

American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

FEBRUARY 1972

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ON LOCATION WITH
STORM
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THE FRENCH CONNECTION

EXCLUSIVE CSC CONVERSIONS

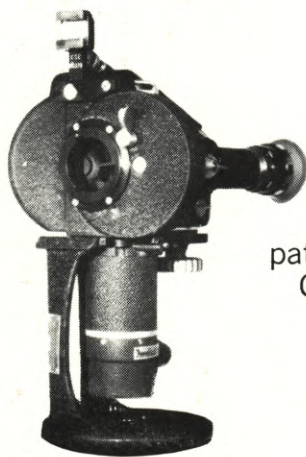
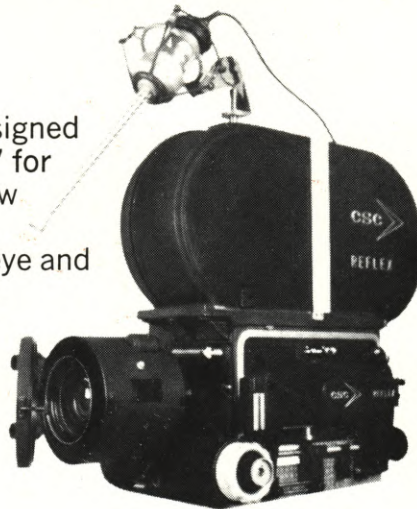
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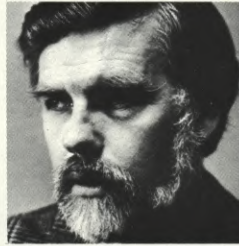
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30

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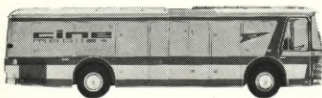
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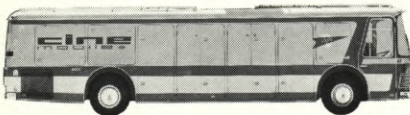
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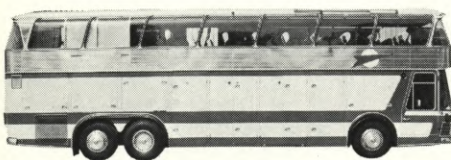
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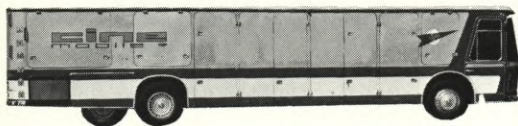
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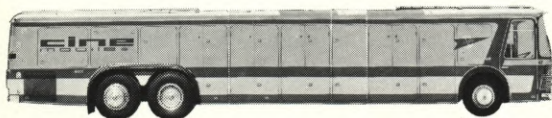
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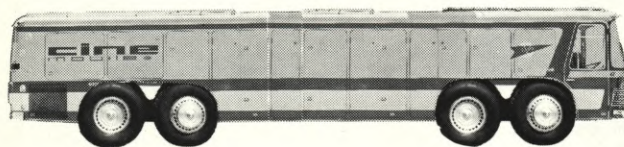
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FEATURES



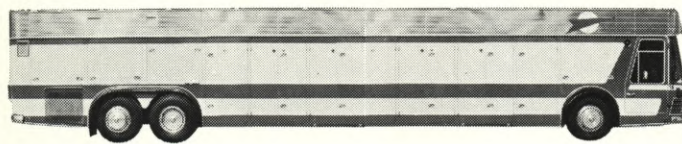
CINEMOBILE MARK 6
4 WHEEL DRIVE



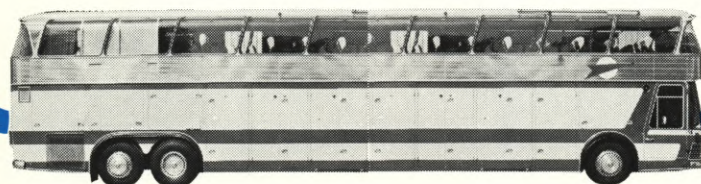
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International Journal of Motion Picture Photography and Production Techniques

FEBRUARY, 1972

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ON THE COVER: Director of Photography Ron Eveslage crouches with hand-held Eclair NPR camera to film start of Hutchinson Grand Prix snowmobile race held in Hutchinson, Minnesota—an exciting action sequence for "STORM", the first theatrical feature to be made entirely in Minnesota by a Minnesota production company. Cover design by PERRI & SMITH. Photograph by Herb A. Lightman

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That's why we're making our Film Footage Estimator available free to interested professionals in the motion picture and audio-visual industries.

It's handy. It has all the information you need built right into its easy-to-read sliding scales. Answering the above questions in 30 seconds would be a cinch if you had one. And it's especially valuable for budgeting and planning.

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A lot of productions use a lot of different cameras for a lot of different purposes. One camera might be blimped and mounted for sound work. Another might be hand-held for wild shots. A third might wind up on the camera car. And if time-lapse, animation or underwater footage is required, the call might go out for cameras number four, five, or six.

Arriflex had a better idea — one rooted in logic, convenience and economy. Why not use one camera and a choice of accessories to do many jobs, instead of many cameras to each do one job?

The idea's validity has been pretty well substantiated over the past three decades. An Arriflex 35 is a 200' or 400' camera that can be hand-held, that squeezes into any corner its operator can, that leaves some room in the camera car for the cameraman. And that same Arriflex is also a blimped 1000 footer, with sync generator and automatic slate, if you wish. There's no shortage of underwater housings, intervalometers and animation motors; and Arriflex mirror-shutter viewing is as beneficial on the animation stand as in live shooting. While the single purpose cameras do all these jobs more expensively, none do them more conveniently, quickly or better.

So if your writers call for all kinds of tricks, or if you expect the unexpected, pick the one that's done them all: Arriflex 35.

ARRIFLEX® 35 users use accessories where other-camera users use other cameras

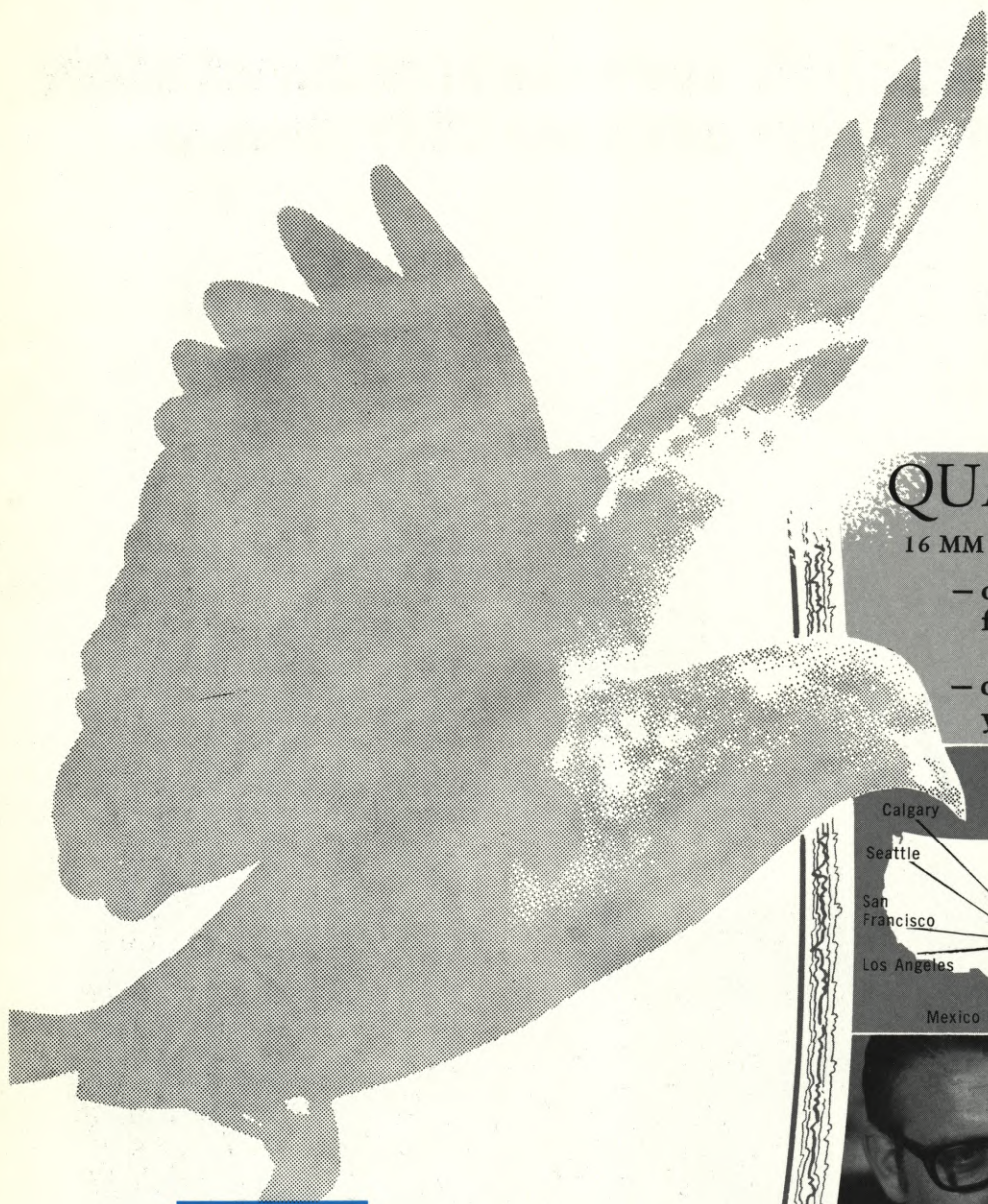
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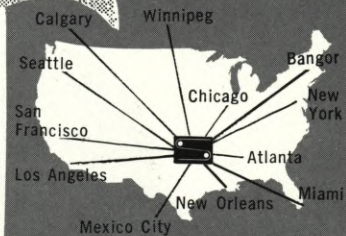


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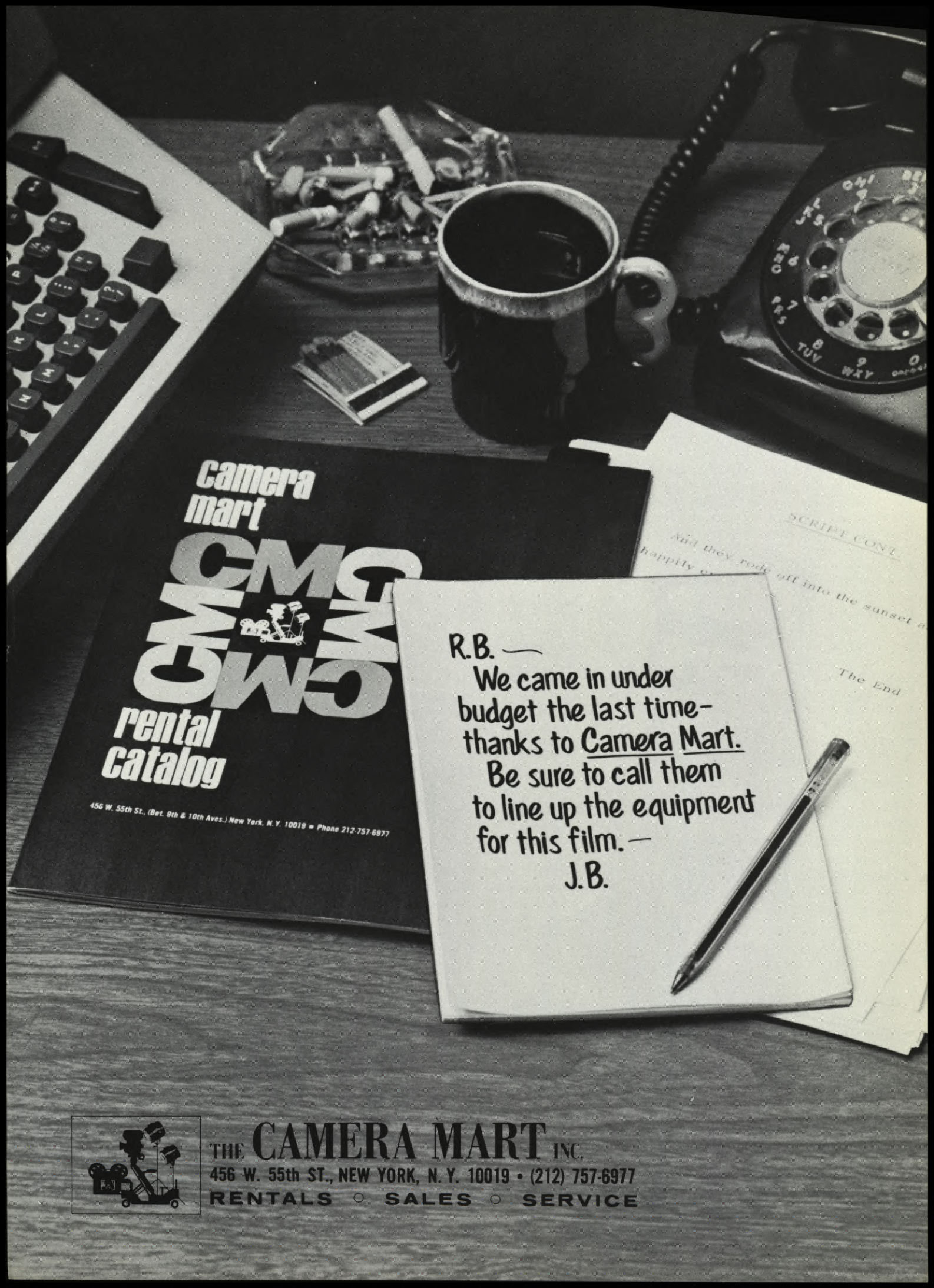
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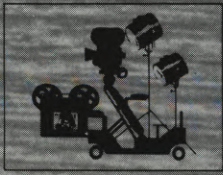
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SCRIPT CONT.
And they rode off into the sunset
happily
The End

R.B. —
We came in under
budget the last time—
thanks to Camera Mart.
Be sure to call them
to line up the equipment
for this film. —
J.B.



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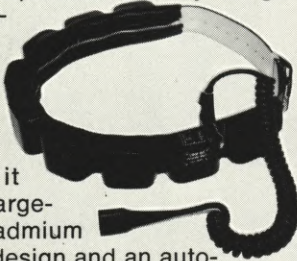
(the next-best thing to instant success)

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

Little things *do* mean a lot. And, for many of those important "little things," cinema professionals turn to Cine 60...

Instant Power

Wherever you go, whatever the shooting situation, Cine 60's exclusive power belt* gives you the power to run every professional camera on the market. Plus the all-important mobility to go where the action is. Available in voltages from 6 to 30V (and up to 7 ampere-hours), it features rechargeable nickel-cadmium cells, sealed design and an automatic overload safety switch. With built-in charger and plug-in coiled power cable, it is one of the most widely-used power sources available today.



Instant Quiet

Silence is golden, yet relatively inexpensive with the Cine 60 battery-powered fiberglass Blimp for Arriflex 35 cameras. Only 19 pounds, the Blimp permits shooting in even the most restricted spaces—with *all* standard lenses (even 18mm, without vignetting!). Inside, the camera is securely mounted, yet isolated acoustically from its surroundings. On the outside, a new, gear-driven mechanism permits smooth, accurate follow-focus via large, easy-to-use knob. All other controls and connections are conveniently placed on a rear control panel.



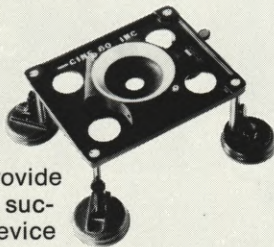
Instant Camera Pod

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



Instant Camera Platform

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



Instant Camera Mount

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



Instant NPR

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



Instant Zoom

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

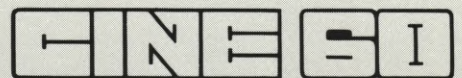


Instant Rentals

Cine 60 also enjoys an excellent reputation for its line of top-quality rental equipment. All thoroughly maintained and delivered on-time. We'd appreciate the opportunity to fill your rental needs.

Instant Information

Whatever your filming needs, all you need to know for "Instant Service" is one name and one number:



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rosco cinegel

THE RIGHT GEL FOR EVERY LIGHTING SITUATION

new answers
to the old problem
of gelling lights and windows

rosco cinegel

Whether you are gelling a light or a window, Rosco has the color medium that exactly matches your need. The traditional gels used by the movie industry were borrowed from the theatre and never quite fit. For instance, the gels used on Brutes were too wide or too brittle until Rosco developed Roscolar Brute Y1 and Brute YF. Both come in 30" rolls to eliminate waste and are heat stable to stand up in front of arcs.

To solve the problem of correcting daylight for indoor shots, Rosco offers a range of three neutral densities and an 85 filter. In addition Rosco combines 85 with all three neutrals in single filters to save you time and money.

For extra wide windows or when you want speed and ease of application, the right Cinegel is Roscovin which adheres directly to glass without framing or taping and comes in 54" rolls.

Or, if optical clarity is critical, Roscolene is your answer in 41" or 48" rolls, depending on color.

Until very recently, the conversion of 3200K lights to daylight

could be handled only by using dichroics. Now heat resistant Roscolar Tough Blue 50 can be clipped to barn doors or framed to raise color temperature to 5000K with minimal light loss and good skin tones.

For a slight boost in Kelvin, Rosco offers a choice of Booster Blue or half-Booster Blue, according to the extent of the correction wanted. In addition, five different shades of blue, ranging from TD 25 to 1/2 26 Blue in optically clear Roscolene permit the cinematographer to balance his lighting exactly as he wishes.

Diffusion can be handled in several ways, and Rosco offers three different media ranging from the soft base Rolux to the heat resistant Roscolar Tough Frost.

This is Cinegel today. Over the years, as cinematographers talked about a problem, Rosco listened and came up with the answer. This is a continuing process: bring us your problem and we'll work on it. Keep in touch with us, we'll keep you posted on our latest products, and we'll help each other do a better job.

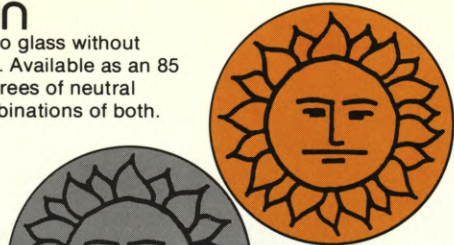


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Samples of every color and
information on how and
when to use each one.
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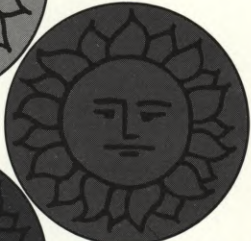
adheres directly to glass without taping or framing. Available as an 85 filter, various degrees of neutral density, and combinations of both.



85—Converts daylight to 3200



N3—Neutral density grey.
Reduces light 1 stop.



N6—Neutral density grey.
Reduces light 2 stops.



N9—Neutral density grey.
Reduces light 3 stops.



85N6
Combines 85 and N6.
Converts daylight to 3200K and reduces light 2 stops.



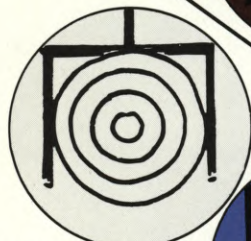
85N3—Combines 85 and N3.
Converts daylight to 3200K and reduces light 1 stop.



85N9—Combines 85 and N9.
Converts daylight to 3200K and reduces light 3 1/2 stops.

roscolar

made of heavy duty heat stable polyester, will withstand the extremes of temperatures of hot quartz lights and Brutes.



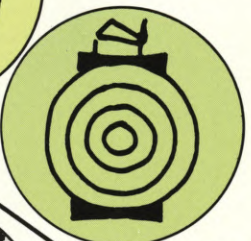
Tough Frost—Softens and diffuses light without charring or yellowing.



Brute Y1
For Brutes burning white flame carbons.
Corrects to daylight.



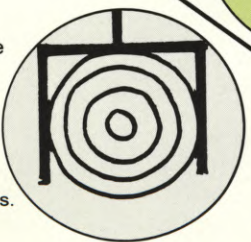
Tough Blue 50—Converts 3200K to 5000K.



Brute YF—For Brutes burning yellow flame carbons.
Corrects to 3200K.

rolux

is used to achieve soft lighting and overall diffusion. It produces a minimum of shadowing and eliminates point light sources.



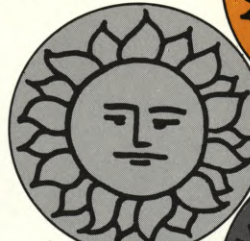
Cine Frost—Softens and diffuses light.

roscolene

is a high clarity acetate base material for use on windows and colors used on lights to balance them to correct shooting temperature.



Cine 85—Converts daylight to 3200K.



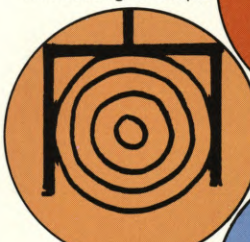
Cine N3—Neutral density grey.
Reduces light 1 stop.



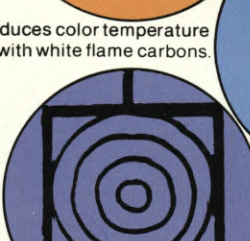
Cine N6—Neutral density grey.
Reduces light 2 stops.



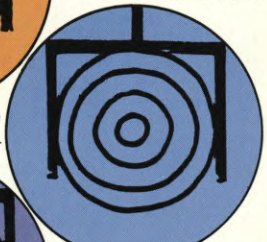
Cine N9—Neutral density grey.
Reduces light 3 stops.



Cine MT2—Corrects arcs with white flame carbons to 3200K.



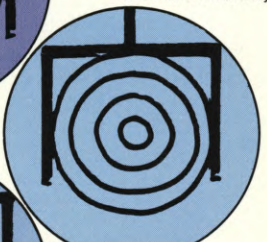
Cine MT2 1/2—Reduces color temperature of arcs with white flame carbons.



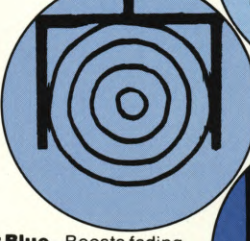
Cine 1/2 26 Blue—Pale blue with half the color intensity of Cine 26 Blue.



Cine 26 Blue—Warm blue filter increases color temperature while maintaining pleasing skin tones.



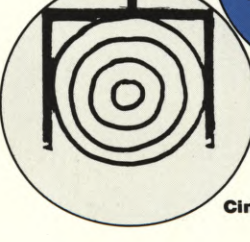
Cine 1/2 Booster Blue—Pale blue for slight increase of color temperature.



Cine Booster Blue—Boosts fading blue-faced Fay lamps to daylight



Cine TD 25—Converts 3200K to daylight.



The fast and easy
way to gel windows

roscolex

OPTICLEAR CINEGEL PANELS



When the shooting situation demands fast and variable daylight corrections, the new 4x8 panels of Roscolex provide the best method of gelling windows. Roscolex 85 panels and the two neutral densities, N-3 and N-6, can be used separately or combined to solve every conceivable lighting problem involving daylight. Roscolex panels go up fast, strike just as fast. No framing, stapling, taping, or gluing are necessary. And they are optically clear enough to shoot through.

Roscolex, in a modular 4 by 8 size, is a lightweight, semi-rigid panel, easily cut to size and positioned with a minimum of fuss and effort. Samples and prices are yours for the asking.

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- Zooms: 45-95mm
50-500mm

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From 15-1000mm.
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CINEMA WORKSHOP



By ANTON WILSON

MICROPHONES

The first link in the recording chain is the microphone. It is the device that initially converts the mechanical sound waves into electrical impulses that can be mixed, equalized, and ultimately recorded and re-recorded. There are currently hundreds of microphones from which the cinematographer can select, and, to all but the most knowledgeable sound technicians, this wide choice can be confusing.

There are basically three types of microphones: the *crystal* or *ceramic*, the *dynamic*, and the *condenser (capacitor)*. The crystal-type microphone is seldom used for professional sound recording. The crystal mike requires extremely high input impedances which restrict both cable length and low-frequency response. Because they are inexpensive to manufacture, this type is usually

supplied with home tape recorders. For all intents and purposes, the cinematographer can rule out the crystal or ceramic microphone for sound track recording.

The dynamic microphone is the most widely used of the three types. It combines high quality, rugged construction and reasonable cost. Mechanically, the dynamic microphone is constructed like a miniature loudspeaker. The sound waves strike a diaphragm and coil assembly, causing it to vibrate. This vibrating coil is in a magnet structure and, thus, generates a small voltage. The dynamic mike is simple and rugged, and requires no special power supplies or oscillators.

The ribbon microphone falls into the dynamic class. It is a very high-quality device, but, because it is so delicate, its use is usually restricted to recording studios. Ribbon mikes are seldom used

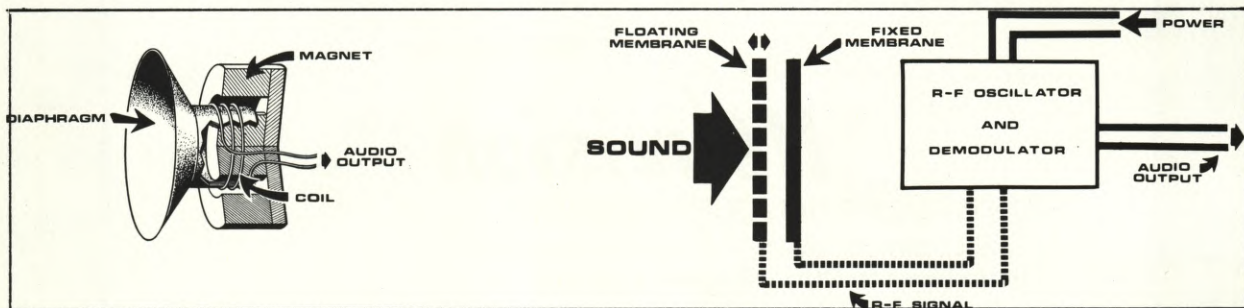
in the motion picture industry for this reason.

The condenser microphone has gained great popularity in the motion picture industry over the last ten years. Condenser microphones employ a tiny feather-light membrane instead of a heavy coil assembly and are considered to have superior electro-acoustical characteristics. The very light membrane, because of its low mass, produces very "clean" sound which is especially noticeable at the higher frequencies. Unfortunately, this light membrane is also very delicate, and for this reason, the condenser microphone, like the ribbon mike, has usually been restricted to the studio.

Recent technical advancements, however, have made the condenser microphone more versatile and rugged. Prob-

Continued on Page 201

MICROPHONE CONSTRUCTION



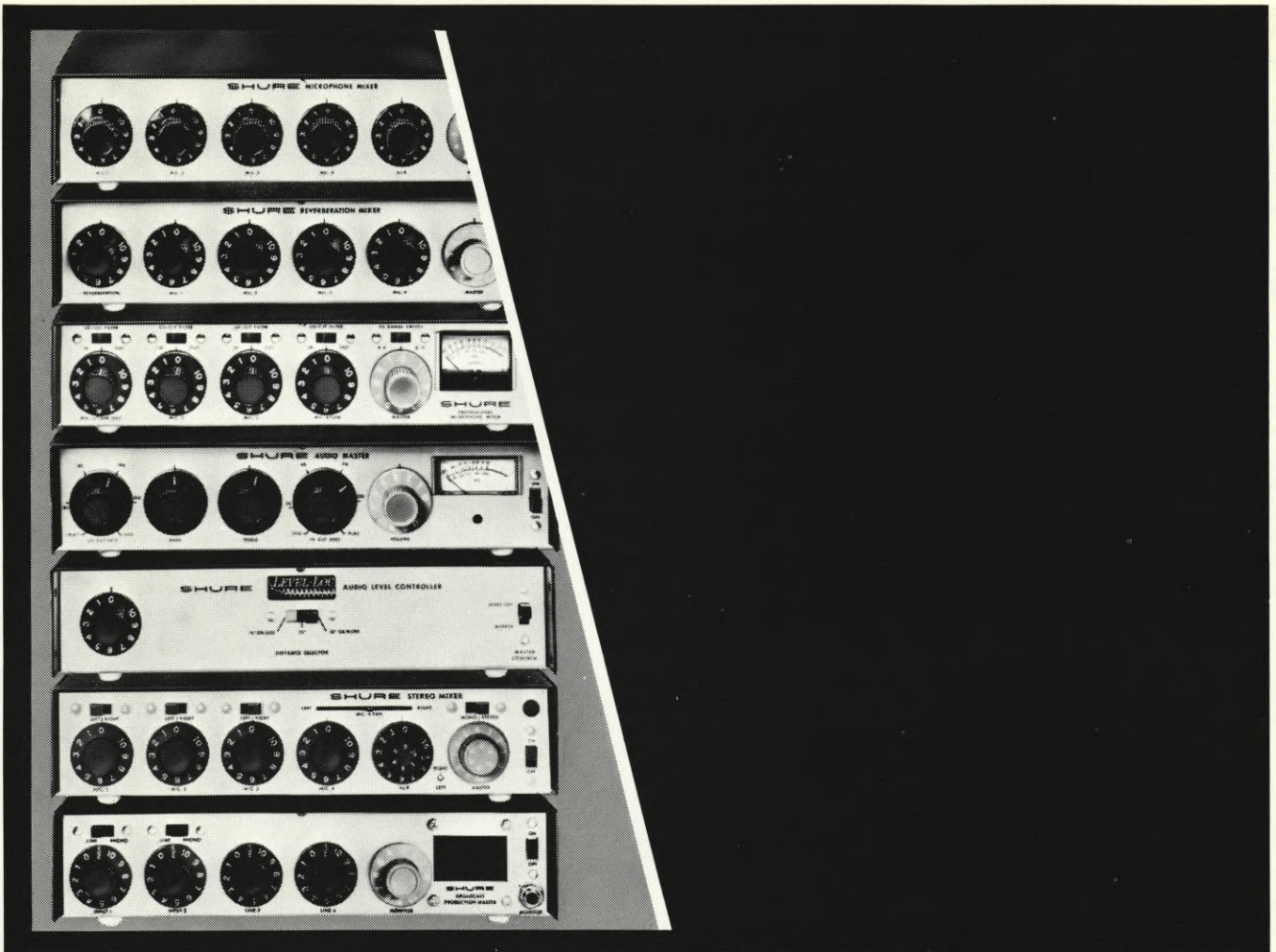
DYNAMIC MICROPHONE

The principle of the dynamic mike is similar to that of the loudspeaker, only in reverse. Sound waves striking the diaphragm cause it, and the attached coil, to vibrate. The coil assembly is immersed in a magnetic field and, thus, the vibrations cause an electric potential (voltage) to be generated. This vibrating voltage is connected (via the leads) directly to the pre-amp input of the recording amplifier, where it is amplified.

CONDENSER MICROPHONE

The condenser mike is not quite as simple as the dynamic mike. The dynamic mike is essentially a generator; the moving elements actually generate the audio signal which merely has to be amplified. The condenser mike uses two thin membranes as the active mechanical elements. These two thin membranes by themselves cannot generate any signal and, thus, additional electronics have to be employed. A r-f condenser mike, in addition to the two membranes, employs an r-f oscillator, a power supply, a demodulator and an audio pre-amplifier. The oscillator-demodulator system needs power to operate, and since no power is generated within the system (unlike the dynamic mike), power must be supplied from an outside source. Some tape recorders have built in power supplies for condenser mikes. In other cases a battery is connected in the microphone line and supplies a D.C. voltage to the mike over the two audio output conductors, thus precluding the necessity for additional or special mike cables.

With the oscillator powered up, a r-f signal is applied to the two membranes which are essentially a capacitor or condenser. As the sound waves hit the moveable membrane, it will vibrate, thus fluctuating the distance between the two membranes. This will, in turn, cause the capacitance of the two membranes to vary accordingly. This capacitor, however, is part of the r-f system and will cause the r-f voltage or in some cases the r-f frequency to vibrate respectively. These vibrations are isolated in the demodulator section of the mike, amplified, and emerge as a clean audio signal.

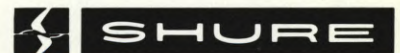


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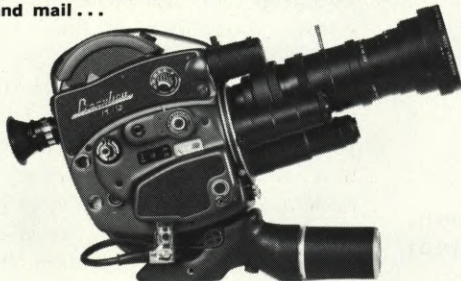
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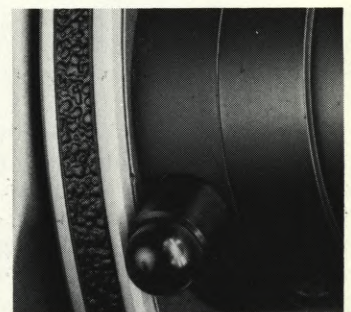
CINEMA  *Beaulieu*
A DIVISION OF HERVIC CORPORATION
Executive Office: 14225 Ventura Boulevard
Sherman Oaks, California 91403.

Dept. AC



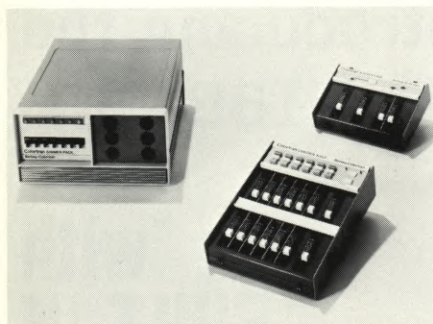
Beaulieu's new Integral Power Zoom (which is coupled to the fine Angenieux 12—120mm "auto" zoom lens), provides an infinitely variable zoom range from three (3) through fifteen (15) seconds. Zoom speeds can be changed while running. The built-in power zoom can be manually overridden when desired. Zoom speed is continuously smooth and even, with instant (and absolute) Start-Stop. Power zoom controls are ideally located for the cameraman's convenience in operation.

PLUS... a fully automatic Pre-Focus control. Fingertip pressure on the Pre-Focus control button instantly and automatically zooms the lens out to its maximum telephoto position, and—at the same time—automatically opens the diaphragm to its maximum aperture. The camera operator is instantly provided with the shallowest possible depth of field required for ultra critical focusing.



WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE



COLORTRAN DIMMER PACK SYSTEM

Berkey Colortran, a division of Berkey Photo, announces a new compact modular portable dimmer pack system. Six 2400 watt fully filtered solid state dimmer modules in a compact portable housing weighing only 60 pounds. The two-scene Control Pack unit can remotely operate the dimmers and can be expanded up to 120 dimmers. A Master Pack provides proportional cross-fading, pile-on mastering of the presets, as well as an independent master and grand master. Colortran Dimmer Pack systems are available for use at 120 or 240 volt.

The Colortran Dimmer Pack system has been designed to be extremely reliable, rugged, portable, and expandable for use in theatres, schools, auditoriums, churches, meeting rooms, nightclubs, television studios, or any situation requiring lighting control.

For the 24-page booklet describing its functions write to Berkey Colortran, Inc. 1015 Chestnut Street, Burbank, California 91502.

COMPACT AUTOMATIC FILM PROCESSORS FOR SUPER-8, 16mm, 35mm

H.G. Cramer Co. of Sarasota, Florida now offers a complete line of small, compact, automatic motion picture film processors in Super 8, 16mm and 35mm format. Processes include black & white reversal, negative and positive as well as Ektachrome color.

All models, except the MARK V, are fitted with the Cramer combination Super 8-16mm roller. The MARK V is fitted with combination 35mm-16mm rollers and will process black & white reversal & negative up to 10 FPM. The MARK III and the MARK VII will also process Ektachrome color Type EF and

MS using the E-4 chemistry. The speed for color processing is 2FPM. Although quite slow this can be useful for TV news film, test runs, and short in-plant runs. The MARK VII will also process black and white reversal up to 20FPM.

Incorporating new features as elevator legs, nylon gear-roller chain drive and increased chemical capacity tanks, the Cramer Processors are ideally suited for low budget film processing. Simplicity of construction allows trouble-free maintenance and replacement of any part by the operator within minutes. Due to stocking policies, shipment of any model can usually be made the day after the order is placed. Parts, accessories and chemicals are always shipped the same day. Prices range from \$695 to \$2250.

For further information, write H.G. Cramer Co., Rt 3, Box 24A, Sarasota, Florida 33580.



