

American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

EMM

DECEMBER 1972

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REPORT FROM
photokina
1972

The CSC Reflex II

The most versatile reflex BNC in the world!



Cooke lenses:

Now you have a lens choice! Ours is the only reflex BNC engineered to accept Cooke lenses. Cookes are better—much better. But don't just take our word for it. We had an independent firm test a set of Cooke lenses and compare them with the more commonly used BNC lenses. The most modern, sophisticated, optical testing instrumentation was used. The conclusion: Cookes are best. If you would like a copy of the complete lens test report, send us a self-addressed envelope.

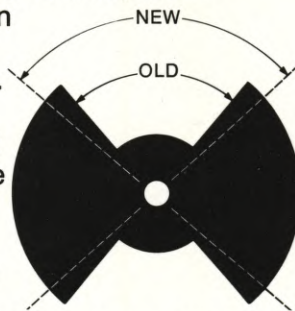
Ultra wide angle:

Do you use a second camera for your dramatic wide angle shots? No need to now. The Reflex II will accept lenses as short as 9.8mm—Yes—9.8mm! Look at the exclusive creative edge you get with the Reflex II—

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9.8 mm	14.5 mm	15 mm	18 mm	20 mm	25 mm	32 mm	40 mm	50 mm	75 mm	100 & up mm

New shutter:

To further boost lens performance, we've made an ingenious design change that permits the use of a new 200° shutter. The big advantage, of course, is the raised light transmission factor. More light means smaller apertures for increased overall sharpness, depth of field and brilliance.



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There's only two ways to improve the SS III.

1. Cut the price 2. Add DC

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Now you can get a complete newsreel package for \$3295.

And now you can get a DC Crystal Cordless model of the SSIII! You get the lowest price and the only AC/DC choice in the field.

SSIII AC

Even at our original price, the SSIII AC was one of the best values for the news/documentary/educational cameraman. But now we've actually improved the camera and lowered the price! There's a new main drive system, a non-ratcheting footage counter and, by popular request, a drop-down door. Plus improved manufacturing techniques that make this incredibly low price possible!

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It's new. It's three pounds lighter and noticeably quieter than any comparable camera in the field today. It will operate with greater torque efficiency and accuracy at temperatures from sub-zero to 150° F. And a 12V battery just slightly larger than a cigarette pack will run 2800 feet on a single charge.

Packages

I—SSIIIAC Magnesium Camera, 400-ft. Magnesium Magazine, Deluxe Carrying Case and Angenieux 17-68mm f2.2 zoom with zoom finder—\$3295 complete.

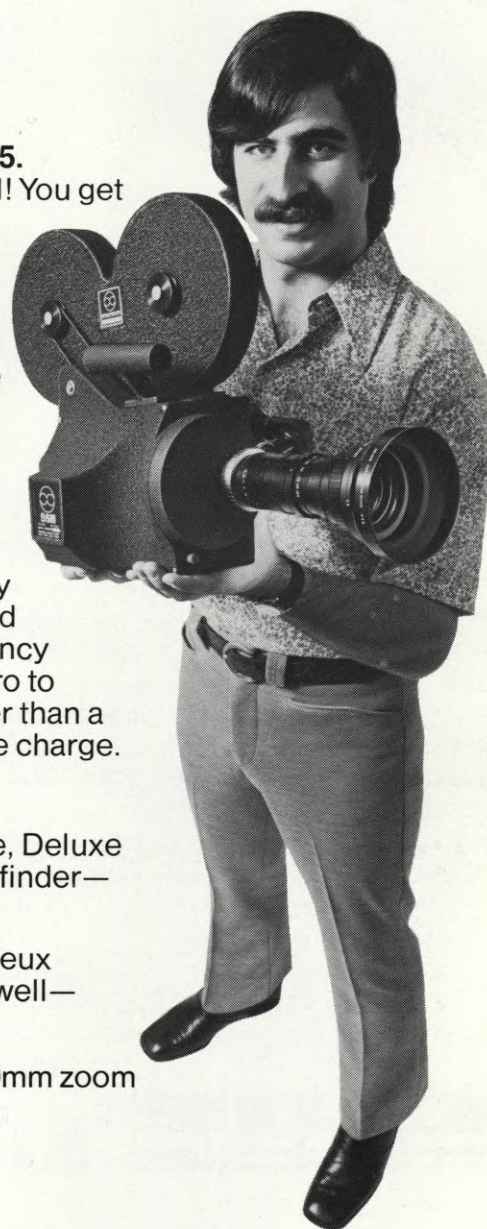
II—SSIIIAC as above, but also comes with detachable Angenieux Retro Zoom Adapter that converts lens to 12.5-50mm f2.2 as well—\$3395 complete.

III—SSIIIAC as in Package I, except lens is Angenieux 12-120mm zoom with zoom finder—\$3895 complete.

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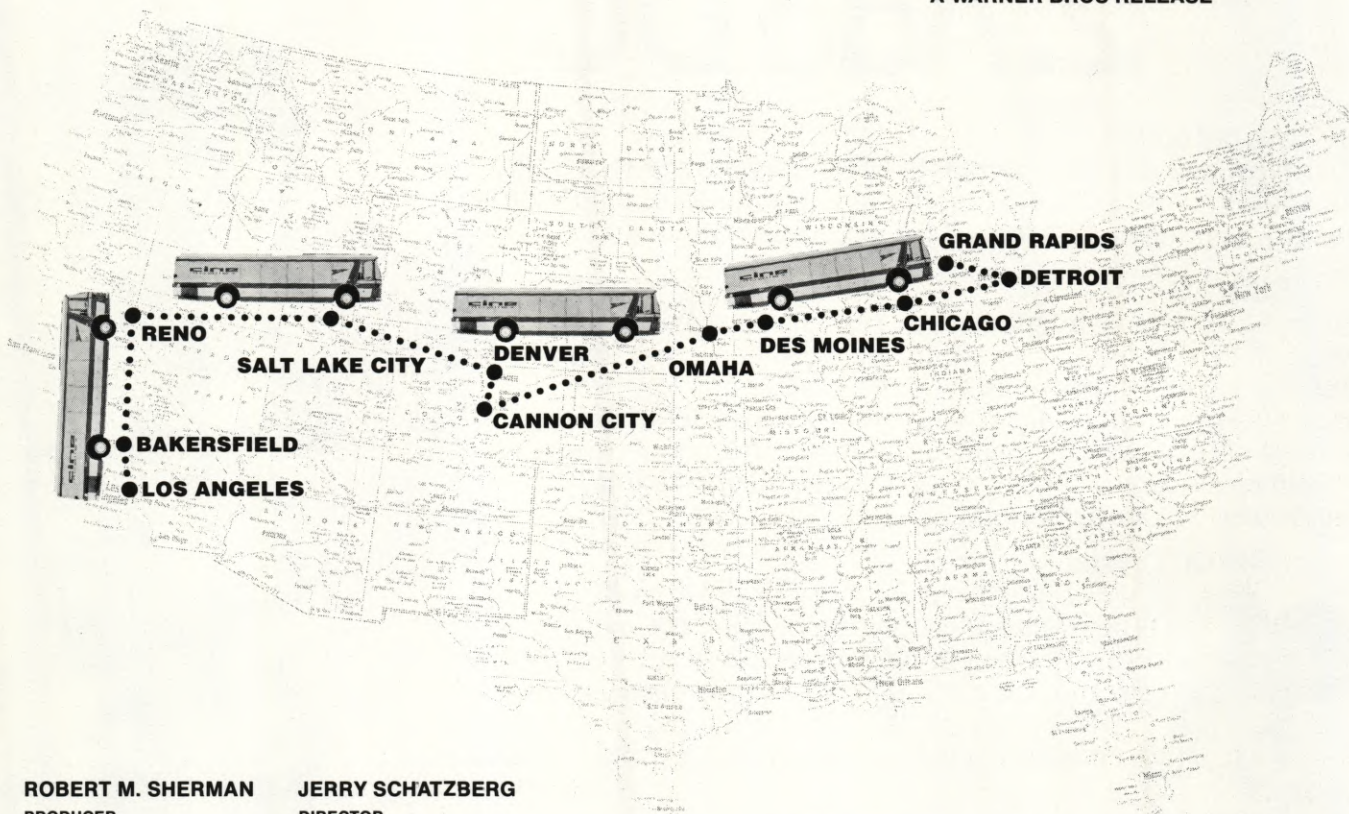


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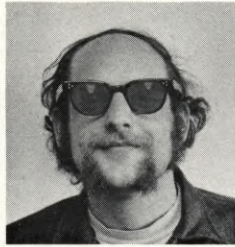
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ON THE COVER: A colorful collage representing the tremendous scope of exhibits and equipment demonstrated at *PHOTOKINA 1972* in Cologne. Cover design by PERRI & SMITH. Poster art courtesy of *PHOTOKINA 1972* Press Relations Bureau.

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Beala Crystal Motor
5- 400' Magazines
3 - Belt Batteries
9.5 - 95mm Angenieux Zoom Lens
5.9mm Angenieux
10mm Xenon Lens
90mm Macro Lens
85, 85n3, 85 Polarizer Filters —
(All Lenses)
Pistol Grip
2 Changing Bags
French Flag

Sound Compartment

Nagra 4.2L
ATN Unit
Crystal Control
Fishpole w/Cueing Head
1 - MKH 805 Shotgun Mike
1 - MKH 405 Mike
2 - Vega Wireless Microphone Units
2 - Sony ECM — 50 Lavaliers

Electrical Compartment

4 - 2000 Watt Mighty Moles
4 - 1000 Watt Mickey Moles
4 - 650 Watt Teenie Moles
4 - 250 Watt Mini Moles
4 - 2000 Watt Location Softlights
4 - 750 Watt Baby Softlights
4 - 1000 Watt Molepars
4 - 750 Watt Baby Solarspots
4 - 9 Lightfay Lights
2 - 5 Light Fay Lights
2 - 2 Light Fay Lights
2 - Lowell Light Kits
All Stands & Accessories

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250' 4/4 Feeder Cables
4 - 50amp Porcelains 25'
4 - 25amp Porcelains 25'
4 - 4 way Boxes 25'
2 - 4 Wire Stage Boxes
10 12/2 Extensions 25'
10 - 16/2 Extensions 25'
6 - 301 1/2 Adapters
1 - Set Siamese Adapters

Grip Compartment

1 - Elemack Dolly or Colortran
Dolly (Opt.)
1 - Mini-Jib Arm for Elemack —
w/Counter Weights
6 - 42x42 Reflectors w/Stands
4 - Appleboxes
4 - Pancakes
6 - Sandbags or Water Weights
2 - 24"x36" Single Nets
2 - 24"x36" Double Nets
2 - 24"x36" Black Flags
4 - 18x24 Single Nets
4 - 18x24 Double Nets
4 - 18x24 Black Flags
4 - Gaffer Grips
4 - Large Spring Clips
4 - Small Spring Clips
1 - 6x6 Butterfly Complete
1 - 9x12 Butterfly Complete
2 - Lowell Polecats
1 - 750 Watt Variac
1 - 2000 Watt Variac
2 - 750 Watt Sidearms
2 - 2000 Watt Sidearms
2 - Double Headers

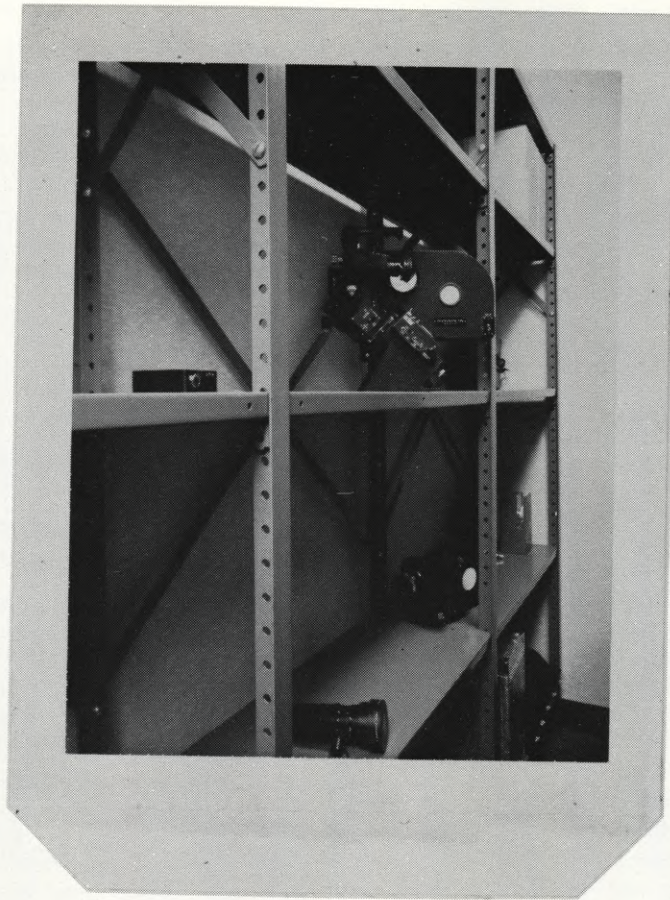
And . . . Roof Shooting Platform, Air
Conditioning, Power Steering/Brakes,
Automatic Transmission, 350 V8

Film maker Arnold Gits is going on location, and he's taking a few things with him. We can help move him smoothly and in all the right directions . . . in a veritable studio on wheels. We call it 'Fercovan'. It's compact enough to go where larger vehicles can't, and it's super-organized in separate compartments which put all the equipment he needs at his fingertips.



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You and your fellow professionals have made 1972 a banner year—more Eclair cameras were sold than ever before. But, as much as we like you, we know it wasn't a matter of personality. More and more of you discovered how many ways our cameras' capabilities enhance your own. And you haven't kept it a secret.

We're grateful. Grateful, too, for the patience you've shown when "demand" occasionally left "supply" standing in the dust. (After all, good cameras, like good films, take time and care.)

One more "thank-you" is in order: to our competition. Who provide a lively incentive for higher standards, further innovations and continuing leadership. Thanks . . .

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WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE



NEW MIIDA MB-810 EDITOR ACCEPTS ALL 8mm FILM FORMATS—BOASTS HIGH FIDELITY VIEWING

Just as the finest projectors accept both Super-8 (and Single-8) and regular 8mm film, the new Miida MB-810 Dual 8 Film Editor can be swiftly converted to accept either format. And because of its precision optics and unique image-enhancing features, it insures a bright and sharp image on its large screen.

Converting the editor for Super-8 (or Single-8) to regular 8mm film is a simple process that requires only the substitution of the two formats' respective aperture plates, both of which are supplied as standard equipment. The machine's dual-film sprocket automatically adjusts itself for the correct film when the aperture plates are interchanged.

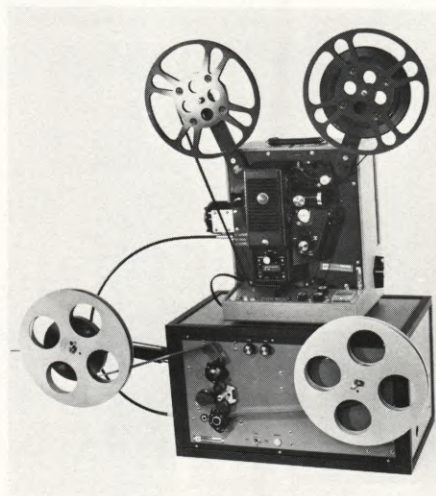
A Fresnel lens system, combined with the precision double-prism system (patent pending) assures a bright, evenly-illuminated image on the oversized 4-3/8" x 3-1/4" viewing screen. This is an important advantage because of the smallness of the 8mm frame. With less sophisticated viewing systems, it is often difficult to see small details and thus, precision cutting becomes more difficult and time-consuming than with the Miida instrument.

A simplified film-threading path also contributes to the ease and efficiency of this fine editor. The film is placed around the bottom portion of the sprocket, and then simply slips over the aperture and around the remaining two guide rollers in a direct, straightforward line. Because of the relationship between sprocket, picture head, and guide rollers, a pressure plate over the aperture is unnecessary. Another special guide roller is provided to permit high-speed film rewinding.

The editor is equipped with reel arms that accept reels up to 7" in diameter, for a 400-foot capacity of Super-8 and regular 8mm film, and 600 feet of Single-8. A frame marker is included to

assist in precision film cutting. Separate focusing and framing controls are also provided, so the filmmaker can get a full-frame image of maximum sharpness regardless of the camera with which the film was shot, or the thickness of various film bases. The unit's built-in lamp switch permits the editor to be left plugged in between editing sessions, rather than disconnected and reconnected as is required by less sophisticated designs.

With its die-cast construction, the Miida MB-810 Dual 8 Film Editor assures many years of reliable, faithful service. It is priced at \$44.95, and is available at all fine photo stores. Additional information can be obtained by writing to Marubeni America Corporation, Miida Photo Division, 104 East 25th Street, New York, N.Y. 10010.



NEW PALMER INTERLOCK ATTACHMENT FITS SUPER-8 AND 16mm PROJECTORS

A new magnetic film transport makes it easy for documentary and experimental film makers to create high quality 16mm magnetic sound tracks according to W.A. Palmer Films, Inc., San Francisco.

The Palmer Magnetic Film Transport, Model PIA is designed to work with various models of Super-8 and 16mm projector. It records and plays back separate 16mm magnetic track in sync with projected motion picture. The new unit is built by the manufacturers of the Palmer Interlock Projector, which is sold world-wide.

The magnetic film transport unit is

equipped with its own synchronous motor. A flexible shaft connects the transport drive to the projector threading knob. Projector and transport can be run forward or reversed in perfect sync using the regular projector controls. The unit delivers top quality magnetic sound without wow or flutter.

The PIA Magnetic Film Transport can also be used separately as a 16mm synchronous recorder and playback unit.

Basic price for the Palmer Magnetic Film Transport, Model PIA is \$1,850.00 (projector not included). Projector adaption kits vary from \$25.00 to \$150.00 according to make of projector.

For further information, contact: W.A. Palmer Films, Inc., 611 Howard Street, San Francisco, Calif. 94105. Phone (415) 986-4961

LIGHTWEIGHT MODEL OF "FREZZI-CORDLESS"

A new magnesium-body lightweight model of the standard "Frezzi-Cordless"[™] professional 16mm TV news-film single/double system sound camera was displayed by FREZZOLINI ELECTRONICS INC. of Hawthorne, New Jersey, U.S.A. at Booth 32 at the October 1972 SMPTE Conference.

Designated *MC-571*, it weighs 14 lbs. complete ready-to-roll with DC motor, or 16 lbs. complete ready-to-roll with AC motor. Indicated "complete ready-to-roll" weights include Angenieux AVB 12-120mm zoom lens, 1-inch finder with TV reticle, 400-ft. magazine and battery. Both versions have built-in crystal-controlled module for sync-sound operation accurate to "dead sync" in 1200 feet of 16mm.

DC-motor version running time is 8 to 10 four-hundred-foot magazines per charge on quick-change plug-in battery. AC-motor version running time is 6 to 8 four-hundred-foot magazines per charge on quick-change plug-in battery. Both feature authentic Bach Auricon movement.

A special TV Newsfilm Station Package is available, too, in a fitted, customized carrying case with "complete ready-to-roll camera," spare battery, data rings, filters, amplifier and accessories.

Another special service: Frezzolini Electronics Inc. will alter *any* existing 16mm "conversion camera" to "Frezzi-Cordless"[™].

For further information write James J. Crawford, Vice-President Engineering, at FREZZOLINI ELECTRONICS INC.,
Continued on Page 1444

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| <input type="checkbox"/> 2 - Beaulieu 4008ZM2 Body with selection of optional, interchangeable lenses | <input type="checkbox"/> 6A & B - Speakers for Heurtier ST 42 STEREO Sound Super-8 Projector | <input type="checkbox"/> 10 - Heurtier ST 42 STEREO Sound Super-8 Projector |
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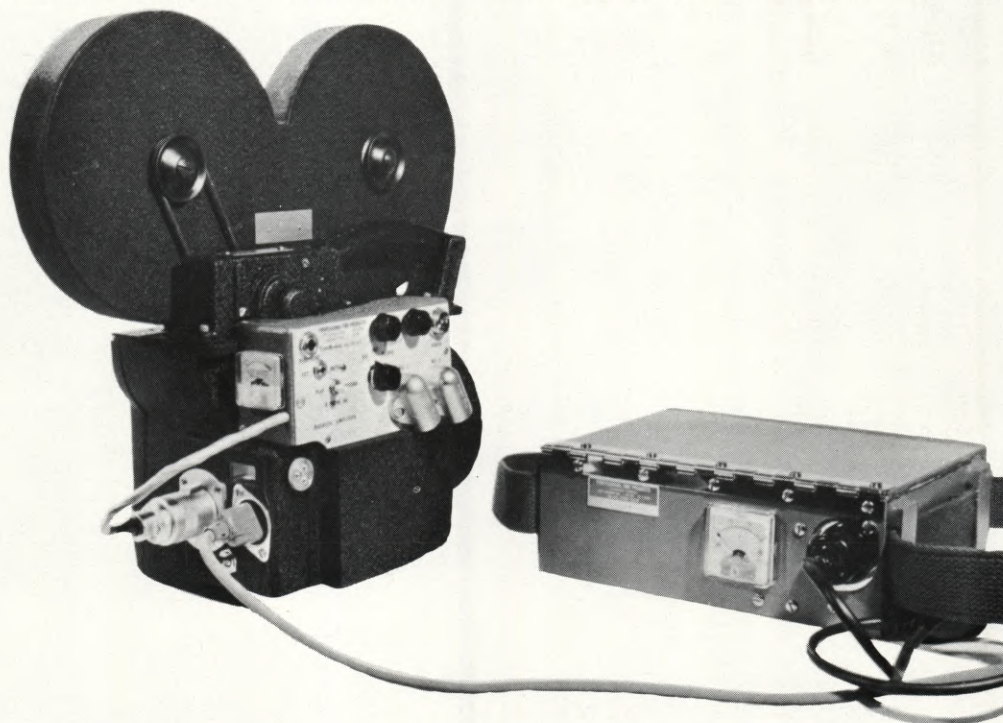
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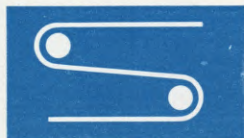
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QUESTIONS & ANSWERS

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 making a film for use at a college. What is the accepted practice in charging the client for release prints beyond the first one? Is there a standard mark-up over lab costs? Am I correct in understanding that the filmmaker retains title to all original materials in film production and that the client gets title only to the release prints? May the filmmaker then use out-takes for other films?

A It is standard practice for the producer to act as the "sole source" of release prints for the client and to make a profit on them ranging from 20% to 50%. The profit per print may be governed by the number of release prints that are ordered, and more importantly, by the amount of profit realized by the producer from the initial production.

To avoid any misunderstandings, the right to ownership of the original, the right to use left-over footage in other productions, the right to supply release prints, and the right to specify the delivered price of the release prints should be carefully spelled out in the basic production agreement. It is correct and proper for the producer to ask for these rights; but it is also within the power of the client to deny them. These are considerations that may affect the fee negotiated at the outset. The producer would be well advised to enlist the aid of an attorney, preferably one experienced in this type of transaction, in preparing the agreement with the client.

Q Is a color-temperature meter absolutely essential to good color cinematography in 16mm industrial work?

A Color temperature is a reliable indication of photographic effect when used in conjunction with tungsten lamps, which possess spectral qualities closely resembling those of black-body radiators. Color-temperature values, however, tend to be misleading when applied to color photography for various daylight conditions. A color-temperature meter is absolutely useless when fluorescent illumination which has large differences in light output from wave length to wave length. An important characteristic of a black-body light source (tungsten), and one which is particularly important for color photog-

raphy, is that the relative amount of radiant energy emitted changes gradually from wave length to wave length. Remember that voltage is an important factor in achieving and maintaining color temperature with tungsten lamps. A volt meter is just as important as a color-temperature meter. First the voltage should be checked and then the actual color temperature of the light source, since line drop may affect the voltage actually reaching the lamp. A change of one volt results in a change of about ten Kelvin units. A drop of ten volts would mean lowering the color temperature 100K. A drop of this nature would mean redder flesh tones.

Q If I use a combination of two filters to produce a day-for-night effect, how do I determine the total factor of the filters?

