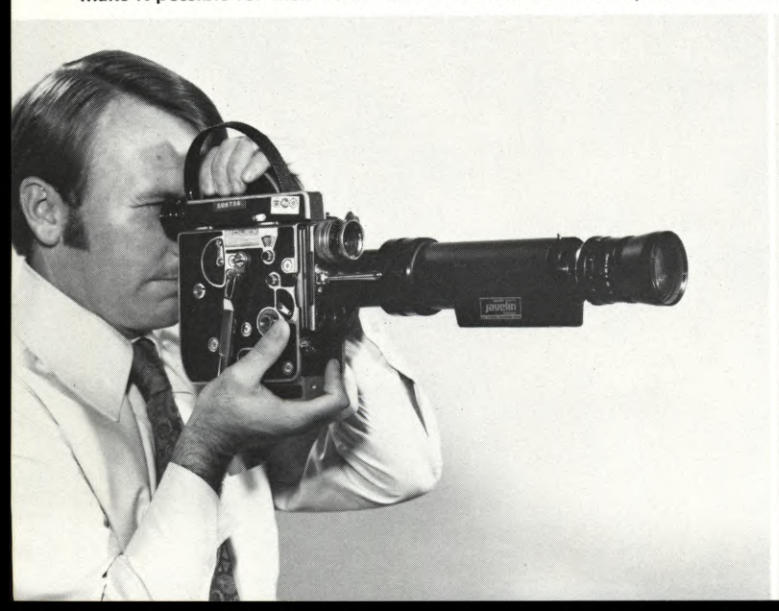
TYPE OF NIGHT VIEWING DEVICE

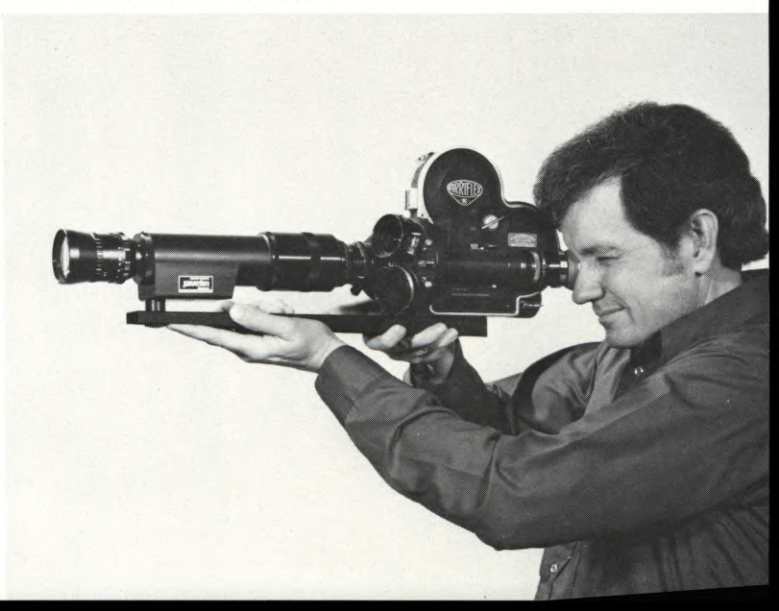
Present night viewing devices, i.e., the Javelin models 220 and 221 (focal plane iris) utilize three 18mm-diameter image intensifiers bonded together. These are called first generation devices because they were the first units used for light amplification and night observation.

The model 222 is a second generation device. It features a single intensifier with a special microchannel plate (MCP) incorporated. This increases the amplification of a single intensifier to levels which previously required three separate intensifiers in first generation units.

The MCP acts as a current-limiting device, in that bright areas such as distant street lights appearing in the field of view are not amplified above a certain level, whereas the dark areas in

(LEFT) Javelin Model 221 Night Viewing Device, mounted on Bolex camera. (RIGHT) The same device mounted on a 16mm Arriflex camera. Adaptors are also available for Eclair, Nikon, Pentax, Canon, Minolta and many other cameras. Compact size and light weight of these new devices make it possible for them to be hand-held on small motion picture and television cameras without difficulty.





the same scene are greatly amplified. This feature provides a more uniformly illuminated reproduced picture over a larger dynamic range than ever before possible. This enhances photographs as the blooming around bright lights is practically eliminated while the intensity of the light itself is reduced in the reproduced image. The operator can view areas around these lights that were not observable before.

(ABOVE) The Model 220 Javelin Night Viewing Device. (BELOW) The Model 221. These devices permit photography at night that was previously impossible. They operate on "A" size batteries and amplify moonlight or "starlight" 37,000 to 50,000 times.

AUTOMATIC BRIGHTNESS CONTROL

An Automatic Brightness Control (ABC) automatically adjusts the gain of the viewer according to the illumination level of the scene being observed. The output of the viewer as seen by an observer, either through the eyepiece lens or a SLR camera, is maintained at an almost constant level in a city type environment. Once the camera is properly adjusted to the output, no further adjustments are required. The ABC automatically increases and reduces the viewer gain when the camera-viewer combination is redirected from a dimly lit area to a more illuminated area or vice versa.

The ABC also acts as a protective feature as it reduces the gain when looking into highly illuminated areas to protect the sensor from overloads. It also eliminates the necessity for an operator to constantly make adjustments.

CONTROLS/POWER

The model 222 has an on/off switch, a focal plane iris, and a standard objective lens that requires focusing as object-to-viewer distances vary.

The focal plane iris permits the operator to reduce the size of the field of view. Closing this iris blocks bright lights appearing on the edges of the scene. It performs this by reducing the field of view in order to protect the sensor.

The model 222 operates from a small mercury battery which is easily replaceable. The battery is inexpensive, has a long life, and is easily obtainable.

LENSES

The Night Viewing Device is designed with a standard "C" mount so that any lens of that type can be utilized. Most other photographic lenses can be easily converted through adapters to a "C" mount if desired.

Javelin can provide a full line of zoom and special telephoto lenses. These lenses have low "f" numbers to provide the most light to the intensifier while having minimum weight.

USE WITH TV CAMERAS (Optional Accessory)

An adapter assembly is available that permits the Night Viewing Device to be rigidly connected to daylight television cameras. Excellent resolution can be achieved using it with a Javelin or any other standard television camera. Hook-up and operation of the TV camera/viewer can be achieved in minutes and is easy to perform. Video tape recorders can then be used to record evidence or scientific phenomena.

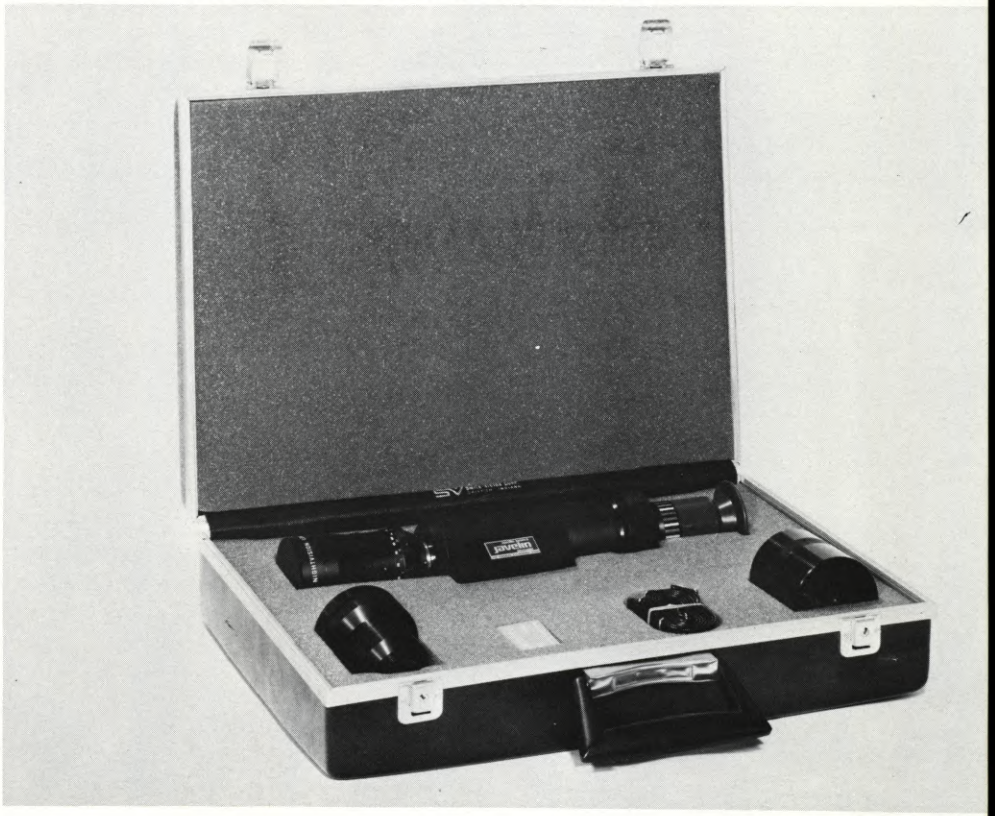
USE WITH PHOTOGRAPHIC CAMERAS (Optional Accessory)

The Night Viewing Device can be rigidly attached to almost all 35mm photographic cameras. This does not mean holding a camera up to the eyepiece lens, taking a picture through it and hoping for the best. High quality photographs can be made through the unit almost as easily and as fast as if the photographs were being made with the camera alone.

A single lens reflex type camera is required so that at night the photographer may see exactly what he is photographing. Numerous cameras such as Pentax, Nikon, Canon, etc., can be attached in the same way.

Further information including brochures, price lists, and rental information can be obtained by writing to: Javelin Electronics Division; Apollo Lasers, Inc.; 6357 Arizona Circle; Los Angeles, California 90045. (213) 641-4490. ■

Javelin devices come packed with accessories in rugged foam-lined cases. They do not operate on an infra-red principle, but electronically amplify the image presented by the objective lens to a level that can be photographed in black and white, utilizing fiber optics.



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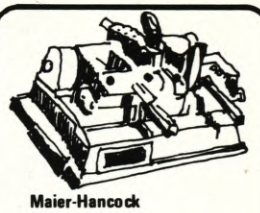

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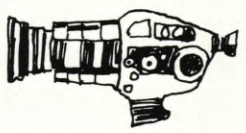

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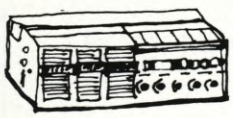

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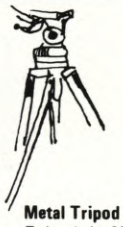

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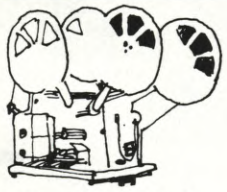

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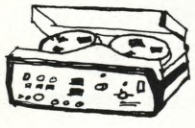

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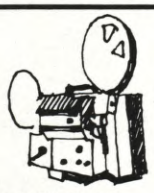

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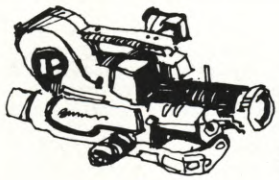

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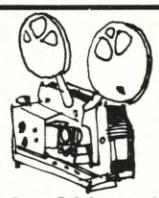

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A Cameraman's Kind of Camera

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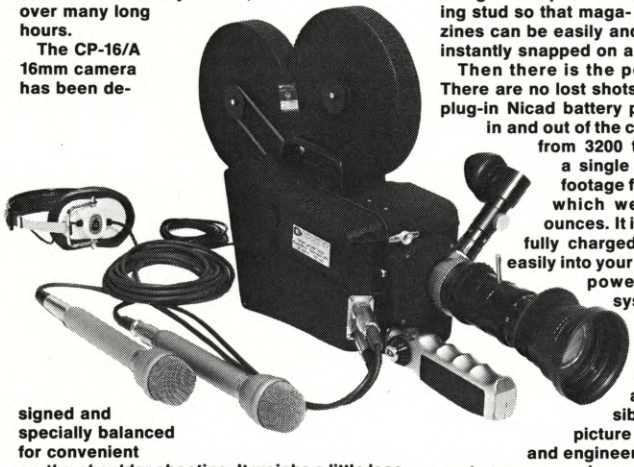
We, at Cinema Products, believe that we have designed a unified camera and sound system that will solve all of these problems.

Take backaches, for instance. Backaches may sound funny to some people. To a TV-newsfilm cameraman they're no joke. More and more TV-newsfilm cameramen have been reporting severe and crippling backache conditions as a result of carrying heavy and poorly balanced cameras, mounted on uncomfortable body braces, over many long hours.

The CP-16/A 16mm camera has been designed and specially balanced for convenient *on-the-shoulder* shooting. It weighs a little less than 17 pounds when fully equipped. And "fully equipped" means *fully*. With 400-ft. magazine loaded with 400 feet of film. With a 12-120mm Angenieux zoom lens. With a plug-in Nicad battery pack. With a critically accurate crystal-controlled DC servo-motor for single and double system sync sound. Plus the Crystasound recording system with built-in amplifier. That's right. Less than 17 pounds!



As for noisy camera movement problems, you've got to "not hear" the CP-16/A to believe how quietly it runs. Our sound tests show approximately 31 dB at 3 feet. But the real sound test is your professional ear, and the actual quality of the sound recording.

Out-of-sync problems? Our CP-16/A is crystal-controlled to the extremely critical tolerances required by *cordless* double system recording, with a frame rate accuracy of ±15 parts per million over a temperature range of 0-140° F. And if something should go wrong, the easily visible out-of-sync warning lamp, located at the front of the camera, will instantly light up.

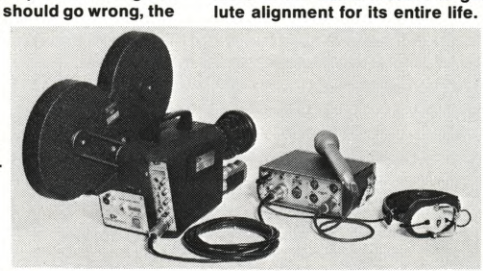
As for magazine capacity, the CP-16/A accepts standard 400-ft. and 1200-ft. Mitchell-type magazines, and we even designed a special locking stud so that magazines can be easily and instantly snapped on and off the camera.

Then there is the power supply problem. There are no lost shots with our rechargeable plug-in Nicad battery pack. It snaps instantly in and out of the camera body, and drives from 3200 to 4000 feet of film on a single charge. That's a lot of footage from a little battery pack which weighs a mere sixteen ounces. It is so compact—a spare, fully charged battery pack will slip easily into your shirt pocket. And it also powers the CP-16/A sound system.

Lately, more and more TV-newsfilm and documentary cameramen have had to "go it alone," with the responsibility of capturing *both* picture and sound. Designed and engineered from an overall total systems approach, our CP-16/A with Crystasound makes it seem almost easy.

The Crystasound amplifier is part of the camera, and it is powered from the same battery pack. Switchable, variable compression Automatic Gain Control let's you concentrate on filming the event. The headphone monitoring channel automatically switches from live mike to playback when the camera is turned on. We've even provided a special line feed to a tape recorder for those instances where the cameraman is recording simultaneously for TV and radio. The built-in amplifier has two microphone inputs and one line input, all with independent volume control. Other features include automatic bias level, with no adjustment required, preview switch, VU meter, and low power consumption.

Our Crystasound recording system features a special record and playback head, encapsulated in the same module to guarantee absolute alignment for its entire life.



Should you need an auxiliary mixer, our Crystasound auxiliary mixer features: four channels of mike input, one channel of line input, and one condenser mike channel. It also features individual and master volume controls as well as switchable AGC.

For the TV-newsfilm cameraman, the name of the game is lightweight, extremely mobile and reliable equipment, so that he can capture the spontaneous *live* feel of a news event as it happens. We are confident that the CP-16/A provides just that.

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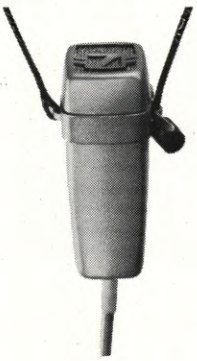
A condenser microphone with excellent directional properties. Even at long distances it can be used without any loss of sound quality. Used in television and film studios whenever the microphone has to be out of the camera range. In spite of its unusual length the MKH 815 is relatively insensitive to wind and pop effects. Excellent signal-to-noise ratio. The MKH 815 can make the most difficult sound recordings with outstanding quality of sound.



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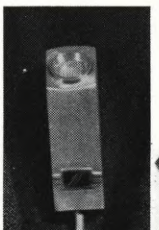
Transistorized Condenser Microphone
A combination of a pressure gradient receiver microphone and an interference microphone. Cardiod directional pattern at low and medium frequencies. Close-talking effects are relatively small. Particularly suited for use by soloists, and its unusual length of 10″ makes it also very desirable for reporters.



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THE PRODUCTION OF "STEEL ARENA"

For his first feature, a young film-maker, aided by a dedicated crew, injects an extraordinary degree of production value into a low-budget action film

By MARK L. LESTER
Writer/Producer/Director

The past few months have seen the wildly successful opening of a feature-length motion picture in the southern United States. The film is "STEEL ARENA", the story of the world famous Auto Daredevils, in a show known as the "Circus of Death," and the rise to stardom of its hero, Dusty Russell. My story is one of a year-and-a-half of grueling hard work in writing, producing and directing my first feature film, but, through it all, a rewarding, satisfying, learning experience one would believe was concocted in a Hollywood press agent's dreams.

The story began actually two years before I had ever imagined I would be directing a 35mm theatrical feature. At the time I was working for a documentary film company in San Francisco and programming classic films at a repertory cinema in my spare time. One weekend, while vactioning along the Sacramento River, I ran into a group of men enjoying a beach party. They were wearing uniforms which, on the back, read "Circus of Death". Intrigued, I crashed the party and learned these were the world famous "Helldrivers," relaxing after a Sunday afternoon thrill show. Thrill shows, I discovered, were a particularly American sport, in which the participants made their living by crashing cars through walls of fire, rolling them over, dive-bombing them into parked cars and generally destroying automobiles in the most creative and destructive ways the human mind can conceive of.

Two years later found me sitting in a cafe in Berkeley, California, with two independent film productions behind me. One, an independent documentary, which I produced in the remote rain forest jungles of Mexico and Guatemala, concerned the last remaining tribe of Maya Indians in the world, the Lacandones, and had just won a silver medal at the Venice Film Festival for Best Documentary. The other, an outrageous, wild and zany featurette called "TRICIA'S WEDDING", a satirical spoof on the White House wedding of Tricia Nixon, was taking the hip youth culture film audience by storm. "TRICIA'S WEDDING" was receiving rave reviews everywhere and has since become an "underground" film classic. Made at a cost of $12,000, "TRICIA'S WEDDING" showed a profit after its first night opening to 6,000 paying customers in San Francisco's Palace Theater. and Berkeley's Community Theater.

Now it was time to produce a full scale 35mm theatrical production. Remembering the "Daredevills" I had met, I thought they would make the perfect topic. The visual element of cars flying through the air, combined with the Americana of the sport of thrill driving, was the perfect combination to appeal to a mass audience, as well as provide an exciting cinematic vehicle.

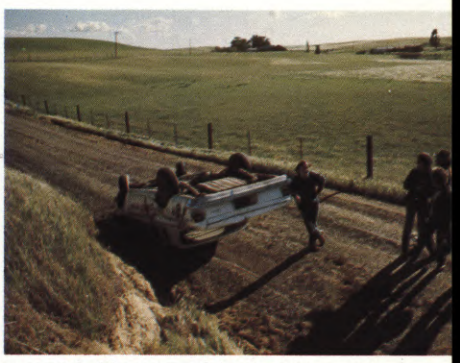
I began to track down the "Circus of Death" I had met two years before and found them in their usual habitat, crashing cars at a county fair in San Jose. The owner of the show is Robert Hanna, who doubles as Dusty Russell, the star of the Circus of Death. Bob loved the idea of a film on Helldriving and agreed to act as Associate Producer and consultant, and to perform in any other way I might need him.

The hard work of writing the script began. I decided to base the story totally on the real-life experiences of thrill drivers and interviewed the various Daredevils for material. What I found was a fascinating array of colorful personalities. Dusty Russell, the star, an intense man dedicated to breaking the world's dive-bomb stunt record. Buddy Love, a character out of the fifties, complete with a pompadour hairdo, known for sliding on his buttocks through a ring of fire and human batter-ramming into a flaming wall of fire, while lying on the hood of a car. Dutch Schitzer, the last of the thirties' Atom Men, who lie down in a flimsy wooden coffin and blow themselves up with 20 sticks of dynamite. Gene Drew, charismatic promoter and announcer of the Circus of Death. It was then that I decided that not only would I write my story about the Auto Daredevils, but that they could play themselves as actors in the movie.

The story follows a summer in the life of our lead character, Dusty Russell. The film opens with Dusty as a moonshine runner in the South being chased

(LEFT) One of the many incredible crashes serving to illustrate action of the "Circus of Death" Daredevils in the Lester-Traynor production of "STEEL ARENA". This one was filmed at the Sacramento Speedway. More than 140 automobiles were destroyed during the making of the film. (RIGHT) The thrilling "Ice-wall crash", in which the driver leaps into the back seat of the speeding automobile a split-second before impact. A point-of-view camera is rigged onto the back of the car.

(LEFT) Young writer-producer-director Mark L. Lester exits office of Earl's Wrecking Yard. Lester used the actual wrecking yard owner to play himself in sequence when promoter Gene Drew purchases his stunt cars. (CENTER) Crew prepares Dusty's stunt car for duel of Daredevils' racing sequence along country road. Camera was operated by switch from back seat. Arriflex camera was damaged when Dusty's car struck an unseen pole protruding from side of the road. (RIGHT) Cameraman John Morrill and Soundman John Brumbaugh ride front of preacher's car for opening title sequence of "STEEL ARENA".



(LEFT) Daredevil cars, driven by Dusty Russell and Bruce Mackey prepare for "showdown" on country road. Closeups of both drivers were obtained with front and side camera rigs. (CENTER) Daredevil cars speed down country road, crashing into one another repeatedly in test of stunt driving skill. Actor Bruce Mackey did his own stunts for this sequence. (RIGHT) Mark Lester directs placement of camera for aftermath of country road stunt driving sequence, which ends with one of the cars flipped upside-down.

from county to county in a souped-up 1939 Dodge coupe by a squad of local sheriffs. Having learned his driving skills, Dusty progresses to those orgies of bent steel and fuming radiators known as "demolition derbies", winning this car battle, being discovered and hired into the Circus of Death by its promoter, Gene Drew. As the thrill show travels from town to town with its death-defying show, Dusty rises to the show's star position and eventually achieves national recognition as the world-famous Divebomber.

While writing the story, I began the search for funds to produce the film and, in doing so, approached Leverage Funding Systems, Inc., an Oakland, California corporation engaged in investing the capital of 1,500 California doctors in real estate and other projects. Peter S. Traynor, its young president, had heard of the success of "TRICIA'S WEDDING" and was convinced of the profitability of investment in commercial pictures. Leverage agreed to fund my picture for $150,000, which made the job difficult, but I was too estatic to care and, with my troupe of loyal Helldrivers, set to work mapping out the production.

In searching for a production manager in Hollywood, I was told that the script would cost far more than $150,000 to produce and that I was crazy to try without more money. One of my sequences, a demolition derby involving fifty cars and drivers, where Dusty wins the championship from our fictitious character, "Masked Marvel," was budgeted at $9,000! This sequence was to account for only a few minutes of screen time. My climatic final sequence, in which Dusty is to break the record on the main street of a small town, was estimated at $5,000. I was intent, though, on filming the script I had written and I knew that somehow it could be done.

I finally met a San Francisco production manager, Rick Smith, who was as crazy as I was, who knew a great deal

Continued on Page 906

Part of the crowd of 5,000 citizens of Lodi, California who gathered along the town's main street at night to cheer on Dusty Russell and act as extras for filming of climactic sequence in "STEEL ARENA". The crowds were drawn by a few local radio spots and a newspaper story, even though the stunt took place at 3 o'clock in the morning.

FILM CLIPS

CINERAMA COMEBACK

By Don Weed
Film Effects of Hollywood

For many of us who can recall the 1950 era that hailed "THIS IS CINERAMA" as one of the motion picture industry's most exciting and successful technological achievements, it is difficult to forget the impact of the presentation. Regardless of its imperfections, which were obvious even to most laymen, the enormous scope and audience involvement of the peripheral format provided screen entertainment totally unique in the history of motion pictures.

The aspect ratio of 3-strip Cinerama was 2.59:1. The projected image encompassed 146° of arc at the Broadway Theatre in New York when "THIS IS CINERAMA" opened in September, 1952, and Cinerama showed the world the largest screen format ever displayed.

Two decades later, in 1972, when Cinerama first explored with Film Effects the feasibility of transferring the 3-strip version of "THIS IS CINERAMA" to a single 65mm internegative, we knew that we would be confronted with a problem or two. The 1952 film was shot on Type 5247, the first color negative rawstock. In addition, the passing of twenty years of elapsed time had left us a negative with only a faded residual of its original color saturation.

The cost factors involved in re-issuing the film program did not permit the laborious and hazardous task of optically printing an internegative from the color separation masters. Plainly, there was only one solution . . . the composite internegatives would have to be made from theatre prints.

Tests were first made from both imbibition prints from the matrices and color positive prints. Excerpts from several sections of the film were composited to a 65mm dupe and 70mm sound prints were sent to New York for home office consideration. The results were surprisingly good, considering all that was involved, and the project was given the green light.

Now, Bill Wild of Cinerama, and his staff, in cooperation with "Bachie" Bachmayer of Technicolor, started to supply us with the best 35mm prints that could be made or were already in existence. In the meantime, Film Effects' Technical Director, Cecil Love, had completed our special printer set-up for compositing the three 35mm "panels" onto a single 65mm internegative.

In an effort to minimize the inevitable "blend lines", between the three Cinerama "panels" we tested each "section" of the film after viewing the 3-strip version. From the test print, we determined the printer adjustments we hoped would improve the end result. Depending on the original camera set-up, the print variances and other contributing factors, our line-up corrections could vary from one to six-thousandths in setting the blend lines. Of course, each internegative was exposed in three separate "passes" through the optical printer and, therefore, ran through the film-moving mechanism five times . . . three forward and two in reverse. The printer projector and camera movements are, of course, pin-registered and so, in spite of the multi-passes, the resulting internegative has none of the vertical unsteadiness between projected panels that was inherent in the original 3-strip format.

At any rate, "THIS IS CINERAMA" is already enjoying what has proved to be a very "welcome back" re-run at the Cinerama Dome Theatre. The advertised box office grosses would seem to be some sort of proof-positive that even a twenty-year-old film can command a considerable audience if it offers something innovative or unique . . . and it doesn't necessarily have to be kinky porno to do the job. ■

ADVANCED VIDEO DISC RECORDING SYSTEM FOR HIGH-SPEED MOTION ANALYSIS

Redlake Corporation, Santa Clara, California, announces a new high-resolution, high-speed motion analysis tool—an advanced Video Disc Recording System. The system will be used for motion and research analysis in a wide range of industrial, scientific and medical fields, complementing Redlake's world-renowned line of photographic instrument equipment.

The basic system is comprised of a high-resolution T.V. camera, 12-inch video monitor, and advanced video disc record/playback machine, all housed in a compact, highly-mobile two-wheeled unit which can easily be transported to any location in a plant or laboratory. The camera may be operated at distances up to 1,000 feet from the recorder using suitable video cable. Where two cameras are needed, they can be used individually, or paired in conjunction with a special effects unit, allowing the presentation of two pictures simultaneously on a split screen.

Heart of the new Redlake VDR System is a 12-inch magnetic-coated aluminum disc which records at speeds up to 60 sharply defined images per second. At 60 images per second the operating time is 9.5 seconds, and when used with a high frequency pulsed strobe light, available with the system, will record at the frequency of the strobe—thereby stopping motion at speeds up to several thousand RPM. The images can be played back immediately at the speed at which they were recorded, or at faster or slower speeds as desired. Pictures can also be "frozen" at any point during playback for detailed study.

Unlike video tape equipment, there is no wear-out of the disc, and frozen images can be replayed indefinitely.

In applications where extended recording time is required, a video cassette record/playback machine is available. Up to an hour of recorded information can be stored and transferred back to the disc recorder for replay and analysis of any desired portion, in slow motion or stop action, if necessary. In addition, transient events may be recorded on the disc and transferred to the tape for long term storage.

●

NEW SONOREX VU METER FOR SONOREX 16/16 INTERLOCK PROJECTOR

A new professional VU meter for use with all Sonorex 16/16 Interlock Sound Projectors has been introduced by the Arriflex Company of America. Supplementing the meter built into the projector, the new accessory meter is housed in a separate, attractive consolette that's connected to the Sonorex by a lightweight cable.

The new instrument is built around a substantial 3½" meter movement. The illuminated, easy-to-read scale spreads over a 90° arc and is calibrated from -20 to +3 db and from 0 to 100% of modulation. Response characteristics are designed to conform to ASA electrical and mechanical specifications for VU meters.

All Sonorex 16/16 Interlock Projectors—from the first one made—are provided with an outlet for use with the Sonorex VU meter. Base of the meter consolette measures 5¾" x 5¾" while

the maximum height is 4". There is a sloping front panel for easy readability.

The Sonorex VU Meter has a suggested list price of $225.00, and is available from authorized Arriflex/Sonorex dealers or from the Arriflex Company of America under catalog number 352-305. Additional information can be obtained by writing: Arriflex Company of America, Box 1050, Woodside, New York 11377.

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SCHNEIDER CORPORATION CHANGES RETAIL LENS DISTRIBUTION

In a move to simplify the retail distribution of its various lens lines, the Schneider Corporation of America (SCA) has announced some changes in distributors. These changes were necessary to remove duplication of sales effort by more than one distributor in every major lens market, according to Mr. Edward A. Wollensak, Vice President, Marketing of SCA.

For the U.S. consumer photographic market, Burleigh Brooks Optics, Inc., Hackensack, N.J., will now supply photo dealers with both GOERZ and SCHNEIDER photographic taking and enlarging lenses. Previously, these two complementary lines of lenses had been handled by separate distributors: SCHNEIDER by Burleigh Brooks; and GOERZ by Burke & James, Inc., Chicago, and La Grange, Inc., Hollywood. Graphic arts lenses will continue to be sold through the manufacturers of process cameras for this field.

In Canada, Braun Electric Canada, Ltd., Mississauga, Ontario, has been selected to distribute the GOERZ lenses for both the photographic and graphic arts retail markets. Braun has been the Canadian representative of Joseph Schneider & Co., and will continue the sale of all SCHNEIDER lenses.

Canadian distribution of theatre projection lenses from ISCO and the KOLLMORGEN Division of SCA will be handled by General Sound And Theatre Equipment, Ltd., Toronto, Ontario, with 6 distribution centers throughout Canada. The Schneider Corporation of America (SCA) will be responsible for the sale of ISCO and KOLLMORGEN slide, movie, and theatre projection lenses in the United States. In addition, OEM industrial sales in both Canada and the U.S. will be handled by SCA. This is necessary due to the extensive technical and engineering support usually required by the equipment manufacturer, according to Mr. Wollensak.

THE NEPTUNE FACTOR

AN UNDERSEA ODYSSEY

The most ambitious underwater film adventure ever produced in Canada poses many unique technical problems, but bids fair to be another "20,000 LEAGUES UNDER THE SEA"

By JACK McADAM

Production Designer

Walter Pidgeon, Yvette Mimieux, Ernest Borgnine, Ben Gazzara, Donnelly Rhodes, and Chris Wiggins, all have something in common. They've all submerged into the most exciting, compelling underwater film adventure ever produced in Canada, "THE NEPTUNE FACTOR".

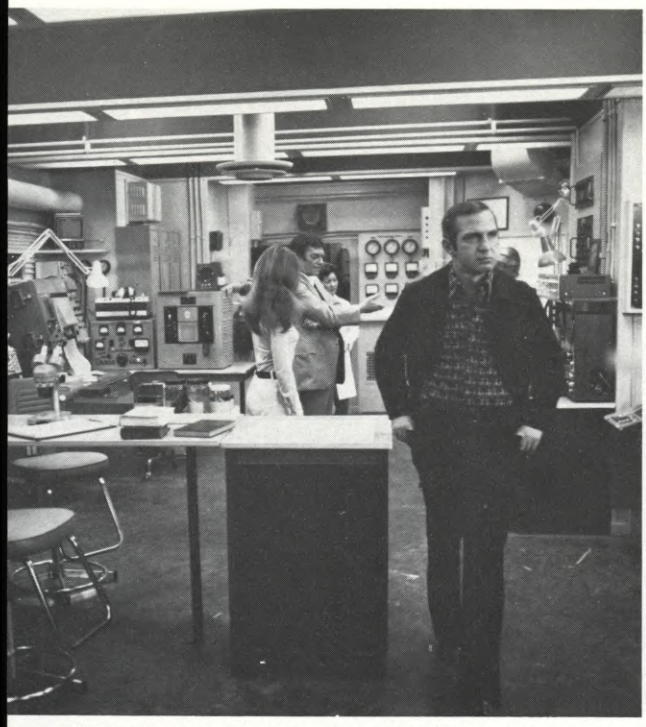
This $1,700,000 ocean odyssey was co-produced by Sanford Howard, Quadrant Films of Toronto and Bellevue-Pathe of Montreal, and is being distributed by 20th Century-Fox. According to 20th's Toronto-born president, Gordon Stulberg . . . "This picture will be another '20,000 Leagues Under the Sea'."

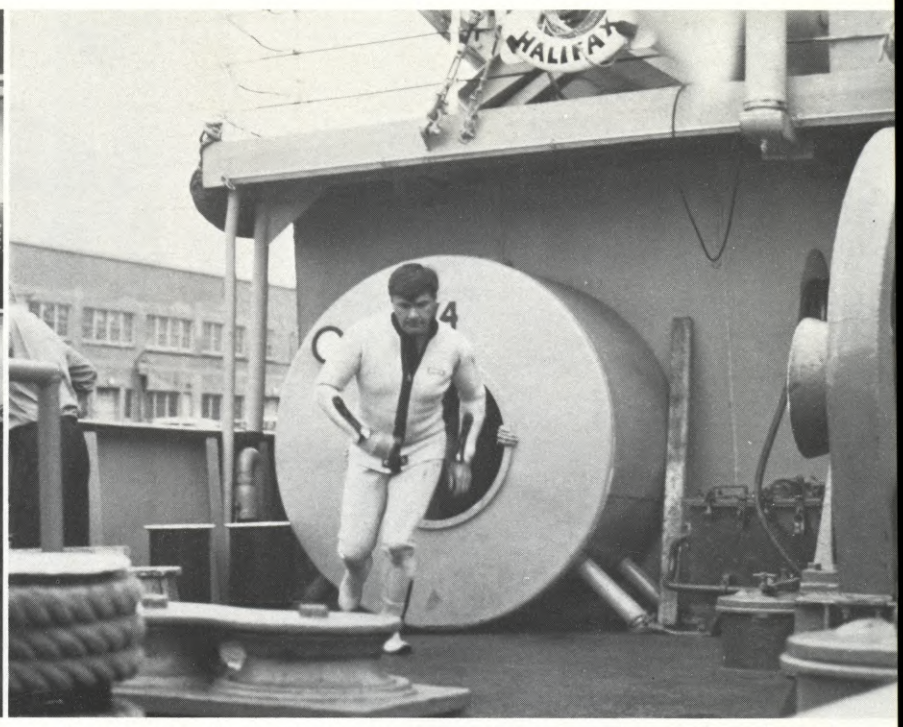
The screenplay, by Jack DeWitt, involves a research vessel, the R.V. Triton, which is calmly anchored off the Muir Seamount, some 85 miles northeast of Bermuda. Attached to it is a habitat called the Oceanlab II, some three hundred feet below. It is the end of a 21-day exercise for the five scientists on board. As they prepare to ascend to the Triton, a violent earthquake tears away the foundation of the Oceanlab II, throwing it over the edge of the seamount with three remaining scientists on board.