NEW NIKON 100MM F/2.8 REPRO-NIKKOR LENS FOR OPTICAL PRINTERS

The new Nikon 100mm f/2.8 Repro-Nikkor, a highly specialized lens designed primarily for use with optical printers, is being introduced by Photo-Technical Products, Inc., a subsidiary of Ehrenreich Photo-Optical Industries, Inc. The unrivaled quality of the new lens, its precise color correction and its 160 lines per millimeter resolving power provide for superior image reproduction, according to Stuart Held, PTP marketing director.

The apochromatic lens, developed in

response to the specific needs of users in the motion picture industry, has an aperture range of f/2.8 to f/22 and an optimum magnification of 1.5 to 1. Its magnification range of 2.5X to 1X provides for printing from 16mm to 16mm, 35mm to 16mm, 35mm to 35mm and 70mm to 35mm, with distortion less than 0.1 percent over 50mm diameter. Overall working distance (object to image) is approximately 400mm.

Price of the new 100mm f/2.8 Repro-Nikkor lens is \$1,150. For more information about this and other precision off-the-shelf special optics by Nikon, write to Photo-Technical Products, Inc., 623 Stewart Ave., Garden City, N.Y. 11530.

NEW BAUER C ROYAL 10-ZOOM MODELS FEATURE SYNCHRON CONTACT

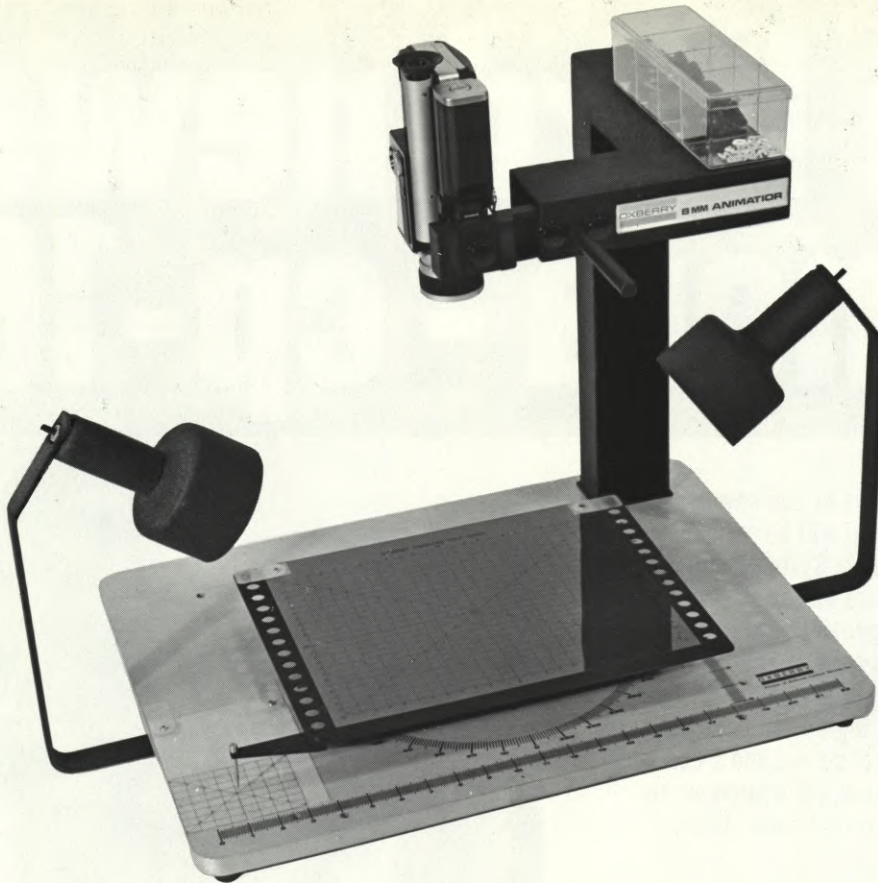
Allied Impex Corp., a division of AIC Photo, Inc., has announced a synchron-contact feature which has been integrated into new models of Bauer C Royal 10-Zoom Super 8mm movie cameras. The new feature allows for the use of electronic flash for single-frame exposures. It also enables the production of lip-synchronized movies... in conjunction with suitable sound-synchronizing equipment.

All C Royal 10-Zoom cameras on the market after October, 1971, are equipped with the new feature. Instructions on how to operate the camera with flash guns are included with the camera.

The single-frame exposures are achieved with the Bauer Trick Set/Intervalometer, or by means of a cable release. One flash is fired for each frame.

To use the Bauer C Royal 10-Zoom with electronic flash units for single frame exposures, one mounts the flash unit with a holding bracket to the camera and connects the sync cord to the camera sync contact. Use of a tripod is essential for this operation. Distance and lens opening should be determined with the aid of the f/stop calculator on the flash unit. The lens should then be corrected by one stop (f/5.6 instead of f/8, for example), and the f/stop set manually on the camera.

Further information can be obtained by contacting the exclusive U.S. importer of Bauer equipment, Allied Impex Corp., or the exclusive U.S. distributor, Interstate Photo Supply Corp. Both are divisions of AIC Photo, Inc., 168 Glen Cove Road, Carle Place, L.I., N.Y. 11514.



INTRODUCING THE "OXBERRY ANIMATOR 8"

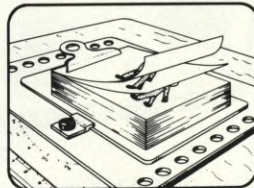
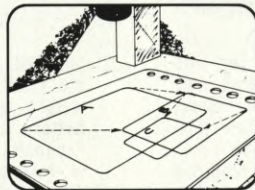
A complete animation system for \$600.

The "OXBERRY Animator 8" is the finest 8mm animation system commercially available to the industrial, scholastic and communication fields. It is surpassed only by the OXBERRY "Filmmaker" and "Master Series" animation stands.

The Animator 8 is a complete animation system that requires only a film cassette and the creative talents of the filmmaker. The stand and accessories have been designed to release these talents and permit the young and untrained animator to achieve exciting results as well as enabling the experienced animator to create excellent films.

This is an OXBERRY system, providing the high quality calibration, registration and control required for the wide variety of animation

and filmography techniques. Its low cost, low instruction, low supervision design make it ideal for all school levels from elementary through college.

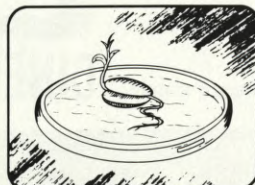


Paper animation inexpensive, quick, and highly creative paper "cel"

The student, amateur and industrial user will find a large variety of applications, of which the following are just a sample.



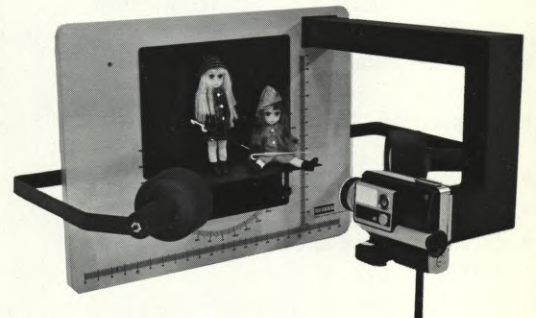
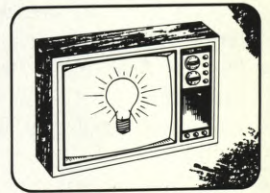
Cut-out animation animate magazines, snap shots, comic books.



Scientific time lapse photograph and study slow processes in the laboratory, classroom and home.



Titling prepare professional live-action and stop-action titles for your film productions. Story boards comprehensive of advertising animation and filmography ideas. and puppet animation also.



For more information write to: OXBERRY, 516 Timpson Place, Bronx, N. Y. 10455

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the hard news camera - cp-16

Whether you're shooting good news or bad news your television or documentary filming assignment will be made easier with the all-new CP-16 Single System/Double System Sound Camera. Designed specifically for cameramen who are on the go, the CP-16 is manufactured of lightweight magnesium and provides maximum portability and comfortable hand-holding balance. What's more, the CP-16 represents a breakthrough in crystal motor technology. Its drive system consists of a small, highly efficient DC motor, an extremely accurate crystal-control circuit and a compact plug-in rechargeable NiCad battery, all located within the camera body. There is no external power pack, no camera cable.

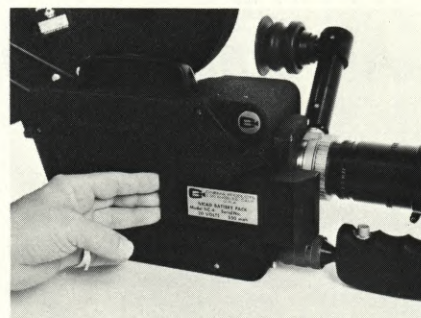


FEATURES:

- Camera body weighs 9 lbs., including motor, battery and control circuit.
- ½ Amp-hr. plug-in battery provides 2000 ft. minimum filming capacity per charge.
- "Battery Eliminator" permits camera operation from AC line while charging internal battery.
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INDUSTRY ACTIVITIES

INFLIGHT MOTION PICTURES SIGNS PROGRAM AGREEMENT WITH PROJECT 7

Inflight Motion Pictures, Inc., (ASE) has entered into an agreement with Project 7, Inc. (OTC) and a subsidiary, CTVC, Inc., to develop special programming to be utilized on short haul flights by Inflight's new IMPAK Super-8 projector.

The affiliation between Inflight and Project 7 follows a recent announcement by Inflight of a revolutionary new Super-8 cassette system, "IMPAK", which will enable airlines to present quality airborne entertainment to a whole new market of short haul travelers.

IMPAK, a Super-8 cassette system, will be ready for public demonstration late in January, and production runs are expected to be operational in the summer of 1972.

The new Super-8 cassette system is the result of three years of research by Inflight. IMPAK's flexibility, automated capabilities and simplicity of operation will provide an opportunity for short-haul airlines to utilize film entertainment on a viable and economical basis. Visual entertainment until now has not been available on short haul flights.

The Project 7, Inc. subsidiary, CTVC, Inc., will be a major source of programming for the IMPAK projectors, CTVC has been a leader in the development of electronic entertainment and production of closed circuit events.

Robert J. Leder, Board Chairman for Project 7, said that CTVC had been working for six months to develop suitable concepts for specialized airline short haul programming. He also stressed the importance of Inflight's IMPAK cassette system in reaching millions of airline passengers who have not had film entertainment available to them.

The programs will vary from 3½ minutes to 2½ hours in time, and will include short subjects and feature films, according to David Flexer, president of Inflight. "Transcontinental and international flights have presented motion picture features for more than 10 years. Now IMPAK is going to bring entertainment to an entirely new and much broader airborne audience. The size of this audience will amount to many more times greater than the current long haul market.

"The airborne entertainment industry has now grown to the point where

pictures can be produced expressly for this market, including sport programs, news commentaries, game shows, travel, fashion shows as well as a wide variety of general interest films and features. We expect to have world premieres on short-haul flights and many films will be seen only in airborne entertainment," he added.

With programming quality required to meet Inflight's—and the airline's—standards the flexibility of the IMPAK cassette system will provide an ability to meet different time segment and scheduling requirements.

"For the first time millions of airline passengers using domestic flights of under four hours will now have a wide variety of entertainment available to them during their trips," Mr. Flexer said.

"IMPAK means that airlines will now be able to carry a library of lightweight film aboard their flights and the stewardesses will be able to change cassettes in flight if desired. At the press of a button the IMPAK projector system shows the film, shuts itself off at the correct time, rewinds itself at a 12-times faster speed, and closes down ready to go again at the press of a button." Mr. Flexer explained.

"NEW FILM MAKERS" SMPTE N.Y. CONVENTION THEME

The 111th Semi-Annual Technical Conference of the Society of Motion Picture and Television Engineers will be held from April 30-May 5, 1972, at the New York Hilton Hotel in New York City.

The theme of this popular convention will be "The New Film Maker—Changing Trends in Motion Picture and Television Production Methods". Technical papers to be presented will emphasize the changing methods and technology today's film maker faces.

As an added feature, student members of the SMPTE will be allowed to attend the Technical Conference sessions free of the usual registration fee. Student non-members will have an opportunity to join the Society for only \$5.00 per year, which will enable them to participate without further charge at this convention and all conferences for the next 12 months, in addition to receiving monthly copies of the SMPTE Journal.

The equipment exhibit held concur-

rently with the conference will be 94 booths comprising the latest equipment and services available to the industry. Those firms desiring to participate in the exhibit should contact John J. Burlinson, Jr., National Screen Service, 1600 Broadway, New York, N.Y. 10019, for complete details.

(Note: Stanley Cortez, ASC, was requested to comment on Frank Capra's new book, "The Name Above The Title":)

"There are no rules in film making, only sins—and the cardinal sin is dullness."

A poignant preface to a monumental work of and by an extraordinary human being.

The four hundred and one-half pages of Frank Capra's "The Name Above the Title" is an autobiography filled with envied wit, wisdom, and Aristotle-inspired philosophy. He will glue your eyes to each word and reach your heart with each profound paragraph. You will share his Sicilian boyhood struggles, his tenacity and ambitions, as well as his rise to become one of the true giants of film-making. The book speaks for all of us who share his dedication and frustrations as it ignites contempt for the pretenders and triggers anger for the so-called professionals who lack ethics and integrity.

Hundreds of books have been written on film entertainment by authors who second-guess and whose theorizing is exceeded by their lack of filmic accomplishment. Sadly, this junk is digested by the unsuspecting public and the serious film student. The dynamic achievements of Capra speak eloquently for themselves and, therefore, a true authority expresses himself.

This absorbing classic is of historical significance. I urge my colleagues and those outside our medium to read "The Name Above the Title".

At the end you will close the book as I did . . . STUNNED!

Beethoven's Ninth had ended.

STANLEY CORTEZ,
ASC, for the American
Society of Cinematographers.

What began as a labor of love for Karl Malkames wound up a vital step toward the preservation of cinema history. Ancient nitrate-base films were decaying rapidly, and were already too deteriorated to be copied on any existing printer.

"They had shrunk erratically, and perforations were torn or enlarged," states Mr. Malkames.

But Killiam Shows, Inc. and New York's Museum of Modern Art wanted 16mm copies of these last surviving prints before they decayed further and were lost forever. They had heard of the success Karl had in copying his father's extensive film collection as a hobby, so they turned to him and the special rig he'd used. It was a custom-designed projector head, capable of

accepting film regardless of shrinkage or general condition; and an Arriflex 16M with 90mm Macro-Killar.

Why had he chosen the 16M for his rig? "The most important consideration was perfect registration—forward or reverse. The 16mm image must be rock-steady. I've worked with all existing professional cameras, and Arri's registration is simply the best. There was also the question of reliability; this rig could be in operation continuously, and I had to be certain that it would endure such drudgery. It did."

Between printing runs, Mr. Malkames regularly removed the 16M from his rig, replaced its motor and used it for many other assignments including microscopic and aerial work "The camera is indestructible. In the printing mode, I ran over half a million feet through it in the last year alone."

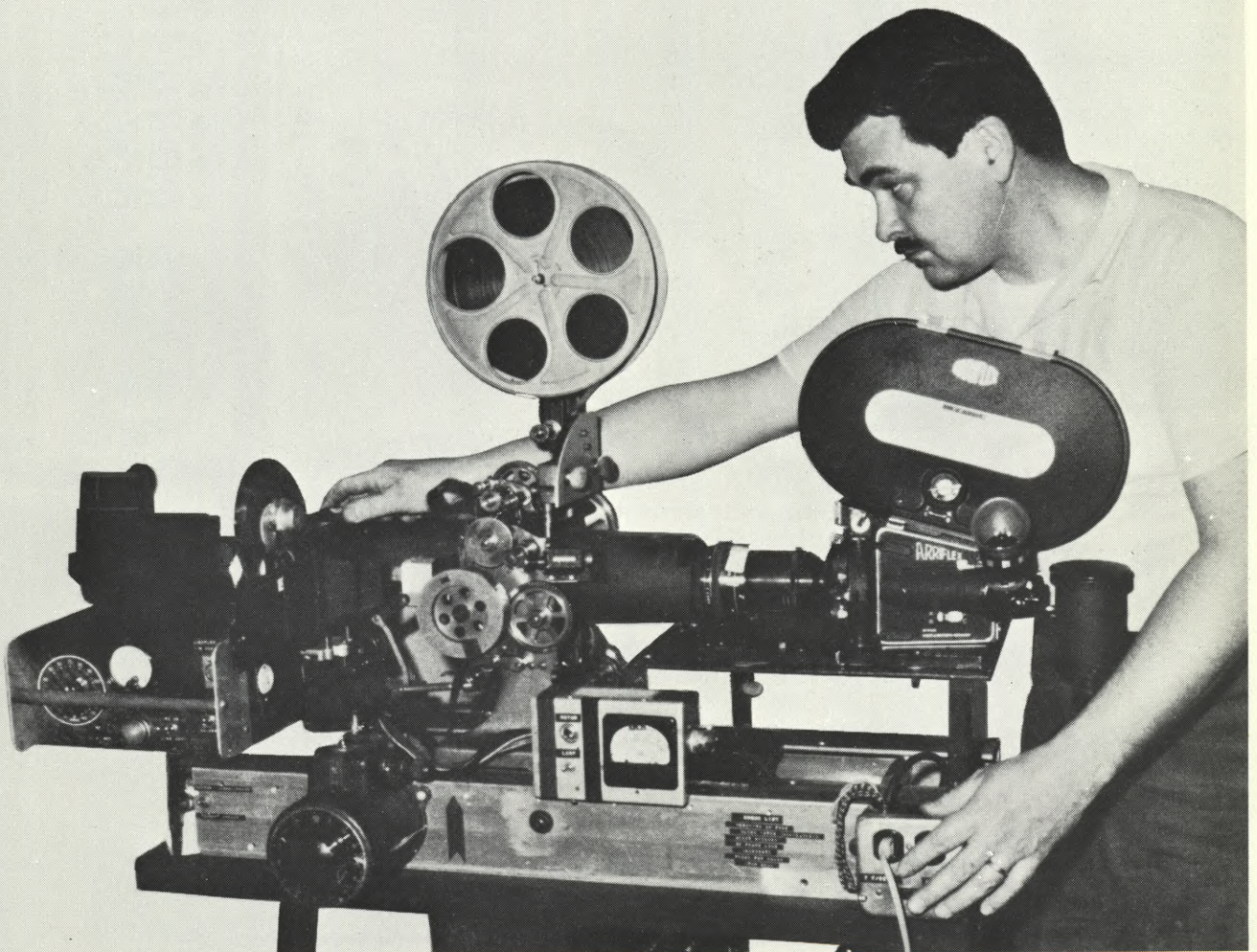
You may never have the need to physically incorporate your 16mm camera into an optical printer, as Malkames did. Yet, every professional camera is the starting place for the footage that must produce 16mm opticals, 35mm blowups and super-8 reductions. In that sense, every camera, used professionally, is part of the optical printing chain. Reason why Malkames used his 16mm Arriflex to copy old, damaged films. Reason why you should consider nothing less than an Arriflex for your live photography.

ARRIFLEX
COMPANY OF AMERICA

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"...and when I've finished with it as an optical printer, I use my Arriflex 16M as a camera again..."

—Karl Malkames

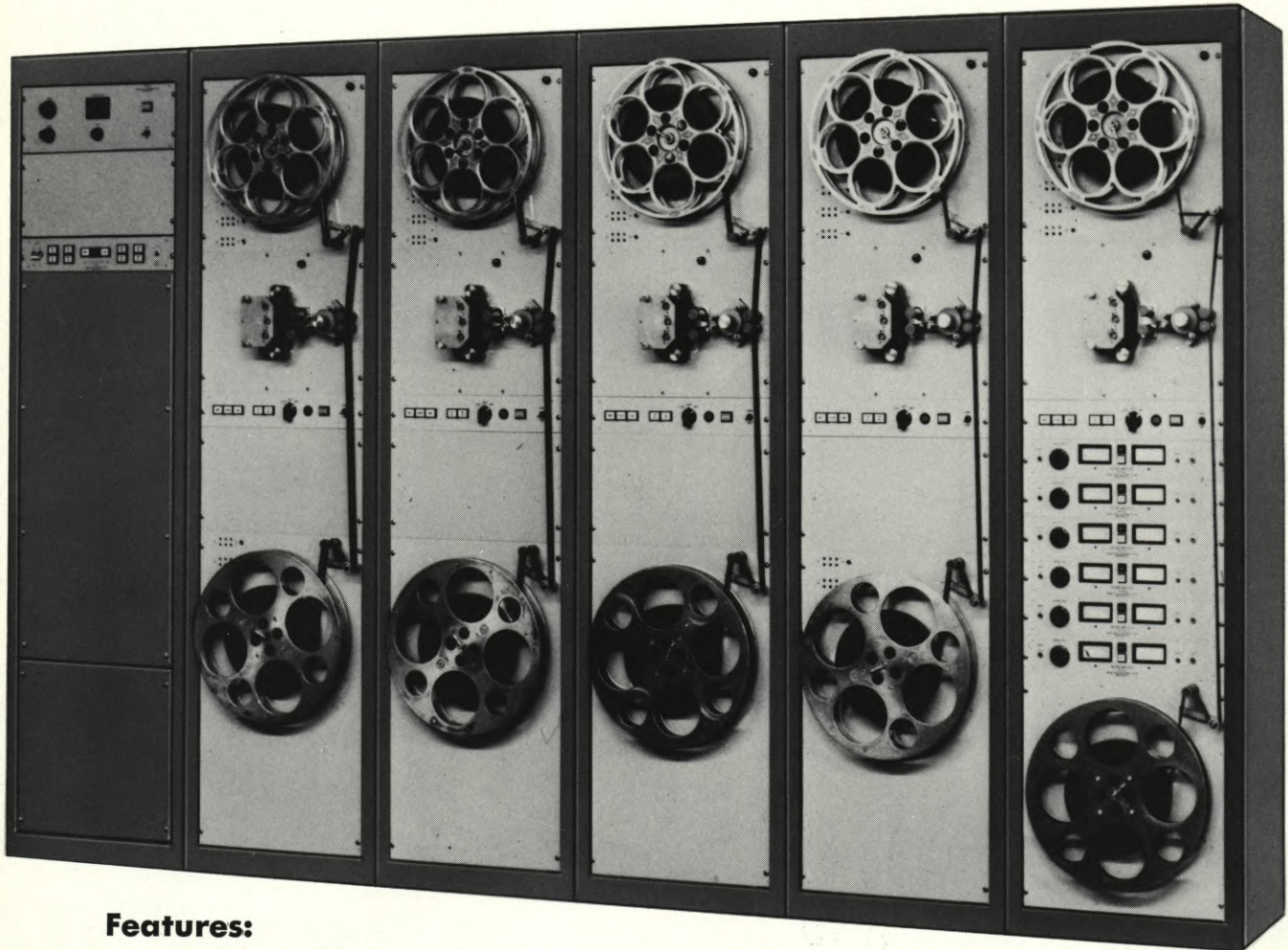


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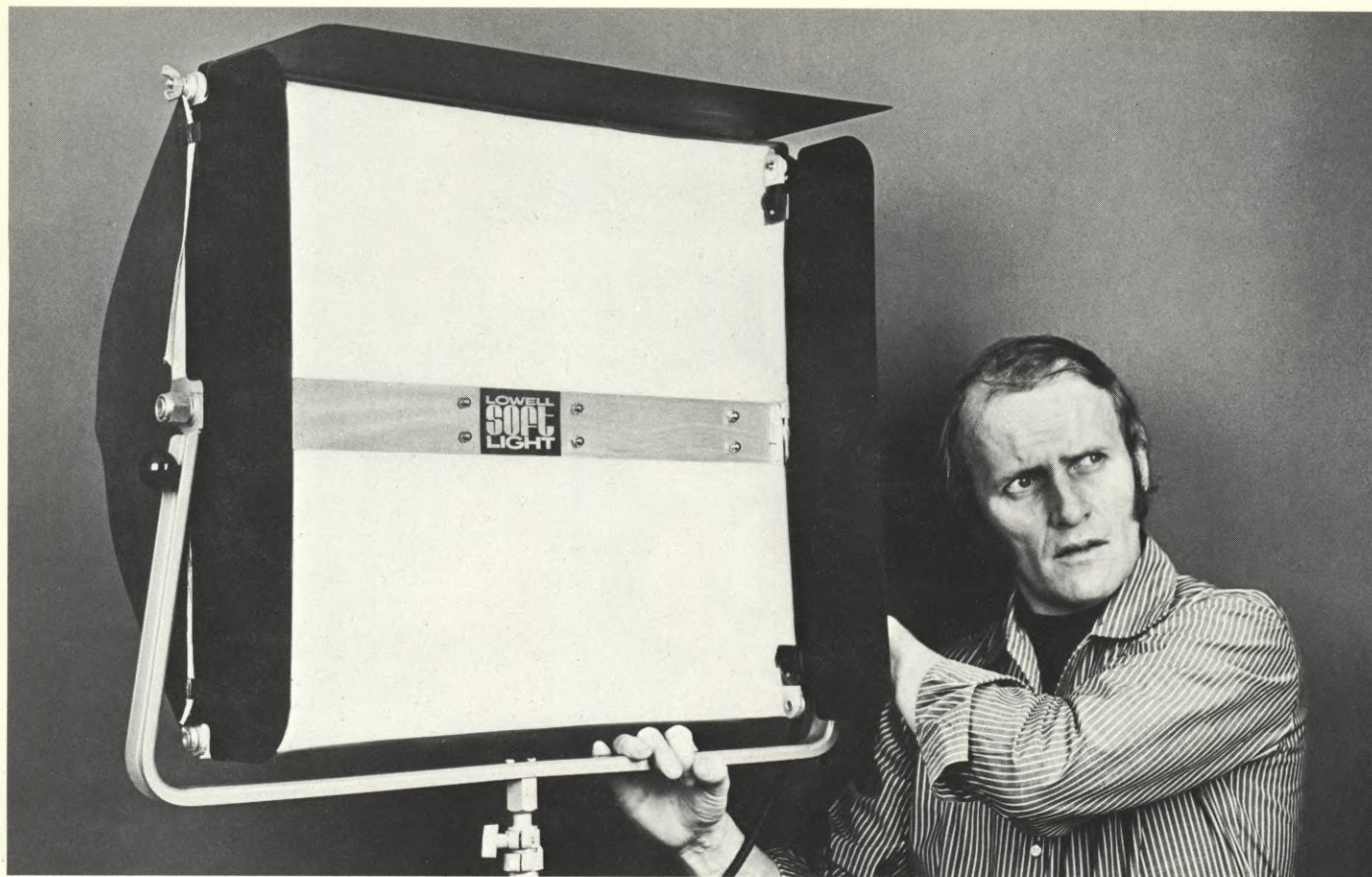
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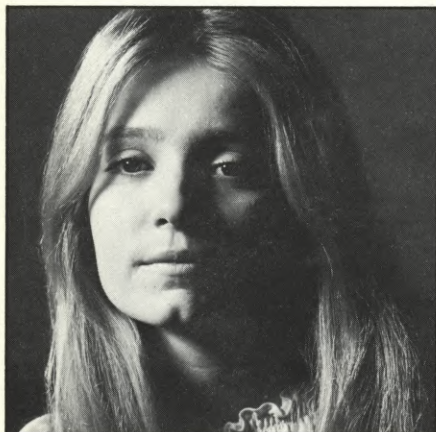
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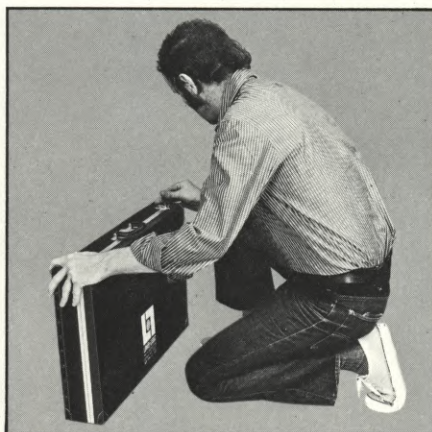


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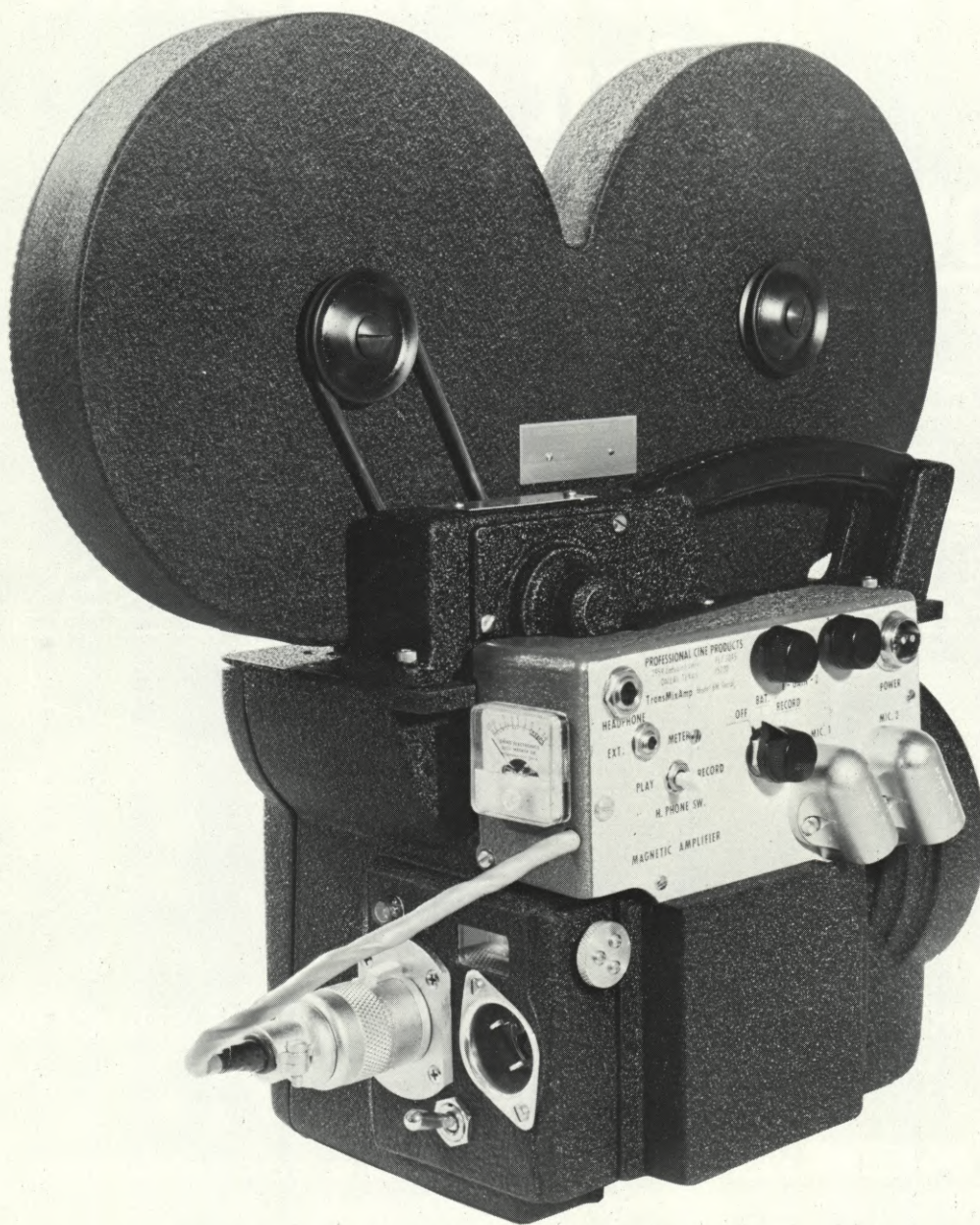
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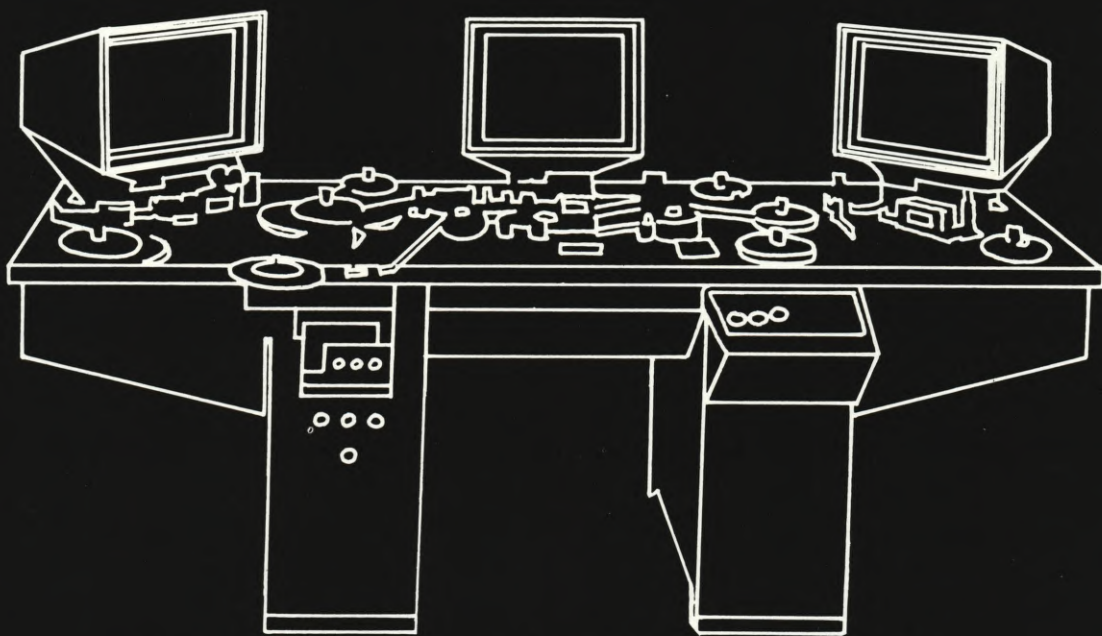
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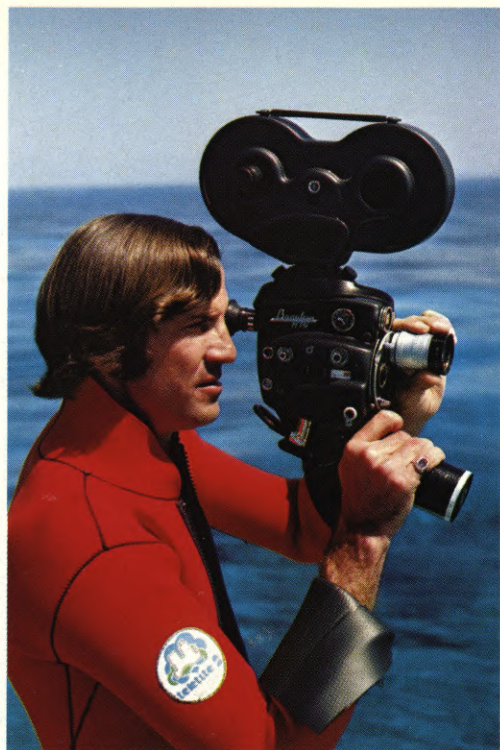
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Flip Schulke—Photojournalist/Cinematographer/"Photonaut"

□ TEKTITE II Photographic Mission Leader & Director of the one-hour long TV-film study of human adaptation to an underwater habitat titled "Man in the Sea—Teknite II" □ Contract photographer for LIFE magazine □ Seven-time Award Winner/News Pictures of the Year Competition □ Feature photo stories for National Geographic, Fortune, Ebony, Time, Playboy, Sports Illustrated, etc. □ Underwater Photographer of the Year Award—1967/10th Annual International Underwater Film Festival.