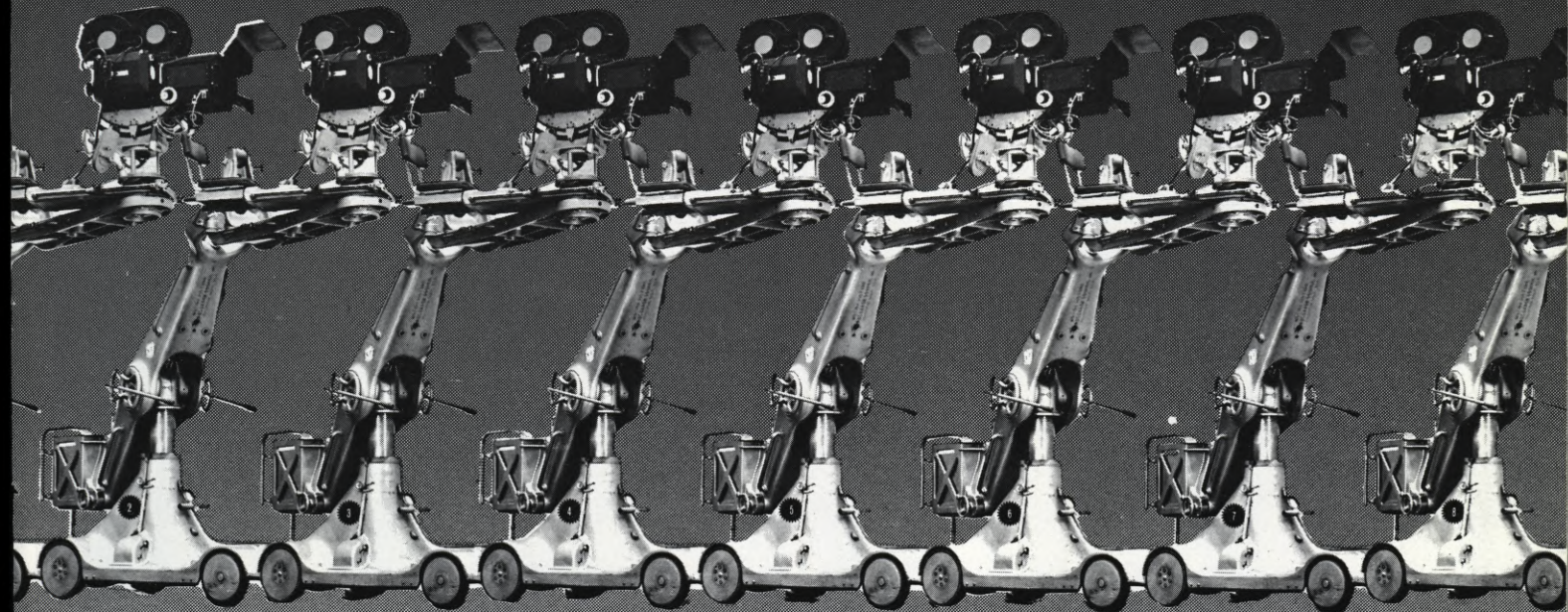
A With few exceptions, the rule to follow is "multiply the two factors" to obtain the effective factor of the filter combination. Thus, if you use one filter having a factor of 4 and another having a factor of 5, the combination factor will be 20.

Q For a film I am making dealing with the ocean, I wish to make titles in the sand, with waves washing one title away and leaving another, etc. How can I do this?

A Make a wooden box about 3 by 6 feet in size and 8 inches deep and fill it half-full of sand. Tilt the box so that when the sand is leveled it is even with the top of the lower edge of the box. Next, provide a tub of water and place it near the box, where an assistant can pour its contents into the box at the elevated side. With your camera lined up on the sand box (but without the box itself visible in the finder, of course) write the first title in the sand. Start camera by fading in. Read the title as you shoot to determine the required screen time, then have the sand flooded with water to obliterate the title. At the same time you fade out on the title. Next, wind back film in the camera, write the next title in the sand, and fade in on same as you start to shoot again. This will create a dissolve at this point. Continue shooting for the desired reading time, then repeat the procedure for as many subsequent titles as you may require.

REMEMBER?

the 12 superb M.G.M. studio cranes
B&S brought you at extra SPECIAL
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SAVE THOUSANDS!

Just released from Warner Brothers! Famous National Research Council Cranes (see photo above)—used on scores of award winning features! These 8 "ACADEMY CRANES" are designed for studio use with all cameras. Reconditioned and in excellent working shape, operation is silent and extremely smooth. Equipped with hydraulic column and mechanical balance arm, these incomparable cranes come complete with remote control and weights. Working range from floor level to 9'. Electrical drive 110-volt d.c.—forward and reverse. At a fraction of original cost, only \$3,500.

We also have two large WARNER CRANES, one electrically driven, with a maximum height from floor to lens of 17' (see photo bottom right). An exceptional buy at only \$6,000. The other WARNER CRANE is manually operated with a maximum height from floor to lens of 21' 7"—at a low, low price of only \$3,500.

And while we're on the subject, we also have some very attractive bargains in five PANORAMIC DOLLIES (see photo bottom left). These dollies have 360° rotation, 7' lens height, manually operated. We have four of these at only \$395 each, and one at \$595. Don't wait. The others moved right out!*

*Cameras and geared heads not included in above prices.

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Wolfgang Reigl checks critical relationship between claw and registration-pin on 16mm Arri movement. Tolerance is 0.1mm. Image on screen is magnified ten times.

Five facts you should know about Arriflex service:

More people, more parts, more maintenance equipment than any other camera.

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

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

1. Service People: Quantity

In the U.S.A., we have more than *twice* as many service people as our nearest competitor. That means faster service, *consistently*. Generally, ten working days. By appointment, two days. In an emergency, back the same day.

2. Service People: Quality

75% of our people were trained at the Arri plant in Germany. Wolfgang Reigl, for example—the man in the photo opposite. Seventeen years ago,

he started as an apprentice at the factory. And he spent *twelve years* there before coming to this country.

3. Spare Parts In Stock

At the Arri Service Centers in New York and Los Angeles, we have camera parts in stock worth well over \$200,000.00—all catalogued. If you ever need an Arri part in a hurry, we have it. *No waiting.*

4. Equipment For Maintenance

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5. Worldwide Arri Familiarity

The vast majority of the professional cameras in use

around the world are Arriflexes. And where there are Arriflexes, there is Arri service.

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

Fixed in Hong Kong

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



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CINEMA WORKSHOP



By ANTON WILSON

CAMERA BATTERIES

It is a fact that most professional motion picture cameras employ a battery-powered D.C. motor. It is also a fact that the battery powering this motor is the most frequently cursed piece of camera equipment. Every cameraman has experienced some sort of battery failure which undoubtedly occurred at a most inopportune moment.

The motion picture battery has thus gained an infamous reputation as a fickle and unreliable piece of equipment. In truth, this reputation is quite undeserved.

Most battery supplies used in the motion picture industry are constructed of sintered plate, sealed nickel-cadmium cells. These cells are the most rugged and reliable battery cells available and are truly a product of modern state-of-the-art technology. The problems encountered with these batteries are not due to their design or construction, but rather to the method in which they are used.

Nickel-cadmium batteries have a very complex "personality." To get the most from these cells and to assure trouble-free operation, the cameraman should fully understand the many facets of this personality. In short, almost all battery failures can be traced to some type of procedure error on the part of the cameraman during the charging, discharging or storage of the battery. In light of this fact, we will take a close look at the nickel-cadmium battery and try to cover those points most closely associated with battery failures.

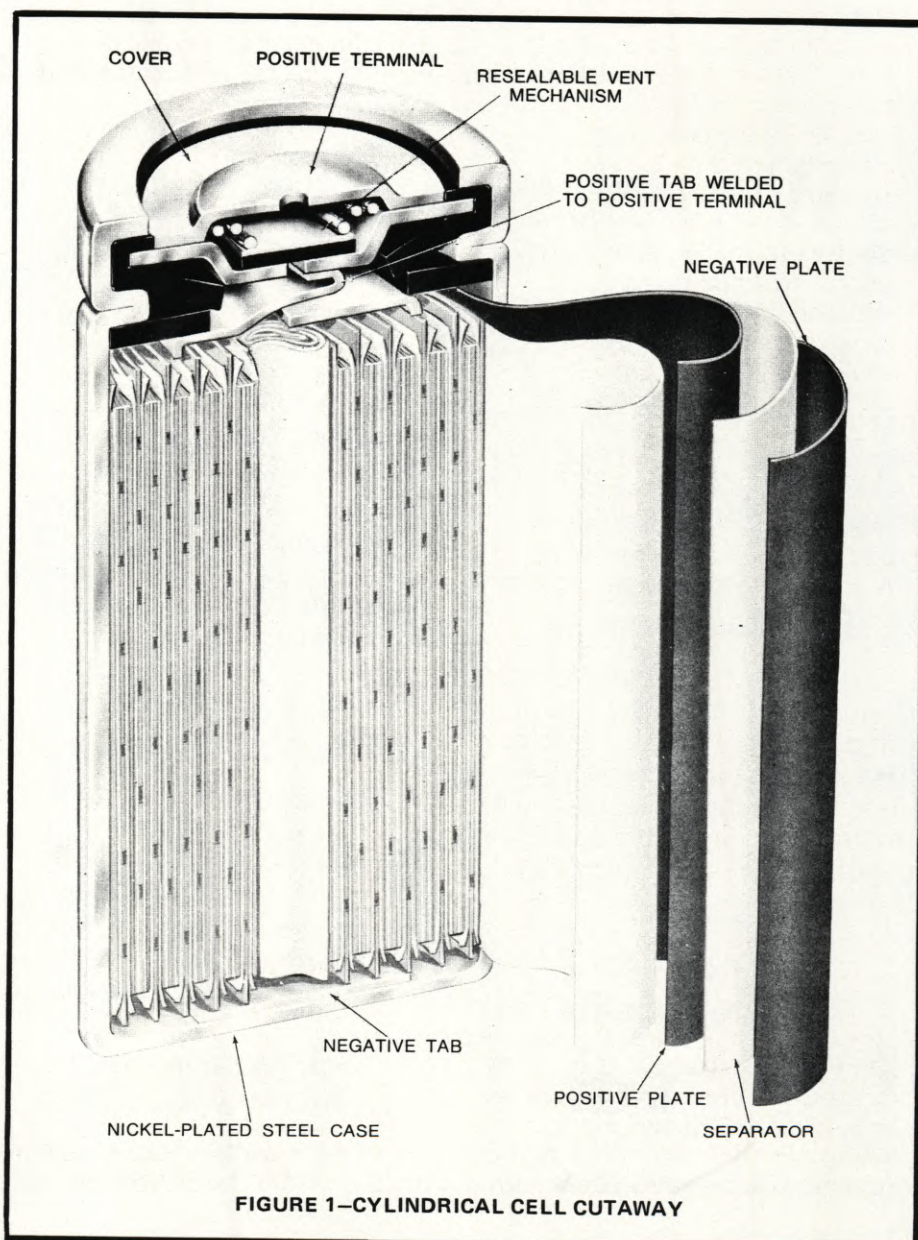
This discussion will apply exclusively to sintered plate, sealed, rechargeable nickel-cadmium batteries. Almost all power supplies used in motion picture production are of this type of construction. There has been some experimentation with silver-cadmium and silver-zinc cells. However, at the present time there are enough problems with these systems to render them unattractive for motion picture applications. They are relatively delicate compared to nickel-cadmiums. They should be charged and discharged in a specific position, they have a significantly shorter cycle life and are prone to leaking. In addition, they require a very sophisticated charging

system. The silver-cads and silver-zincs do have some very attractive assets. However, for motion picture applications the nickel-cadmium system offers the best combination of virtues.

CONSTRUCTION—The sealed nickel-cadmium battery is an extremely rugged device, both physically and electrochemically. (See FIGURE 1) The construction is relatively simple. The cell consists of a positive plate, a negative plate and two separators. These four sheets are then rolled up very much

like a jelly roll. The plates are nickel-plated steel strips to which an extremely porous plaque is sintered. This plaque is then impregnated with the chemicals which form the active plate materials. All connections are securely welded and the cases are nickel-plated steel. All this adds up to a design that is straightforward and rugged. The cells exhibit excellent resistance to shock and vibration and can be operated over a wide range of temperatures.

Continued on Page 1412



Colortran Fresnels Save You Time and Money!

Berkey Colortran's Ring-Focus Fresnels are a major improvement in Fresnel spotlights.

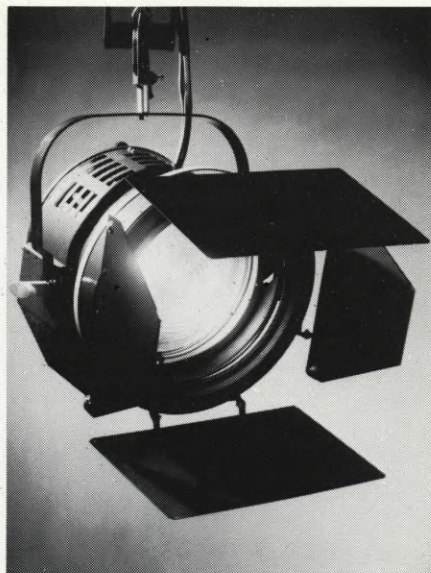
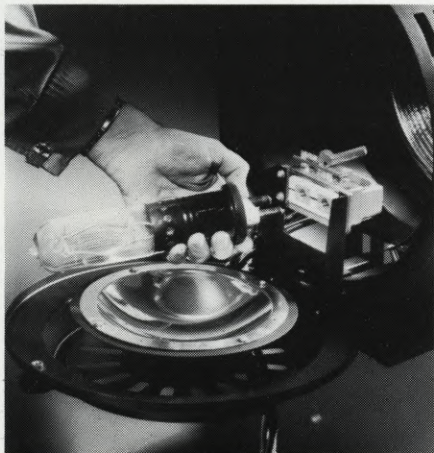
Lens Colortran's new lens designs provide highest optical performance coupled with incredibly smooth fields. Barndoor cutoff is sharp. You will find the optical performance of the Ring-Focus Fresnels to be superior to any other spotlight in the market. This is the new quality and performance standard for the industry, competitive comparisons are invited.

Focusing Focusing is accomplished by moving the lens, not the lamp carriage. A wrap-around cool focus ring permits fast easy focusing. Focusing may be done in any position. Focus ring is equipped with an adjustable drag to permit pole operation from the floor. The Ring-Focus Fresnel is the only spotlight that can be handled for focusing purposes after it has been on for hours. *The lamp doesn't move.* No flexing of feed wires, no fraying, no filament shock. The spot flood focus ring remains cool to the touch and its 360° access makes it convenient to use whether you're on a ladder or catwalk. With the cool pan and tilt handle, its easy focus all the time.

Relamping Colortran's Ring-Focus Fresnels offer unique *rear lamping* so that gel frames and barndoors don't have to be reset. Focus adjustments remain unchanged.

Socket The new *floating diamond* four-point contact socket

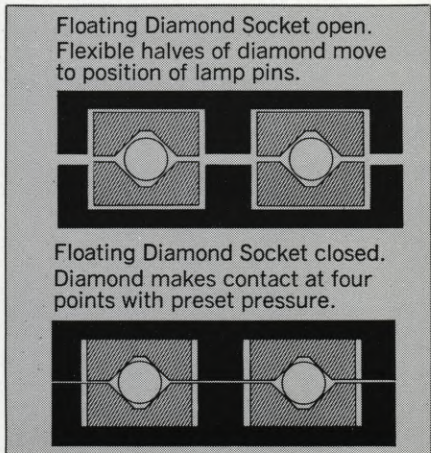
Ring-Focus Fresnel with rear lamping



(patented) doubles contact area and eliminates arcing and overheating. Pressure is constant and preset. Floating contacts are self aligning preventing lamp base, and seal failures.

Cooling and lamp life Improved cooling provides increased lamp life. New double wall construction, vented bottom housing, and a floating lens design permit cool air flow even in the critical 90° down position. Data from studios now using the Ring-Focus Fresnel indicate a lamp improvement in excess of 50%. Here's why: Focusing. Ring-Focus eliminates mechanical shock to the filament. Focusing the spotlight while hot is often the cause of premature lamp failure. With the Ring-Focus Fresnel, you move the lens — not the lamp.

Floating diamond four point contact socket



Lamp failures in spotlights are often caused by air leakage where the contact post goes into the lamp. This air leakage is due to heat build-up in the socket and uneven socket pressure against the contact posts. Colortran's floating diamond four-point contacts make contact at four points instead of two, improve cooling, insure against pressure leaks and assure uniform contact pressures.

Cooling Manufacturers' average rated lamp life is based on lamps burning in open air. When these lamps are used in conventional fixtures, lamp life is decreased. The better the cooling, the longer the lamp life.

Colortran's new unique air flow design improves lamp life. Double wall construction, vented bottom housing, and suspended lens combine to provide optimum air flow and increased lamp life.

Rugged mechanical design makes the Ring-Focus Fresnels easy to use in the studios or on the go. These rugged units will take more punishment with less up keep. The floating lens is less likely to crack, even when the unit is dropped. The patented bi-post socket will outlast any other.

Labor Colortran's Ring-Focus Fresnels save you production time because they're easy to focus when hot, focus in any position and are easy to relamp. Fewer relampings per year, and rear-access eliminates resetting barndoors, all this means money to you.

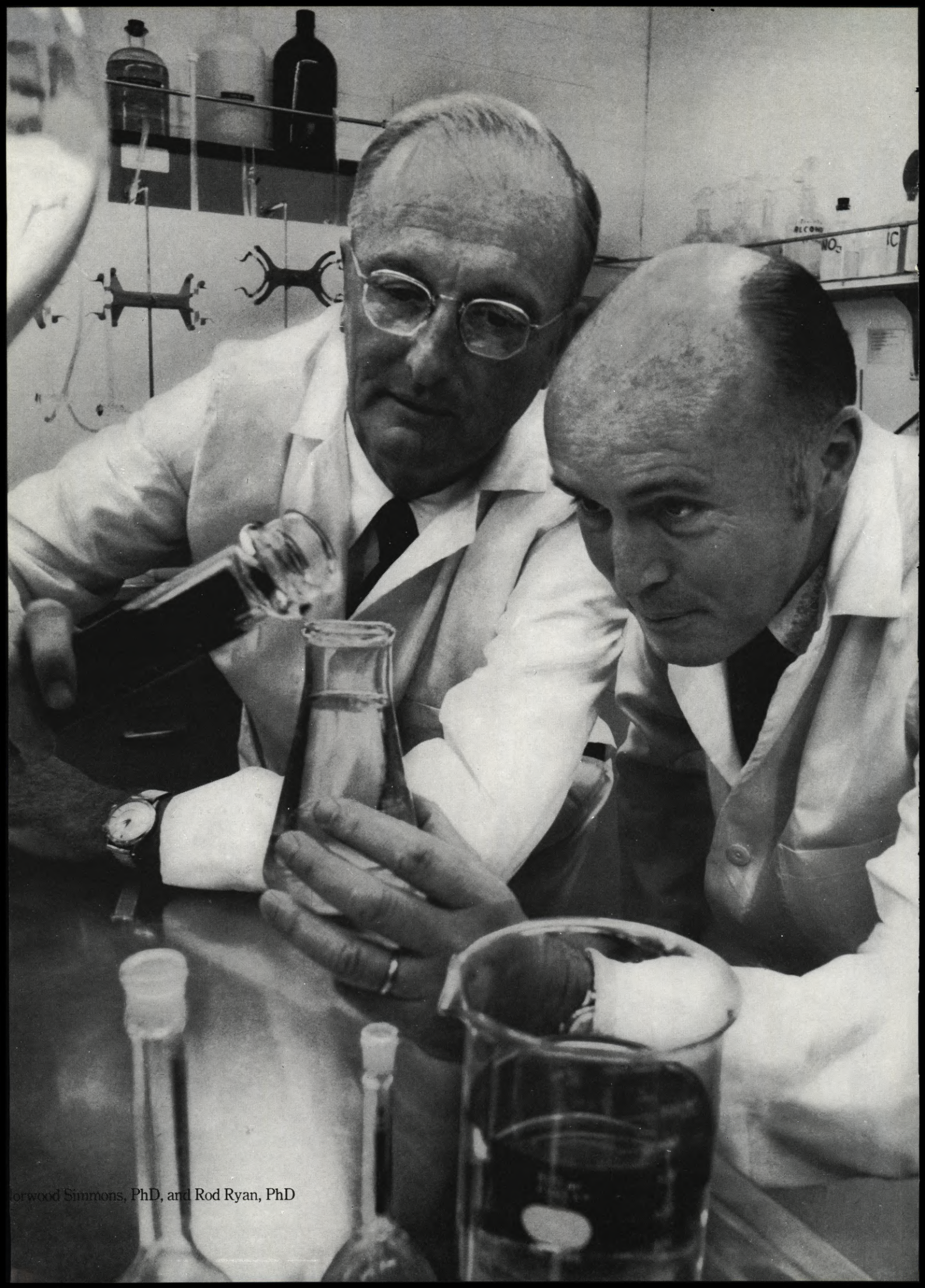
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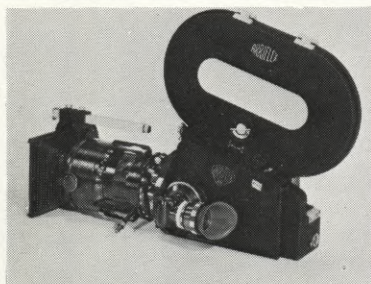
In fact, we'll be glad to discuss any film problem you might be having. After all, that's what Kodak Sales and Engineering Reps are for.



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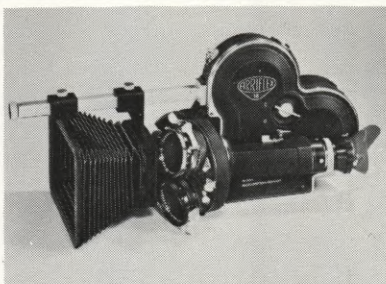
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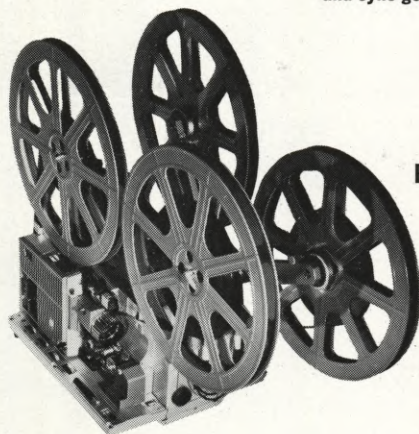
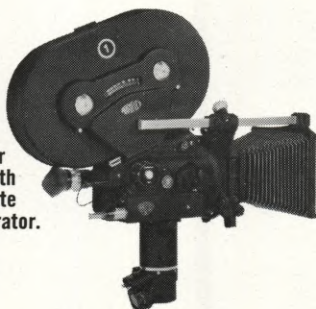
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THE BOOKSHELF

By GEORGE L. GEORGE

Gerald Millerson, an engineer with some twenty years' experience at the B.B.C., has assembled his extensive knowledge in **THE TECHNIQUE OF LIGHTING FOR TELEVISION AND MOTION PICTURES** (Hastings House \$17.95). The book's comprehensive approach progresses from the fundamental principles of lighting techniques to their most advanced application.

Following a chapter on studio equipment, Millerson discusses the various problems confronting the cameraman when lighting for static or dynamic portraiture, still life, and the general set illumination on location or in the studio. His section on effects offers many practical tips (firelight, rain and mist, flashes, and distortions) as well as background and frontal projection, and other standard procedures.

Well-illustrated and written without excessive technical terminology, the book offers a solid practical basis for creative cinematography.

* * *

A classic text on the esthetics and techniques of camera work, Vladimir Nilsen's **THE CINEMA AS A GRAPHIC ART** (Hill & Wang \$10./2.95) was originally published in the USSR in the early 30's. Long out of print in its English translation, this new edition affords technicians and scholars alike an invaluable historic perspective on the evolution of screen art. Particularly stimulating are his comments on the "compositional construction of the shot", a truly creative view of the pictorial contents of the frame.

* * *

An impressive accomplishment of scholarly popularization, **THE INTERNATIONAL ENCYCLOPEDIA OF FILM** (Crown \$17.95) encompasses movies as an art, an industry, and a facet of the social development of this century. Profusely illustrated in color and b&w, it covers in nearly 1,300 entries biographical data, national film histories, general topics and technical terms. Edited by Roger Manvell, with Lewis Jacobs as the U.S. editor, this large-size 600-page volume is an invaluable tool for research and documentation.

* * *

Sixty years of dazzling Hollywood pulchritude are packaged in a lavish, king-size book, **THE IMAGE MAKERS** (McGraw-Hill \$16.95 to Jan. 1st, then \$20.), a magnificent collection of film star portraits by outstanding photographers. In color and b&w, these exceptional pictures offer a stunning visual comment on the changing standards of beauty and that elusive magic spell we call glamour. Bette Davis and Joan Crawford reflect upon the relationship between actress and photographer, while Paul Trent's introduction and Richard Lawton's design round out a worthy artistic achievement.

* * *

The full scope and depth of the director's craft is explored with unequalled perceptiveness and sensitivity in **KING VIDOR ON FILM MAKING** (McKay \$6.95). Drawing largely on his U.S.C. lectures, Vidor considers all the facets of his craft, stressing that film-making, while a collaborative undertaking, "must follow the unifying conception of one man . . . the director."

This approach implies that the director be thoroughly knowledgeable in every phase of production. Vidor's familiarity with camera equipment and techniques afforded him the closest cooperation with photographers. Ray June, George Barnes, William Daniels, George Folsey, Leon Shamroy, Lee Garmes are some of the cameramen whose creative work Vidor mentions.

The book's particular merit lies in the articulate and stimulating manner in which director Vidor assembles the disparate pieces of that complex puzzle—film-making.