When the first search, conducted with both surface vessels and a navy submarine proves unsuccessful, the R.V. Triton enlists the cooperation of a highly sophisticated submersible called the Neptune. In a desperate effort to rescue the lost Oceanlab II in time, this 4-man mini-sub dangerously descends into an uncharted section of the ocean's depths. This lost area of ocean experiences a warm current and a strange

(LEFT) Fabricated rock is lowered into the dry Seatank, a massive swimming pool with underwater viewing windows, built specially in Toronto for filming of "THE NEPTUNE FACTOR". More than 250,000 gallons of water were required to fill it. (CENTER) 15-foot-high rocks, cave units and plant life to match miniature setting are installed in the Seatank. (RIGHT) The Neptune, a sophisticated submersible, shown in "dry" position in the Seatank.

(LEFT) The Neptune surrounded with "bubble" plastic installed on the floor of the tank. (CENTER) Lighting the interior of the Neptune with stand-ins. The complete interior of the 25-foot submersible was built in Toronto studio and dressed with practical instruments and equipment to simulate an undersea voyage. (RIGHT) Shooting a closeup of Yvette Mimeux in studio tank against rear-projection screen.





(LEFT) For dramatic scene in the Triton Lab, Ben Gazzara walks away from Yvette Mimeux after a heated argument. The captain of the R.V. Triton is at left. (RIGHT) Divers running out of decompression chamber during undersea earthquake sequence. The entire action for this sequence was shot in Halifax harbor, requiring the participation of 200 extras from the services and 20 professional divers.

growth cycle that produces both sea animals and plants of gigantic proportions. A gibberellic acid has stimulated everything in the immediate area. Here they find the remains of the Oceanlab II, and are forced to fight the many enormous creatures of the deep in order to save the stranded scientists.

A PRODUCTION DESIGNER'S NIGHTMARE

"THE NEPTUNE FACTOR" was the largest Canadian-budgeted production ever to be mounted with a totally Canadian production crew. As the Production Designer, my first meeting with the producer, Sandy Howard, and our production manager, Gerry Arbeid, was to be the beginning of some three hundred such meetings. The first was a survey of the budget for all of the many settings, costumes, and effects. According to the production board before us, we had an array of miniature settings, fish tanks, and location filming. I approached these problems by resolving the following picture requirements for each area:

HALIFAX—We needed a large research vessel, one helicopter, one ocean barge, two destroyers, one submarine, a mini submersible, two or three fishing boats, an auxiliary vessel, an air/sea rescue room, a radar installation unit, a decompression chamber, two hundred extras from the services, and approximately twenty professional divers.

TORONTO—To simulate the many underwater settings, we needed over 40 specially-constructed glass aquariums, 15 large glass and plywood tanks, three thirty-six-foot-long swimming pools, two hundred miniature seawalls, canyons, caves and varied colored sea plants, silica sand and dolomite gravel (both in the tons), 40 special filters and heaters, and, finally, well over 80 species of live sea animals from all over the world.

TORONTO—In a studio, we needed to build the complete interior of a 25-foot submersible and fill this interior with all the practical instruments and equipment to simulate an undersea voyage. There was the need to build a complete ship's laboratory with a passageway to a deck area, a 40-foot habitat on a rocker to simulate the force of an undersea earthquake, a pool built into the floor of the studio for the hatch units, and a large glass tank for rear projection so that actors could work in front of a camera window.

TORONTO—To simulate all of the undersea sequences in both Halifax, and later in the Bahamas, it was necessary to build a massive swimming pool with underwater viewing windows. We estimated that this pool would require more than a quarter of a million gallons of water to allow us the freedom for several of our sequences. In this pool we would need 15-foot-high rocks, cave units, and plant life to match our miniature settings.

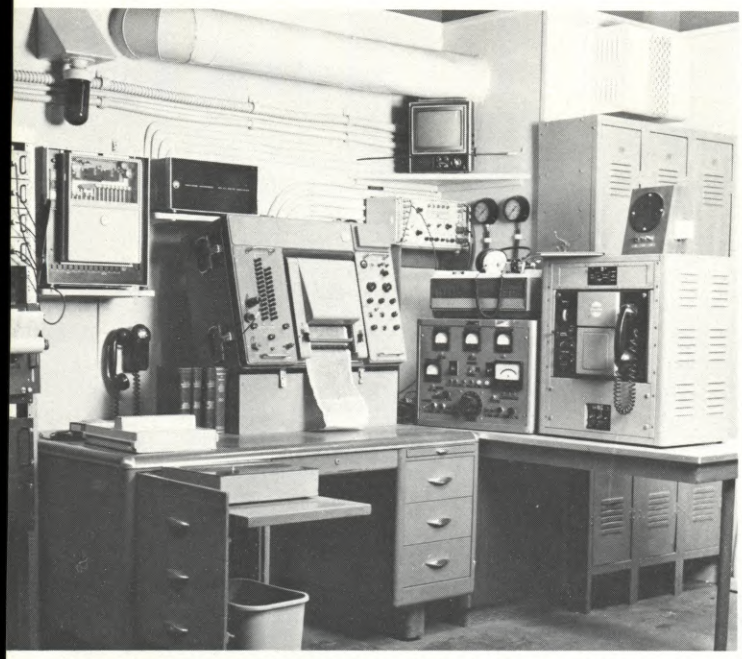
THE BAHAMAS—Here in the open ocean, close to 40 feet below the surface, we needed a large habitat, a grid of steel pipes, a large oil pipe in construction, a dock for a wet sub, five or six hydrophone domes, and a closed circuit breathing apparatus for 15 or 20 divers.

OUR PLANS BEGIN

To start at the beginning is always a matter of breaking down the script, estimating the costs of each operation and then proceeding with a complete set of detailed drawings for each department. But this picture posed a different problem in the beginning. To co-ordinate all of the departments in each involved sequence of the film, I set out to fully detail every individual shot in the form of a storyboard, scaling all measurements to the 70 millimeter format used in the film. After three and a half weeks of intensive detailing and sketching, I finished 691 drawings.

This completed the storyboard, except for various model shots and extra miniature effects still to be devised. Copies of the storyboard were given to Sandy Howard, director Dan Petrie, and our Director of Photography, Harry Makin. A copy of the master was kept in the art department for future reference.

Now we moved into the third phase of our planning with a concluding production meeting of all departments, where we reviewed each shot according



(LEFT) Many units of practical sophisticated equipment were loaned for the production of the film. This lab was built in the studio and matched the Halifax version down to the last waste-basket. (RIGHT) Production Designer Jack McAdam explains front plex-bubble position over bow section of the Neptune.

to the storyboard. Our final production budget was reviewed and each area of pre-production was given the green light.

A CONSTRUCTION DEADLINE

With my associate, Paul Herbermann, I started to draft out the plans for our location filming in Halifax. Since 75 percent of our film was to take place in a submersible, it was decided to employ the services of the Canadian Armed Forces' underwater vehicle, the SDL-1. This magnificent 20-ton submersible carries four men on most rescue and salvage projects around Halifax. Having to match this vehicle in every detail posed many problems. As the SDL-1 was designed and built in Vancouver by International Hydrodynamics, we contacted their head engineer, Jim MacFarlane. After receiving a set of master plans and a variety of photographs, I soon completed our own special design.

Within a few days, we ordered four 20-foot fibre-glass fairing units and an eight-foot fibre-glass sail tower.

While this phase of our planning was in progress, Dennis Clark was busy designing the five miniature scales of this same submersible which would later be used in our model tanks. Inside of two weeks, our fibre-glass outer shells arrived from Vancouver and we proceeded to build the Neptune. With such an intricate pattern of steel, aluminum, and plastic required for this vehicle, I called upon the All-Weld Company in Toronto to do the final assembly. Armed with a new interior structure and numerous photographs detailing the exterior areas, I held a meeting with All-Weld's head engineer, Bill Dunsmore Jr. And, after three and a half weeks of careful construction, the Neptune was completed. The finished mock-up weighed approximately 2,300 pounds and matched every detail of the original Halifax version of the SDL-1. In addition, we included a large five-foot-wide plexiglass viewport in the bow section and a small three-foot-wide plexiglass viewport on the side. Around this, we built a frame for underwater lights and a three-camera unit.

While Paul and I were planning the many particulars involved in our Halifax location, Dennis was experimenting with the miniature models of the Neptune. Some of the smaller-scaled models had to be "puppeted" on black or clear thread.

The large 28-inch model was being tested for a radio control system. Miniature sea walls and marine plants began to take form with a foam-gun and fibre-glass. At the same time, my bearded friend and chief ichthyologist, Jan DeWitt, was having a variety of glass aquariums built, some of which were eight, ten, and sixteen feet long to accommodate the miniature sets. While Jan was fitting over forty of these glass tanks into an old warehouse room that would eventually become our film studio, his assistant, Doug Spry, was converting thousands of gallons of fresh water to salt water to accommodate the multitude of fish due to arrive from suppliers around the world.

ON THE OCEAN IN HALIFAX

We arrived in Halifax on September 14th to begin the first part of our underwater adventure. With our Neptune mock-up chained on a 40-foot flat bed truck, we moved into the Armed Forces Dockyard. The many surprised officers applauded our submersible as it rolled into the dockyard hangar to rest beside the Navy's SDL-1.

Filming began the following morning in the C.C.S. 280 Computer Room, now redressed to resemble the Rescue Co-ordination Centre. With the addition of a number of radar units and computers being operated by actual officers, this scene became intensely realistic.

The next day found us on board a submarine called the Onondaga, which in the film, is seen as one of the undersea search rescue vessels. We somehow jammed our equipment and crew into the torpedo room, the control room, and parts of the passageway in order to film the main command room and the torpedo room.

The following morning it was scheduled to leave and participate in a NATO sea exercise. When the Onondaga finally pulled out in a thick morning fog, we were there to film it from the roof of a dockside warehouse. Later that afternoon we sailed on board a 155-foot auxiliary vessel called the *Bluethroat.* This ship was built in 1955 as a mine-layer and cable-layer. She is still an operable vessel but is of more use in assisting oceanographic research than in laying mines. We redressed the ship with our own life rings, a steel decompression

chamber built in Toronto, and a fine collection of research buoys, holding tanks, and scientific containers, on loan from the Bedford Institute of Oceanography.

All of these colorful research units added an air of authenticity to our research vessel, the R.V. Triton. The Institute and its public relations officer, Ed Murray, were instrumental in supplying most of my scientific research for the film.

And now, with our research vessel off Chebucto Head, our days of filming at sea began.

Some days, when the sea was running high, one would notice both the crew and actors standing very close to the railings.

Our final two days of filming were rather involved on all accounts. We held a production meeting with Sandy Howard and Dan Petrie at 5 a.m. in the lobby of the Holiday Inn at Dartmouth. We decided to split our forces to make better time. Sandy would direct the second unit from our Bell helicopter to obtain the master shots. Our Halifax unit manager, Sam Jephcott and myself were to steam out with the Neptune and the SDL-1 aboard the 100-ton barge crane, which stretched an enormous 150 feet in length. This barge would rendezvous with Dan Petrie and the main unit on the R.V. Triton later that morning. Our location was two and a half miles off Chebucto Head. Waiting along the same coastline, a fast Boston whaler was in reserve in the event we might need a ship transfer or a quick means of returning to the mainland. All of our units were in constant communication with walkie-talkies and ship-to-shore radios. After steaming out of harbour at 7:30 a.m. we arrived on location two hours later to start filming. With the barge in position, we proceeded to lift the SDL-1 submersible into the water with two Navy frogmen standing by in a small dinghy. Our Neptune disguised under a large canvas, and the SDL-1 now operating in the open water, we radioed Sandy in the helicopter to commence filming. The main crew on board the R.V. Triton swung into position and we started our closing sequences of the picture.

The next day we met with a very high sea and heavy rain, but, nonetheless, persisted to film on board both ships well into the afternoon. Later, when we made harbour, with filming completed, our soggy crew set a world record in packing away their equipment to leave the ship.

The following morning was Saturday, a day that Harry Makin and I, with five members of our crew, had been waiting for all week. With unit manager Charles Doucett and three certified PADI instructors, we drove out to Peggy's Cove to accomplish an open dive. For many weeks, back in Toronto, Harry and our crew had been taking a crash course in SCUBA diving and this was about to be our final test. After two hours in the ocean with equipment checks and buddy diving, we easily qualified, and returned to sit on the high rocks of the shoreline to write our examinations. I should think that we are the only certified feature film diving crew in Canada. And to think that Harry Makin had just learned to swim!

AN OCEANLAB FOR FREEPORT

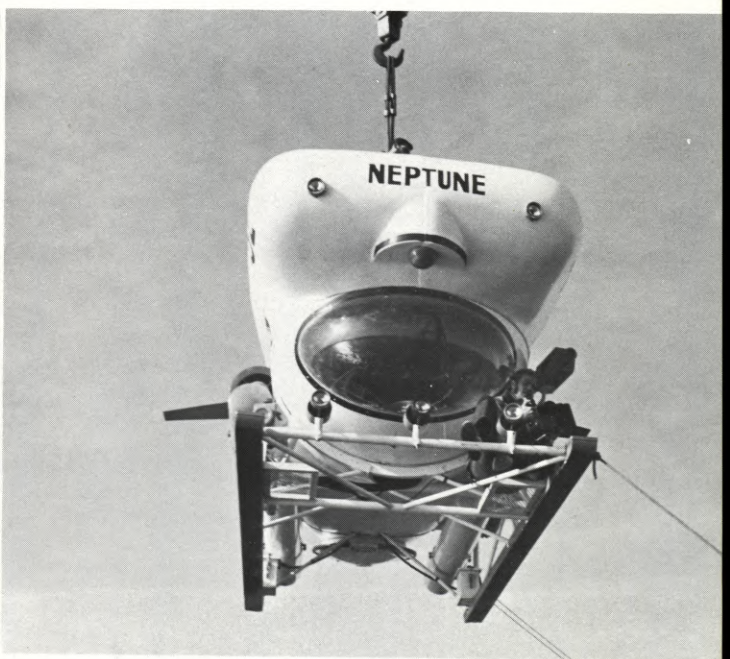
When we arrived back from Halifax and our sea legs adjusted to floors that no longer swayed, we began to make our plan for Freeport on Grand Bahama Island.

It was decided that a two-section habitat be built by purchasing two railroad tank cars. Again the problem of construction in the amount of time we had left was soon resolved by employing Bob Landry of Underwater World, a local dive shop that specializes in salvage and industrial construction on the Great Lakes. Since Bob had spent six years in the Bahamas, both as a hard-hat welder and SCUBA instructor, it was relatively simple for him to construct and install our Oceanlab II on our seafloor site. After finding two acceptable tank cars in a large salvage yard by the docks in Toronto, I redesigned the loading ports. By turning one tank car upside down, we were able to use the loading ports to join both tanks. Now, with one tank above the other, our height became an impressive 18 feet. By adding an eight-inch 'I' beam platform under the bottom tank, we created a frame that supported the total weight.

The tremendous problem of how to handle a unit of this size and tonnage in the ocean, was solved by making the top tank car air-tight and using it as a float.

Continued on Page 892

(LEFT) Panavision camera, auxiliary equipment and vessels are made ready for the day's shoot, as crew leaves Halifax harbor. The bridge to Dartmouth is in the background. (RIGHT) Second Unit cameraman rides the Neptune for point-of-view shot, as the submersible is hoisted into the air. In the film, Neptune is sent out to attempt rescue of lost Oceanlab II crew.



Hear him all the way down with a Vega cordless mike

"We're on the jump run. I'm climbing out on the wing strut. OK, I'm ready. Cut the engine! Now I drop . . . belly down. I can almost touch the mountains! Want a slow roll? Watch. Now a dive . . . 120 mph! I'm a bird! I'm flying! The roof tops and big plowed circle are coming up fast! Time to pull the cord. Ahhhh. Chute's open and I'm gliding . . . gliding . . . home."

Vega lets you capture sight and sound together . . . whether you're shooting dancers, runners, car drivers or sky divers.

The tiny Vega mike clips on like a tie pin. The Vega transmitter hides in a pocket. The solid state receiver is perfectly compatible with all mixers, tape recorders, or P.A. systems.

When you want sound with full fidelity and without booms, stands or trailing wires . . . or where wires couldn't go . . . you want a Vega Cordless Mike. You can choose from four models, including a hand-held mike, described in our beautiful four-color brochure. Write for it now. Vega Electronics, 3000 West Warner, Santa Ana, California. Or call John Beaman at (714) 540-0222.

VEGA

COMPUTER EQUIPMENT CORPORATION • VEGA ELECTRONICS DIVISION

If you don't have our 1973 Price Schedule,

why not use our 1972 or 1971 or 1970 or 1969 ?

Same Prices? For five years? No changes? Well, there have been a few changes here and there, but in the main our prices are the same as they were in 1969. If you've tried to buy anything lately—any place—you may just find the whole idea a little exhilerating.

Our materials cost us as much as they do anyone else. The sophisticated equipment we use has gone up in price, and our expert technicians expect, and get the kind of wages that experts deserve. So, with everything more costly, how have we managed to hold a price line this long?

Simple.

First, in 1968 we constructed a new building, designed to do our work more efficiently.

Secondly, we have purchased the most modern equipment in the optical printing field—new Research Products Optical Printers, high contrast developing machines, color analyzers, liquid gates and many more items.

Third, we have the finest technicians in the industry and we give them the finest tools available. They do the rest. They represent a combined 300 years of experience in optical printing and, with this solid core of know-how, they have reduced the time necessary for every operation steadily and dramatically. Steadily and dramatically we have nearly canceled out the rise in prices which has afflicted every industry.

So, if you don't already know us, it won't cost you nearly as much as you might have expected . . . to see what we can do for you. We cover the field of optical printing. Color and density corrections, matte shots, inserts, titles, 16-35mm enlargements and reductions, 16-16mm and 35-35mm combinations. You name it.

Oh, and about that 1973 Price Schedule; if you don't have one, send for it. True, it isn't all that different inside, but its new and fresh and that's always nice.

Write or call Cinema Research Corp., 6860 Lexington Avenue, Hollywood, California 90038; Phone **(213) 461-3235.** Ask for Jack Glass or Hal Scheib.

CINEMA RESEARCH CORP.

A RENAISSANCE APPROACH TO FILM-MAKING

A group of youthful, energetic motion picture technicians de-emphasizes specialization to reap fertile new markets in America's Northwest area

By J. HAL WHIPPLE

Filmhouse International, Inc., Eugene, Oregon

Convinced that the Pacific Northwest was a fertile market for filmmaking, lumbermen Eliot Jenkins and Roger Lee bankrolled the opening of Filmhouse International, Inc., in May 1971, before the Eugene, Oregon, company had exposed its first frame of film.

If there is a common denominator to describe our staff, it probably can be found in the adjectives "youthful" and "energetic," and in what I call the "Renaissance syndrome."

Almost everyone here free-lanced in a specialized area before joining the staff, but was interested in much more than his specialty. That's no accident. We feel that this type of person helps us avoid tunnel vision.

We like carpenters on the staff who don't hesitate to tell us how to film a scene, and we thrive on truck drivers with better ideas for hanging insulation on our sound stage. This generates an exciting, vibrant, and creative environment where communications problems and opportunities can be attacked from all angles.

Within this open environment, we avoid absolute creative authority, although we realize pure democracy isn't always practical and it's contrary to much accepted filmmaking tradition.

I frequently hear about some great director or someone else who made his mark by refusing to make a picture unless he had final cut rights. Our attitude, however, is that, if an electrician has a better idea than a director, we want him to come in and pound on the desk.

The philosophy suggests possible chaos, but that isn't what happens.

When a staffer feels he is important, you get his best efforts in his areas of expertise, and the benefit of his best thinking in every other segment of our business.

I don't think that this can be done every place. Eugene is a city of 100,000 people, with education and recreation as the major sources of employment. And the surrounding area is pleasant.

We have four seasons but neither the summers nor the winters are too harsh. The Pacific Ocean is an hour's drive to the west, and similar travel in other directions will take you to wild, white water rivers and mountains. One reason for locating the studio here was that these conditions make the area a mecca for multitalented people. Staffing the new company was easy.

Also, we aren't too far from technical help when we need it. When we were first getting organized, we received a lot of assistance from the Eastman Kodak Company sales and engineering representative working out of Kodak's Seattle office.

FHI found its first customers among the region's schools, businesses, and television stations. However, getting that business wasn't easy at the start.

Much local film work was being done by producers flown in from New York, Chicago, Los Angeles, and other major cities. Initially, we didn't have much success vying against this higher-priced competition.

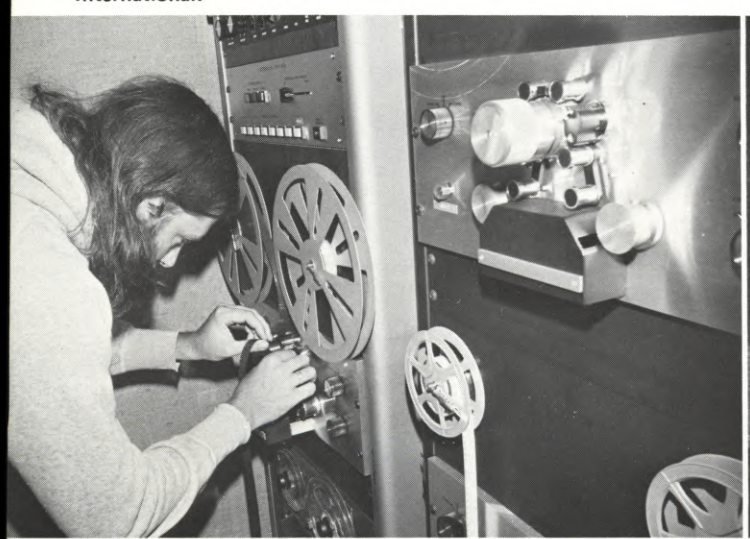
We were new and young (the median age is 25) and they were proven and safe. Also, our way of doing things was much different from the other producers' methods.

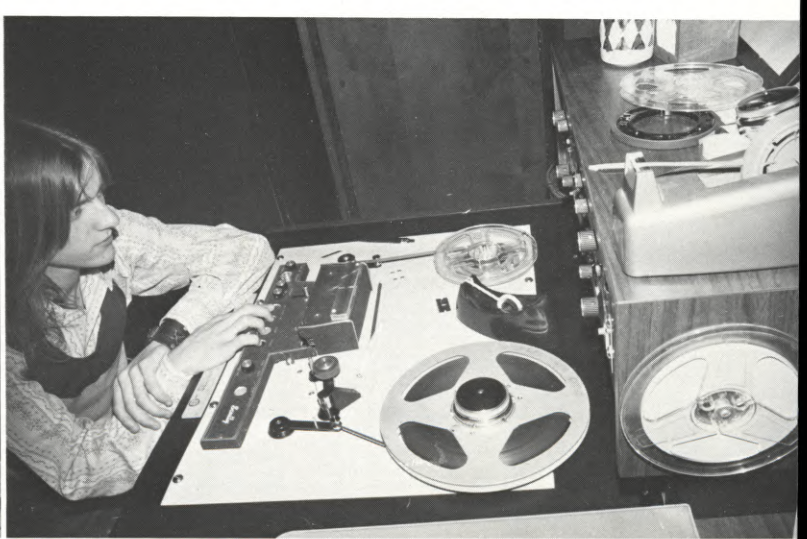
But there were seeds to be sown in fertile new markets. To encourage small businesses to buy spot time, for example, many local TV stations were producing free commercials. Basically, the sponsors got what they paid for. The commercials usually consisted of a sponsor standing in his store or car lot imploring customers to buy from him.

FHI personnel bombarded TV stations, sponsors, and other potential advertisers with unsolicited ad treatments and budgets. Everyone working for the company is given sales responsibility. If they sell an idea, they can help produce the film.

Most of the TV stations were responsive, because they could see how better commercials would help them sell more time. A good number of referrals came from this approach. Sponsors also re-

(LEFT) Cinematographer Tom Cornish sets up a first-cut film and sound track for editing at the FHI studio in Eugene. (RIGHT) Sound recording engineer Rob Perkins, 22, played in rock bands and was second engineer at a Los Angeles sound recording studio before joining Filmhouse International.





(LEFT) J. Hal Whipple, left, who taught Renaissance Literature before joining Filmhouse as a script writer, discusses with a staffer an audio cassette package produced as part of a multi-media project. (RIGHT) Whipple meets with financial backers on the FHI sound stage.

sponded if they were convinced that the investment in a filmed commercial would reap worthwhile dividends.

One example is the University of Oregon football team. For years, the commercial to sell season tickets consisted of footage from previous games shown against a voice-over narration promising "a greater team than ever."

We approached the athletic department with an alternative.

"How about selling football instead of selling winning?" we asked.

What evolved was a 30-second color spot make up of four filmed vignettes.

The vignettes were recorded on Kodak Ektachrome EF film 7242 (tungsten). Originally designed for TV news coverage, the film stock has a relatively high exposure index of ASA 80 when used outdoors with a Kodak Wratten filter, no. 85, over the camera lens, and ASA 125 indoors with 3200K tungsten light.

This meant that we needed very little artificial illumination—allowing us to work faster and at lower cost. In addition, all persons in the vignettes were amateurs, so we feel we got much better performances by working as simply as possible.

Vignette No. 1 was recorded at a local farm, with an Eclair camera. The "farmer" is shown loading hay onto his truck. He looks at his watch, suddenly jumps into the truck, and speeds off, losing bundles of hay along the way. Sound consists of quarterback Dan Fouts talking in a huddle.

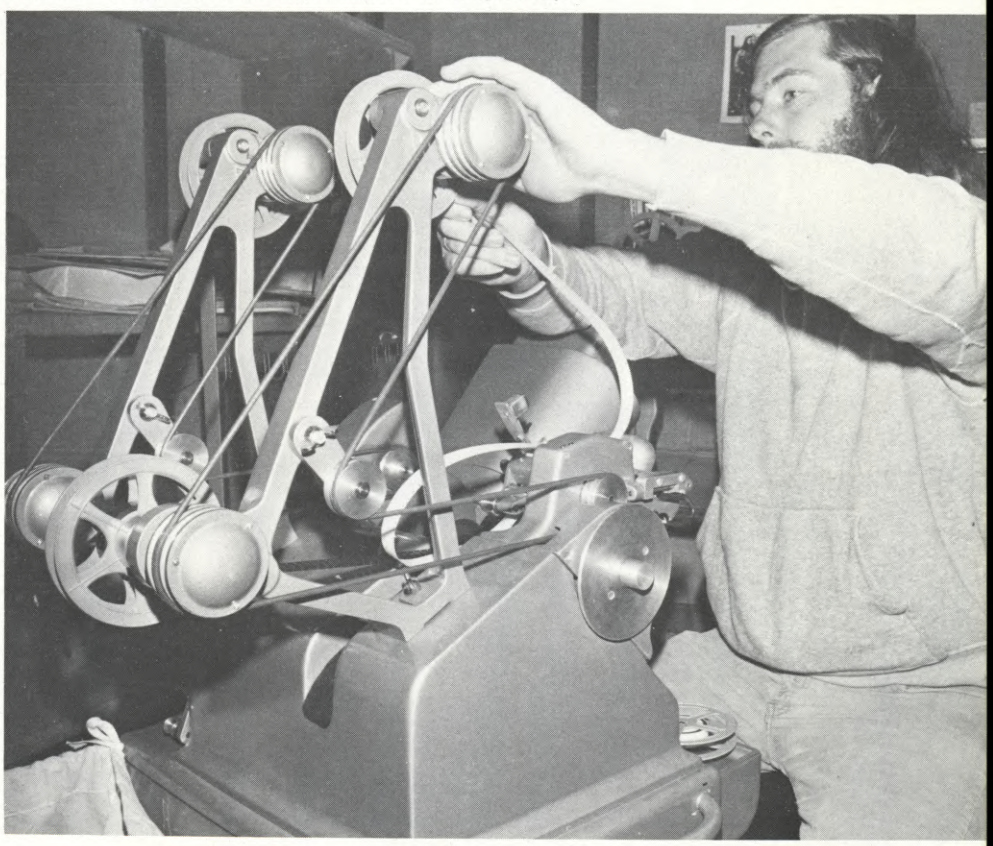
Vignette 2, also filmed with an Eclair camera from a shoulder pod, shows a woman leaving a supermarket with an armload of bundles. She, too, rushes off after noticing the time, leaving behind her bundles and an astonished bag boy.

Vignette 3 shows a bank holdup in progress. The thief drops a bundle of money after consulting the clock. Meanwhile, quarterback Fouts is heard calling signals as *Vignette 4* begins.

This segment shows a bulky man (in real life, the owner of a local Chinese restaurant) washing laundry in a huge wooden vat. Props made by the production house identify the scene as occurring in a Chinese laundry, an amenity Eugene lacks. Once again, after noting the time, the subject drops a bundle of laundry and runs off.

While this has been happening, the

Tom Cornish, 28, a pre-law college graduate when FHI hired him for his carpentry skills, became a cinematographer by observing, asking and learning, he says.



(ABOUT THE AUTHOR: J. Hal Whipple's business card doesn't carry a title but he describes himself as talent coordinator for the 15 full-time employees at Filmhouse International, Inc. At 32, he is the "old man" and top creative officer of the organization. He taught Renaissance literature for 10 years at the University of Kansas and the University of Oregon before starting a second career as a script writer at Filmhouse International.)

sound has changed to the University of Oregon fight song, and then to the roar of a crowd. The visuals finally fix on the outside of the stadium.

"You don't have to drop a bundle to enjoy University of Oregon football," advises the concluding voice-over narration, as the screen displays where to write for tickets.

Not only did that spot help sell football to the community, but it also helped sell us to prospective customers.

The Blatchly Seduction Model Drivers Education Kit, a multimedia package designed to discourage teen-age alcoholism, is another successful job that recommended FHI to others. The project started with a local educator who received a federal grant to test a new concept to educate youth about the dangers of alcoholism.

His research indicated that many of the available materials were counterproductive. One film, for example, shows a good-looking youngster drinking and making out with the prettiest girl at the party. They leave in a flashy car at high speed and, after a chase scene, there is a terrible crash.

The educator contended that most teen-age viewers actually identified with the boy and girl until the crash. If so, the tendency would be for the youngsters to tell themselves that they wouldn't have crashed.

What the educator wanted to say to teen-agers was that, if you drink excessively, you become an easy mark for anyone who wants to take advantage of you. In effect, you become controllable —which isn't a very "in" thing to be.

FHI was hired to produce a media package to help drive home this concept. A 20-minute, color-sound film was made by director-cinematographer Tom Cornish. He did the job with a four-man crew, working mostly with an Eclair camera (a Bolex camera was used for some slow-motion sequences and for titling). He chose Kodak Ektachrome EF film 7242 and Eastman Ektachrome commercial film 7252, depending upon the subject and location. We generally prefer these two film stocks because they afford us the reliability we need, even under the most varied and difficult shooting conditions.

Two men handled the Nagra IV sound recorder, and another aided the director-cinematographer. Locations ranged from the sound stage at the studio, to streets, private homes, and schools in Eugene. The acting was done by amateurs with the exception of a few key adult roles.

It's far easier to find youngsters who can play-act than adults.

In addition to the film, which is currently being shown at high schools in Washington and Oregon, we also created a study guide and a set of still photographs taken on location during filming.

Teachers use the guide to lead discussions and the pictures to focus on specific incidents. The package is designed to do more than just lay a block of information on youngsters. The hope is that it will stimulate talk and thinking in a peer group environment that will make the message more relevant and meaningful.

In the end, the pursuit of meaning has probably been the main catalyst for everything done at FHI. I, for example, was happy teaching Renaissance literature and planned to make it my life's work.

Then I free-lanced an article for a regional magazine about an old-fashioned hardware store about to be plowed under by progress. The story caught the eye of someone at FHI who passed it along to others.

Stewart Stone, 25, was hired to drive a pick-up truck, but now manages the sound stage and composes sound tracks for Filmhouse International.

They called and asked me to come in and talk about a job as a script writer. It was wild—I'd never dreamed of doing anything like that. Now I don't dream of anything else.

Cornish, 28, came to Eugene to play basketball and study sociology. His long-range goal was to practice law like his father and grandfather. He took numerous detours en route, however—working lumber mills, fighting forest fires, cooking, pouring cement, and "doing all of the things that people do when they aren't exactly certain where they are headed."

His introduction to filmmaking occurred during one of these excursions from the main path. He took a summer course in educational broadcasting, solely because he needed the five credits to graduate.

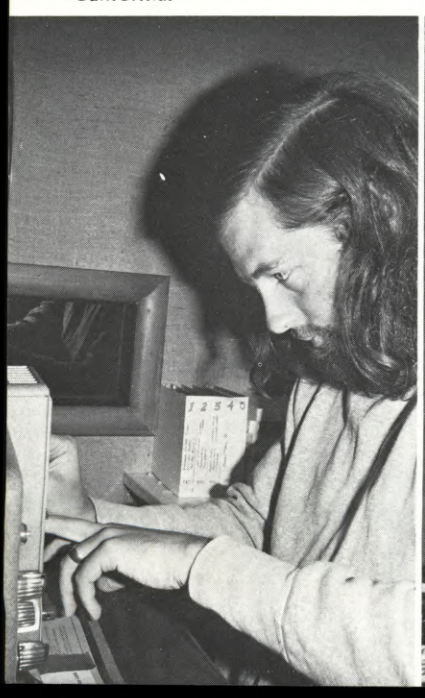
Later, Cornish was working as a carpenter's helper, waiting to enter law school, when a friend suggested he might find more interesting work at FHI. After all, he reasoned, he had experience at filmmaking because of the ETV course.