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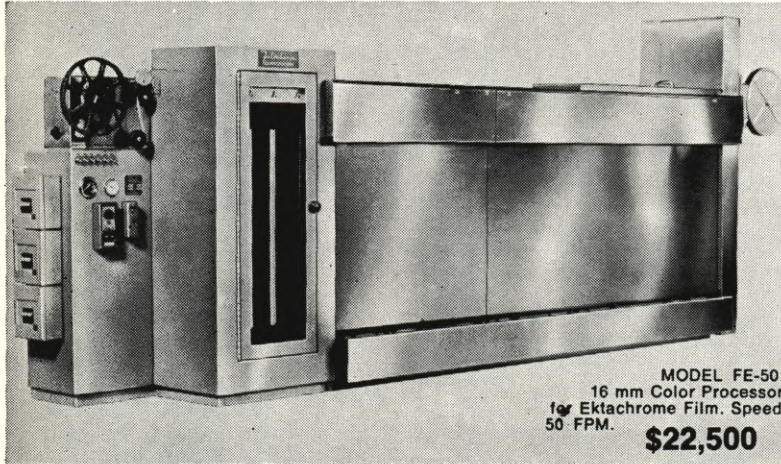
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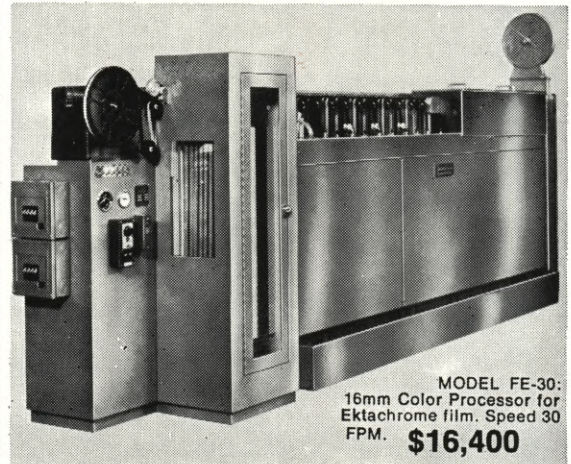
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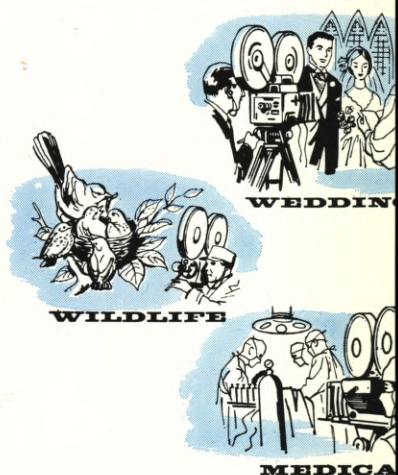
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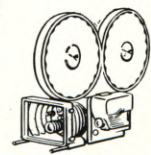
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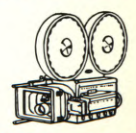
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**16MM
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CAMERAS**

ON LOCATION WITH STORM

A dedicated group of eager "pros" pool their talents to shoot the first theatrical feature to be produced entirely in Minnesota by a Minnesota film production company

By HERB A. LIGHTMAN

HUTCHINSON, MINNESOTA

This is a town of 8,031 souls, located about 60 miles from Minneapolis. It is grass-roots, main-street America, a town of friendly solid citizens. Surrounded by picturesque farms, it is the kind of community in which Andy Hardy might have grown up.

There's only one thing slightly wacky about the local gentry: They're snowmobile freaks—from toddlers to octogenarians.

I'm with them. The speedy snow scooters turn me on—as do any diminutive vehicles that go fast and make a lot of noise.

Right now it's cold, teeth-chattering cold. Or at least it is to someone like myself who hails from a land of orange groves, palm trees and perpetual sunshine (according to the Chamber of Commerce).

"You call this *cold*?" snorts one of the natives. "It's only 16 degrees below zero. Why, in these parts that's practically a thaw!"

Yeah—well . . .

The question is: What is a thin-blooded Californian like me doing in a place like this? The answer: I'm here to witness what is hoped will be a famous "first"—the production of the first theatrical feature picture to be produced in Minnesota by a Minnesota film company (Dandelion Productions of Minneapolis) and also, incidentally, the first feature to direct a sidelight focus on snowmobiling and snowmobile racing.

It is not, however, to be confused with feature-length sports documentaries like "ENDLESS SUMMER" or "ON ANY SUNDAY". Titled "STORM", it is a gutsy dramatic movie about the experiences of a young man who returns to



(ABOVE RIGHT) Most of the 8,031 people of Hutchinson, Minnesota crowd grandstand for running of Hutchinson Grand Prix snowmobile race. (BELOW LEFT) Dandelion Productions crew sets up in a remote Minnesota wilderness area to film sequence in which a man is attacked by wolves. (CENTER) Hollywood makeup expert Robert Westmoreland pours artificial blood ("It coagulates just like the real thing!") over actor portraying victim of wolves. A gory collage of mortician's wax and cow's giblets completed the horror of the scene. (RIGHT) Wolves cast in sequence were wild, tame and stuffed.



(LEFT) Scene is slated as part of sequence filmed inside garage of snowmobile dealership. Though snowmobile races and cross-country chases provide exciting action sequences in "STORM", it is not a sports documentary, but a dramatic feature concerned with the relationships of its characters. (CENTER) Rehearsal of a moment of confrontation. (RIGHT) Interior sequences were filmed with simple, but effective lighting. Actors in the film are all professionals, but most are from the stage and had never appeared in front of a camera before.





Director of Photography Ron Eveslage and Assistant Cameraman Jan d'Alquen rig Photosonics camera on high snowmobile mount to get over-shoulder shots of driver as he races around track. Camera crew, gaffer and soundman are San Francisco-based technicians.



Hand-holding crystal-controlled Eclair NPR, Eveslage crouches right in the big mix of the race, as roaring snowmobiles whiz by him. Most filming involved actual racing at Hutchinson Grand Prix, but one special race was staged expressly for the camera crew. Moving cameramen hand-holding Eclairs and one cameraman with Arriflex on covered the entire proceedings. Intrigued spectators, informed that they were going to appear in a feature movie, were most cooperative.



Snowmobiles, moving at tremendous speed, careen around curve in oval track during running of Hutchinson Grand Prix, weekend classic which attracted a huge crowd of devoted fans. Snowmobiling, a way of life in the area, has many devoted enthusiasts.



(LEFT) Star of "STORM", Lance Henriksen (in red suit) is accomplished actor from the prestigious Tyrone Guthrie Theatre Company in Minneapolis. This is his first film role. (CENTER) Preparing mounted camera to shoot sequence in which snowmobile loses one of its skis. Local racing racers served as stunt drivers for the film. (RIGHT) Festooned with cameras and wearing an Arctic Cat snowmobile suit ten sizes too large for him, the author prepares to shoot picture of race.



his boyhood home in northern Minnesota in search of his identity. This particular identity crisis happens to include a fast-paced snowmobile racing episode and a hair-raising cross-country chase on snowmobiles—but that's only part of the crisis.

Picked up at the Minneapolis airport and driven out here by the film's producer, Richard A. Diercks, I have been told that "STORM" is six weeks into production, right on schedule and slightly under budget at this point. Not bad for a first anything!

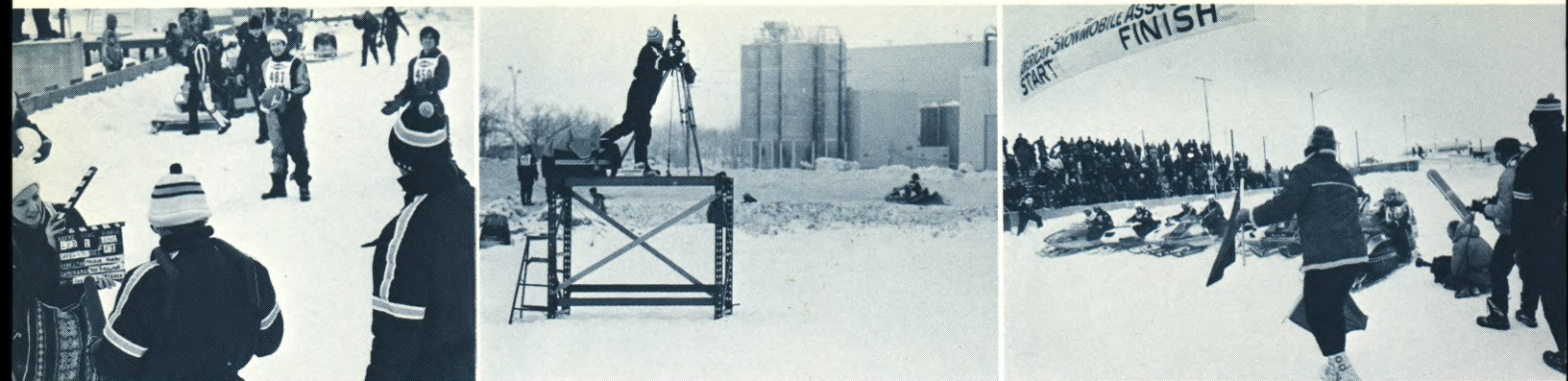
The company has already completed shooting of sequences in a private home in south Minneapolis, at various locations on the campus of the University of Minnesota, at the Country Dam Bar in

Amery, Wisconsin, and at Thief River Falls, Minnesota, a famous snowmobile center of this area. At the latter location, some 27 scenes were shot in and around the plant of Arctic Enterprises (manufacturer of Arctic Cat snowmobiles), depicting a major snowmobile company and the central characters who work there. Arctic offered its plant, snowmobiles and personnel for technical assistance on the movie. It also provided the distinctive black (with purple trim) winter wardrobe sported by every member of the cast and crew.

Which brings up an interesting cult aspect of the sport of snowmobiling. Each manufacturer of snowmobiles has its own distinctive color which is applied not only to its machines, but to a

vast line of snowmobiling clothes which it puts out—snowmobile suits, jackets, sweaters, boots, gloves, scarves, face masks, caps—everything but fur-lined bikinis. The drivers of the various snowmobiles wear the clothes that go with their particular machines and are, thus, instantly recognizable as Good Guys or Bad Guys, as the case might be. The whole clothes thing has gotten to be such a "HIGH NOON" syndrome that if, for example, a lone snowmobiler in a yellow suit should happen to blunder into a bar full of red-suited drivers, he might very well become the focal point of organized mayhem—or so I'm told.

The company has moved into this town to shoot sequences during the running of the Hutchinson Grand Prix, a



(LEFT) Associate Producer Mary Olson holds the slate for marking of a scene during oval-track race. She also served as Script Supervisor. Dedicated spirit with which "everybody did everything" was typical throughout the production. (CENTER) Second Unit Cameraman Terry Morrison operated camera mounted on low parallel at turn in the track just before the "home stretch", a place where dramatic spills often occur. (RIGHT) At the drop of the starter's flag the snowmobiles take off from the start line. Hutchinson Grand Prix was a regularly scheduled event, but one race was staged exclusively for the cameras.

snowmobile derby to be held at an oval-track just outside of town. They will shoot dialogue scenes during and after the races, as well as crowd reactions, pit scenes, heat races and shots from the finals in each class. A dramatic highpoint will be the moment when one of the skis comes off the machine driven by an actor and he goes skittering around the track out of control.

As a base of operations, Dandelion Productions has taken over the Hutch Motel (a name which sends visions of Playboy Bunnies hopping through my head), but it turns out to be a very proper hostelry.

Crew members, having been off on a hiatus, are converging at this spot from all over the country to resume shooting. The first one I meet is Dandelion's Unit Manager, Lyle McIntyre, a good-natured, sandy-haired young teddy-bear who is very squared away. He is one of those unflappable types capable of dealing calmly with the thousand-and-one crises that beset any production, and without which no film company could function for very long.

Next, I am introduced to the pic-

ture's director, Maury Hurley—dynamic, quick-witted and very intense. He is imbued with that unique "frenzy for film" which I know so well, having been subject to it myself for so long a time. It's that almost fanatical do-anything-to-make-the-picture drive and dedication that separates the dilettantes from the serious film-makers. Hurley's loaded with it.

While Hurley emphasizes the fact that most of the picture consists of dramatic sequences having to do with the protagonist's personal relationships and attendant crises, it is obvious that he is partial to the snowmobiling sequences. He tells me: "We have been doing snowmobile action films for the past five years at Dandelion, and know that the machines in action are difficult to film.

"For example: When you find a scene that is exactly what you want, you must get it in one take. Once the machine tracks up the snow, the scene is lost.

"Moving in snow which is three feet deep is very difficult. Setting camera position becomes a physical problem

much like trying to work in quicksand. The weather is never ideal. It is either 30 degrees below zero, or storming it seems.

"At any rate, we know we have a subject that is both exciting and new. A snowmobile race is wilder than anything there is on wheels—the man sitting on an open seat, his feet skimming the ground, traveling at speeds in excess of 80 miles an hour on ice."

Lyle McIntyre, who has been rummaging around in the wardrobe truck parked outside the motel, shows up at this moment with an armload of gear.

"You're liable to freeze your gonads off out there at the track today, so I brought you some warm things to wear," he says, handing me a pair of insulated boots and a huge black Arctic Cat snowmobile suit.

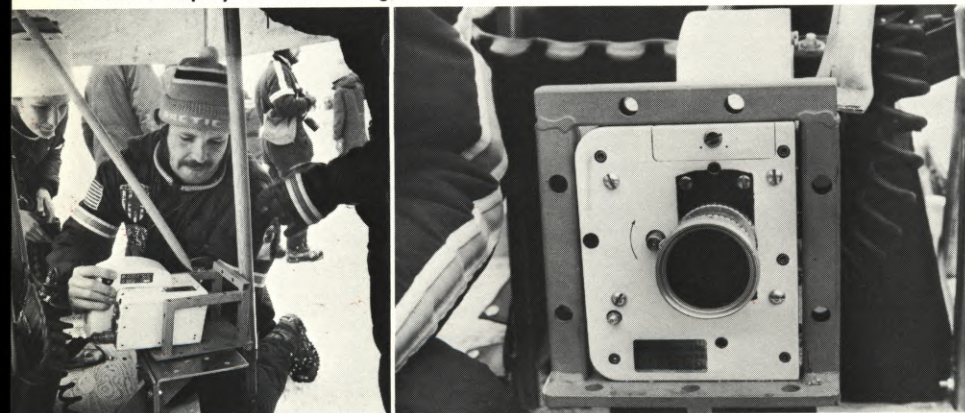
"All I had left in suits was Extra Large," he says. "Sorry 'bout that."

I try the suit on and it fits like a sarcophagus. My hands get lost somewhere near the elbows. The legs are a foot longer than mine are. The crotch of the garment hits right at my kneecaps. This creation would be just perfect for the Jolly Green Giant. However, even though it makes me look like Dopey of the Seven Dwarfs, I'm glad to have it. Beats risking the gonads any day!

Meanwhile, the San Francisco-based crew members are arriving. These include: Director of Photography Ron Eveslage, Assistant Cameraman Jan d'Alquen, Soundman Jim Mansen, Gaffer Bill Maley and Second Unit Cameraman Terry Morrison. On hand also, to help provide full coverage of the races, is local Second Unit Cameraman Skip Nelson.

The last crew member to arrive is Hollywood makeup expert Robert Westmoreland, whose credits include "PLANET OF THE APES", "MISSION IMPOSSIBLE" and "STAR TREK". Everyone has been praising his work on

(LEFT) Associate Producer Olson watches as Ron Eveslage fits Photosonics camera onto low camera mount rigged on snowmobile. (RIGHT) Photosonics camera rigged alternately in both high and low positions aboard snowmobile, was used to get exciting point-of-view and over-shoulder shots. It was usually run at 32 frames-per-second to minimize peculiar cyclic vibration set up by snowmobile engine.





(LEFT) Ron Eveslage balances Eclair NPR on his shoulder between races. His camera was rigged for crystal-control, allowing free movement about the track during shooting of sync-sound scenes. The new Eclair ACL was also used as an extra camera. (CENTER) The picture's "heavy", Rino Mascarino, springs one of his fancy dialects on appreciative Hollywood makeup expert Bob Westmoreland. (RIGHT) Assistant Cameraman Jan d'Alquen shivers in cold (like rest of the Californians present) while preparing to shoot race scenes with Arriflex.

"STORM", but the thing that he himself is most proud of is not the actual makeup, but an arrangement of mortician's wax and cow's giblets which he whipped up to simulate the remains of a character who had been chomped on by wolves. He tells me with great gusto how superior the new 3M artificial blood is to similar preparations he's used in the past, emphasizing the fact that it coagulates "just like the real thing." I have the feeling I'm listening to a hemoglobin commercial.

"STORM" is budgeted at \$250,000 and is being filmed, oddly enough, in both 16mm (for blow-up) and 35mm. I'm told that the two different film gauges are being confined to whole sequences, with no actual 16mm/35mm intercutting within the same sequence.

The crew personnel from Dandelion Productions are all young, but highly experienced in the making of commercial, industrial and documentary films. However, they are all honest in admitting that they know nothing about
Continued on Page 204



(LEFT) Gaffer Bill Maley checks mount he rigged aboard snowmobile to hold Photosonics camera. Doubling in brass, Maley had his own truck available on location with everything required for rigging of special mounts as needed. (RIGHT) Soundman Jim Mansen operates crystal-controlled Nagra recorder on race-track location. Despite less than favorable sound conditions throughout filming, sound is of such high quality that little or no post-dubbing is expected to be necessary.

(LEFT) Jan d'Alquen, in high camera position atop shed adjoining track, trains Arriflex on three hotly contending snowmobiles as they round a curve. (CENTER) Cinematographer Eveslage discusses upcoming scenes with Director Maurice Hurley, whose head is really not the shape it appears to be in this photograph. Hurley is in his element in directing these sequences of "STORM", having made several previous films for snowmobile industry. (RIGHT) Unit Manager Lyle McIntyre doubles as Second Unit Soundman for Cameraman Skip Nelson.



PHOTOGRAPHING THE FRENCH CONNECTION

An exciting screen adventure, superbly photographed to capture wild action and the true grit of Fun City



"THE FRENCH CONNECTION," a Philip D'Antoni Production for 20th Century-Fox release, based on the best-selling book by Robin Moore, is a perfect example of the truism that reality is nearly always more dramatic and unpredictable than fiction.

The film depicts the exciting real-life story of a pair of dedicated, hard-working New York City Narcotics Squad detectives, Eddie Egan and Sonny Grosso, who played a long-shot hunch that eventually led to the smashing of a \$32,000,000 international dope smuggling ring. The trail proved a long and arduous one, and before it ended, it involved leading citizens of both France and the United States, including France's most popular television personality of the day.

"THE FRENCH CONNECTION" marks one of the most ambitious movie

projects ever to be filmed in New York City. Eighty-six separate locations throughout the city were utilized, covering Fun City scenically as it has rarely been covered before in a feature film. Locations included such Manhattan sites as the swank Westbury Hotel on Madison Avenue, Central Park, Park Avenue, the lower East Side, Little Italy, and the busy shuttle beneath Grand Central Station; the Bedford-Stuyvesant and Coney Island sections of Brooklyn, Hunt's Point in the Bronx, Maspeth in Queens; and Ward's Island, in the upper East River near Hell Gate. In addition to New York City locations, "THE FRENCH CONNECTION" also filmed at key government buildings in Washington, D.C., and in Marseilles, France.

Besides the almost overwhelming logistical problems involved in transporting cast and crew to the record number

(LEFT) Interior scene in actual restaurant, warmly lighted to simulate candlelight and provide striking contrast with the cold outside. (CENTER) Low-ceilinged bar was one of several used as locations in the film, creating formidable problems when it came to lighting. (RIGHT) Elegant supper club featured the usual low ceiling, plus two walls that were fully mirrored. It was lighted entirely through the use of "Dinky-inky" lamps placed on the tables and wrapped with red gel.



(LEFT) An abandoned warehouse provided the spooky locale for the film's climactic sequence. (CENTER) Only light used in shooting warehouse interior came from lamps placed outside the windows, which were covered with tracing paper to create diffused flare. (RIGHT) A raid by the police on Puerto Rican vandals involved the largest night exterior location, an area in Brooklyn three blocks long. Four 10K's were used for main illumination with smaller units hung on fire escapes and telephone poles. No arcs were used.





(LEFT) Scene inside the lobby of Manhattan's Westbury Hotel, showing the elaborate lighting and rigging needed to achieve an "available light" look. (CENTER) Rigging camera mount on front of car in order to film point-of-view shots for the elaborately wild chase sequence that is the dramatic high point of "THE FRENCH CONNECTION". (RIGHT) Shooting from a 12-foot parallel in the middle of the sidewalk on Madison Avenue between 45th and 46th Streets. The *blasé* New Yorkers paid no attention to the rig and lengthy sequence was filmed without having to camouflage the camera.

of filming sites (no formal studio interiors were utilized), producer D'Antoni was daily faced with the challenge of filming, mostly outdoors, during New York's highly unpredictable winter months of December through February.

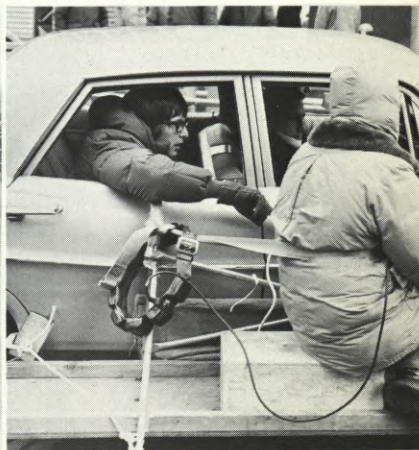
"The winter was when the actual events occurred," said D'Antoni, "and there was never any question that we would try to achieve a similar effect. Filming in New York in the winter presents unique problems to the filmmaker, juggling schedules and locations, cooperating with various city authorities, moving hundreds of people and heavy equipment all over town, often in snow and sleet, but it was worth it. We achieved a 'feel' of the streets impossible to duplicate on a Hollywood studio lot. And it had a subliminal effect on our actors, too. When Gene Hackman and Roy Scheider played numerous scenes in sub-freezing temperatures where they were supposed to be tired and cold while trailing their quarry, they *were* tired and cold. This overall sense of reality communicates itself to today's perceptive audiences, who often absorb a film's authenticity rather than see it."

One of the highlights of "THE FRENCH CONNECTION" is a pulsating, mile-a-minute "chase" sequence

through the Bensonhurst section of Brooklyn. "This isn't a 'chase' in the ordinary movie sense," noted D'Antoni. "What we have, in visual terms, is a detective (Hackman) in a commandeered car chasing a killer (Marcel Bozuffi) trying to escape on a moving elevated subway train. Hackman has to drive with one eye on the traffic, the other on his quarry. We constantly cut between both individuals, showing the interaction as the detective pursues and

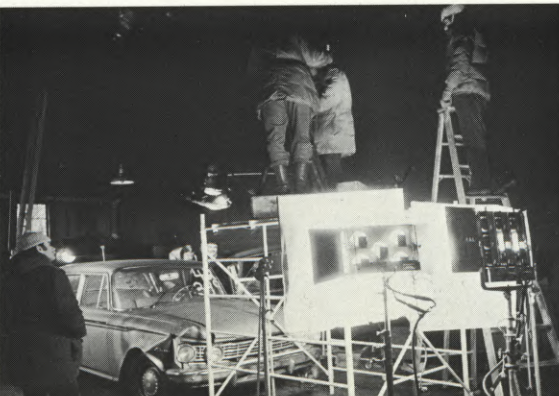
the criminal flees. Of course, there's some violence in the dramatic action of the sequence, but it flows naturally from the scene. We hope audiences will react viscerally to the mounting excitement, much the same way they did to the now-classic chase sequence in 'BULLITT'."

Producer Philip D'Antoni has a personal interest in the subject of "THE FRENCH CONNECTION" far beyond his professional dedication to the film.



(LEFT) Improvised camera car, with operator riding "outrigger" mount, follows the two detectives down a Brooklyn street. (RIGHT) Director Friedkin gives some back seat instructions to the camera operator poised on the exterior platform. No conventional dolly shots were made on the streets. Moving camera shots were made from an ordinary car or a wheelchair or with the operator "walking" the camera.

(LEFT) For the final violent shoot-out sequence, lighting was kept very stark, with no fill light used, in order to enhance the dramatic impact of the action. (CENTER) Sequence lighted predominately by means of quartz cluster units, softened by sheets of diffusion material placed in front of them. (RIGHT) Sequence shot in the lavatory of the black bar was lighted by means of a single photoflood replacing the conventional bulb in practical overhead light socket. No fill light was used.





(LEFT) Intricate shot begins with scene of diners inside warmly lit restaurant, then zooms through window to show detective waiting in the cold across the street. (CENTER) Final sequence inside abandoned warehouse was photographed with lights placed outside and beamed through windows. Glass panes were covered with tracing paper to hide lights and create intentional flare. (RIGHT) Director of Photography Owen Roizman lines up scene with hand-held Arriflex, while Director William Friedkin looks on.



(LEFT) In car used for chase sequence, one camera is mounted behind driver to film over-shoulder shot, while second camera is mounted on passenger seat to photograph profile closeup of driver. (RIGHT) Operator crowded behind camera in back seat, adjusts camera for over-shoulder shot.

He is a native New Yorker, with a passionate love for his hometown and a terrible sadness at what time, crime, and particularly, the new drug culture, has done to degrade what he still believes is the finest city in the world.

"Some people believe that New York is a terminal case," says D'Antoni, a graduate of Fordham University, who began his career in the CBS mailroom. "I don't buy that pessimism at all. I think we can solve all our problems, if we take them in stride and deal honestly with them. And that includes drugs. Obviously, you've got to reach the big 'pushers,' the masterminds behind the operation. If you cut off the big guys, if you make it too tough for them to operate, you are well on your way to licking the problem in New York and in the whole country for that matter. That's what Eddie Egan and Sonny

Grosso did in 'THE FRENCH CONNECTION'. The amount of pure heroin confiscated at the end of that investigation is still a record haul for law enforcement authorities in the United States, with a street value of \$32,000,000. I like to think that in our own modest way this dramatization of 'THE FRENCH CONNECTION' will play a significant role in creating public awareness of one key aspect of a serious problem facing all of us."

D'Antoni selected one of the industry's foremost young directors, William Friedkin, to helm "THE FRENCH CONNECTION". A native Chicagoan, a city not unfamiliar with the drug problem, Friedkin shares his producer's passion for filming "THE FRENCH CONNECTION" so that it deals truly with its subject.

Says Friedkin, "This is a dirty, stark

and ruthless story, fortunately larded with some humor in certain incidents. It had to be captured that way on film. The main characters, be they cops or criminals, project their own complex inner reality. You know, some are actually walking zombies and monsters, and I don't mean just the so-called 'bad guys.' Of course, Gene Hackman and Roy Scheider carry the load, portraying two real-life human beings, heroic after their own fashion, who happen to be policemen. But we tried to film it honestly and with compassion, and I think we have not only an entertaining motion picture, but one which also makes a contribution to understanding the nature of ourselves."

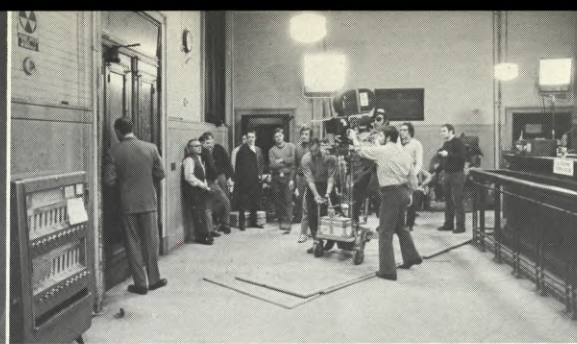
Rarely has a feature film depended so heavily upon photography for its dramatic impact as did "THE FRENCH CONNECTION". The gritty, gutsy visual style of this picture is, perhaps, more important than any other single production element in establishing an authentic atmosphere, creating mood, building pace and enhancing the force of the slam-bang action.

Selected for the important function of Director of Photography was dynamic, New York-based cinematographer Owen Roizman who, in the following interview, comments in detail upon the unique problems, technical challenges and cinematic techniques involved in photographing "THE FRENCH CONNECTION" entirely on location in the streets and structures of New York:

QUESTION: Although the photography

(LEFT) Roizman operates hand-held Arriflex during filming of sequence in pizza bar. (CENTER) During chase sequence, car careens wildly through a pile of trash, narrowly missing steel pylon of elevated railway. Actor Gene Hackman did much of his own driving during the two weeks required to shoot the sequence. An unscheduled crash added to the excitement. (RIGHT) Lining up a shot with 600mm lens mounted on Mitchell camera. Long lenses were rarely used during the filming and they were employed only when a specific effect was desired.





(LEFT) Filming inside actual night club was complicated by the fact that the ceiling was very low and there were mirrors on two walls. (CENTER) Available light inside large room was augmented through the use of a couple of diffused quartz cluster units. (RIGHT) Filming exterior sequence on the icy sidewalks of New York worked hardships on cast and crew, but resulted in a degree of authenticity that could have been gained in no other way. Actual situations which form the basis of "THE FRENCH CONNECTION" took place in New York during the winter months.

of "THE FRENCH CONNECTION" is, as such, skillfully unobtrusive, it has a very distinctive visual style. Can you tell me how, in concept, that was arrived at and what technical approaches you decided to use in order to achieve the desired style?

ROIZMAN: In the first meeting that I had with Phil D'Antoni and Bill Friedkin, they told me that the one thing they did not want was a "pretty" picture. They wanted it to be rough, almost documentary, but with the look of a professional job to it. It had to be the kind of picture that would involve the audience. This meant that there would be a lot of hand-held camera-work, and they didn't especially care if the audience was aware of the camera. Another important goal was to not make New York look pretty. So the approach in scouting locations was to pick places that would make the city look the way it really looks. I tried to figure out some sort of a style that would carry that effect through—not necessarily to be different—but something that would add to the atmospheric result. I wanted the images to have a dismal, dreary look. We were going to shoot in winter and it was going to be cold. The feeling of those conditions had to come through on the film.

QUESTION: In terms of mechanics, how did you set about achieving this?

ROIZMAN: Fortunately, the quality of light that is characteristic of winter in



(LEFT) Suspenseful "cat-with-mouse" sequence was filmed in actual subway station. Fluorescent lamps lighting platform were colder than those on train cars, but Roizman decided against replacing them, in the interest of realism and speed of filming. (RIGHT) Many of the shots in subway sequence were photographed with hand-held Arriflex.

New York lends itself to the type of photography I had in mind, but it called for a complete reversal of the technique I would use in shooting a "sunny" subject. When I'm working with contrasty sunlight, I take the approach of overexposing the film and printing it down in order to get a very rich kind of color. In this case I did just the opposite—underexposing everything and printing it up. This flattened the contrast out and got a bit of grey into it.

QUESTION: By how much, in general, would you say that you underexposed it?

ROIZMAN: It varied somewhat according to the particular scene, of course, but all of the night stuff was underexposed by a full stop. I also force-developed everything one stop and then underexposed on top of that.

QUESTION: Does that mean that you might be two stops under when you shot the scene and then pushed it one stop in development?

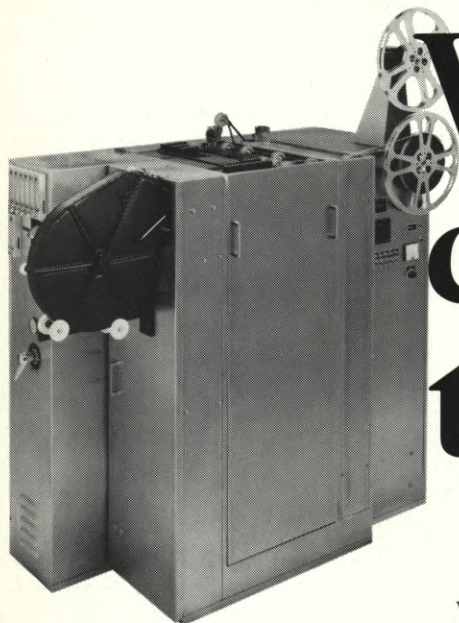
ROIZMAN: Yes—that's generally what I did for the night work. For the day stuff, I usually underexposed it a stop and a half, force-developed it one stop and printed it up from there. I tried to shoot it so that the lab could do very little to change it. I knew that if I gave the lab a solid, normally-exposed negative and then asked them to print it in a special way, it just wouldn't have the same look. They would be very creative and make a very beautiful print of something I didn't want to look beautiful at all. I tried to give them a very thin negative so that they would have no leeway in printing it.

Continued on Page 184

(LEFT) At climax of chase sequence, dope pusher is shot in the back by Detective Egan as he tries to escape up stairway of elevated. (CENTER) Police, taking cover behind patrol cars, shoot it out with dope smugglers gathered inside abandoned warehouse. (RIGHT) In basement hideaway, detectives monitor phone conversations of suspects in dope smuggling caper. "THE FRENCH CONNECTION" is film dramatization of real-life situation in which detectives Egan and Grosso managed to intercept shipment of pure heroin with a street value of \$32,000,000.



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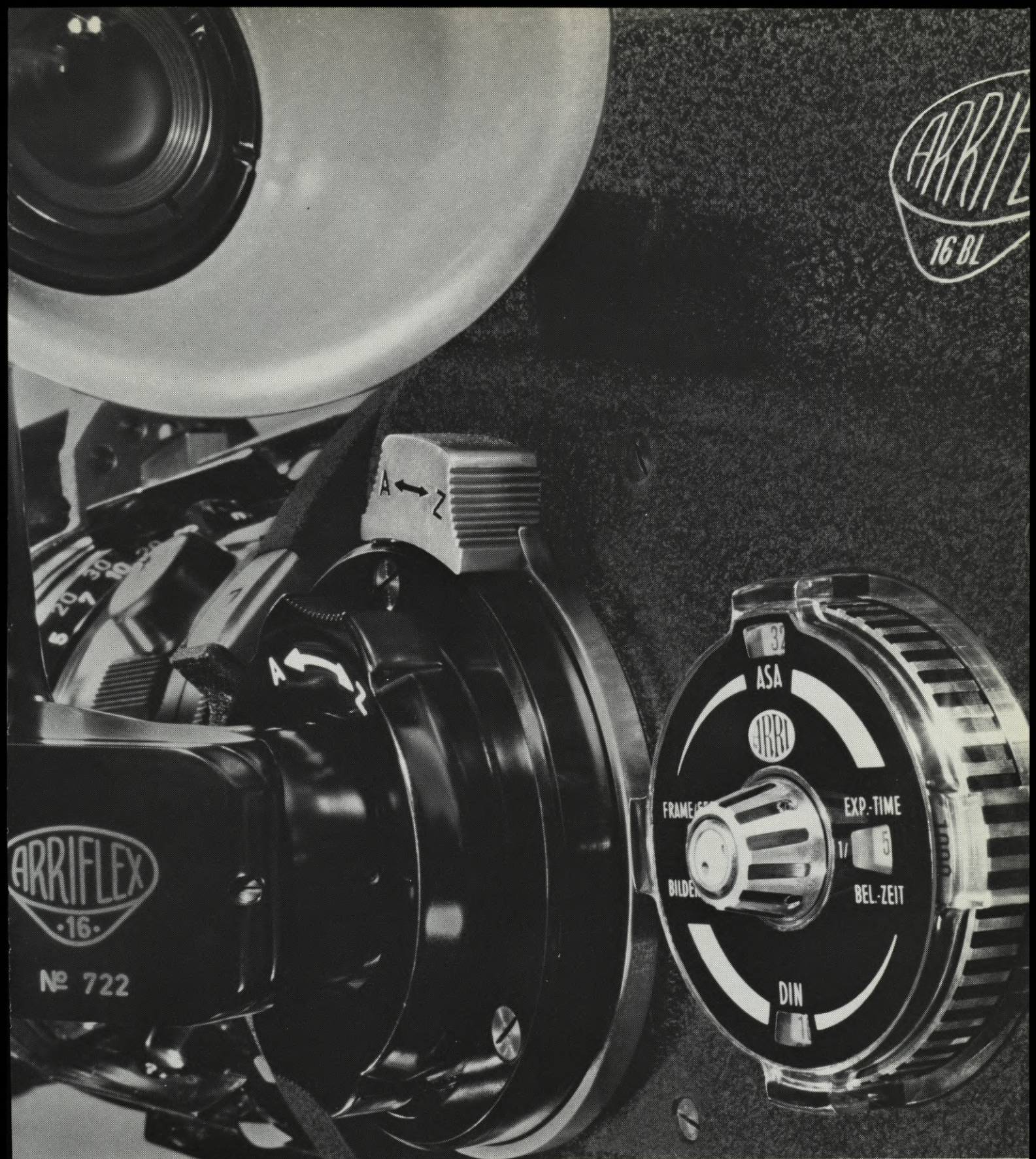
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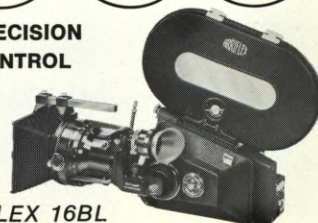
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PROFESSIONAL AND PROFITABLE FILMING IN SUPER-8

By MARSHALL BROWN

The refinement of Super-8 into an original filming format is a breakthrough with bright commercial prospects

- ★ Super-8 is opening up a vast new profitable market that is beyond the capabilities of the 35mm and 16mm formats.
- ★ The Hollywood mystique fails to accept that true professionalism requires adapting to the changing communication needs of a changing society.
- ★ Super-8 holds the hope of regenerating a viable industry before it is lost forever to other media.