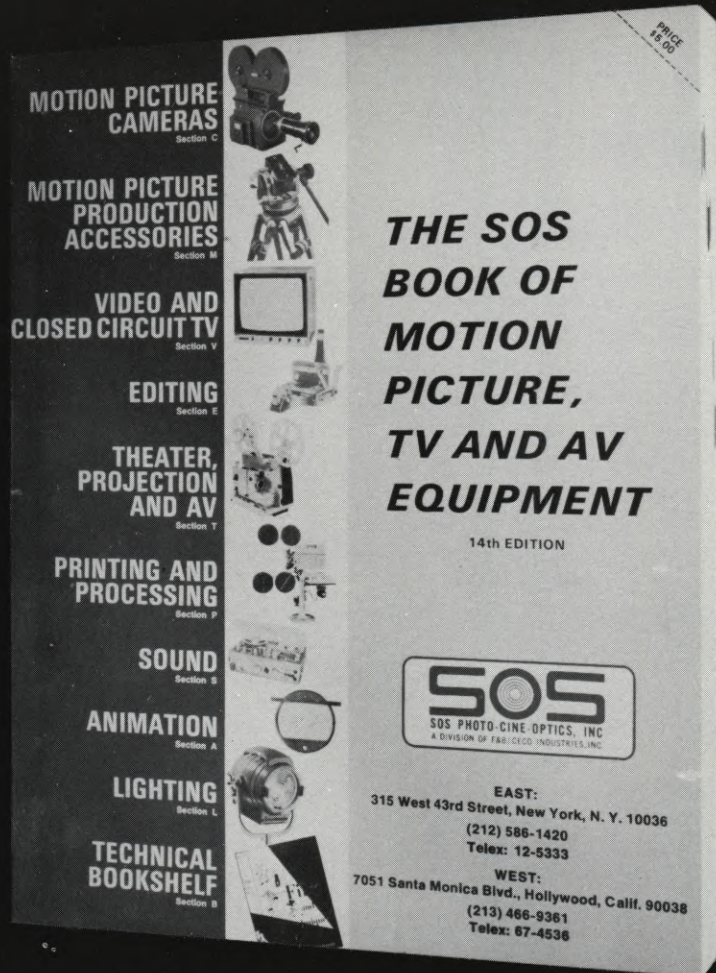
* * *

Director Jack Couffer, who gained wildlife experience on Disney animal films, relates in **THE LIONS OF "LIVING FREE"** (Dutton \$5.95) his colorful adventures in Kenya on this sequel to the successful *Born Free*. His account, as exciting as the film itself and superbly illustrated, graphically describes the problems of African location shooting. As for his cameraman's name, you may find Wolfgang Suschitzky listed alphabetically among the 260-odd members of the film's cast and crew.

* * *

Suggesting familiarity with the Slavko Vorkapich type of visual effects, **IT'S ONLY A MOVIE** (Prentice-Hall \$8.95/3.95) by Clark McKowen and William Sparkle is a mirthful method-in-madness montage of pictures and poems, quips and quotes, a hodge-podge presentation of movies as a distorted but truthful mirror of life.

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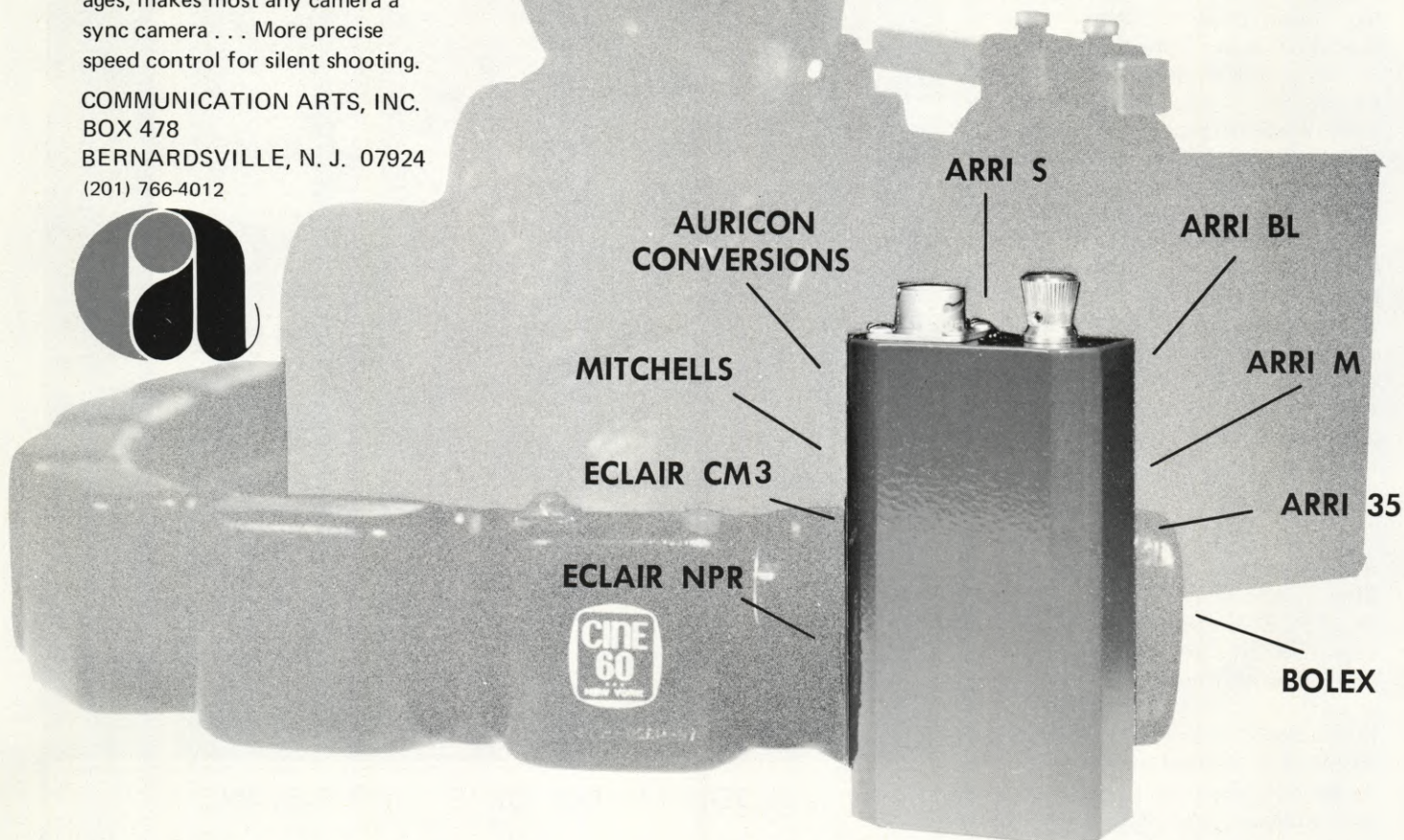
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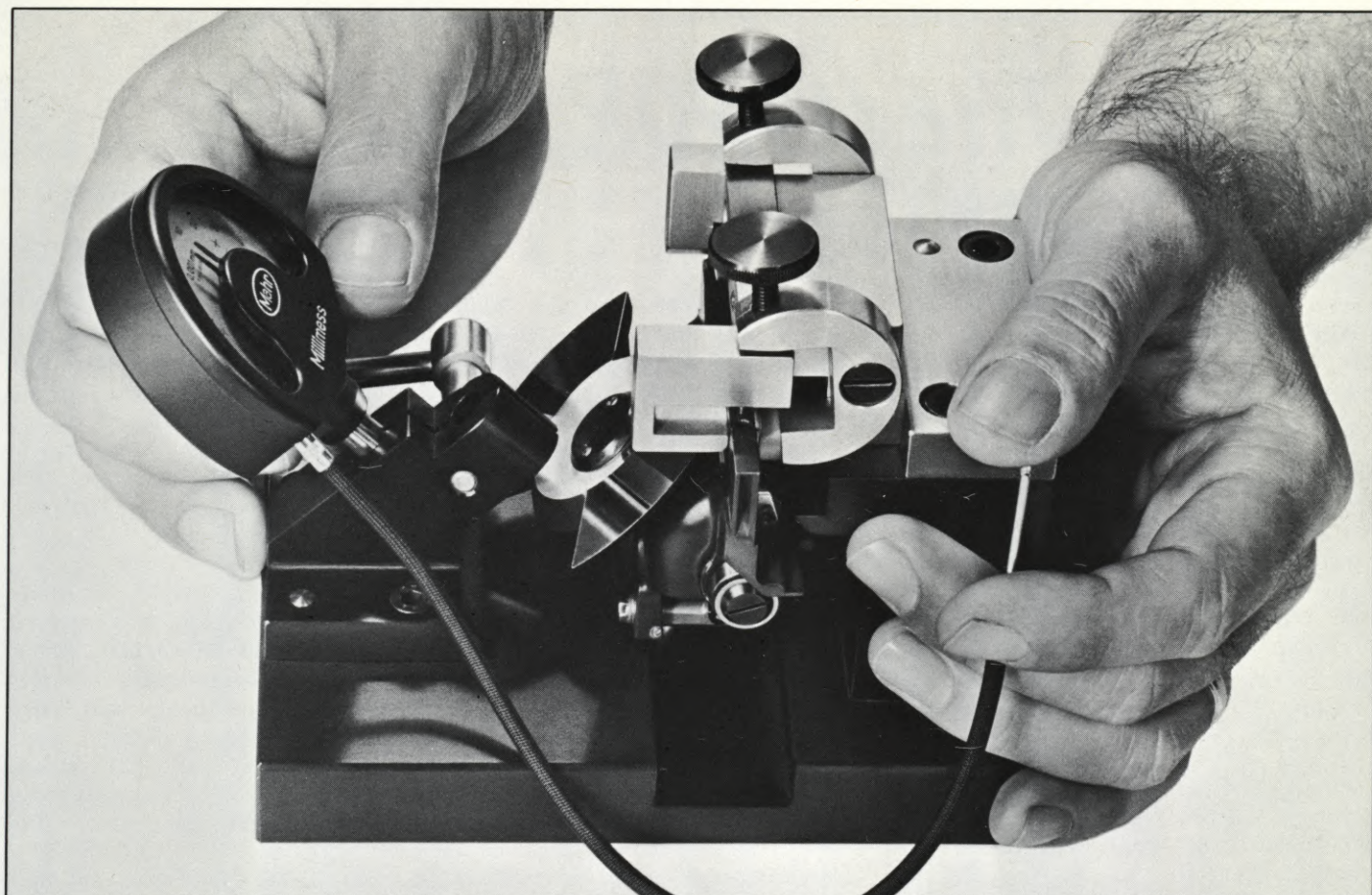
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THE HONOR ROLL



ARCHIE STOUT, ASC

I'd like to tell you how Archie became one of us. He was a forest ranger, fish and game warden. One day the Mack Sennet Company needed a pelican who was to bite the leading lady in the fanny. Archie was sent along to see that the bird didn't get the rabies after biting her. Archie liked everything around him, promptly fell in love with the camera, and right then decided to make this his life's work.

Fred Jackman was short on cameramen and took a liking to Archie, so Archie was given some instructions and sent to the High Sierras to get some background shots. Archie was an instant cameraman.

Archie has made approximately 300 pictures some for Mack Sennet and Christy Comedies, mostly one reelers with Chaplin, Swanson, Wally Beery, Mabel Normand, etc.

After several years of this, Archie decided comedies weren't funny anymore and he bought an Akeley camera with a 16 inch lens and began to experiment with it.

For a while there were no takers, but Bert Glennon, who was doing the first "Ten Commandments", allowed him to make some shots at random as long as he stayed out of the way of the other cameras. When C.B. saw some of his telephoto shots he liked them and he was given a five year contract and became an Akeley specialist.

Archie and C.B. went bear hunting one time and they got their bear but Archie paid dearly. C.B. was a kind of health nut and he insisted that Archie go with him every morning for a dip in an ice cold creek, what C.B. wanted, C.B. got.

In 1930 Archie became a Director of Photography on "Manslaughter" with Claudette Colbert. After that he made many fine pictures, thirty with John Wayne, several with John Ford, like "Hurricane", "Westward Ho", and others.

In 1947 he was doing "Fort Apache" in Monument Valley and achieved some remarkable effects using infra-red film, but, unfortunately, he suffered a heart attack.

After recovering he did "Hondo" and several others. In 1953, he did second unit on "The Quiet Man" and through the generosity of Winton Hock he was

given screen credit and both of them got Academy Awards.

In 1954 he did "The High and The Mighty" and after the premiere, while celebrating at Ciro's, he suffered his second heart attack.

In 1958 he decided to retire.

HARRY F. PERRY, ASC

Harry Perry started in the motion picture industry as a cameraman for Lasky-Paramount in 1918. On a visit to his brother's home in Hollywood he was taken to The Lasky Studio and introduced to Alvin Wycoff, who was head of the camera department, and, as a result of that visit, he was put to work as an assistant cameraman. His brother Paul worked for the studio and when Paul came back from location shooting in Hawaii Harry became Paul's assistant cameraman and they worked together on "Everywoman", "Told in the Hills", "Pettigrew's Girl", "The Sea Wolf", "The Roundup" and "Behold My Wife".

In 1920 Tom Forman was to direct a series of pictures with Tom Meighan and Meighan insisted on Harry Perry as Chief Cameraman and Perry was promoted. He made eight pictures with Thomas Meighan, seven of them directed by Tom Forman. They were: "The Easy Road", "The City of Silent Men", "White and Unmarried", "Cappy Ricks", "The Conquest of Caanan" directed by Roy Wm. Neill, "A Prince There Was", and "If You Believe It It's So".

Then Perry did "The Crimson Challenge", "The Ordeal" and "Borderland" with Paul Powell directing.

In 1922 Perry moved from Lasky Studio to work for Ben Schulberg in a new production company named Preferred Pictures with Tom Forman again the director and did "Are You A Failure?", "Shadows" and "The Virginian", this last on location in Lone Pine and Big Pine. "The Broken Wing", also done with Forman and Preferred Pictures, was Perry's first experience with aerial photography. This was followed by "The Girl Who Came Back" and "April Showers" with Tom Forman.

In 1924 Forman and Perry went on to Universal Studios to do "Flattery". Then he did "The Fighting American" with Mary Astor, "The Breath of Scandal" at FBO, "The Midnight Flyer",

"The Vanishing American", and "Old Ironsides".

In 1925-26 Harry Perry filmed "Wings". "This was the biggest and most expensive picture made up to that time and the best picture of war in the air ever made according to critics, and won the first Academy Award Oscar in 1929 for the Outstanding Picture of the year. "Wings" was followed by "Now We're In the Air" and "Hell's Angels".

Perry makes this comment about the film, "The whole production was nearly two years in the making and the total cost was around \$4,000,000. About thirty cameramen were used at different times on the production and Tony Gaudio was in charge of the interiors which were done twice, once in black and white and once in color with sound effects in the finished picture." The years 1927-1930.

From 1930 to 1942 Perry spent most of his time traveling to different parts of the world to make background shots for process work for Howard Hughes, Warner Brothers, Paramount and RKO. He was on government assignment for Crossroads Atom Bomb Tests at Kwajalein and Bikini in 1946 and made the process shots of Paris, Frankfurt and Berlin for "Berlin Express".

Part of 1948 was spent at Eniwetok and Bikini for "Sandstone Atom Bomb Tests" and from 1949 to 1957 at U.S. Air Force Lookout Mountain Laboratory as Supervisor of the Motion Picture Photograph Division, retired October 25, 1957.

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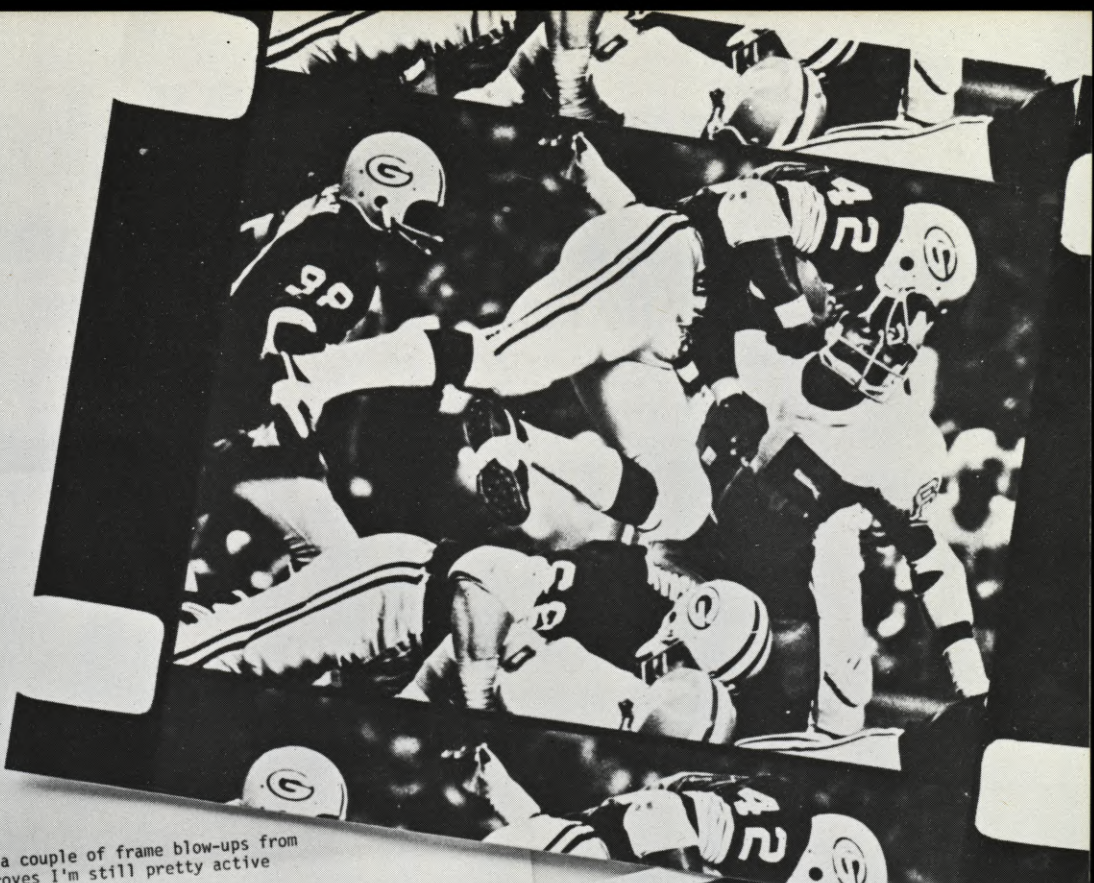
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Dear Leo:

As I promised last week, here are a couple of frame blow-ups from recent games...plus a shot that proves I'm still pretty active behind the lens.

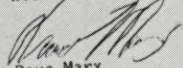
While I appreciate your praise of recent NFL films, you really ought to repeat them for your own people. A lot of credit is due your GV 16 camera! While we've modified it for better balance and faster handling, none of the things we've gotten on film would be possible without the camera's basic advantages--such as wide speed range, 180° shutter, quick-change magazines and daylight loading. (Not to mention high side visibility, which is vital to cameraman survival when we're close to the action.)

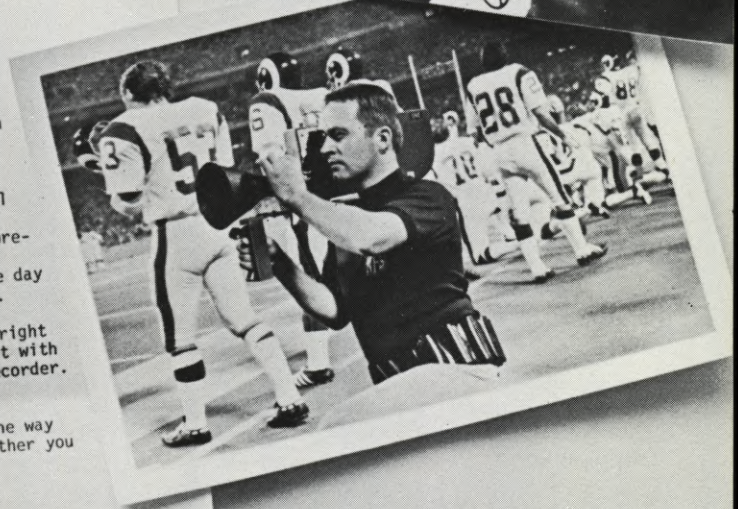
Of course, the camera's endurance is also a factor. We've had several since 1966, and haven't replaced a worn part yet. With an average of about 500,000 feet through each camera since then, and just regular preventive maintenance, that's pretty good. It's even better when you consider that we take them everywhere from icy Green Bay winters (one day last year it was -13°!) to over 100° coming off the Dallas AstroTurf.

This year, thanks to your quiet little ACL, we'll be taking viewers right into the bench area and sideline huddles, shooting as close as 2 feet with a small zoom. The 'crew' will be one man with an ACL and a small recorder. Our pre-season tests prove that the players forget we're around.

By the way, Leo, I can cite a number of other figures relative to the way the GV 16 has performed for us. If they could be of any help to either you or Eric, please give me a call.

With best regards,


Dave Marx



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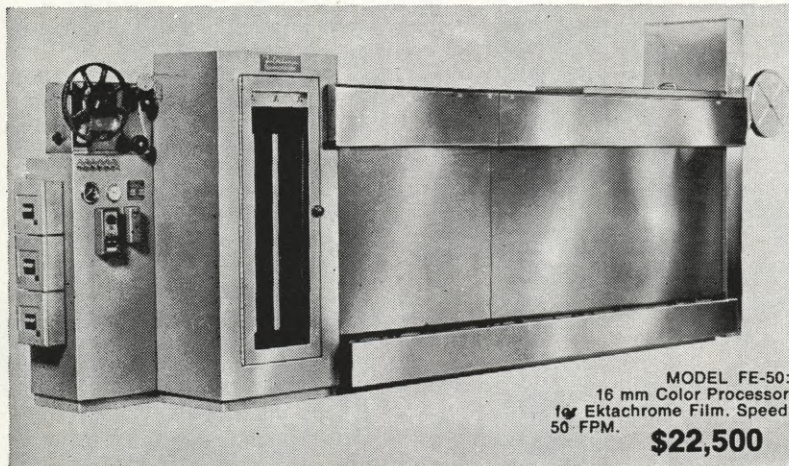
The Money-Makers

FILMLINE'S professional color film processors for motion picture laboratories.

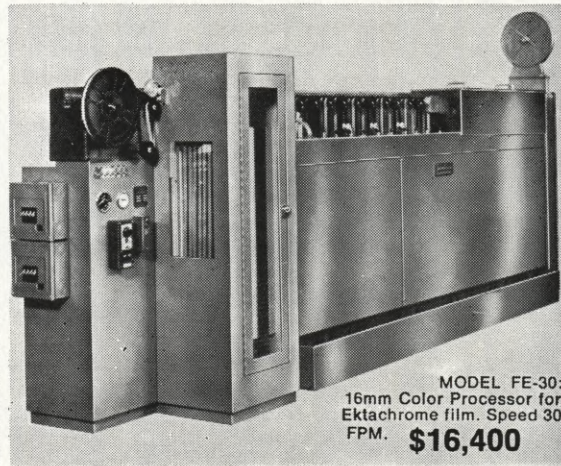
The Filmline Models FE-30 and FE-50 are fast, foolproof, troublefree and long-lasting. They turn out consistently superior work. The design is backed by Filmline's reputation as the world's leading manufacturer of film processors for the motion picture laboratory industry.

Now enjoy the benefits of professional equipment incorporating exclusive Filmline features that have paced the state-of-the-art in commercial, industrial and defense installations at a cost lower than processors offering less.

Check the exclusive Filmline features below:



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



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

● **"FILMLINE OVERDRIVE FILM TRANSPORT SYSTEM"**

This marvel of engineering completely eliminates film breakage, pulled perforations, scratches and operator error. The film can be deliberately stalled in the machine without film breakage or significant change of film footage in solutions. The heart of any film processor is the drive system. No other film drive system such as sprocket drive, bottom drive or simple clutch drives with floating lower assemblies can give you the performance capability of the unique Filmline Overdrive Film Transport System.

● **"TORQUE MOTOR TAKE-UP"** gives you constant film take-up and does not impose any stress or strain on the film itself. Completely independent of the film transport system. This FILMLINE feature is usually found in professional commercial processors but is incorporated on the FE-30 and

FE-50 models as standard equipment. Don't settle for less!

● **"TEMP-GUARD"** positive temperature control system. Completely transistorized circuitry insures temperature control to well within processing tolerances. Temp-Guard controls temperatures accurately and without the problems of other systems of lesser sophistication.

● **"TURBO-FLOW"** impingement dryer. Shortens dry-to-dry time, improves film results, and carefully controls humidity content of your valuable (and sometimes rare) originals. Immediate projection capability is assured because the film dries flat without the usual curl associated with other film processors.

"ZERO DOWN TIME" The reputation of any film processor is only as good as its reliability. The

combination of the exclusive and special added Filmline features guarantees trouble-free operation with absolute minimum down-time and without continual operator adjustments. Recapture your original investment in 2 years on maintenance savings alone. Filmline's "Push the button and walk-away processing" allows inexperienced operators to turn out highest quality film.

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

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

Additional Features included in price of machine (Not as extras).

Magazine load, daylight operation ■ Feed-in time delay elevator (completely accessible) ■ Take-up time delay elevator (completely accessible) ■ Red brass bleach tank, shafts, etc. Prehardener solution filter ■ Precision Filmline Venturi air squeegee prior to drybox entry ■ Air vent on prehardener ■ Solid state variable speed D.C. drive main motor ■ Bottom drains and valves on all tanks ■ Extended development time up to two additional camera stops at 50 FPM ■ Pump recirculation of all eight solutions thru spray bars ■ Temperature is sensed in the recirculation line ■ All solutions temperature controlled, no chilled water required ■ Built-in air compressor ■ Captive bottom assemblies assure you constant footage in each solution ■ Change over from standard developing to extended developing can be accomplished in a matter of seconds ■ Impingement dryer allows shorter put through time.

Partial listing of Filmline Color Installations: — NBC- New York, NBC- Washington, NBC- Cleveland, NBC- Chicago, CBS & ABC Networks, Eastman Kodak, Rochester.

Laboratories: De Luxe Labs, General Film Labs (Hollywood), Pathe-Labs, Precision Labs, Mecca Labs, Color Service Co., Capital Film Labs, Byron Film Labs, MGM, Movie Lab, Lab-TV, Technical Film Labs, Telecolor Film Labs, Guffanti Film Labs, A-One Labs, All-service Labs, NASA Cape Kennedy, Ford Motion Picture Labs.

TV Stations: WAPI-TV, WHP-TV, WMAL-TV, WXYZ-TV, WWL-TV, WMAR-TV, WJXT-TV, KETV-TV, WTOP-TV, WEAT-TV, WCKT-TV, WAVE-TV, WAVY-TV, KTVI-TV, WCPQ-TV, KTAR-TV, WSYR-TV.