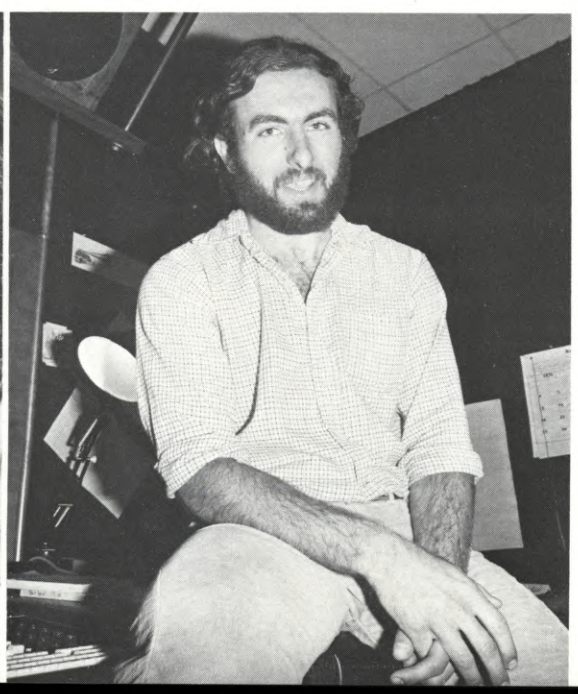
He was hired—as a carpenter—and put to work building partitions at the studio, which occupies space originally intended for a department store at a downtown shopping center.

That really fueled his determination

Continued on Page 881

(LEFT) Tom Cornish threads a 16mm film on a Kodak Pageant sound projector in an FHI projection room. (RIGHT) Tom Schumacher, 24, was driving a tractor-trailer truck when FHI hired him to write scripts on the basis of his fantasy literature studies at Sonoma State College in California.





CINEMOBILE INTRODUCES TWO NEW "SUPER-VEHICLES"

A couple more "mobile" studio units to help make location production faster and more convenient

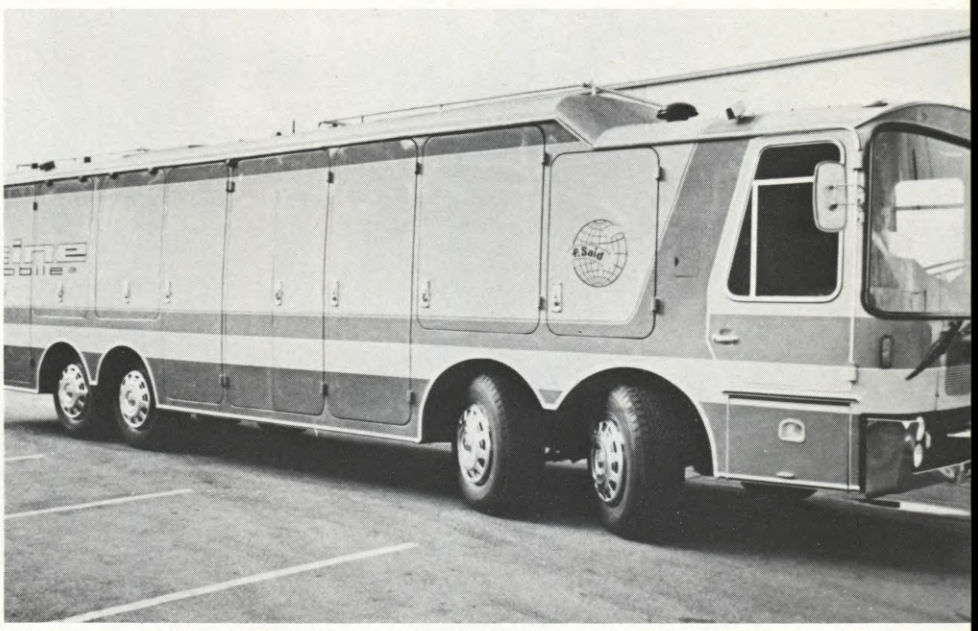
CINEMOBILE "SUPER-VEHICLES"

The latest addition to the Cinemobile Systems family of studios on wheels is probably the most expensive motor vehicle ever built for commercial use. It's called the Mark VIII. The Mark VIII was designed and engineered to meet the most rigorous challenges relative to location film production. One of its unique features is an 8-wheel-drive transmission that enables the giant (40' X 11' X 8') vehicle to negotiate extremely rough terrain and grades of up to 50 degrees.

The Mark VIII is the only known 8-wheel-drive vehicle in the Western Hemisphere (a check by Cinemobile engineers revealed that not even the U.S. Army has a comparable vehicle). The drive shafts are designed to be employed only when needed, so that the Cinemobile can use two-wheel, four-wheel, six-wheel, or eight-wheel drive. The Mark VIII comes equipped with air suspension and air brakes that include two emergency backup systems.

Careful consideration was given in the design for those who actually use the Cinemobile: the crew. The driver sits in an air-conditioned cab equipped with a twelve-channel phone that can send and receive calls anywhere in the world. He's protected by a half-inch-thick, one-piece windshield (3½'X8'). He can drive at highway speed (55-60-MPH) on specially-designed Michelin radial tires that are 18" wide to prevent sinking in mud or sand.

The largest cameras can be transported in padded compartments which slide out from the body of the Cinemobile for easier loading and unloading. The Mark VIII also has a walk-in darkroom for changing film magazines.



The new Mark VIII CINEMOBILE—probably the most expensive motor vehicle ever built for commercial use. One of its unique features is an 8-wheel-drive transmission that enables the giant (40' x 11' x 8') vehicle to negotiate extremely rough terrain and grades of up to 50 degrees. It comes equipped with air suspension and air brakes that include two backup systems.

The latest grip equipment, lightweight and highly portable, can be housed in padded individual compartments. The compartments can be replaced or re-arranged, according to the individual needs of the production. The locks are tamperproof. As with other Cinemobile models, the Mark VIII features a telescoping hydraulic camera platform which can lift 1800 lbs. of men and equipment to a height of nearly 40'. The 30,000 lb. Mark VIII can carry an additional 34,000 lbs. of load.

The engine, of the type used in Army tanks, is located in the front for better weight distribution and increased rear loading capacity. It's powered by diesel fuel (120 gallon capacity).

The Mark VIII comes equipped with a silent 6000-RPM, 1500-amp aircraft generator that will provide up to 10 continuous hours of power before requiring additional fuel.

The new CINE II, an auxiliary vehicle that eliminates the need for individual trailers for dressing rooms, props, wardrobe, generators and honey-wagons by providing room for all of these facilities in one unit. The 60' x 13' x 8' CINE II comes in two sections: a truck cab and trailer. The trailer portion can be separated from the cab and left on hydraulic jacks, which can be individually controlled to maintain the level of the vehicle.

CINEMOBILE'S CINE II

The Cine II is an auxiliary vehicle designed to supplement the regular Cinemobile in compactly filling the requirements of location film production. The Cine II eliminates the need for individual trailers for dressing rooms, props, wardrobe, generators, and honey-wagons by providing room for all these facilities in one unit. The 60' X 13' X8' Cine II comes in two sections (a truck cab and trailer).

The trailer portion can be separated from the cab and left on hydraulic

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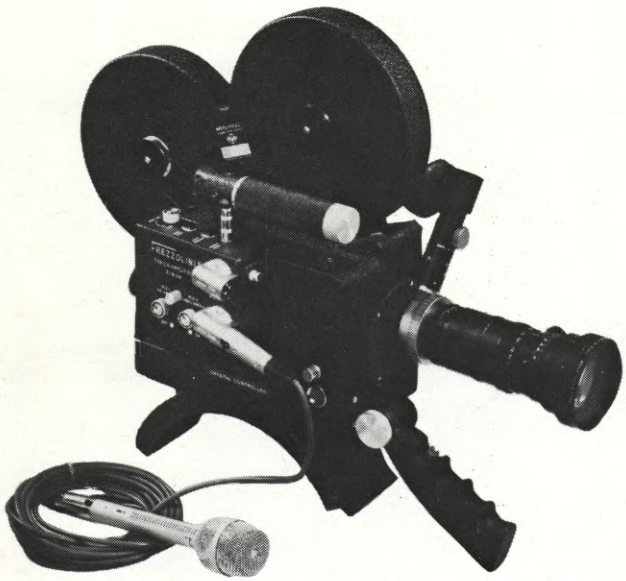
When these two Frezzi's take pictures they mean business!

"TOP OF THE LINE"

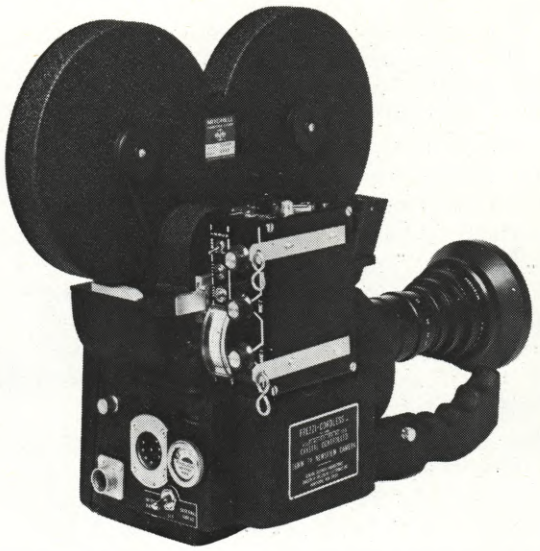


FREZZOLINI® MODEL LW-16 TV NEWSFILM AND DOCUMENTARY PROFESSIONAL 16MM CAMERA.

Specifically designed, as a lightweight 16mm single/double system sound camera, for television newsfilm cameramen and professional documentary filmmakers. Incorporating a crystal-controlled phase-lock DC motor drive and an internal quick-change battery, the Model LW-16 is remarkably silent running and extremely well balanced...a must for today's filmmakers!

Available with or without automatic iris, the LW-16 is backed by Frezzolini's dependability and time-tested Bach Auricon mechanism.

"THE ECONOMICAL STANDARD"



FREZZOLINI®"CORDLESS" MODEL MC-571 PROFESSIONAL 16MM TV NEWSFILM SINGLE/DOUBLE SYSTEM SOUND CAMERA.

Used by all major TV newsfilm operations, the standard lightweight 16mm TV newsfilm camera features the "Frezzi-Cordless"™ internal power system. The MC-571 is rugged, completely portable and operates everywhere from its internal power system or external 120 volt AC line or external DC battery. Also available with the same phase-lock DC motor drive as the LW-16 at no additional cost. Sync operation with integral crystal-controlled module. Shoots single or double system with ease. And, of course, the Frezzi MC-571 features Frezzolini dependability and time-tested Bach Auricon mechanism.

MC-571 Camera Body Revolving Stock Special: only **$2,995.00**

Convert your Cine Voice to MC-571: from **$1,995.00**

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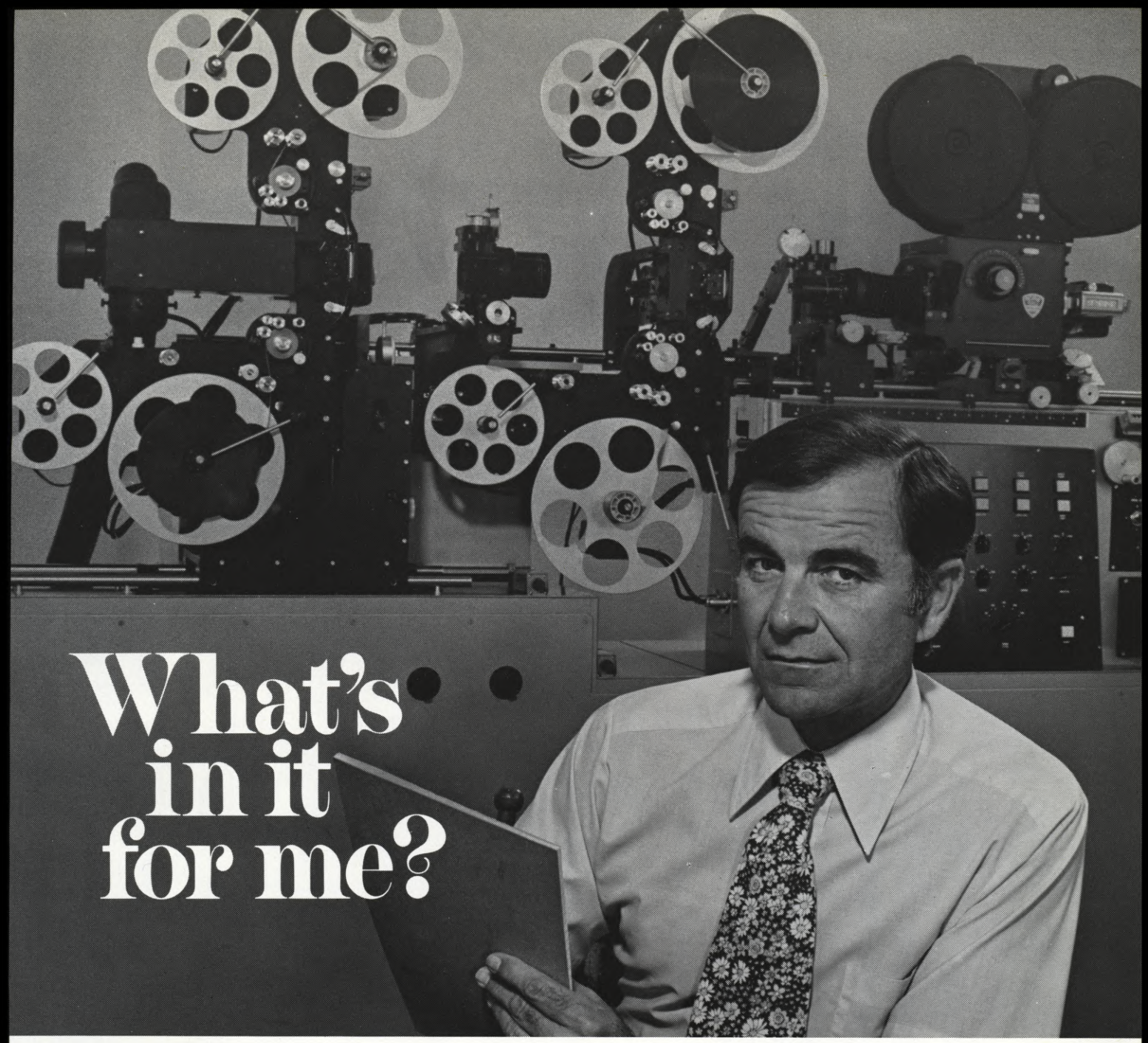

What's in it for me?

Maybe we ought to start out by saying what is *not* in our new Model 2101 Aerial-Image Optical Printer.

To be exact, we left out mechanical gear trains, levers, one horsepower motors, shafts, stop-motion clutches, solenoids, relays, knuckle joints and a lot of other things like that. We thought of it as leaving out trouble. After all, if mechanical drive systems are going to wear, vibrate, backlash, gum up, drag or stick, you know when they are going to do it. Right in the middle of your rush job. When else?

Not any more.

Which brings us back to that original question. What we put in, in place of all that worry, was our space-age drive system called "PhotoTron". It's an all electronic film drive using computer-accurate stepping motors and solid-state electronics on snap-out circuit cards. That's right, *snap-out* circuit cards. They may not exactly eliminate down time, but they should put a pretty big dent in it.

If all that sounds pretty good, listen to this. We made our new printer automatic. Automatic zooms from 4X enlargement to 5X reduction, automatic dissolves, logarithmic or linear for perfect fades or dissolves without overlap, an automatic shutter that can be programmed, at the flip of a switch, over a predetermined fade count, and an automatic skip-frame programmer that gives you unlimited combinations at all speeds and with three heads at once.

Sound pretty impressive?

We like to think so, but there's more. By making the drive system all-electronic, it can be adapted easily to computer control or tape programming. So when you're ready for this, you'll know that your Model 2101 will be too.

Price? Brace yourself. The lowest in the industry for an optical printer with the same features. That's something you don't hear every day. But it's really very simple. By throwing out all that expensive tailor-made hardware and simplifying construction, advantage went up and cost of manufacture went down.

What's in it for you? Plenty.

Write, wire or phone for our full line catalog and our custom engineering capabilities. Research Products, Inc., 6860 Lexington Ave., Hollywood, Calif. 90038;
Phone: **(213) 461-3733;** Cable: "RESEARCH"

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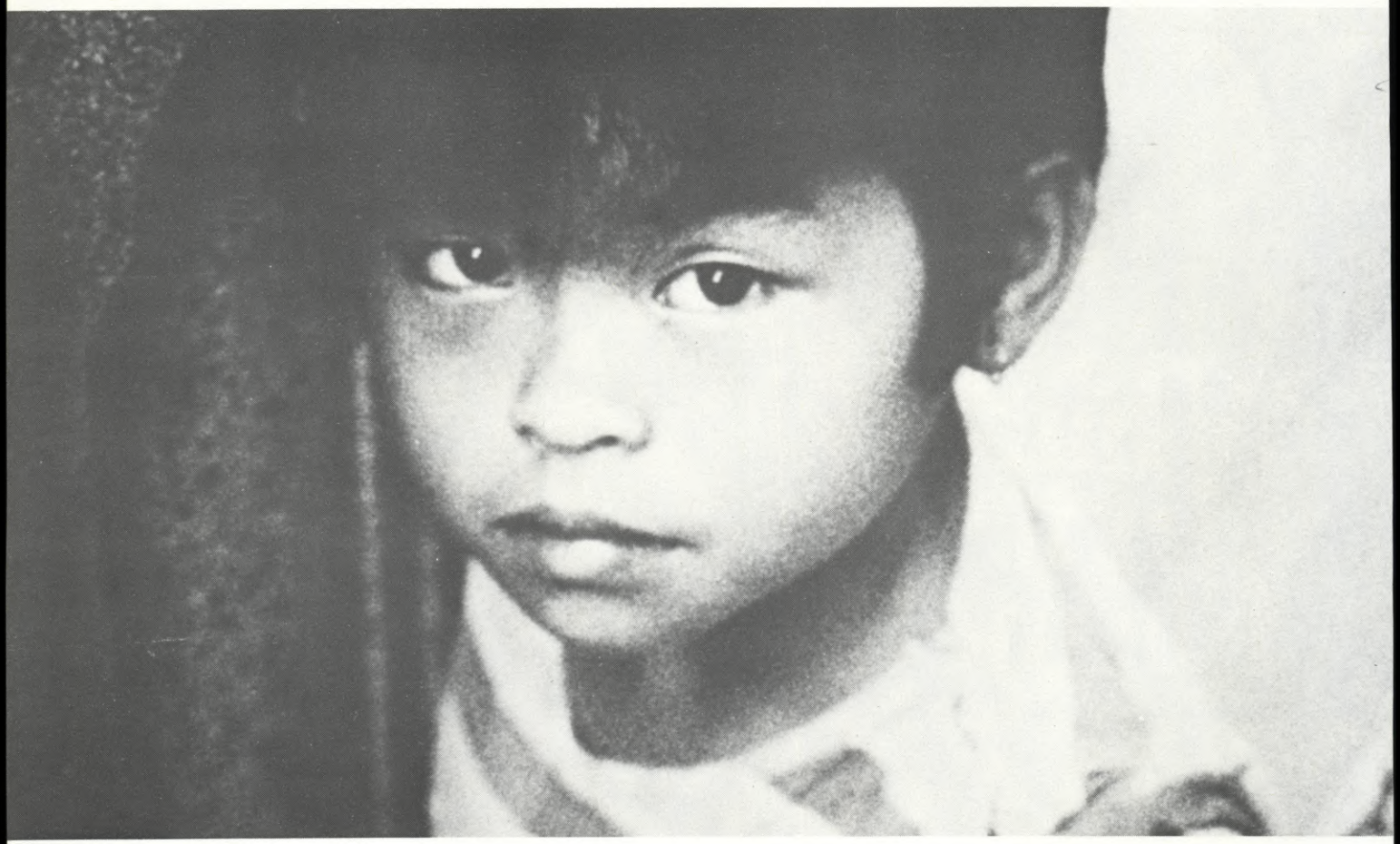
RP **RESEARCH PRODUCTS**

Research Products are Products of the Future

If you have a little money to spare you can buy a kid breakfast for a year.

If you have a lot of money to spare you can buy him a home.



For 17 years, WAIF, the Children's Division of International Social Service, has been providing homes for homeless children throughout the world.

We've arranged for their adoption and foster care, settled custody or guardianship problems and reunited many with their families after long periods of separation.

We want to continue doing this. And we can. With a little help from you.

Just $10 can buy breakfast for 8 months for a pre-schooler in Venezuela.

$25 will provide English language lessons and counseling for a refugee child coming to the U.S. from Hong Kong.

$150 will reunite a Mexican-American family separated by immigration problems.

$240 will pay for a year's foster care for a Vietnamese baby.

And $500 will find a home in the U.S. for a rejected Korean child.

Your contribution, no matter what its size, will help make life a whole lot happier for one of these children somewhere in the world.

Send your donations to *WAIF, Box 2004, N. Y., N. Y. 10017.*

All gifts are deductible from U.S. income tax.

WAIF

Continued from Page 837

duced by Vidtronics are to be presented by President Echeverria to the heads of state of the various countries visited by the Mexican leader.

The initial meeting in the series of worldwide visits took place in Toronto, Canada, where President Echeverria met with Prime Minister Pierre Trudeau, and addressed the Canadian Parliament. From Canada, the delegation traveled to London for meetings with Queen Elizabeth, the Royal Family and Prime Minister Edward Heath.

Next stop on the globe-girdling trip was Brussels for meetings with the rulers of Belgium, and with the heads of the European Common Market. Following this, President Echeverria flew to Paris where he met with President Georges Pompidou.

Programs were transmitted daily via satellite from each of these countries, as well as from Moscow where President Echeverria met with Leonid Brezhnev, Alexei Kosygin and Andrei Gromyko. In the Soviet Union, visits were also made to Bratsk and Irkutsk in Siberia.

From Russia, the group traveled to the People's Republic of China where they visited Peking, Shanghai and Canton. Meetings were held in China with Mao Tse-tung and Chou En-lai.

•

SEMINAR ON ADVENT OF SOUND ERA PLANNED

The Film Department of the Division of Broadcasting & Film, the School of Public Communication, Boston University, in conjunction with George Eastman House, is pleased to announce a symposium on: "THE COMING OF SOUND TO THE AMERICAN FILM, 1925-1940", to be presented at George Eastman House, Rochester, New York, from 19-22 October 1973 under the auspices of the University Film Study Center, and through the sponsorship of the National Endowment for the Humanities and the New York Council for the Arts.

The three-day program will include delivered papers from invited guests, among whom will be:

Dr. Raymond Fielding (author of *The Technique of Special Effects Cinematography, A Technological History of Motion Pictures and Television,* and *The American Newsreel, 1911-1967)* on the technology of the coming of sound;

Bernard Herrmann (composer of film scores for *Citizen Kane, All That Money Can Buy, The Magnificent Ambersons, The Day the Earth Stood Still, Vertigo, North by Northwest, Fahrenheit 451,* etc.) on composing music for the sound film;

Gerald Noxon (scriptwriter for NBC, CBC, BBC, and CBS radio and the *Studio I* series, member of Grierson's GPO Film Unit before World War II and later a member of the National Film Board staff) on the theatre's influence on early sound films;

Richard Schickel (film critic for Life magazine, author of *The Disney Version, Second Sight)* on the social and political effects of the coming of sound;

and others.

Secondly, there will be eight sessions devoted to the screening of rarely-seen films of topical relevance from the vast film archives of George Eastman House, selected and introduced by James Card, Director of Film at George Eastman House.

Lastly, the two top prize-winning essays from each of the following competitions will be presented:

Competition I: An open essay competition, offering a top prize of $300, a second prize of $200, and a third prize of $100, for the best essays submitted on a topic relating to the theme of the symposium;

Competition II: A competition for three student thesis fellowships of $400 each, to be awarded to three student scholars engaged in research which will result in honors papers or theses relating to the theme of the symposium to be completed by 31 August 1973.

•

INFORMATION FILM PRODUCERS OF AMERICA, INC. 14th ANNUAL CINDY COMPETITION

IFPA takes pride in announcing the call for entries for their 1973 CINDY Competition. Open to all persons and organizations engaged in the field of audio-visual communications, this competition honors creativity and excellence with the coveted CINDY awards which will be presented at the conclusion of the 1973 IFPA Conference to be held from 31 October through 3 November at the Riviera Hotel and Country Club in Palm Springs, California.

IFPA serves a national membership through chapters in various cities in the United States and includes members-at-large throughout the world. IFPA membership—like its CINDY Competition—is open to all persons engaged in audio-visual communications. Our members come from business, industry, government, and education. They are producers, writers and directors, cameramen, editors, animators, and designers, students and teachers, working together to advance the state of the art in their chosen field of endeavor.

ABOUT CINDY

The IFPA CINDY competition is the only one—other than the Academy Awards—where entries are judged solely by fellow professionals. Initial screening is done by IFPA chapters and final judging by a selected panel called the Blue Ribbon Jury. Gold and Silver CINDYs are awarded to the first and second place winners, respectively, in each category. However, the Blue Ribbon jurors may decide that the entries in any category do not meet competition winner status and eliminate either or both awards.

RULES

—Films and videotapes may be entered by anyone, member or non-member.

—No limit as to number of entries submitted by an organization or individual.

—Entry fees are:
IFPA members—$25.00 per film or videotape
Non-members—$45.00 per film or videotape
Student fee—$10.00 per film

—All fees to be submitted by check (payable to IFPA) with entry form (Government agencies may submit a valid purchase order with entry form, but unless payment is received prior to judging entry will be disqualified.)

—All entries must have been released or declassified between 1 July 1972 and 30 June 1973

—Entry forms must be postmarked no later than 1 July 1973

—In the event of a withdrawal from competition, no refunds will be made after 15 July 1973

—Films must be 16mm prints w/optical sound track. Provide proper description of system used with all video tapes.

—Send entry form to: Stan Follis, CINDY Chairman, 4055 Bernice Drive, San Diego, CA 92107

—Receipt of entry will be acknowledged. DO NOT SEND FILM OR VIDEOTAPE WITH ENTRY FORM. You will be instructed when and where to ship this material.

—Ship material in reuseable container with return label enclosed. Unless oth-

Continued on Page 898

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Photo courtesy Saber Productions — The Thing with Two Heads, *starring Ray Milland and Rosey Greer.*

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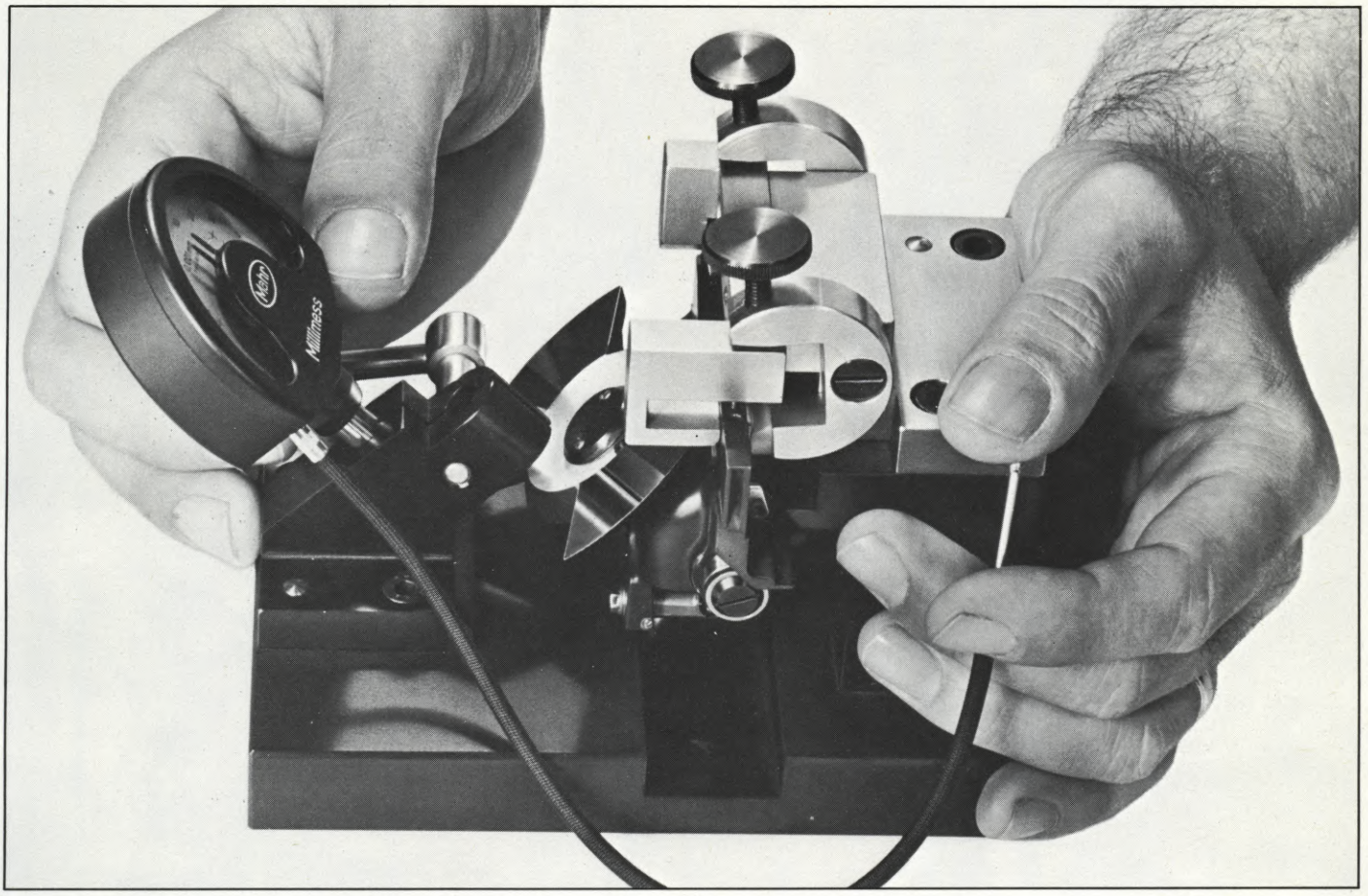

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For example: the $540.00 device you see above has *one function only.* It checks out mirror flatness in the 16mm Arriflex, using a depth gauge accurate to .00004 inch. We have three of them.

Dick Reinauer of Don Meier Productions says: "We use Duncan's service shop frequently. They're close by, they do damn good work, and they're fast."

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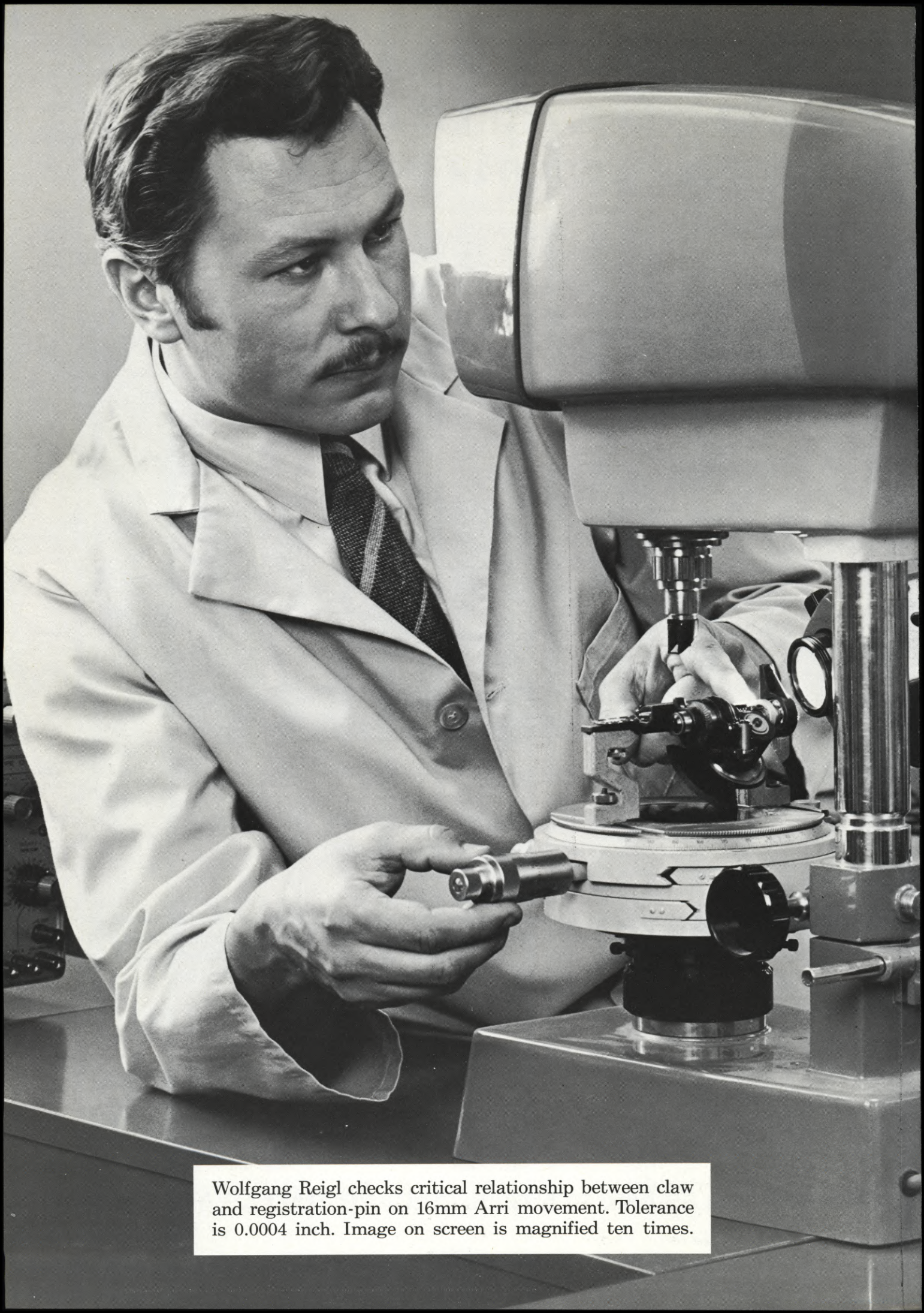

Wolfgang Reigl checks critical relationship between claw and registration-pin on 16mm Arri movement. Tolerance is 0.0004 inch. Image on screen is magnified ten times.

Five facts you should know about Arriflex service:

More people, more parts, more equipment than any other motion picture camera.

When you buy a camera, obviously you're also buying the service that backs it up—or doesn't.

We've all heard the horror stories about some cameras—parts not available for three months, etc. Service *does* vary between brands. Ask any dealer. Some points to consider:

1. Service People: Quantity

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2. Service People: Quality

75% of our people were trained at the Arri plant in Germany. Wolfgang Reigl, for example—the man in the photo opposite. Seventeen years ago, he started as an apprentice at the factory. And he spent *twelve years* there before coming to this country.

3. Spare Parts In Stock

At the Arri Service Centers in New York and Los Angeles, we have camera parts in stock worth well over $200,000.00—all catalogued. If you ever need an Arri part in a hurry, we are almost certain to have it.

4. Equipment For Maintenance

We also have about $73,500.00 worth of repair and test equipment—the same as that used at the factory. Our Service Centers here can and do match the factory's optical, mechanical and electronic tolerances.

5. Worldwide Arri Familiarity

The vast majority of the professional cameras in use around the world are Arriflexes. And where there are Arriflexes, there is Arri service.

Says Kemp Niver, A.S.C.: "I quote a flat fee for a job. Breakdowns come out of *my* pocket." Shooting a project for CARE that involved traveling to 26 countries, he chose to take an Arri 16S.

Fixed in Hong Kong

In Hong Kong, the lens mount was slightly damaged in a fall. But Mr. Niver was able to get it serviced there right away. "The Arriflex," he says, "is a camera that an Independent can depend on."