Putting these controversial precepts to the test is a growing young company in Denver, Colorado: Creative Visual Dynamics has successfully been working entirely in Super-8 from camera to release print.

Charles Sellier founded Creative Visual Dynamics two years ago, based upon the conviction that with improved techniques Super-8 could be developed into a professional medium. Their

present success is based upon two key concepts. First, take advantage of and promote the psychological factor that Super-8 is the direct, personal communications medium. Second, recognize that there is no room for "good enough" craftsmanship in Super-8.

THE QUALITY BUGABOO

The first obstacle to be overcome was to prove that it was technically and economically possible for an all-Super-8 production to be indistinguishable from a professionally-produced 16mm film. Extensive market research, of both existing film operations and potential users of films, showed that the vast majority of industrial and educational films—up to 85%—are made for showing to audiences of fifty or less and that screens under five feet wide are most frequently used. This established the criteria for a test.

Representatives of public relations firms, business and educational institutions, two television stations, and a competing filmmaker were invited to view two ten-minute promotional films in CVD's screening room. Following the film they were asked to complete a questionnaire concerning the quality and effectiveness of the films as sales promotion and training tools. Included near the bottom of the list of twelve questions was a multiple-choice question involving whether the films were made in 16mm or in Super-8.

Of the twenty who answered the question (one declined to do so), seventeen indicated that both the films had been done in 16mm, one identified the 16mm as Super-8 and the Super-8 as 16mm, and only two indicated correctly that the first film shown had been made in 16mm and the second in Super-8. For purposes of the demonstration, a 16mm film considered among the best made during the past year by a local firm was used.

The important fact is that eighteen of twenty-one people familiar with films and their uses, several of whom were familiar with film technology, were unable to tell the difference when the films were shown on a standard five-foot-wide screen. Earlier tests had confirmed that no one could tell the difference between films originally made in 16mm and those made in Super-8 when they were shown on MPO Videotronic desk model rear projection equipment.

THE SUPER-8 MARKETPLACE

Charles Sellier believes that Creative Visual Dynamics is, in reality, opening up an entire new market for film production. There has always been a cost barrier which for many potential users ruled out the possibility of even considering the use of film as a communication medium. And there has been another group that, although they had made an entry into the use of films, did not feel that they could justify continuing.

It is very important to realize that there are two benefits gained by the application of Super-8 to these markets. First, there is the very real savings in

Shooting of an industrial film by crew of Creative Visual Dynamics, Inc., located in Aurora, Colorado. The growing young company has racked up a track record for successfully working entirely in Super-8, from camera to release print, and claims that important savings now put films within the reach of those who could otherwise not afford them. A CVD filming crew normally consists of only three men.





Charles Sellier, CVD President and Technical Director, talks with his creative staff in preparation for a sound mixing session.

material cost. Equally or more important, however, is the psychological factor. Many potential users who had permanently closed their minds to 16mm are willing to accept Super-8 as *their* medium—something that they can accept and relate to.

Customers who had never before felt that they could afford films now find that they can, and without the fear of getting into something "over their heads".

This kind of relationship actually is evident in all aspects of the marketplace—educational, industrial, even television. The first beneficiary is the customer, but it follows that the filmmaker benefits also.

The average Creative Visual Dynamics film runs 12 to 15 minutes and costs the customer \$4500. He may have previously investigated 16mm and found that it might cost him \$20,000. By turning to Super-8 he is either able

to have a film where it had not been possible before, or to expand his usage.

Taking into account the cost of raw stock and processing for the camera original, work print, answer print, etc., CVD figures that the saving amounts to over \$200 per minute of finished film. To a high-volume user such as a television station, this is a very significant amount. CVD has been actively working with a number of broadcast and cable TV stations in the utilization of Super-8 film chains. In fact, they have offered to travel to and advise a TV station with their Super-8 conversion problems free of charge.

Further savings become possible with the increased efficiency resulting from a higher volume of production. CVD crews work a very carefully planned week, which usually consists of six days.

In the educational fields, many films are kept in service after they have outlived their usefulness or have become obsolete. The cost of replacing them with updated material is usually considered prohibitive. The increasing use of Super-8 in the schools opens the door for the production of single-use and special-purpose films. CVD is presently producing a series of films for Learning Pathways, Inc., on specialized learning disabilities, and is opening new doors for educators previously unable to afford films.

It is not relevant to discuss whether Super-8 can or should compete with 16mm or 35mm; there is a vast, virtually untapped field that is uniquely Super-8's.

THE PEOPLE WHO MAKE IT HAPPEN

If one characteristic were to be found to typify the production staff at Creative Visual Dynamics, it would be a driving interest in filmmaking. Founder Charles Sellier attributes no small part of their success to the selection of people with "filmmaking in their blood". His crews willingly work long

hours to see a production completed. And they never have to worry about keeping busy; they frequently turn out as many finished films in a week as other companies do in a month or more.

There are presently eight full-time production men under Head Cinematographer Bob Wolper. CVD has a standing agreement with Bill Neff, head of the motion picture department of the University of Denver's School of Mass Communication. Bill, a fine filmer in his own right, each year recommends his top graduating student for employment with CVD. Sellier and Production Manager Jim Conway prefer to train their filmers to the Super-8 approach and to avoid what they call the "Hollywood syndrome". As Sellier puts it, "We aren't going to make them rich, and we aren't going to make them famous, but they will have the opportunity to truly experience the thrill of filmmaking."

OPERATIONS

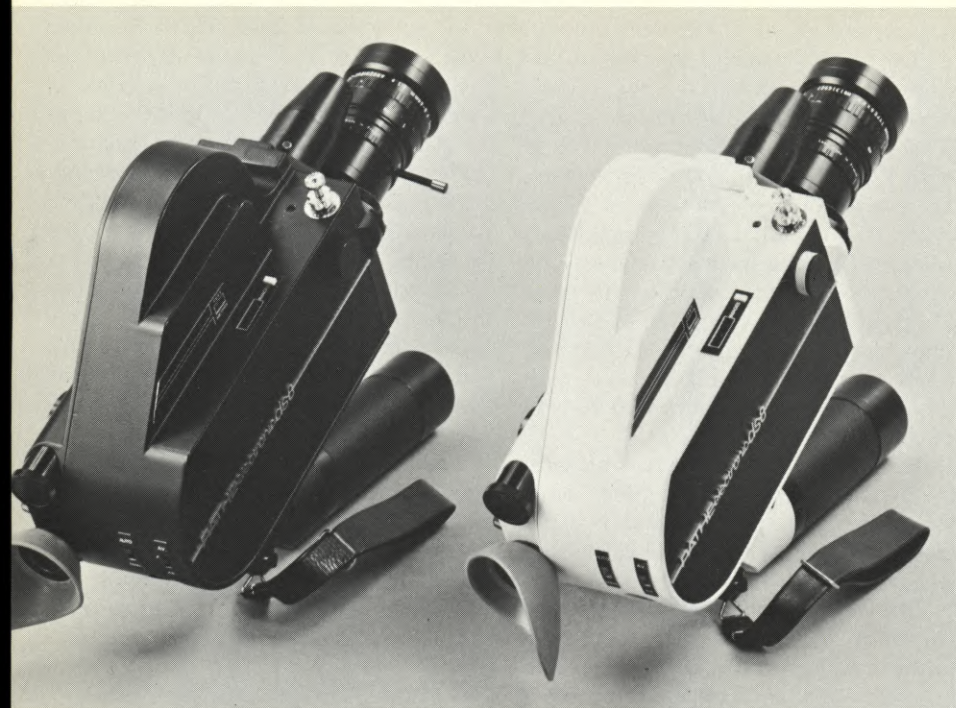
Creative Visual Dynamics exercises control over every step of the production, from conferring with the customer about the script to cartridgeing of the release prints for projection. The primary aim is to produce as perfect a print as possible.

The average time from contract signing to completion is 6 weeks. Most of that is pre-production planning and scripting. Some jobs can be done as quickly as five days when required. One television sponsor required—and got—two-day service. The contract was signed on a Saturday morning and the answer print was delivered Monday afternoon. The multiple release prints (some blown up to 16mm) were delivered for broadcast on Wednesday.

The regular camera crew on location consists of the cameraman, gaffer, and director, plus the soundman when required. Of course, each man has multiple responsibilities. The typical film requires three days of location filming

(LEFT) Cameraman readies Pathe Double Super-8 camera for the day's shooting. CVD currently has four of these and one Canon DS8 camera available to its crews. **(CENTER)** Standard 16mm magnetic film is used to set up dubbing channels for sound mix. **(RIGHT)** CVD editors are accustomed to cutting Super-8 and maintain that the only thing different about it is the size. Editors find the large viewing screen of the Moviscop Super-8 viewer to be most helpful.





Two of the recently-announced "Pathe Electronic DS8" cameras. This camera has been ordered by CVD and it will provide them with such exclusive features as: electronically regulated filming from 4 to 100 frames per second, strobe contacts, built-in 60 Hz sync generator and a NiCad battery that fully recharges in 30 minutes.

and one day of shooting in the animation studio for titles and graphics. A crew usually shoots about 400 feet a day, and the film ratio to final print is approximately 6:1. Most filming is done with Eastman Commercial Ektachrome (ECO), which CVD was instrumental in getting Kodak to release in the DS8 format.

At the end of the day's shooting the film is sent to Western Cine in Denver for processing and a work print.

The customer usually views the daily work prints for any comments or sug-

gestions. Editing is not commenced until all shooting is completed.

Retakes are probably more frequent than in 16mm or 35mm practice. The primary reason for this is the insistence on obtaining the best possible picture, so exposure errors, blemishes, or processing defects are normally immediate cause for a retake.

The script has of course been prepared prior to shooting, but the narration is not recorded until after the work prints are all received, in case the customer desires a change in emphasis

after viewing the footage. The narration is then recorded and the work print is cut to match the narration for industrial and sales types of films. This is because the visuals are considered an adjunct to the voice, where proper timing is important.

After completion of editing a timed reversal answer print is ordered. The final sound mix is made of narration, music, and effects. This is so the customer may view the answer print with double system sound. He is never allowed to see a mute print. Occasionally this means that if a change is requested the sound must be remixed, but CVD considers this preferable to having the customer misjudge a mute print. The approved answer print is sent to Hollywood Valley Film with a log of timing corrections, and a two-row internegative is made.

The lab then runs the release prints, which may number anywhere from 50 to 500. They are then returned to CVD for transfer of the magnetic sound. Good quality sound is as important to CVD as a good picture, and it is much easier to correct a bad sound track by re-recording before it is loaded into a cartridge than after.

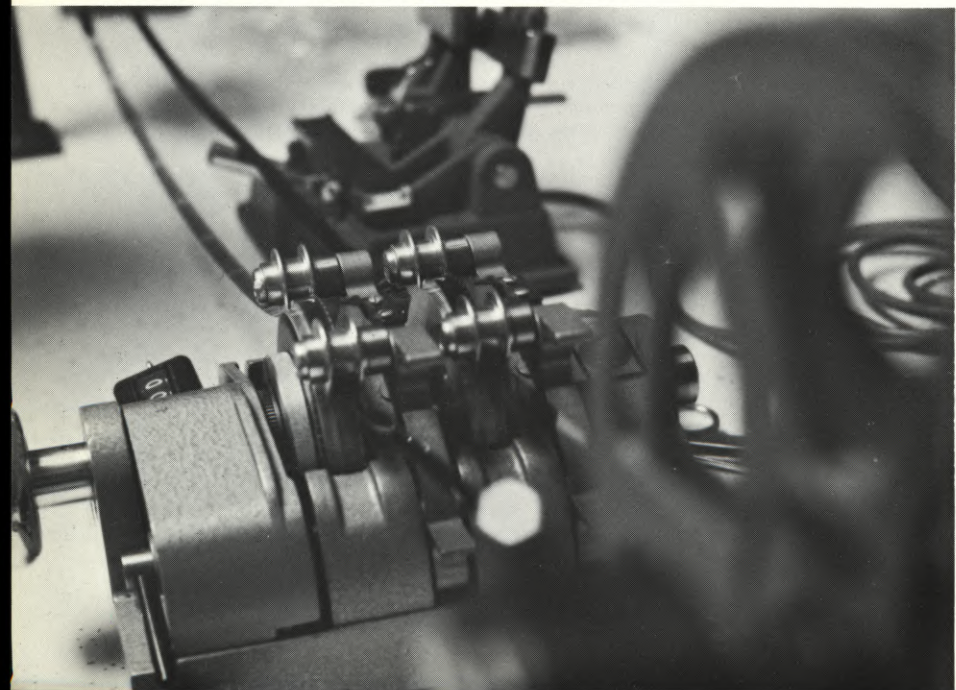
Over 90% of CVD's customers request that the films be loaded in the MPO cartridge for projection. This is done in CVD's studios. Sellier feels that the performance and reliability of the MPO cartridge are superior because the complete gate and pressure plate are in the projector instead of the cartridge.

FACILITIES

One of the most discouraging problems Creative Visual Dynamics had to face was obtaining the necessary tools with which to work. Almost all professional equipment was designed for 16mm and larger formats. What Super-8 equipment was available was generally designed for the amateur. Consequently, much of the editing and screening equipment had to be specially-ordered or modified by the CVD crew.

Fortunately, the Double Super-8 cameras were already on the market. One Canon Scoopic DS8 and four Pathe DS8 cameras are provided for the camera crews. They are essentially the same design as their 16mm counterparts. The Scoopic provides a compact, completely self-contained camera for hand-held filming. The built-in zoom lens covers the majority of filming situations. The 100-foot film load allows up to five minutes of continuous filming. The Pathe cameras, with their provision for interchangeable C-mount lenses and optional 200- and 400-foot film maga-

A two-gang Super-8 synchronizer used in editing. CVD editors also use Hollywood Film Company synchronizers equipped with both Super-8 sprockets (for picture) and 16mm sprockets (for the sound track). CVD has made numerous modifications to the equipment so that double-system sound can be conveniently and speedily edited.



zines, provide greater flexibility for special shooting conditions.

The recently-announced "Pathe Electronic DS8" camera has been ordered by CVD, and will provide them with such exclusive features as electronically-regulated filming from 4 to 100 frames per second, strobe contacts, built-in 60 Hz sync generator, and NiCad battery that fully recharges in 30 minutes.

Both cameras utilize the Double Super-8 format that CVD has found permits some unique economies in production. For example, it is faster and cheaper to make the work print directly from the processed camera stock before it is slit. This allows printing and processing a piece of film that is only half the normal length. After processing, the work print is slit and placed on a normal projection reel.

Sound is recorded on standard ¼-inch magnetic tape. Two Nagra IV's are available for wild or sync location recording. Electro-Voice 635A and Sennheiser shotgun microphones are usually used. In the studio the sound is transferred to 16mm magnetic film to be edited in synchronism with the film. Magnasync film recorders and dubbers can be fully interlocked with the Nagras and with the projectors in the screening room.

Initially, Craig viewers and Thomas synchronizers were used for editing the film. Moviscop Super-8 viewers and Hollywood Film Company synchronizers equipped with both Super-8 sprockets (for the picture) and 16mm sprockets (for the sound) are now available. The CVD crew has made numerous modifications to the equipment so that double-system sound can be conveniently and speedily edited.

The screening room uses both Bolex SM8 and Synchronex SP500 projectors. These have been modified by adding interlock motors to allow double-system synchronous sound. Screen brightness has been increased by changing over to quartz-halogen low-voltage lamps operated from separate external power transformers. The projector motor is still used to provide cooling.

Altec audio mixing facilities have been installed for recording from magnetic film, ¼-inch tape, records, or a 12 x 15 foot live narration studio. Magnasync remote footage counters are provided in the narration studio and other locations to assist in timing the voice, effects, and music for a film.

CVD has found that available stock shots could not be adequately matched into their Super-8 original films, so they are gradually building their own library

of stock shots, in addition to a music and effects library.

NEW LOCATION FACILITIES

Location filming will now be faster and more convenient. Creative Visual Dynamics has just taken delivery of their version of the Cinemobile. It is deluxe in every respect. The interior sleeps four and is completely air-conditioned. Regular and auxiliary generators are installed to provide power and lighting for completely independent location shooting. Built-in storage compartments provide safe transit for all cameras, lighting, sound gear, and other equipment.

The van was supplied completely outfitted (less portable equipment) by Winnebago to CVD's specifications. With as many as five crews working throughout the North American continent, location filming forms an important part of their production schedule.

NEW STUDIO BUILDING

This April will mark the opening of a new 10,000-square-foot building now under construction, which will double the area presently available. A new sound stage will occupy 2000 square feet. The stage will be completely equipped with Colortran lighting gear sufficient to provide 600 foot-candles for each of five sets.

A considerable speedup in shooting time is expected when the new stage opens. What now takes three or four days on location can probably be done in an afternoon, Sellier predicts.

The remaining 8000 square feet will accommodate new production facilities. Conference rooms and offices are being



Creative Visual Dynamics crew shooting Super-8 on location. Company has just taken delivery on a van that sleeps four and has built-in storage compartments, generators and air-conditioning.

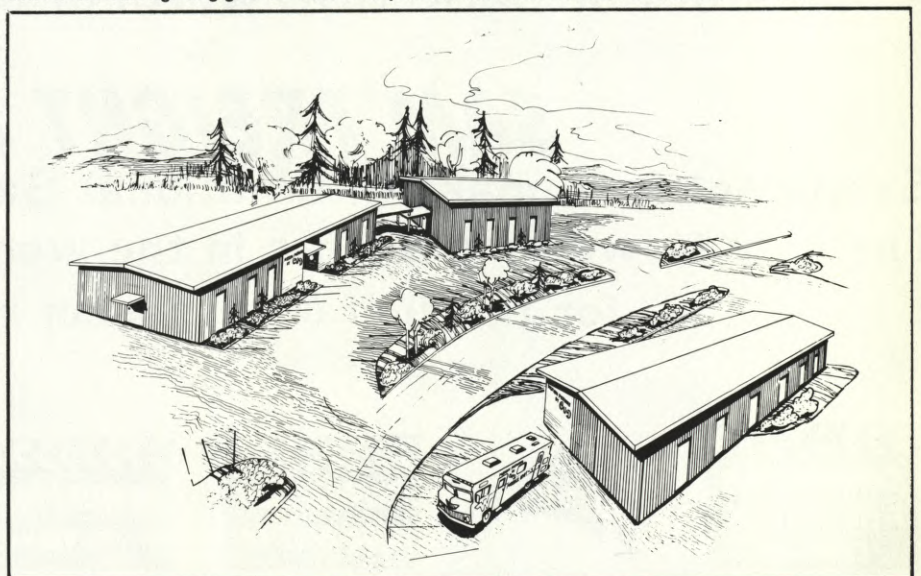
built for scripting, production planning, title preparation, etc. New equipment is being installed for editing, mixing, and sound transfer. Not only will the new building better serve CVD's expanding needs, but it can also be made available to visiting production companies.

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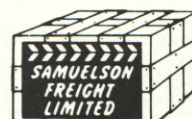
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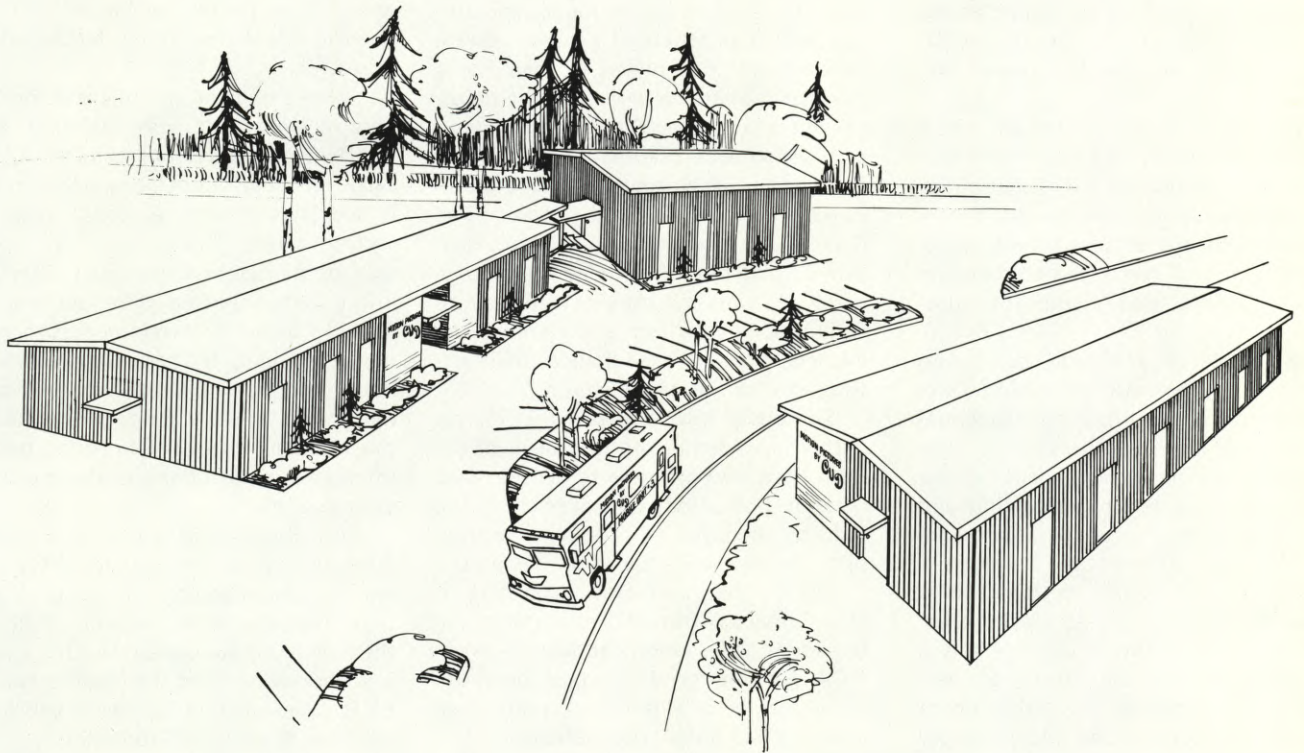


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KODAK DEMONSTRATES FEASIBILITY OF SUPER-8 VIDEOPLAYER FOR TV

Newly developed hardware for video presentation of the versatile and universal standard Super-8 film format may spark the so-far non-existent video-cassette "revolution"

"CASSETTE REVOLUTION FIZZLES"

So read a headline stretching across the front page of the December 21, 1971 edition of *The Hollywood Reporter*.

This blunt headline kicked off a two-part article by the *Reporter's* Sue Cameron in which the lady cited multiple examples to indicate that the much-vaunted (but so far unrealized) video-cassette "boom" had failed to detonate even an audible "pop" within the industry.

"A couple of years ago, companies rushed to create cassette divisions, employ leadership for these new potential profit areas, and issue bundles of news releases extolling the financial allocations and projected programming and production plans," wrote Miss Cameron. "In the last 10 months, however, a deathly silence seems to have fallen across the cassette industry. The question to be asked now is whether this is the calm before the storm of new activity or merely a true reflection of over-kill by zealous and profit-hungry entrepreneurs."

The lady then went on to answer her own question in the negative by citing case after case in which the most delirious former prophets of a video-cassette "revolution" had pulled in their horns in quiet retreat. For example, she pointed out that Peter Guber, *wunderkind* production vice president of Columbia Pictures, who wrote the highly-publicized and widely-quoted article, "The Cartridge Revolution—A New Ballgame", had not only failed to become involved in his company's video-cassette activities, but "is not alone among the experts who have re-shaped their enthusiasm for this new medium."

She cited, also, the fact that Martin Jurow, heralded as the new head of the 20th Century-Fox cassette division, had recently bowed out of that phase of the industry in favor of producing motion pictures and series for cable television.

On the hardware side, according to Miss Cameron, Tom McDermott's much-heralded \$50-million allocation from RCA for the production of programming for its SelectaVision audio-visual cassettes had failed to materialize.

She quoted Ken Fritz, who was

among the first to form a company exclusively for the production of video-cassettes and who has since "left the cassette scene for more fertile enterprises."

"Weeks became months and months became years. It was apparent that standardization was not coming. All the early talk was about programming, but it was like having a record with no record player," observed Fritz. "The lack of money and incompatibility can kill cassettes before they get started. Talking about entertainment programming is a lark. If there were a market don't you think TV production would be in it? Since I have gone back to management, my final words to people interested in cassettes are—don't give up your day job."

Even Sony, developer of a video-cassette system of excellent quality, now seems to have assumed a low profile in that area. But most damning of all was the recent announcement by CBS that it is withdrawing from the manufacture of EVR video-cassette hardware and EVR cassettes at a loss of \$10 million.

Technically speaking, the much ballyhooed EVR system was an excellent one, but its inevitable doom became obvious early on when it was announced that all software for the system, no matter what the media of the original material, would have to be transferred to a unique (and non-compatible) gauge of film in laboratories operated exclusively under the aegis of CBS.

Actually, the handwriting on the wall regarding the decline and fall of the video-cassette industry even before it got off the ground, flashed in brilliant neon more than a year ago when a video-cassette symposium was announced in Hollywood. Approximately 1500 frenzied, fee-paying attendees jammed the International Ballroom of the Beverly Hilton Hotel to capacity with hopes of planting a foot firmly on the video-cassette bandwagon. Many of them left in disgust halfway through the program when it became obvious that this so-called "symposium" was nothing more than a parade of hucksters representing at least 15 different (and non-compatible) video-cassette systems. Each made an impassioned pitch to

Feasibility model of a cartridge-loading Super-8 film videoplayer, built by Eastman Kodak Company to study the concept of a Super-8 playback device, attaches to the antenna terminals of a standard color television set for video presentation of sound/color Super-8 film. Kodak officials stress that no commitment to manufacture or market such a videoplayer has been made.



persuade the audience that *his* company's system should be adopted as the standard of the industry. It didn't take a crystal ball to predict that corporate greed (and the resultant lack of standardization) might once again deal an early death blow to a potentially viable industry.

At that time, this writer asked a simple question: "If one really *must* run material through a television receiver (and there are a few persuasive arguments in favor—especially in the field of education), why not standardize on Super-8 film?"

There were a whole raft of logical reasons which favored this obvious alternative—which is precisely why it was dismissed. For it is a well-proven fact that when corporate greed enters the picture, logic flies out the window.

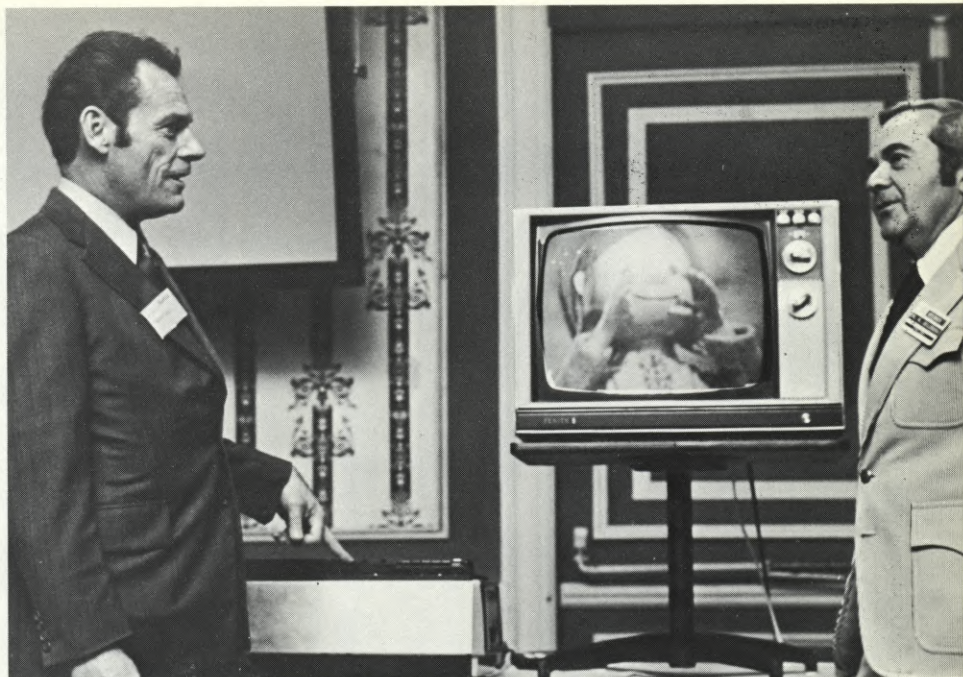
However, it appears that, fortunately, the Super-8 video-cassette alternative was *not* simply dismissed in all quarters. This became evident in October when a feasibility model of a cartridge-loading Super-8 film videoplayer that could be used in schools, business, industry, government, and in the home, to play color and sound Super-8 motion pictures over a standard television receiver, was demonstrated by the Eastman Kodak Company.

The demonstration, which Kodak emphasized was not a new product announcement, and two speeches on the concept of a Super-8 film videoplayer were delivered before the Society of Motion Picture and Television Engineers at its 110th convention in Montreal's Queen Elizabeth Hotel.

Speaking on the practicality of Super-8 film as the software to be used in a television playback system, Eric Yavitz, sales administrator for Kodak's Motion Picture and Education Markets Division, outlined several specific advantages of film over other software, stressing the limitations of other software systems entirely dependent upon a television receiver for playback.

"Super 8 film is the one system which allows the communicator to use conventional display when it's desirable, video cassette display when *it* is desirable, and use the same film in the same cartridge to do either or both," stated Yavitz.

Pointing out several of the more well-known advantages in any television playback device—such as enabling the user to program without setting up projection equipment and darkening the room, being able to feed one or a number of television sets from remote locations, etc.—Yavitz went on to point out several similarly inherent disadvantages



New Kodak videoplayer received its first public showing at a recent meeting of the Western States Advertising Agencies Association. Marvin P. Hodges (left), Divisional Director of Sales Development, Motion Picture and Education Markets, Eastman Kodak Company, gave a working demonstration of the new videoplayer. Dr. Richard J. Goldberg (right), Chairman of the Board, Dymat International Corporation, gave introductory remarks on this important "media marriage" between the already standardized Super-8 film cartridge and the television set.

of a system entirely dependent upon a television set for playback. Included were the high price of the cassette player and color television set, the limited size of the TV screen, the difficulty and expense in distribution overseas due to differing television standards, and the obvious inability to program material without a television set.

Identifying the pros and cons of a system that permits only television playback, Yavitz pinpointed the need for a more flexible system permitting more freedom for the professional communicator in business, industry, education, and government.

"Super-8 sound film systems can give the user this sort of flexibility," said Yavitz.

Citing Kodak's recent break-through in available-light Super-8 film and cameras, the existence of vast libraries of filmed material currently available, the ease and low cost of Super-8 print duplication in small and large quantities, the low cost of Super-8 print stock, the multiplicity of film processing labs throughout the world, the ease in editing film, and the ability to project film forward or backward at a variety of speeds, and to freeze-frame and stop-motion, Yavitz went on to outline a system dependent upon a highly flexible Super-8 film cartridge that could be played back on conventional silent and sound motion picture projectors as well

as on a video playback device.

"Such a system," said Yavitz, "puts at the user's disposal a recording and display system of excellent quality which can be used indoors and out, in black-and-white or color, video or non-video, domestically or internationally, with individuals or groups—all at the user's discretion."

Discussing software prices, Yavitz cited Super-8 as being the least expensive and went on to differentiate between actual print costs and program price, pointing out that the print cost is a very minor part of the total program price. Roughly 80 percent of the average current program price, according to Yavitz, is made up of production costs, salaries, royalties, residuals, distribution costs, and numerous other cost factors not related to the print cost.

In a second paper, Joseph L. Boon, Technical Assistant to the General Manager of Kodak's Apparatus Division, outlined some of the key concepts in the design of the feasibility model of a Super-8 film videoplayer built by Kodak and demonstrated at the convention.

The compact, noiseless unit, measuring 8 inches in height, 26 inches wide, and 24 inches in depth, weighs 35 pounds, runs on standard 60-cycle, 110-volt current, and its output connection is two wiring clips for attachment to the TV receiver.

The feasibility model lends itself
Continued on Page 198

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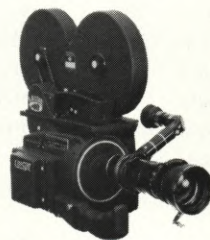
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A CREATIVE CHALLENGE: COAL MINE CINEMATOGRAPHY

Making an "underground film"—in the literal sense of the term—strains skills and facilities, while neatly separating the men from the moles

By KARL WRIGHT

"When in the mines, do as the miners do!" A variation of the old Roman adage, but nevertheless one that really applied to a recent assignment given the Bureau of Mines' Motion Picture Branch in Pittsburgh. Their job was to photograph underground mining scenes in the bituminous coal fields of western Pennsylvania for two health and safety training films for use in the Bureau's accident-prevention programs.

Ordinarily, such an assignment would not have warranted any unusual consideration, or made any Herculean demands on the crew, who specialize in underground cinematography, but this was their first venture into the *low* coal mining world!

"Low" coal generally means a thin seam or bed about 3 feet or less in height; and when allowance is made for overhead roof supports such as bolts, crossbars, and timbers, it is usually *less*.

Dragging yourself (known as "crawling" in some quarters) through cold, damp, and dark passageways as low as 32 inches in height every day for 6 weeks gives you an idea of how an earthworm must feel; and when you add to this the loads of equipment that had to be carried—cameras, accessory cases,

lights, cables, and related paraphernalia—it becomes downright drudgery.

Working in low coal mines was a unique experience for the Bureau cinematographers, but once the project was undertaken, each member of the five-man motion picture crew became a "miner." He arose early each morning, donned coveralls, hard-toed safety shoes or boots, hard hat, rubber knee pads, and miner's belt with attached battery and cap lamp, and then entered the mine with the regular miners. After a few days of this routine, if he did not feel like a miner, at least he began to look like one.

Transportation into the mine was usually by "man trip"—a string of covered mine cars designed to carry men rather than coal, and pulled by a trolley locomotive. But at one of the smaller, trackless mines visited, the crew rode a "skid"—a metal, sledlike conveyance that resembled a large cake pan—pulled by a rubber-tired, battery-operated motor.

The men lay in this barge-like structure, 5 by 10 feet in size with 12-inch sides, and were dragged more than a mile back into the mine. All along the rocky, bumpy way, the low overhead

clearance made it necessary for the men to really lie low. In some places in the haulageway, water stood knee-deep—water that was dark, dirty, and deadly to camera gear and to morale.

The skids floated, but with the water, coal dust, and finely powdered limestone "rock dust" that covered practically everything that did not move in the mine, there was much cleaning of both men and their movie-making machines to be done at the end of a day's shooting.

"Rock dust" is sprayed onto the floor, ribs, and roof to dilute the coal dust in the mine atmosphere. The addition of this inert material to the combustible coal dust reduces both fire and explosion hazards.

Getting men and materials to the "location" or the working face, where coal was being mined and most of the filming would take place, was only one inconvenience. Lack of space and cramped quarters, dusty atmosphere, low temperature, high humidity, and darkness that was really "black" accounted for many delays and personnel hangups. These were inherent, environmental conditions that had to be lived with if they could not be overcome.

(LEFT) "Was this trip necessary?" Larry Shellenberger, electrician, and Bill Stone, soundman, seem to be wondering, as they pause during the equipment unpacking and setting-up phase far underground. (RIGHT) While waiting to film a coal augering machine in action, cameraman Tony Mantia takes a back-relaxing "break". Note Angenieux 12mm-120mm zoom lens, used extensively throughout production.