All prices F.O.B.
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AD

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(203) TR 8-2433

Teledyne announces introduction of the first 16mm underwater motion picture camera that is human factor engineered for the professional photo/diver.



Time tested experience.

Teledyne Camera Systems' precision intermittent-movement high speed cameras have become the industry's standard. The company's earlier model 16mm underwater camera has been in use by the U.S. Navy for over ten years. Calling on this background and expertise, Teledyne focused their efforts on designing a completely new underwater motion picture camera offering water corrected optics, and human factor engineering. A camera with primary emphasis on the needs of the photo/diver. A camera that was easy to swim, and easy to operate.

The design criteria.

Design criteria were evaluated by professional photo/divers from both industry and the Navy. These joint efforts determined operational criteria, lens system, buoyancy control, camera handle positions, and so on. The result? A superior quality 16mm motion picture camera specifically for underwater filming. It's a self-contained unit with corrosion proof housing; not an existing camera in a waterproof cover. It's the smallest 400-foot capacity camera ever made. Operational depth is 300 feet.

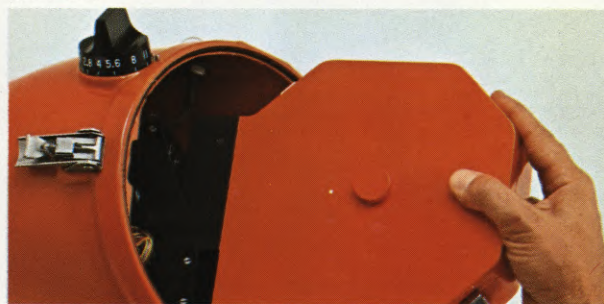


Human factor engineering.

The camera's hydrodynamic configuration reduces water resistance. An adjustable buoyancy control allows adjustment for positive or negative buoyancy. Forward camera handle is adjustable for either right or left handed operation. Aperture adjustment is accomplished by a large knob with high visibility graduations. Footage indicator and leak detector are readily visible to the diver. Cine speeds are 16, 24, 32 and 48 frames per second. Plus, the DBM 9-1 has a unique Q-light that signals other divers that the camera is on and filming.

Distortion free films.

A Leitz 6.6mm water contact lens system completely corrects for distortion normally associated with underwater filming. Interchangeable 13mm or 28mm focal length lenses are also available. Camera accepts either sports type or optical viewfinders.




On site loading.

Film loading and unloading can be accomplished with one hand on site via the 400 foot magazine film chamber. No special tools, or prealignment required. Battery pack is a plug-in module system also designed for on site replacement.

Ultimate underwater cinematography.

If your underwater filming needs are such that you demand the very best equipment and highest quality motion pictures, then the DBM 9-1 is undoubtedly the camera for you. For additional technical specifications and purchasing information, contact Teledyne Camera Systems, 131 North Fifth Avenue, Arcadia, California 91006. Phone (213) 359-6691.

 **TELEDYNE CAMERA SYSTEMS**

It's That Time Again! —

CAMERAS 35mm

	Sale Price
Arriflex 35 IIB package, complete with w/s motor, 3 lenses, 2 magazines...	\$1995.00
Mitchell 35NC, complete with motor, 1 magazine, 4 lenses, and case	\$6995.00
Mitchell NC Reflex, body only	\$4500.00
Mitchell BNC, complete with 7 lenses, 4 magazines, synchronous motor, matte box, viewfinder, cases	\$21,000.00
Mitchell BNCR, complete with 7 Kowa lenses, 25-250 Angenieux zoom lens, zoom housing and servo zoom motor, 4 1000' magazines and cases	\$32,000.00
B&H Eyemo single lens w/2' lens	\$ 295.00
B&H Eyemo Q w/1", 2" and 6" lens, 400' magazine	\$ 495.00
B&H Mdl. 2709 w/Hi-Speed movement (200 fps)	\$ 950.00
B&H Mdl. 2709 w/unit "I" movement. Excellent for animation	\$1295.00
Clair Camerette 16/35mm, three Kinoptik lenses, 12V motor, two 400' 35mm magazines, two 400' 16mm magazines. Excellent condition	\$3995.00
Mitchell Hi-Speed w/four lenses, two magazines, viewfinder, matte box, three carrying cases. Excellent condition	\$4950.00
Novado. New from Italy. Camera complete w/matte box, two-stage filter holder, three lens turret, 12V VS motor, reflex focusing, 400' internal film magazine. Parallax corrected viewfinder. NEW	\$ 495.00
Wall single system, less sound equipment, complete w/two magazines, motor and two lenses	\$ 995.00
Mitchell 35mm Single System Camera w/ built-in features and recording drum w/RCA Galvo, mixer and amp., mike, headset and cable	\$4900.00

CAMERAS 16mm

	Sale Price
Beaulieu R-16 less lens w/meter, battery charger and hand grip	\$ 650.00
Varicon 400' converted Cine Voice, body only, modified to CP-16 crystal motor, complete with battery charger, LIKE NEW	\$2995.00
Arriflex 16S complete w/three lenses, variable speed motor, matte box, battery pack and case. Used, completely reconditioned	\$2450.00
Varicon Pro 600, complete with: camera body, 2-ea. 16mm x 600' magazines, optical sound galvanometer installed, optical sound amplifier, camera case. Value: \$4000.00. Excellent	\$2100.00
Cine Special I, less lens, complete w/100' magazine	\$ 195.00
Cine Special II, less lens, w/100' magazine	\$ 295.00
Milliken 16mm Hi-Speed camera DBM3, 16mm x 100', less motor, excellent condition	\$ 450.00
Milliken 16mm Hi-Speed camera DBM4, 16mm x 200', 28V DC, 400 fps, excellent condition	\$ 750.00
Milliken 16mm Hi-Speed camera DBM5, 16mm x 400', 400 fps, excellent condition	\$1895.00
B&H Filmo Mdl. 70 HR adapted for external magazine motor, Veeder-Root counter. Price new, \$775.00	\$ 395.00
Mitchell 16mm complete w/four lenses, motor, viewfinder, matte box, 2 ea. 400' magazines, cases. Used, excellent condition. Price new, \$9200.00	\$3250.00
Varicon Super 1200 complete w/optical sound amplifier, microphone, viewfinder, 2 ea. 1200' magazines and cases. Used, excellent condition. Price new, \$6000.00	\$2550.00

Maurer Mdl. 05 complete w/two 400' magazines, optical viewfinder, matte box, 115V motor. Used, excellent condition. Price new, \$10,000.00	\$1995.00
Eastman Kodak K-100 complete w/25mm Ektar lens, viewfinder lens, 40' spring wind. Used, excellent condition. Price new, \$650.00	\$ 295.00
Eastman Kodak Reflex complete w/three Angenieux Ekton lenses, sync motor, 400' magazine. Like new. New price, \$2495.00	\$1495.00
Eastman Kodak K100 w/17-85mm zoom lens w/special zoom support. Excellent condition	\$ 495.00
Gun Camera 16mm (GSAP) Fairchild, w/35mm lens, 24V DC; used, good condition	\$ 98.50
Gun Camera 16mm (GSAP) Bell & Howell, w/o lens, 24V DC. Can be easily converted to "C" mount. Used, good condition	\$ 125.00
Mini-Cam 16, Model 55GE. Rebuilt better than new. Set for 24 fps, special shutter, 1/100 sec. Modified for "C" mount lens. New finish	\$ 298.50
Gordon Bell Helmet for use with above listed gun cameras. Choice of size, color white, if available. Model GB16. New price, \$75.00	\$ 59.95
Eclair 16mm Model NPR w/two magazines, 12:120 Angenieux zoom, TV ground glass, battery, cases, rebuilt excellent condition	\$5500.00
Fairchild Mdl. HS101 highspeed camera, complete with lens, motor, power supply, control box, cables and case. Originally sold for \$3550.00	\$2300.00
Traid Mdl. 200P 16mm, 50' magazine load time-lapse camera, 24V DC, accepts all "C" mount lenses. Value \$450.00	\$ 225.00
Bolex H16 with 20-60mm motorized zoom lens. Special tripod dove-tail base plate, 115V sync motor. Complete	\$ 495.00

CAMERA ACCESSORIES

	Sale Price
Flyer Helicopter Mount designed for use with Mitchell Mark II and Arri 35 when filming from helicopter. New price, \$8500.00	\$3500.00
16mm Magazines	
Arri 16 400'	\$ 125.00
Mitchell type 400', new	\$ 120.00
Mitchell Magnesium 400', new	\$ 150.00
B&H 400' NEW	\$ 135.00
Cine Special 100'	\$ 125.00
Cine Special 200'	\$ 325.00
Eclair Camerette 400'	\$ 245.00
Maurer 05 400'	\$ 155.00
35mm Magazines	
Arriflex 500'	\$ 125.00
B&H 400' fiber	\$ 19.50
B&H 400' metal	\$ 55.00
B&H 400' bipack	\$ 145.00
B&H 1000'	\$ 95.00
Elcair Camerette 400'	\$ 245.00
Mitchell 400' std	\$ 60.00
Mitchell 1000' std	\$ 115.00
Motors	
Eclair 16 NPR Susync 110V sync motor, like new	\$ 775.00
Eclair CM-3 220V 60-cycle, 3-phase synchronous motor	\$ 425.00
Bell & Howell Filmo 12 and 24V DC	\$ 95.00
Mitchell 16 24V variable speed	\$ 375.00

Mitchell 16 24V highspeed (96 fps)	\$ 375.00
Mitchell 16 110V highspeed (48-128 fps)	\$ 420.00
Mitchell R35 12V variable speed	\$ 285.00
Mitchell 35 BNC 220-V 3-ph multi-duty	\$ 995.00
Mitchell 35 BNC, phase synchronous	\$ 595.00
Mitchell 35 NC 110V sync	\$ 395.00
Mitchell 35 NC 110V variable speed	\$ 495.00
Mitchell 35 NC 24V variable speed	\$ 495.00
Arriflex 16 110V/42V AC synchronous, complete with power supply	\$ 295.00
Arriflex 35 110V synchronous, mounted on gear base, with footage counter	\$ 525.00

Tripods-Heads-Dollies

Heavy duty, std. tripods, manufacturer unknown	\$ 30.00
Heavy duty tripod heads, manufacturer unknown	\$ 30.00
Three-wheeled crank-up camera dolly, as is	\$ 25.00
Akeley gyro-tripod	\$ 125.00
Large heavy duty spring loaded friction heads	\$ 325.00
Paramount Studio Crane. Mdl. 11, electronically operated, maximum boom, 15', overall length, 33'	\$ 500.00
Paramount Studio Crane. Mdl. 111. Similar to Mdl. 11. Overall length 31'. Some parts missing	\$ 400.00

Blimps

Arriflex Universal Studio sound blimp for Arri 16S/16M, aluminum construction, precision acoustical dampening. New list price \$5200.00	\$1500.00
Cine Special Blimp, Ceco	\$ 295.00
Maurer O-5 Blimp	\$ 985.00
Raby Blimp for Mitchell Std. N.C., Wall, B&H 2709, etc.	\$ 450.00
Eclair Aquaflex underwater housing for 16mm or 35mm Camerette. Used, excellent condition	\$1495.00

LIGHTING AND GRIP EQUIPMENT

	Sale Price
2K Soft Light, low silhouette LQBS 20	\$ 165.00
Maxi-Brute 9, NEW	\$ 375.00
4-light "FEY" fixture, uses DWE, FBE lamps, individual switches. New price \$179.00	\$ 79.95
2x2 Hand Reflectors w/stand mounting yoke. Hard and soft side. NEW	\$ 29.95
ColorTran 500 flood 1000W LQK5/YMA. New price, \$59.95	\$ 29.95
ColorTran Scoop 1000W LQK-15, New price, \$110.00	\$ 37.50
CYC-Strip 1000W background light LQC10 12-3. New price, \$300.00	\$ 150.00
CYC-Strip LQC 10 6-3. New price, \$170	\$ 85.00
ColorTran Soft Light 800W LQS 80-10P. New price, \$530.00	\$ 379.50
Birns & Sawyer Mdl. 5530 SeAqartz Underwater Light 30V DC head only. Sold new for \$295.00	\$ 195.00
Grip Equipment	
Houston Fearless Panoram Dolly, 4-wheel, steerable, complete with boom arm	\$ 795.00
Raby 4-wheel stage dolly with boom arm. Fair condition	\$ 300.00

LENSES AND FILTERS

	Sale Price
Arriflex	
11.5mm Schneider f/1.9	\$ 150.00
16mm Schneider f/1.9	\$ 125.00
25mm Schneider f/2	\$ 125.00
50mm Schneider f/2	\$ 125.00

16mm Rodenstock	\$ 99.00
25mm Rodenstock	\$ 99.00
50mm Rodenstock	\$ 99.00
100mm Cooke	\$ 250.00
800mm Astro with cradle and case	\$ 550.00
640mm Astro with cradle and case	\$ 300.00

Zoom Lenses

17-85mm Pan Cinor, Arri mount	\$ 175.00
17-70mm Pan Cinor, Arri mount	\$ 150.00
12-120mm Angenieux, Arri mount	\$ 650.00
12-120mm Angenieux, "C" mount, with finder	\$ 850.00

STAR FILTER SPECIAL

Good through February 15, 1973 only: Special Effects Star Filters, Series 6, 7, 8, 72mm, 2x2, 3x3 — 20% off. Mention this ad when ordering.

SOUND RECORDING EQUIPMENT

	Sale Price
Perfectone EP6A Pilotone sync recorder, complete w/microphone and charger	\$ 850.00
Fishpole Microphone Booms, lightweight anodized aluminum, extend from 5' to 12', wired, \$135.00 value. New	\$ 89.50
Stellavox Model SM5, Pilotone, complete w/case, batteries and AC power supply. Excellent condition	\$ 425.00
Westrex 35mm recorder-printer complete optical and magnetic sound system w/sound mixing console. Excellent condition	\$6500.00
Maurer Film Phonograph. Matches directly into the Maurer recording amplifier for re-recording and mixing. The highest quality reproducer providing the ultimate in play-back fidelity for judging the quality of sound track. New price, \$3000.00	\$1495.00
Maurer Dual Track Mdl. F-Prime galvanometer negative/positive equipped w/2.15 ampere lamp. New price \$3300	\$ 995.00
Stellavox Model SP7. Latest model, 4-speed Pilotone, complete with case. Brand new	\$1550.00
Roberts Model 1700 half-track monaural recorder, 2-speed pause control, VU meter, with built-in public address system, complete with microphone. New price, \$179.95	\$ 99.50
Roberts Model 1719 stereo recorder. 2-speed, 20W amplifier, light weight, VU meter. With built-in public address system, complete with microphone. New price, \$245.00. Brand new	\$ 130.00
Concord Model 850 AC/DC wireless PA system. Demonstration model, excellent	\$ 175.00
Uher Model 5000 Dictating and Transcribing Recorder, monaural, half-track, complete with stenographic accessories. \$350.00 value	\$ 110.00

SOUND RECORDING ACCESSORIES

	Sale Price
Sennheiser	
SK-1006 2-channel pocket wireless transmitter. New price, \$275.00	\$ 140.00
Model 214/1 Lavalier Microphone designed for use with wireless transmitters. New price, \$130.00	\$ 75.00
T-201 2-channel AC wireless receiver. New price, \$375.00	\$ 185.00

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Annual AGE Inc. Year End Sale

SOUND RECORDING ACCESSORIES

	Sale Price
T-203 2-channel DC pocket size wireless receiver. New price, \$285.00	\$ 160.00
6 1/2 Fountain Pen microphone. New price \$22.50	\$ 15.00
MM24/2 button-hole microphone. New price, \$30.00	\$ 17.50
HZS-21 Head-set for use with T-203 receiver. New price, \$27.50	\$ 18.00
Vega	
Vega Wireless Microphone complete w/ transmitter and receiver, 110V. Excellent condition	\$ 195.00
	\$ 795.00

PROJECTION EQUIPMENT

	Sale Price
B&H 16mm Mdl. D4, w/carrying case and speaker	\$ 350.00
B&H 16mm (JAN)	\$ 495.00
B&H 16mm, analyst type (JAN D-5)	\$1400.00
RCA 16mm Mdl. 400	\$ 225.00
Graflex 16mm TV Projector Mdl. 930 w/ base and lens	\$1200.00
Graflex 16mm projector, Mdl. 820, w/ remote controls	\$ 475.00
Pixmobile Rear Projector cabinet, Mdl. AV463.	\$ 99.50
DeVry XD Portable 35mm Projector. New price, \$2500.00	\$1495.00
Century 35mm Projector Heads. New price, \$3000.00	\$ 750.00
Century Pedestals	\$ 125.00

16mm Projectors

B&H Mdl. 302, Mag. and Optical Sound. New price \$1100.00	\$ 595.00
B&H Mdl. 385 Continuous front or 12" x 18" rear screen Optical Sound Projector. New price, \$1295.00	\$ 450.00
B&H Model D1B Analyst, single frame, 400' capacity, variable speed, forward and reverse frame counter	\$ 295.00
B&H Mdl. 185 16mm Optical Sound	\$ 195.00
B&H Mdl. 173 Silent, 750W lamp	\$ 175.00
Spectro MK II Analyst, 800' capacity, flickerless, single frame, forward and reverse. New	\$ 475.00
RCA Mdl. 1600 1000W Optical Sound	\$ 625.00
Kodak AV-126 Optical Sound Projector w/Christie 900W Xenon lamphouse, complete, excellent cond. New price, \$4000.00	\$1995.00
Victor Mdl. 60-B Optical Sound Projector, less lens and speaker. Needs cleanup. As-is	\$ 50.00
Ampro Super Stylist Optical Sound	\$ 195.00
Ampro Arc-20 Optical Sound, complete w/Strong Arc lamphouse, rectifier, amplifier and base	\$ 750.00

35mm Projectors

One Pair Century Mdl. SA projectors, complete w/ pedestals, magazines, changeover, continuous sound, R3 optical heads, Magnarc ARC lamps, rectifiers, DC exciter, lamp power supply. Like new condition	\$5800.00
Bell & Howell Model D4 Optical Sound, separate speaker, rugged construction like a JAN. Excellent condition. \$600 value	\$ 350.00
Simplex, Super head, 35mm. Excellent condition	\$ 675.00

Simplex, E-7 Head, 35mm. Excellent condition	\$ 750.00
Simplex, Standard Head, 35mm. Excellent condition	\$ 350.00
Peerless Magnarc Lamphouse, 35mm	\$ 400.00
Ashcraft Lamphouse, 35mm	\$ 250.00
Fairchild Mdl. 400 8mm, self-contained continuous salesman Projector	\$ 85.00

STACK UP ON TAPE. WRITE FOR COMPLETE LIST OF ADHESIVE TAPE, GAFFERS, PAPER, CAMERA AND EDITING.

EDITING AND CUTTING ROOM SUPPLIES

	Sale Price
Kodak 16mm edge numbering machine Mdl. A16. Affixes footage numbers on edge of processed film	\$1650.00
B&H 16/35 pedestal splicer, completely reconditioned	\$1250.00
Harwald Splice-O-Film 16mm hot splicer, Like new	\$ 139.00
Neumade film measuring machine 16mm Mdl. HM5S, complete w/counter	\$ 59.50
Acmade 16mm precision hot splicer similar to B&H hot splicer	\$ 99.50
Neumade two gang 35mm film measuring machine complete w/counter	\$ 67.50
Neumade one gang 35mm film measuring machine complete w/counter	\$ 55.00
HFC Edge Numbering Machine. Edge numbers rolls up to 3000'. Complete w/numbering block. Mdl. ENM-16 PT 16mm, reconditioned. New price, \$3675.00	\$2695.00
Paulmar Mdl. 75 16mm film inspection machine. Needs repair. New price, \$2400.00	\$ 100.00
Film Storage Rack, holds 75 1000' 35mm reels or 150 16mm reels. Made of heavy gauge steel w/closed-in end	\$ 95.00
Film Storage Rack, five tier, constructed of heavy gauge angle iron and round bar stock	\$ 39.00
Moviola 16mm Model L20 Table Model Viewer with reel spindle and counter. Old model, used, excellent condition. New price, \$1495.00	\$ 695.00
Maurer Film Shrinkage Gage, #51, with case, 16mm	\$ 95.00
Cueing Machine, 16mm	\$ 150.00
Moviola 35mm Model UC20S Console Sound Model w/picture head and separate sound head, without reel spindles, with counter, light well and tray and electric brake. New price, \$2896. Brand new, in stock	\$2350.00
Moviola 2-gang sync w/counter, 35mm	\$ 75.00
Cinema Arts 35mm 2-gang Synchronizer, w/counter	\$ 55.00
Cinema Arts 35mm 1-gang Synchronizer, w/counter	\$ 45.00
Cinema Arts 35mm 1-gang Synchronizer, w/counter	\$ 50.00
Moviola, Editing Machine, 35mm, complete w/bullseye head optical sound head, amp, speaker and base	\$ 695.00
Moviola Editing Machine, "Preview" model, 35mm, complete with base and foot switch	\$ 750.00
Neumade S-1000 Film Polisher and Cleaner, 35mm	\$ 25.00
Harwald Splice - O - Film Hot Splicer, 35mm	\$ 110.00
Neumade 2-gang sync w/counter, 35mm	\$ 35.00
Morgan Fairest Robot II, fully automatic splicing machine, pos - neg. pins, 35mm	\$ 299.50

Neumade Film Measuring Machine, 35mm	\$ 45.00
Cueing Device, 35mm	\$ 49.50
Moviola Multiple Rewinds BL, 35mm	\$ 25.00
EDL Optical Sound Reader, 16/35mm	\$ 95.00
Combination Sync Unit, 70mm/35mm, with counter, 1-ea. 70mm gang, 2-ea. 35mm gangs	\$ 180.00
Neumade Combination Sync, 70mm / 35mm, 2-gang 70mm with counter, 2-gang 35mm w/counter	\$ 450.00
N.C.E. 65mm 3-gang sync w/counter ASA II	\$ 300.00
Richards Hot Splicer 70mm	\$ 295.00

Reels & Cans

Prices shown are for either reel or can:	
16mm x 400'	\$.30
16mm x 600'	\$.95
16mm x 800'	\$ 1.05
16mm x 1200'	\$ 1.35

FILM PROCESSING EQUIPMENT

	Sale Price
Houston-Fearless Mdl. A-11 16mm or comb. 16/35 neg./pos. and reversal. Rebuilt	\$3450.00
Houston-Fearless Mdl. 22-B 16mm neg./pos.	\$3495.00
Houston-Fearless Spray Processor, late Mdl. S. 16/35 NP 150, neg. 80 fpm; pos. 120 fpm	\$9500.00
Houston-Fearless Mdl. PH-413-A, 16mm neg.-pos. 7-15 fpm	\$1275.00
Houston-Fearless, 16mm Ansco Color, neg./pos/reversal	\$5950.00
Morse, A-8 16/35 Ansco Color, up to 50 fpm or B&W neg./pos/reversal	\$4500.00
Film Dryer Mdl. EL-13A, 16/35/70mm, 220V. Drying speed 35 fpm	\$1995.00
Film Dryer Mdl. C2A, 16/35mm, 200' capacity. Drying speed 30 fpm	\$ 385.00
Film Dryer Mdl. C2, 16/35, 200' capacity. Drying speed, 8 fpm	\$ 235.00

MOTION PICTURE PRINTERS

	Sale Price
Optical sound printing heads for attaching to B&H and Peterson printers, 16mm for B&H Mdl. J. New price, \$3450.00	\$1895.00
Same as above for 35mm B&H Mdl. D, New price \$3450.00	\$1895.00
B&H Mdl. D 35mm continuous contact, rebuilt like New	\$4995.00
Same as above, Reconditioned	\$3100.00
B&H Mdl. J 16mm continuous contact printer w/high intensity lamp housing. Reconditioned	\$4250.00
B&H Mdl. JA 16mm continuous printer w/high intensity lamp housing and roller gate. Rebuilt, Like New	\$5650.00
Depue Optical Reduction Printer, Mdl. K3-35/16. Reconditioned	\$5500.00
Herrfeld 16mm sound track printer Mdl. 1517B. "B" wind printer for one pass printing, 86 fpm. Like New	\$1795.00
Acme Matte Shot projector designed for rear projection of live action into a painted scene. Magazine capacity 1000'. 170° enclosed rotating shutter, Acme stop-motion drive motor. New price, \$5500.00	\$3750.00
Arriflex 35mm Step Printer w/punch tape control	\$ 995.00

Herrfeld 35mm continuous printer. High intensity lamp, 21 light changes, shotgun filter changer. Complete, needs clean-up

Houston-Fearless Mdl. EN5 16mm continuous Contact Printer, table top model. 22 light changes, printing speed B&W 60 fpm, color 30 fpm. Excellent condition

Bell & Howell 16mm Continuous Color Additive Printer Model 6100 complete with Model 6190 Sound Printing Head. Original cost, \$32,000.00. Rebuilt.. \$14,950.00

RECENTLY RECEIVED FROM DELUXE GENERAL FILM LABS, NEW YORK:

Bell & Howell Model J, 16mm Contact Printer, complete with sound printing heads and automatic light control.

Bell & Howell Model J 16mm Contact Printer; 16mm negative to 35/32mm positive.

Bell & Howell Model J 16mm Contact Printer complete with sound printing head and fade unit.

Bell & Howell Model J 16mm Contact Printer with Depue automatic light control.

Bell & Howell Model D 32mm Contact Printer complete with sound printing head.

Depue Reduction Printer 35/16mm.

Depue Reduction Printer 35/32mm.