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THE SIXTH MOTION PICTURE SEMINAR OF THE NORTHWEST

Top professionals, cinema buffs and film-makers of the Pacific Northwest and Canada gather for a most rewarding interchange of ideas and techniques

By HERB A. LIGHTMAN

Early-morning crowd throngs the foyer of Seattle Center Playhouse, site of the Sixth Motion Picture Seminar of the Northwest, to examine equipment displays and stay till late at night participating in the program.

SEATTLE, WASHINGTON

When, several months ago, I was asked to be Moderator of the Sixth Motion Picture Seminar of the Northwest, I pondered whether to let well enough alone or attempt to shoehorn yet one more commitment into a schedule already so crowded that it scarcely left room for metabolism.

Then I talked to my good friend and neighbor, James Wong Howe, ASC, who had been Guest of Honor at the Seminar last year, and he gave such a glowing report of his encounter with the filmmakers of the Pacific Northwest that I figured it was an offer I couldn't refuse. Which explains why I'm here in Seattle.

And it's a very nice place to be, this verdant seacoast city, ringed with mountains and laced with waterways. The Seminar is being held in a rather spectacular setting, the Seattle Center Playhouse, a plush theatre that is part of that complex of facilities and structures that marked the site of the Seattle World Fair in 1962. Directly overhead towers the majestic Space Needle, with its revolving restaurant (where I am ultimately to enjoy a huge, bubbling, smoking dessert known as a *Lunar Orbiter*).

Seminar Chairman Les Davis and Program Chairman Laszlo Pal make me feel at home when I arrive, as do a clutch of my buddies from down South (Hollywood, not Dixie), who are also on the Seminar program. There's Cameraman Sherwood Omens, USC Cinema Professor Melvin Sloan, *BOXOFFICE* Editor Syd Cassyd, Image Transform President John Lowry, Cameraman Vilmos Zsigmond and Director Mark Rydell. The latter two are in town to begin shooting of "CINDERELLA LIBERTY", which will be filmed entirely in Seattle.

To make things even nicer, famed Swedish cameraman Sven Nykvist (who had been in Hollywood for pre-production work on his next assignment, the Gregory Peck production of "HERE THERE BE DRAGONS") has accepted an invitation as honored guest.

Laszlo Pal, a patient and affable local film producer, who has taken time off from the affairs of his company (Pal Productions) to cobble the program together, explains to me how and why the Seminar came into being.

"It started six years ago, primarily because there was no film school in the Pacific Northwest and it was felt that there should be some kind of forum where film technicians and students could get together and exchange ideas," he tells me. "Les Davis was actually the man who launched it and everybody pitched in to help. A non-profit corporation was formed and nobody gets paid. We all simply contribute our time

(LEFT) The stately Space Needle soars majestically more than 600 feet above Seattle Center, cultural hub of the beautiful seacoast city and former site of the Seattle World Fair. (RIGHT) Patio of the handsome Seattle Center Playhouse, location of the two-day Seminar that attracted participants from all of the Pacific Northwest states and Western Canada.

and effort to make it go. It was a great success from the start and has been growing ever since. The Seminar represents all of the Northwest states, plus British Columbia, even though it's always held in Seattle."

The night before the kick-off of the Seminar, a get-together dinner is held at a rather fabulous waterfront restaurant, where the decor features Northwest Indian and Eskimo art and artifacts.

When I arrive at the Playhouse next morning, I discover that the foyer is filled with displays of motion picture equipment, with a few more old friends on hand to demonstrate it. I am surprised at the large crowd which has turned out at this ungodly hour of the morning. Moreover, I am to discover that they're a very loyal group, filling the auditorium at crack of dawn and staying through until the end of the evening screening (about a 15-hour day), with only time off for lunch and dinner. As might be expected, most of those attending are young, but there's a generous sprinkling of more venerable types, just to add variety.

Even though I've got my hands full introducing all of the speakers, I find myself intrigued by the variety and pertinence of the subjects covered—plus the competence of the individual speakers to present them. Pal has done a fine job of getting it all together.

The final item on the afternoon program is a panel discussion with the puzzling title: "The Puzzles of Professional Film-making", but the panelists include Don Mankiewicz, John Lowry, Sherwood Omens and Mel Sloan. They are as puzzled as I am to begin with, but launch into a brisk discussion that turns out to be most interesting. It would be unfair to quote only bits and pieces of what was said, but space limitations preclude publishing the whole transcript at this point. However, I hope to be able to do just that in an early issue of *American Cinematographer.*

The evening program consists of screenings of films produced by Northwest film-makers, and a fine collection it is. The one that absolutely flips the audience is a two-reel short produced (as might be expected) by the National Film Board of Canada and titled "THEY CALL THEM KILLERS". To say that it is a film about captive killer whales, and let it go at that, is to commit a gross understatement. It is a lyrical, mystical, poetic viewing experience—but, even so, mere words can't do it justice. It must be seen for its artistry to be fully appreciated.

The second day of the Seminar is as eventful as the first, and a high-point is reached during the luncheon, held in the San Juan Room of Seattle Center. Again, I'm amazed at the throng that turns out. The Guest Speaker is Don Mankiewicz, who talks off the cuff and keeps the crowd chuckling throughout his witty speech. If he can be that original on his feet, it's easy to see why he's one of our top screenwriters.

Also introduced is Special Guest Sven Nykvist and he charms the crowd with his little talk on film-making in Sweden, particularly his references to working with Ingmar Bergman. From that point on he is a favorite of the crowd and is always, during breaks, surrounded by eager young film buffs asking questions.

The last regularly scheduled seminar event on Saturday afternoon is a symposium on "Creative Directions in Film-making" and, as moderator, I find myself riding herd on a distinguished panel which includes: Eugene Boyko (of the National Film Board of Canada), Sven

SIXTH MOTION PICTURE SEMINAR OF THE NORTHWEST
PROGRAM FRIDAY MAY 4

8:00AM 9:00AM
registration

9:00AM 9:05AM
entry from HOPE film contest

9:05AM 9:10AM
introduction by moderator Herb Lightman

9:10AM 9:25AM
film and tv facilities Washington State University. Donald Zimmerman

9:25AM 9:55AM
stereo sound for 16mm. Chip Wilkinson

9:55AM 10:25AM
creative use of music for motion pictures. George F. Hood

10:25AM 10:40AM
break

10:40AM 11:05AM
formal education and training for filmmakers. Melvin Sloan

11:05AM 11:45AM
writing for television. Don Mankiewicz

11:45AM 1:00PM
LUNCH

1:00PM 1:05PM
film from HOPE contest

1:05PM 1:35PM
in-depth analysis, super-16 format. Herb Lightman

1:35PM 2:20PM
application of video techniques to feature production. John Lowry

2:20PM 2:45PM
production techniques of a successful ski show. Charles Fey, Fred Nelson

2:45PM 3:00PM
break

3:00PM 3:45PM
panel discussion, eastman color negative. Bob Dohrendorf, Bob Reid, Ralph Umbarger, George Vipond, Chip Wilkinson

3:45PM 4:30PM
how the cameraman's eye interprets; the nature of aesthetic resistance. Sherwood Omens

4:30PM 5:00PM
panel discussion; question and answer; the puzzles of professional filmmaking. Herb Lightman, John Lowry, Don Mankiewicz, Sherwood Omens, Melvin Sloan

8:00PM 11:00PM
showings of the best in Northwest produced films; winning film in the Seminar HOPE competition

SIXTH MOTION PICTURE SEMINAR OF THE NORTHWEST
PROGRAM SATURDAY MAY 5

8:00AM 8:30AM
registration

8:30AM 8:35AM
HOPE contest winner

8:35AM 9:00AM
super 8 production techniques; preparation of super 8 for the lab. Clive Tobin

9:00AM 9:25AM
simple special effects inside the camera. Ernst Wildi

9:25AM 9:45AM
low budget feature production. Tom Moyer, Jr.

9:45AM 10:00AM
break

10:00AM 10:25AM
distribution of non-theatrical films. Sid Cassyd

10:25AM 10:50AM
history and future of the National Film Board of Canada. Peter Jones

10:50AM 11:15AM
22 years of production techniques and innovation for the National Film Board of Canada. Eugene Boyko

11:15AM 11:30AM
fluffs and funnies in front of the camera. Fred Engel

12:00PM 2:00PM
LUNCHEON - SAN JUAN ROOM - SEATTLE CENTE
guest speaker Mr. Don Mankiewicz
also honoring Sven Nykvist, director of photography for Ingmar Bergman

2:00PM 2:25PM
current trends in feature film production. Mark Rydell

2:25PM 2:55PM
sound recording techniques, location and studio, sound mixing for tv and theatrical market. Barry Jones

2:55PM 3:30PM
editing techniques for non-theatrical films. Melvin Sloan

3:30PM 3:45PM
break

3:45PM 4:05PM
eskimo animation. John Taylor

4:05PM 4:25PM
creative cinematography. Vilmos Zsigmond

4:25PM 5:00PM
panel discussion, creative directions in filmmaking. Eugene Boyko, Herb Lightman, moderator, Sven Nykvist, Mark Rydell, Vilmos Zsigmond

8:00PM 11:00PM
selected films by Seminar Speakers with personal comments

American Cinematographer **Editor Herb Lightman moderates panel discussion on "Creative Directions in Film-making". Panelists (left to right) include Eugene Boyko (National Film Board of Canada), famed Swedish cameraman Sven Nykvist, Director Mark Rydell ("THE FOX", "THE RIEVERS", "THE COWBOYS"), Cinematographer Vilmos Zsigmond ("McCABE AND MRS. MILLER", "DELIVERANCE", IMAGES").**

Nykvist, Mark Rydell and Vilmos Zsigmond.

What transpires goes something like this:

LIGHTMAN: Our next, and final, panel discussion of this Seminar addresses itself to the subject of "Creative Directions in Film-making", a subject which these assembled gentlemen are eminently qualified to discuss. Though they represent different hues of the motion picture production spectrum, all of them are innovative and "with it", as far as new directions in film-making are concerned. They are also realists, because they are pros, and that puts a slightly different light on it. It's very easy to be an idealist when you don't have to consider the economics of this art form—but when you do, that's where the crunch comes. All of these men are very definitely individuals. I don't know Mr. Boyko too well, but I gather that he fits neatly into that category, as well—so we should have a rather interesting interchange of ideas here. I'd like to lead off with a question aimed at Mark Rydell, since, as a director, he is the one who inevitably ends up with the basic responsibility for the film. Mark, what do you feel are the creative directions in the modern trend of film-making? In other words, what is the tenor of the industry at this point in time? To what degree does creativity enter into it and how far can you go?

(ABOVE) Sven Nykvist and Seminar Program Chairman Laszlo Pal browse Seattle Center grounds during break. Nykvist's reputation as "Ingmar Bergman's cameraman", plus his own warm Scandinavian charm, made him a crowd favorite.

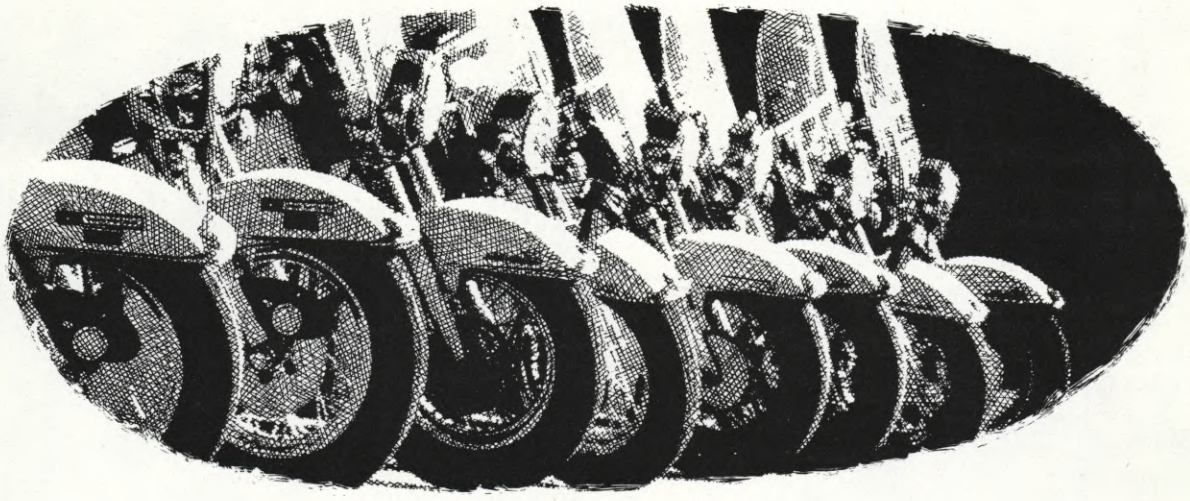
(BELOW) A more-than-capacity crowd packs the San Juan Room of Seattle Center for luncheon at which Guest Speaker Don Mankiewicz kept crowd chuckling with his witty speech and Sven Nykvist was honored as Special Guest.

RYDELL: I think that the key to creativity in film-making today is that it's really essential for you to hang on. You have to fight. There are too many pressures to prevent you from achieving what you want to do. It requires a sort of monomania to be an artist—certainly in America, anyway—so you have to be a little crazy to begin with. You're dealing with a very, very different kind

Continued on Page 921

Puzzled panelists ponder "Puzzles of Professional Film-making" (with apologies to Spiro Agnew). (Left to right:) Screenwriter Don Mankiewicz, USC Cinema Professor Melvin Sloan, Cinematographer Sherwood Omens, Image Transform President John Lowry.

ELECTRA GLIDE IN BLUE



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RENAISSANCE APPROACH

Continued from Page 866

to break into filmmaking. He started hanging around cinematographer Bill Huagse, doing whatever he could to help while learning as much as possible.

When Huagse, who holds a master's degree in filmmaking from the University of Southern California, left the company to direct educational films in Los Angeles, Cornish was hired as his replacement. From hammer to camera presented some problems, but it also allowed for some fresh perspective.

"I never found the technical aspects of shooting and cutting film that difficult," Cornish says. "I think anyone can learn to do these things competently. What's important is to learn the technical and creative limits of the medium and never be satisfied with what you know already."

In this respect, he reports, he has received valuable help from Eastman Kodak Company and from professional processing labs in Seattle, Portland, and Eugene.

"If you're willing to look, ask, and listen, there are always people to answer your questions," he said. "This doesn't mean that we do everything by the book, and it doesn't imply that we never make mistakes—but we do learn."

So far, the company has worked solely in 16mm production, because this is the most convenient format for the nontheatrical films we have been producing.

But changes are on the horizon at FHI. We are interested in Super-8 film and equipment. The smaller format could multiply the ways communication and entertainment films are used. The training and sales films we produce for industrial clients could be even more valuable if they were also reduction-printed for use in small-format sound projectors. We are also interested in the trend of schools establishing Super-8 libraries.

With our roots now deep in the fertile markets of the Pacific Northwest, we are beginning to look eastward. We have already had conferences with large ad agencies that are becoming aware of the wide range of natural locations available in the Northwest. And educators from as far away as Europe have made inquiries.

There are several ways to look at this. We feel we have the talent and facilities to solve communications problems anywhere. On the other hand, we still believe that a film that will be used locally and deal with local subjects should, if possible, be made by people living and working on the scene. ■

STUDENT FILM-MAKERS GO ALL OUT TO PRODUCE "A FIELD OF HONOR"

Eager Beavers of the University of Southern California Department of Cinema pull out all the stops to shoot the most ambitious student film project of recent years

By TOBY LOVALLO

"A FIELD OF HONOR"–SYNOPSIS

Vic Fury, a timid and fragile young man, is uneasily released from a mental hospital. Almost immediately, the world launches a series of coincidental attacks against him: he gets trampled in a riot, caught in police gunfire during a robbery, and stumbles into a private swimmming pool. He boards a bus to go home, but cannot escape trouble. In the midst of a brawl the bus is hijacked by a revolutionary, and an undercover FBI agent begins a shootout. At home, Vic relates his story to his father, who is totally paranoid. The old man decides his home is under attack and sends his son out to do battle. Vic, now pushed back completely into insanity, defeats the imaginary enemy before being returned to the mental institution. The chief psychiatrist, exasperated to the point of tears, welcomes Vic back for the start of another program of treatment.

From the very beginning "A FIELD OF HONOR" wasn't an ordinary student film. Writer-director Robert Zemeckis had conceived a large-scale action comedy that would capture the abundant energy of contemporary America, and celebrate the wild humor of an earlier age of film comedy. Faculty advisors, more accustomed to weighty tales of truth from student filmmakers, warned of the difficulties involved in an action film with a large cast, especially in light of the budget and time limitations of a student film.

But the director had already assembled an enthusiastic five-man crew and the film got underway. I had signed on as production manager and began struggling to solve the riddle of how to make a fifteen-minute color film for $1,400.00, when the script called for, among other things, a street demonstration with riot police, interiors and exteriors of a mental hospital, and a shootout on a moving city bus. The speaking parts numbered eleven and the total cast would exceed fifty persons.

Casting director and editor Mustafa Gursel arranged the three five-hour casting sessions that eventually tested some 75 actors. Cameraman Horace Jordan supervised the video taping of the trials. Using the Sony AV-3400 Videocorder system, we had the advantage of a visual reference when it came time to decide on the principal cast.

The director wanted to maintain professional image standards, and knew the film had to be in bright, high-key color to maintain the comedy. Cameraman Horace Jordan first ran an exposure test on a city bus, figuring this would be his toughest lighting situation. With a bright sun outside he could get exposure with ECO, but needed additional fill light. A cloudy day would mean trouble. Considering this, and the limited lighting equipment that would be available from the school, Jordan decided to shoot ECO pushed one stop, obtaining a more workable ASA rating of 50 (tungsten).

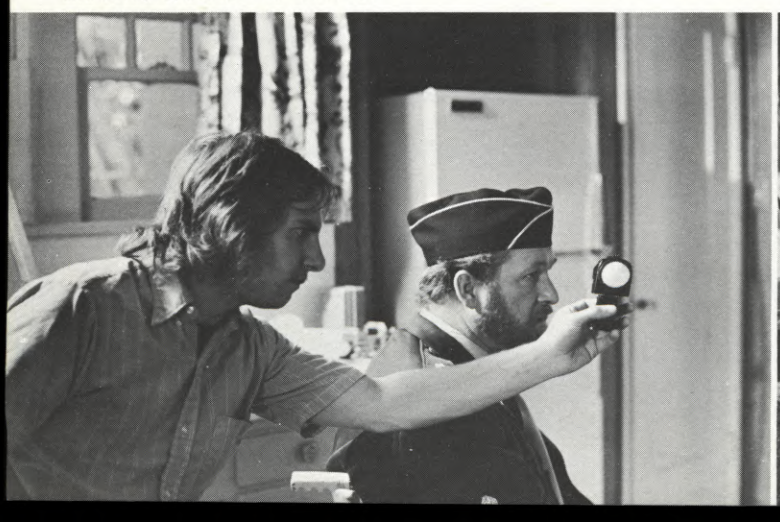
USC had purchased a new Arriflex 16BL with the APEC metering system and an Angenieux 12-120mm lens. Jordan decided to make this his number-one camera because, with the variable speed motor and the Crystal-Lock controller unit, he could use one outfit for both synchronous and undercranked shooting. Anticipating logistical problems during the bus sequence, soundman Don Scioli advised pairing the crystal-controlled BL with a new Nagra model 4.2 recorder. Everyone welcomed the freedom gained with the crystal system, so Jordan and Scioli used it almost exclusively. Multiple cameras would be required for several of the stunts and Jordan selected the Arriflex S for his second unit, since no sync capability was needed.

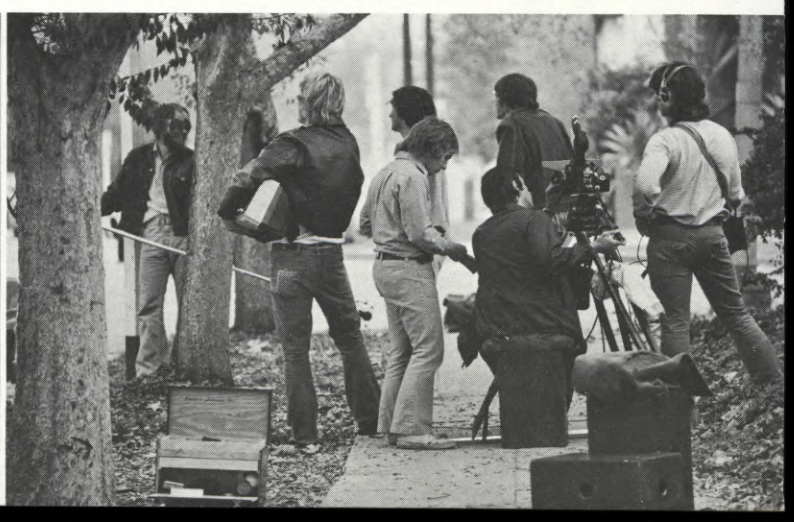
Shooting the psychiatrist's office the first day out, problems abounded. The quarters were cramped and the zoom lens, even at 12mm, wasn't wide enough to get the shots originally planned. The director had asked for sterile, institutional lighting and Jordan wanted to preserve at least the depth he could get at F/4. But the largest lights available were 1000-watt quartz lamps by Mole-Richardson and Colortran. For a complex dolly shot, this meant nine lights in a room only 12 by 22 feet. The BL magazines were making noise, so an impromptu barney was fashioned from coats and towels.

The room's dead acoustics were at odds with Scioli's goal of achieving a nervous, "live" sound. He found the solution in hiding two microphones as close to the action as possible, and using them in combination. Everything took too much time, but the actors cooperated throughout a day that stretched 12 hours for the cast and 19 for the crew.

Lighting the corridor for the hospital interior was a tough assignment. After utilizing all the available quartz lamps,

(LEFT) Doubling as Assistant Cameraman, Production Manager Toby Lovallo takes a light reading on Roger Pancake during filming of "A FIELD OF HONOR", which, despite its grim synopsis, was conceived as "a large-scale action comedy that would capture the abundant energy of contemporary America, and celebrate the wild humor of an earlier age of film comedy." (RIGHT) USC student camera crew sets up, while director and cast prepare for the next shot.





(LEFT) During rehearsal of a police stunt, the crew makes final checks on light and sound. (Left to right: Horace Jordan, Bob Gale, Don Scioli and Toby Lovallo. The policeman is Ken Merriman.) (RIGHT) Soundman Don Scioli and Director of Photography Horace Jordan prepare to shoot an exterior scene for "A FIELD OF HONOR". (BELOW RIGHT) Jordan drapes a tarp over the camera to protect it from splashing water at poolside.

Jordan was still short of a F/2.8 reading. He borrowed six babies from the school's soundstage and pressed the circuits and cables to the limit to get the scene, including extensive dolly work, on film.

Next on the schedule was the scene outside the mental hospital. Vic Fury, the leading character, has just been released by the authorities. He is apprehensive, not quite cured. He steps out the door and into a riot, just in time to get trampled by a wedge of charging policemen. On location at Queen of Angels Hospital in Los Angeles, the early morning sun was moving in and out of scattered clouds. The weather didn't promise to improve, so director Zemeckis decided to shoot the masters first, catching the sunlight and blue sky. The cameraman had already put together a special extended sun shade to fit over the Arri matte box, a necessity because of the low angle of the sun at 7:30 AM.

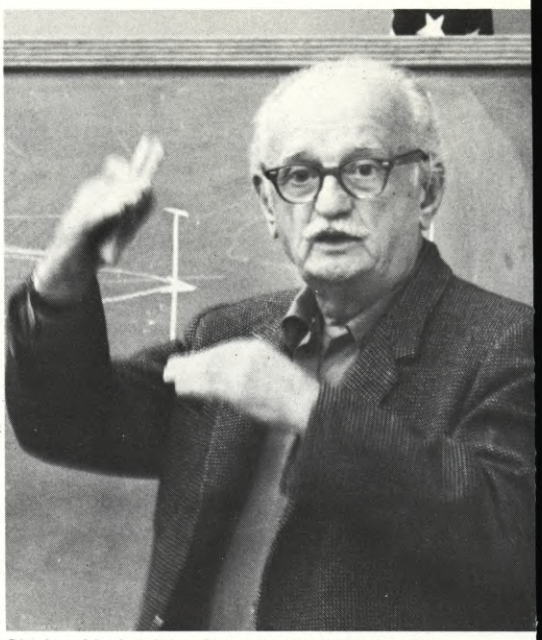
I positioned a few of our fellow-student helpers to prevent passers-by from

Continued on Page 912

(LEFT) Director Robert Zemeckis takes his turn with the slate marker before shooting a scene with actors Peter Belcher and Roger Pancake. (RIGHT) On board moving bus, Toby Lovallo hand-holds fill light, as Bob Zemeckis demonstrates handgun technique. Cameraman Jordan has covered his face to protect himself against powder burns. The use of lavalier microphones overcame the rumble of the bus, as well as street noise.

TOWARD TRUE CINEMA

"It is not a question of artistically composed tableaux . . . It is a problem of composing visually—but in time . . ."



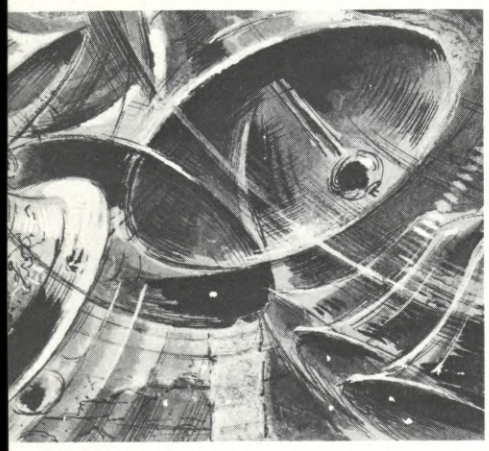
Slavko Vorkapich, for many years the top montage expert of Hollywood's major studios, is also considered the world's foremost living authority on cinematic form and structure.

By SLAVKO VORKAPICH

1. TWO ASPECTS OF THE MOTION PICTURE: RECORDING AND CREATIVE

The name *motion picture* may stand merely for the technical process which consists in a rapid succession of pictures projected on a screen, or for any kind of popular entertainment produced and presented in such a way, or, among other things, for a truly creative use of a rapid succession of pictures projected on a screen. The name is a general one and a general name is expected to cover a variety of things. But a special meaning of a general name like *painting* becomes immediately apparent when it is placed in a simple context, for example, in "Teaching Painting at a University." Obviously here the sense of creative use of the tools of painting is intended, and not house- or furniture-painting and other similar uses of brush and paint. It may be worth noting that in the case of *painting* the general name is reserved for the creative use of the medium, while other uses have to be qualified.

Vorkapich's sketches for a montage depicting the Duke's triumphal entry into Madrid for the MGM production of "THE FIREFLY".



Now, with the word *creative,* especially in connection with motion pictures, one can get into real semantic and philosophic difficulties if one tries to prove as true one's assumptions about it.

One of my claims is that most of the films made so far are examples not of creative use of motion-picture devices and techniques, but examples of their use as recording instruments and processes only. There are extremely few motion pictures that may be cited as instances of creative use of the medium, and from these only fragments and short passages may be compared to the best achievements in other arts.

Often, when a specific example, like the lunch-hour sequence in the documentary *The City,* is mentioned, a number of listeners would come up with some such question: "You mean a series of quick cuts?"—"Do you think it is possible to make a whole picture like that?" If I mention McLaren's *Fiddle-Dee-Dee:* "Oh, you mean abstract shapes dancing to music?"—If I describe passages from Cocteau's *Beauty and the Beast,* some jump at the conclusion that I mean fantasy and symbolism, and if, with some hesitation, I mention some of my own work I can almost hear a few of them thinking: "Now we know! You mean camera tricks! You mean montage: the Hollywood kind, not the Eisenstein kind! You mean flip-flops and wipes and zooms and the camera on the flying trapeze!"

Perhaps the right answer would be: Yes, all of these things and much more.

(ABOUT THE AUTHOR: Slavko Vorkapich was born in Yugoslavia, March 17, 1895. He was educated in Belgrade, Budapest, and Paris, where he studied painting. He emigrated to New York in 1920, where he worked as a commercial artist and portrait painter. Moving on to Hollywood, he made with Robert Florey and Gregg Toland the experimental film The Life and Death of a Hollywood Extra *(1928), "produced" with miniatures on a kitchen table. From 1928 to 1934, he worked for RKO and Paramount as a creator of montage sequences, most notably the Furies sequence from Ben Hecht's and Charles MacArthur's* Crime Without Passion *(1934). In 1934, he moved to Metro-Goldwyn-Mayer where he created the revolution sequence in* Viva Villa!, *the plague sequence in* Romeo and Juliet, *the famine and exodus in* The Good Earth, *the reprise of Jeanette MacDonald's career as an opera singer in* Maytime. *Other films on which he worked at this period include* Manhattan Melodrama, David Copperfield, The Firefly, The Broadway Melody of 1938, The Last Gangster, Test Pilot, Yellow Jack, Three Comrades, The Shopworn Angel, Marie Antoinette, Boys Town, Sweethearts, *and* A Tale of Two Cities.

In 1938, Mr. Vorkapich lectured on montage theories in The Museum of Modern Art Film Library's course on the motion picture, given in collaboration with Columbia University. In 1941, he directed short films dealing with the war as part of Pathe's "This Is America" series. From 1949 through 1951, he was Head of the Department of Cinema at the University of Southern California. In 1952-1956, he travelled and lectured extensively in Europe, where he also made a film in his native Yugoslavia. In 1956-60, he returned to Hollywood as editor of John Gunther's High Road. *In 1965 he gave a series of ten lectures on The Visual Nature of the Film Medium at the Museum of Modern Art in New York. Similar lectures were given afterwards at Princeton University, at the Academy of Theatre Arts in Belgrade and at the University of Southern California. Last summer the UCLA Motion Picture Division and the American Society of Cinematographers co-sponsored the lectures.)*

But first let me try to explain what may *not* be considered as the creative use of the medium, what may be called the *recording* use only, or an *extension* of some other medium of communication or expression.

The technical nature of the film medium is such that it may very easily and profitably be utilized as such an extension. In this sense it may be compared to various uses of printing of words; to various uses of still photography: reporting, keeping records of events, people, things, etc.; to uses of drawing and painting for scientific exposition such as diagrams, charts, and illustrations in books on biology, botany, medicine, etc; or it may be compared to various uses of the sound-recording devices for preserving speeches, lectures, memorable performances of music or for making transcriptions of radio shows. In fact, the film medium is used mostly as an extension of each of the various media mentioned. And it is natural that the chief value in such films should lie in that which is recorded: the event, the performance, the person, or the object photographed and the verbal and sound accompaniment that usually goes with it. Rarely is it required that the value consist in a unique filmic structure about the subject.

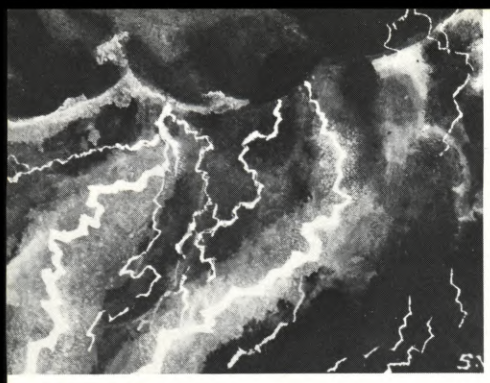
The fact that some of these recordings have been so effective and at times emotionally very moving may have led many people into believing that this efficient power came from the medium itself. Now, no one would call a *phonograph record* of a master conductor's interpretation of a great composer's composition—no one would call that record a musical masterpiece, no matter how technically perfect it was. But, quite often, technically polished *visual* and sound recordings of great performances in various fields have been hailed as great films. This applies, equally, to most dramatic or story films. Let me illustrate this with a hypothetical example.

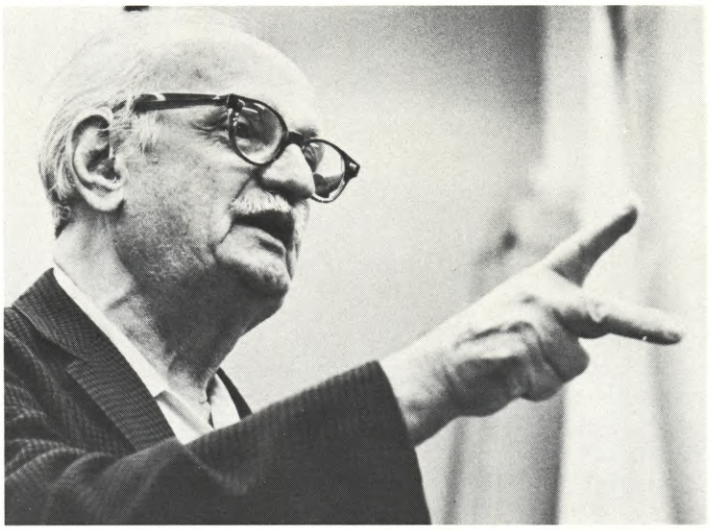
Suppose we take a piece of creative writing, e.g., the famous soliloquy from *Hamlet,* and suppose we photograph with a motion-picture camera that passage just as it is printed on the page in a book. Or, for this particular shot, we may have had the monologue printed on parchment in some fancy type designed by a creative typographer, and we may, for extra embellishment, use some real "mood" lighting, like throwing a faint shadow of "a bare bodkin" upon the page. Now would this, in a "rapid succession of pictures projected on a screen," give us a motion picture? Technically, yes. But what creative contribution was achieved by the use of the motion-picture camera, apart from giving us another *record of Shakespeare's* creative work? Obviously, none.

Suppose we elaborate a little more on our shooting of the monologue and we get a creative actor and we dress him in a costume designed by a creative designer and put him in a setting designed by a creative art director and we light him with lights full of mood and photograph him with a motion-picture camera and register on film all his expressive actions and gestures and movements of his lips and tongue and cheeks and record his voice on the best sound system available. What do we get this time? A performance really worth preserving and showing all over the world. *But what have we as makers of the picture created except making an*

Scene designs by Vorkapich for a proposed film version of "DARK OF THE MOON". The moody style of rendering captures the mystical aura of the story, which deals with witchcraft in a North Carolina mountain village. Vorkapich worked as a commercial artist and portrait painter in New York before moving to Hollywood to begin his career in the motion picture industry.

*Slavko Vorkapich, "Toward True Cinema," **Film Culture,** No. 19, March 1959, pp. 10—17. Reprinted in Lewis Jacobs, **Introduction to the Art of the Movies.** New York, Noonday, 1960, pp. 288—296.





(ABOVE) Teaching theory from the viewpoint of a practical film technician, Vorkapich deals with the fundamental grammar of film structure, the timeless elements that make a motion picture flow smoothly and forcefully on the screen. (LEFT) Sketches from a Vorkapich battle montage for MGM's "THE FIREFLY".

embellished record of an actor's acting of a writer's writing? Again the answer is: obviously nothing. No matter how "amazingly life-like" the picture may seem, strictly speaking, this is what was actually achieved: from a living creative performance a shadow was abstracted by mechanical means. This applies also to complete photoplays. *Photo plays,* how precisely descriptive that name is!