In addition, other logistical and technical problems arose underground that offered challenges not found in the average cinematographic assignment. Not the least was: How to light it?

Most cinematographers will agree that there are no absolute or rigid rules for set lighting, especially at more than 500 feet below the earth's surface! Therefore, acting on past experience—from filming in the "luxurious" locations of "high" coal mines—the Bureau movie-men selected the following lighting equipment for this particular assignment: Four (of the old favorite) 2,000-watt "deuces," with specially cut-down stands; twenty 650-watt and twenty 1,000-watt quartz lights (number used at one time depended on the "size" of the shot, and the amount of electrical power available); and twelve four-socket bar light units for holding the 650's and 1,000's. These bars were mounted on collapsible aluminum stands, or clamped to 12-inch spikes that were driven into the mine rib, roof, or roof supports. Because of their relatively small size, the quartz lights were also used singly in tight spots, or places where they could be hidden out of camera range.

Fifty-foot heavy-duty extension cables with twist-lock connectors supplied current from a specially built electrical "junction" (distribution) box. This suitcase-like unit contained 12 grounded, three-wire, individually fused outlets, switches, and circuit-breakers, and was the heart of the electrical lighting system. Also available was a voltage-dropping resistance unit that offered a limited amount of control over the not infrequently fluctuating mine voltage. Voltage changes usually occurred when large mining machinery was started or stopped during filming.

Lighting the average scene on this assignment required around 20,000 watts. Most of the mines were able to provide more than sufficient electric power. Occasionally, in some of the smaller mines, most of the power was needed for mining operations. This meant lowering the lighting "key", or changing the overall lighting and shooting plan. Normally, the power supplied was approximately 240 volts DC. Since the cinema lighting equipment was designed to operate in "pairs," or two 110/120-volt bulbs in series, it was readily adaptable to most commonly available 220-volt power sources.

Electric power was usually supplied by the underground substations, or from portable transformers or rectifiers. The mines also supplied enough heavy-duty "trailing" cable to reach back to the working face, or motion picture



(LEFT) Safety was stressed in the films, and during the filming itself. Here Deward Moore, Federal mine inspector, checks "location" with methanometer for presence of explosive gas. (RIGHT) Electrician Shellenberger inserts quartz lamp into four-socket light unit. Lights were then plugged into custom-built electrical junction box at his right.



"set." On haulageway travel shots, where the camera was mounted on a moving locomotive, power was obtained for the two bar lights used directly from the trolley line. This was done by connecting a fused tap (a metal hook with insulated handle and cable) to the locomotive's trolley contactor, or current-collecting shoe.

The locations were picked to correspond as closely as possible to the shooting script and still create a minimum of interference with normal mining operations. Usually, they were in sections not being actively mined. All photography underground was done in "fresh air"; that is, at locations in the (ventilating) intake air, which was free of noxious and explosive gases.

Safety was stressed at all stages of

the production, especially underground. A Federal mine inspector and a company official stayed with the motion picture crew throughout the underground filming, constantly monitoring or checking the working place for bad roof, presence of methane gas, or any other unsafe conditions.

There were no serious accidents throughout the six-week shooting tour. Aside from the crew members inadvertently bumping their heads—and "rear ends"—on the low roof or the metal bolts and wooden crossbars that supported it, the main complaints were the restricted space—which gave the men aches, pains, and cramps in the back and neck—and the constant flow of cold air that swept through the work area, keeping cameramen's focusing

(LEFT) Motion picture crew stands by while the director discusses upcoming scene with the continuous mining machine operator (RIGHT) Three of the crew members wait to film an approaching shuttle car. Note rubber knee pads that had to be worn underground.





(LEFT) Soundman Bill Stone finds the compact Nagra tape recorder readily adaptable to "low" coal mine location. (CENTER) The underground "studio"—not the easiest or most comfortable place in which to make a film. (RIGHT) U.S. Bureau of Mines motion picture crew prepares to "roll camera" on one of the many underground mining scenes shot recently in the subterranean coal fields of Pennsylvania.



(LEFT) Using a methanometer, Federal Mine Inspector Deward Moore checked for presence of explosive gas in each "location" prior to filming. (CENTER) The underground crew: (left to right) Gene Rapp, still photographer; Tony Mantia, chief cameraman; Tim Kirby (seated), cameraman; Gayle Morrow, mine foreman; Larry Shallenberger, electrician; Bill Stone, soundman. (RIGHT) Three of the crew waiting to film approaching shuttle car.

(LEFT) Film crew stands by, while the director discusses upcoming scene with continuous mining machine operator. (CENTER) Director Sam Sappo watches as mine foreman Gayle Morrow checks cable connection. Up to 2,000 feet of wiring was required for lighting some scenes. Note "flame safety Lamp" on the foreman's belt—used for detecting explosive gas. (RIGHT) Director Sappo takes a peek at the shot that almost stopped the show: the "ripper" head of a continuous mining machine that came to rest only a few inches from the camera lens.



(LEFT) Lighting underground was by 2000-watt "deuces", 650 and 1,000-watt quartz lights, or a combination of both. The largest area lighted required 40,000 watts; the smallest, 6,000. Note powdered limestone "rock dust" covering mine floor, ribs and roof. This material reduces the likelihood of a coal dust explosion. (CENTER) Deward Moore checks for gas. Note "safety Jack" used temporarily to reinforce (permanent) metal cross bar and roof bolts supporting mine roof. (RIGHT) Back on the surface, weary film crew leaves the mine after a long day's shooting.



fingers frigid, and fogging up camera viewfinder eyepieces. (A warm eyeball against a cold viewfinder always caused condensation!) Other uncomfortable moments and delays were caused by the accidental upsetting of light stands, breaking bulbs and fraying cables. However, the overall damage factor was higher for cameramen's nerves than for equipment.

One of the more imposing logistical problems was the maneuvering of men and machinery. Because of the cramped and crowded work space underground, changes from one location to another were made reluctantly. A complete move to a new location involved breaking down and repacking all the gear, loading it into shuttle cars or other haulage vehicles, traveling—sometimes miles—to the new site, and then unload-

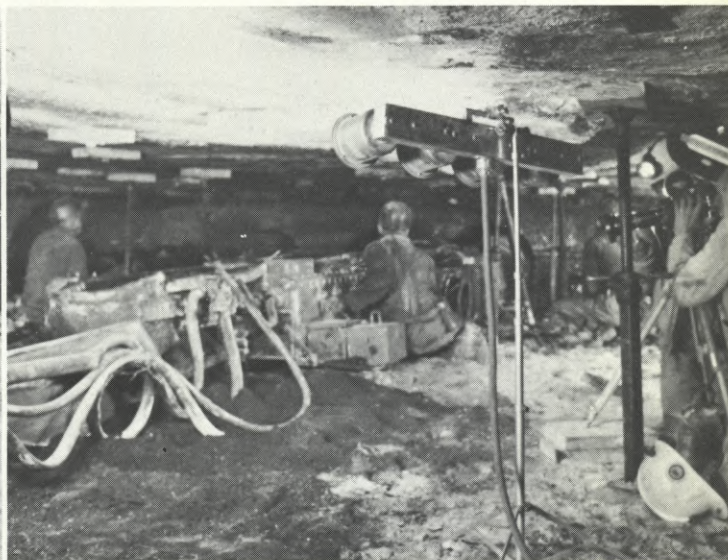
the script called for a dolly shot through a narrow, trackless entry that showed the metal bolts installed into the roof to prevent roof falls. For this shot, the roof area was lit by spacing bar lights, low and uptilted, along both sides of the passageway for a distance of approximately 50 feet. The cameraman then lay on his back in the wagon, hand-holding the camera, while one of the crew pulled and another pushed him down the entry. Dollying tracks were rigged out of 10-foot, 2 x 10-inch planks, and strung together for the distance the shot was to cover. Although most of the crew were singing "Wagon Wheels" before the sequence was over, the resulting footage was quite effective—or "moving"—to say the least.

The cameras used almost exclusively for this assignment were two Arri-

ventilating currents. The dust often contained moisture released by the water spraying devices affixed to the mining machines.

In a few tight places, and for an emphatic or exaggerated effect, a 5.7mm. wide-angle lens was used. One shot showed a continuous mining machine, with a huge, rotating "ripper" head with spikes-a-spinning, coming directly at the camera. When it stopped, its cutting bits were only 6 inches from the camera lens! The scene came off somewhat spectacularly on the screen, and so did the hats of the motion picture crew—in salute to the skill of the mining machine operator.

But the real workhorse of the lens lineup was the Angenieux 12mm-120mm zoom. Both Arriflex cameras were fitted with these, each with its



(LEFT) Continuous mining machines—such as this twin-head coal auger—conveyors and roof supports (upright timbers and safety jacks) occupied most of the space in the underground "studio", leaving little room for lights and cameras. (RIGHT) Filming an actual mining sequence. Cramped quarters and dusty, drafty atmosphere were among the problems encountered in underground filming. (Note the quartz bar-light unit clamped to aluminum stand; also the cold-weather helmet liner worn by the cameraman to protect against strong ventilating air currents.)

ing, unpacking, and going through the whole routine again. Getting electric power to a location, stringing cables, and setting up lights and camera equipment could take the better part of four hours—for a sequence that would last only 10 seconds on the screen!

Therefore, much ingenuity was used to limit the number of "sets," or location changes. In many instances, all that was needed for a "change of scenery" was to move a few lights, remove, add, or shift some timbers, hang brattice (ventilating) cloth, and reverse the camera angle or direction of shooting.

For moving the cameras and accessories (batteries, film magazines, lens cases, etc.) between setups, one of the mining companies furnished the crew with a toy red wagon. This came in handy in other ways. In one instance,

flex-S's, mounted on baby tripods or high hats, with fluid pan heads. The one exception was for a blasting scene in which a Cine Special was utilized as an "expendable" camera for a head-on view of a coal face being "shot down." Placed 25 feet away from the face, using a 15mm. Ektar lens and running at 48 frames per second, the Cine recorded a beautiful blast, complete with coal dust filling the scene—and the lens! The camera came out of it somewhat dirty, but undaunted. The two Arriflexes were used to take side-angle views of the blast at 24 and 32 f.p.s., respectively. The footage from these cameras was also "right on the money."

Between takes the cameras were covered with plastic bags to protect them from the fine, clinging dust that was kept in suspension by the constant

own motorized zoom control. The use of this lens allowed for fewer changes of camera positions, and eliminated the time-consuming switching or interchanging of different focal-length lenses and the subsequent job of trying to keep all of them clean! The men behind the cameras were able to get a variety of good shots, and the results were well-composed, sharp, and of high-quality color.

The film used was Eastman's new improved Ektachrome Commercial 7252. Higher speed film stock was not chosen because of the widely varying contrast factors present underground: "black" coal face, "white" rock-dusted areas, and workmen's "skin tones." Since the films were to be of an "instructional" nature, most of the

Continued on Page 196

A TV COMMERCIAL ALMOST AS COMPLEX AS A FEATURE

Building an entire house with rooms that "float" together before the eyes of TV viewers required a great deal of imagination, innovation—and money

It can cost more to film a short TV commercial nowadays than it does to make a full-length feature film.

On a per-frame basis, shooting 50 seconds over a house in Long Island makes the cost of a Hollywood spectacular like "THIRTY SECONDS OVER TOKYO" look skimpy.

Directors of Photography employed on such Madison Avenue ventures must use as much ingenuity and creative skill as they do on some low-budget features that run 90 minutes or more and cost about \$350,000.

As a case in point, an ad agency recently conceived the idea of filming a completely furnished home which "floated" celestially together, room by room, before the eyes of the TV viewers. This creation required 40 people, artists and craftsmen, working the better part of six weeks to come up with 50 seconds of commercial sell.

The drawing board plan, like the well-planned battle, was simplicity itself. Logistics were another matter.

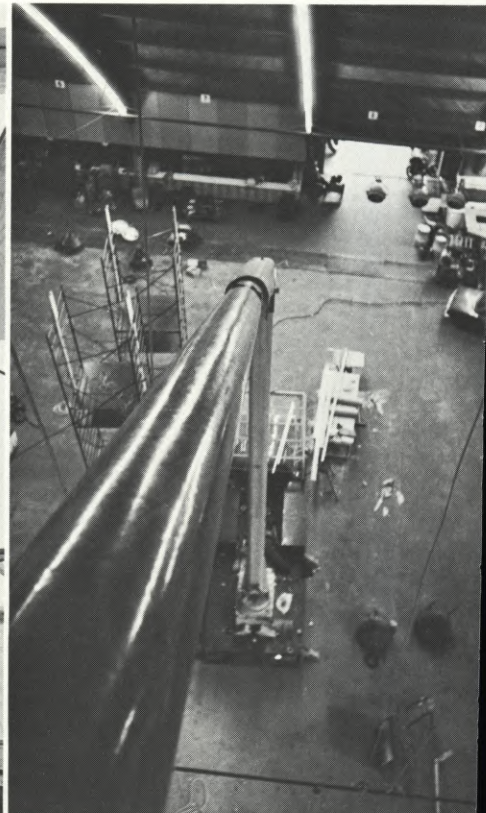
Before production could begin, the mechanics of photographing the concept had to be worked out carefully. Director of photography Bert Spielvogel, a veteran of commercial and feature films who got the assignment, was called in by Doyle, Dane, Bernbach to ascertain how and where such a commercial could be done in New York.

Spielvogel estimated that the camera would have to be placed at least 75 feet above the house in order to get a shadowless overhead shot. No studio in New York has that kind of headroom,

but Spielvogel recalled doing a cigarette commercial in Hempstead, L.I., inside the 75-foot high Long Island Garden, home of the New York Mets and part-time arena for events like circuses, rodeos and ice shows.

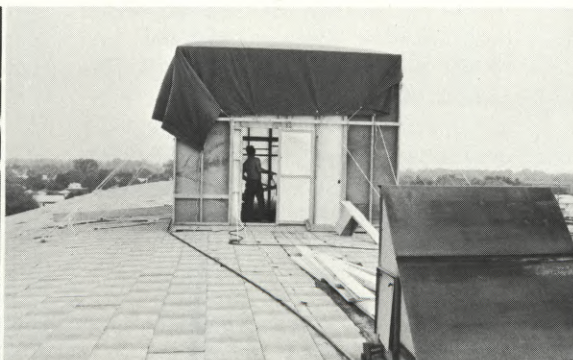
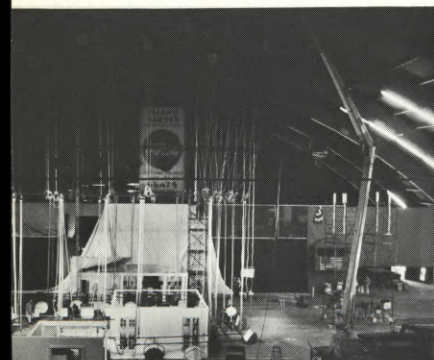
The camera work was feasible until the architects of the house decided they needed additional height to brace and rig the flooring of the rooms so they could be rolled together.

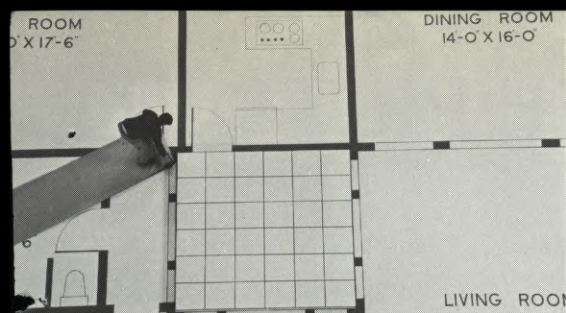
Because of technical photographic



(LEFT) Rigging camera inside shack especially built atop the 75-foot-high Island Garden Stadium at Hempstead, N.Y., grip removes stud in roof. Lightweight Arriflex camera, with 25mm-to-250mm zoom lens and VTR attachment, was used for overhead shots of area measuring 75 x 55 feet on floor below. (RIGHT) View from platform of "cherry-picker" crane used to shoot construction scenes for 50-second, \$160,000 Burlington Industries TV commercial.

(LEFT) A view of intricate sets which turned the Island Garden into a movie studio for six weeks. (CENTER) Because additional height was needed to zoom to the subject, a 7 x 7-foot hole was cut into the 75-foot-high stadium and a 15 x 15-foot shack built over the hole in order to shield cameramen and equipment from rain and high winds on Long Island. (RIGHT) New York Director of Photography Bert Spielvogel prepares to shoot still picture of six-room home 75 feet below. Spielvogel and assistant cameraman climbed a makeshift ladder to get to perch and wore safety belts during two days of filming inside shack.





(LEFT) Scenic artist touches up floor plan for fully-furnished six-room house. Individual rooms of the house were rolled into place over the floor plan. Twelve takes of this scene were made during a full day of shooting. (CENTER) Truck moves in camera dolly for ground-level shooting. A 95-foot cyclorama was required to eliminate horizon lines and allow for TV cut-off. (RIGHT) Critical lighting was needed to cover all areas of six-room house as it rolled together, room by room.

difficulties either the house had to be made smaller or a hole would have to be cut into the roof of the Long Island Garden. The interior decorators felt that miniaturizing the furnishing of Burlington Industries, the manufacturer paying for the commercial, was not practical.

The result: Long Island Garden now has a sturdy shack sitting atop its vaulted roof. Inside the shack is a raised platform on which Spielvogel had a lightweight camera set up with a videotape attachment to permit the director at ground level to see what the camera was shooting.

Now the task of assembling a completely furnished six-room house began in earnest. Carpenters, electricians, painters, interior decorators, architects and even mechanics erected a 34 by 45 foot house inside the Garden.

Due to the unusual angle of the filming some touchy obstacles had to be overcome. A lightweight camera with a 25 to 250 zoom lens had to be used as well as special lighting effects. Since shooting was to be done from overhead, lighting had to be arranged in a rectangular pattern with cones and quartz lights positioned to eliminate all shadows.

Working from a cherry picker crane, hundreds of feet of cables, and scores of connections and lead-ins were hung from the ceiling trusses. A larger crane was brought in to do the heavier work,

like hanging block and tackles and raising the big lights.

After weeks of preparation, the actual shooting time took but two days. For the TV viewer, it was an eagle's view of a home forming before his eyes, followed by a ten-sentence talk.

FACTS ABOUT THE FILMING

Bert Spielvogel, Director of Photography, born in Brooklyn, N.Y., a resident of Manhattan. Member of cameramen's Local 644.

Eddie Thalrose, assistant cameraman, member of Local 644.

Advertising Agency: Doyle, Dane, Bernbach

Producer-Director: Herb Strauss of DDB
Art Director: Ben Quinn, created concept, of DDB

Writer: Helen Miller of DDB

Client: Burlington Industries, marking entry into Home Furnishings

Location: Long Island, Hempstead, at the Island Garden Stadium

Cost: \$160,000

Filming Time: Two days

Props: House 34' x 45' in four parts (living room 16 x 18 and dining room 14 x 16)

Construction time: three weeks

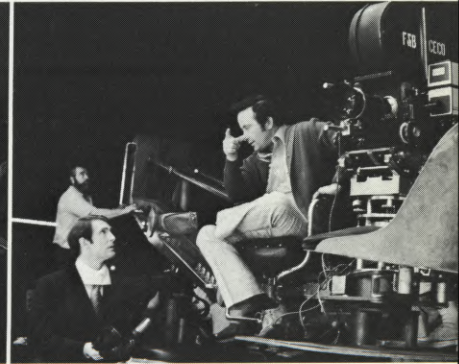
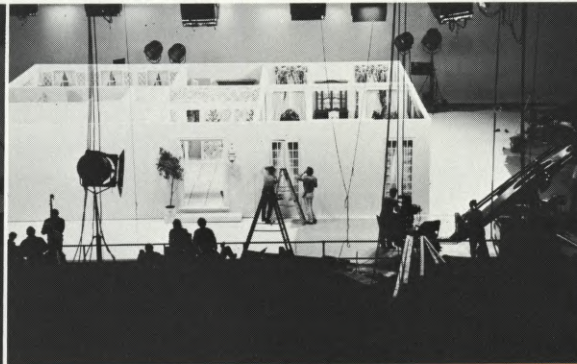
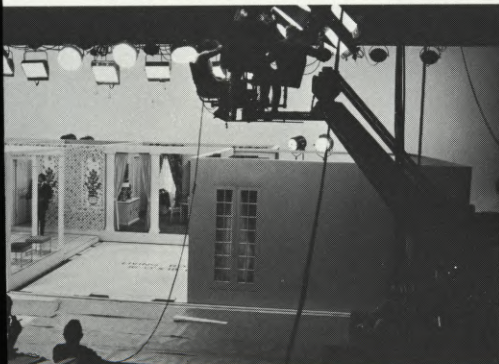
Total time: From concept planning to final shooting, six weeks

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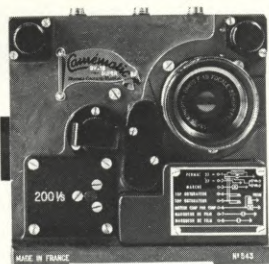


(LEFT) A vast array of different types of lighting equipment was needed to execute the difficult assignment. Cinematographer Spielvogel employed 30 cone lights, 24 quartz soft-lights, 23 spotlights and 12 sky-pans. (RIGHT) Lamps are moved into position to get evenly lighted shot of an individual room. Overall lighting was softened by use of sky-pans rigged from the 75-foot ceiling.

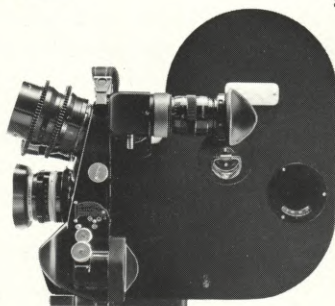
(LEFT) Lights were arranged according to wattage in rectangular patterns. Ample use of cucolorises, dots and nets was made for special lighting effects. (CENTER) As eye-level filming commenced, Bert Spielvogel spotted a defect in window of six-room house and shooting was held up for repairs. Forty people were employed for six-week period needed to film TV spot for home furnishings market. (RIGHT) Director of Photography Spielvogel (right) listens as producer-director Herb Strauss, of Doyle, Dane, Bernbach, instructs actor. Attached to camera is VTR equipment which gave television picture of what film camera was recording.



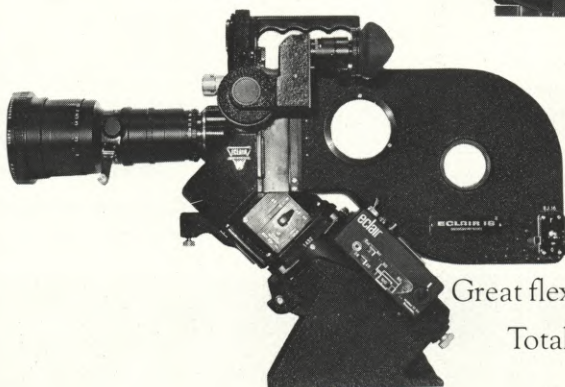
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A FRESH LOOK AT THE DYNAMICS OF FILM-MAKING

Excerpts from recent lectures on *The Visual Nature of the Film Medium* by the world's foremost montage expert and "greatest cinema theoretician since Eisenstein"

By SLAVKO VORKAPICH

Often I have been asked by friends and, occasionally, by some publishers, to put down my teachings in the form of a book. The very thought of it makes me feel frustrated, because I am convinced that the most cinematic moments on the screen *cannot be conveyed verbally*. I will give you an example. In revising the tape transcripts of my recent lectures, I came to the moment where I wanted to describe something that I had shown on the screen. This is the best I could do:

One of the most striking cinematic passages built on the principle of good continuation occurs in *Olympia: Diving Sequence*. The effect cannot be rendered in words; but I'll try to describe the action. First, we see a normal pan-and-tilt shot in which the athlete dives in a graceful slow-motion curve. As his body penetrates halfway below the water surface, his legs still above it, there is a cut to a startling new shot. It is inverted end-for-end, thus reversing the action in an upside-down view. Emerging feet first out of the surface, which is now in the "ceiling" position, the diver's twisting body "falls" through space, in slow motion, towards the diving board. This produces an uncanny feeling as of a breakthrough into another, antipodal dimension.

If you have never seen the sequence and reading this description with its implied enthusiasm, is it not your first, somewhat unrelieved, feeling and impulse that can best be expressed in words: "Show me!?" At least, that's the way I feel whenever I read in books on film about some "great" cinematic passages which I have never seen.

How can you put in words the gyrations of the mechanical peacock over the Tsar's door in *Ten Days That Shook the World*, or the raising of the bridge in the same film, or the seventh variation in *9 Variations on a Dance Theme* by Hilary Harris? Still pictures won't do. They would only aggravate my frustration.

Books on poetry can quote, books on painting can show reproductions, books on music can illustrate with musical notation, but we have no cinematic notation that we could feed into

our private computers. The only *useful* book on the art of the film would be one that went with several reels of Super-8 film as books on languages go with phonograph records or with tapes.

THE ILLUSION OF MOVEMENT

I will now review only the main subject of that first lecture, namely the *illusion of movement*—which in books on psychology of perception is variously referred to as the *phi* phenomenon,

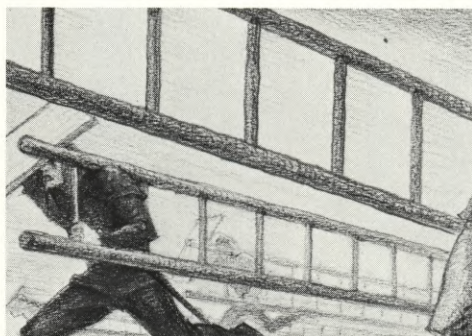
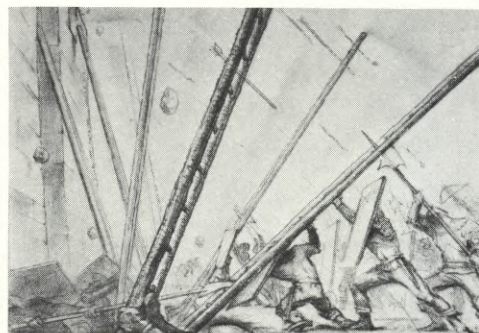
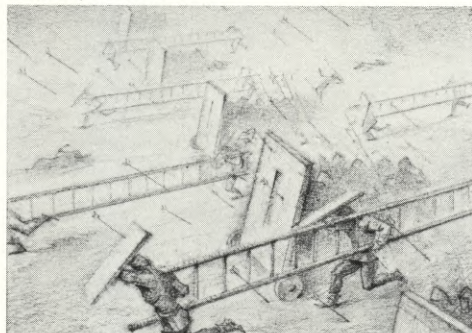
apparent movement, stroboscopic movement, or beta movement.

In our specific case it was the *illusion of sudden movement* or leap taking place *on the cut* from one *stationary setup* to another.

As we know, movies *move* when a series of *still* pictures, or snapshots, of a *moving* object are projected in rapid succession on the screen.

But, as we have seen, sudden movement, or *phi leap*, takes place even when—

Meticulous storyboard sketches made by Slavko Vorkapich in the course of designing the stunning Battle of Orleans montage for the film production of "JOAN OF ARC", starring Ingrid Bergman (1948).



on a cut, the same stationary object is shown in two different areas of the screen;

and that a kind of visual beat, or a visual tug of tension, occurs between two different objects stationed in different areas of the screen, when separate shots of each of the objects are joined in a cut.

We also learned that, on a cut, between two separate shots of two *different* objects, each of which is shown in the same area of the screen, a strange, a kind of *magic* effect of *sudden transformation* may occur if the objects, although quite different in shape, are similar in other ways, such as their illumination and the tonal value of the background.

From these experiments we may derive some practical lessons in movie-making on the most elementary level, namely: shooting and editing scenes consisting entirely of stationary objects in stationary setups, that is, *static shots*.

The following are not arbitrary rules; they are valid principles based on the known laws of visual perception; they will prove useful in all cases where *clarity of visual presentation* is desirable.

Let me quote, at this point, a saying of the late T.S. Eliot: "It's not wise to violate rules until you know how to observe them."

Here, then, are some of the rules:

1. If you wish to avoid momentary disorientation or confusion in a series of static shots intended to represent a specific, continuous scene resembling everyday reality, your objects or characters should remain, from shot to shot, so long as they are not in motion, each in his respective screen area, or as close to it as the changes will allow.

2. When a change of position is desired, then that change should be carried out by a real movement of the performer, or by a movement of the camera, or in a combination of the two. In all cases the movements should be clearly evident.

3. To avoid the often amusing effect of magic transformation, do not *compose different figures* in such a way that they will follow one another on the same spot on the screen. Avoid the conventional central framing of closeups. Individual closeups of each of two figures previously shown in a two-shot should retain some of the *functional distance* separating the two figures.

4. Avoid direct intercutting of reverse angles.

(I repeat: these "rules" apply to clear representation of realistic scenes. In fantasy films or sequences liberated

from logical narrative continuity, anything goes, provided that it goes—well; provided that it goes *visually* well in other ways.)

In static scenes of the *realistic-narrative-continuity* type not much can be achieved—from the visual-cinematic point of view—beyond a certain rudimentary rhythm that occurs on the cut from one stationary character to another, from one character to a group, or from one group to another.

It may be said, in fact, that the only part that is really "movie" in such sequences is the *dynamic beat on the cut*. Soon after the cut, the scenes goes flat if it is held too long on the screen. A film thrives on strong visual change.

Greater opportunities for *creative* use of the principle of rhythmic apparent movement may be found in *generalized* sequences expressing themes or moods that naturally lend themselves to treatment in a series of static shots, such as scenes of tense waiting, of suspense before the battle, tragic evidences of natural or man-made disasters, scenes of quiet resignation, or of serene calm.

When working out such sequences, the following principles will prove useful:

The dynamic impact of the cuts varies as the degree of difference or contrast between fundamental compositional structures of the adjoining shots.

Variation in spatial organization from shot to shot, that is, variations in three-dimensional extension and interplay of volumes or masses against hollows, may result in vivid kinesthetic responses.

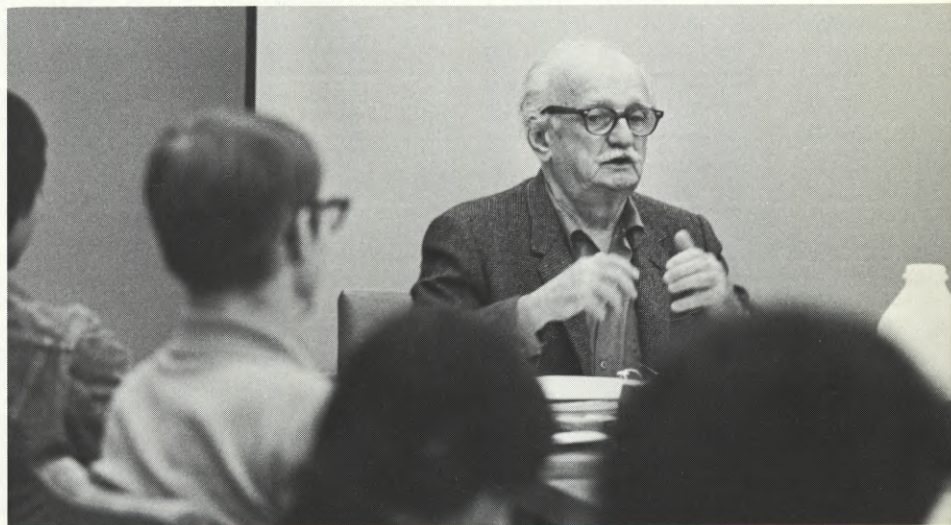
And, generally, the simpler the visual situation, the stronger the impact.

Continued on Page 192



Frame blow-ups of two scenes from the *avant garde* short, "THE LIFE AND DEATH OF A HOLLYWOOD EXTRA" (1928), described by the Museum of Modern Art as one of the first American expressionist films. Written and directed by Robert Florey, with closeups by Gregg Toland, it was designed, photographed and edited by Vorkapich. The whole film was made for \$99 in Florey's kitchen, Toland's garage, and other such exotic locales.

Vorkapich conducting an informal seminar on the dynamics of film-making. His ten-lecture series on *The Visual Nature of the Film Medium*, presented at the Museum of Modern Art in 1965 filled the 500-seat auditorium to capacity, with as many more turned away for lack of space. A similar lecture series will be given in Hollywood, starting April 1, 1972.



"THE FRENCH CONNECTION"

Continued from Page 161

QUESTION: Gordon Willis does that, too.

ROIZMAN: Yes, I know. Gordie and I are old friends. We were assistant cameramen together. Another thing we decided upon was to never go for any fancy compositions. We would set up the shots very simply and shoot them. We never went for foreground objects or out of focus things. It was a matter of staging the action and shooting it with the best lens possible. We never used wide-angle lenses or long lenses just arbitrarily. If we used a long lens, there was always a reason for it. We didn't use it a lot, but I feel that every shot we made with a long lens was in the picture because we carefully chose when to use it—and when not to. We never made any distorted wide-angle shots, either. You might say that the photography, from the standpoint of composition, was very simple and straightforward.

QUESTION: What about your approach to lighting "THE FRENCH CONNECTION"?

ROIZMAN: Ordinarily, for this type of film, I might take the "light and shadow" approach—nice crisp sidelight with black shadows. That would be my normal style, but, in this case, I didn't want to follow what I would do normally. Instead, I used more fill light than I normally would. I underexposed the key light one stop, but filled it in a lot. That's what flattened it out.

QUESTION: On the screen, just about everything in the picture has the feeling of having been shot with available light.

ROIZMAN: That's the effect I worked for throughout the picture, that feeling of available light—but it wasn't. I can tell you the times I used available light and it wasn't very often. I didn't light any exterior day scene—that was all available light. If there were any interior car scenes, these would naturally have

to be lighted. But anything that was out on the street in daylight was shot without fill light. I feel in general that if fill light isn't necessary, it shouldn't be used. It wasn't necessary in our street scenes, so we didn't use it. Also, we didn't really have the time to set fill light and we were able to move much faster without it.

QUESTION: In this picture, at least, you didn't have to glamorize anything.

ROIZMAN: Which was like a breath of fresh air. We didn't have to worry about making anything look pretty. The approach to interior lighting was to underexpose, working at very, very low light levels and using small units. Most of the places were lighted with Dinky-inkies. In the night club sequence, for example, 90 percent of the lights were inkies. The interesting problem there was lighting the people at the tables. The ceilings were very low and there were mirrors on two walls. We had to do a hand-held

walking shot through the whole club, so it was difficult to hide lights. I had to figure a way to light the people at the tables and it was done by taking an inky bulb in a socket, wrapping a piece of spun glass around it and then a red gel. These lights were set right on the tables and were all hooked into one master dimmer that took them down to between four and six foot-candles—which was all that I needed. As you know, when you photograph red, it's very difficult to overexpose it—almost impossible—so I wasn't worried that the lamps would look overexposed. As it turned out, they looked normal and most people think they are the lights normally used on the tables. They were our own lights, however, and that's all that was used to light the tables—nothing else. There wasn't any room for anything else.

QUESTION: Would you consider that to be your most difficult lighting problem?

Continued on Page 211



(LEFT) Members of Puerto Rican gang, caught vandalizing car, are forced up against wall and frisked by detectives, while police train guns on them. (RIGHT) Setting up for low-angle scene of man shot during wild chase aboard elevated train. Available light was used, but was complicated by varying exterior light conditions.

(LEFT) Lush apartment sequence was staged inside suite of Manhattan's Hotel Pierre. Entire lighting consisted of replacing conventional bulbs in practical lamps with photofloods. (CENTER) Operator moves in to catch hand-held shot of detective tearing up car in search for smuggled heroin. (LEFT) Director Friedkin instructs cast and crew members for shooting of scene aboard runaway elevated train, while operator hand-holds camera. It would have been impossible to light this sequence with photographic lamps, so only available light was used.





(LEFT) Gene Hackman, portraying detective on trail of international dope smuggling ring, sits alone in a bar. Objective of Director of Photography Owen Roizman was to create feeling of "available light" throughout the film—but most times it wasn't. (CENTER) Supported by assistant, the author hand-holds camera for filming of scene during final shoot-out. (RIGHT) Sequence in which chemist tests smuggled heroin for degree of purity was filmed in New York hotel room.