Depue Reduction Printer 35/16mm complete with Fish-Schurman Model R3 additive color lamphousing.

All of the above printers were recently removed from service and are in operating condition. They contain many unique features and our Sales Dept. will be happy to quote price on an as-is serviceable basis or overhauled to your specifications.

LABORATORY EQUIPMENT

	Sale Price
Neumade Neuvator film cleaning machine, 16mm	\$ 495.00
Neumade Neuvator film cleaning machine, 35mm	\$ 495.00
Welch Densichron Mdl. 3853D full color transmission light source densitometer. New price, \$400.00	\$ 195.00
Eastman 35mm film waxing machine w/ two flat wheels .001" wide and containers for cleaning solution and liquid wax, designed for bench mounting. A \$1500.00 value. Reconditioned	\$ 595.00
Herrfeld Scene Tester, Mdl. 1508-B. Used, Good Condition	\$ 995.00
Depue light control board designed for use w/Depue Optical Reduction Printers. Provides 22 light changes	\$ 685.00
Bausch and Lomb Densitometer, projection type. Measures light by spectrum lines on photographic plates. Original cost more than \$5000.00. Used, fair condition, some minor parts missing.	\$ 300.00
Westrex Densitometer Mdl. RA-1100E. New price, \$5900.00	\$1595.00
Film Slitter 35/32, highspeed, exceeds 200' per minute	\$3000.00

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REPORT FROM



1972

At the biennial "World Fair of Photography" in Cologne, Editor studies and reports on what's new in the way of motion picture equipment

By HERB A. LIGHTMAN

In retrospect, the 1972 PHOTO-KINA "World Fair of Photography", held in Cologne, West Germany, from September 23 to October 1st inclusive, would seem to have scored a signal success—at least in the eyes of those who organized and promoted it.

The public came in droves, filling the 12 huge halls on the banks of the Rhine and eagerly examining the acres of goodies spread out before them. There seemed to be something for everybody—from the rankest amateur to the most advanced professional. The following excerpts from a report by Diplom Kaufmann Dieter Ebert, Director of the Cologne Fair Company, given at the final press conference on October 1, present a rather imposing impression of the vast logistics of the event:

Cologne's PHOTOKINA 1972 was a success in every respect—a clear success. For nine days it inspired and fascinated the experts and amateurs. That is the unanimous verdict of exhibitors and visitors from all parts of the world.

I should like to emphasize three



important aspects of this PHOTOKINA:

1. Good to excellent business

The exhibits presented by manufacturers from 25 countries represented the technical realization of the wishes of professional users, professional consumers, dealers and amateurs. In this respect the matter-of-fact and attractive arrangement of the stands and excellent presentation of products earned the unqualified recognition of visitors. As a central meeting point for manufacturers and customers from 116 nations PHOTOKINA once again proved its worth as a seismograph of technical, industrial and trade policy trends in the photographic branch.

2. Greater emphasis on trade fair

At this year's PHOTOKINA the trend to a true market event was even more noticeable than in the past. Trade talks, the initiation of new business contacts, the actual business done and a study of the market were clearly to the fore at the fair. The proportion of trade visitors in total attendance was 42%. This is the result of an inquiry carried out on all days of PHOTOKINA by the Society for Market Research (Gesellschaft für Marktforschung—GFM—), Hamburg. This means a rise in trade attendance of 15% over the last PHOTOKINA. Exhibitors stressed the fact that the number of important customers from home and abroad was bigger than ever before.

3. International character

Following a rise of almost 9 per cent in the number of exhibitors from other countries at PHOTOKINA this year there has also been a further increase in demand from abroad. This underlines the dominating international importance of Cologne's PHOTOKINA as a genuine multilateral market.

One special attraction at this year's PHOTOKINA was again the cultural section with its photographic exhibitions and film parades, the information centres and supporting events. This section provided a striking impression of the many different traditional and new applications for photography and cinematography. It presented in an excellent manner the photo as a medium of documentary, critical, educational or advertising expression, and as a form of expression of artistic composition. In addition to the photographic exhibitions, special interest was aroused at PHOTOKINA by the third "film parade" with 94 short films from 26 countries which were seen by some 32,000 visitors to the fair.

And now for the figures: Cologne's PHOTOKINA 1972 was attended by 250,900 trade visitors and amateurs



from 116 European and overseas countries. That is an increase of 4% over the last PHOTOKINA. Of these visitors, 31,400 came from countries other than Germany. This represents a growth of 7% over 1970. There was an above-average rise in attendance from overseas and European countries not belonging to the EEC or EFTA. In considering these figures it should be remembered that we had at the last PHOTOKINA an Action Centre which alone attracted 32,000 visitors, and that this was not included in the fair this year.

716 direct exhibitors and another 54 represented firms from 25 countries took part in the 12th PHOTOKINA in Cologne, this total including 354 direct exhibitors and a further 54 represented firms from countries other than Germany. The gross display area occupied was 1,076,000 sq.ft., the net stand area 497,865 sq.ft.

1,280 trade visitors from the U.S.A. were registered at PHOTOKINA. This means that the U.S.A. provided the seventh biggest group of foreign visitors

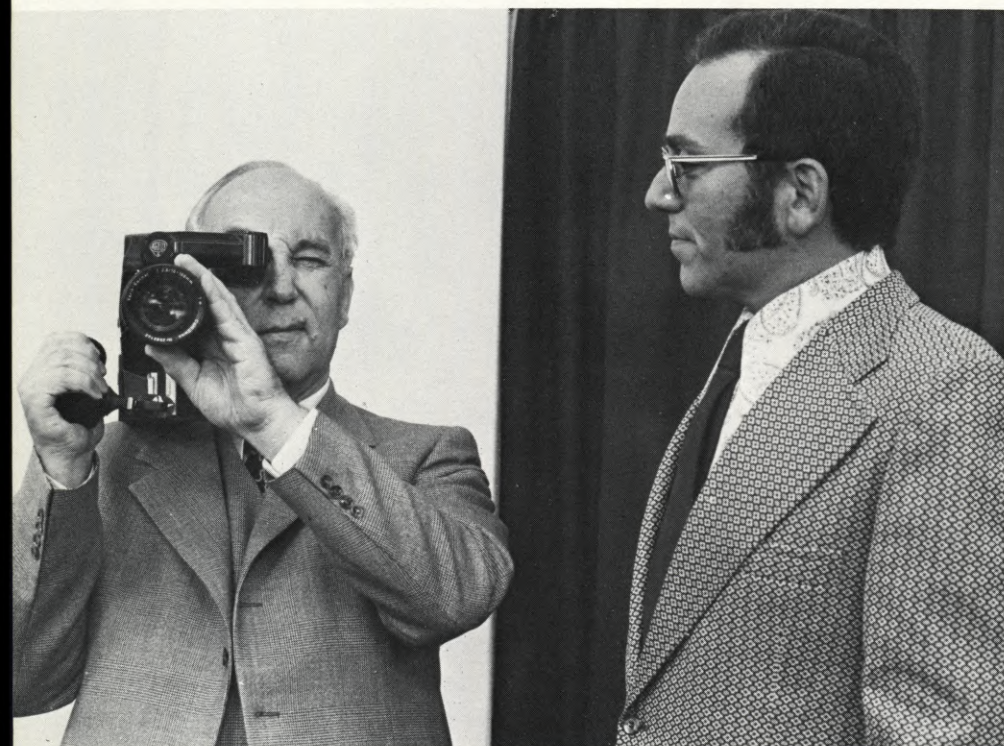
Continued on Page 1430



THE NEW ARRIFLEX 16SR CAMERA



The "hit of the show" at *Photokina 1972* turns out to be a unique, light-weight, highly sophisticated 16mm camera for studio production and hand-held use



At *Photokina* in Cologne, Arnold & Richter Chief Design Engineer Erich Kästner demonstrates the new Arriflex 16SR for Bruce Harris, Vice President of the Arriflex Company of America. The 16SR, designed by Kästner, was conceived not as a "second camera", but as a blimpless, silent-running "prime" camera for full production use. Its light weight and compact silhouette also make it applicable wherever a hand-held camera is called for.

At each *Photokina* there is always one item of equipment that particularly catches the eye and captures the imagination of the crowd. Word rapidly spreads throughout the halls via a kind of "jungle telegraph" and everyone is soon asking everyone else: "Have you seen the new so-and-so?"

At the 1972 *Photokina*, the conversation piece receiving such attention—and deservedly so—was the new ARRIFLEX 16SR camera. Designed by Erich Kästner, Camera Chief Engineer of Arnold & Richter KG, the ARRI 16SR is described by its manufacturer as "introducing a new era in professional motion picture filming. New advances in technology led to a revolutionary camera concept which sets new standards in speed of operation, compact design, mobility and operational comfort."

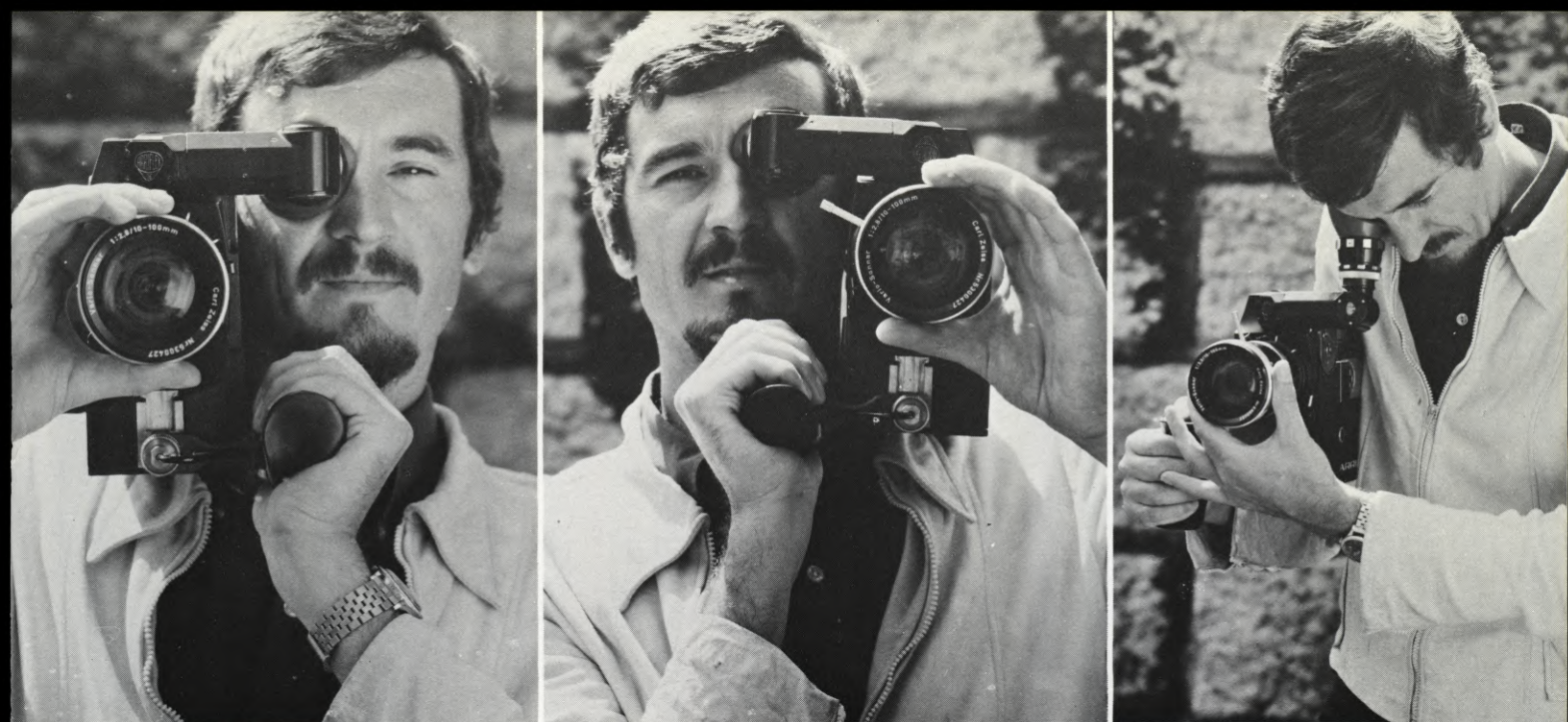
Those "trying the new camera on for size" at *Photokina* could find little to quarrel with in this seemingly extravagant description.

BASIC DESIGN

The major point that sets the ARRIFLEX 16SR apart is that it was conceived not as a "second" camera (as most other extremely compact 16mm

(LEFT) The Arriflex 16SR, shown fitted with 400-foot magazine. (RIGHT) The camera with 200-foot magazine. Looking ahead, the camera has a built-in time-based marker capability, as well as an integral provision for an electronic viewfinder system. The new camera is expected to be generally available toward the end of 1973.





The Arriflex 16SR is the world's first camera designed for perfect operational symmetry. (LEFT) The camera in conventional right-eye-viewing mode, as it is used by most cameramen. (CENTER) With eyepiece and hand-grip reversed, camera can now be used for left-eye-viewing, preferred by some. (RIGHT) With eyepiece turned straight up, camera is made more convenient for extreme low-angle shooting. Image remains upright and reading correctly in all eyepiece positions.

cameras have been), but as a "prime" camera for use in 16mm filming—including feature production. Although so slim in silhouette that it can be carried in an *attaché* case, the camera was designed as a blimp-free studio production camera which, by virtue of its light weight and extremely small size, can also be very easily and comfortably hand-held. As such, it is ideally suited for feature and documentary production, for in-plant filming, for TV commercial production, and for newsreel photography—especially in Europe, where double-system sync-sound shoot-

ing of newsfilm is quite the common practice.

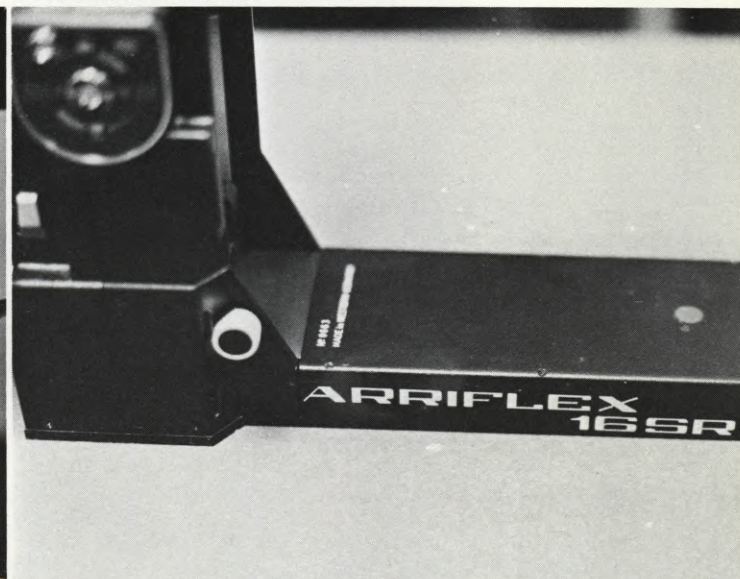
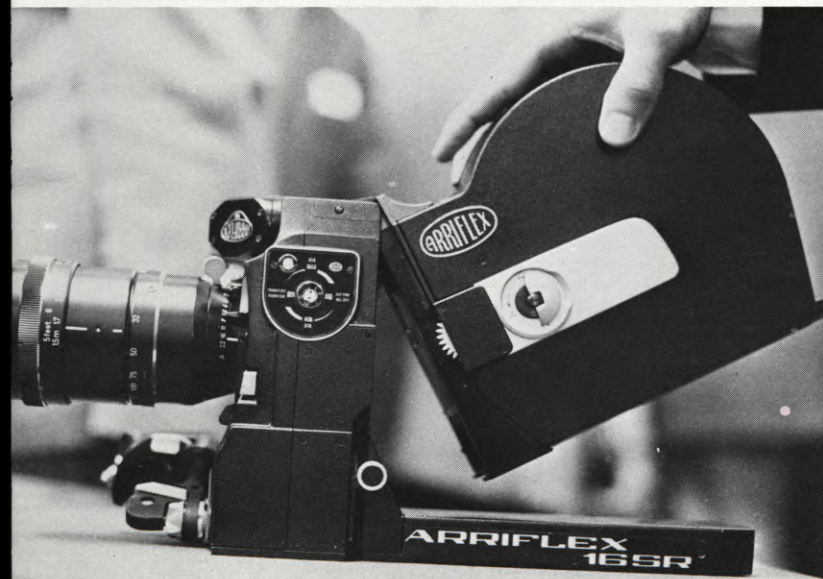
In short, it can be used for all applications where professional 16mm cameras of the caliber of the Arriflex 16 Standard, the Arriflex 16M and the Arriflex 16BL have been used in the past.

OPERATION

The ARRIFLEX 16SR is an extremely compact camera with a level bottom surface. Weighing only 11 lbs, the camera can be operated from the shoulder without tiring. The ARRIFLEX 16SR is

the world's first professional motion picture camera planned for perfect operational symmetry. Consequently, all lens adjusting and camera release functions can be accomplished equally well with the left or the right hand. This also applies to viewfinder observation with the left or the right eye. A centrally arranged viewfinder, pivoting in 3 planes, and a pivoting hand grip with camera and automatic diaphragm release, allow for adaptation to all anatomical conditions and all technical shooting situations—without the need for special accessories.

(LEFT) Quick-change 400-foot magazine is snapped onto the body in a matter of seconds. (RIGHT) The camera's power supply is conveniently located in its flat base. The Arriflex 16SR is easily convertible to the Super-16 format without mechanical alteration. It requires a simple change of aperture plate, plus replacement of the front plate by one incorporating relocated lens and viewfinder axes.



BASIC OPERATING FEATURES OF THE ARRIFLEX 16SR CAMERA

- 200-foot and 400-foot coaxial quick-change magazine
- Small, handy transport case for the camera ready for operation
- High-speed viewfinder assembly with 12x magnification, rotating and pivoting in 3 planes with optical image compensation—interchangeable eyepiece
- 180° mirror-reflex shutter
- Cam-driven film movement mechanism with registration pins
- Special DC motor without commutator, crystal controlled, 24/25 fps, with slave mode. Extensive accessory program such as Pilotone module, variable speed, accessory phase shifting device (for filming from the monitor), remote release, etc.
- Camera stops with the mirror shutter closed, thus allowing for uninterrupted viewing
- Built-in CdS follow-pointer exposure meter (equipped for fully automatic exposure control) 15—28 DIN, 25—50 fps, with indication of ± 2 stops in the viewfinder.
- Automatic lens diaphragm with internal release from the camera—therefore focusing is always possible with the lens wide open
- Proven ARRIFLEX bayonet mount opening—enables the use of the complete ARRIFLEX lens program
- Pivoting and tilting hand grip for left and right-handed operation
- Quiet blimpfree operation for synchronous sound filming
- Spacer gate
- Gelatine filter slot behind the lens
- Accepts time coding system
- Easy-to-service construction through independent optical, mechanical, and electronic modules

From the outset, it was a major element of the design philosophy to make the new camera as compact as possible, taking into consideration its portability for ease of transport. With this in mind, Kästner conceived the "front exit" viewfinder system, which emerges at the front of the camera so that its tube can be positioned in the upright position without protruding to the side. As a result, the camera, for the sake of storage and portability, is as slim overall as its front casing. The camera was designed as a "square box", so to speak, so that its snap-on 400-foot magazine does not extend beyond the extreme limits of the camera itself. With the viewfinder tube swung to the upright position and the hand-grip turned downward to the vertical position, the camera is very narrow for transport purposes, and can actually be accommodated in an *attaché* case.

QUICK-CHANGE MAGAZINES

A 200-foot magazine and a 400-foot magazine are available for the ARRIFLEX 16SR. In the coaxial double-compartment magazine, the film gate is extremely simple and clearly arranged due to the symmetrically located pres-

sure plate. The feed and take-up loops can be externally controlled before mounting the magazine.

VIEWFINDER ASSEMBLY

The most predominant characteristic of the new camera is the central location of the viewfinder along the center of the camera. The viewfinder tube can be rotated and swivelled in 3 planes with complete image position compensation. The viewfinder image, therefore, remains upright and correct left-to-right in every eyepiece position. Special advantages of the viewfinder tube arrangement are:

- minimum camera width for transport in the case, due to the swinging up of the viewfinder
- left or right-eyed viewfinder observation without special accessories
- excellent shoulder position of the camera by means of the finder outlet on the front of the camera

The new arrangement of the finder allows for compensation between shoulder-level and eye-level, while maintaining a straight eyepiece position. Further possibilities due to the pivoting finder—low angle shots, viewing from the side and overhead shots.

The viewfinder front exit, which makes possible optional right-eye/left-eye viewing, is a significant development, not only because there are many cameramen who prefer to view with the left eye, but because such an accommodation has never before been available on a professional 16mm camera. Because the hand-grip is also readily switchable from one side to the other, it is the first 16mm motion picture camera with truly symmetrical controls.

In addition, the lens scale of the 10mm-100mm Zeiss Vario-Sonnar lens—which is envisioned as the standard lens for the camera—has index marks on either side of the barrel. The control ring, which serves to adjust the iris and is attached to the lens receptacle side, can also be operated from either side of the camera.

All of this means that the cameraman—in a newsfilming situation, for example—can anticipate action from whichever side it is expected to develop.

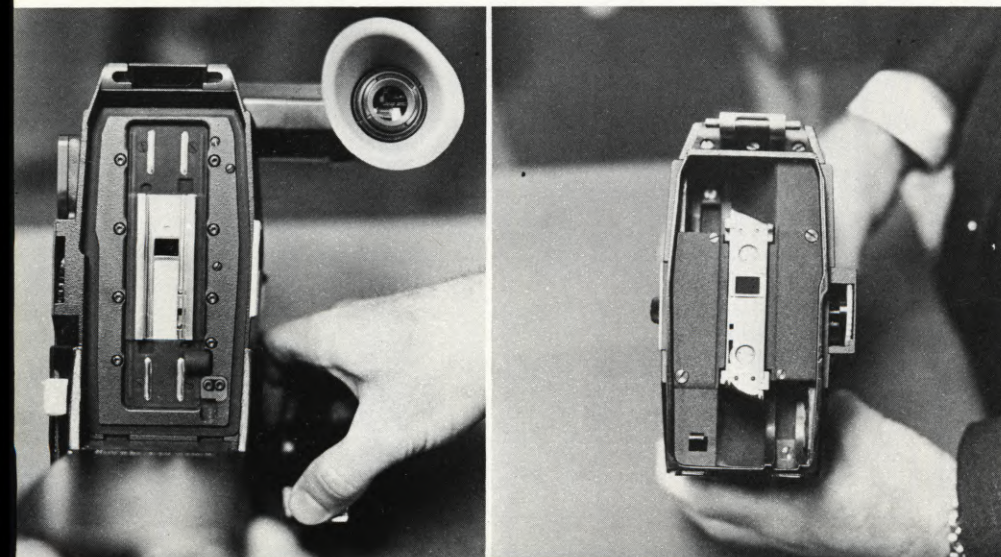
MOVEMENT AND FILM GATE

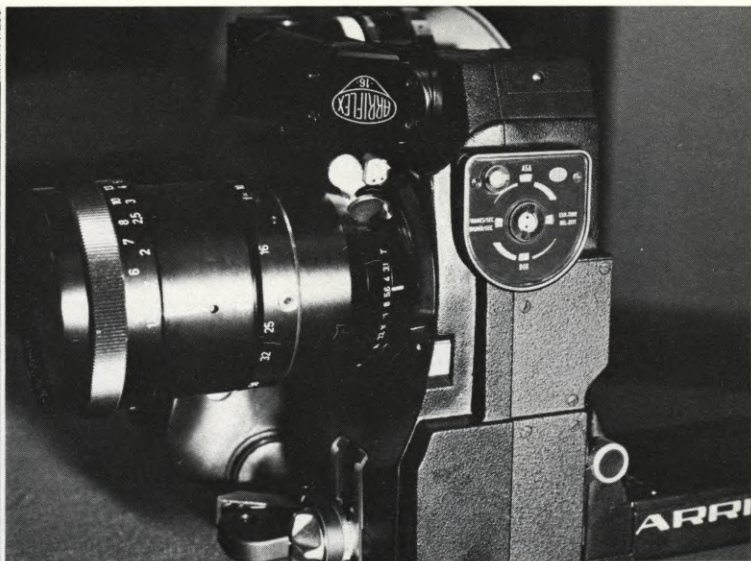
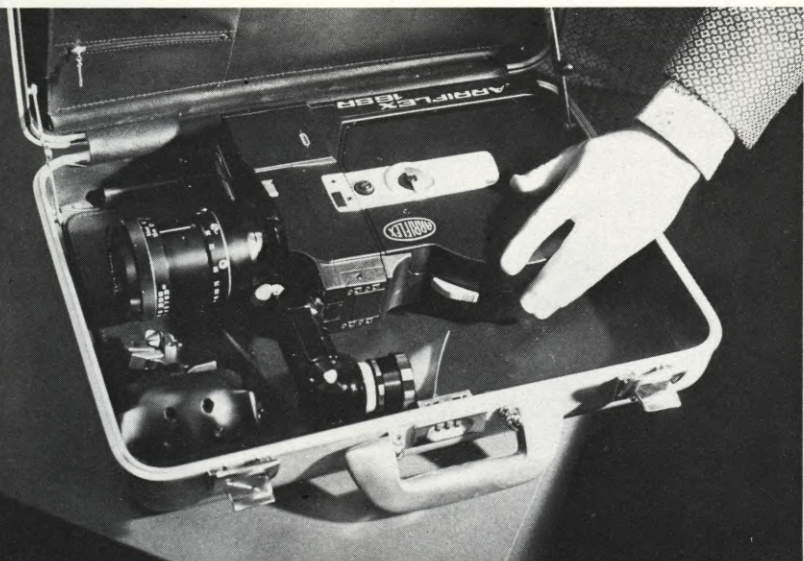
Positively controlled pull-down claw and registration-pin guarantee reliable film advance and exact image steadiness— independent of film material used and climatic influence.