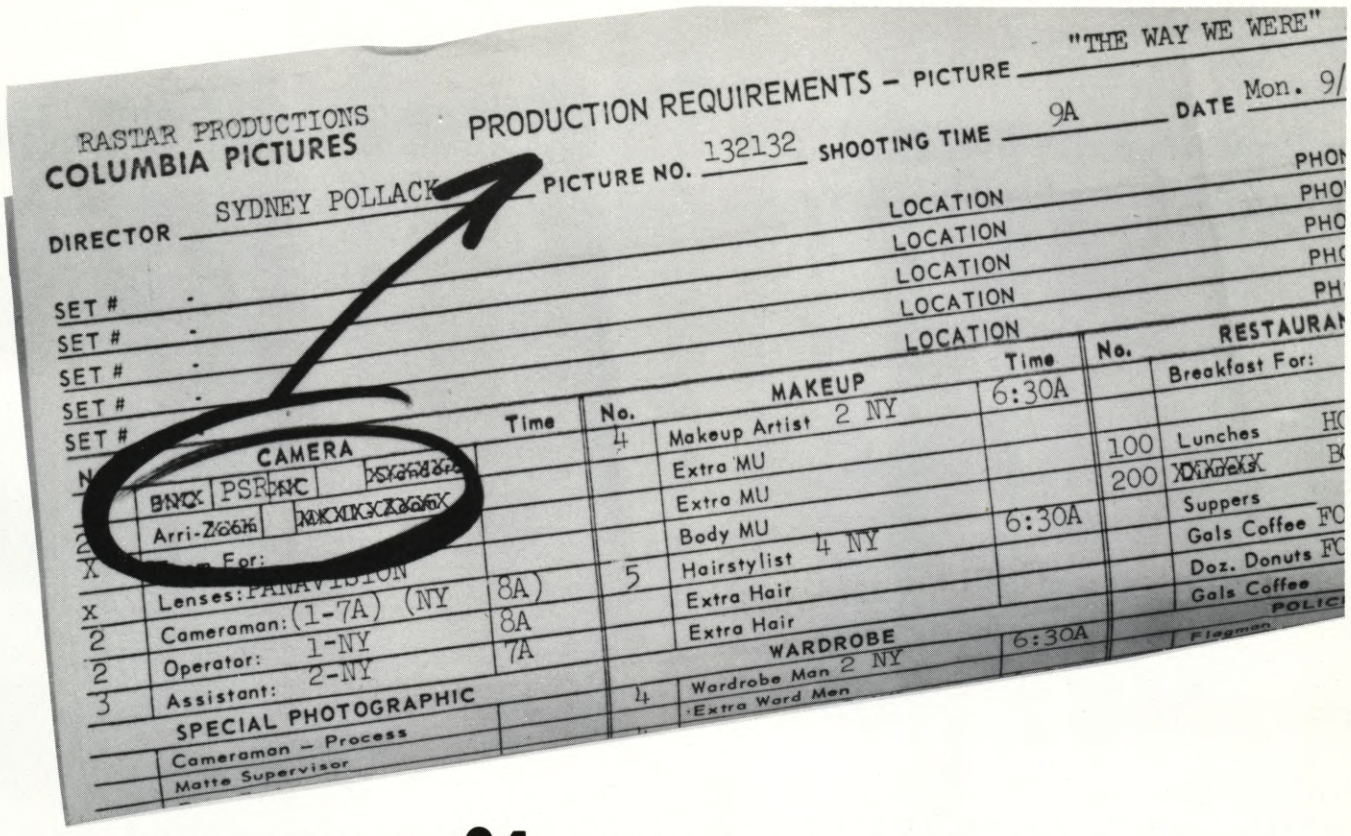
At this point the thought of the close-up as a real filmic contribution usually comes up. The close view is not something specifically filmic, if it is taken in the sense of something brought closer or magnified for closer scrutiny only. Long before the advent of the film, the close-up was to be found in all except stage arts and music. Portraits and still lives in painting, sculpture, and still photography; descriptive detail in literature.

There is a controversy about who "invented" the close-up. Probably the inventor got the idea from observing someone in the audience of a theatre—*a legitimate* theatre, of course—who was using a pair of binoculars to see an actor's or an actress's face at close range. And it is mainly in this telescopic sense that the close-up is still used. No doubt that it adds dramatic emphasis to a photoplay and thus makes up for some of the loss of the performers' living presence. Still we are talking in terms of the theater, and still we are using the medium to record bits of that other art, the actor's creative acting. Let me at this point make clear that I am not opposed to the use of the film medium as an extension of the theatre, I object only to calling such extension creative use of the unique characteristics inherent in cinematography.

Considered filmically or creatively, the close-up has two main functions: visual-dynamic and associative. "Close-up" here means close view of anything

Continued on Page 930

Vorkapich shown lecturing students in a film workshop during the period when he was Head of the Department of Cinema at the University of Southern California. Many of his students, including Academy Award-winning cinematographer Conrad Hall, ASC, went on to establish highly successful careers in the Hollywood motion picture industry.



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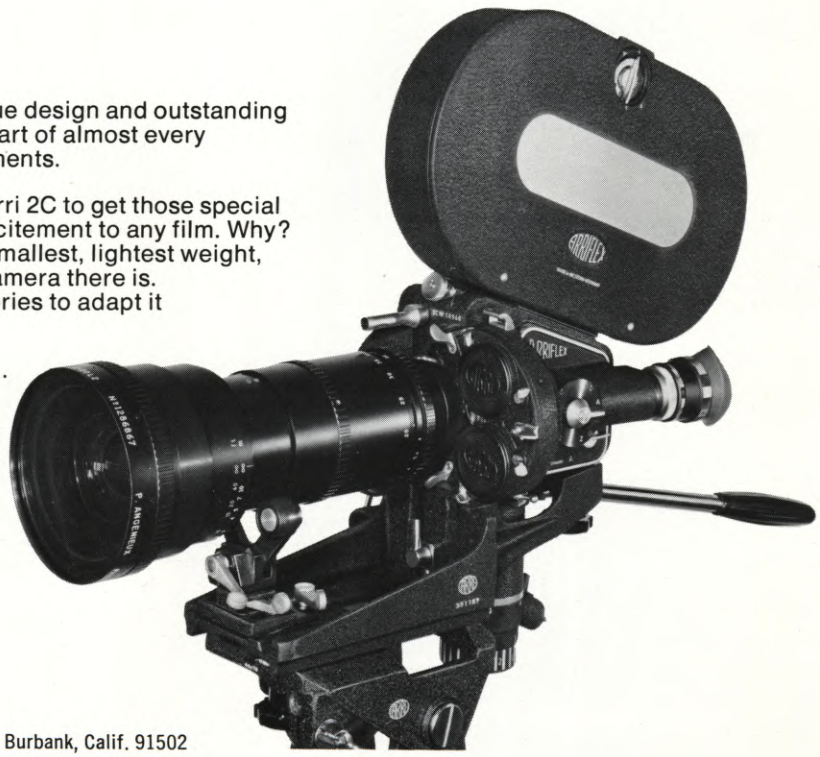

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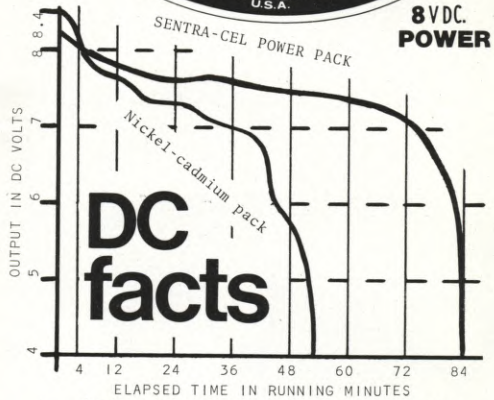

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INTERVIEW WITH AN "EMMY" WINNER

Award-winning cinematographer discusses the constant challenge of achieving top-grade technical finish on the short schedules of television production

Of the myriad "Emmy" statuettes handed out on May 20 at the Annual Awards Presentation of the National Academy of Television Arts and Sciences, the ones of most direct significance to readers of *American Cinematographer* were undoubtedly those granted in the field of cinematography.

The winner in the category of "Best Achievement in Cinematography for a Television Series or Segment of a Series" was Jack Woolf, who won for the *"Eye For An Eye"* segment of "KUNG FU" (ABC).

The winner in the category of "Best Achievement in Cinematography for a Television Special or Feature" was Howard Schwartz, ASC, for *"Night of Terror"*, "TUESDAY MOVIE OF THE WEEK", (ABC).

The latter film is a suspense-filled mood melodrama starring Martin Balsam, Catherine Burns, Chuck Connors, Donna Mills and Agnes Moorehead. Filmed at Paramount Studios, Hollywood, and on location at Malibu Beach, California, it was directed by Jeannot Szwarc and produced by Thomas L. Miller and Edward K. Milkis.

In the following interview with *American Cinematographer* Editor Herb Lightman, Howard Schwartz discusses the photographic techniques employed in the filming of "NIGHT OF TERROR":

Donna Mills in a terrified moment from award-winning ABC "Tuesday Night Movie of the Week", "NIGHT OF TERROR", for which skilled mood lighting did much to enhance the drama.

QUESTION: From the viewpoint of the Director of Photography, can you tell me what special problems or challenges you encountered in shooting "NIGHT OF TERROR"?

SCHWARTZ: Actually, it was a pretty straightforward story and there really wasn't anything spectacular about it, but it did give us a chance to play for some effects. On a broader scale, however, I think that the great challenge in all filming for TV is to try to do an effective job on a very short schedule. You have a rather large number of pages of script thrown at you every day and you've got to get them shot.

QUESTION: What was your schedule on "NIGHT OF TERROR"?

SCHWARTZ: It was a 90-minute (minus commercials) ABC-TV "Tuesday Movie of the Week" and we had 10 shooting days, plus an extra day of second unit for the car chase stuff in the garage. That's a pretty short schedule for a picture involving locations, but what made it workable was the fact that the key people were given a week of preparation by our Production Manager, Sam Strangis. That much preparation was a big plus on a show like this. We had a chance to visit the locations with the director and talk about how all the shots would be made. My Gaffer, the Key Grip and the Best Boy went out to the locations with us and we spotted the places where we wanted lights and where we'd have to lay cable, so that they'd know exactly how to rig. We talked over the progression of the action with the Director, Jeannot Szwarc, so that we'd know what order he'd want to shoot in. By then we'd already seen what the second unit had shot and we knew how to go ahead and match it for our close shots.

QUESTION: In other words, the second unit had shot the garage car chase in advance?

SCHWARTZ: Yes, they shot that ahead of us and our first day's work was in the garage, matching what they'd shot. But I can't stress too strongly the importance of pre-production planning on a show like this. You can do so much if you have a Production Manager who will really swing with you and a Director who knows in advance what he wants.

QUESTION: As I understand it, part of the film was shot on location and part in the studio. Can you tell me how and why these decisions were made?

SCHWARTZ: The action in the climactic part of the story takes place at a beach house in Malibu. We found a house out there that was just right for the exteriors and, ordinarily, we might have shot the interiors there, as well. However, in this story, the main character plays the last part of the script in a wheelchair and the house she's in has an elevator (a practical one) that hauls her up and down. It was, of course, impossible to find a beach house with an elevator, so we built the set on the stage at Paramount and shot it there. We did the exteriors on location and two tie-in shots, looking from inside the actual beach house toward the outside—one a day shot and the other a night-for-night shot. In terms of set and lighting, we were able to match the stuff filmed on the stage to these tie-in shots, because we made them first. In this case, shooting in the studio was a big help to the Director, because he could tell the Art Director exactly how he wanted the set and plan his action accordingly.

QUESTION: Can you tell me a bit about the lighting problems and techniques involved in shooting "NIGHT OF TERROR"?

SCHWARTZ: One of the most interesting lighting situations took place in the hospital, where we had translucent drop ceilings that ordinarily would be backed up with fluorescent lights—which always create problems. Instead of the fluorescents, we used #1 photofloods diffused with tracing paper. This was fast and easy to do, involved no color temperature problems and produced a nice feeling of realism. This diffused source supplied the overall key and the faces were built up with other lights to balance. Also, we could shoot real low angles against these ceilings and get some interesting dramatic effects. Of course, getting a ceiling like that involved talking to the Art Director, Bill Campbell, about it ahead of time.

QUESTION: Is there anything else you can tell me about the lighting?

SCHWARTZ: Only that we had a lot of pages to shoot in that beach house set—so the challenge was to get variety into the lighting. We did this by lighting each sequence a bit differently. Sometimes we used very low-key mood lighting for dramatic effect and, in one sequence, we used a light fire effect from a fireplace, which helped break things up a little bit. Such effects help tremendously when you have a big set with a lot of work to be done in it. All of the cameramen who shoot for TV are used to working in that way. They all do a tremendous amount of work in a very short time, and they still have to make it look good. Actually, it's a great training ground for when they get loose on a big feature and don't have so much to shoot in a day. They can take more pains with everything. Let's face it—when you have 10 or 12 pages to do each day, you can't be as careful or discriminating as you can when you have a lot less to shoot in a day.

QUESTION: There are some very impressive night-for-night scenes shot in the downtown Los Angeles area. Would you care to discuss those?

SCHWARTZ: Yes. Those scenes were interesting to shoot because we were using the new fast lenses from F & B/Ceco. They're T/1.4 and we had a 28mm, a 35mm, a 55mm and an 85mm. They're odd sizes, but they come with BNC mounts, so that they will work on either a BNC or a hard-front Arriflex. You can use the one set of lenses for both cameras and they're really tremendous to work with. The scenes we shot at night with them varied between 8 and 12 foot-candles and we were able to shoot at T/1.4 without forcing the development. This meant that we could get nice rich blacks. These lenses pick up amazing detail. You can see a tail light three blocks up the street. It helped a lot, in the scenes where we panned across the parking lot, to be able to see the whole city in the background. All we needed in the way of extra lighting was four or five 10K's scattered around and pulled down on buildings a block away. You don't need a heck of a lot of light with those fast lenses—just enough to poke up faces where you want to see them. Otherwise, you have plenty of detail in the street from the street lighting itself and from the car headlights and tail lights. It's very natural. In one scene where we had a bus driving up, we lit the exterior just a little bit, but the actual lighting inside the bus was enough to register.

QUESTION: For what lighting you did need on those night exteriors, what kind of units did you use?

SCHWARTZ: When we were working up close, FAY lights were fine, but where we needed a longer throw, we used 10K's. These fast lenses allow you to project a beam a tremendous distance away, and you get practically what you see with the eye. And there's another great advantage, as far as I'm concerned. I know it's fashionable these days to force development, but I like the nice rich blacks, and you can get them with the new fast lenses. There are several types available now and everybody is starting to use them. Panavision has a number of them and they're becoming pretty widely used professionally.

QUESTION: What about that interesting three-story stairwell set in the picture, where you followed the action from the bottom to the top?

SCHWARTZ: There's a good example of designing a set to meet the needs of the script. If we'd gone out and tried to find an actual interior location like that we'd have gone crazy—to say nothing of the time it would have taken to shoot it—whereas, by building the set in the studio, we could do the whole thing with a Chapman Titan crane and go from the first to the third floor and back again, while shooting dialogue. We had eight or ten pages to shoot in that set and it was an intricate one to light, but Wally Samson, our Unit Manager and Sam Strangis, our Production Manager, agreed to let us get an extra crew in there and rough in the lighting, because we needed 30-parallels to mount the lights. We couldn't use scaffolding and there were a lot of gobos and cutters to be set in order to get shadows and effect lighting. The preplanning and that extra crew working ahead of us saved a great deal of time during the actual shooting.

Understandably happy Director of Photography Howard Schwartz, ASC, shown with "Best Achievement in Cinematography—TV Feature" "EMMY" statuette awarded to him for "NIGHT OF TERROR".

QUESTION: I saw "NIGHT OF TERROR" on a rather big screen in the projection room, not on TV, and even though some sequences were very low-key, it didn't seem that you made any concessions (in terms of lighting ratio) for transmission on the tube. In other words, it looked like the kind of lighting you would have used for shooting a purely theatrical feature. Would you care to comment on that?

Continued on Page 915

Perfectly type-cast as the meanest of all villains, Chuck Connors plots dastardly deeds. Though filmed on a super-tight 10-day shooting schedule, the 90-minute television production has all of the technical polish of a big-screen theatrical feature. Dedicated cooperation of top-professional cast and crew made it possible.

"THE NEPTUNE FACTOR"

Continued from Page 861

After cutting the end off the bottom tank to form an entrance for both men and equipment, we installed a set of special flood cocks on the top tank. Four portholes built into the bottom section, two coats of marine yellow paint and a final lettering job on the sides, completed our Oceanlab II.

When we built a 60-foot by 40-foot pipe grid unit with four three-foot plexiglass bubbles to simulate our hydrophone stations, we'd completed our Freeport requirements. Both tanks and equipment were then loaded on two trucks for Miami.

To create a sophisticated unit of diving gear for each man, Kerry Cover of Divemaster was called in to manufacture a special backpack and matching helmet. By incorporating the Healthways diving gear, we designed a breathing unit which would receive its ultimate test in the open ocean. This backpack was designed to receive twin air tanks, fitted upside down in a bright yellow fibre-glass shell. The shell included an exposed pressure gauge, a reserve button control and a battery pack that, in turn, connected to the diver's helmet for a small headlamp unit. Each helmet was completed with a short nine-inch antenna that simulated an underwater communications system. All of the backpacks and helmets were lettered with a name and number to help the audience identify each suited diver. Through the courtesy of Healthways, our entire production crew was outfitted with diving gear and air tanks.

Both our special diving equipment and crew flew into Freeport to await the arrival of the Oceanlab II. Once our underwater director, Paul Stader, had found a suitable location half-a-mile offshore in 60 feet of water, the few days of preparation began.

Bob Landry had the two sections of our habitat lifted off the freighter from Miami, and, with the same dock crane, we connected the two sections permanently for the first time.

At 5 a.m. the next morning, the Oceanlab II was carefully slipped into the harbour and, with its watertight top section bobbing out of the water, we connected a heavy 100-foot cable to our waiting tugboat. When the tug reached our location, we opened the valves and our tanks slowly settled to the bottom. Once in position, our habitat was connected with a long umbilical cord, and the surrounding area was dressed with a pipe grid, a steel fish cage and four hydrophone stations with various pieces of survey equipment.

With Harry Makin and a second underwater cameraman, Lamar Boren, our week of filming began. Working in the open ocean posed many problems for each one of us. On certain days, the water was exceptionally clear—on others, it became algae-murky with the sea running very rough. Through all of this, Harry and Lamar continued to work with a superb style and understanding of our new elements.

Our final filmed sequence was quite spectacular. We required the effect of an earthquake cracking the ocean floor and tossing our Oceanlab II over the edge of the seamount to become lost in the depths beyond.

After setting a series of air tanks along the bottom and around the habitat to simulate the first explosions of gas, we connected a cable to our tug on the surface. With both Harry and Lamar in position, we signalled the tug to pull ahead. While the buried air tanks supplied a steady flow of small bubbles, the cable that was connected to the top half of our habitat finally snapped taut and our great yellow 18-ton Oceanlab slowly toppled over to disappear in a cloud of white sand. It was an awesome sight. It was stranger still to see a film crew, amidst clouds of sand and bubbles, silently applauding underwater.

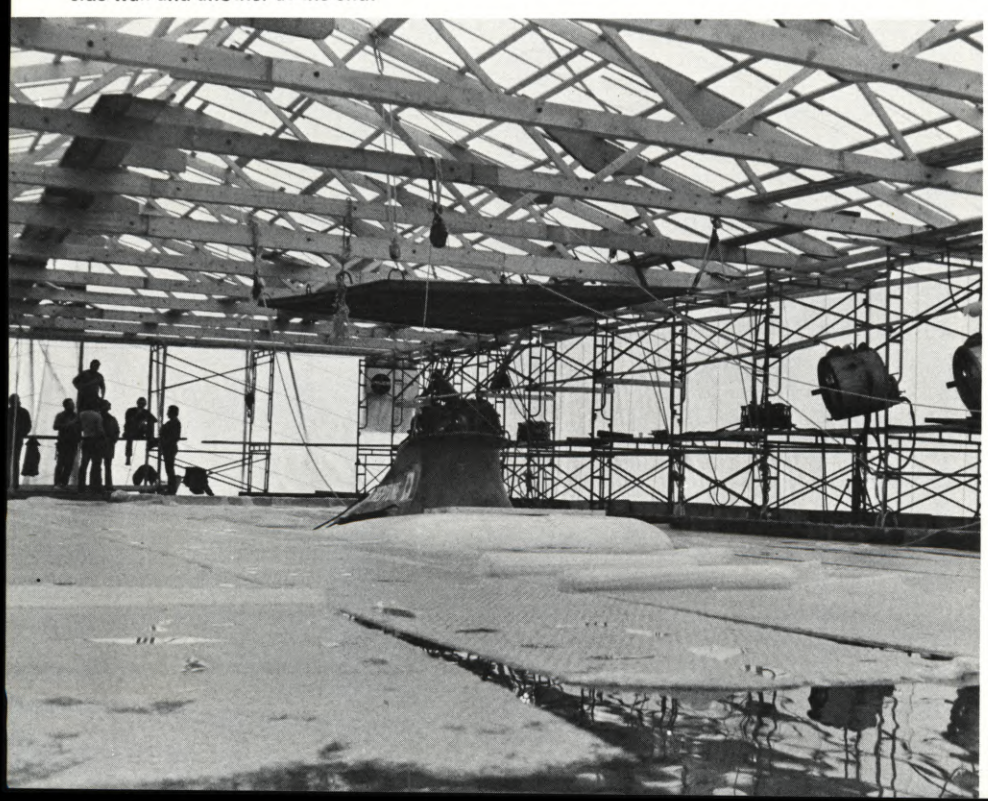
When we arrived back in Toronto from Freeport, we began the final rigging of lights and equipment in an old warehouse on Evans Avenue. Both Jan DeWitt and Dennis Clark had performed miracles with so many glass tanks, miniature sets and models, and a great variety of fish. Set up in three different areas of this large 200-foot room, we had installed three 15-foot by 30-foot vinyl swimming pools complete with 18-inch by 24-inch viewing windows on both ends and one side. Into these pools, Dennis had built a series of undersea settings. Brightly coloured plastic anemones, groupings of brain coral, jagged outcroppings of sea cliffs, black areas of miniature antler coral and desert areas of black and white silica sand, all blended together to form an ocean fantasia.

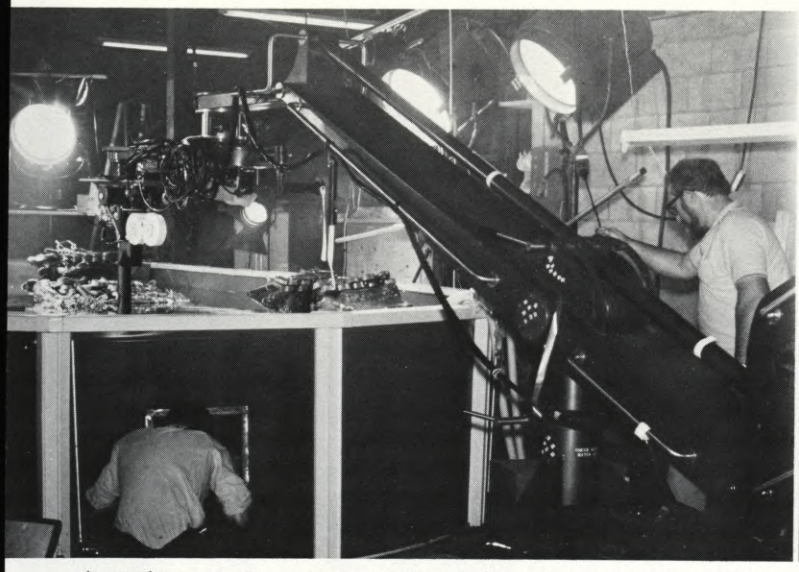
Jan DeWitt was training many of the fish to react to both sound and color in preparation for the camera. Dr. Allan Emery, a marine biologist and ichthyologist, joined our staff with a second ichthyologist, Peter Buerschaper. Both specialists were on-staff with the Royal Ontario Museum. Jan and Dr. Emery soon learned how to encourage certain fish to attack our miniature Neptunes on cue.

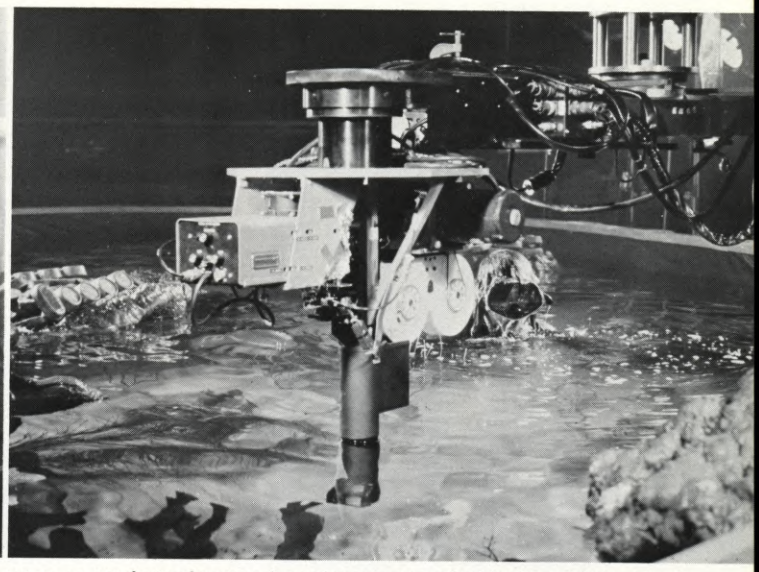
While the Seahouse was preparing many of the intricate miniature shots, we simultaneously started to plan our full-scale sets for the studio in Kleinberg. With Wiets Jekel as the head carpenter and Michael Papp, the head of our paint shop, we began to build our studio interiors.

Meanwhile, back at the Seahouse, Harry Makin was conducting involved tests with the fish, the effective control of our miniature models, and the difficult problem of lighting the interior of so many glass aquariums. One major problem in lighting any water effect was the control of surface reflections appearing on the sandy bottom since this

Lighting crew assembles for discussion inside the Seatank. Bubble plastic was installed on the bottom of the tank in order to soften the underwater lighting effects. The Seatank measured 83 feet long, 35 feet wide and was 15 feet deep. It featured two underwater windows—one in the side wall and another at the end.







(LEFT) The highly sophisticated "Snorkel" camera, mounted on its huge crane, moves in to shoot underwater sequences inside the miniature tank. (RIGHT) The tip of the Snorkel's three-foot periscope dips beneath the surface of the miniature tank. This slender camera probe is operated from a remote-control unit located approximately 20 feet away and incorporates the use of a closed-circuit video screen for monitoring purposes.

would immediately reveal the true depth of our water to an audience. We tested many sheets of fibre-glass and frosted plastics over our lights, including a stove-pipe arrangement fitted over a light that protruded into the water. But all of these tests proved unsuccessful, since the majority of our lighting still bounced off the water surface and lit the ceiling of our Seahouse, or dispersed in all directions once the light entered the water. Finally our head gaffer, Bernie MacNeil, made a test with a large sheet of packaging plastic that was covered with hundreds of one-and-a-half-inch air bubbles. This material was superb. The many air bubbles not only created a natural flotation blanket when laid over the entire surface of our tanks, but the bubbles seemed to act as individual prisms to create an extraordinarily even light when viewed underwater.

DIFFICULT WEEKS

The majority of miniature sets completed, and most of our fish adjusting well to their new foam-plastic homes, we started filming. This week and the following two weeks became the most difficult of the entire film. With Dan Petrie preparing for the incredible complexities still to be met in our studio at Kleinberg, Sandy Howard began directing the model and miniature sequences at the Seahouse. As we recorded with our high-speed cameras the effects of a miniature undersea earthquake, the simple task of cajoling, begging, or just gently pushing camera-shy fish through their many situations, created the need for endless Rube Goldberg inventions.

An ordinary 30-foot aluminum television tower became a long, reaching puppet arm full of small pulleys and cables to suspend a model over any area of our largest tank. A simple one-foot-square plastic air pillow was rigged to float our smallest six-inch model on clear lines across the camera. A heavy-duty curtain track was employed as a 30-foot monorail unit, set only inches below the surface of the water to drive our largest model. To create a smooth descent or ascent with our 10-inch model, we discovered a hydraulic arm from a surplus milking-machine. By applying a minimum of air into this mechanism, we were able to smoothly dive the Neptune for our high-speed cameras.

With so many possibilities for effects and still so many problems to resolve, Sandy, began the complicated schedule of arising each morning at 4:30 to quietly plan each shot for the day. Just the tedious handling of 400 sea animals in their confined areas made many of our days extremely long and very frustrating. Our moments of total pleasure would happen unexpectedly; when filming a group of pink sea anemones, suddenly a small white and orange clown-fish would appear out of the anemones' long waving tentacles and dance in front of the camera. Or a grey hermit crab would seem to understand our needs and move into our light to pose eating the remains of a brine shrimp.

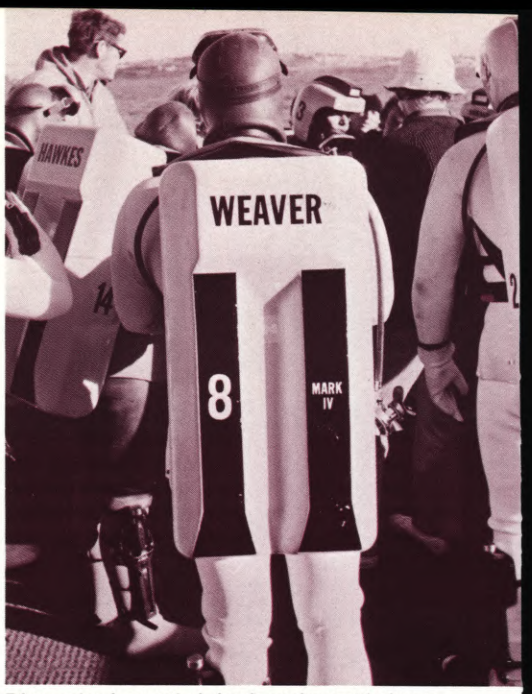
Both Jan and Peter had trained an aggressive black-finned triggerfish called Jerry so well that the fish would violently attack any model that was dropped into his tank. His reward for this performance was a live goldfish. Our reward was the remains of a fine model. Our large tank of spotted eels and snake eels became so accustomed to our camera lights that when they were turned on, the eels would begin swimming towards the food cache of shrimp.

In the last week of filming, and for the first time, we employed a "snorkel" camera in our tanks. This is an intricate camera device that looks like a long, three-foot periscope with the main body of the camera suspended above on a rigged platform. This slender camera probe is operated from a remote-control unit approximately 20 feet away, incorporating the use of a closed circuit video screen. With the cameraman/technician operating from a control console, Sandy was able to direct this mini-camera through the very narrows of a sea gorge, or perform a jousting match inside the gaping arms of a giant sea crab. This unique camera was responsible for performing what might otherwise have been impossible effects.

With Dennis Clark supervising our "wet suit" crew in the changing of sets, the draining of tanks for a water change, or the repairing of many models, we somehow captured on film one of the most challenging parts of this picture. Unfortunately, Dennis left the picture at this point because of an earlier commitment.

As the Seahouse was filming the miniatures, we were also very involved in set construction and painting in Kleinberg Studios, north of Toronto. One of the first units to prepare for filming was the interior of our Neptune submersible. This set was 25 feet long and 10 feet wide, with a head height of nine feet at the highest point. There were five independent units complete with lights and equipment so that any section would disconnect and be rolled away on its own wheels. This was the most frequently utilized interior in the

A tired Ernest Borgnine rests on suit-up bench of inside Neptune lock-out chamber after a hard climb through the steel hatch on the floor.



Divers check out their back-packs and helmets in readiness for an ocean dive. The exciting action required services of many professional divers.

picture and all of the instrumentation was fully operational. The main area was designed into four distinct stations: a chair on the port side, a co-pilot chair on the starboard side, and behind both of these stations, a communications area with a navigation station across from it.

In our film, Ben Gazzara used the command chair, with Ernest Borgnine as his co-pilot, Yvette Mimieux on communications, and Donnelly Rhodes on navigation.

The entire unit was bolted to a 12-foot by 25-foot steel platform which, in turn, was bolted to an eight-foot-wide boiler plate. This special rocker unit lifted the Neptune off the floor by 30 inches and it appeared like some giant teeter-totter.

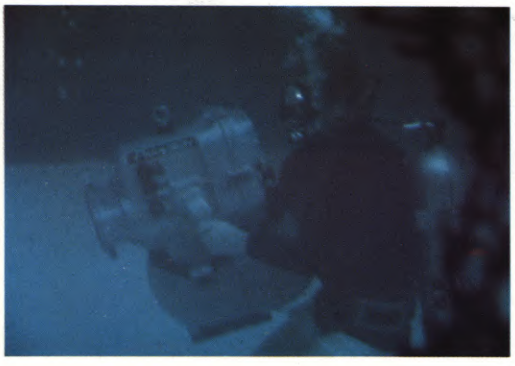
The four corners of the steel platform were held in place by strands of 5/8-of-an-inch of airplane shock-cord. The slightest lift from any side of this unit by a studio grip would set our submersible into a gentle rocking motion without a sound. The stern section of the Neptune was our lockout chamber for divers and was separated from the main area by a foam-padded wall with a three-foot-wide circular steel hatch for an entry. Once we had filmed the rocking sequences around the command area, the stern lock-out section was quickly lifted off the rocker by a chain bridle. The bridle was connected to a chain-fall trolley run high above the studio on a 60-foot 'I' beam welded to the studio ceiling on the same diagonal as the rocker unit. This apparatus was used both to strike or set the Neptune or the Oceanlab in half an hour.

With the stern lock-out section now resting on the studio floor, it was a simple task to roll this section over our water tank that was built flush in the floor 10 feet by 12 feet and 10 feet deep. Walls were painted a light blue and the tank bottom was covered with 18 inches of white silica sand. With the stern section over this water tank, Ernest Borgnine was able to splash in and out of the lock-out hatch in the submersible.

This method was very successful for the final sequence in the picture when we had no less than four divers emerging from the water to climb into the Neptune. Later, this studio tank was used with the floor hatch of our Oceanlab in much the same way.

One of our largest sets in the studio was the ship's laboratory, designed to match the look of our research vessel in Halifax. By staggering the walls and creating a feeling of low ceilings, we

(LEFT) During shooting of underwater sequence filmed inside the filled Seatank, Harry Makin shoots a scene of Paul Stader entering the Neptune. (CENTER) Harry Makin on camera. (RIGHT) Paul Stader doubles for Ernest Borgnine for sequence staged inside the Seatank. A scaffold wall was built around the pool to support the heavy lighting equipment required.