(LEFT) Detective disguised as street vendor observes action outside bar. "THE FRENCH CONNECTION" was shot completely outside the studio in 86 locations scattered throughout Manhattan and Brooklyn. (CENTER) A crowded bar served as locale for one of the most dramatic sequences in the film. (RIGHT) Following a hunch and doggedly refusing to give up, Detective Doyle strips a car completely in his search for the smuggled heroin. The real detective Doyle (whose actual name is Egan) served as technical advisor and played a small role in the film.



(LEFT) After an exhaustive car chase and an elevated train all over Brooklyn, Doyle races toward the stalled car where he believes the smuggler to be hiding. Chase sequence, more intricate and exciting than the one in "BULLITT", was precisely staged and required two weeks for filming. (CENTER) The moment of truth in which Egan draws a bead on his quarry. (RIGHT) Smuggler and henchmen gather in an abandoned warehouse to exchange money for heroin. Dramatic lighting originated from lamps placed outside windows covered with tracing paper.

(LEFT) Long, low-ceilinged bar served as location for informer raid, one of the most dramatic sequences in the picture. Scheduled for two days of shooting, sequence required many set-ups and was most challenging, considering the size of the room and the number of people in it. (CENTER) Bar sequence was filmed mainly with available light (fluorescent units along the wall and overhead 100-watt bulbs), augmented by a strip of dimmed photofloods on the ceiling and a few Dinky-inky lights placed for kickers and to fill especially dark areas.



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MOTION PICTURE "MAGIC" DEMONSTRATED IN BOSTON

Top Special Effects expert, Linwood G. Dunn, ASC, takes to the road to share secrets of Hollywood know-how in the field of creating filmic legerdemain

By STEPHEN A. KALLIS, JR.

Boston has long been known as a center of culture, and occasionally as a good "location" for films such as *WALK EAST ON BEACON STREET* and *THE THOMAS CROWN AFFAIR*; but it is perhaps less well known that in Boston there is a great deal of interest in film from the standpoint of production. Thus, the news that Linwood G. Dunn, ASC, would be speaking on special effects cinematography in the greater Boston area sent a minor shock wave through the Boston film community.

The occasion was the first joint meeting of the Boston chapter of the Information Film Producers of America (IFPA) with the local chapters of three technical societies, the Society of Motion Picture and Television Engineers (SMPTE), the Society of Photographic Scientists and Engineers (SPSE) and the Society of Photo-Optical Instrumentation Engineers (SPIE). In addition to these societies, invitations were extended to members of the Society of Information Display (SID) and the faculty and students of cinema of five Boston colleges and universities.

Because of the nature of the program, it was not held in the normal lecture hall. Instead, it was presented in a theater, the Studio Cinema, in Bel-

mont, Massachusetts. The Dunn presentation involved examples from 35mm theatrical feature films, both flat and scope, and Boston fire laws are very strict on how and where 35mm projectors are set up. So, using a theater avoided problems (as a matter of fact, it turned out to be a good idea for other reasons, as will be discussed shortly).

The meeting was set for December 1, at 8:30 PM. This was after consultation with all the involved societies, since we wished to make the lecture available to as many serious cinema students as possible by steering clear of the Christmas holidays while remaining in December. So after the date was agreed upon, a feeling of mutual congratulation settled among all of those involved in the planning of the program—until the last portion of November.

During most of November, the greater Boston area was unnaturally warm, having extraordinary weather for post-Halloween New England. Then, about a week before the scheduled meeting, an Arctic cold front moved through the region dumping well over a foot of snow on the area (Thanksgiving was so bad that most families of my acquaintance cancelled plans to get together). Indeed, at the meeting, Linwood Dunn com-

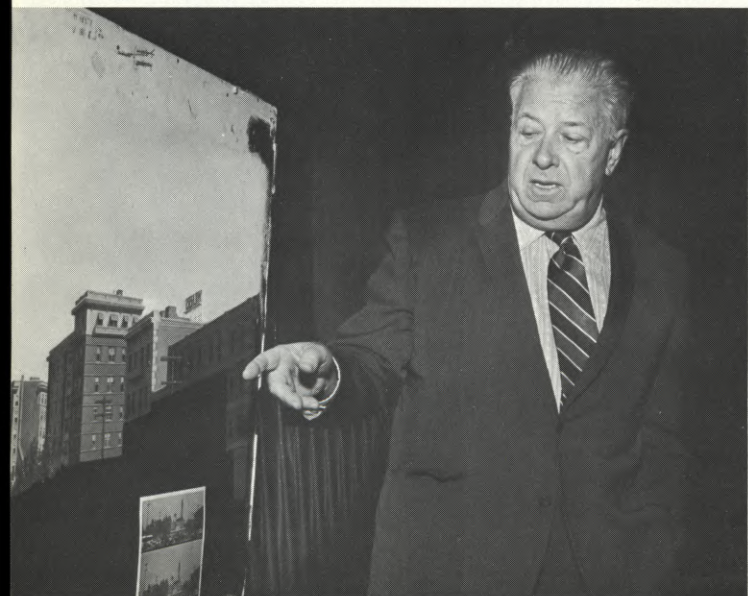
mented to me that just a week before he left for the meeting, he saw in a Los Angeles paper a picture of snow-bound Worcester, Massachusetts, which had nearly a record snowfall for the date. Hardly the sort of thing to put a speaker at ease—to say nothing of the program committee!

Just to make matters more interesting, a form of flu was sweeping through the area, and more than one of the planning committee was laid up with a case of it. Certainly nothing to calm the program chairman.

Although the meeting was set to start at 8:30, Dunn indicated that he would arrive before 8:00 to set things up with the projectionist. So several of us arrived at intervals before that, starting at about 7:30 to make sure things were set up properly before the arrival of our speaker.

So 8:00 arrived, and no speaker. We had checked everything carefully; the plane was scheduled on time, and I had horrible thoughts of some other passenger aboard the nonstop flight having a sudden desire to visit Havana, but there was no notice of a skyjacking on the hourly newscast. The theater was filling up at a fairly rapid clip, and I was beginning to start thinking seriously

(LEFT) In recent "Special Effects Cinematography" film-lecture at Hollywood's Academy Award Theatre, Linwood G. Dunn, ASC, describes the dramatic advantages of utilizing matte paintings where set construction would be prohibitively expensive, if not impossible. He points to original background painting used in "IT'S A MAD, MAD, MAD, MAD WORLD". Foreground action and other matted scenes were printed into the black areas. (RIGHT) After the show, Dunn explains to some of his audience how a pan-across was made of a composite matte painting scene by optically printing from a large film format to a smaller one, while adding motion.





(LEFT) Audience at Boston's Studio Cinema Theatre included a complete "mix", ranging from beginning cinema students to veteran producers. Photograph taken during intermission indicates that most remained in their seats for informal discussion. (CENTER) The author introducing Dunn, just before he inadvertently walked off with the guest's lecture notes. (RIGHT) Dunn discusses specific effects with professional members of the audience who waited until after the general meeting to engage him in conversation about the more technical phases of his specialty.

about checking to see whether there had been any accidents or traffic jams when Linwood Dunn arrived.

He is a very friendly and gracious man, and once we had introduced ourselves, he explained the delay to me by saying, "It's a good thing you scheduled the meeting for 8:30 instead of 8:00. The plane came in early, but there was over an hour's delay in getting my luggage." We discussed his program for a few minutes, and then he went off to confer with the projectionist.

I was slated to introduce him to the guests assembled. This was because I had suggested a joint meeting of IFPA and SMPTE-SPSE-SPIE, because I was on the board of managers of both the IFPA and SMPTE chapters, and because I was the incoming chairman of the SMPTE chapter. But how do you introduce a man like Linwood Dunn?

To those in the profession, the name "Linwood G. Dunn, ASC" would be enough—more than sufficient. But it was a mixed audience that I would be addressing, an audience not only of professionals, but also of students at all levels. To list the many achievements and honors of Linwood Dunn would have taken many minutes, and there is nothing more boring to an audience than listening to someone giving a lengthy background while waiting for the *important* event—the start by the featured speaker.

So, I took a page with a few notes on it, went to the lectern, and gave a short but (I hope) adequate introduction to Linwood Dunn, mentioning his better than three-and-a-half decades of association with the motion picture industry, the fact that he had been honored internationally a number of times, including Academy Awards, and noted that he was president of Film Effects of Hollywood, Inc. Realizing how inadequate any oral description of what we were about to see would be, I noted that Dunn's work would demonstrate the skill of the man more than any words I could say.

Then he joined me on the stage, and after acknowledging my introduction,

he was ready to begin. So I stepped down from the stage, taking in my haste not only my own introductory note but also all his lecture notes for the evening! Fortunately, I hadn't riffled them, so returning them was but the work of a moment.

As I returned to my seat and sank back, I reflected that the start wasn't very auspicious and sent up a silent prayer that I hadn't jinxed the whole thing. Then the program got under way.

I needn't have worried. The format of the program was rather trying for a projectionist (ours came through with flying colors), since it consisted of alternating periods of light and darkness. First, an effect would be shown, and sometimes several. Then the house lights would come up and the effects and their techniques would be discussed

in detail. In minute detail, if the audience was so inclined.

During the course of the presentation, it was evident that Dunn's introduction to effects was tutorial in the best form—imparting real information while maintaining genuine interest. It was also evolutionary, graduating from the simpler effects to the more complex. Starting with rear projection, it went into mattes, miniature photography, color separations, and blue screen process work. By building up a foundation of simpler techniques, Dunn led the students through a "crash course" to some of the most sophisticated techniques employed today. And there was much interest.

Dunn's audience was large. We kept no accurate head count as people came through the door (we only checked to

CONTENT OF SPECIAL EFFECTS PRESENTATION BY LINWOOD G. DUNN, ASC

SPECIAL EFFECTS CINEMATOGRAPHY is a presentation of special visual effect scenes taken from motion picture productions with which Linwood Dunn has been associated, spanning a period of more than 35 years. The films represent an accumulation of various "work prints" which serve the purpose of illustrating the various mechanisms, methods, and techniques used, as well as their particular applications. These special effects scenes were preserved as guides for their proper application "as important tools for overcoming economic infeasibility and/or physical impracticability in the creation, with skill and fidelity, of the illusion of reality and/or fantasy." (Quoted from Academy Award rules). Additional specially produced films have been included to further demonstrate certain other techniques.

Mr. Dunn shows scenes from several early productions illustrating rear projections, matte paintings, traveling mattes, miniatures, optical printing and other visual effects.

From "*West Side Story*" the application of still photographic techniques "derivations" which is a distortion of color and contrast values, and creative optical effects, are shown.

Also—

"*It's a Mad, Mad, Mad, Mad World*"

Scenes from this production, shown in detailed form, illustrate the breakdown of certain effects, including a special demonstration film made from the extreme long shot of a tall plaza building. This required 21 separate exposures through the printer-camera to complete the compositing of seven scene elements. Certain matte painting and optical printing effects are shown, as well as an example of the salvaging on the optical printer of a ruined scene which would have been very costly to retake.

"*Hawaii*" Storm Sequence

The original photography of an 80-foot ship in front of a 100-foot blue screen is shown in edited workprint form before backgrounds were optically matted in.

"*Hawaii*" Storm Sequence in Final Composite Form

(Nominated for 1967 Special Visual Effects Academy Award)

The sequence is then shown in its entirety, as in the theatre print, with foregrounds and backgrounds matted and combined in the optical printer.

"*A Place To Stand*"

This Expo '67 Ontario Pavilion 70mm film presentation received the 1968 Motion Picture Academy Award for Best Live Action Short Subject. The multi-panel optical printing technique used in this unique documentary shows 1¾ hours of film action in just 17½ minutes of screen time.

In addition, scenes are shown from several other films ("*Darling Lili*", "*The Happening*", "*My Fair Lady*", "*The Great Race*") illustrating abstract effects and miscellaneous camera and optical printing effects.

(EDITOR'S NOTE: Linwood G. Dunn started in motion pictures in 1923 as a cameraman, joined RKO in 1928 and during his 28 years of employment there was a Director of Photography and Head of the Photographic Effects Department at RKO Radio Pictures.

During World War II Mr. Dunn designed, with his associate Cecil Love, the first special-effects printer to be commercially manufactured. This, the Acme-Dunn Optical Printer, was the subject of an Academy Award for technical excellence in 1944.

In 1946 Mr. Dunn founded Film Effects of Hollywood, an independent special-effects laboratory, and in 1957, when RKO Studio production activities ceased, leased the Photographic Effects Department facilities and merged them with his company to provide special photographic effects services.

Mr. Dunn is a Board member of the ASC and author of numerous engineering papers and technical articles. He is a Fellow of the SMPTE and a member of the Academy of Motion Picture Arts and Sciences.

Feature pictures for which Mr. Dunn provided special photographic effects include WEST SIDE STORY; MY FAIR LADY; IT'S A MAD, MAD, MAD, MAD WORLD; THE GREAT RACE; HAWAII; THE BIBLE; THOROUGHLY MODERN MILLIE; DARLING LILI; AIRPORT; SONG OF NORWAY; and A PLACE TO STAND (Expo 67). His work has also been seen in the Astorama and Washington State pavilions (Expo 70) and in Cousteau's PHENOMENA OF THE SEA.)

make sure each was carrying his invitation), but after everybody was seated in the 800-seat theater, we were able to determine that we had approximately 600 people present. A solid proportion of these were students in their late teens.

Some of the effects he showed were from CITIZEN KANE, and prior to showing them, Dunn surveyed his audience, which included so many youthful faces, and asked for all those who had seen CITIZEN KANE to please raise their hands.

Film is studied seriously in Boston; nearly every hand in the theater went up. "Astonishing," I heard Dunn mutter.

Dunn never forgot the students and frequently, through the course of his program, he would stop to observe which of the effects that he was showing could be done with equipment available to students.

And the students were impressed. At several points throughout his talk, where especially exciting visual effects were being screened, involuntary "ooohs" and "aaahs" could be heard, such as when a yellow-orange wave would suddenly "break" with a foam colored glowing purple.

Because of the time factor, a "working intermission" was called for. During that interval, those who wanted to take a break could do so, but those who preferred to stay and discuss techniques with Dunn were encouraged to remain. A sizable proportion of the audience did so. Indeed, the "intermission" was so interesting that although the arrangement had been set up to save time, the discussion dropped Dunn ten minutes behind his schedule before the "regular" program resumed.

At the conclusion of the meeting, there was the inevitable crush of people, ranging from students to old friends

Dunn accepts special merit award from Wilton R. Holm, Director of AMPTP Motion Picture and Television Research Center, in recognition of outstanding service to the industry. Dunn has given many lectures before groups of young film-makers in recent years and expects to do more in this field in the near future, including the furtherance of a unique special effects workshop.



Linwood Dunn, ASC, explaining how a \$7.00 three-foot Eiffel Tower hobby kit was used to create a scene in miniature originally budgeted at \$35,000 for a major studio feature. Total cost: under \$500.

who wished to talk to the speaker individually. Interest on the part of some students was so evident that they were still discussing aspects of the technology of special effects long after the lectern had been removed and the public address system disassembled (through a fluke, we had two public address systems; one courtesy of IFPA and one courtesy of SMPTE. We only used one—the first that arrived—but if your signals get crossed, it's better by far to have a surplus than a lack.)

After the meeting, a small number of us had a late supper. Linwood Dunn was still on Pacific Time, so he had an advantage over us who were (theoretically) three hours further along without sleep. During the meal, though, the anecdotes concerning the industry were so fascinating, we quite forgot that we were tired.

Well, the officers of the various society chapters were happy with the meeting as well as being stimulated by it, but I wondered whether the bulk of the audience had been.

Again, I shouldn't have worried. During the next few days, the officers of the societies received quite a few communications, mostly by telephone, expressing enthusiasm for the talk and its subject matter. And the comment that I think best answered my question came from one of these calls, made by a working documentary cameraman. An unsolicited comment.

"The program was terrific. I can hardly wait to try out some of those effects for myself." ■



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DYNAMICS OF FILM-MAKING

Continued from Page 183

ON VARIABLES OF SHOOTING AND CONSTANTS OF PROJECTION—VS/CP

Before a semblance of the concrete visual reality can reach the viewer, it first must go through two machines: the camera and the projector. (It will become apparent that in the present context the intermediate "machine"—the lab, need not be considered.) And these two machines, although mechanically somewhat similar, lead, in fact, two entirely different ways of life.

Let us first take the projector. Or, rather, the projection setup; that is, the projector-plus-the-screen-setup. And here we have—an utterly rigid system. (I am, of course, talking about the standard movie-house setup.)

The projector is firmly fastened to its massive and immobile stand and is intended to remain stationary during its whole active life. The light rays it projects along a near-horizontal optical axis strike a rigidly fastened vertical screen. The film in the machine runs in one direction only at a constant rate of speed and the images are projected through a lens of fixed focal length. Let us call this situation *constants of projection* or the *projection situation*.

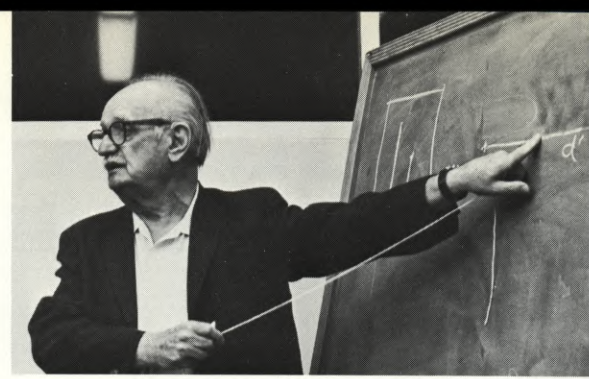
On the other hand, the camera is completely unrestricted in ways corresponding to those of projection. It is utterly free and, within practical limits, amenable to an infinity of variations with respect to position, direction, angle, mobility or locomotion, steadiness, rolling speed, and focal lengths of its lenses. Let us call these factors *variables of shooting* and each particular instance of shooting—the *shooting situation*.

A little thought will show that, in projection, there is bound to occur a measure of transformation or deformation, desirable or undesirable, of the

normal aspect of a recorded piece of visual reality whenever the two situations differ in any of the factors listed above. The most obvious example is slow motion. Clearly, in this case at least, if projection were to reproduce the speed of the shooting situation there would be no transformation. This shows how valuable for expressive purposes the disagreement between the two situations can be. But not all transformations are desirable. Take the case of getting a shot of an object coming down a 30-degree slope toward the camera located at the foot of the hill and with its line of sight tilted up 30 degrees. Naturally, in projection, the gradient of the slope would be reduced to zero and the object would seem to move on a horizontal plane. This often happens with shots of skiers, as it also happened at the end of *SHOOT THE PIANO PLAYER*, where the body of the slain woman seemed to glide on a horizontal snowy surface. The makers of such shots don't seem to notice this peculiar transformation, probably because, having been present at the event, they still have a fresh memory of having had to crane their necks to watch it and this seems to veil their objective perception of the result. I call this the "I-was-there-delusion." Another form of a wide-spread self-deception is the belief that no matter what you shoot with a movie camera you "capture" it.

If in the case of screening of the shots just-described, the projector suddenly tilted up 30 degrees and, simultaneously, the screen leapt up toward the ceiling to intercept the images, then the slope of the hill would be restored for the viewers down in the orchestra seats.

Another fundamental aspect of the VS/CP relativity, that is, of all movie-



making, is that no matter in what direction, position, location, or type of locomotion you shoot your scenes, they all end up on that one scensame, immobile, vertical and rectangular area called—the screen. Movie-makers of the world, there is *your* stage; you are chained to it, but you must create the illusion of perfect freedom moving in an unbounded world!

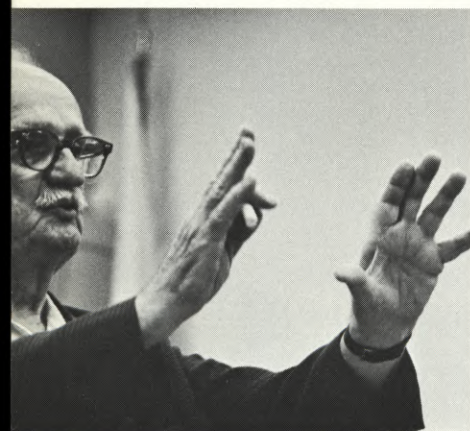
ON THE STATIONARY CAMERA WITH OBJECTS IN MOTION

In the early days most shots were taken with a stationary camera. There was and there still is, a kind of classical purity about such shots. As in normal perception of the visual reality, stationary things remain stationary and moving objects move. Furthermore, the stationary camera being in accord with the stationary projector (and the stationary viewer in the theater) motions as seen on the screen retain their essential character. They do not get transformed or deformed in projection as often happens with shots taken by a moving camera.

There are, though, two possibilities of deformation of motions in depth—object motion toward or away from the camera—when taken with a wide angle (short focus) lens or with a long focus lens. Shot with a wide angle lens, the

(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, most recently, at the University of Southern California. A new series of lectures, to be held in Hollywood, will begin in April (See Page 195).



motion perspective will seem greatly extended in depth, the moving object appearing to cover greater length of space than in reality, while with a long focus lens the depth will appear compressed, thus reducing the progression or regression of the moving object. (However, the well-informed filmmaker, or filmgoer, would know that *the lenses are not to blame for these perspective distortions: these are actually due to improper viewing distance.*)

Psychologists say that an object's motion to be perceived must take place in relation to other objects in the field, the observer being one of them. Since moving objects, shot with a stationary camera, move in relation to the edges of the screen, laterally, obliquely, or forward or back, that is, expanding or diminishing in relation to the edges, *they do not need other objects in the field in order to be perceived as being in motion.* In other words, *the field or background may be completely homogeneous*, that is, uniform and smooth in texture, color, tonal or light value throughout. Such is not the case when the camera pans or travels with the moving object, keeping constant distance from it and holding it steadily in the frame. *The object's progression and its velocity are thus completely cancelled* when shot by the *moving* camera against a homogeneous background. Many filmmakers don't seem to be aware of this, as we shall see in a later lecture.

Another virtue of the stationary camera, useful in some cases, is that it is less obtrusive than a moving one. It can easily be imagined as an invisible presence, sitting on its tripod in a convenient spot while "running" and candidly recording everything before it and with nobody behind it.

MOTION AND MOTION PICTURES

The primary drive and intention behind the invention of the motion picture camera was to record, that is, to visually capture *things in motion*. Initially, at least, the intention was not to take pictures of stationary objects or stationary scenes, nor to record the camera's own locomotions. Simply stated, the motion picture camera was invented to take pictures of motions, to make *motion* pictures.

It seems logical, then, to affirm as I, among others, affirm that the essential nature of the cinema is *movement*. When it comes to discussing the artistic aspect of motion pictures, I prefer to use the term cinema, since its meaning in Green, *kinema*, is motion. In the same sense I prefer the word *movie* to *film*.

(A locksmith, seeing lots of film cans and other equipment in my workshop in New York, asked "What do you do?"

"I am a filmmaker," I said.

"Like Eastman Kodak?" he asked.

"NO!" I said, "I am a *movie*-maker."

"Oh, I see," he said.)

The term *film* calls attention to its material substance; its original dictionary definition is given as "a thin membrane," like the skin of a soap bubble.

In my lectures, however, I use the expression "filmic values" to stand for good craftsmanship apart from any artistic considerations. If a visual statement is presented clearly to our perception, then it has filmic value. It's like

the expression "good English" when used to appraise a clear verbal statement. *Clarity of presentation* is the standard for judging filmic values. Clarity and forcefulness of presentation often go well together.

On the other hand, "cinematic value," as I use the phrase in lectures, always signifies a kinetic *visual change*, that is, a form of movement or organization of movements, within the shot or from shot to shot, that affords esthetically satisfying possibilities.

It is easy to objectively demonstrate filmic values, but I can only draw your attention—at screening time—to values that, for me, are cinematic, and hope

Frame blow-ups from the prologue montage for Ben Hecht and Charles MacArthur's "CRIME WITHOUT PASSION" (1934), created by Slavko Vorkapich. Later, Hecht wrote: "There was also a brooding fellow named Vorkapich on the film whom we hired through a misunderstanding. We thought he was a movie cutter. It developed he was a montage expert. Not wanting to waste Vorky's talent and paychecks, Charlie and I wrote a montage prologue for our movie. Vorky put together four handsome minutes of Furies flying through the canyons of New York."

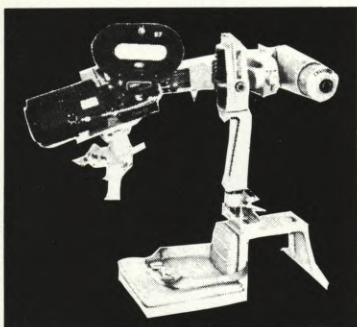


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that you will *feel* about them as I do.

ON CANCELLED AND INDUCED MOTION

I would like to tell you the story of one of my experiences that led me to the decision to re-examine the visual nature of the film medium in the light of modern psychology of perception, psychology of *visual* perception—and to re-examine in that light the visual language of some representative film-makers past and present. Here is the story:

In the early days of my film career (about the time that sound came in) I was given the assignment to shoot a day-dream sequence for a film about a chorus-girl who was promised to be made a star on Broadway.

The producer of the film wanted me to get a shot of the girl walking through a deserted street at night—her mind filled with visions of her name in bright lights all over Broadway. These were to be superimposed later, after we got her closeup, walking. Please remember: in what is to follow the main thing we want to discuss is not the trivial *subject matter* of the sequence, but simply the *problem of HOW to get a CONVINCING SHOT of a person walking.*

In the middle of a deserted street, on the Paramount back lot, we laid out about 60 or 70 feet of wooden planks to serve as a track for the wheels of the dolly. To level off all the dips and rises in the track, while a fully-loaded dolly travels over it, takes plenty of time, and in our case it took plenty of *overtime*, as we shot our scene at night.

As I needed dark areas around the girl's closeup over which to superimpose the bright marquees, I asked the cameraman to use very low-key lighting on the street itself. As for the light on her face, the cameraman insisted that her closeup must be beautifully lighted throughout the shot since she was *already* a star in real life. "*That's* the reason why the lights have to be carried along on the dolly," he said.

After a few run-throughs we shot the scene. The girl did beautifully; she walked briskly and her eyes were filled with starry dreams. I was very pleased; besides I enjoyed the dolly ride on that cool California night.

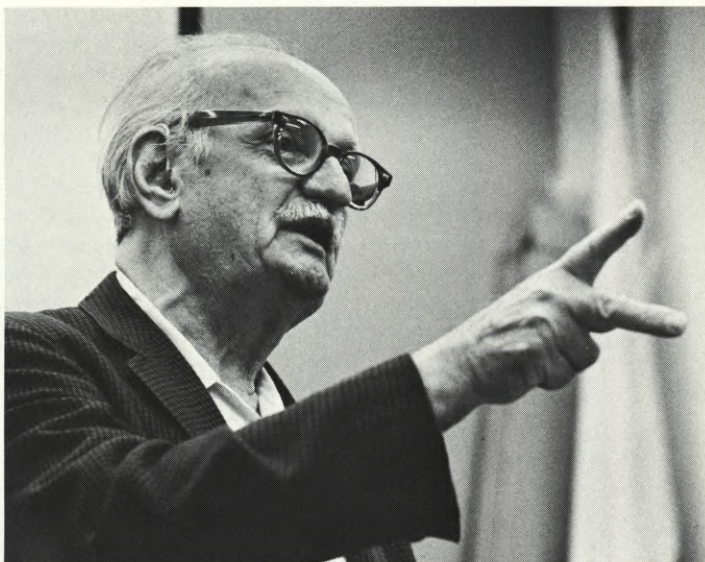
The next day we ran the dailies. Well... My dream-bubble burst, fell flat. There, on the screen, the pretty, "beautifully lighted" face just bobbed up and down in a chunk of black, empty space. Her expression seemed inspired all right, but her treading in one spot with a little swaying from side to side—looked silly. But I knew that she

Continued on Page 220

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Category I: Stationary Camera and Stationary Object.

Most elementary level of movie making; its problems and its possibilities... Life span of a static shot... Visual dynamics in a series of static shots... Seeing motion where there isn't any: the *phi* phenomenon... Phi leap, phi bear, and phi transformation... Traditional staging practices reexamined... Corresponding angles, reverse angles, over-the-shoulder shots... Proper placement vs. disorientation... Functional category... Cinematic possibilities of Category I... Cinematography vs. pictorialism... Elementary metric rhythms... Space play.

"All the world's a stage"... The shifting proscenium... Uni-directed objects, the sagittal plane, and the critical crossing.

The Law of Bipolar Organization. The force of offscreen directed attention: looking, pointing, aiming, etc. demand paired subjects, determine subjective character, angle of view, and distance of the observed object... Impossible views... Seeing one's self?... Abuses in stories with wild animals.

The Law of "Good Continuation." Direction and velocity of motions as factors of continuity... Transformation or exchange of identity—on the cut—due to movement... Lateral movement and "second take" effect... Movement in depth... Unintentional disorientation... Fusion vs. confusion... Méliès and magic possibilities.

Category II: Stationary Camera and Object in Motion.

Real motions and homogenous background... Shapes of motions—virtual and actual traces... Movements within the prone pyramid of space encompassed by the lens... Filmic mind vs. pictorial mind... Analysis and vividness of the dynamic event... Value of over-analysis in filmic training... Partial repetition or overlapping... Cinematic possibilities... Organization of movements within the shot and from shot to shot... Rhythmic accent within the shot and on the cut... Choreography of natural movements... Classical examples... Degrees of three-dimensionality... Rotation.

Categories III and IV: Moving Camera and Stationary Object / Moving Camera and Object in Motion. Three Types of Pan.

(1) Pan over stationary scene... Uniform motion of whole picture surface does not represent perceptual scanning... Absence of anchor-point for the eye... Pan (type 1) unfolds and reduces scene to flat photograph... Perspective and secondary "motions"... An improvement: pan

combined with zoom... (2) Pan over movement within scene adds life and depth to scene... (3) Pan pursues moving object... Inhomogeneous background necessary... Pseudo-rotation and three-dimensionality.

Three Types of Dolly Shot.

(1) Dolly across stationary scene... Perspective depth necessary... Diagonal vs. lateral and head-on dolly... Gibson's *continuous gradient of motion*... Comparison with pan... (2) Dolly across objects in motion... Perspective and timing for rhythm... (3) Dolly moves with the moving object... Close, structured, background necessary... Induced motion... Cancelled motion... Transferred motion... Dolly combined with pan, or crane with tilt, results in pseudo-rotation. All categories may blend one into another... Examples of cinematic choreography of natural movements combined with camera movements... Zooming, in combination with basic four, yields four more sub-categories.

Hand-held camera considered with regard to natural perception of the stable visual world... Shots taken with hand-held camera imply the holder as witness to events... Expressive possibilities... Problem of the large projected image.

Angles, Low and High, as Variables of Shooting. Transformed by constants of projection: horizontal throw upon a vertical screen... Expectation as factor of transformation... Subjective view and plane of regard... Angle relativity and inversion in double exposures and matte shots... Expressive possibilities.

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Tricks as Tricks and as Legitimate Filmic Devices. Slow motion, fast motion, and reverse action as valid means for stylizing natural movements... Dissolves and fluidity of mental images... Interpenetration and image-creating power of double exposures... montage sequences.

The Problem of Cinema as an Autonomous Form of Art. After the completion of the study of objectively valid filmic principles, the lecturer will present a critique of the 'prevailing assumptions about film as art, and offer a theory based on two insufficiently explored cinematic powers: the power to arouse organized kinesthetic responses and the power to transcend literal meanings of the shots, that is, to create poetic images. Nearly all of the discussed principles will be amply illustrated with excerpts from over fifty well-known classical and contemporary films and with experimental work done by students.

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COAL MINE FILMING

Continued from Page 177

scenes were lit on a high key, rather than for mood or dramatic effect. Spectra "Professional" exposure meters were used, and the average exposure for the majority of the scenes photographed was F/2.8.

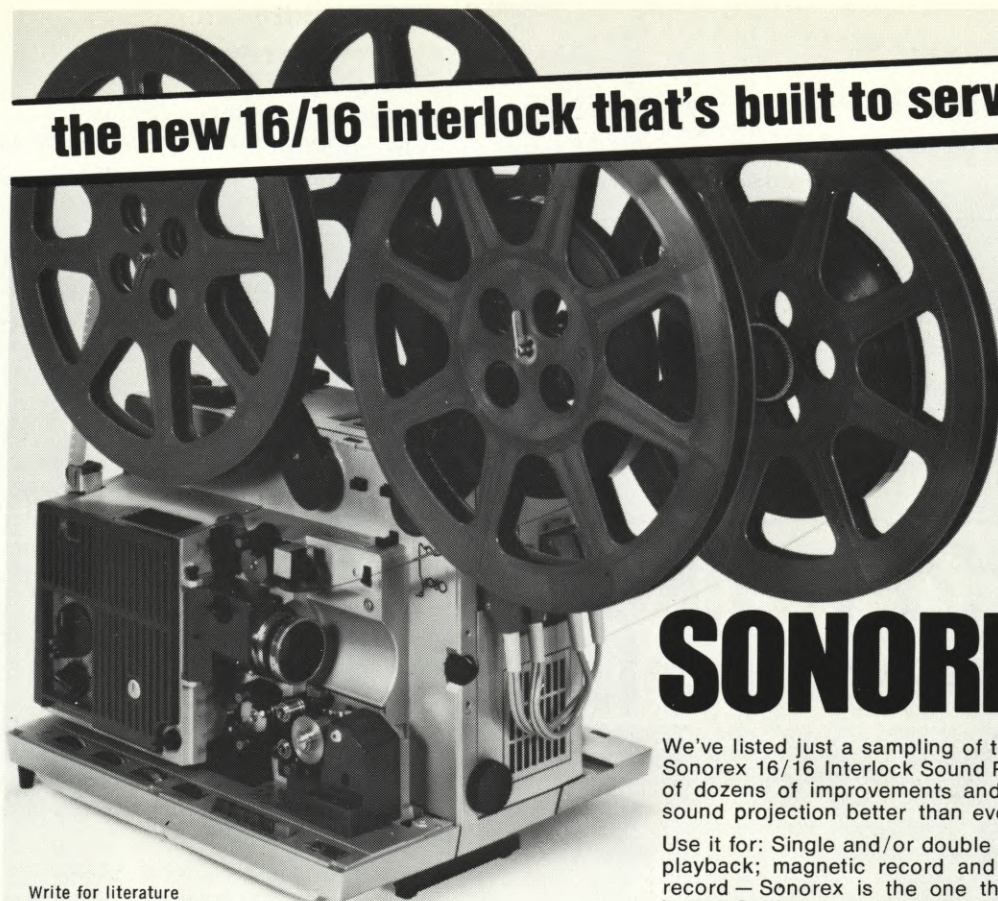
Many of the scenes involving different types of mining machinery were shot in "sync" sound. The main action, along with the distinct sounds of machines such as continuous miners, loaders, and shuttlecars, was recorded with a Nagra quarter-inch magnetic tape recorder. Some time was also spent recording "wild sound" of such activities as drilling, bolting, blasting, and other related mining operations.

At the end of a day's shooting, cameras and film were brought to the surface. The film was packaged for shipment to the laboratory, and the cameras were cleaned and serviced. Any production problems that had arisen during the day were ironed out, and all necessary preparations for the next day's shooting were cleared away. The workprint returned from the lab was screened once or twice a week. The work schedule was rather rigorous, and late-evening dinners and early-to-bed retiring were the rule for most of the crew. Finally, six weeks and some 14,000 feet of film later, the underground shooting was completed. The filming task had presented many challenges, both technical and aesthetic, and the Bureau of Mines Motion Picture Branch had met them "face to face" (literally and figuratively). There were no paid actors in these scenes, but the action and continuity were outstanding, and the photographic results were superb.

As in most complex undertakings, the goal of this filming venture was reached through close teamwork. Much of this success was due to the immeasurable assistance, participation, and cooperation of the mining companies from the highest ranking official topside to the lowest-paid entry worker underground. Acknowledgment must also be made to the many other concerned individuals—local, State, and Federal—who, recognizing the importance of coal to our national welfare and the need of greater safety for the men who mine it, contributed much time and effort to the project.