The film gate is comprised of the aperture plate on the camera side and the pressure rails on the magazine. When the magazine is mounted a spacer channel is formed through which the film runs freely. In the area of the film-gate, the film is held absolutely flat in the focal-plane by a pressure-plate.

The ARRIFLEX 16SR is a no-compromise camera and has a cam-driven, registration-pin movement to assure the absolute picture steadiness demanded in professional cinematography. Both of the quick-change magazines—200-foot and 400-foot—can accommodate daylight-loading spools, as well as darkroom loads. The magazine spools are coaxially arranged and, as is common with a quick-change magazine design, the aper-

(LEFT) Camera with magazine removed. Gauged members to guide film mean that the camera dictates the film-plane position in the gate. (RIGHT) Face of the magazine, showing symmetrically located pressure plate. The feed and take-up loops can be externally controlled before mounting the magazine.





(LEFT) The compact characteristics of the Arriflex 16SR graphically demonstrated. With eyepiece in upright position and hand-grip turned downward vertically, camera is so slim that it can be carried in an *attaché* case. (RIGHT) Camera incorporates not only the automatic exposure control system so successfully applied to the Arriflex 16BL, but its standard lens (10mm-100mm Vario-Sonnar) has automatic diaphragm which stops down to correct aperture when camera starts.

ture plate is in the camera front, whereas, the pressure-plate is part of the magazine.

Arriflex has perfected the film-gate concept in this quick-change magazine design and considers it as reliable and accurate as the integral type of film-gate found in its Arriflex Standard and 16M Models.

The pressure-plate is divided into two parts. The film-guide rail section rests against gauged members in the camera, which means that the camera dictates the film-plane position in the gate. As a result, any number of magazines can be used in conjunction with one camera, without altering the film-plane registration. The film literally floats and no pressure is brought against it. Consequently, emulsion build-up is practically nil and film friction has been greatly reduced. Only in the actual aperture where the film is being exposed does a separate pressure-plate bring pre-determined pressure against the film, in order to hold it in the correct focal-plane. This design concept means that the camera is completely insensitive to variations in film stocks, as well as environmental or climatic conditions.

DRIVE

A high-performance DC motor without commutator allows, with built-in crystal control, for synchronous sound filming with any tape recorder which is fitted with a crystal generator. A warning light is visible in the camera viewfinder and lights up when an out-of-sync condition occurs.

The motor is also equipped for slave operation. Variable frame speeds can be set with an accessory control mechanism.

An electronic stopping device always brings the mirror-shutter into viewing position when the camera is switched off.

The motor is permanently built in. While it can be removed for service purposes, it is not intended to be changed, because this special 12-volt DC motor, in combination with the control electronics, will answer all camera-drive needs which may be encountered in present-day filming.

In the standard camera configuration, the motor electronics incorporate crystal-control for 24 or 25 fps operation. An optional variable-speed accessory will make possible filming

between 8 and 40 fps. Another accessory will be provided to enable slating the camera to an external reference signal for playback purposes, or in order to synchronize the ARRIFLEX 16SR to another camera not having crystal-control, but equipped with a pilotone generator.

The camera is basically designed to be used without a connecting cable to the recorder, but, in cases where such a connection is desirable, an accessory cable is available for feeding a 50 or 60-cycle pilotone signal to the recorder in the correct signal strength.

THROUGH-THE-LENS EXPOSURE CONTROL SYSTEM

The built-in CdS exposure control system corresponds in principle to the ARRIFLEX 16BL exposure control system, which is very successful. The concept of this exposure control system represents the ultimate in measuring accuracy in professional filming techniques.

The indication of ± 2 f-stops in the viewfinder enables the control of exposure within the permissible film contrast range.

Continued on Page 1416

TECHNICAL SPECIFICATIONS OF THE ARRIFLEX 16SR CAMERA

Film width: 16mm, one-sided or double perforation, B winding
 Aperture: 180°
 Viewfinder magnification: 12-fold
 DRIVE
 DC motor without commutator
 Supply voltage: 12V
 Crystal accuracy: 5×10^{-6}
 Battery type: 12 V, 1,8 Ah NC
 Magazines: 200 ft (60 m) and 400 ft (120 m) magazines, coaxial double compartment type, daylight reels can be used

EXPOSURE CONTROL SYSTEM
 Film Sensitivity: 13-28 DIN (16 to 500 ASA)
 Frame speed: 25 (24) to 50 fps
 Indication range: ± 2 f-stops
 Dimensions: Length 11½" (290 mm) with 200 ft (60 m) and 400 ft (120 m) magazine
 Width 3½" (90 mm) with 200 ft (60 m) and 400 ft (120 m) magazine
 Height 8" (200 mm) with 400 ft (120 m) magazine, 7½" (190 mm) with 200 ft (60 m) magazine
 Weight of camera: approx. 11 lbs (5 kg) with 200 ft magazine

THE LOWELL TOTA-SYSTEM



Based around a pocket-size, but high-powered, lighting unit is an entire system of accessories for the lighting of interiors on location

At each of the past few *Photokinas*, the big news in motion picture lighting has come from a company dedicated to designing lighting equipment that is as small as possible, Lowel-Light Photo Engineering.

The company's president and chief designer, noted New York cinematographer Ross Lowell, states his basic design philosophy in very simple terms: "A lot of the equipment I've designed

has been created to fill my own personal needs as a working cameraman shooting on location. Much of the studio lighting equipment is well thought-out and efficiently designed for use on sound stages, but is simply too hard to handle on location."

With that idea in mind, Lowell has gone on to create an entire line of light-weight, extremely portable, highly efficient lighting equipment and acces-

sories. These items include the Lowell Quartz System of focusing quartz lights, the Lowell Link System (of grip, lighting-support-and-control equipment) and the portable, focusing Lowel-Light Vari-Flector.

At the 1970 Photokina, Lowell stunned everybody with his revolutionary Lowell Softlight, an extremely portable "foldable" 1000-watt shadowless light source weighing in at less than 1/5 the weight of conventional soft-light units.

At the 1972 Photokina, his new Lowell Tota-System created a similar sensation. It is a total system of miniaturized lighting equipment designed around the Tota-Light, a pocket-size unit which uses 1000, 750 or 500-watt lamps. Complete with a wide and superbly-integrated range of accessories, it should prove to be ideal for shooting in cramped location interiors.

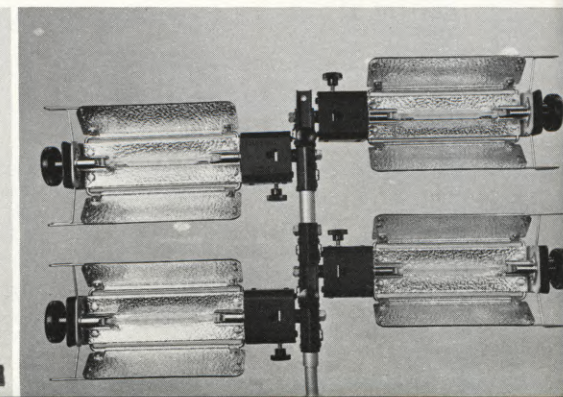
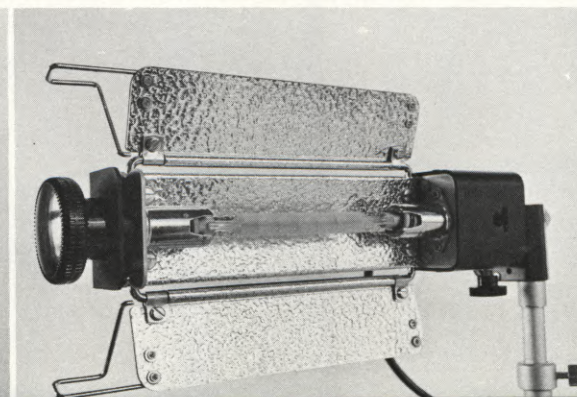
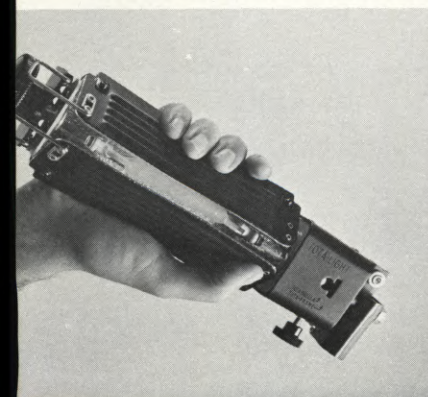
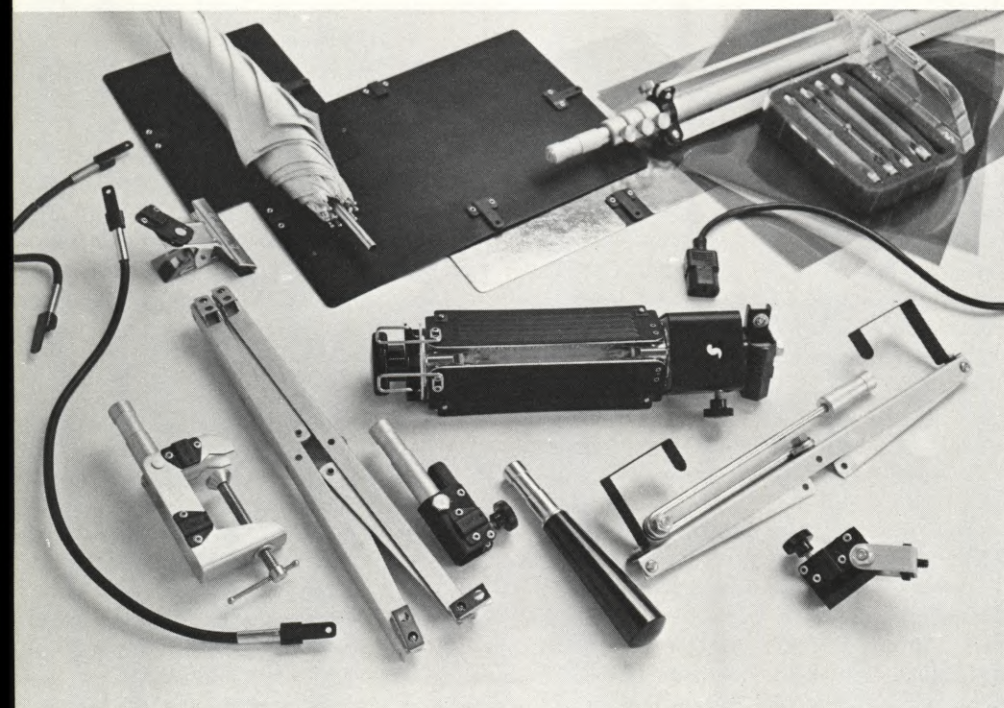
The Tota-System includes the following:

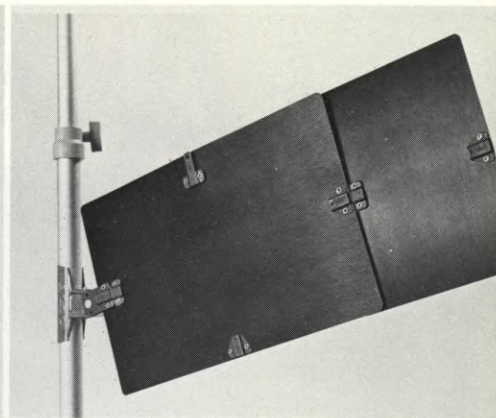
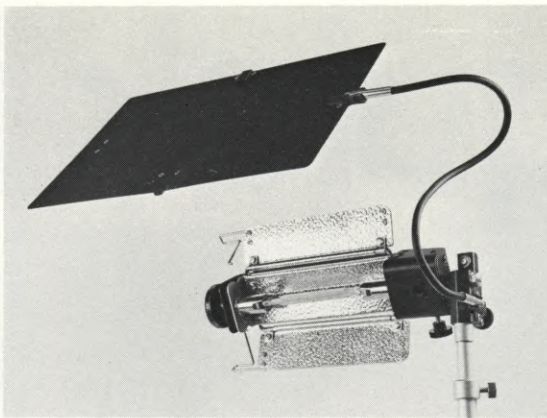
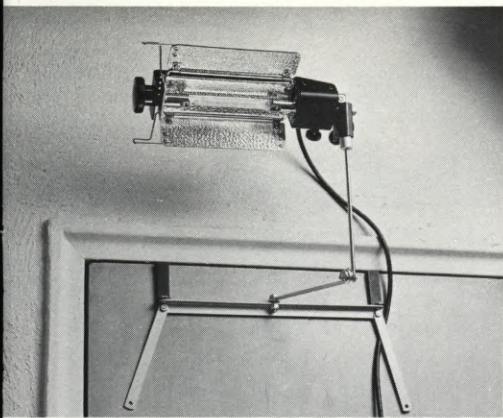
TOTA-LIGHT

Tota-Light is the central unit in Lowel-Light's new Tota-System. It is a pocket-size professional quartz light, which uses 1000, 750 or 500-watt lamps (or 800-watt, 240V lamp). Ruggedly built with dual-wall construction (aluminum and steel), the Tota-Light produces a smooth beam of "total" light that can cover 4 walls of a room from a corner . . . or 3 walls from the 4th wall! Using Tota-Light's two reflector doors with handles, the light's intensity may be varied without reducing its beam width. The light is easily maneuvered by means of an oversize tilt/pan knob, while a

The Lowell Tota-System includes lamps, flags, stands, clamps, gel-holders, flexible shafts and an umbrella reflector for bouncing light. Everything is extremely light-weight and portable, but this compact equipment was designed to do a big lighting job on location. In keeping with the Lowell concept, all items are modular and interlock readily with each other.

(LEFT) The central unit in Lowel-Light's new Tota-System is the Tota-Light, a pocket-size professional quartz light which uses 1000, 750 or 500-watt lamps. (CENTER) The Tota-Light's two reflector doors (with handles) fold out to direct the light. By varying angles of the doors, light's intensity may be varied without reducing its beam width. (RIGHT) Tota-Lights may be stacked two-at-a-time without adaptor and four-at-a-time with a Tota-Daptor, making an enormous amount of light available in a small space.





(LEFT) Tota-Flags are 8" x 12" lightweight, aircraft alloy panels used to shield the camera lens, subject or walls. Two or three flags snap together at ends or sides to provide larger flag units. (CENTER) The Flexishaft is a flexible arm that snaps onto the Tota-Flags (as well as several other accessories) to position them in any direction. These inexpensive, replaceable arms come in standard 8" and 16" lengths. (RIGHT) The Tota-Mount support holds the Tota-Light safely on top of doors and partitions or can be gaffer-taped to most walls.

"V" inside stand fitting locks Tota-Light on any stand up to 5/8" diameter.

The Tota-Light has an integral, lock-in system that accommodates a reflecting umbrella and gel frame, for which a variety of pre-cut colored and diffusion gels are available. Tota-Lights may also be stacked, two at a time without an adaptor, and four at a time with a Tota-Daptor. Stacking is also facilitated by exchanging the Tota-Light's standard 16-foot neoprene cord for an optional 3-foot cable, which is also available. With a 1000-watt lamp, output of the Tota-Light is 150 foot-candles at 10 feet.

TOTA-FRAME

Frame holds pre-cut Tota-Gels. Locks into Tota-Light like a camera matte box. "Stores" on light when not in use. Folds instantly to 1/2" x 1" x 12".

TOTA-GEL

Long-life gels are heat and fade resistant. 10" x 12" pre-cut sheets for Tota-Frame available in compact packages: Daylight blue; Frost diffusion; Neutral density; Five useful colors.

TOTA-BRELLA

Umbrella locks directly into Tota-Light. Requires no mounting accessories. Provides full tilt and pan. Two Tota-Lights can be used with one Tota-Brella. Reflecting surface is "soft-bright" aluminized Mylar. Measures: 27" across open area; 19" long, closed.

TOTA-MOUNT

Remarkable support holds Tota-Light, safely on top of doors and partitions. Door can be opened or closed. Inside or outside of rooms. Permits full tilt and pan adjustments. Flipped over, Tota-Mount can be Gaffer-taped to some walls, windows etc. Folds up to 1/2" x 1" x 12". Allows shooting

360° by eliminating stands.

TOTA-STAND

Sturdy, lightweight, wide base, aluminum stand. Nine feet extended, 27" folded. Has standard 5/8" stud on top.

TOTA-NEWS HANDLE

Locks into stand fitting so that Tota-Light can still tilt and pan 360°. For hand-held operation of this (and other) lights.

TOTA-CLAMP

Fast, simple rigging device. Strong, lightweight unit clamps onto round and flat objects. Standard 5/8" stud with 1/4" 20 threaded hole on opposite end rotates and locks in two positions. Accepts lights, Tota-Tilter and snap-in Flexi-Shaft.

TOTA-TATCH

Small, strong spring clamp clips onto most stands, shelves, barndoor, etc. Accepts snap-in Flexi-Shaft and flags on a rotatable bracket. Two can be interlocked in any position with a short Flexi-Shaft. Tota-Flags snap directly into Tota-Tatch.

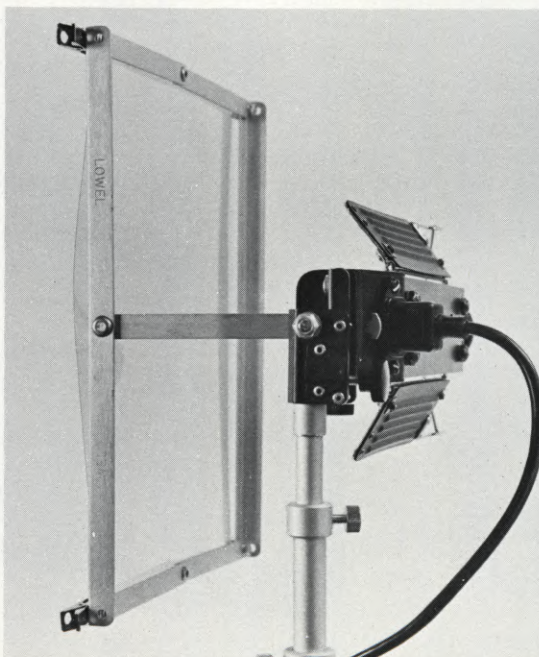
TOTA-TILTER

Locks on all stands up to 5/8" and on end of Tota-Clamp stud. Holds and precisely positions small cameras with 1/4" 20 tripod thread, many battery lights, some microphone yokes, etc. Accepts two Flexi-Shafts with flags.

TOTA-DAPTOR

"Converts" many other lights for use with Tota-System, by providing two
Continued on Page 1419

(LEFT) The Tota-Frame holds pre-cut Tota-Gels to modulate light. It locks onto the Tota-Light like a camera matte box, and "stores" on the light when not in use. It folds instantly to 1/2" x 1" x 12". (RIGHT) The Tota-Brella, a reflective umbrella, locks directly onto the Tota-Light, requiring no mounting accessories. Reflecting surface is "soft-bright" reflecting mylar.



A quick look

A silent-running
35mm camera that weighs
26 lbs and changes
magazines in seconds.

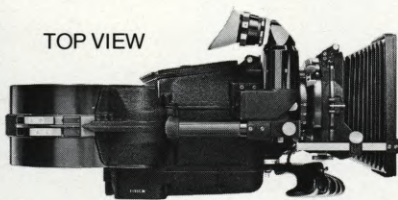


at the features of the 35BL

This is obviously a tool that you'll need to be familiar with. So here's a summary of its salient features:

Dimensions and weight

With a 50mm lens and a 400 foot magazine, the 35BL weighs 26 lbs and measures 20 inches from front to back, including matte box. You can see its low profile and shoulder-resting format in the photo at right.



TOP VIEW

Running noise level

Three feet from the lens blimp, the 35BL measures 31½ dBs, with film running. At close quarters on a sound stage, you may need a Barney over the magazine. On most locations, the 35BL is effectively inaudible, even with unblimped zooms.

Quick-change magazine

Changing the 35BL's co-axial magazine takes about 30 seconds. The empty one slides off; and the full one slides into place and locks at the rear of the camera body. No sprockets. Apart from putting the film on a guide pin in the gate, no threading. That's all done when you *load* the magazine. 400 foot loads now. 1000 foot magazines early next year.



Lens mount and housing

There's a standard Arri steel bayonet mount and a support rod for long lenses. The universal lens blimp lets you use fixed focal length lenses from 16mm to 85mm.

Universal DC motor

A 12 volt battery weighing 5½ lbs. drives 2400 feet of film through the 35BL on a single charge. A red warning light shows in the viewfinder if you're not on speed. There's also a large tachometer.

The standard motor built into the 35BL gives you 50Hz and 60Hz crystal-control sync at 24 and 25 fps. Plug-in variable speed attachments let you run at up to 100 fps.

Rotating reflex finder

The Arri mirror-shutter and new Zeiss optics deliver a finder image that's the brightest you'll find on a portable camera. The viewfinder rotates 90 degrees above and 30 below horizontal; and the image stays upright.

The entire silent aperture is visible on the groundglass. You can see the microphone *before* it gets into the shot. And when the camera stops, the shutter is always open to the viewfinder. No more inching.

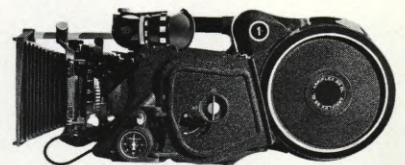
Pin-registered movement

For quiet running, the 35BL's movement uses a solid camshaft that is dynamically balanced to eliminate vibration. The film travels through a fixed film channel — no side or rear pressure plates, except right at the aperture.

Film is advanced by four claws and registered by two pins — one for vertical, one for horizontal registration. 35BL image steadiness is well within optical printer standards.

Many more features

This is just a quick survey, of course. We'd like to show you more! Write, or give us a call. No obligation.



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IMPROVED HELIVISION II HELICOPTER MOUNT



New, redesigned version of helicopter mount features a cleaner look and increased versatility, making it adaptable to a wide range of aircraft

The updated version of the Helivision II Helicopter Mount made its debut at *Photokina '72*, showing a cleaner look and increased versatility, as compared to previous models. Now being made in Sweden by Hedén Engineering, Helivision II was exhibited in the booth of Sachtler and Wolf, agents for Germany.

In its state of "indifference to gravity" it aroused the curiosity of many of the professional cinematographic crowd, as well as those of the amateur bent. It seemed to be in an outer-space environment—floating about at the touch of a finger.

This condition was described as one in which the camera will remain in any position (off-level, on its side, or upside down) when it is so placed. It was explained by Helivision's Technical Director as follows: "The condition known as 'indifference' is one in which the center of gravity along the axes of rotation is brought to a common point. When the camera is then placed in any off-or-on-level position, it will retain that position without moving.

"Contrary to popular belief, mere 'balancing out' will not completely eliminate the problems inherent in any helicopter camera system in current commercial use. If a camera is merely

Demonstrated at *Photokina 1972* in Cologne, the Helivision II proved that it could really "float", giving a sort of "weightlessness in space" appearance. Pressure of only one gram is sufficient to float the entire camera-lens system in any direction, yet the camera will remain absolutely stable and without movement or vibration in any given position with no outside influence.



The improved Helivision II Helicopter Mount employs an important reduction of the head bearing system, thus increasing the headroom in the Bell Jet Ranger and Hughes 500 configurations. Its accessory mounting brackets make possible adaptation to small, inexpensive helicopters, as well as big, more expensive ones.

'balanced', it will require more and more force on the part of the operator to retain his framing as he wishes since the mount will resist any movement away from its point of equilibrium. The further away it is moved, the stronger will be its desire to return to that point.

"'Indifference', being a state of neutrality to gravity, approaches the ideal for the operator. Bringing all axes of rotation to a common center reduces this tendency to return to a point of balance, thus reducing the pressures necessary to maintain a camera on its axis of view."

To accomplish this, Helivision II now has an entirely counterweight system which is extremely simple to regulate, requiring only three adjustments and taking only a few minutes to accomplish. From there on, the articulated, vibration-absorbing head takes over and

Continued on Page 1424



THE AÄTON 7 16mm/SUPER-16 CAMERA



A new totally electronic 16mm camera that converts readily to Super-16 and molds to the shoulder so well as to seem almost weightless

Introduced at *Photokina '72* in prototype form, the new AÄTON 7 16mm/Super-16 camera, light-weight and extremely well-balanced for hand-held shooting, drew considerable favorable comment.

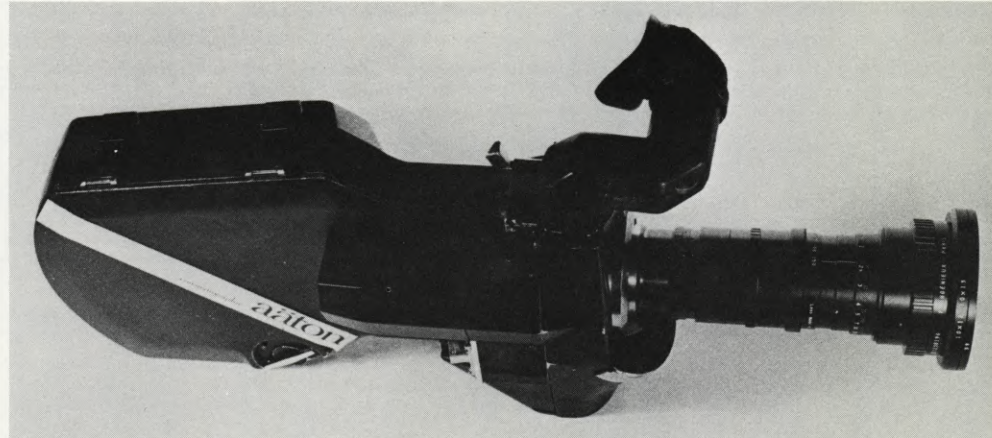
This silent-running camera, designed by J-P. Beauviala shortly after the 1970 Photokina to answer the needs expressed by many cameramen, is an instrument which is very well adapted to mobile sync group shooting.