(LEFT) Petrie stands outside viewing window of the Seatank holding a microphone and a written message. (CENTER) Wet-suited Jack McAdam picking up a second tank of air. (RIGHT) A briefing is held inside Seatank for the crew to receive last-minute instructions from Producer Sandy Howard.

filled this room with an assortment of marine and scientific equipment. Most of the equipment was set up around one end of the room and included everything from four practical stainless-steel lab sinks, to a computerized specimen analyzer. I obtained fish specimens from the Royal Ontario Museum, which we displayed along one wall of the lab. The main portion of the room was carefully fitted with hydrophone reporting tapes, a battery of meters, and a monitoring unit for the life-support system to the Oceanlab.

Almost all of our sets incorporated the use of rear or front-screen projection to give studio scenes a feeling of realism and depth. Projection coordinator, Bill Hansard, was exceptional in making these effects possible. The ship's railing could suddenly become a storm-tossed ocean or a still moonlit night, according to the story. Some of the most effective rear screen projection is seen inside the Neptune when the giant 20-foot long trigger fish appears to swim headlong into the front viewport.

There are times when Ben Gazzara and Ernest Borgnine struggle with the controls to stabilize a violently rocking submersible, and through both viewports we see an erupting ocean of falling sand and dark seacliffs dashing towards the Neptune. An immense 40-foot-wide sea crab would slowly amble toward the front viewport, and to the horrified few inside, the crab would reach out a gnarled claw and push the Neptune aside.

There were quiet times when the screen proved invaluable. While the scientists are sitting around a table in the Oceanlab, discussing future plans for farming under the ocean, through a small porthole on the back wall, a diver would slowly swim by in a cloud of bubbles. Many of our closeup sequences were accomplished this way in a five-foot-deep plywood water tank. One side of this tank had an eight-foot-wide window that accommodated the rear screen and the front section featured a three-foot by four-foot window for the camera.

When Ernest Borgnine was completely suited up with a backpack and helmet, he was carefully helped down a ladder into this tank. Because of the rear screen, we were able to reconstruct any location or situation underwater. There were times when the rear screen would register the image of the open ocean with Ernest swimming away from a giant Lion Fish that would appear to eye Ernest as its next meal. Both Bill Hansard and Harry Makin would take full advantage of these effects and, by adding a prop or set piece in the foreground, each sequence became disturbingly real.

One of the last units to film in the studio was our Oceanlab II. This 30-foot-long habitat was designed in three major sections. The living quarters consisted of eight folding bunks, a work table, areas for books, and a practical head and shower. The lock-out chamber consisted of auxiliary air tanks, suit-up benches, meters, helmets, and diving gear. The centre section consisted of the life-support system monitored in a bank of highly sophisticated instruments, and across from this, a complete medical station for our resident doctor.

Breaker panels, volt meters, oscilloscopes and scanning systems were activated by our technical consultant, Bob Bowkett, after weeks of installing a variety of batteries, condensers, and voltage amplifiers behind the scenes. Hundreds of meters, digital readouts and scientific units were arranged through the courtesy of the large industrial companies that our unit manager Deanne Judson had approached.

With Deanne serving as our industrial liaison between the various contributing companies, I was able to discuss our needs with each company representative. This arrangement proved very successful, since all the companies were anxious to see their units installed and operating inside our sets.

UNDERSEA EARTHQUAKE

Our final sequence to be filmed in the Oceanlab II was the undersea earthquake. Harry Makin rigged his camera inside a spinning wheel rim and with this unit mounted securely at one end of our long habitat, director Dan Petrie and Paul Stader gave the four stuntmen a last briefing. With plates, books, chairs, and units of equipment rigged by our prop master, Keith Barry, the crew gathered around the steel rocker for the earthquake sequence.

The rubber shock cords now removed from the rocker, we were able to violently wrench the Oceanlab almost over on its side and back again. The interior became littered with flying plates, water breaks, escaping steam and scattered stuntmen. Fortunately, this chaotic effect worked the very first time to successfully complete a difficult studio schedule.

While we were filming in the studio, two miles down the road we were building a swimming pool beside the Woodbridge Memorial Arena. It measured 83 feet long by 35 feet wide and 15 feet deep. The pool featured two underwater windows, one on the end wall, and the second window set exactly in the middle of the side wall. To match miniature sets and parts of the ocean areas shot in Freeport, I designed rock formations and seagrowth twice their size. The shortage of time in constructing a tank of these dimensions posed new problems. Deanne Judson was instrumental in seeking the cooperation of the Township of Vaughan for our final building site. We proceeded to bulldoze the arena's large parking lot.

Once the main drain pipes and water lines were installed, we started pouring concrete to form the base and walls. These 12-inch-thick walls were laced with tons of steel, reinforced to support the final load of 291,000 gallons of water. Two small rooms were built behind the walls of the pool to facilitate filming through the glass windows. A third room was filled with filtering tanks and natural gas heating units. Since the walls were finished in a smooth grey concrete, I decided to save a great portion of construction time by painting a realistic section of seacliffs and rock formations on the actual wall. Using a special acrylic paint, Mike Papp painted a 15-foot by 110-foot undersea mural according to color photos and film slides of our previous Freeport scenes. After finishing this mural, we continued to paint the remaining walls in a light blue color, and the bottom was painted to simulate the rolling dunes of a white sand sea floor.

About this time, the carpenters and plasterers were finishing a group of vertical rocks, 14 feet high and eight feet wide to match the tall painted rocks of our sea mural. We built and plastered a long cave section that again was a detailed reproduction of a miniature cave model filmed earlier in a fish tank. When the cave was completed, it weighed over 1,800 pounds of conduit pipe, lathing screen, and concrete. Both the rocks and cave were lifted carefully with a block and tackle, and arranged in position against the sea mural to await the water.

To cover a pool of this size, a pipe scaffold method was utilized by constructing a scaffold wall around the pool, allowing an area for a workshop. The carpenters built 20 80-foot-wide wooden truss units to serve as a roof. To finish this large construction, we applied a final covering of clear vinyl tarpaulins. We had no sooner completed this covering over our Seatank, when, as if on cue, the first snowstorm of the season began.

This blizzard lasted for eleven hours, but fortunately, did not affect our structure. The following morning the fire department arrived and began a 14-hour water fill from the local hydrant. With our sets in position, we

Continued on Page 934

INDUSTRY ACTIVITIES

Continued from Page 871

erwise instructed, all materials will be returned insured parcel post.

HOW TO ENTER

To provide an equitable basis for judging, the CINDY Competition is divided into groups and categories. It is important that you select the proper ones, as the jurors are under no obligation to place an entry in its proper category. Each entry is judged not only on creative and technical excellence, but on achievement of its stated objectives and intended audience as well. Selection of the wrong category could penalize your entry. To facilitate the judging of videotape entries, please provide (on the entry form) as much information as to type and system used as possible.

GROUPS

There are three major groups in the CINDY Competition:

A. Films
B. Videotapes
C. Student Films

CATEGORIES

Groups A. and B. are subdivided into the following categories:

1. Public Relations—A production designed to inform a general audience
2. Employee Relations—Intended for an in-house audience; to inform, motivate, or indoctrinate.
3. Technical—About a specific product's performance or capabilities for a specialized audience
4. Training—Detailed how-to-do-it instructions
5. Academic Instruction—Designed to educate, rather than train
6. Enrichment—Art, culture, religion, etc.
7. Sales/Advertising—To sell a specific product
8. Special—Purpose or intended audience does not fall under one of the above

Group C—Student Films—is not divided into categories. IFPA inaugurated this special group in 1972 in recognition of the growing number of educational institutions who have added cinema courses to their curriculum. Outstanding entries in this group will receive Certificates for Creative Achievement. To qualify, films submitted must meet the criteria as specified under RULES (above), except that films may be either 16mm or Super-8, and proof of student status must accompany the entry form. ■

FILMING "STEEL ARENA"

Continued from Page 909

That evening, for Dusty's big jump, off-duty police volunteered their time to help with crowd control. And crowds there were. For three city blocks they lined the streets. They started gathering at 7:30 p.m. when our lighting crew, led by gaffer Richmond Aguilar, (a beautiful and totally professional man, I might add), began placing lights along the rims of buildings. The crowd didn't leave until 4:00 a.m. when the last shot was in the can. The city provided a drop-line from the local power source and we used 36 Master Lights, a 10K and 10 quartz lights to light two city blocks. These Master Lights again gave us more reach per size and unit for a long throw, plus versatility per number of units to move for better angles. Their being lightweight and portable was another asset of these lights. There was no greater thrill for me in Lodi than taking the megaphone and directing my first DeMille-style crowd scene of 3,000 extras, all of whom cheered and applauded on my cue.

Dusty's stunt actually broke the world record and was carried by UPI on sports pages in thousands of newspapers across the country the following morning, living up to our promise to put Lodi on the map.

THE ACTING

The major roles in "STEEL ARENA" were filled primarily by non-actors. The end result of their performances was believability, mainly due to the script which placed all the characters in situations closely related to their real-life roles. Gene Drew captivates the audience as the energetic, powerful promoter, but this is Drew's real self. The fact that Dusty does his own stunts in the movie results in a sense of documentary realism. Using real people, though, did create some problems. Dusty, in the film story, was to break his right leg, but, in reality, ended up breaking his left leg. We had already shot scenes with Dusty's right leg broken. Therefore, we spent a good part of the filming changing Dusty's cast back and forth. Also, non-professionals tend to perform in their film parts the way they happen to feel that day. If they're depressed for any reason, they haven't the craft or tools necessary to act any way other than depressed when the cameras roll. It takes an unusual amount of patience to inspire the non-actor to go before the cameras when he's not feeling good. However, one rowdy Daredevil wanted to act so badly that when I shortened

his part for practical reasons, he came at me with a shotgun and threatened to blow my head off if I didn't write his lines into the script again. Needless to say I was back at the typewriter within minutes.

A surprise that I received recently was the news that one non-actor, Ed "Chromedome" Ryan, who plays the roll-over man, turned out to be an escapee from the Wisconsin State Prison and had been wanted for armed robbery during the whole of the shooting. Whoever would have guessed that a man wanted by the law would appear in front of hundreds of people disguised as a movie star?

Two parts in the film required trained actors. Dusty's girlfriend was played by Laura Brooks and Dusty's chief antagonist by Bruce Mackey, an actor from The Committee in San Francisco. Bruce finally tired of being the only male actor not doing stunts and ended up asking to perform the human battering-ram for real, making Bruce an actor who really uses his head.

The cinematographer was John Arthur Morrill. John brought with him gaffer Richmond Aguilar. Both of these men brought a quality and dedication to their work and the film that I could not have done without.

John and I decided to shoot in the Techniscope format and Techniscope turned out to be a fine choice. It is, I feel, a much better option then 16mm or Super-16 for low-budget films. Techniscope gives you far better quality and a wide-screen look for the same cost as 16mm blow-up to 35mm. Techniscope allowed us to shoot a large amount of footage at a big savings, using only half the standard 35mm frame. This made it economically feasible for us to use our four cameras on the thrill show material. Further, we avoided problems related to getting good sound and picture in our natural locations, as the format allowed us to put microphones and lights right on top of the frame. There was one drawback, however, in editing. We had to work with a squeezed workprint and would have been much happier to have followed through with the savings of Techniscope by having a contact Techniscope workprint to run the sound at 45 feet per minute. In this way, our sound cost would have been cut in half. Unfortunately, though, we could not have interlocked or mixed the film at that sound speed.

We shot with Arriflex Techniscope-converted cameras, with a Cine 60 blimp and 400-foot magazines. We decided not to use any zoom lens shots in the film and stayed totally with hard lenses to give the film an old-fashioned

50's look and feeling, and also because sharpness is critical in Techniscope. It was for this reason also, sharpness, that we tried not to shoot at any aperture wider than F/4. Finally, the Techniscope format proved to be visually exciting for an action film.

Ken Phelps became the rigging consultant on "STEEL ARENA". We used his specially-built iron boxes which protected two Bell and Howell army surplus cameras we had purchased. These cameras were mounted inside the cars and enclosed in steel casings. They had to withstand the shocks and impacts of cars crashing head-on at speeds up to 100 miles per hour. The cars would be completely crushed, but the camera and steel case remained intact, giving us quite spectacular, and, I'm sure, never-before-seen P.O.V. shots of cars crashing head-on at high speeds. For close-ups of the drivers during our chase and tour footage, Phelps Super-Grips were used to great effect. Aguilar provided 30-volt battery units and seal-beam lights for mounting on the hood.

Included in the film is a 40-second 4-way split-screen sequence of car crashes. Cinema Research Corp. did a tremendous job on this material made from CRI dupes. For a montage section of the film, made up of 22 dissolves, we insisted on inter-positives rather than the CRI, which would have been cheaper, because many of the shots were made at night and we felt negative dissolves would look poor. In a positive dissolve the light areas dominate and that's what we wanted, as the shots were of characters against dark background.

The sound was handled by John Brumbaugh, who did a fantastic job of recording a great effects track. To get great crash sounds for our accidents in the film, John and I went to an auto junkyard and had Daredevils crash cars into each other so that we could specially record, close-up, sounds of cars crashing and metal against metal. This gives our Demolition Derby a particularly great effect. These car crashes turned out to be so good for sound, that in one sequence in a bar scene, where a Daredevil falls on the ground during a fight scene we didn't have a good effect, so we used a car crash sound and it worked perfectly.

One of the most rewarding things to me about the filming of "STEEL ARENA" was the *esprit de corps* with which the film was made. The cast and crew, working together for very little wages in all aspects of the production, gave the film a value far greater then the actual dollars that went into its production. ■

"THE RED PLANET"

Continued from Page 843

quency. Colored filters merely act as neutral-density filters and do nothing to change the color of the beam.

Laboratory stands and clamps were used to insure precise alignment of the glass. Synchronous clock motors of 4 rpm, ½ rpm, ¼ rpm, etc. were used to insure fluid movement. A few effects were shot at 24 or less frames per second, but most usually the camera speed was set at 48 fps to insure smoothness. When we wanted to induce hesitation or irregularity we pulsed the electrical power for the motors. Elsa and I encountered our primary difficulty when we attempted to re-create a scene or specific movement of the week before. There were so many variables: laser power levels, alignment, electric motor speed, angles of glass interference, mylar thicknesses, etc. At first, it was often four a.m. and we were still attempting to duplicate the shot. Eventually, we succeeded in the duplication of effects by painstakingly cataloguing and documenting our setups.

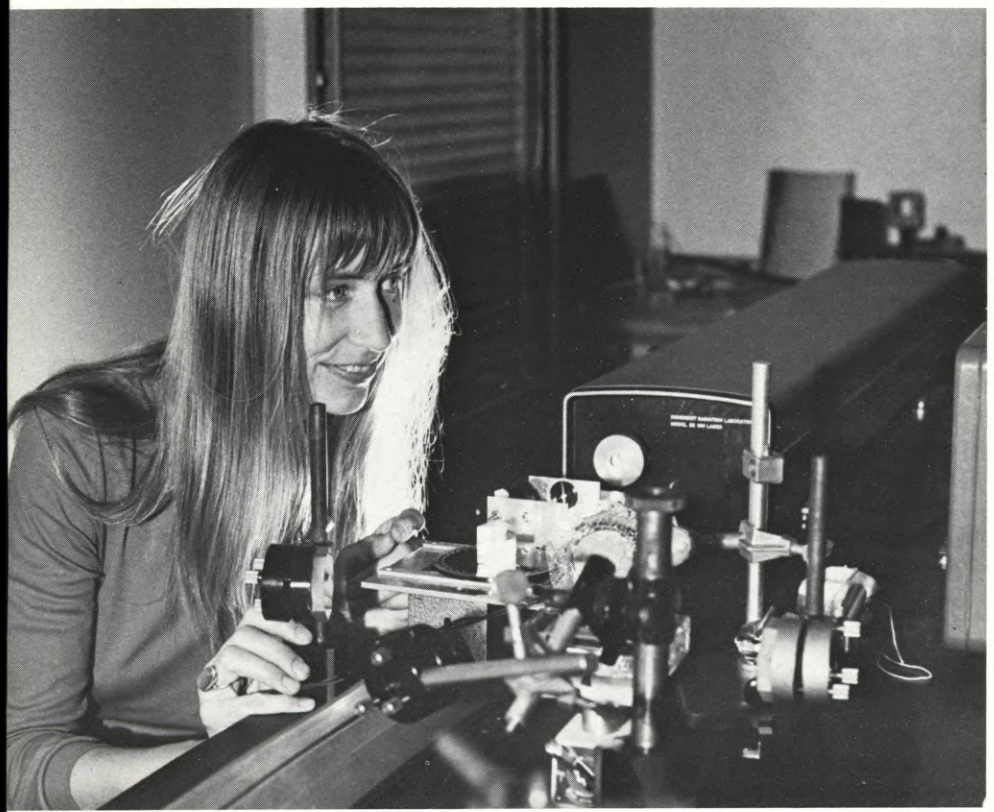
The film was essentially an "optical" film in order to gain control of its development. An Acme wet-gate optical printer was used to re-photograph, reposition the images, to add color, change speeds, to fade and dissolve, to go from positive to negative, to strobe the light, to solarize, and to basically animate the film. At this point script writing began in earnest. Storyboard drawings aided in calculating the printing sheets. Various shots were combined so that double and triple impositions resulted in new, more complex, compositions. Some of the effects were the result of stumbling in the dark and chance experiments. There were over 27,000 individual frames in the finished film and many thousands more in the original footage, all of which had to be individually accounted for when lining up the optical cue sheets. Several printer passes were required and each frame was shot two or more times at widely-spaced time intervals. Errors were made and, on rare occasions, the errors were fascinating in themselves (like the scene where positive and negative mattes were six frames out of phase) and were not thrown out, but were integrated into the film. After spending night after night preparing intricate effects sheets while bending over a synchronizer, I felt more like an accountant than a filmmaker.

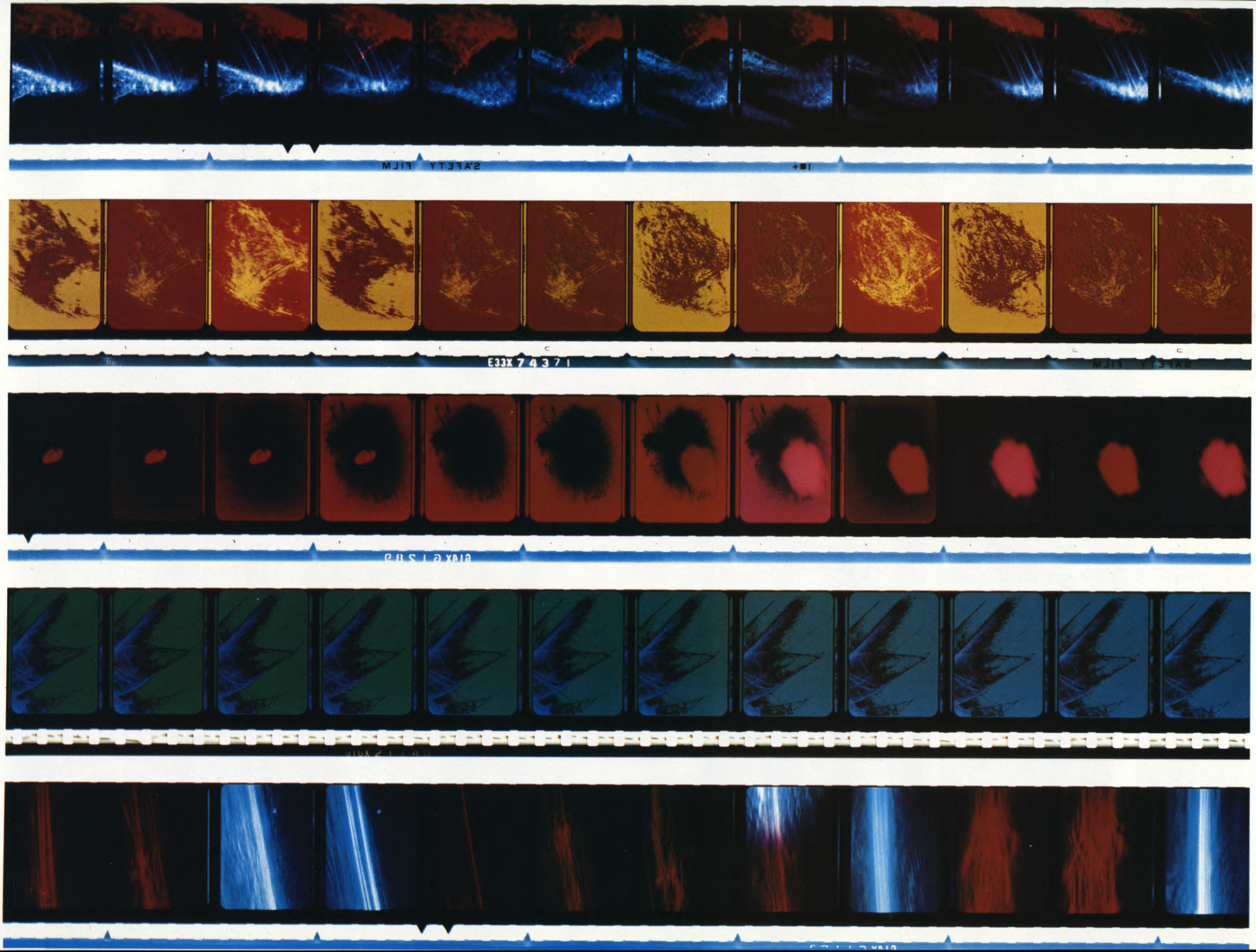
Jan Buehre and I did all of the optical printing work, including the blowup to 35mm. Since the film had been shot on 7241 and 7242 stock, we encountered like the makers of

Continued on Page 911

Writer-producer-director-cameraman-editor Dale Pelton works at the KEM editing console, which was used to cut the sync picture/sound track. This was necessary, since the Moviola could not read the quadraphonic track. Transfer from 1/2-inch tape to 35mm mag stock was done by Jack Woolse of Todd-AO.

Dr. Elsa Garmire, a member of the research faculty at the California Institute of Technology, shown working with one of the laser set-ups which she used for creating the effects in the film. (OPPOSITE PAGE) Randomly selected film clips from "DEATH OF THE RED PLANET", indicative of the vast variety of colorful images that lend the picture a "cosmic" scope.





CINEMA WORKSHOP

Continued from Page 816

of the TTL is approximately half that of the entire frame. (See FIGURE 1) Thus, the above lenses would effectively be 2° spot meters when zoomed tight. On the other hand, by zooming wide, the TTL becomes an averaging reflective meter of over 60° acceptance.

The TTL is perfectly suited to zoom lens technique. The cameraman zooms in to the subject, opens wide, focuses, stops down to the needle match and then zooms out to compose. In one step he has achieved critical focus at wide aperture and maximum focal length, obtained an accurate spot reading, set iris and composed, *without removing his eye from the finder.* In addition, the TTL allows follow-iris technique. If the lighting changes during the scene or the camera is panned or zoomed to alter the overall brightness of a scene, the cinematographer can follow iris, similar to following focus on a traveling shot. Another advantage of the TTL is the automatic compensation of filters.

The fully automatic exposure system has finally reached our industry also. This device couples a TTL system with a servo-motor that sets the iris to the proper setting. It essentially by-passes the cameraman and uses its own information. Of course, the cameraman can override the servo-system. The better of these lenses are definitely of professional calibre; however, they must fall into the special-purpose category. For certain types of documentary, hard news, sports coverage, *cinema verité*, etc., these lenses can prove to be invaluable. A professional automatic iris lens (see FIGURE 2) performs its function flawlessly. In recent tests, this lens smoothly tracked from an F/2.2 to an F/22 during a pan of only five feet. The results were accurate, consistent and smooth.

Its placement into the special-purpose category is not due to any shortcoming of the automatic iris system *per se,* but rather to the inadequacies of the reflective-type light meter principle which we have already discussed. The iris will faithfully and accurately follow the reflective reading. However, the cameraman's brain is not in the servo system to interpret the reflective readings. Thus, a close-up of a light-skinned person may be too dark, or the iris will shift on a static subject due to changes in the background brightness. This could occur while panning a subject walking down an evenly lit street. The light on the subject will remain constant, yet the iris will compensate as the subject passes in front of

a light-colored building and then a dark one.

Amateur and semi-professional automatic iris systems suffer from conditions known as "hunting" and "overshoot". Hunting occurs when the iris tends to oscillate back and forth at approximately the proper exposure point. It appears that the iris knows the correct spot but cannot quite make up its mind. Overshoot usually occurs when the lens is panned from one extreme of illumination to another. The servo motor whips the iris to the new position, but gains too much momentum in the process and overshoots the proper stop and then slowly comes back. An automatic iris lens can easily be checked for these shortcomings. Truly professional automatic lenses have almost entirely eliminated these problems. ■

SUMMIT FILMS RECIPIENT OF FILM FESTIVAL AWARDS

Summit Films is proud to announce that it has recently received several film festival awards.

IKAROS took the first place gold medal in the first Festival International du Film Alpin held in Paris, France on October 15th. SENTINEL: THE WEST FACE received the third place bronze mdeal. Mr. Jean Louis Guillermou, the director of the Festival International du Film Alpin, invited a representative from Summit Films to attend the Festival as his guest. William Trautvetter travelled to Paris and received the awards.

At the U.S. Television Commercials Festival held in Chicago on November 2, SUNSCOPE, Summit's 60-second commercial on the Caribbean for Eastern Airlines (Young & Rubicam Agency) received two first place awards: one for the Recreation Category and one for Editing Technique. Roger C. Brown, Summit Films' President, attended the Festival and received the awards.

SUNSCOPE won the gold medal for the live action, 31 to 60 second commercials in the recent International Film & TV Festival of New York. This award was accepted by Mr. Dennis Powers of Young & Rubicam.

CINE awards which Summit had received throughout the year were presented to Mr. J. Lusk of Modern Talking Picture Service at their recent banquet. In addition to Golden Eagles for SKI AMERICA and A THIRD CHANCE, foreign festival certificates were received from the Kranj 4th International Festival of Sports & Tourism Films, the Cortina Sports Film Festival and the Venice XV Golden Mercury Film Festival.

FILMING "STEEL ARENA"

Continued from Page 855

about film production and who agreed to work for a fair salary. Rick, Bob and I set to work organizing the production scene by scene, intent on not exceeding our budget of $150,000. What we needed to fulfill the script requirements included nine principal characters, thousands of extras, supporting players, the staging of three auto thrill shows, one demolition derby, a moonshine chase, the duplication of a tour through the South, the main street of a small town and twenty-five additional locations spread throughout Northern California. To keep within budget and allow us to get people to work economically for a limited period of time, we set the shooting schedule for 21 days. All of the above we accomplished!

While "STEEL ARENA" sometimes has the feeling of a realistic documentary, all of the footage was staged for our cameras. I felt that we could not shoot at actual thrill shows, as the audiences would grow restive during the boring process of setting up shots and demand their money back. However, we rented the stadium facilities, announced to the public in the newspapers that a film would be made at the speedway about the Auto Daredevils and that not only could they watch a film being made, but also the Daredevils in action. Thousands turned out at our thrill shows and paid an admission fee to watch "STEEL ARENA" being shot! This is undoubtably the first time in the annals of movie history that the extras paid the producers to appear in a movie! Printed on the back of the tickets was our release, giving us all rights to their pictures upon their entrance to the grounds.

In our locations we attempted to duplicate the feeling of the South today and even the most well-traveled Southerner would be fooled. To do so we covered territory that included San Jose, Sacramento, Vallejo, Berkeley, Russian River, San Francisco and Locke, in Northern California. The company never stopped moving for a day. All of the locales have an authentic rural atmosphere. This was enhanced by the photography, which was designed to give the film an earth-colored and gritty look. In the lab, during post-production, we worked closely with Technicolor timer Wayne Gilgord, to time all the scenes warm, bringing out the browns to point up the idea of a dirt track life.

Throughout the production we devised ingenious ways of obtaining the film visuals at little or no cost. For the chase which opens the film we purchased a fleet of 1969 Ford Sedans from the Yellow Cab Company (which changes models every three years), for $75.00 apiece. These provided us with the basis for the 140 cars that would be totally demolished by the time the film was finished. The stuntwork in the chase was out of the Daredevil handbook. The stuntdrivers in the film "tripled" as actors, stuntmen and mechanics, saving us thousands of dollars. The Daredevils worked for a percentage of the profits. We had to shoot the chase in continuity, as we could afford only one model of the 1939 Dodge coupe Dusty Russell drives. Any one of the stunts he performs in the chase could have wiped out the car. Each time Dusty was successful and the car survived, the cast and crew would cheer—although without our Daredevil mechanics repairing the car all night before each day's shooting, it wouldn't have gone one mile. The most difficult location to find was the old wooden barn which Dusty crashes through in the '39 Dodge. These are considered valuable by their owners, and so it took us two months to locate a barn and convince its owner that his barn would be famous after it appeared in our movie.

For the interior scenes in the bars we used natural locations and filled them with local people for mood and atmosphere by giving away free drinks. This was a mistake, in spite of the great faces and "free talent", because, after two

(LEFT) "Squeezed" frame blow-ups from 4-way split-screen montage of car crash action, created through the use of CRI dupes by Cinema Research Corp.

Dusty Russell's car flies three stories high above Lodi main street to actually break world's "dive-bomb" record. The next morning this photograph was published in 4,000 newspapers throughout America.

(LEFT) Cameraman John Morrill prepares to shoot long shot of wrecking yard from erected platform, while Assistant Cameraman Charles Eason hauls up blimp. (CENTER) Dusty Russell looks over his souped-up "moonshine runner" car in barn sequence. Makeup man Jim Catania, doubling as actor, guzzles booze in foreground. (RIGHT) Grip Couter Watt inspects damage done to state highway sign during chase. The stunt driver miscalculated, coming within inches of destroying the camera.

(LEFT) Part of the large crowd that turned out to attend night "Thrill Show" staged in Vallejo, California. Individual spectators were posed for reaction shots used in the sequence. (CENTER) The wreckage of Dusty's car, following Vallejo Speedway dive-bomb crash. (RIGHT) Daredevils look out over wreckage of car toward bloodthirsty crowd which packed the Vallejo Speedway to participate as extras in the filming of "STEEL ARENA".

(LEFT) Cameraman Morrill directs setting up of FAY lights for barn moonshine sequence. These lights were specially rebuilt by Gaffer Richmond Aguilar, so that each light was individually adjustable for added control. (CENTER) Aguilar rigs seal-beam lights for upcoming scenes inside the "Circus of Death" cars. (RIGHT) Actor Bruce Mackey, playing arch-rival of Dusty Russell, cuts Dusty's seat belt before his dive-bomb stunt at Vallejo Speedway, while Cameraman Morrill films insert.

(LEFT) Mark Lester directs scene inside Isleton's Delta Bar, while Rick Smith fishpoles microphone in background. (RIGHT) In the middle of shooting the Isleton bar sequence, a real fight breaks out near the entrance. Quick-thinking cameramen filmed this unexpected action, but it was later cut from the film. Skillful use of existing locales and utilization of actual crowds resulted in a feature that looks as though it cost many times more than it actually did.

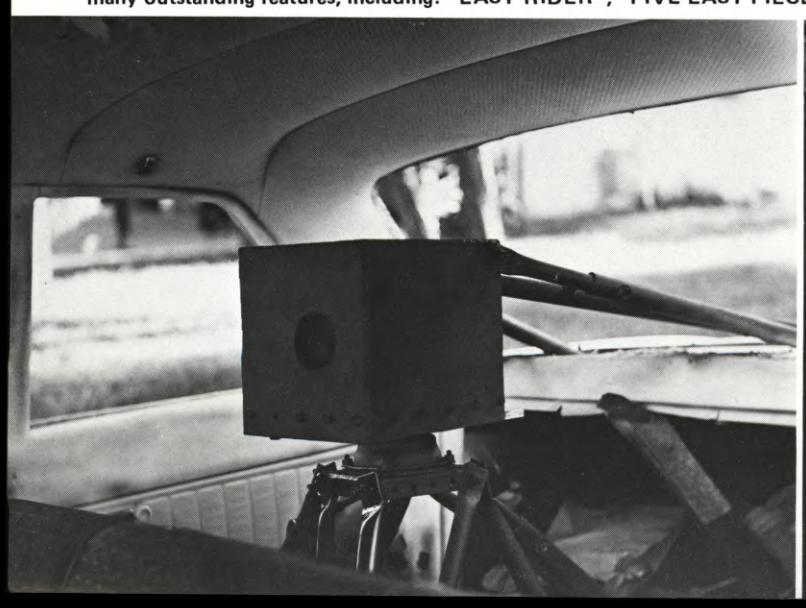
(LEFT) Two cameras are set up to film upcoming death scene of Speed Sterns. Double cameras were used to shoot most of the dramatic footage at the tracks, in order to save time. (RIGHT) Bruce Mackey, strapped to the hood of the car in preparation for shooting the "Human Battering Ram" sequence, turned out to be an actor who really used his head. Looking on, at right, is Dusty Russell.

hours, the extras were so completely plastered it was almost impossible to quiet them for a take. The real feeling was brought out further by the lighting. We lit the bars from overhead for a documentary feeling and to allow us to put the camera anywhere to shoot at F/4. We used local power in the bars. The voltage kept dropping, though, due to the load, dimming the lights but lending a warm, earthy tone to our interior scenes.

To film the demolition derby, in which Dusty defeats the champion "Masked Marvel" and rises to the top of the car world, we first looked for a demolition derby that was already taking place. None were being held the month we planned to shoot. We had no choice but to stage our own. Having only wanted to make a comment on this weird American sport (after all, where else but in the United States can people afford to crash and destroy good-running cars for a hobby?), I found myself promoting a derby event. Bob and I contacted a local race track which was holding a motorcycle race, and got the track free, provided that we would make our Derby an extra event after the race. A crowd for reaction shots for free! Now for the drivers and the cars. We posted notices around Sacramento, offering $300 prize money to the winner, explaining that we were making a film. Sixty drivers and their cars showed up to compete. Before the Derby I held a drivers' meeting and explained that our man Dusty was not competing for the money, but wanted to be left pretty much alone until the end of the event, when we could stage the final duel between Dusty and our other actor the "Masked Marvel". The drivers must have had their own meeting and decided to show "those Hollywood film people who was boss," because, when the gun went off signaling the start of the derby, all sixty cars came right for Dusty's 1939 Dodge coupe (still running after the chase) in an attempt to knock him into oblivion. Dusty's great driving saved the day for us. He escaped, we got our realistic shots of Dusty in a Demolition Derby and staged the final showdown with the Marvel amidst the wreckage of sixty cars. All of this production value captured on film for $300.

In the filming of our thrill shows, we used two day-events and one night-event and, in the editing, made them appear like many shows staged over an entire summer. We used four cameras to film the shows—two on the track, one in the stands and one in the stuntman's car. The danger was great, as we wanted to give the audience the feeling of being right there on the track and this necessitated our being in tight for the shots. We found that action looks best played to and from the camera, in close and with a wide-angle lens. Many a time, though, a car would fly in the wrong direction, forcing us to run for cover with our cameras. For the night thrill show shot at the Vallejo Speedway we made use of their existing light poles and chose Master Lights because they have spot, medium and wide beams. By placing the lamps correctly we could control our lights and shoot generally. We used 36 Master Lights on racks of 6 each, which fit onto one stand fed with one cable, for the convenience of mov-

(LEFT) Mounted inside Daredevil car, the camera is enclosed by steel case specially designed by Ken Phelps, who created the many exotic rigs used for filming the automobile action sequences. (RIGHT) Gaffer Aguilar places lights for shooting sequence inside the Delta Bar. He is a veteran of many outstanding features, including: "EASY RIDER", "FIVE EASY PIECES" and "WHAT'S UP DOC?".