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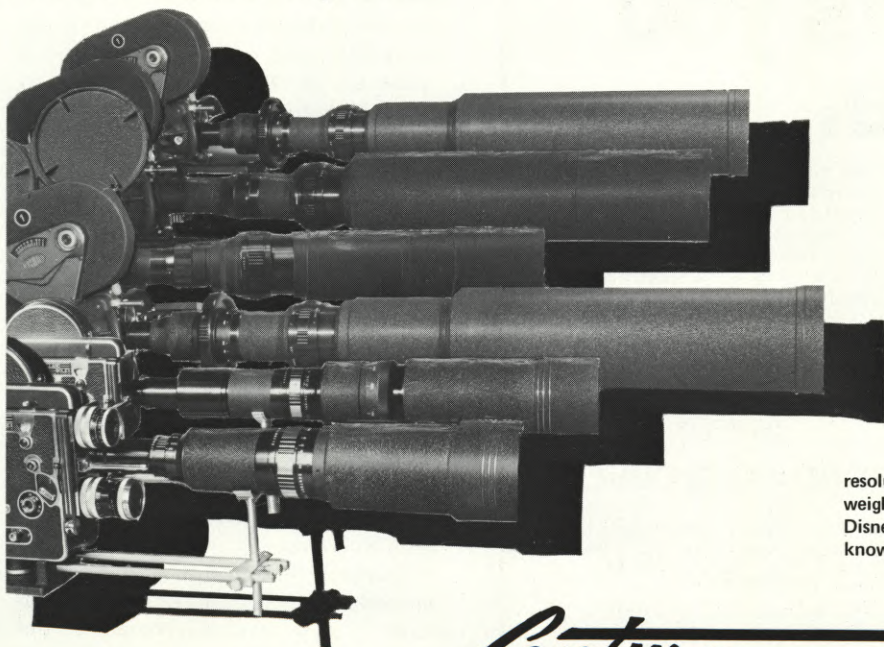
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KODAK VIDEOPLAYER

Continued from Page 171

readily to modification for use in countries utilizing other electrical (50-cycle) and television scanning systems.

The unit's continuous film transport system permits the acceptance of thinner base film for longer programs, imposes less wear on the mechanism, allows minimal wear to the film, and is very quiet. Controls on the feasibility model of the videoplayer permit forward projection, stop-motion, instant review, and automatic rewind of the film into the cartridge at the end of the film. The unit accepts Kodak projection cartridges—which can be used interchangeably on other silent and sound motion-picture projectors—in 50, 100, 220, and 440-foot sizes.

Kodak officials emphasized that the videoplayer demonstrated at the convention was merely a feasibility model—built to study the concept of a cartridge, Super-8 television playback device—and that no commitment to manufacture or market such a unit has been made by Kodak.

The feasibility model of Kodak's new videoplayer was unveiled to the general public for the first time during the November meeting of the Western States Advertising Agencies Association.

The product demonstration was presented by Marvin P. Hodges, Divisional Director of Sales Development, Motion Picture and Education Markets, Eastman Kodak Company and members of his staff. An introduction and overview were presented by a leading authority in the field of photographic science, Dr. Richard J. Goldberg, Chairman of the Board of Dymat International Corporation, the parent company of Hollywood Valley Film Lab.

Said Dr. Goldberg: "We are going to see the introduction of a new communications tool. An innovation that will have an impact on the advertising, entertainment, education and training industries, and all aspects of audiovisual communications. Countless billions of dollars are spent throughout the world each year in these areas. It is estimated that there are 100 million television receivers in the U.S. and Canada and 172 million in the rest of the world. This new communications innovation—which you will see tonight—will provide the means for showing any Super-8 film through any of these 272 million television receivers.

"Super-8 film is standard wherever in the world it is made and wherever in the world it is processed. Therefore, the producer or owner of a Super-8 film will

have the capability of communicating with a selected group out of the vast numbers watching television. Never before has the opportunity been provided to do this with such ease. The television receiver is now a way of life and is ever-present in the room awaiting only the turn of a knob for viewer reception. Film is the only medium which can be used with such flexibility. It is the only medium that can be shown optically and electronically. All the developments of photography in the last 100 years are available in this ribbon of Super-8 film. It has the highest quality of any medium. It has a low viable cost. It has service available anywhere in the world. With the videoplayer principle of Eastman Kodak the Super-8 film can be viewed on a television receiver in any country no matter what the television standards of that country. Only film has the capability of high-speed duplication on common laboratory equipment in existence everywhere. The ease with which film can be used is self-evident.

"Industry and government will probably be the first to use this new communications technology—and evolutionary development techniques will soon make the videoplayer a household item, available to everyone—and as common as the television set.

"The film cartridge, with its high quality of sound and color picture reproduction, and equipment such as Kodak's Videoplayer, connected to a standard television receiver, has enormous market potentials—industrial communications applications certainly include training and employee orientation programs, sales films, public relations messages, and filmed house organs.

"Magazines—in color and action with sound—will certainly be a major future use. Educational and instructional—both in the classroom and for individual utilization—are important applications. The same goes for religious and spiritual message films. And home entertainment, in the form of rented or purchased libraries of great motion pictures, travel documentaries, and encyclopedias-in-action are surely down the road."

According to Dr. Goldberg, "A compatible film/television system has many advantages over an all electronic system, including the existence of vast libraries of filmed material currently available, the ease and low cost of Super-8 print duplication in small or large quantities, and the multiplicity of film processing labs throughout the world. Kodak's recent breakthrough in available-light Super-8 film and cameras may be added to the positive points of the Super-8 film format." ■

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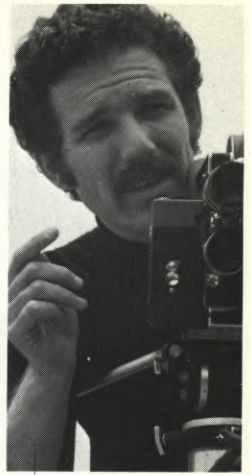
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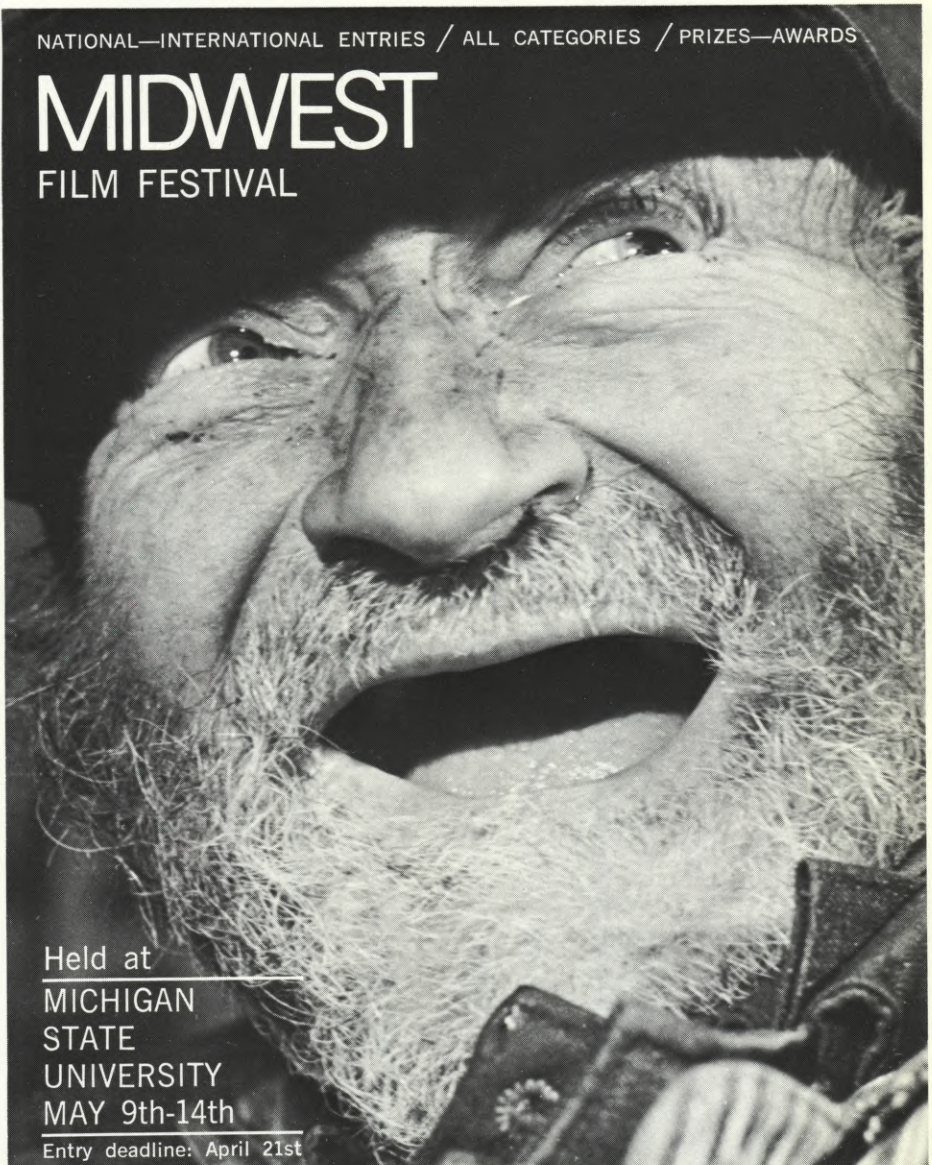
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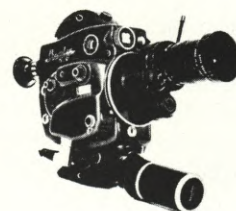
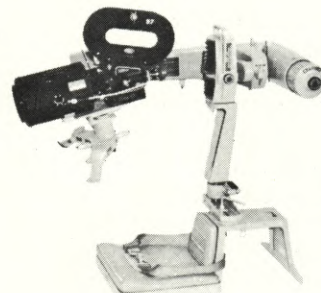
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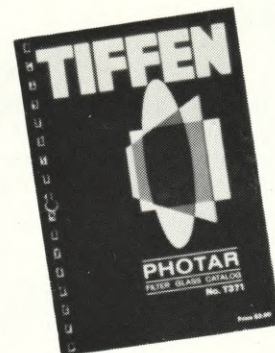


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CINEMA WORKSHOP

Continued from Page 136

ably the biggest breakthrough has been the r-f condenser mikes (Sennheiser 415, 815). These microphones employ an extreme high-frequency signal on the membranes. The sound pressures will then modulate this high-frequency (r-f) signal and the audio signal ultimately results from demodulating this r-f signal.

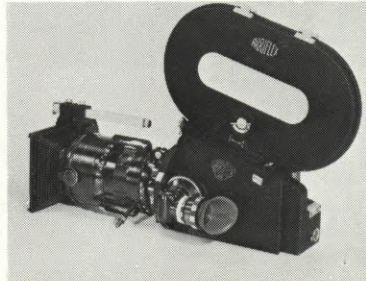
This may appear to be a roundabout method, but the results are quite impressive. For openers, the r-f condenser mike is very rugged and is less sensitive to physical shock, humidity and temperature when compared to conventional condenser microphones. Most astonishing is the extremely low noise level of the r-f condenser mike, which approaches the theoretical noise limit. (The mike can actually register the movement of free air molecules when compared to a vacuum.) The audio output of the r-f condenser is very high and thus high gain in the pre-amp stage is unnecessary, thus further enhancing its low noise characteristics. Because of the inherent superior characteristics of the condenser mike, and in light of the recent technical advancements, the r-f condenser mike is fast becoming the most popular device for those demanding the ultimate in recording quality.

On the negative side, the r-f condenser is usually very expensive. It also requires an external power supply. However, on the latest models this merely consists of a tiny battery that attaches to the mike itself. Most basically, a dynamic mike is usually available that will be more than adequate for the particular situation. In other words, in many cases, the quality of an r-f condenser mike will grossly outclass the other components in the recording chain and, thus, nothing is actually gained above that which a good dynamic mike would have provided. (Keep in mind that a 16mm optical track has a response of approximately 70-6000 Hz and typical S/N of 40-45 db. Not exactly what would be considered the ultimate in high fidelity.) In general, the quality of the microphone should be equal to, but not necessarily superior to, the other components in the sound chain including the final product.

The two types of microphones, *dynamic* and *condenser* refer to their construction principles. These microphones are further classified as to their *directivity*, such as: *omni-directional*, *cardioid*, *shotgun*, etc. Other terms used to describe microphones include *sensitivity*, *impedance* and *frequency response*. These topics will be explored in the next *Cinema Workshop*. ■

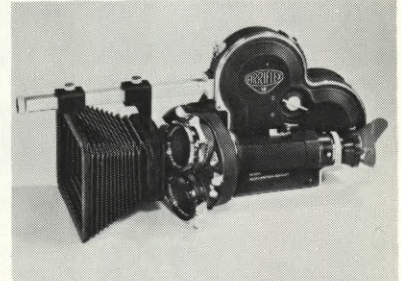
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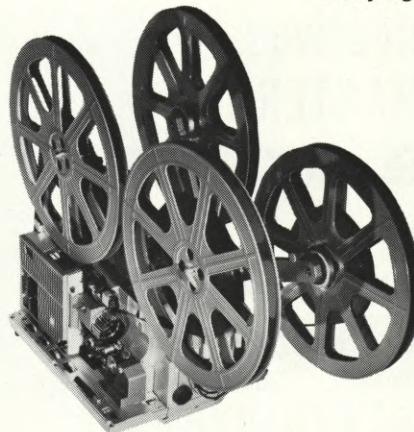
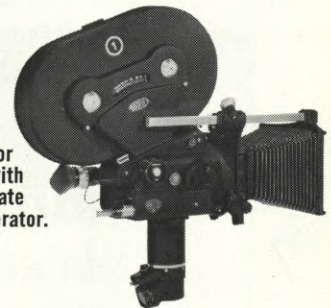
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THE BOOKSHELF

By GEORGE L. GEORGE

Leonard Maltin's *BEHIND THE CAMERA*, a well-written NAL paperback, consists of interviews with 5 outstanding ASC directors of photography: the late Arthur C. Miller, Lucien Ballard, Conrad Hall, Hal Mohr and Hal Rosson. While not a technical study, the book is highly knowledgeable, intelligent and perceptive. Maltin has the reporter's flair for inducing a responsive attitude and the answers he elicits reveal these professionals' individuality, their experimental urge and their personal approach to the creative side of film. Each man's credits, selected stills and a lively introduction complete this enjoyable volume.

* * *

As a study of production techniques, *A PRIMER OF FILM-MAKING* by Kenneth H. Roberts and Win Sharples, Jr. is currently the best text available. Written by active filmmakers who also teach, it covers every aspect of 35/16mm production. Equipment and its use, practices and procedures, the artistic potential, all are systematically surveyed, with budgeting forms, standards nomenclature and illustrations rounding out a thoroughgoing guide.

* * *

The pre-eminence of the documentary as a medium for artistic and social comment is demonstrated by Lewis Jacobs, filmmaker and scholar of international standing, in *THE DOCUMENTARY TRADITION* (Hopkinson & Blake). The nearly 100 historic texts he has assembled cover 50 years of growth, from Robert Flaherty's *Nanook* (1922) to last year's *Fidel* by Saul Landau. Among the experts represented, such cameramen as Boris Kaufman, ASC, Richard Leacock, Paul Strand and Jacobs himself contribute significantly to a richly informative book.

* * *

In taped interviews, G. Roy Levin has recorded for *DOCUMENTARY EXPLORATIONS* (Doubleday) the work experience of 15 notable filmmakers such as Willard Van Dyke, Frederick Wiseman, the Maysles brothers, Arthur Barron, Richard Leacock and eight well-known Europeans, with one regrettable omission, Joris Ivens. The book ranges effectively and widely through the world of the factual film.

* * *

John Bainbridge's *GARBO* (Holt Rinehart Winston) is the definitive biography of the superstar. Written with perceptive devotion, the book delves

into Garbo's complex personality, her behavior with friends and co-workers, notably the late William Daniels, ASC, who photographed 19 of her 24 Hollywood pictures. The book is most tastefully produced and illustrated.

* * *

Director-writer Garson Kanin's candid but tactful memoir, *TRACY AND HEPBURN* (Viking), chats amusingly about aspects of their lives at home and abroad, and their preferences in friends, foods and photography. Frankly, it is the author's literary style and the couple's personal attractiveness that really make the book.

* * *

From studio heads William Fox through Darryl F. Zanuck, an unmatched array of feminine pulchritude graced their stages. James Robert Parish's *THE FOX GIRLS* (Arlington) celebrates in text and pictures the 16 brightest beauties of all, from Theda Bara to Raquel Welch, not forgetting Linda Darnell, Alice Faye, Betty Grable, Gene Tierney and Loretta Young. This is, in effect, a tribute to the cameraman's art, since it is his talent, more than the writer's or the director's, that contributed most decisively to the "goddesshood" of these hard-working, dues-paying SAG members.

* * *

In two valuable spin-offs derived from the encyclopedic seven-volume set of *The New York Times Film Reviews*, a hefty one-tome selection, *THE NEW YORK TIMES FILM REVIEWS 1913-1970* (Arno Press—Quadrangle) carries 400 critical appraisals of significant movies. Film historian George Amberg has contributed perceptive comments to this handy and substantial reference work.

* * *

Full data on 500 award-winning films since 1924 pack the 1243 pages of the impressive *THE NEW YORK TIMES DIRECTORY OF THE FILM* (Arno Press—Random House). It includes the original NYT reviews, a complete awards list, a full talent index and nearly 2,000 performers' photographs. Arthur Knight's discerning preface underlines the book's usefulness and fascination.

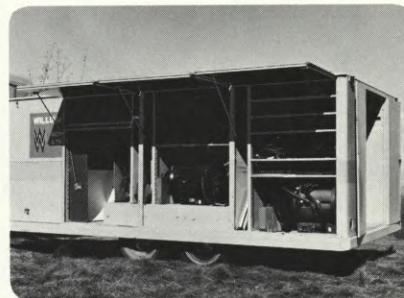
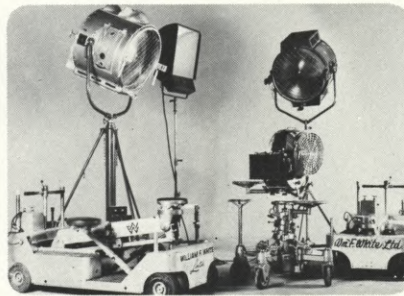
* * *

From Barnes, two invaluable annuals, Peter Cowie's *INTERNATIONAL FILM GUIDE 1972*, and F. Maurice Speed's *FILM REVIEW 1971-1972*. The former surveys extensively production in 43 countries with a wealth of factual data and informed comments, while the latter stresses the pictorial aspect of the year's releases and evaluates worldwide movie trends.

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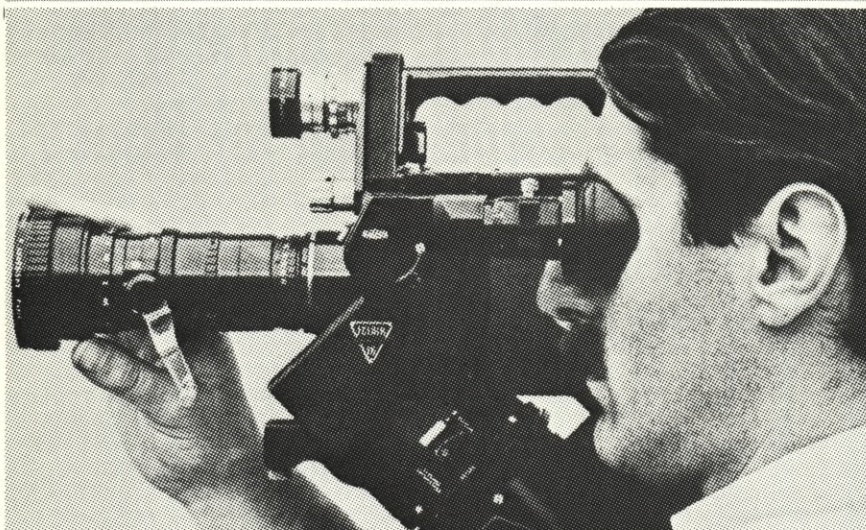
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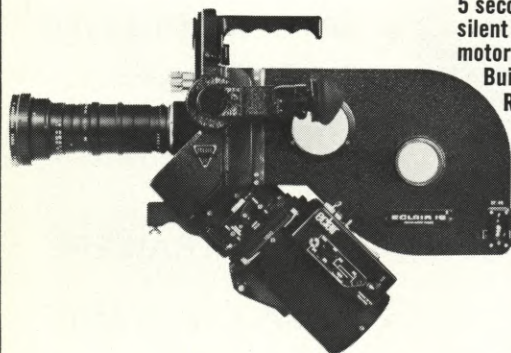
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ON LOCATION

Continued from Page 157

feature production. What they may lack in this area of experience is more than made up for by their enthusiasm, dedication and thorough professionalism. It's a pleasure to watch people work who are so in love with what they're doing.

Later, at the oval track just outside of town, it appears that the entire local population has gathered to watch the running of the Hutchinson Grand Prix snowmobile classic.

The filming of the event has been very carefully organized, with what amounts to five units shooting concurrently to capture every aspect of the race. The first unit consists of Ron Eveslage (with crystal-control Eclair NPR) and Jim Mansen running the Nagra. The second unit pairs cameraman Skip Nelson and his Eclair with Lyle McIntyre running the back-up Nagra. They are tied together umbilically because they are not equipped with crystal-sync. Jan d'Alquen is perched on top of a shed adjacent to the home stretch with his 16mm Arriflex. Terry Morrison, with Eclair, is positioned on a low platform at one of the turns where exciting spin-outs and pile-ups are likely to occur. The "fifth unit" consists, actually, of the Photosonics and Bell & Howell cameras which Bill Maley has ingeniously mounted onto one of the snowmobiles. Also available is an Eclair ACL with a 5.7mm lens, which has been brought along in case the director gets so carried away that he feels the need to grab a camera and squirt off some footage.

Soon the snowmobiles are off and running, with Ron Eveslage right in the big middle of the track action as the growling machines roar past him.

While all of this is going on, the second unit (Nelson and McIntyre) is grabbing "atmosphere" footage—crowd reaction shots, local color, people coming to the race, drivers unloading snowmobiles from trucks and getting them ready—all the little bits and pieces that will add dimension to the final cut of the sequence.

The single race that is staged for the cameras is one in which a ski comes off of one of the snowmobiles, while the driver fights to control the skidding machine. Doubling for the actor is a champion racer named Lofton, a fresh-faced Pat Boone type who looks more like a choirboy than the screaming demon he turns into on an icy track.

The intricate sequence, complete with lip-sync dialogue fore and aft, is

filmed without a hitch and with a minimum of interruption to the scheduled races that remain. A crew of real pros in action!

Afterwards, back at the Hutch, there is a far-into-the-night post mortem of the day's shooting, plus frank and funny comments on the project in general. Following are some of the ideas expressed by key crew members during that spirited bull session:

RICHARD A. DIERCKS, Producer

"STORM" is the first feature to be made by Dandelion Productions. We've taken a lot of advice and listened to a lot of people who kept telling us that the most critical thing in feature production is pre-planning. That turned out to be very good advice, and we feel that the planning for this film has been very carefully done.

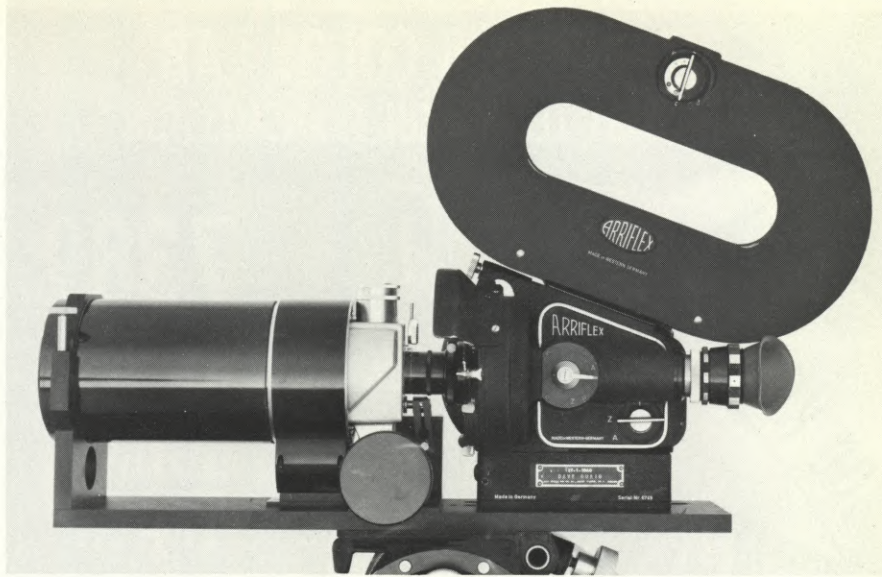
Quite honestly, in the beginning, we wanted to shoot the picture in 35mm, but for a number of reasons (some of which were budgetary), we decided to shoot mainly in 16mm for blow-up, with some special sequences in 35mm—and I believe we've made that 16mm/35mm combination work for us.

To my knowledge, we haven't lost a day's shooting because something that was supposed to be there wasn't there. We've had some close calls and the usual number of foul-ups, but the picture is right on schedule. At this point, we are \$15,000 under budget, which is an amazing feat for a first film costing less than \$250,000, and requiring so many locations.

Part of our planning dictated that for every interior location we would have a nearby exterior location, so that if the weather was right we could stop everything on the interiors and go out to shoot exteriors—and vice versa. In this way, we have been able to move back and forth very successfully.

We are a Minnesota company and we believe very strongly in the talents of the people here in the midwest who don't often get the opportunity to do anything like this. We've got excellent talent here—not quantity, perhaps—but quality. On the other hand, we don't want to get into reverse bigotry and say that everything in Hollywood and New York is bad and we can do it all ourselves. That simply is not true. You can't beat Hollywood and New York technicians. They are completely professional, and we didn't want to limit ourselves by saying that we're only going to use people from here. We wanted to pick the best people we could find who were available to us, no matter where they came from. If they came from Minneapolis, that was super—but if they came from Hollywood or San Francisco, that was super, too.

Maury Hurley, the director, held auditions for cast and crew in Minneapolis, New York and Hollywood, and the team was assembled from wherever he could find the right people. What we were looking for was people who had the same feel for film that we had, who had been in the business long enough to be thoroughly professional—but no "stars" and no big names. Bob Westmoreland, the makeup expert from Hollywood, is probably the most experienced man on the crew. Ron Eveslage has been a Director of Photography for about 10 years. He now lives in San Francisco, but came originally from Minneapolis. We knew him personally and knew that we could work with him. Ron suggested the rest of the crew:



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The great thing about this system, David Quaid says, is that it will permit the cinematographer to do something that nothing else in the world will let him do. For example, from a distance of 8 or 10 feet, he can pick up an ant full screen, balanced on the tip of a blade of grass, and as the ant begins to move he pans, keeping it in exact focus as it crosses over to a tall tree and then climbs to its very topmost branch, the whole trip in perfect focus. He may then, if he wishes, switch to a woodland a mile away and focus sharply and instantly on leaves swaying in the breeze.

The precise engineering that has gone into this equipment makes it virtually vibration-free. It can be used not only with the Arri 35, but with 16 mm. reflex cameras. Special accessories are available, such as the Questar Calibrated Follow-Focus Gauge, a Barlow lens to increase the size of a distant object on the film, a positive lens which will diminish the size while increasing the light on a nearby object, and an aerial-image groundglass.

David Quaid says that the prototype of the Questar Cinema Model was used in producing several of the award-winning films made by David Quaid Productions.

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Bill Maley, the gaffer; Jim Mansen, the soundman; and Jan d'Alquen, the assistant cameraman.

We tried to be very flexible going into this, realizing that we knew nothing about feature production and did not have all the answers. Everyone on the project has contributed in every possible way. There isn't a person on the film who hasn't done everything from the fun jobs to the rotten jobs. It really has been a team—actually, a kind of family. We've had a few family squabbles now and then, but nothing serious.

Our plan is to produce more features, to stay in the feature film business. One of the purposes of this project was to find out if we really could produce a feature and do it professionally.

If "STORM" is successful, we plan to take whatever funds may accrue and re-invest them in additional films.

LYLE McINTYRE, Unit Manager

"STORM" is an attempt by a group of people with very little experience in feature films, but a lot of general experience in motion pictures, to successfully make a low-budget feature in Minnesota. Now that we're almost finished with the shooting, I feel that we have done it successfully.

There have been hang-ups, of course, and picayune problems—but nobody ever really thought that this wouldn't happen. We were very, very green in this field and we couldn't possibly anticipate some of the problems we've encountered, but I think we've really done a pretty good job of making things happen.

In this situation, we were totally unre-



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pared for 20 different egos. Our previous experience has been restricted to industrial, educational and sales training films. But now, for the first time, we are dealing with people and personality relationships that are sometimes difficult to cope with. However, I feel that we've overcome these obstacles quite well.

There are certain problems that are simply the result of the locations. It would be easy to go into a big metropolitan area, pick up the phone and say: "Hello, Sheraton Hotel, I need 40 rooms." But in Hutchinson, Minnesota, it's a little tough to house 20 people in a group at the only motel in town during a big race weekend. The same goes for eating. It's very difficult to call up a small restaurant in a small town and say: "I've got 23 people who want to have lunch. They've all got to get the same thing, and it's got to be ready, and it's got to be hot, and we've got to be out of there in 40 minutes."

Surprisingly enough, for the last six weeks, they've done it. I don't know how, but they've managed it. The food has been very good. Of course, we've got a few gourmets who can't seem to understand that when you're working 30 miles from the nearest town and it's 10 below zero and snowing, there isn't likely to be a commissary truck rolling by. They don't seem to realize that we aren't in Las Vegas and I can't put them up at the Sahara and I can't buy them filets every night or get wine in for them from the Napa Valley in California.

In spite of that, we've gotten along beautifully. For instance, one of our locations was a cabin located about a mile and a half from the nearest point where you could park a car. You have to go in the rest of the way by snowmobile. Now, what do you do for lunch?

I thought of having it catered, but where do you find a caterer in Grantsburg, Wisconsin, who will drive five miles out of town, transfer all the food onto a snowmobile and drive over a bumpy trail for a mile and a half to lay out a lunch that's hot and ready for 23 people to eat?

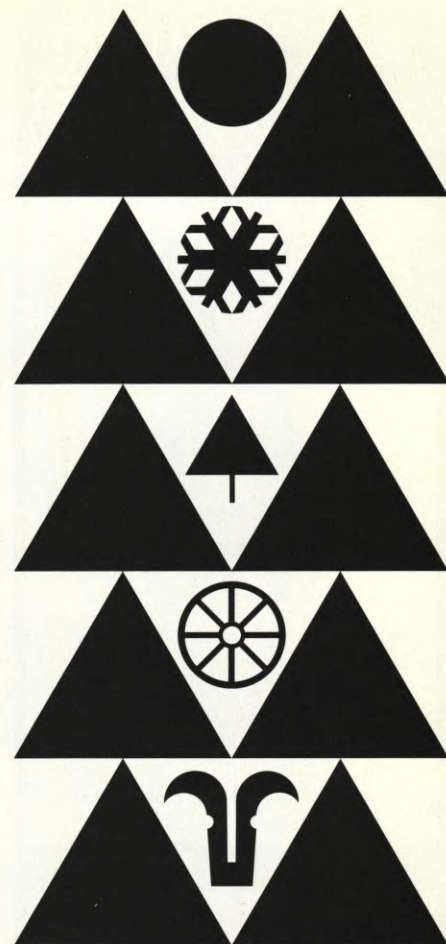
The esprit de corps of our "family" came to the rescue. They decided that each day a different one of them would become a gourmet chef and create his own specialty. After that, we ate like kings. The members of the cast and crew, being from various parts of the country, came up with a fantastic variety of dishes. So, we've been living very well and I hope everybody is happy—because if they're not, I'm in trouble.

Maury picked these people for a family situation and the family thing has worked just beautifully. I'm sure that if one of us met someone on the street who wanted to start a fight, it would be a 'Hey, Rube' situation, like in the circus. The rest of us would be there in a second and kill 'em—just kill 'em.

RON EVESLAGE, Director of Photography

The photographic style for this picture was very clearly defined in the script written by the director, and I can't speak too highly of him. Hurley had some great images in his mind and, in our discussions, it came out very definitely how we were to treat the subject photographically and get those images onto film. It's been going very well—better than it has a right to, considering the conditions under which we've been working.

To explain the mixture of 16mm and 35mm in the same film, I might point out that this was decided on in order to help establish various changes in mood. For exam-



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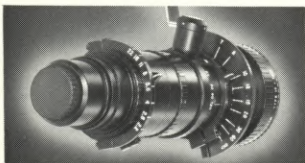
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ple. The lead in the film hitch-hikes to a farmhouse late at night through a kind of swirling snowstorm—and a storm in Minnesota is a depressing, heavy thing. We shoot the storm in 16mm. But when he wakes up on the morning after the storm, the sunlight is hitting the frost on the trees, and the snowflakes sparkle and reflect back almost like little mirrors. We shoot this in 35mm and it sparkles. The whole screen just comes alive.

I've felt, from time to time, that we were saddled with 16mm, but, on the other hand, when it comes to mobility, that's where 16mm really shines. The 16mm cameras are incredibly easier to use and mount on snowmobiles and they are easier to barney for heating. They are much simpler than 35mm to use in cold weather. We can put on a 400-foot magazine and it will last almost three times as long as the same size magazine on a 35mm camera.

The 16mm equipment has been holding up very well in the cold. We've had heater barneys made out of two layers of nylon-dacron synthetic canvas with a layer of reflective space blanket material between. These barneys have little pockets inside that will hold a standard hand-warmer, and that works just fine.

Our main camera for shooting is an Eclair NPR with Arriflex mounts on it, and the 9.5mm-95mm zoom is the primary lens. We also have a 12mm-240mm zoom which is a fine, very sharp lens, but it is too slow to use for interiors. I use it for exterior scenes whenever I can. We have an Arriflex S that we use for wild shooting and it takes all of the same lenses that we use on the Eclair. The photosonics camera that we use for high-speed work is a very rugged camera to mount on sleds and tromp through the woods with. It's practically indestructible and the double-pin registration is so steady it's almost frightening.

Bill Maley built some excellent camera mounts onto the snowmobiles and we're overcranking at 50 frames per second—which is something I'm not in complete agreement with, because it will look like 50 frames per second. It won't intercut with the real-time scenes, so it will have to stand on its own.

The action is very exciting and I think we will have a film document on snowmobile racing such as people have never seen before. It will hold them on the edges of their seats. It's fast and it's colorful machines and bright outfits and white snow and green trees flashing by. It's so much action and so much everything that you just can't miss!

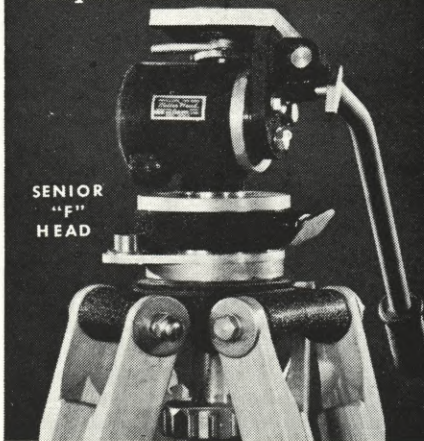
As far as current for our interiors is concerned, Lyle has handled every one of the locations and handled the preliminary work very well. For example, we've had 300 amps of power dropped into every location we've shot, and on some of them, we've had much more than that.

In some locations, we've had to park in an area snowplowed for us in a place far from where we were going to shoot. Then we've had to carry everything in by snowmobile—cameras, lights, sound equipment and other gear—twisting through a forest for about a mile and down a fantastic hill to the cabin where we were going to shoot.