The highly-sophisticated and totally electronic AÄTON 7 was designed specifically with Super-16 in mind and it can be adapted to this format without mechanical modification simply by quickly exchanging aperture plates and rotating the circular front lens mount to its relocated Super-16 position.

A light, easy to carry and well-balanced camera, the AÄTON 7 is particularly well adapted to hand-held 16mm film shooting.

It is designed to take fullest advantage of the latest developments in lenses and emulsions (1) by imposing a firm positioning of the film in height/depth relation to the lens. Moreover, the reflex viewing is very open, making image focusing extremely precise.

This instrument, which is equipped with the most rapidly interchangeable



The new AÄTON 7 16mm camera, as shown in working prototype form at *Photokina 1972*, was produced under the direction of the development group which was instrumental in designing the Eclair ACL. Production models of the camera are estimated to become available early in 1973.

magazines and with a built-in television pick-up tube (2), could well make Super-16 a "standard" format.

Among the camera's primary features claimed by the manufacturer are the following:

- It is well-balanced, comfortably placed on the shoulder, but not too light, so as not to disturb shooting stability. It is held by the lens, which permits permanent control of focusing and zooming rings.
- The profile is very low so as to clear

the cameraman's peripheral vision.

- The eyepiece is placed in the nodal plane of standard lenses, and its position is very advanced in comparison with other cameras; the camera is therefore guided by the head, permitting much better bearing stability.
- The viewfinder is very open and transparent for better control of image focusing; it turns both vertically and horizontally, giving a wide choice of shooting angles.
- The built-in video control permits video rushes recording, and, thus, the association of the reliability and quality of color film with the rehearsing characteristic of video tape.
- It is completely independent owing to the use of high-efficiency quartz motors, built-in batteries, and permanent chronometric marking (neither clap nor pilotone).
- The rigidity and stability of the lens-film mechanical linkage assure very high image definition, making 35mm blow-up easy.

The AÄTON 7 was designed not as a "second" camera, but as a feature production camera with all of the advantages of a documentary camera. It must be emphasized that the new camera was shown at *Photokina* in working prototype form only. It is, therefore, impossible to comment upon the AÄTON's

Continued on Page 1422

The AÄTON 7 has been designed in such a way that the curved throat of the magazine fits snugly onto the shoulder, eliminating the need for a brace and resulting in such perfect balance that the camera seems almost weightless when hand-held. It actually weighs 12 pounds, without lens.



Troubled by out-of-focus pictures?

Troubled by emulsion

pile-up in your camera gate?

Troubled by distracting camera

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

Troubled by cameras that are always in need of repair and adjustment?

If so, switch to Auricon, the only 16mm Camera that guarantees you protection against all these troubles, because it is so well designed! The Auricon is a superb picture-taking Camera, yet silent in operation, so that at small extra cost for the Sound Equipment, it can even record Optical or Filmagnetic sound in addition to shooting your professional pictures.

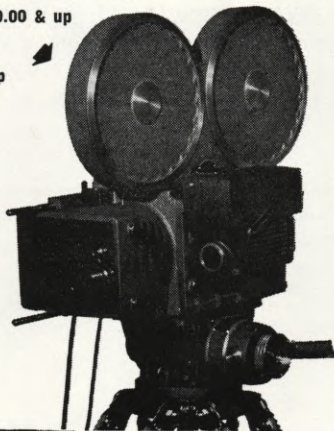


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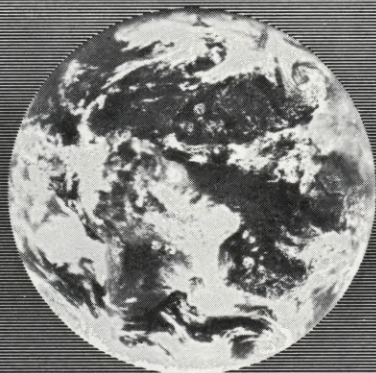
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THE ARRIFLEX 35BL REVISITED



The revolutionary hand-held 35mm camera which made its stunning debut at the last *Photokina* reappears at this one redesigned for even more efficient operation

The Arriflex 35BL camera burst upon the 1970 *Photokina* like a bombshell, stunning visitors with its compact, blimpless, shoulder-mounted design and setting up a clamor among cameramen and rental house representatives as to when it would become generally available.

The besieged ARRI personnel on duty at the booth replied quite honestly that the sample cameras being shown at *Photokina* were simply working models and, when pressed further as to the availability of the production models, estimated that it would take at least a year.

It has taken a bit longer than that. The simple fact was that, despite the camera's spectacular features, it did not run quite quietly enough (33-34 dbs) to qualify it as a truly silent-running camera for use under a complete range of sync-sound shooting conditions. Living up to their reputation for precision and perfectionism, Arnold & Richter KG quite rightfully decided to hold back general release of the camera until it

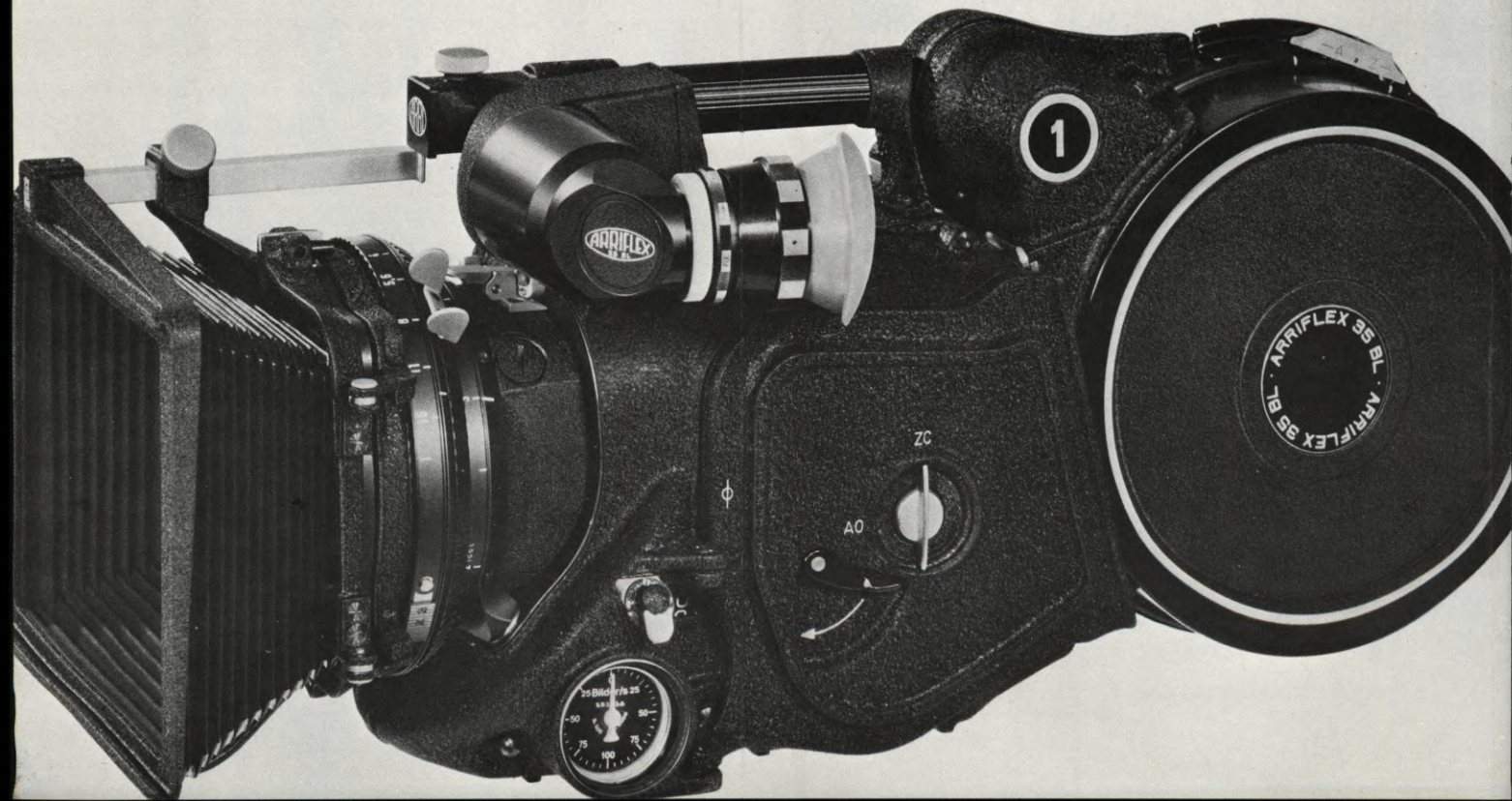
could be made to meet the top standards of professionalism. Since they could have sold at least 200 cameras on the spot at *Photokina 1970*, it is to their great credit that they showed such restraint.

ARRI engineers felt that they could and should reduce the noise level of the camera by at least 5 dbs in order to qualify it as a truly silent-running camera. But this turned out to be a far from simple task. It has required two years of intensive testing and redesign, but the time and effort have paid off. The Arriflex 35BL shown at *Photokina 1972*, though similar in appearance, is quite different from the version displayed in 1970. It has been quite completely reworked and modified, with the main result that the noise-level has been reduced to the desired level. Given a merciless shakedown just a few weeks before at the Olympic Games in Munich, five of the redesigned Arriflex 35BL's performed perfectly in sync-sound and high-speed modes, eliciting
Continued on Page 1432



Arnold & Richter Design Engineer J. Gerb, who was largely responsible for the design and development of the Arriflex 35BL, tries his handsome "baby" out at the ARRI display at *Photokina 1972*. Redesign of the camera since initial showings has resulted in much quieter operation.

Arnold & Richter, very commendably, held back on production of the Arriflex 35BL until all possible "bugs" were removed and users could be assured of top-flight performance. Radical redesign of gearing and magazine construction produced a much quieter camera. Other improvements have been incorporated as well. Five of the BL's were given a very rugged shakedown by crews filming the Munich Olympic Games, and they performed perfectly in all situations.



THE WILCAM W-1 SUPER-8 SOUND CAMERA



A totally new single/double-system sound camera for Super-8 professional use includes many of the features of its 16mm "big brothers"

A couple of years ago Geoffrey Williamson, basing his design upon a modified Minolta model, came up with a single-system Super-8 sound camera. It worked quite well and is now in use by a number of TV stations around the country. Williamson still makes this package available, but it remains, however you may look at it, a modified Minolta.

Now Williamson has come up with a single-system Super-8 sound camera of his own original design—not a modified *anything*—and he calls it the WILCAM W-1. It is an ultra-sophisticated Super-8 camera with everything necessary for

picture and sound recording built into the camera. The only external item required is a microphone.

The WILCAM W-1, having many of the features of its electronic 16mm big brothers, was previewed at *Photokina '72* in working prototype form and drew considerable attention. Also shown was a half-hour demo film made with—and about—the camera. The picture quality looked very good, taking into consideration that it was projected onto a rather small screen, and the sound was exceptionally clear.

The camera uses a co-axial magazine of 200-foot capacity that fits right

inside the camera body. Larger magazines for external use will be made when film supplies become available. For threading, a single knob opens the entire film path, except the sprocket clamps, and brings into position two locating pins that correctly position the loop for 18-frame sound-to-picture lead.

Extreme quietness of operation is achieved by a revolutionary type of design which eliminates all gears; there is not one gear in the entire camera.

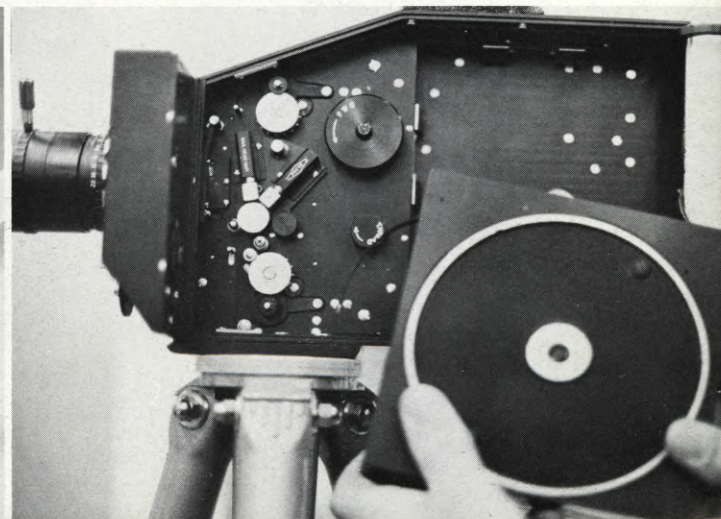
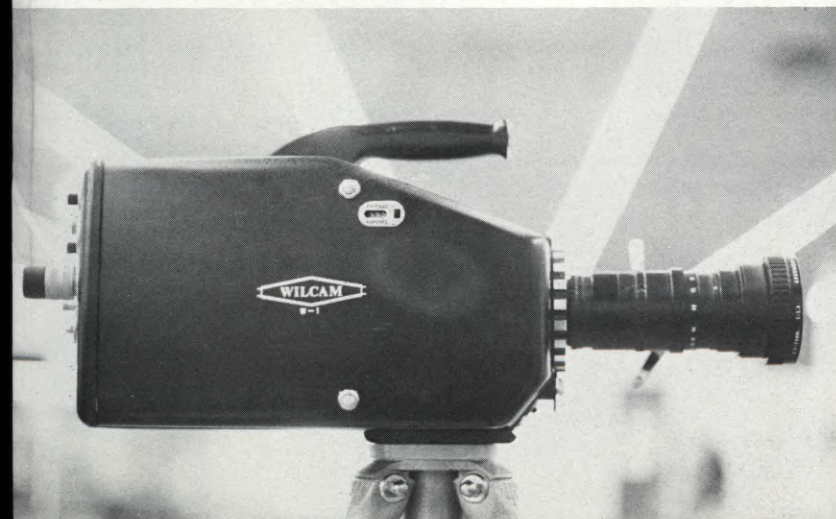
The record amplifier, with two microphone inputs built into the camera, is of very advanced integrated-circuit

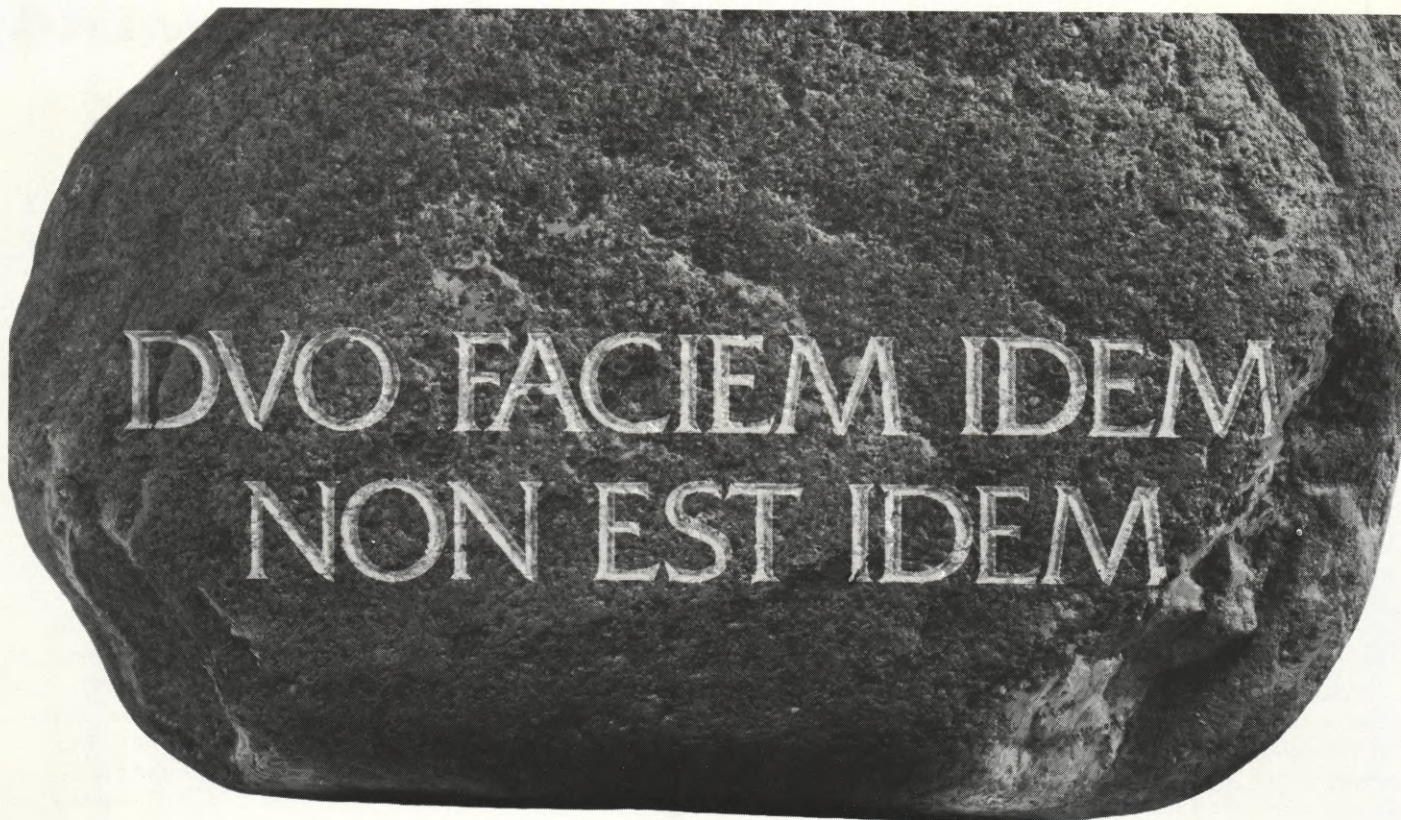
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TECHNICAL SPECIFICATIONS OF THE WILCAM W-1 SINGLE-SYSTEM SUPER-8 CAMERA

CAMERA TYPE:	Super-8 single system sound and wireless double-system by crystal-controlled drive motor.	FILM THREADING:	One knob opens film gate, sound heads, sound drum rollers, and sets threading guide pins. Sprocket clamps are independent.
SHUTTER:	Rotating mirror of aluminized beryllium 170° open.	EXPOSURE CONTROL:	Match pointer in viewfinder with ± 1 stop indication, optional servo control also available.
LENS MOUNT:	Wilcam bayonet. Will accept 10mm F/1. lens when available.	VIEWFINDER:	22x magnification, incorporating exposure and VU meter, also camera level indicator, ground glass central focussing.
FILTER WHEEL:	4-position filter wheel (2-position with 6-66 lens) with fingertip control, filter cast shows in viewfinder.	PLAYBACK AMPLIFIER:	For instant film track monitor. Both amps. Use plug-in boards.
RECORD AMPLIFIER:	Internal 2 channel with individual AGC and man. override.	MONITOR:	Miniature speaker in camera door, also headphone jack.
MAGNETIC HEADS:	Record and playback module. Instantly replaceable in field.	WOW & FLUTTER:	.4% maximum.
FREQUENCY RESPONSE:	± 3 db 100 - 7000 HZ.	AC OPERATION:	Combined battery eliminator and charger.
VU METER:	In viewfinder, below picture area.	SIZE:	Excluding lens, 12 ins. long, 7½ ins. high, 5 ins. wide.
WEIGHT:	Camera, lens, internal amplifier, batteries, loaded magazine. 11 lbs., 14 oz.		
FILM CAPACITY:	200-foot single-width Super-8 in internal co-axial magazine.		

(LEFT) The new Wilcam W-1 camera is a handsome and highly sophisticated instrument designed to produce Super-8 sound film of professional quality. (RIGHT) The Wilcam W-1 uses a pre-loaded coaxial magazine of 200-foot capacity that fits right inside the camera body. Extreme quietness of operation is achieved by a revolutionary type of design which eliminates all gears. The built-in record amplifier (with inputs for two microphones) is of very advanced integrated-circuit construction and consists of three separate circuit boards, all of which snap in and out for instant servicing.





Two may do the same thing, and it is not the same thing.

Pubilius Syrus
1st Cent. B.C.

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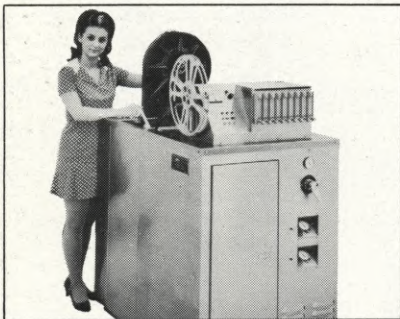
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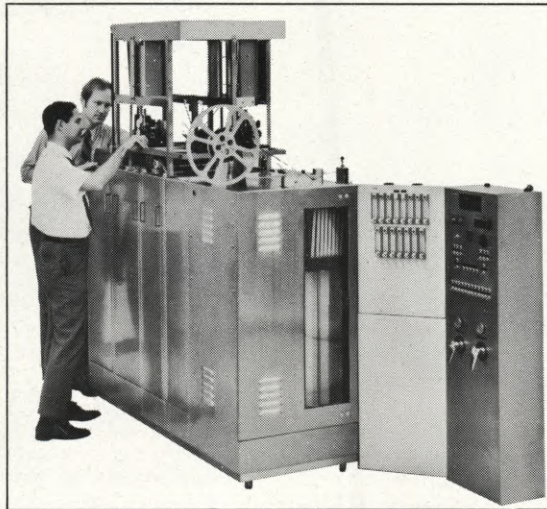
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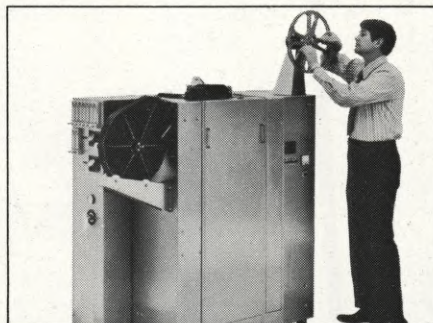
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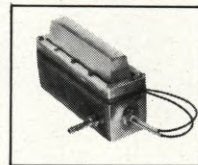


There's a Jamieson color film processor in the size you want, for the process you want to conduct. For complete technical data and specifications on the Mark IX series, Mark IV series, and Compac models, write for our catalog on Jamieson Color Film Processors.

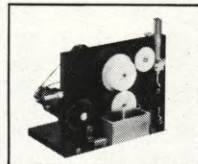


Jamieson Mark IV, Model A. Processes 16mm and 8mm Ektachrome at 30 f.p.m. Model B for ECO-3 and ME-4 with silver track. Other models for 35mm processes, including CRI.

Jamieson Mark IX, Model B. Conducts ECO-3 and ME-4 for all 16mm, 8mm Ektachrome camera and print films at 65 to 75 f.p.m. Other models in the Mark IX series for Eastman Color and other processes in 16mm and 35mm.



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The New CP-16/A (with Crystasound). A Cameraman's Kind of Camera.



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

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

The CP-16/A 16mm camera has been de-

signed and specially balanced for convenient on-the-shoulder shooting.

It weighs a little less than 17 pounds when fully equipped. And "fully equipped" means fully. With 400-ft. magazine loaded with 400 feet of film. With a 12-120mm Angenieux zoom lens. With a plug-in Nicad battery pack. With a critically accurate crystal-controlled DC servomotor for single and double system sync sound. Plus the Crystasound recording system with built-in amplifier. That's right. Less than 17 pounds!

As for noisy camera movement problems, you've got to "not hear" the CP-16/A to believe how quietly it runs. Our sound tests show approximately 31 dB at 3 feet. But the real

sound test is your professional ear, and the actual quality of the sound recording.

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

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

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

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

The Crystasound amplifier is part of the camera, and it is powered from the same battery pack. Switchable, variable compression Automatic Gain Control lets you concentrate on filming the event. The headphone monitoring channel automatically switches from live mike to playback when the camera is turned on. We've even provided a special line feed to a tape recorder for those instances where the cameraman is recording simultaneously for TV and radio. The built-in amplifier has two microphone inputs and one line input,

all with independent volume control. Other features include automatic bias level, with no adjustment required, preview switch, VU meter, and low power consumption.

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



Should you need an auxiliary mixer, our Crystasound auxiliary mixer features: four channels of mike input, one channel of

line input, and one condenser mike channel. It also features individual and master volume controls as well as switchable AGC.

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

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THE NEW OPTASOUND SUPER-8 CASSETTE RECORDING SYSTEM



A most advanced development, which utilizes sprocketed cassette tape, makes possible the frame-for-frame double-system editing of Super-8

Shooting double-system sound with Super-8 cartridge-loading cameras has, in the past, presented two major difficulties: (1) keeping picture and sound in sync, and (2) editing picture and sound separately (double-system) but in sync.

Several systems (Bell & Howell Film-osound and Synchron, among them) were developed to maintain sync between Super-8 cartridge-loading cameras and cassette recorders, and they work very well in that respect. However, the remaining bugaboo had to do with the double-system editing of the Super-8 film in sync with the tape.

A few years ago the Optasound system, developed in England, was introduced to solve this problem. It completely eliminated the expensive process of transferring from 1/4-inch tape to an editable mag stock, simply by using a sprocketed 1/4-inch tape that matches the Super-8 film perforation-for-perforation. Sync is maintained in shooting by means of a simple device, the Optasync,

which consists of a lamp and a photocell. The tape runs between them on its way to the take-up reel and, as each perforation passes, the light shines through it and onto the photocell. This creates a pulse that is transmitted through the sync cable to the camera, which exposes one frame of film for each perforation. Thus, film and tape are in sync frame-to-frame and can be double-system edited accordingly.