(LEFT) Director Lester takes a look through the camera to check set-up for shooting scene on country road. (RIGHT) 1939 Dodge coupe, driven by Dusty Russell, crashes through side of "moonshine" barn to begin the chase sequence. This old barn was the single hardest item to locate, since such structures are considered to be antiques by their owners. Running from the scene is generator and transportation specialist Skip Hitchcock, who doubled as a moonshiner in this sequence.

ing and adjusting with a limited number of people. Also, we used two generators.

In the film's climatic scenes, the script calls for the promoter, Gene Drew, to bring his star, Dusty Russell, to a small Southern town to break the world's dive-bomb record on the main street, where the town's residents are to give him a rousing welcome. We also wanted to stage a parade during the afternoon on the street as a welcome to Dusty. We contacted many towns in Northern California and finally convinced the officials of Lodi, California that our stunt would put them on the map and bring them national publicity.

The cooperation of the town was fantastic. For our parade sequence the local high school band (more than 100 pieces) played for free, and a local car dealer donated some classic automobiles. The crowds lined the streets, our banners were strung across the intersection on the main street and a local 10-year-old bow-legged baton-twirling majorette joined Dusty and Drew as they waved to the crowds.

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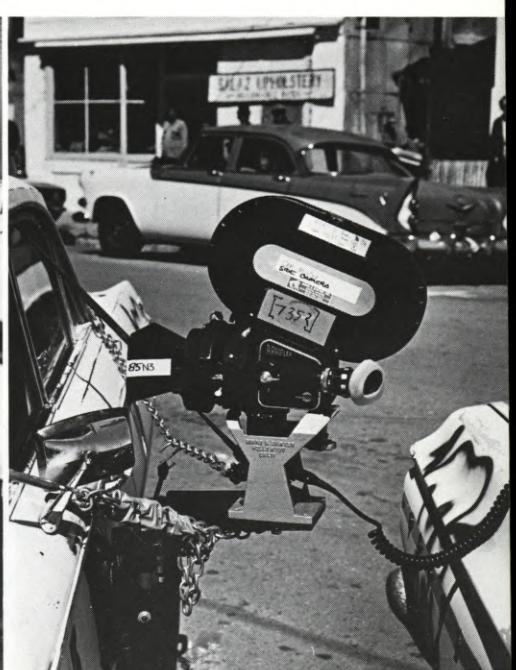
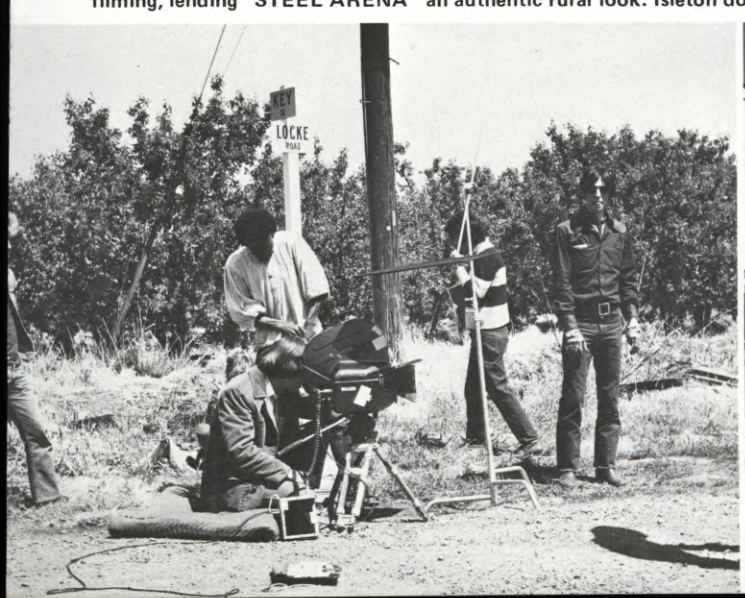
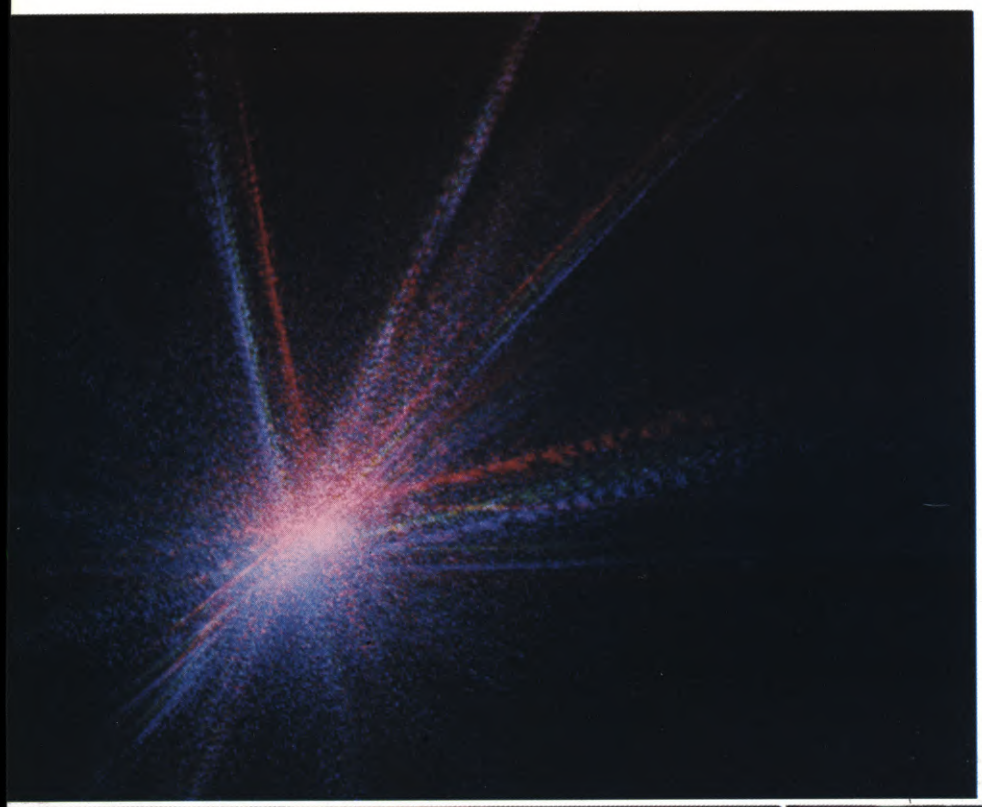


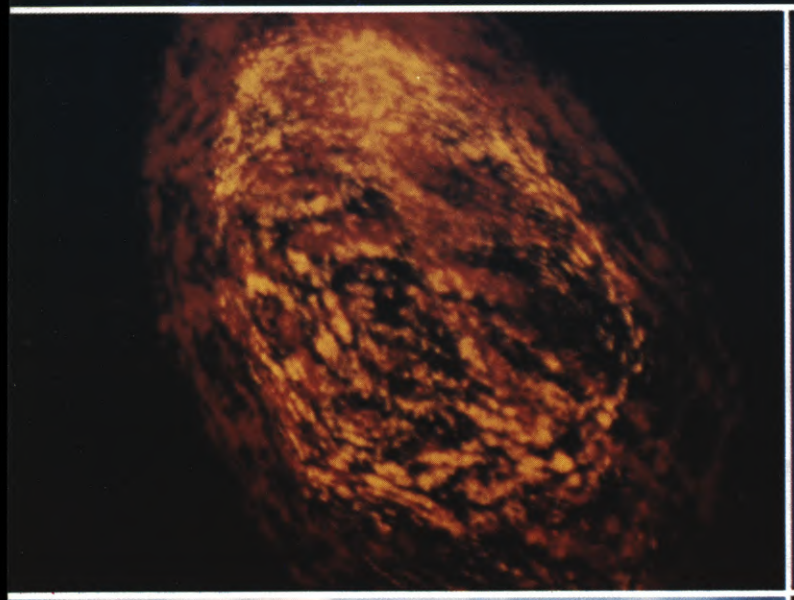
(LEFT) Director Lester smiles with satisfaction as he observes rehearsal of a scene. He did a superb job of drawing credible performances from non-professional "actors". (RIGHT) Side-camera rig devised by Ken Phelps for shooting dialogue scenes inside car. Despite almost wall-to-wall action of a most intricate type, "STEEL ARENA" was completed on a very short shooting schedule and within estimated budget.

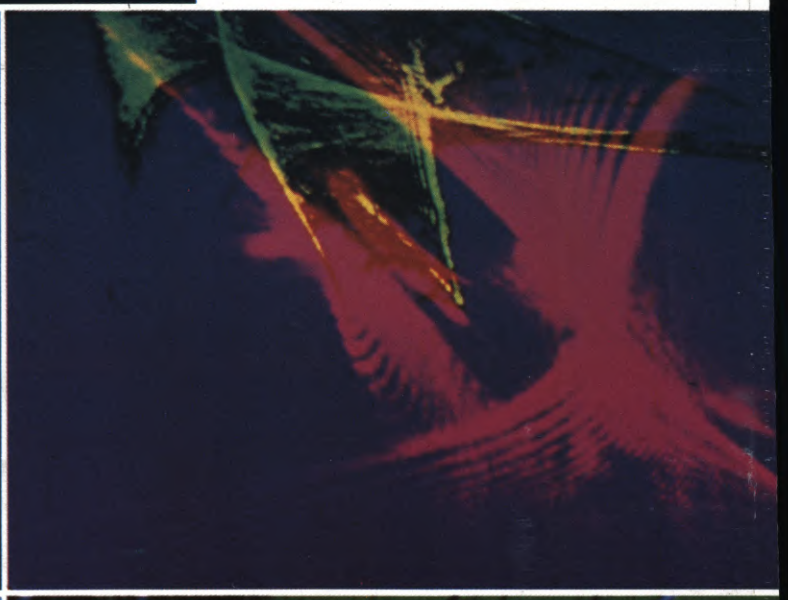
(LEFT) Cinematographer John Morrill lines up opening shot of the film along a country road. (RIGHT) Speed Sterns, motorcycle stuntman with "Circus of Death", performs stunt for biker sequence on main street of Isleton, California. More than 32 locations were used as backdrops for filming, lending "STEEL ARENA" an authentic rural look. Isleton doubled as a small Texas town.

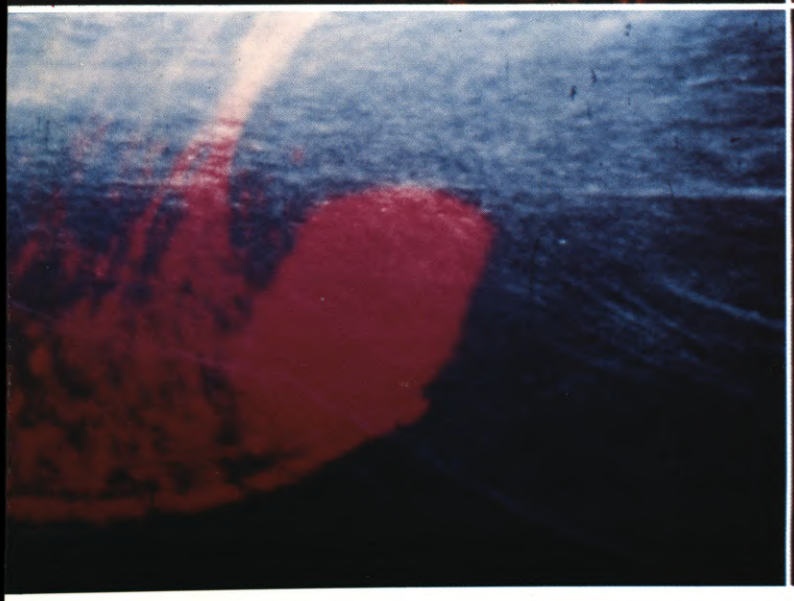


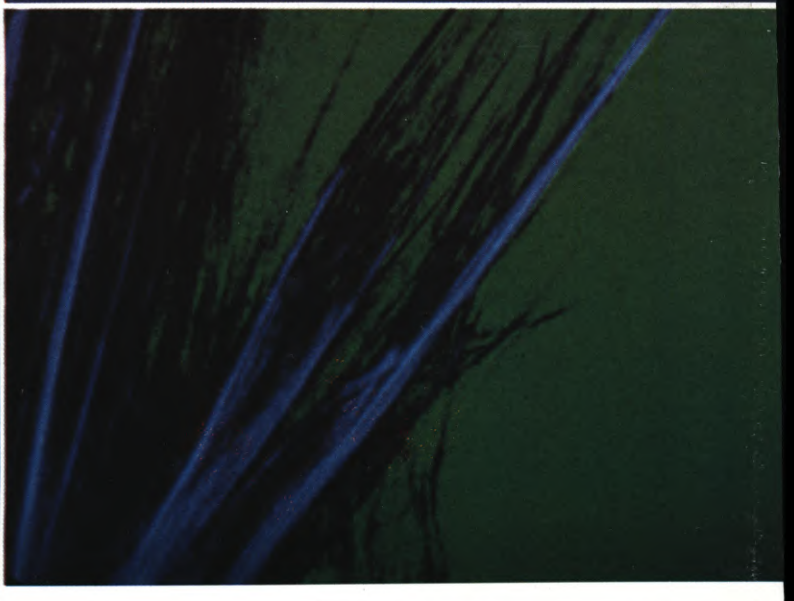


A two-watt Argon laser was the primary instrument used to create the effects for "RED PLANET". Its intense white beam was split by a prism into a band of three color beams: yellow, green and blue. A 250 milliwatt helium-neon laser (which produces only a red beam) was independently employed for forming the red planet. The laser beams were directed by first-surface mirrors onto a 10-foot-square rear-projection screen. The laser light was dramatically exploited by directing it through or bouncing it off of patterned glass and plastic and different thicknesses of aluminized mylar.









"THE RED PLANET"

Continued from Page 902

"WOODSTOCK", as reported in *American Cinematographer* magazine, the problem of the 35mm blowup shifting towards green. Even the blacks picked up a slight greenish cast. By using a Hazeltine Color Analyzer we balanced the color by adding gel corrections varying from 10CC magenta and 30CC blue to 25CC magenta and 60CC blue. Of course, the gel densities and increased exposure required slowed our printer speeds down to 5 feet per minute and 2½fpm. The film could be easily further enlarged to 70mm. I have held discussions with Linwood Dunn, ASC, of Film Effects about the possibilities of blowing the film up to 70mm or even to the 70mm IMAX format, because "THE RED PLANET" is a film spectacular which should only be seen on a truly large screen with maximum sound fidelity.

I spent four months cutting a sound track from pre-existing electronic sound effects. Although it worked quite effectively, I discarded the track because it was monaural. Industry technology has often dragged its feet in the area of sound. Even today, many films are released monaurally in theatres with woeful sound equipment, even as most younger audiences are buying quadraphonic systems for their homes. This is ludicrous, but the industry still resists change.

Due to the startling kinetic movement of my images, I felt that this necessitated an original composition using the three-dimensional space of a quadraphonic composition. Thus, the sound could move across and around the audience and increase their perceptual involvement. I searched for several months for the right electronic composer. At last I heard *Celebration,* a work by Barry Schrader, a young teacher of electronic music at Cal-Arts. I immediately knew he was the one to score the film. He had a unique ability to generate startling high-energy music. Barry's final quadraphonic mix was produced in the space of two months after many all-night sessions with the Buchla 200 electronic music synthesizer. Using complex timbres and as many as twenty layered tracks, Barry achieved incredible sound densities (sound events per unit time). The Buchla sound is quite different from that of the Moog synthesizer which we have become familiar with in pop music. The Buchla does not use a keyboard. The various sound events and dialogues amongst its modules are initiated internally, and externally controlled by touch sensitive tabs. The sound track for "DEATH OF THE RED PLANET" will be released as a quadraphonic LP after the film is released.

Today, in Hollywood, the mass release of 35mm shorts ("THE RED PLANET" is 16 minutes long) is problematic, due to the exhibitor's and distributor's heretofore insistence upon the necessity of double feature engagements, even though the hallucinogenic visuals of "THE RED PLANET" make it commercially viable in today's youth-oriented market. I believe that the double feature bias will gradually change over the next few years and we will see more and more often (as in Europe) a feature film packaged with a short film for multiple engagements.

While exploring distribution possibilities of "THE DEATH OF THE RED PLANET", I am at work on story treatments for a large-budget science-fiction film entitled, "CELESTE AND THE CYBORG", a fantasy-monster film inspired by the classic fairy tale *Beauty and the Beast,* and for an extremely low-budget horror film about a young brother and sister with strange genetic traits who are trapped in a mansion filled with contemporary art objects—ranging from giant strobing electric eyes to throbbing, undulating walls. The inanimate objects have become animate . . . and malevolently so. ■

Dale Pelton made the rough cut of the picture using a traditional Moviola. He spent night after night preparing intricate effects sheets and lining up the optical cue sheets. Several printer passes were required and each frame was shot two or more times at widely spaced time intervals.

Barry Schrader, of the Cal-Arts music faculty, studies notes for his original electronic score. Sounds generated by the Buchla 200 electronic synthesizer were recorded onto as many as 20 tracks, which were mixed in layers into the final quadraphonic track. The Dolby system supressed tape hiss.

"A FIELD OF HONOR"

Continued from Page 883

interfering with the operation and organized the student extras who had been rounded up the night before. Makeup man Ken Merriman helped get the riot police actors into shape. Once shooting began, everything fell into place. The crew was functioning well together by this time, and Jordan and Zemeckis had preplanned each shot. Peter Belcher, playing Vic Fury, slipped into his knee and elbow pads and crashed onto the sidewalk for the camera as the police pounded over him.

Another sequence provided a couple of different problems. The character, pursued by gunfire, was to vault a wall and land in a backyard swimming pool. The first portion went well, but the pool location was not the same as the original wall location. To make the two walls match, I produced a hammer and chisel and carefully removed the objectionable row of red brick from the top of the gray wall (unknown to the owner, of course). Problem number two: the water in the pool was about 45 degrees. The best that could be done was to keep the camera rolling and reframe and focus for the closeups immediately after the splash entry. The shivering actor was bundled off, the wall reassembled, and the equipment packed and moved out.

When it was time to shoot the next batch of interiors Jordan was ready with some new equipment. From Cinemobile Systems, Inc. he had four Ianeiro 2K quartz lamps (Ianebeams) and a hefty cable and tie-in array. Supplementing these with the school's Mickey Moles and using Rosco Soft-Frost and Tough-Spun diffusion materials, he created some excellent window-motivated lighting. As the sun set, things became a little more tricky. In the shots where window spaces appeared, lights were placed outside the building to simulate daylight. And in one tight hallway Horace and I, functioning also as assistant cameraman, resorted to traveling fill light and pulling f-stops.

The climactic scenes were filled with action, physical stunts, and special effects. A crowd of extras was hauled in from suburban Canoga Park and Universal Studios provided a squad car. Special effects man Bob Gale was prepared with blank cartridges for M-1 carbine fire, a compressed air pellet gun to simulate bullet impact, and a breakaway emergency flasher.

These scenes had to be shot in two days, so Jordan knew he would have to compensate for great changes in the position of the sun and the direction of

shadows. Fortunately, we had at our disposal a good number of reflectors. These got constant use, and were even used to key closeups as the sun set in the afternoon.

The grand finale of the shooting schedule was the sequence aboard a moving bus. The script required not only a busful of people but action including arguments, fist fights, and a lengthy shootout. Dialogue had to be recorded, too, and Scioli knew this would be difficult, fighting the rumble of the bus engine and the street noise. By using lavalier mikes whenever possible, he got very acceptable results. The only looping required was for a couple of lines delivered over the gunfire.

To avoid towing a generator, Jordan obtained two wet-cell banks to power his fill lights. Each of these Cinemobile units was rated at 40 amp-hours and weighed some 300 pounds. Aside from the difficulty in moving the equipment, there were no problems in running the 1K and 2K lamps outfitted with dichroic filters. A feeling of motion was required in the photography, and the cramped conditions preempted most tripod work, so Jordan substituted the offset finder on the BL and used the Arri body brace. Carul preplanning by director Zemeckis and acrobatic handheld fill lighting served to speed operations. Of course, the Crystal-Lock/Nagra 4.2 setup was essential.

During the gunfight sequence, when blanks were often fired at close range, the cameraman would wrap his entire head, except for his viewing eye, in towels to protect against powder burns. The lens was safeguarded with a glass filter. The special effects crew used petroleum jelly capsules fired by slingshot to create the effect of bullets shattering the windows. For a scene where the main character leaps from the moving bus, the safety wiring in the rear door had to be short-circuited to allow the door to open without stopping the vehicle. Throughout two days of intense work on the bus, our crew numbered eight, working with a cast of fifteen, plus camera, lighting, and sound equipment as well as makeup and food supplies.

On the last day of shooting, circumstance limited the crew to four men and the assignment was a series of vehicular stunts involving the bus and an automobile. Shooting hand-held from the trunk of one car, Jordan stayed just ahead of the bus and employed a short focal-length lens to accentuate the motion as the bus swerved through the street. In another setup, he compressed space with a long lens, to give the impression of a near collision when another vehicle

is forced off the road by the careening bus. For a shot where a car smashes over a curb and into a pile of garbage cans and trash, multiple cameras were used, and one cameraman escaped the crash by only five feet. The shooting was finished and the crew was confident.

The time deadline was pressing against editor Mustafa Gursel as he and the director worked marathon shifts to cut the film before the semester ended. Both virtually eliminated their holiday vacations as they shifted the film from standard Moviolas to the new Moviola horizontal editing tables. While most of the actual cutting was done on the standard machines, the horizontal tables provided a constant awareness of the picture's rhythm, and proved indispensable for cutting music to the picture. Soundman Scioli was at the controls during the sub-dubs and the final mix, and the film was ready for interlock screening for the department.

A Field of Honor, one of the biggest student productions in recent years at USC, won a warm reception from students, faculty, and guests, and earned considerable praise for the cinematography of Horace Jordan. The university is now planning an extensive festival campaign for the Robert Zemeckis film. ■

"EMMY" AWARD"

Continued from Page 891

SCHWARTZ: It's interesting that you should bring that up, because, whereas it certainly isn't unusual for a theatrical feature to be that low-keyed, it is a bit out of the ordinary for a TV film. However, I feel that the two techniques are getting closer and closer all the time, as far as mood and key are concerned. This is because transmission in TV has improved so much recently. It means that you now have more liberty to shoot things for the tube as if you were doing them for the big screen, and that means that there's not that much difference anymore in your lighting ratios.

QUESTION: What about your use of the zoom lens on this show?

SCHWARTZ: We used the zoom quite a bit—the 20mm-to-120mm Angenieux—and it worked out very well. The opening shot of the picture starts with the closeup of a brush stroke of a painting, and we must have had 15 or 20 marks for different positions with the zoom as the master scene was played out. You aren't aware that the zoom is being used, because all the zooming is done on pans or when the actors are moving, and it ends up with a 180-degree pan of the full room. I feel that's the way a zoom lens should be used—except where you want to accentuate something by doing a straight-in zoom.

QUESTION: Do you have any further comments on the shooting of "NIGHT OF TERROR"?

SCHWARTZ: Just that I had a really great crew on the show. Buddy Brooks, who has since retired, is a really fine Operator and there was excellent work by Mike O'Shea, the First Assistant, and Mike Nakamura, the Second Assistant. They all worked very hard on the picture. The Producers, Tom Miller and Eddie Milkis, are also two fine guys to work with. Eddie used to be in charge of post-production at Paramount and he's very conscious of such things as the proper timing of the print. It's very rarely, especially in TV, that the cameraman gets to sit in on the timing of the print—so it's an advantage when you have a producer who's experienced in that end of it, besides being very cooperative and encouraging you to do interesting things. That was one of the joys of working on this picture. The cast was very nice, very accommodating and very thoughtful—and they worked very hard. There were no prima donnas, and everybody got along very well. ■

WHAT'S NEW

Continued from Page 808

ments of its purchaser. For instance: either regular 16mm or Super 16mm; viewfinder of various kinds and with or without TV reticle; crystal-control sound sync accurate to 10 parts per million (ppm), practically "dead sync" for double-system sound operation or with Pilotone output; single-system magnetic sound with film recording head; 400 or 1200-foot Mitchell magazines; 3 different film frame speeds; and many more options.

Lens systems available include a wide selection of the newest C-mount Angénieux zoom lenses, and viewfinders, including an advanced automatic iris system powered from within the camera.

A *SPECIAL TV NEWSFILM PACKAGE* can be purchased with a choice of camera accessories, amplifiers, portable "Frezzi-Lites™", customized carrying case, tripods, shoulder mounts for close work, etc.

For more details or for camera demonstration write James J. Crawford, Vice-President Engineering, Jack Frezzolini or Joan Paliotta at FREZZOLINI ELECTRONICS INC., 7 Valley Street, Hawthorne, New Jersey 07506, U.S.A. or call them at (201) 427-1160.

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DELUXE GENERAL SYSTEM III TAPE-TO-FILM TRANSFER

DeLuxe General's new System III tape-to-film transfer process is being demonstrated for major producers and distributors in Hollywood, Chicago, and New York. In announcing the system, Robert T. Kreiman, president of DeLuxe General, said, "Competitive tests establish that the 16mm print from our electronic transfer process is of better quality than most transfer systems provide, and is equal to the best available today. The result from a high quality tape is very close to original film print quality."

System III transfers are made electronically from 2" quadraplex high band videotape to a blue, green, and red successive-frame exposure master. This master is printed on a special printer to standard 16mm internegative film. Release prints are made from the internegative. Additional internegatives can be made from the master in single or double-rank. The sound is transferred to magnetic ¼" sync tape, then re-recorded to 35/32mm single or double-rank sound negative.

Mr. Kreiman emphasized that "System III is just one more step in enlarging DeLuxe General's capability to service its customers as a complete visual communications center."

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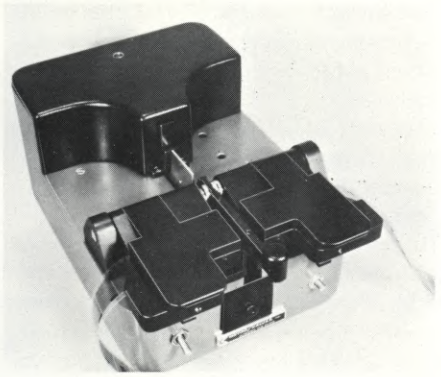

MAIER-HANCOCK APPOINTED DISTRIBUTOR FOR METRO/KALVAR'S MODEL 2001 POLYESTER-BASE FILM SPLICER

Maier-Hancock Industries has been appointed distributor of the Model 2001 ultra-sonic polyester-base film splicer manufactured by Metro/Kalvar, Inc.

The splicer permanently welds Super-8, 16mm and 35mm polyester-base film and microfilm in seconds without scraping emulsion or base. Its operation is simple and fast with precision cutting and alignment. The unit is lightweight and portable.

Literature is available on request.

Price: $1700.00; Delivery: 45 days.

For further information contact: C. Brown, Marketing Manager, Maier-Hancock Industries; 13212 Raymer Street; North Hollywood, Calif. 91605; Phone: 213-764-0280.

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ECLAIR INTRODUCES QUICK-CHARGE/QUICK-CHANGE BATTERY SYSTEM

Eclair Corporation of America has announced the availability of an exclusive battery system featuring quick charging and an instant-change battery pack.

Heart of the system is the BAP, a compact rechargeable 2-ampere-hour battery pack measuring 5¼ x 4-1/8 x 1-3/8". In an unbreakable LEXAN® housing, the BAP contains a 12-volt configuration of sintered premium nickel-cadmium cells with welded contacts, and an automatically-polarized system of spring-loaded silver-plated contacts. Under normal conditions, the BAP can run 12-15 200-foot loads (or 7 400-foot

loads) through an ACL. It also works with NPR.

Quick charging is accomplished with the ZAP charger, into which the BAP plugs instantly. Full charge takes only 2 hours; 60-70% charge requires only 1 hour. As the battery pack charges, the ZAP pilot light dims, until it is extinguished at the point of full charge. At that time, the unit is placed on a trickle charge, which can be continued indefinitely.

In use, the BAP drops in and plugs directly into the HIP housing/connector. Battery change takes less than five seconds. Fabricated of LEXAN®, the HIP may be slipped into a pocket, worn over neck or shoulder with accessory strap connected to the unit's two mounting rings, or slipped over a belt, using HIP's two built-in belt loops. Connection to all Eclair cameras is accomplished via a standard 4-pin XLR connector on the HIP.

User net for the units is $130.00 for the BAP battery pack, $175.00 for the ZAP charger, and $45.00 for the HIP housing/connector. The system is also available as a package, Model QCQC, for $350.00.

Please note the new address and phone number of Eclair's eastern office: Eclair Corporation of America, 62 West 45th Street, New York 10036 (212) 869-0490.

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NEW 35MM 200-FT. DISPLACEMENT MAGAZINE

The new Model 700 35mm 200-foot Displacement Magazine, manufactured by Automax Industries, is announced by Instrumentation Marketing Corp., exclusive distributors, 820 So. Mariposa St., Burbank, Calif.

Originally designed for Automax cameras, its standard Mitchell mount permits use on many other 35mm cameras. It is lighter in weight and 25% smaller than conventional magazines, and is ideal for use where a magazine as small as possible is required yet still holds 200' of film. Spindle adapters that are used with the 200-foot darkroom loading core may be removed to permit use of 100-foot daylight load.

As film unwinds from feed spindle, space is provided for film build-up on take-up spindle for nearly twice as much film as in a magazine using standard daylight loading spools. Gate rollers provide a light trap permitting magazine attachment to camera for daylight threading. It has a manual-type footage counter which indicates remaining footage.

Literature available on request.

Price: $295.00; Delivery: Immediate.

For further information contact: Richard Freeborg, President; Instrumentation Marketing Corp.; 820 So. Mariposa St.; Burbank, California 91506. Phone: (213) 849-6251.

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EUMIG INTRODUCES COMPACT "MINI 5" MACRO ZOOM REFLEX CAMERA WITH 5:1 POWER ZOOM, CHOICE OF OPERATING SPEEDS

The extremely compact and versatile Eumig Mini 5 Macro Zoom Reflex Camera introduced at the 1972 Photokina last September is now available in the United States. It is being imported and nationally distributed by Eumig (U.S.A.) Inc., here.

The Eumig Mini 5 is the most compact 5:1 Super-8 zoom camera on the world market today. It is equipped with a 13-element f/1.9 8-to-40mm Macro Viennon lens with a power or manual zoom operation. It also has a macro fousing facility that can sharply image a subject from infinity to the front of the front lens element. A crosshair in the clear reflex finder field gives the user's eye a fixed reference for focusing.

Operating speeds of 9, 18 and 24 frames per second are provided by the Mini 5, as well as single-frame exposures. Film speeds from 25 ASA to 160 ASA are automatically keyed to the camera's through-the-lens exposure metering system. The shutter of the Mini 5 has an aperture that is measurably larger than that of earlier Eumig models to favor existing light filming under adverse conditions with 160 ASA color film at 9 frames per second. The 24 frames-per-second speed is generally reserved for sound synchronization.

The Mini 5 is slightly less than 6-1/2 inches long, 2 inches wide, and 3-1/3 inches high. All electrical functions are performed by two penlight alkaline batteries.

Other features include: fully automatic exposure control via CdS cell, with bridge circuit to cancel effect of voltage fluctuations . . . +1 f-stop manual override of automatic exposure system . . . lens-aperture lock . . . flicker-free reflex viewfinder with indicators for: over-, and underexposure; end-of-film; film-running; battery test, and lens-aperture override.

Also, ±3-diopter correction in finder eyepiece . . . built-in conversion filter . . . cable release socket for single exposures and continuous run . . . 5-second travel between wide-angle and

tele-zoom limits . . . automatic zero-setting footage counter coupled to camera drive.

The suggested list price of the Eumig Mini 5 is $259.95, including lens cap, sun-shade, wrist strap, rubber eyepiece and filter key. There is also a Mini 5 Kit, attractively presented in a display carton, available at a suggested list price of $279.95, including lens cap, sun-shade, wrist strap, rubber eyepiece, filter key, leather pouch and pistol grip.

Available accessories include: locking cable release, pistol grip, leather pouch and a macro and copying set incorporating a slide holder, wipe-mask, title-mask and macro bar. For individual accessory prices, contact: Eumig (U.S.A.) Inc., Lake Success Business Park, 225 Community Drive, Great Neck, New York 11020.

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IMPROVED GRIP TRUCK FROM BIRNS & SAWYER

A new grip truck available from the Hollywood headquarters of Birns & Sawyer, Inc., has been announced by B & S president Jack Birns. The 24-foot long, high-van vehicle is designed for easy access with four large jockey boxes, adjustable shelving, a heavy-duty lift gate, a choice of Colortran or Mole-Richardson lights and a complete selection of ready-to-go grip equipment. For additional information, call (213) 466-8211, or write Birns & Sawyer, Inc., 1026 North Highland Avenue, Los Angeles, California 90038.

CINEMOBILE "SUPER-VEHICLES"

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landing gears (jacks), which can be individually controlled to maintain the level of the vehicle. It houses four air-conditioned, lavishly appointed dressing rooms with two (aircraft type) lavatories that have hot and cold running water. There are two additional crew lavatories.

The Cine II has a large walk-in wardrobe facility (located in the truck cab section) and separate boxes for props and grip equipment in the trailer section. All available space is utilized, including space below the dressing rooms where lumber and scaffolding can be stored. In addition, there's an outdoor makeup table and coffee service.

The generator (also a product of aircraft technology) is one of the most silent to be developed and can be powered either with gasoline or (if available) regular electric current. ■

Continued from Page 878

of mind in the Hollywood film industry. Those people have to deal with dollars and cents, and you're not going to get support for what they consider to be "adventures"—so you have to acquire a sort of bird-dog tenacity. You can push as far as it's possible to push, but it finally comes down to a personal kind of commitment to an idea. There are producers and directors—really talented people—who get rolled over every day. It's horrifying. What's required is a vigorous commitment to the battle, because it is a battle. It always will be a battle, I think, when large sums of money are involved—because the people with the large sums of money are rarely the artists. The one controlling the purse strings is usually someone with a different kind of imagination. So, what's necessary is a kind of tenacity, a sort of crazy, lunatic commitment—or else the tendency is to smooth your film over, to let it disappear into the lexicon of aimless films. If you want to do something individual, you have to have a kind of monomaniacal tenacity.

LIGHTMAN: In other words, talent isn't enough. You also have to be a fighter. Isn't that it?

RYDELL: Yes, I think that's correct.

LIGHTMAN: One of the most creative film-making groups in the world, if not the most creative, is the National Film Board of Canada, and Mr. Eugene Boyko is a member of that great creative group. So I'd like to ask Mr. Boyko: In your work with the Board, what are the attitudes toward creativity? To what extent are you free? To what extent are you limited?