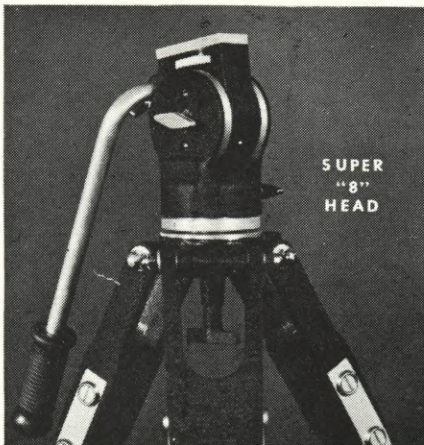
The sequences shot in the cabin called for four distinctly different lighting moods and Maley came through with just what we needed. We used Mole-Richardson quartz lighting exclusively—some soft-lights, some 1K's and 2K's, baby spots and the new Molettes.

The 16mm footage has a beautiful soft

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look to it now, but we know that it will pick up contrast in the 35mm blow-up and will appear more normal. We kept a hard edge on all of the photography and used no fog filters, except for effect in a couple of fantasy sequences.

For example, there is a fantasy love sequence where we used a #3 fog filter. It's all in yellows and was shot in an incredible room. I've never seen a room like that before. It has yellow velvet wallpaper, a yellow canopy bed, yellow formica tile on the desk and a yellow carpet. It's so yellow it's unbelievable. Our makeup artist had to give the actors a purple makeup so that they would look white against it. It's an actual bedroom in a house in Minneapolis. Somebody lives in that bedroom!

Maury Hurley is fantastic in the cutting room and he will make something very exciting out of the snowmobile footage. That's his number. It's where he's been for the last five years, and he knows what to do with it and how to direct us to make it look exciting.

MAURICE HURLEY, Director

What I'm trying to get into this film more than anything else is intensity. I don't simply mean emotional intensity in terms of violence and hatred, but also in terms of humor and charm and love—which can be just as intense as violence. I don't want any emotion in this film to be weak or placid.

It sounds funny when you say it, but I like to think of a film as an emotional roller-coaster. I like to take you up to some point, spin your head around, drop you right to the bottom and take you around another curve. Then, when you think you're going down a straight path that's going to be cool for a minute, just rip your guts out again.

We've never made a feature before, so we have no guidelines. Everything is a new experience. What we are trying to do is be very careful technically. A few years ago, one of my films won the San Francisco Film Festival award for technical excellence, so that's where I come from. My background is mainly technical. I've never written a script before or dealt with actors in any way—not in little theatre, not in high school, nowhere. But I'm getting what I want. I see the dailies coming in and I look at them and say, "That's what I want!"

I like to think of this picture as being like a bald fist that is coming right at you. You may not like it, but you aren't going to be able to get out of the way of it. I'm trying to take what I feel in terms of gut-pure emotion, intensity, or whatever you want to call it—and throw that onto the screen, but without sacrificing what it takes to make a good film. To me that means all the basic things—the focus, the exposure, the lighting, the sound, the camerawork.

In other words, I want to take this gut feeling and put it onto the screen with all of the technical expertise that Hollywood has. Sometimes you see a movie and it's technically terrible, but you like it anyway. How much more might you have liked it if it had been technically good? You liked it in spite of the fact that it was shaky, grainy and out of focus. But if it had had all of those other things going, it would have been "ZHIVAGO".

Take a man like David Lean—who says it all for me. The stories he tells on the screen, holding it all in his head and having Freddie Young there to press the button for him. You put that kind of a team together and it's "gangbusters"!

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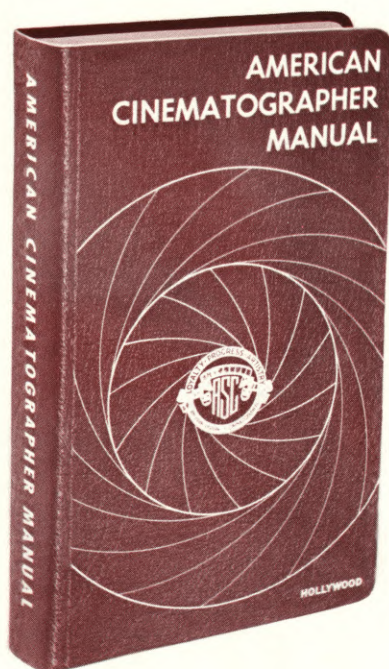
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"THE FRENCH CONNECTION"

Continued from Page 184

ROIZMAN: *It was the toughest lighting job on the picture, but we knew that going in. There were problems with fluorescent lights in some of the interiors. Take that sequence shot in Grand Central Station, for example, the one I call the cat-with-the-mouse chase, where they jump back and forth on and off the subway train. To light that area and make all the set-ups we had to make, with all the extras we had to use, would have taken forever—and we just didn't have forever to do anything. Everything was on a very, very tight schedule. So I decided to shoot without any lights at all, using only available light, and I didn't use any photographic lights at all.*

QUESTION: Was there enough light available?

ROIZMAN: *It didn't look bright to the eye, but as it turned out, I had more light available down there than I had in any of the interior locations where I used my own lighting. In fact, I had about two to four times as much.*

QUESTION: It appeared that you had rather cold light down there. Did you make any attempt to correct color temperature in the camera or did you leave that to the lab?

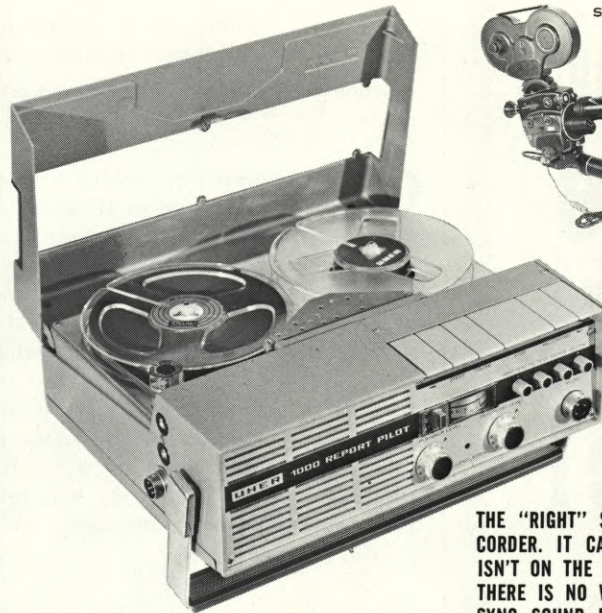
ROIZMAN: *I left it to the lab, in this case. The big problem was that the fluorescents on the platform were a different color from those on the train, which were warmer. At first I toyed with the idea of changing all the lamps in the subway cars, since there were only two or three cars to worry about, and then they would have matched the lamps on the platform. The lab could have made an overall correction and everything would have looked right and perfect. I did just the opposite. I let it go as it was, so that part of it looked a little blue and the rest looked a little warm. I think it looked more realistic that way, and it saved all the time that would have been needed to change the lamps.*

QUESTION: What about lighting the scenes on the elevated train during the chase sequence?

ROIZMAN: *Those scenes would have been impossible to light, so I didn't use any extra lighting on them. We just shot with a hand-held camera—no tripod, no dolly. The biggest problem there was*

Continued on Page 213

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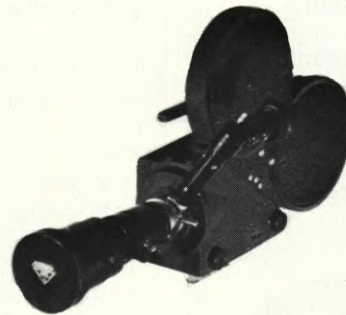
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QUESTIONS & ANSWERS

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, Holly-
wood, Calif. 90028.)

Q I am considering making a short experimental film in 16mm color that will consist mainly of high-contrast b&w scenes shot in the snow, printed over diffuse, slowly-moving abstract color patterns. Would you suggest that I shoot the snow scenes in b&w negative and the background color effect on Eastman color or stick with reversal film stocks? Also, would it be better to shoot the snow scenes on a normal stock and let the lab do the high-contrast work, or do it originally on a high-contrast emulsion?

A We would suggest that you ask the printing laboratory that will be doing your release printing what films you should use. They will have to know in detail the final effect you want to achieve.

Q I have to shoot some 16mm color film from the deck of a moving vessel at night, and want to record the various navigational aids as seen by the bridge. These aids consist of colored and sometimes flashing beacons.

As this footage will be used for training purposes, it is most important that these beacons appear as close to real life as possible.

What film and shooting technique would you advise me to use?

A The same type of training film you are trying to make has been done by one of the railroad companies in California. It is very difficult. The lights are small and of low light level. Use a fast emulsion like Kodak Ektachrome EF Film. You may have to force-process one or two stops. Try both daylight and tungsten balance. If you can use the daylight balance, Type 7241, the exposure index is 160, so you gain 1/3 of a stop in speed over the tungsten balance which has an exposure index of 125. Use a 25mm F/.95 lens if you can and a 235° shutter angle, which gives a speed of 1/37 of a second when exposing at 24 frames per second.

Q Could you give me some information on the photographic process used to obtain color prints from the three selected black-and-white negatives on a black-and-white positive?

I believe that this process is based on "Diazotype".

I enclose herewith a piece of film which has been obtained by the process.

I have seen it made in Brussels, Belgium certainly 24 years ago. Unfortunately, this has been made rather mysteriously by the inventor who refused to tell us what were the chemicals he was using; I think this inventor is dead now.

The fixity of the colors is surprising and I am wondering why the process has not been commercialized since that time. At the present time it has no economic value because it is rather slow and printing with new color films is much faster.

A In Wall's Dictionary of Photography, 12th Edition, published by the American Photographic Publishing Company, Boston, Mass., there is a very detailed discussion on the Diazotype or Primuline Process which was patented in 1891 by Messrs. Green, Cross, and Bevan. You will find it on pages 240, 241 and 242. We do not believe the film sample you sent was Diazotype since they say that "the colors are not very brilliant." We suggest that you write to Mr. Adrian Cornwell-Clyne, author of Colour Cinematography, published in 1951 by Chapman & Hall, Ltd., 37 Essex Street, W.C. 2, London, England. He may be able to supply the information you need.

Q In sound-striping motion picture film, will a normal application of iron oxide magnetic track give better sound results than a laminated track? Should this be applied before or after applying a protective coat to the film? Also, if 16mm magnetic sound film is stored in a metal container, and wound on a metal spool, will sound quality be lost?

A There should be little or no difference in the sound quality rendered by either type of track. The track material should be applied to the film before the protective coating is applied. We know of no instance where magnetic film or tracks have been adversely affected by storage in metal containers or on metal reels.

"THE FRENCH CONNECTION"

Continued from Page 211

trying to match, because the light was changing constantly. As we'd run along the track another train would pass and block out the light. Or we'd go between tall buildings and that would cut down the light in the middle of a scene. This made it a little difficult, a little tricky. But after a while, we got the feel of it and were able to do it with no problem. I had a terrific operator and my assistants were great.

QUESTION: Was the chase sequence filmed by the first unit or the second unit?

ROIZMAN: We filmed about 90 percent of it with the first unit. The second unit shot some running scenes on the ground, a few pass-bys and inserts of hands and feet. We decided to use as much hand-held camerawork as possible. We never made an actual dolly shot on the streets. Every time we had to make a moving shot, we'd do it out of a wheelchair or out the window of a car, moving along or walking. We shot with an unblimped Arriflex a good deal of the time and we really didn't have a big problem with the sound. I don't know how Chris Newman did it, but he did it. He has a way.

QUESTION: Did they have to loop much of the sound?

ROIZMAN: They didn't have to loop anything, that I know of. Getting sound while shooting underneath the elevated tracks was really brutal because the trains were so noisy. I didn't think he'd get a track at all. I was amazed the next day when I went into the screening room and heard the sound. It was unbelievable.

QUESTION: Can you tell me about the various types of lighting units you used during the filming?

ROIZMAN: We used almost every type of light there is, including quartz lights. We tried to use small units wherever we could—inkies and things like that. But mostly we used a new light-weight soft-light that is very compact. They call it a "Zip Light" and it was made by a gaffer in New York. It is a 2,000-watt soft-light made of aluminum, but it's about half the size of a regular 2,000-watt soft-light. I adapted these lights with nets and various gags for hanging them simply in places where we'd never be able to hang lights of normal size. We

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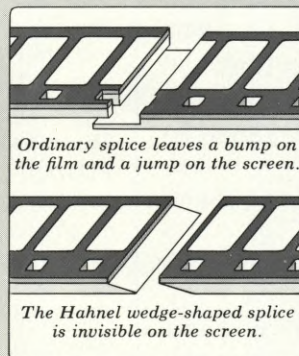
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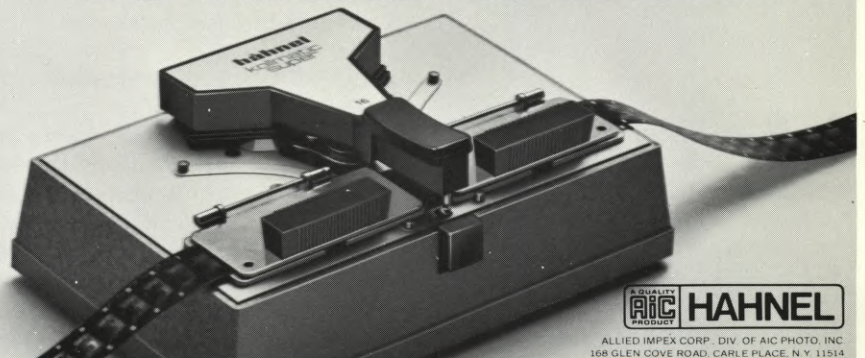


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never had to worry about ruining any structures. They put out a tremendous amount of light and cover a wide area—so I used them a lot.

QUESTION: Did you use any Brute arcs on "THE FRENCH CONNECTION"?

ROIZMAN: I didn't carry a Brute during the entire picture. I can see the use of Brutes sometimes, but not on this type of film. There was no necessity for using them. In general, I don't like to use them and I do so reluctantly. When possible, I like to avoid them—but they're a great protection in certain instances.

QUESTION: What about your night exteriors? You had some pretty wide expanses to light, didn't you?

ROIZMAN: We had one that was really big—that sequence with the Puerto Rican raid. It encompassed about three blocks, plus part of FDR Drive. But there were no Brutes involved. I used maybe four 10K's for the main lighting—at the most. The rest were small units hung on fire escapes and on the tops of light poles, spread out all over the place. Instead of lighting it up brightly and going for contrast, I lit it sparsely and underexposed to give it a dingy feeling. I did that with all of the night stuff. There was one scene where the FBI agent and his partner drive up and offer Gene Hackman a drink from a bottle. That was lighted entirely with inkies—about six to eight foot-candles. I like to shoot wide open on everything. I always do it. Some people criticize me for it—especially my assistants. It's rough on them—I know it and they know it—but the ones who have worked with me on a few pictures know that I'm going to do this and they're used to it by now.

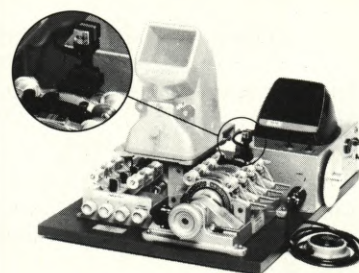
QUESTION: When you say "wide open", just how wide do you mean?

ROIZMAN: Whatever is the maximum aperture of the lens I'm using.

QUESTION: Is there a reason?

ROIZMAN: I like to maintain a shallow depth of field. Whatever I'm focused on—that's what I want to be sharp. Even with a wide-angle lens, everything but the main subject will be just slightly soft. It won't be as crisp as the center of attention. Every time I stop the lens down it disturbs me. If I have to shoot a scene at F/4 or F/5.6, it bothers me—so I always try to shoot wide open.

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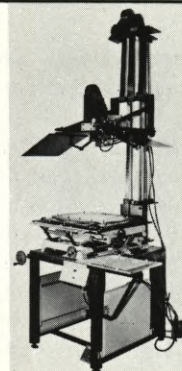
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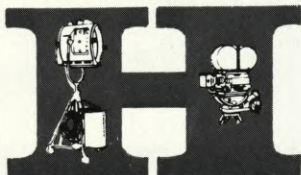
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QUESTION: It also makes it possible for you to shoot at extremely low light levels, doesn't it?

ROIZMAN: Yes. The main reason I like to shoot at such low light levels is that I don't have to use much fill light. When you work at low levels like that, the light has a tendency to fill itself in. The ambient light picks up in the shadows. In fact, if you turn a fill light on, it washes everything out. With a high light level, you get the opposite effect. The scene picks up contrast. On "THE FRENCH CONNECTION", the highest I ever worked in a controlled situation was 32 foot-candles—which will give you F/2.3 if you force-develop one stop. I avoided using the zoom lens as much as possible because it's slow and requires more light.

QUESTION: You had a great many location interiors on this picture. Can you tell me about some of the more challenging ones?

ROIZMAN: The one that was the most challenging was the raid on the black bar. The ceiling was very low and we had to contend with some daylight coming in the windows. Bill Friedkin and I talked about the sequence in detail ahead of time. He laid out the action and showed me exactly how many set-ups he wanted to make in the two days that were scheduled. It was a lot of set-ups for the size of the room and the amount of people involved, so I tried to figure out a way to do it without having to change lights for every set-up. I built a row of lights onto the ceiling and used photoflood bulbs, all on a master dimmer. There were fluorescent lights on the walls and I used them just as they were, keeping the photofloods low so that they would blend in with the fluorescents and not overpower them. There were also some practical lights on the ceiling. I used ordinary 100-watt bulbs in them and took the photofloods down to about the same intensity. The only other units were a few Dinky-inkies used for kick lights or to open up really dark areas.

QUESTION: What about the scenes where the detective throws the informer into the men's room?

ROIZMAN: That's the most interesting sequence I've ever shot. I had asked Bill Friedkin what he would like to see in there, what kind of feeling he wanted, and he said: "Whatever you'd actually see—that's what I'd like to see." There was a bulb in an overhead socket, and that's all that was lighting the men's

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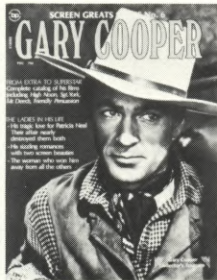
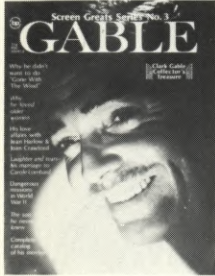
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room. So I just took that bulb out and replaced it with a photoflood—and that's the way we shot it. I even stopped down a little bit, because I didn't want it to be too bright. When we went to shoot the scene, Friedkin chickened out a little bit and asked if I wasn't going to use a little fill light on the black actor. I felt that you could see the actor well enough to tell who he was, and that was enough. But just to appease Bill I put some white cards on the floor to bounce the light from the one photoflood. They didn't do much, but he felt better. Anyway, I kept it 90 percent the way I wanted it and I loved the whole sequence. It was printed down a little bit in the final print. I wasn't around when it was timed—but Friedkin printed it down.

QUESTION: Can you think of any other interior sequences that posed special problems?

ROIZMAN: Yes—that sequence where the dope smugglers are eating inside the restaurant and Doyle is standing on the sidewalk across the street eating a pizza. It was very challenging, because we had to start on the smugglers inside and then zoom through the window to a close shot of Doyle. I knew that if we put gels on the windows, the image wouldn't be sharp enough when we made the zoom. It would be too diffused. So I had to light up the interior of the restaurant to balance with the exterior and use a 85 filter over the lens. But I also wanted to use a very warm lighting inside the restaurant. In order to really be able to tell what I was going to get, it would have meant using blue lights inside and then adding some kind of warm gel. However, the light loss would have been so great that it just didn't make sense. So, instead, I used 3200K lights in there and added a slightly warm gel. I wanted it to look quite warm inside so that the outside would look even colder than it actually was.

QUESTION: What about the problems of shooting that last sequence, where the action takes place in what appears to be an abandoned warehouse?

ROIZMAN: When I first saw that location I loved it. My main problem was how to make it look like it wasn't lighted, even though it had to be. I really had to think about that one. I finally decided to cover all of the windows with tracing paper, light everything from outside and let it flare out. When you take that approach, it can be very tricky, but I had used it in shooting commercials and I knew what I could

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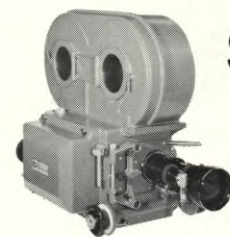
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get away with. I did no lighting inside the place at all, except for a few tight closeups. Then I simply recreated the effect with a FAY light and some tracing paper. As it happened, there was a terrible snowstorm raging outside on the day we shot it, and it was hard on the guys who had to run around in the snow setting lights outside about 15 windows.

QUESTION: How did you break down the photography of the shoot-out at the end of the picture?

ROIZMAN: The director decided where the cops and the bad guys were going to be. Then my operator, Enrique Bravo, took one camera and I took another one. Friedkin just had them shoot it out with nothing planned and we covered it in documentary newsreel style. We just did whatever we wanted and tried to outdo each other to see who could get the best shots. We had a lot of fun shooting it.

QUESTION: Under what conditions do you think the hand-held camera should be used or shouldn't be used?

ROIZMAN: My theory about photography is that you should use whatever is necessary to make the particular shot. There are some operators who can make hand-held shots so smoothly that they don't look hand-held. The audience never becomes aware of it. In "THE FRENCH CONNECTION" we wanted it to look rough. In fact, we hid Enrique's shoulder brace so that the hand-held shots wouldn't look too smooth. After a while he got to like it so much that he wanted to shoot everything hand-held. Instead of taking time to set up a dolly, we'd simply put him in a wheelchair with the camera. If the road or sidewalk or whatever was fairly smooth, it worked very well and saved a lot of time. There were other sequences, like the one where they were testing the heroin, in which the camera was locked down solid. The audience was not to be made aware that the camera was involved at all.

QUESTION: There were a couple of sequences in which you departed from the rough, dingy style used in most of the picture. Can you tell me about those.

ROIZMAN: Yes. There were two sequences which we decided in advance should not be dingy. One was the heroin-testing sequence. The other was the sequence that took place inside the

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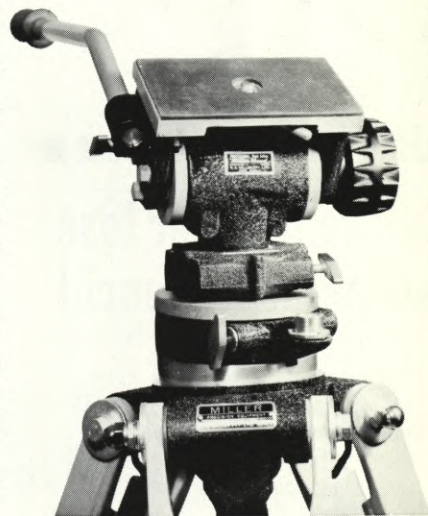
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apartment of the wealthy guy who was supposed to be the contact man. These represented a complete contrast in technique. The scene with the contact man was shot in a suite in the Hotel Pierre and we wanted that to have a rich look. I overexposed everything so that when it was printed down it became much richer. The walls and ceilings of the room were white, so I put photofloods in the practical lamps and bounced a couple of lights off the ceiling. That's all the lighting that was used.

QUESTION: The sequence inside the lobby of the Westbury Hotel had the available light look, but it actually must have required quite a bit of lighting. Isn't that so?

ROIZMAN: Yes. It was actually illuminated with quite a bit of our lighting. It was a pretty big place. So the crew took an early call to come in and rig it. We tried to pre-rig the locations whenever possible in order to save time. I'd line out what I wanted in a certain location and the crew would go ahead and hang some lights and lay the cables. Then we'd come in just before shooting and do the actual lighting. This saved a tremendous amount of time.

QUESTION: What can you tell me about the shooting of the chase sequence?

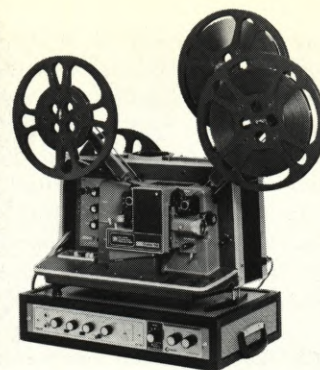
ROIZMAN: As exciting as the chase was, it really provides very little to talk about. The approach we took was very simple. The sequence was broken down into about five stunts, with the second unit doing some isolated shots. For each shot inside the car there were two and sometimes three cameras rigged. These gave us over-shoulder and point-of-view shots and closeups of Hackman, who did a lot of the driving himself. The crashes were shot from outside using four or five cameras—all with different lenses and from different angles.

QUESTION: Did you undercrank much of the chase footage?

ROIZMAN: I undercranked at 20 frames and sometimes 18, but never less than that, because they were driving very fast. The biggest chore was controlling traffic—blocking off streets for six or seven blocks. There was one real accident in the chase—when our car crashed into a white car and spun it around. That wasn't staged. One of the stunt drivers simply missed his mark.


QUESTION: What about lighting inside the car?

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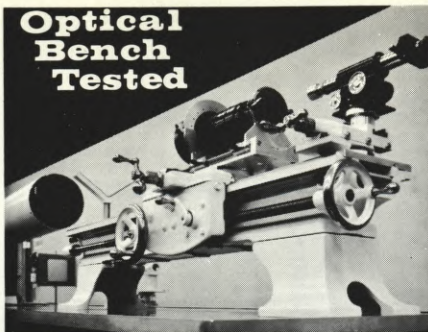
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ROIZMAN: I tried to avoid it, but there were a couple of shots where we needed a bit of fill, so we used the Sun-Gun—the biggest one they've got. It didn't put out much light, but it was enough to keep Hackman's face from being a silhouette. There was one great tie-in shot where the operator started on Hackman's face and panned up so that you could see the train racing along. I loved that shot.

QUESTION: What special problems did you have in shooting the scene with all those people on the streets of Manhattan?

ROIZMAN: That was the triangular surveillance sequence shot on Madison Avenue. We decided to shoot it without extras, as we did on all of the exteriors. The assistant director was worried about people looking at the camera, so we talked about hiding the camera, camouflaging it or shooting out of cars. The day we went out to shoot, I said to him: "Let's try to shoot without any cover-up. Let's just put the camera out on the street, hand-held or on a tripod, and see what happens." I had the feeling that New Yorkers were so used to seeing newsreel cameramen running around that they would pay no attention. Sure enough—it worked! We even got so brazen as to set up a 12-foot parallel right on the sidewalk in the busiest section of Madison Avenue—and nobody looked at the camera.

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Among the main chapter headings in the catalog are 35mm Cameras, 16mm Cameras, Lenses and Lens Accessories, Filters, Viewfinders, Power Supplies, Cases, Tripods, Special Camera Supports, Dynalens System, Dollies, Grip Equipment, Lighting, Meters, Sound, Production Accessories, Editing, Motion Picture Printers, Laboratory Equipment, Animation Equipment, Projectors, Underwater Cameras, Housings and Lights and Books.

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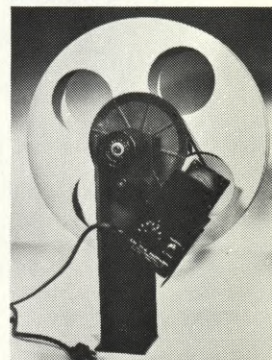
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DYNAMICS OF FILM-MAKING

Continued from Page 194

had *walked* when we shot her: *I WAS THERE!*

My intention was to show her walking; but all that was left of that sprightly walk was that silly bobbing up and down. I had failed to realize my intention. I was betrayed by the *camera's tricky capacity to subtract* as it moved, and by my *ignorance* of that power.

When, subsequently, bright marquee lights were superimposed all around her closeup, nothing was changed—she still kept on *treading on the spot*.

Long after the sequence—disappointing as it was—had been incorporated into the picture I learned that I could have saved that dolly shot, *that I could have restored a semblance of natural walk and progression in space*, if I had shot the bright lights in such a way that they receded into distance on both sides of her closeup.

But, at that time, I was not acquainted with the principle, the *perceptual principle of induced motion* as formulated by Gestalt psychologist Duncker (1929).

What is this law of induced motion? Simply stated, it goes like this:

If a *stationary object* is surrounded by a moving background then the *object appears as moving*, and the background, or framework as stationary.

It is over forty years since that principle was formulated, yet, still, tracking shots of closeups are being made against homogeneous or distant backgrounds, thus completely cancelling the characters' natural locomotion in ambient space.

ON TV COMMERCIALS

A few years back, in reply to a producer's request to put down some thoughts on TV commercials, I submitted the following:

Regarding films in general, I am primarily concerned with visual values. Not in the sense of photographic-pictorial values, but visual-dynamic, that is, *cinematic* values.

These, for me, depend first and foremost on the *quality of movements* within the shots and the quality of organization of the movements in a sequence of shots.

I judge the quality of a movement the way a musician would judge the quality of a tone or a chord, and I judge the quality of a total cinematic organization the way a music critic would judge a musical composition, or the way a dance critic would judge a piece of choreography.

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Borrowing the term from the art of the dance, I would say that cinematic value depends on a kind of filmic choreography in which *natural* movements of all objects, animate and inanimate, are organized (composed, "orchestrated") in such a way as to create a dynamic, meaningful, and esthetically satisfying whole. I stress natural in contrast to stylized dance movements, which do not seem to accord well with the "reality texture" of the cinema. Natural movements, however, may be legitimately stylized only by technical means proper to the medium, such as slow motion, fast motion, stop motion, reverse action, dissolves, multiple exposures, camera movements, etc., and by means of editing as: overlapping, jump-cutting, mismatching, etc.

Occasionally there appear a few commercials which come close to fulfilling the requirements of these definitions; and often I find them more cinematic than the whole feature films into which they are inserted.

There are other commercials which lie outside of my primary concern: those which depend solely on verbal or comic or "slice of life" content. They interest me only to the degree that they are presented with clarity and force; that is, according to principles of filmic grammar and syntax based on the laws of visual perception. In these cases, where the recording of a performance is of paramount importance, the film medium is used mainly in its aspect of audio-visual language and not as an autonomous form of art.

Here are a few things that I find disturbing in many commercials: (1) Claustrophobia (*love* of confined spaces); when all objects (usually food products), and/or all people (usually gay parties), are shown in extreme closeups only. To be satisfying to perception, a sequence should reveal a sense of proportion by playing with variations of included volumes of space. The product can still remain in close foreground and show deep space behind it, as in a recent well-made floorwax commercial. The kind of filmic claustrophobia where everything seems to be shot with the nose against the grindstone induces in me a feeling of claustrophobia and an impulse to break open my TV set and take a visual breath in the space around the product. No doubt, with such commercials, budgetary considerations are involved. Yet, in most cases, the problem of space play could be solved with very little additional expense. (There is no "space" here to go into this.)

(2) Working from outside in: that is, borrowing (usually from New Wave and "avant-garde" cinema) techniques which

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may have been suitable to the original subjects, and forcing the same techniques, photographic or editorial, upon themes where they do not belong, as, for example, using quick, *choppy* cutting while trying to sell razor blades, or using hand-held camera where the *presence of the cameraman as a participant*, as a witness to the event, is not indicated.

Expressive form must arise from inside the subject matter. As Pope said of poetry, "The sound must seem an echo to the sense."

(3) Wrong association of ideas or association of wrong images, as with some soft drink commercials where bottles (and glasses) are associated with sea water, running brook water, or rain water. Such close connections make me suspect the contents of the bottles. Anyway, coolness comes from ice or refrigeration, and freshness from the sparkle of the little bubbles. Both of these elements, together with cool shade and breeze, coming *after* shots of heat, dryness and exertion, would have more visceral appeal. Incidentally, seeing people covered with snow makes me want to take a *hot* drink.

ON KINESTHETIC RESPONSES

What is that sense of movement? It is actually a sense that we all have, but which is seldom listed with the other five senses, sight, hearing, touch, taste and smell. Science calls it the *kinesthetic sense*. Let me explain what is meant by that. "A Dictionary of Psychology" by James Drever defines *kinesthesia* as a "general term covering sensations of movement of any part of the body, arising from stimulation of receptors in joints, muscles, tendons and sometimes inclusive of sensations from the semi-circular canals of the inner ear, and therefore to the sensations belonging to the static sense."

But let me describe this in more concrete terms which, I think, will lead to the aspect of it that is of primary importance in the theory of *film form* that I intend to submit to your consideration.

Think vividly of yourself as performing some physical action such as lifting a weight, jumping over a puddle, tracing a figure eight on your skates, and so forth. If, while doing this, you pay attention to what goes on in your body, you may become aware of certain tensions and changes, certain "movements" within your muscular structure. If you do become aware of this, then you will understand what is meant by *kinesthetic* or *implicit motor impulses*. You know from experience, I am quite sure, that when you watch scenes of football,

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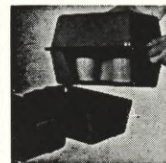
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boxing, tennis, etc. in real life, in the movies, or on TV, you get so involved that you often "participate" with visible gestures. This we shall call *kinesthetic responses*. Not the overt gestures but the inner responses and impulses that preceded them. In the former case, you actively thought of performing certain actions, in the latter case you responded to *seen movements*. This is important for us.

With a little training a film-maker will be able to feel kinesthetic responses to seen movements not only of human bodies in motion but of objects in motion as well. To a door opening, to a billowing curtain, to a wave breaking, to lava bubbling, to leaves shimmering, and so on. To kinesthetically feel is to somehow reproduce these movements within our body. But this is still not enough to enable us to make art. We must also be able to organize movements. As a poet organizes his words, a musician organizes his tones, so will the film artist meaningfully organize his movements into what may be called "kinesthetic melodies and orchestrations"... so that a sensitive viewer's experience will not be merely kinesthetic but kinesthetic-esthetic or, to coin a word, cine-esthetic... And much more than this is needed to make film art.

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At present we have no specific name for the kind of cinematic experience that, in my opinion, should be offered to discriminating movie-goers. On the formal-physiological level it would be a vivid kinesthetic experience, while on the "content" level it would be a kind of poetic experience. (I am aware of the artificial separation of "form" and "content," but this seems necessary for purposes of discussion. In experience they are inseparable. Yeats said, "How can we know the dancer from the dance?")

Poetic values in film can be achieved only if the referential aspects and literal content of the shots are transcended so that they acquire multilevel meanings, which cannot be verbally described. And this can come about only by creative selection of right imagery, in right movement, and in the right context. This insistence on the kinesthetic-poetic aspect of the ideal film does not preclude a new kind of dramatic experience where moods, tensions, and conflicts would be expressed—in visual-dynamic imagery, but not in histrionics, as is done today. For that, however, we will have to wait for a visual-kinetic-imagist Shakespeare to appear. ■

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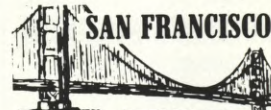
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Continued from Page 179

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Film, 35mm Kodak Color Negative

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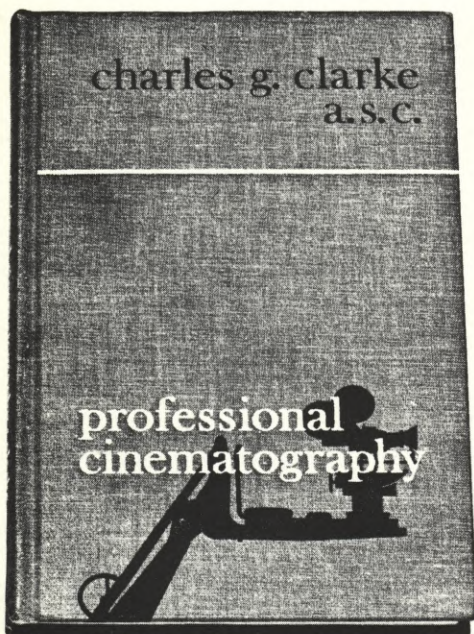
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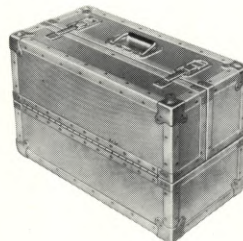
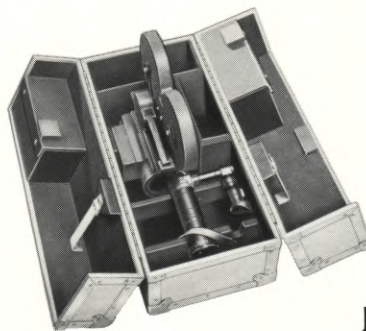
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