BOYKO: Well, basically, it's no different there than in the private sector. As I was walking back to my hotel from the screening last night, I overheard a couple of people saying: "You know, those Film Board people are lucky. They've got that bottomless pit of government money coming in." And I just had to fall back a couple of steps and walk along with those people and let them know that it's not true, that there is no bottomless pit. We, perhaps, have more restrictions than the commercial producer—not only in artistic approach, but when it comes to money. Our Executive Producer is the taxpayer —and he's really watching. That's perhaps why we're not too much into the feature end of the business—because if we make a million-dollar boo-boo, it's a

little different from making a $50,000 boo-boo—and they can point at you. Even so, I think there are ways in which a resourceful person can overcome the problems of whatever kind of filming. These gentlemen here know that, when making a feature film in Hollywood, there is always somebody standing over them. When they reach a certain point, the funds are cut off. If a cinematographer want to continue with a certain style of lighting, be it natural or something he creates, it costs money and he may have to step back a few notches in order to follow through and still fit in. He has to use all his resources in order to work around what may have been created by nature. In talking to these gentlemen earlier, I arrived at the conclusion that there is very little difference in our restrictions. We all have the same problems, and it comes down to that at the end of the ledger.

LIGHTMAN: Mr. Sven Nykvist, who is here from Sweden to work on a new American film, represents, in a sense, a different world of cinema—especially in regard to his very special relationship in photographing 15 of Ingmar Bergman's feature films—including the current "CRIES AND WHISPERS". It's a special world of creativity, but I'm also aware of the economic problems and restrictions that pertain to the Swedish film industry, having been to Sweden about a year and a half ago, where I was made aware of these problems. I should like to ask Mr. Nykvist to what extent creativity can flourish in the present-day Swedish film industry—and in what ways he himself regards the restrictions —or lack of restrictions.

NYKVIST: When I first started working with Ingmar Bergman, we discussed the fact that we would have to make a very low-budget picture. But there were two things that we promised each other, even though we were working on a low budget. One was that the only important thing was what showed on the screen. The other was that if we had difficulties with each other or something went wrong, there would be the possibility to re-shoot. This made it much easier for me to take chances in my lighting. Sometimes I under-exposed and sometimes over-exposed, but he never said anything about that. He just said: "That's fine. If it's bad, we'll re-shoot. The only important thing is what shows on the screen." When I made my first American picture in Spain, "THE LAST RUN", I felt very insecure, because, instead of the 18 technicians I was used to working with, I had about 100. I saw that everyone

was sitting around most of the time. Someone told me that I was the man who should make them work, but I couldn't do that because I was so shy. So I talked to myself that evening and I said: "You have to remember what Ingmar said when we started our first picture—the only thing that's important is what shows on the screen."

LIGHTMAN: In that vein, what shows on the screen—relating to an abstract idea like creativity—is rather hard to pin down, if you stop to think about it. What are the elements of creativity? What makes a technician creative? What makes the result on the screen a creative result? Vilmos Zisgmond is considered to be one of Hollywood's most creative cinematographers, so maybe he can give us a clue.

ZSIGMOND: Well, when I talk about creativity, I basically refer to the kind of movie-making where you use whatever is there. But a director like Mark Rydell, who is sitting next to me, has a different approach to this thing. He likes to plan things—which is very unusual today. Twenty years ago, everything was planning; today, there's almost no planning at all. Mark tries to combine the two approaches. He likes to find the real thing in the streets or in an apartment, but, he also wants to create certain things. That requires time and money. Occasionally we walk through the streets for hours and hours to find the right location where we can photograph a sequence the way he has it in mind—but if we don't find the right place, we'll just have to create it. He'll just have to send the Art Director there to build it—or whatever he has to do to make it right for the script or the way he sees it.

LIGHTMAN: Now we've had a sort of basic statement from each of these gentlemen on the panel, but the real chemistry in a seminar like this involves that contact with you—the audience—you people who have been interested enough to come here and listen to what these experts in various fields have to say. Certainly you have questions to ask them or you have statements of your own that you'd like to make. In the interest of developing that kind of dialogue, I should like now to throw the panel open for questions and answers.

QUESTION: There seems to be a difference between the cinematographer who sets out to be a professional and certain others who, by accident become professionals. Would you say that an individual who wants to go into professional

film-making should know the fundamentals before he tries it, or should he just start shooting and develop as he goes? I'd like to know what the individual panel members think about it.

LIGHTMAN: Who'd like to tackle that one first?

ZSIGMOND: Well, in my opinion, the only approach is to learn the fundamentals first. You have to do that, but even before that you should study the photography in the films of the past. You have to know what the rules are, especially about lighting. You have to know what is a key light, a fill light, a back light, a side light, a source light. I think that you have to learn the fundamentals before you can go off in other directions. Of course, there are many cameramen who come into the profession with the other approach and are successful, but I think that most of those cameramen who haven't learned the fundamentals stay basically with documentary photography. Even if they shoot features, their features will look very documentary. I don't mean to say that that might not be good, but when you're a professional cameraman you have to work with different directors and certain directors don't like that documentary style of photography. You have to be able to give them something better. Maybe his picture is poetic, or it's a fantasy—so you've got to be able to give him the right look.

BOYKO: The advances in motion picture technology and the fine new cameras that have been developed recently have made it much easier to get an acceptable image on film and many film-makers have evolved because of the ability of the equipment to do this. But advanced technology has not necessarily made good film-makers. We still see films, unfortunately, that do not communicate. A cameraman has one of the most powerful functions in film-making because, with the choice of lenses and the different perspectives that he can create, he can actually contrive (even while staying with the director and working with him) to subliminally suggest something that is not there. You can do that if you're creative, but you just can't do it by pressing the button on the camera. You have to have some ability. The same is true of TV, as Mr. Lowry pointed out yesterday. I don't know whether the electronic camera will take over, but it will still need a creative person behind it. After all, it's just another camera. Mind you, a more elaborate electronic machine, but it will still need that brain belonging to some-

body who can turn it on at the right moment and compose the scenes properly.

QUESTION: Do you consider the electronic camera a threat?

BOYKO: No, I don't. Why should any new equipment be considered a threat? It should be evaluated as a tool. I think the more tools the better. An artist requires a canvas and the equipment to achieve what he wants. I can't imagine a new innovation being anything but helpful.

QUESTION: Do the unions consider it a threat?

RYDELL: The unions consider everything a threat.

LIGHTMAN: To give credit where it is due, I can say that the cameraman's union in Hollywood is very actively sponsoring courses in electronic camera operation for its film cameramen members.

QUESTION: I'd like to ask Mr. Rydell how he's handled problems with producers and also with arrogant stars like John Wayne, whom he directed in "THE COWBOYS".

RYDELL: First, let me correct what I consider to be an incorrect implication. I am producing and directing my current film, "CINDERELLA LIBERTY" and I also produced and directed "THE COWBOYS", so there isn't any producer problem. As for Wayne, I'd heard stories about him, just as everybody else has, and he certainly was an alien person to my sensibilities when I first heard him suggested as the ideal choice for the lead in "THE COWBOYS"—but he stunned me quickly on in the filming with his professionalism and his commitment to good work. This was something that, prejudicially, I did not expect, because I had associated him with certain ideas that were anathema to me, but I found him to be one of the most committed and honorable artists that I had ever worked with—an incredible man. You spend five minutes with him and you know immediately why he has been a star for 42 years. I hold no truck with his personal feelings in 90% of the areas, but I found him to be a hard-working, committed, surrendering actor who was thrilled to be in the company of young and talented people. I had very consciously surrounded him with a type of people he had never worked with before, many of whom were from the Actors Studio and had been trained

in an entirely different way than he had been trained. The crew was carefully selected to include young innovators of film. That was my armor, my defense—which I found to be unnecessary. I had been the victim of a prejudicial attitude toward him, but it turned out that he was the first guy on the set in the morning and the last guy to leave. I know it's hard to believe, but he called me "sir" throughout the entire picture. He was better on the 10th take than on the 9th and better on the 15th than on the 14th, if that many were required. I found him to be a joy to work with and a consummate professional—so I can't support those stories we've all heard about his arrogance on the set; he was nothing but a pussycat.

LIGHTMAN: He may regard them as fightin' words, pardner. Other questions?

QUESTION: I'd like to ask Mr. Zsigmond if he doesn't think all pictures should be shot on location to make them look more real. For example, his picture "IMAGES" was shot on location and it looked just great. I don't think it would have looked nearly as good if it had been shot in the studio.

ZSIGMOND: That's a very interesting question, because many, many directors and cameramen today want to shoot everything on location because they believe that location looks real and anything shot in the studio looks bad. They're convinced that studio footage can never look like the real thing. The fact is that 90% of the footage for "IMAGES" was shot in a studio in Ireland—on sets built on the sound stages. We found a beautiful house by a lake for the exteriors and we shot what we could there—entrances to the house and shots looking out through the window—but all of the interiors and all of the night footage we shot on the stage. Now, that must be a big disappointment for people here who believe that pictures can only be shot on location.

QUESTION: Mr. Zsigmond, in photographing "DELIVERANCE", what was the biggest problem that you, as a cameraman, experienced?

LIGHTMAN: Roping up and down a 1,200-foot cliff every day. I know, because I was there with him.

ZSIGMOND: I don't remember those things. It may be hard to believe, but "DELIVERANCE" seems like it was my easiest picture to shoot. It was very well planned. Again, John Boorman is a

director who likes to pre-plan things and we worked things over for several weeks so that we knew in advance how we were going to handle each situation. There was one thing that turned out to be a pleasant surprise for us. We had originally planned to shoot for eight weeks with the first unit and then spend two weeks shooting scenes of doubles going down the river rapids in the canoes. But after two weeks of shooting in the live rapids, we found that the actors could handle the big ones and that they wanted to do it themselves. This improved the picture greatly, because it meant that we didn't have to get far away and shoot big long shots. We could get right in where the action was happening, very close on the faces. I think that, considering everything, "DELIVERANCE" was my easiest film to shoot.

QUESTION: I'd like to ask Mr. Nykvist about this matter of pre-planning. We've had it said here today that certain directors lean heavily on pre-planning. You've worked with Ingmar Bergman on many pictures and, obviously, he believes in pre-planning. But then, I'm sure you've worked with other directors who don't—who prefer to work more spontaneously. Do you think it's possible to pre-plan carefully and still get a spontaneous, immediate feeling into a picture?

NYKVIST: Well, I believe very much in pre-planning. But always, when I ask other directors and producers about that, they say it's much too expensive. I don't think it is at all, because, in pre-planning, you have only a very small group working intimately together. Of course, they are paid, but the real costs come when you start to shoot—using the film and sets and so on. Everyone says: "Yes, that's right. We should pre-plan everything." But they never do it. In Sweden we can't afford to shoot more than 40 days. No picture I have done with Ingmar Bergman has shot more than 40 days—and I think that's the way to hold the costs down. When I say this to American directors or German directors or English directors, they always agree—but it's the producers who always say that it's much too expensive. When we finish a Bergman picture it's usually the end of November and, on the last day, Ingmar says: "Remember that we want to start next year on the 8th of September and I want to have all of you with me." That's the reason that we can have the same group every time—and I think it's very important to work together with the same group. I don't know many who are able

to do it, but we can do it simply because Sweden is such a small country.

QUESTION: A question for Mr. Rydell. You said earlier that it's necessary to hang in there and fight for what you believe in. But movies are a very expensive medium—so, don't you think that many idealistic film-makers are eventually forced to give in and prostitute their talents to make commercial pictures—just so they can keep on making pictures?

RYDELL: I don't think it's prostitution to try to make some money. I don't think commerciality, in itself, is wrong. I think that there are some people who work deeply and well and happen to produce commercial products. They are in tune with something. It's a kind of X-factor, and it's sort of hard to put your finger on it. But there are people who make good films that make money. I don't find myself surrendering. I've always been a kind of pugnacious, crazy guy anyway, so I kind of enjoy fighting with the studio. I like it when they tell me that what I have in mind is wrong—because, if they say I'm wrong, it usually turns out that I'm right. Those things don't have to do so much with art as with a kind of personal vigor and a personal integrity and a personal commitment. I think you find those same problems in all areas of life. There's always somebody who is asking you to take less, to do less, to make it easier. Well, those are moral decisions each man has to make for himself.

QUESTION: Mr. Nykvist, it seems that it's only within the last few years that you've started to shoot in color. Is this because you feel that black and white is more artistic?

NYKVIST: I very often get that question and the answer is that I do think that black and white is much more artistic. For that reason I was very happy when I saw that Bogdanovich had used it in "THE LAST PICTURE SHOW". Ingmar Bergman didn't want to start to use color because he thought it was too bright and that it would be impossible to shoot anything that had to look ugly. It never does look ugly. It always looks just wonderful. We started a color school in Sweden for several cameramen and directors and we worked for three or four months to learn about color. We asked a man from Kodak to come and talk to us about color. We even had a doctor examine our eyes and I have never been so afraid in my whole life that I might be color

blind. After making experiments for half a year, we finally started with a picture called "ABOUT ALL THESE WOMEN". I did all the photography according to the rules from Kodak and it looked terrible. After that we were so afraid of color that we went back to black and white to make a picture called "PERSONA" and we felt it was much more artistic than color. But then the American distributors told us that we couldn't go on making pictures in black and white, so we really had to try to learn to shoot in color. We made lots of experiments to take away the brightness of the color and I don't shoot it according to the rules any more. So now I've changed my mind and I think that color can be much more interesting than black and white.

QUESTION: Mr. Zsigmond, in "DELIVERANCE", how did you accomplish the shooting of day-for-night, and did you consider it successful?

ZSIGMOND: I knew that was coming. We wanted to shoot a new kind of day-for-night along the river, so Technicolor made a test and it was very successful. What we did was simply replace the whites with blacks, without touching the medium and deep color tones. But the final work had to be done in another place, since Technicolor is not an optical house. We worked and worked for months, but the optical house was never able to get good registration. Certain people raved about it—but I hated it always, that double image. It looked like solarization, but it was not intended to look that way.

LIGHTMAN: I'm afraid the clock has caught up with us, so we'll have to bring this discussion to a close. I want to thank all of you for coming and participating in what has been for me, at least, a most interesting symposium.

The Sixth Motion Picture Seminar of the Northwest winds in a blaze of glory later that night with a special program of selected films by some of the seminar speakers.

Included in the screening are: "CENTAUR", a ten-minute short stunningly photographed by Eugene Boyko; "THE MARKET", edited by Melvin Sloan; "SOMEBODY WAITING" photographed by Sherwood Omens; "THE SKY ABOVE" and "PRELUDE", photographed by Vilmos Zsigmond; and the *piéce de resistance,* Ingmar Bergman's "THE SECRET OF ANNA", photographed by Sven Nykvist—in beautifully muted color. ■

TOWARD TRUE CINEMA

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relatively small. We react bodily, kinesthetically to any visual change. As a rule the bigger the change, the stronger the reaction. For example, in a sudden cut from a long view of an object to a very close view of it there is, always, an inevitable optical and kinesthetic impact, an explosive magnification, a sudden leap forward. If the object is in motion, the close-up intensifies this motion; as a rule, the greater the area of the screen in motion, the greater the intensify. This seems obvious. And thinking in these terms, one should, obviously, be led into thinking of *degrees* of change, impact, and intensity, and how important—if one hopes to use film creatively—the relative organization of these factors must be. To use a visual medium artistically is to make the visual parts "go well together." Problems of duration, harmony, contrast, proportion, and rhythm, are involved in this sort of visual-dynamic organization, i.e., cutting, which is quite different from editing a sequence of long shots, medium shots, and close-ups according to literary-dramatic requirements only. And a little more thinking in this direction leads one to deeper fundamental differences, through proper shooting for that sort of cutting, down to the original conception, to the problem of how to express a theme filmically. And that is a long way from the stage.

In a close-up an object appears somehow dissociated from its context. It is thus more or less liberated and made available for new combinations, both in respect of its visual values and meaning connotations. The latter are called "association-fields" by Gyorgy Kepes in his remarkable book *Language of Vision.* (Although primarily a study of visual principles operative in static graphic arts, this book is full of fruitful suggestions applicable to motion pictures.) In certain combinations with other fields an object acquires a quality that may be compared to that of a poetic image, but this similarity should not be taken too literally. Each different aspect of the same object has a unique quality and thus it differs from a word, which is more readily variable in a different context. The possibilities of creative organization of filmic imagery are so little known and explored (to some extent by Cocteau) that it seems like an insolence to compare our crude gropings with masterpieces of other arts.

It is clear that the emphasis here is on visual values. But this means more than striking photography, unusual camera angles, and ingenious dolly and

boom shots. It is not a question of artistically composed tableaux. It is a problem of composing visually, but in time. Individual shots may be incomplete, as individual musical tones are incomplete in themselves, but they must be "Just right and go well together" with other shots, as tones must with other tones, to make complete and esthetically satisfying units. Beautiful photography is only surface embellishment, while *cinematography* is the gathering of visual-dynamic-meaningful elements, which creative cutting combines into living entities.

The emphasis, then, is on the development of a visual dynamic language, independent of literature and theatrical traditions. The emphasis on the visual aspect does not exclude creative use of sound. It is, however, somewhat amusing to read a chapter on "counterpoint between sound and image" when no one can claim to have mastered the fundamental organization of the factors spoken of in connection with the close-up.

No doubt, the film medium is related, in some ways, to other arts. But relation does not imply imitation. It may learn from other media, but, if it is to be dignified with the name of art, it must not merely copy. In art "speaking likeness" is not a criterion of value.

2. A METHOD OF TEACHING THE CREATIVE USE OF THE MEDIUM

In essential ways the motion-picture medium is unique. And to the study of the possibilities inherent in the medium a method has to be worked out. I can give here only a rough idea of certain aspects of such a method, based on my own experiences teaching film at the Department of Cinema at the University of Southern California.

The teaching should be based on a literal interpretation of the name of the medium: *motion pictures. Pictures* should be taken in the sense of *images.* The goal is integration of motion, image, meaning, and sound, but at the beginning the emphasis should be laid on the first part of the name: *motion.*

An effort should be made to dissociate the meaning of the word from certain undesirable connotations. It does not stand merely for stage action, nor a certain type of agitation now so popular with film directors. This may be exemplified by the "movements" of a star, who, during the span of a brief dialogue moves from the couch to the fireplace and to the window, where with a toss she turns her back to her lover and comes to rest, staring out of the window. Nor does it stand merely for a perpetual agitation of the camera, also very popular with the movie directors,

who treat the camera like an infant who is not satisfied until it is perambulated or dollied about. The students are asked to make a fresh mental start, if they can, by forgetting, for a while, the daily film fare they have seen. It is then explained that a whole new world is open to them for exploration: the world of motion.

The invention of the cinematic tools has not only given us the means to make "amazingly lifelike" recordings, it has also extended, immensely, the possibility of a heightened perceptual grasp of reality.

In static visual arts students are trained in a sensitive perception of the shape of things, while here they are directed toward a keener perception of the *shapes of the motions* that things generate. At first they are required to observe simple motions. An example of a simple motion would be a segment of space as it is cut out by a door opening or closing, a complex motion would be one traced by a newspaper dancing high in the wind. The emphasis is on object motion, because of the geometric simplicity of such motions. The students are requested to observe, analyze, compare, classify, and describe these motions.

The human perceptive mechanism is such that it may interpret as motion certain phenomena where no actual motion occurs. This was thoroughly investigated by Gestalt psychologists and is called phi-phenomenon or apparent movement. "Under appropriate conditions successive presentation of two lights at two points not too distant from each other results in an experience of movement from the first to the second" (Koehler). Our experiments show that there is a sensation of displacement or a visual leap in a cut between any two sufficiently different shots. This may be demonstrated very vividly if short strips of the shots, approximately ten frames each, are rapidly alternated. In certain cases a clear transformation of one shape into another may be experienced. By making their own selections of shots or designs and intercutting them in various ways students become aware of a new purely filmic force: more or less intense visual impact that occurs at each cut.

The project following these exercises consists in a thorough observation of a complete simple activity or occupation where a limited variety of motions is involved. Again the emphasis is on the motions of objects, for example in the wrapping of a package, preparing food, loading of a truck, etc. The complete action is broken down into as many simple motions as possible and each is

shot from a great variety of angles. This kind of analysis, or overanalysis, is different from recording previously discussed. Here the motion-picture camera is in its natural element. This process is really a filmic liberation of bits of dynamic visual energies, extracted from a simple event in reality. Each angle is selected to take hold of a single clear visual note. None is intended for an individual display as a "best shot" in the picture, not any more than a note is intended to be the best in a melody. In the re-creation of the event in cutting, each filmic facet acquires value only by its place in the total filmic structure. And the student's sense for structure grows out of these exercises in analysis.

Sometimes, in cutting, the movements are slightly overlapped, i.e., each new fragment begins a little back of the point already reached by the preceding fragment; in other words, in each new strip a small fraction of the preceding movement is repeated. Often surprisingly beautiful effects result. A sort of rhythmical time-stretching occurs. There are several striking instances of this effect in Eisenstein's earlier films.

Most students soon will become aware that very simple everyday actions may be made exciting by means of filmic analysis, and that there is a new kind of visual beauty to be found in the ordinary world around them. One can say that where there is physical action there is visual poetry.

The next stage in the student's work should consist in exploring the associative possibilities between images. Students should be asked to make simple statements entirely by visual means. Some may become capable of expressing truly poetic moods; those with vivid imaginations may bring in surprisingly effective free combinations of images, while others may succeed in making simple documentaries interesting and visually exciting.

The work done this way may be compared to the creation of simple melodies. Once the student has mastered this elementary process, he should be prepared to orchestrate several movements within a shot and to achieve a more complex organization of images for themes of greater complexity, so that perhaps, some day, he may learn how to make, not *photoplays,* but dramatic *motion pictures.* ■

"THE NEPTUNE FACTOR"

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maneuvered the Neptune into the tank with flotation rings. When the pool was full, we began the final steps by forming a special diving crew to work with me in the seatank.

Our diving began by placing a group of gnarled hawthorn trees, dipped in white and red latex, into position. Tons of white silica stones were carried down and raked by hand around the base of each large rock formation. Four long diving days of lifting rocks, raking stones into place, and setting featherstones beside the cave entrance, completed our seascape. The addition of a group of towering kelp made from a soft yellow vinyl, enhanced the scene. To assist this 12-ft.-tall kelp to slowly wave backwards and forwards in the water, we added small bubbles of trapped air to each section. Our 2300 pound Neptune floated level along the water line, after adding a ballast of styrofoam inside the frame. We pushed many of the heavy concrete rock formations into a new location with little effort by first lifting them on large truck inner tubes. To touch up parts of the mural, we used silicon mixed in color and painted underwater with a caulking gun. The water that started at a cold 38 degrees from the hydrant, was heated over the following days, to reach a comfortable high of 85 degrees.

With Harry Makin now a seasoned diver with his camera, the advantage of an underwater speaker system, and our experienced diving crew, sequences were filmed ahead of schedule. Our crew arrived on a Monday and we finished the necessary filming by Thursday of the same week. Thus, the picture was complete.

Outside, the wind continued to blow the light snow off the roof of our seatank. Inside, many of us standing about in our wetsuits recalled the days in Halifax, Freeport, Toronto, Kleinberg, and now here in Woodbridge.

We had finally come to the end of a six-month odyssey. ■

HOLLYWOOD IN A HOLE

Continued from Page 847

as those three components may seem—formed the basis of our film project. But each one of those components came hard forged from our creative efforts. We figured that, having the essential elements in hand, we were prepared to make our film idea a reality through hard work and cunning. The incredible amounts of money required, with a little help from our friends, would then become more reasonable. What bills were left would in some way be taken care of because the important things were right.

Among these five people who had something to say were Jay Arnold and Frank Binney—preoccupied with the film story of the "sensual cave explorer." Previous attempts were made to express the inspirational measure of caving on a personal level, but, unfortunately, most seemed to fall short of their mark, due to lack of professional moviemaking experience. Jay and Frank wanted to see the sport caver's statement about his wilderness presented, and so originated this interesting scheme. They talked me into bringing a piece of Hollywood on location with them to get the job done.

Two other essential members of "THE WILDERNESS BELOW" team were Bill Deane and Barbara Vinson. Bill's experience in photography proved valuable and he spent many hours loading film and maintaining camera gear. Barbara kept script notes in order and gave a general account of our film activities for later editorial use. Every one of the family worked to their limit hauling gear, repairing equipment, and spending long hours in the evening planning the next day's work. Each one was a professional in his or her job.

We also received additional part time help from: Karen Stuck, Jim Herschend, Mike Alley, George Plumlee, and Roy Davis. Post-production credit must go to Monte McMillian for important creative assistance in that area. Filmmaking is a collective effort.

A diverse variety of locations and set-ups were required to do all the planned shooting. Some important locations were Russell Cave National Monument, Falling Cave, Talley Ditch (near Falling Cave), the Crystal Palace and other locations in Cumberland Caverns and, ironically, a "studio" was set up at Bill Deane's house in Knoxville, our base of operations. The company was in production across the southern states for a total of about two weeks, each day a full 10 to 12 hours long.

We had to adopt a technique for

shooting in these difficult locations that would not only allow portability and flexibility, but maintain professional standards. To do this we had to use equipment which was compact, but reliable, and, at the same time, give us good footage. I personally spent two weeks in Los Angeles using saved-up favors from my colleagues in rounding up specialized equipment. This was rough because I had little or no money to do it with.

For the exteriors at Falling Cave and certain inserts we chose to use existing light. Properly established concepts can allow natural lighting to be even superior to that which is manufactured with trucks of equipment. But in doing so, it is sometimes necessary to wait for the precise few minutes of a day to get the quality of light you are seeking, and inclement weather can destroy the most carefully scheduled plans. Believe me, these problems did present themselves, especially at the pit where, at the extreme bottom, there was almost no exposure and we frequently waited for hours for clouds to disperse before we could even shoot. And times came when we could wait no longer and gambled on calculated underexposure or pushing.

The interiors posed a special problem. In the Crystal Palace, for example, some electrical power is available in the commercial section of the cave. But the idea of stringing cable for 2,000 feet through a delicate, winding labyrinth was not a feasible solution for the use of conventional lights. I worked late into the night at home before I devised a unique 12-volt lighting system for this purpose, another part of the careful preparation for the adventure.

This lighting system is built around available surplus aircraft landing lights (used in this industry before, for different applications) which come in a variety of sizes and beam patterns. At a mere 100-watts, the same output as the standard household light bulb, they throw a tremendously intense beam. Some beam patterns are spotty and difficult to control compared to fresnel-lensed studio lamps, but ingenuity and imagination allow for ways of accomplishing almost anything. I softened the beam in some cases by using spun-glass and plastic diffusion materials common in the industry such as "Tough-frost" and "Marlux". Colored gels were useful to add tone to the light.

These PAR-36-sized lamps are also found on farm tractors, and receptacles to house the globes can be found in hardware stores, but they have many limitations. Ironically, Mole-Richardson Company of Hollywood manufactures the "One-Light FAY" lamp that uses an

identical globe in external appearance (110 volts, though); and this FAY head can be used to contain the aircraft globe. By adapting the studio plug to alligator clips, the lamp is immediately converted to 12-volt use. Four of these lamps were lent to us by Craig Greene who operates White Spot Equipment Rentals in Hollywood, and for this we were grateful.

To power these hybrid units, I chose batteries made in Japan by Yuasa, designed especially for the Honda 750 Four motorcycle. These are small, much lighter than any car battery available, and a little more rugged, with better seals on the cells, so the electrolyte doesn't spill easily. They are about the size of a fat cigar box, weigh about 7 pounds each, and cost $20. One battery will operate two lamps continuously for over two hours, the equivalent of an average day under the earth. In many ways, I found these superior to conventional battery-powered "Sun-Guns" which are used extensively by TV news cameramen and documentary film crews.

It was a difficult choice in selecting the proper camera gear. In one way, flexibility is available by bringing every conceivable lens and camera mount available. Perhaps even more than one camera could have been used for special effects, such as high-speed photography. I could have brought at least four tripods, two fluid heads, each one different and lending versatility in gaining varied angles. But in contrast, the more equipment we took, the more we depended on using, and the less flexible we became in moving about in those ridiculoulsy confined spaces. Once again, these choices were somewhat hard to make.

The Beaulieu 16mm Zoom Turret camera was brought along after some decision, because even if it was not as adaptable as the Arri or Eclair, it did offer some interesting features. One, it was small and light, and we knew there would be some photography done from hanging on the rope in a *rappel* situation. Secondly, due to the fact that it uses 100' daylight loads, it is small enough to stick in a back pack and the film spools themselves can be stuffed in a pocket or two. Also, the camera is a lot cheaper to replace in the event of an accident, as has been experienced in similar situations. The camera features a variable-speed motor for some limited high-speed work, a standard C-mount lens fitting which will universally adapt almost any lens (and rigidly). It also has reflex viewing which is essential for extreme close-up work and special lens work, like telephoto shooting, which we

planned on.

If we couldn't have four tripods, we did bring two. One for standard height, and baby legs for low-angle work. More than once, though, the cameraman and camera were on the ground, in the mud, getting that angle that couldn't be gotten any other way.

Choosing a film stock was complex. We were insistent on the highest possible quality, which meant sharpness, fine granularity, and good contrast. This is commonly available in Eastman Kodak Ektachrome Commercial stock (ECO), #7252. However, this emulsion has low sensitivity (ASA 25), and is not feasible even outside on a heavily overcast day. We finally decided to use Kodak's High-Speed Ektachrome Type B (EFB, ASA 125) #7242 after long thought. It provided the necessary speed and, when post-flashed to reduce contrast as a printing original, has very nice color rendition. But it is not overly sharp and, in 16mm, when going through a color reversal intermediate for release in a commercial market, the most stringent care must be taken with exposure, lens contrast and lens sharpness to maintain professional results. We long considered this, because, despite these admonitions, we also knew we would abuse the latitude of the film in impossible places shooting "THE WILDERNESS BELOW". There are some parts of the finished film which perhaps have this weakness, but overall, constant care rendered the long-sought professional results.

Professional cameras have a tremendous variety of lenses available for different applications. I have known cameramen who make special lenses themselves, and even one who used a dime store magnifying glass on one occasion for an unusual effect. We had several ideas about the lenses we wanted to use, but chose an Angenieux 9.5-to-95mm zoom lens as our basic tool. It worked quite well, and allowed us to make "camera moves" that normally would not have been available. It allowed for speed in setting up because the proper focal length was available by dialing on the lens. However, it is large and cumbersome and is not as fast and sharp as some 16mm fixed-focal-length lenses. So we picked a few of those too.

The most popular with us was a 13mm Elgeet F/1.5 lens for obvious reasons. It is very fast and allowed us to shoot by carbide lantern light in more than one shot. Wide-angle lenses worked in the confined spaces of different passageways, and another often-used lens was the 10mm Switar, also fast when wide open. This lens and other important equipment was made avail-

able to the project by Ron Dexter, a leading Hollywood commercial cameraman.

Using this selected stuff, which was available to us fortuitously, was only a part of the actual production. It was essential that we took our concept of the film, our plan, and graphed it into a blueprint by which we could construct the story. Therefore, it was elemental that the script be broken down into a workable schedule that would put us at the right place at the right time. Making a film involves hundreds of tenuously-held variables and, in the most controlled cases, is a guided crash. Therefore, a plan must be adaptable enough to changing situations, and to sometimes capture elusive moments that cannot be planned for.

This idea necessitated complete oneness of mind of all members of the group. We not only spent days previous to the springboard journey making sure we knew what we wanted and how to get it, but every night, around the warm campfire, aggressively discussed the following day's plan, which, in many cases, included new ideas and new accommodations forced upon us by reality. For example, we had only 2,400' of unexposed film stock to make this movie on and, once having used the allotted budget on a particular sequence, had to make changes to get everything necessary in the film. You can't argue with empty.

A method of shooting was quickly arranged. Jay, our director, would summarize over breakfast of eggs and bacon *a la campfire* what we would attempt that day. Once we arrived at the location, which was sometimes a monumental effort in itself, he would then plot the first shot while everyone watched. Then, when the parameters were decided upon, each member would take his post. Bill Deane, the assistant cameraman, would know where the camera went, what lens was to be used, and begin getting focus marks. I would then plan exposure and camera operation and feed back to Jay any new information I would discover. Frank, the star, would then begin moving through his actions to find the best way to achieve the effect he was after. Barb, script supervisor, would record what the camera shot. Essentially, each person began work in unison with every other member. Seldom is this kind of organization prevalent on low-budget films. This method is exactly what allowed us to make a $15,000 film for nowhere near that figure.

This experience was as exciting to me as it was to those members who had never been involved in film work before,

simply because it was a group effort that is only occasionally witnessed in the film world. I am not proffering the premise that this is the new way to make film; simply, it was a fortunate happening, a moment of union and communion between some people. Sometimes this chemistry comes about of its own will, but can never be manufactured.

And this experience was fun in unexpected ways. It brought me into a world of natural wonders and sporting thrills that I have been inspired by. I sometimes now close my eyes in the midst of Hollywood chaos and remember those tranquil and silent moments when we relaxed in a canyon that knew only eternal darkness. I try to summon up that unusual friction smell of Bluewater zipping through my rappelling rack. I remember looking down that first time and I'm shaken from this reverie by tensing hands and cringing teeth.

Then I want to make another cave film! ■

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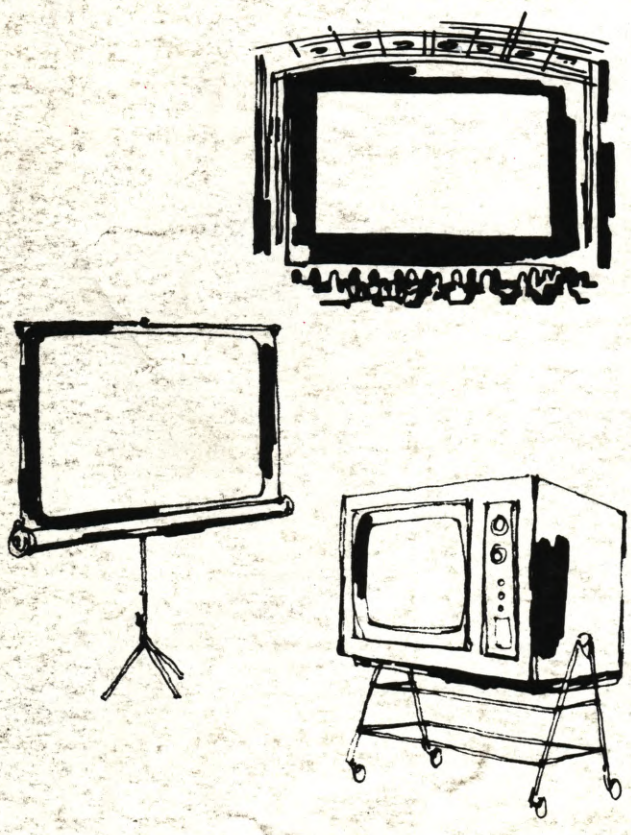

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