The Optasound system worked very well, but it was usually applied to rather cumbersome reel-to-reel recorders. Introduced at *Photokina 1972* was a new light-weight, compact Optasound Cassette Recorder, which utilizes special-purpose cassettes loaded with sprocketed tape. The new recorder was presented at *Photokina* in conjunction with the equally new Cinemax C1000 Super-8 camera, which has been specifically factory-engineered for use with the Optasound system. It can, however, be used with any number of standard Super-8

cameras now on the market.

The Optasound Cassette Recorder weighs only about four pounds and is powered by batteries or, when available, 110-volt AC current. It is expected to retail in the United States for around \$140.00.

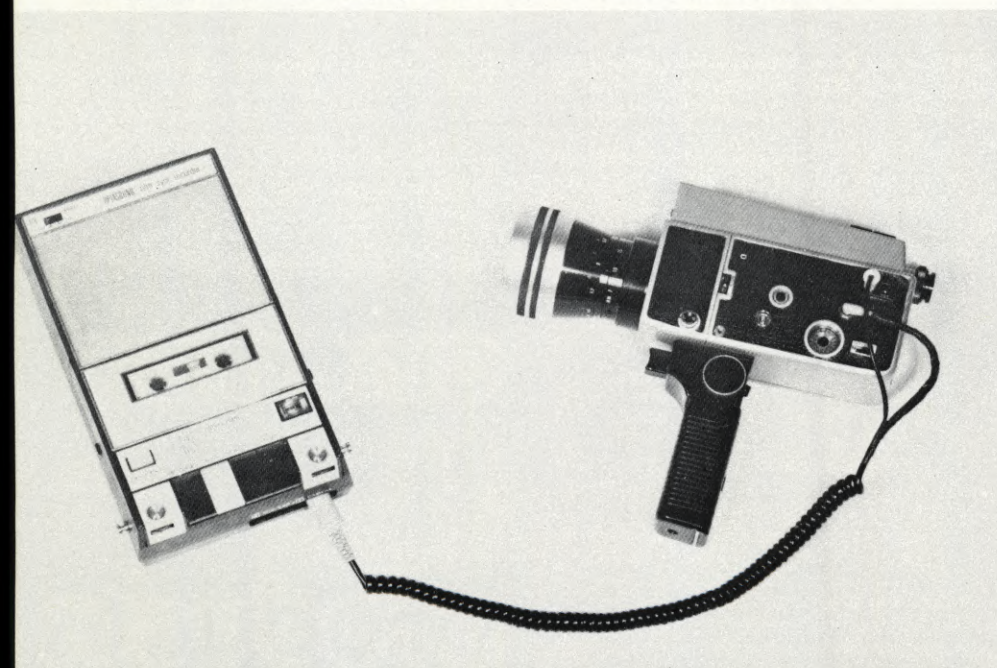
The cassettes used in the Optasound system are in the familiar Phillips configuration, although the tape itself is of a special design that makes possible the synchronization with the shutter mechanism of Super-8 cameras. Once camera and recorder are "in synch" the user operates *both* by simply squeezing or depressing the shutter release trigger or button. The "control" factor is the recording tape, perforated at precise intervals to correspond with the sprocket perforations of Super-8 film. A miniaturized photocell in the Optasound Cassette Recorder "reads" the perforations, with the aid of a small exciter lamp. In turn, this transmits governing "pulses" to the camera through interconnecting cables, where film frames are exposed in synchronization with the ongoing audio recording.

A number of "safeguard" features make the system a model of simplicity. For example, an automatic "clapboard" is provided by special blank leader on the tape, the camera's film doesn't start rolling until the first portion of recordable tape passes the photocell. Further help for beginners in sound motion-picture work is provided by other safeguards, i.e., the system will not function if the cables are not connected properly, if the power supply is faulty, or if the cassette is inadvertently reversed in the recorder. The cassettes are reusable, incidentally, once their "sound information" has been transferred to film.

To make a projector-ready sound print, the cassette-recorded "track" is transferred to a magnetic "stripe" on the Super-8 film. In effect, this is an un-edited "shoot-&show" sound motion picture. (Optasound will provide a popular-price service to handle both film processing and sound-transfer work.)

Amateurs and professionals have long agreed that the real "making" of a film

The new Optasound cassette recorder shown attached to the Cinemax Super-8 camera, which was designed specifically to function with this recording equipment without modification. The recorder can also be used with many other Super-8 cameras, requiring only slight modification. The sprockets of the recording tape act as a "control" factor to maintain sync.



is in post-production editing. Because the "sound frames" in the Optasound Cassettes (the intervals between tape perforations) precisely match corresponding frames of Super-8 film, Optasound is able to offer do-it-yourself movie-makers and semi-professionals an editing process which adds a degree of sophistication to movie-making previously available only to professionals using elaborate high-priced equipment. Using the Optasound Editor, an accessory unit, in conjunction with the basic system, both film and tape can be mounted and cut "frame for frame" and "length for length" without disturbing sync. The Editor is projected for U.S. retail at about \$400.00.

Commenting on Optasound's new Super-8 sound system, A. Frederick Greenberg, president of Optasound, stated:

"With our compact, portable Cassette Recorder, Super-8 becomes a simple and inexpensive sound medium with virtually any modern Super-8 camera. And, the system's editing feature permits truly flexible editing, to the point where you can edit out a single frame of film—and take out the sound as well. Once recorder and camera are synchronized, that's it. The user can stop and start, travel and shoot in a variety of locations. Later, the Super-8 user can edit, mix, re-edit and generally polish his film.

"The user of an Optasound system doesn't have to send his developed film to a professional sound lab, either. He can perform both editing and sound transfer with Optasound equipment to produce a finished lip-sync sound film. Thus, we are providing Super-8 film makers with sound film at a tenth of the cost of doing it in 16mm, and a fraction of the cost of doing it in 35mm.

"We are convinced that there's a real future for 'sound' as a creative adjunct to Super-8 movie-making—and we're proud to be part of it. We believe our modestly priced portable system offers beginners a strong starting point with 'shoot-and-show' sound movies in Super-8. At the same time, new avenues are opened for more sophisticated filmmakers through the wide editing flexibility achieved with the Optasound system."

Some Key Questions (and Answers) About OPTASOUND Compatibility . . .

Q. What makes and models of Super-8 motion picture cameras can be used with the Optasound Cassette Recorder?

A. Virtually all late-model Super-8 cameras on the market can be converted to sound cameras by connecting the Optasound Cassette Recorder to form a basic system. Here is a brief list of some of these camera units:

- Kodak LX-33, LX-55
- Canon 814
- Nizo S-560, S-800, S-56, S-30
- Cinemax Super 8
- Canon DS-8
- Minolta D-10, D-6, D-4
- Bauer C-Royal
- Fujica Z-800
- Yashica Super 800 Electro
- Beaulieu 4008ZM, 4008ZM2

Q. What is required to adapt these cameras to Optasound?

A. The Beaulieu and Cinemax cameras are already factory-compatible. Others require a simple modification to permit connection of the recorder cable. Check with your dealer when you purchase a Super-8 camera.

Q. If I own or purchase a camera that requires modification, how can I arrange for such work to be done?

A. Usually, it can be arranged through your photographic dealer. If not, your camera can be sent directly to Optasound, and the modification performed for about \$20 per camera. Optasound's address is 116 John

Street, New York, New York 10038.

FEATURES OF THE OPTASOUND CASSETTE SYSTEM

Perfect lip-sync—The camera and recorder are electronically interlocked.

Fully editable—The perforated tape gives a frame-for-frame and length-for-length relationship between picture and sound.

18fps or 24fps—The recorder offers filmmakers the flexibility of both popular filming speeds.

C-30, C-60, and C-90 Cassettes—For the recording of voice or music tapes on any standard cassette, the recorder operates at 1-7/8 ips.

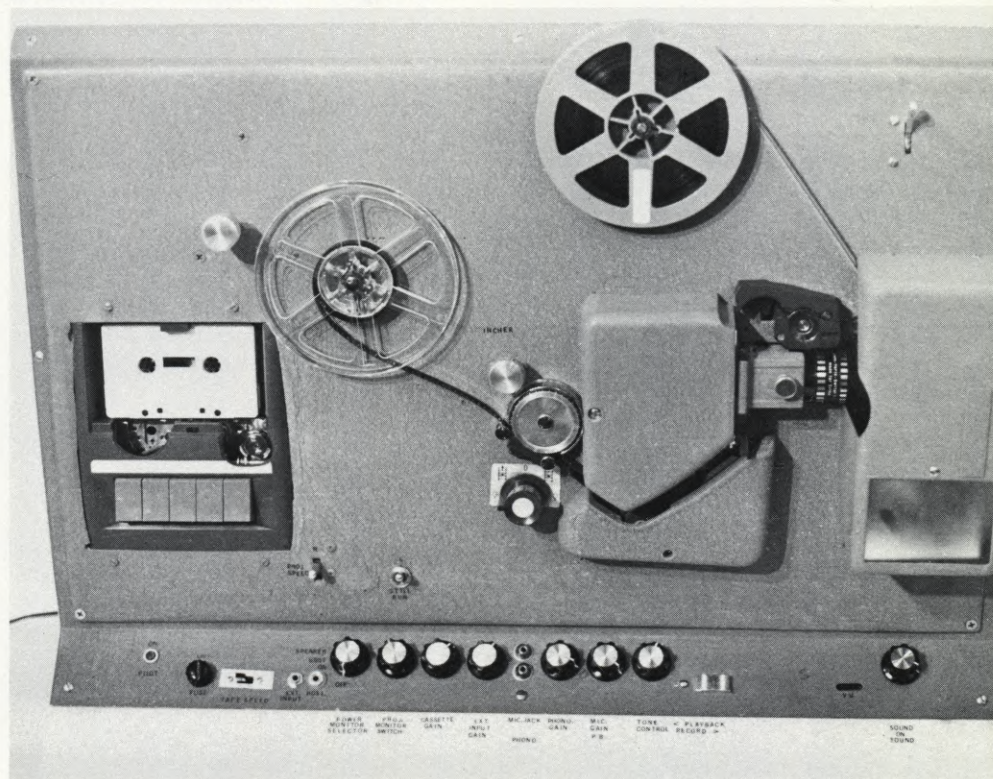
Automatic Level Control—Eliminates the necessity of having a sound man and sound filming can be a one-man operation . . . the cameraman can even monitor the sound as he shoots.

Unique Automatic Clap-mark—Assures perfect lip-sync . . . no need for a bulky clap-board.

High Fidelity sound—Is assured by the use of integrated circuits and easily replaceable modular printed circuit boards.

Continued on Page 1439

Apparatus used to transfer sound from sprocketed tape cassette to magna-stripe track of Super-8 original or print. Again, sync is maintained by means of the Optasync, a simple device which consists of a lamp and a photocell. The tape runs between them and the light shining through the perforations creates a pulse that acts as a sync control element. The system makes possible lip-sync Super-8 sound filming at a very low cost.



VINTEN-COUTANT 16mm/SUPER-16 CAMERA



Another impressive new 16mm camera which embodies a versatile range of features for professional newsreel and documentary filming

Joining the seemingly endless parade of new 16mm cameras introduced recently, the VINTEN-COUTANT 16 camera made its debut in working prototype form at PHOTOKINA 1972. The new camera represents the brainchild of André Coutant and W. Vinten Limited, who joined forces "to produce an outstanding new 16mm Newsreel Documentary camera that has been specifically designed for today's exacting shooting conditions. The Vinten/Coutant has been designed to give freedom from technical operating worries and leaves you free to concentrate on getting creative pictures."

Though a bit clumsy in exterior appearance and rather large in comparison to some of the other new 16mm cameras recently introduced, the designers seem to have thought of almost every possible sophisticated feature to include in their new camera. Moreover,

Super-16 model of the Vinten-Coutant camera, as shown in working prototype form at PHOTOKINA 1972. Though not as compact as some of the other new 16mm cameras recently introduced, it is balanced for support on the shoulder without a body brace. It features an integral, rechargeable battery pack and many other sophisticated features.

Mr. Vinten explained that what was shown at PHOTOKINA was simply a working prototype and that the production models of the camera will be a bit smaller and more "streamlined" than the one on display.

Shown at PHOTOKINA was the Super-16 model of the camera, which also comes in a standard 16mm configuration.

THE VINTEN-COUTANT 16 FEATURES:

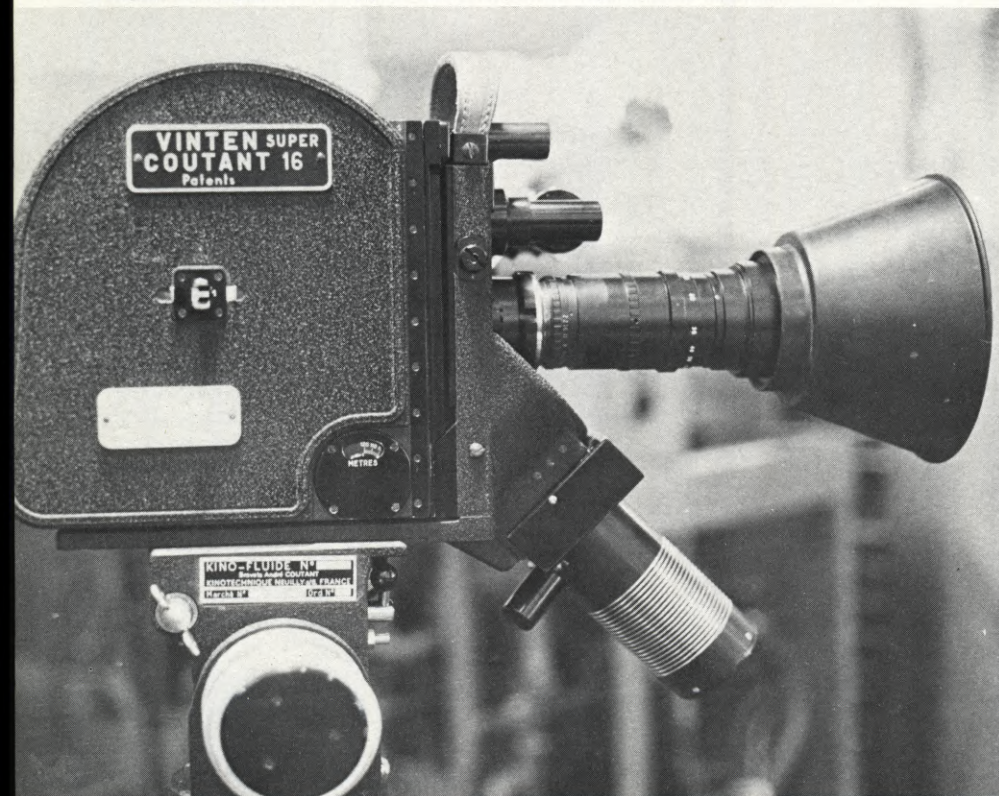
- Light weight. Perfectly balanced for the shoulder without body brace.
- Perfect sound synchronization, achieved by use of built-in crystal controlled DC high-torque motor.
- 120 metre (400 ft) snap-on magazines with automatic film location. Change magazines in seconds.
- Integral rechargeable battery pack.
- Film marker and loss of sync lights.

- Self-blipped silent running.
- Accurate frame-to-frame registration by latest side-guide system.
- Rotatable eyepiece with oversize viewing. Allows cameraman to see activity outside area of film frame.
- Mirror shutter reflex always stops in the viewing position.
- Accepts all 'C' mount lenses for normal or Super-16 filming.
- Can be used for separate magnetic recording with and without sync-pulse output cable and for combined magnetic recording on striped film.
- Precision engineered using the latest materials and components.
- A quality camera—reliable in action—rugged over long use.

SPECIFICATIONS:

1. Crystal-controlled DC motor for synchronous 24 or 25 f.p.s. and 10-40 f.p.s. variable speed filming.
2. 120 metre (400 ft) snap-on magazines accepting core-wound film or daylight-loading spools.
3. Integral rechargeable NICAD battery pack providing 5-6 magazines running time from full charge.
4. Film marker light.
5. Loss-of-sync indicator light which shows in viewfinder and is recorded on film.
6. Self-blipped sound level better than 30 decibels.
7. Steadiness $\pm 0.1\%$ of frame height.
8. Cordless sound sync for separate magnetic recording.
9. Pilotone 50Hz or 60Hz sync-pulse output provided.
10. Eyepiece rotatable through 360° and detachable for left or right eye viewing.
11. Mirror-shutter reflex viewing which always stops in the viewing position.
12. 'Albada' oversize viewing area with etched ground-glass outlines.
13. 180° shutter opening.
14. Film frame camera-identification notches.

Continued on Page 1438



O'CONNOR HYDRO-PED CAMERA SUPPORT



Recognizing that the conventional tripod is a less than ideal way to support a camera, a new computer-designed device appears to take its place

Anyone who has had to grapple with a conventional tripod (and that includes just about *every* cameraman) has, at one time or another, ended up cussing out the infernal contraption and mumbling to himself something like: "There *must* be a better way!"

Among those harboring such sentiments was Chadwell O'Connor, President of O'Connor Engineering Laboratories and designer of the famous fluid heads that bear his name.

To put it in Mr. O'Connor's own words: "We have thought for years that a tripod was not the best way to support a camera. Our structural Engineer programmed a computer with over 50 different designs with several hundred different material thicknesses. Our conclusion . . . a tripod is not the best way to support a camera.

"The standard tripod we have been used to since the turn of the century has several weaknesses, among which are:

- 1) It is weak in torsion resulting from panning motion.
- 2) It is weak when a vertical movement is applied to the top plate as when tilting.
- 3) It is awkward to level.
- 4) The legs are not tied to one another, thus if one leg slips the tripod collapses.
- 5) It is not safe to carry, particularly in a crowd.

"We felt that it was necessary to develop a totally new concept for camera support—one that would eliminate the inherent weaknesses of the conventional tripod."

O'Connor may (or may not) have taken a clue from the single-column pedestals used to support television cameras. At any rate, he turned back to the computer and the result is a single-column hydraulic support made of lightweight metal and dubbed the Model 101 Hydro-Ped. It was introduced at PHO-

TOKINA 1972 and drew a great deal of favorable attention.

The O'Connor Hydro-Ped has hydraulically controlled legs for fast and easy leveling and locks with the push of a button. It adjusts to any slope up to 45°.

The Hydro-Ped supports cameras up to 100 pounds. Each unit is tested to 400 pounds. The column can be adjusted from 30-inches height from the floor up to 60-inches.

The Hydro-Ped folds up to 9-inches diameter and 30-inches long and weighs only 19 pounds.

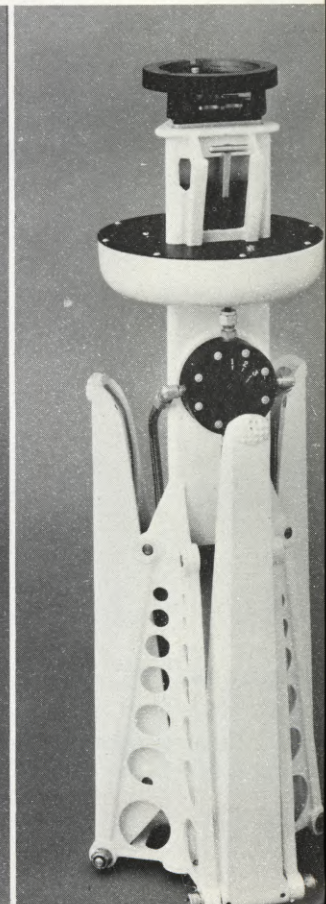
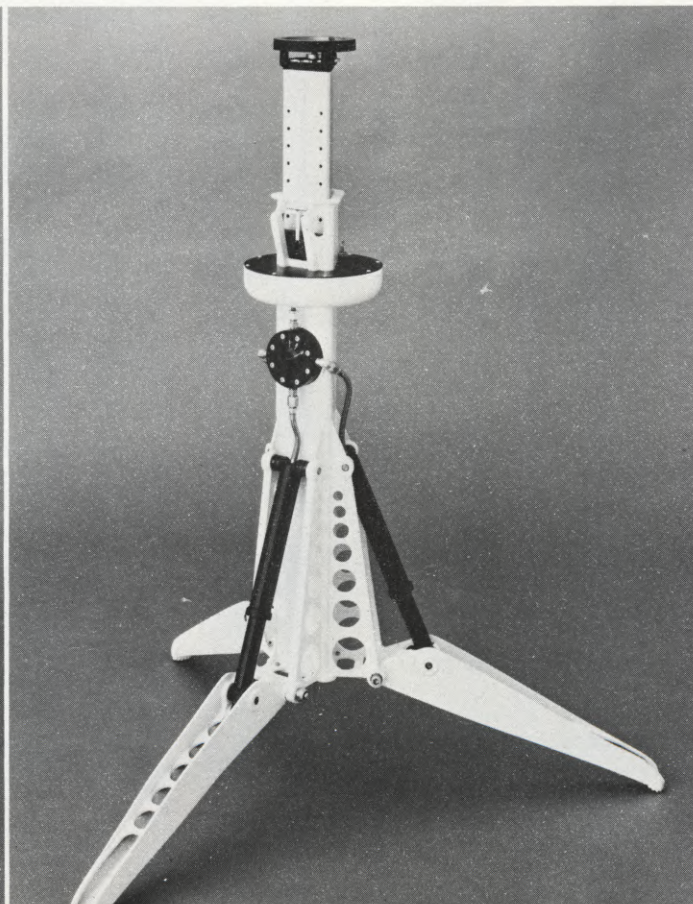
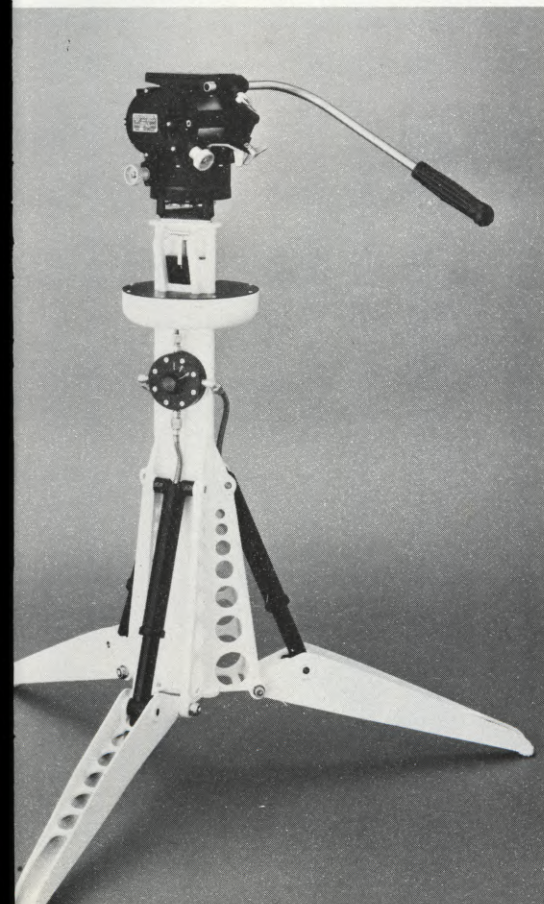
The 101 is 8 times as rigid in torsion and 4 times as rigid laterally as a comparable tripod.

This new device eliminates the need for a ball. It levels hydraulically on any terrain.

The 101 is more convenient to carry, safer and has a greater vertical adjusting range.

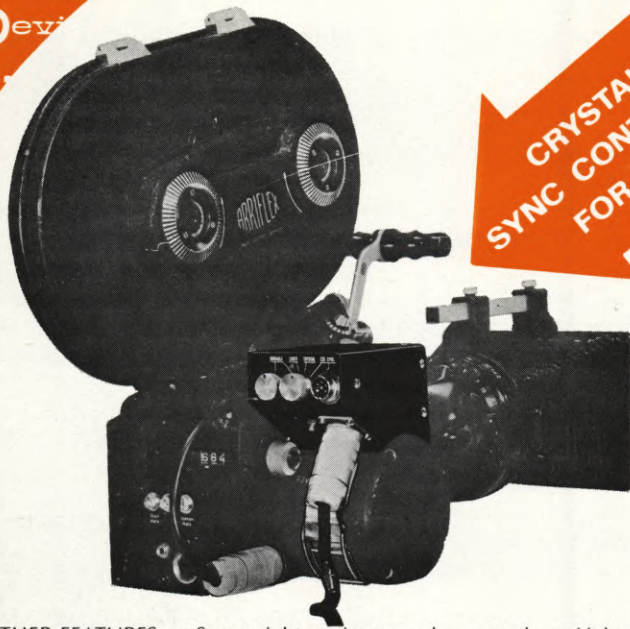
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(LEFT) The O'Connor Hydro-Ped 101, with pan-head mounted. (CENTER) The Hydro-Ped with hydraulic column partially raised. Column can be adjusted from 30-inches height from the floor to 60 inches, and will hold cameras weighing up to 100 pounds. (RIGHT) The Hydro-Ped with legs folded up. The device folds to a mass nine inches in diameter and 30 inches long. It weighs 19 pounds. A smaller and lighter model designed for 16mm cameras is now on the drawing boards.



FREEDOM from SYNC CABLES

Jensen 505 Multisync \$750.



CRYSTAL SYNC CONTROL FOR 16 BL

EXCLUSIVE FEATURES:

- ★ Pre-wired with external connector for radio slate.
- ★ Automatic out-of-crystal-sync safety camera stop.
- ★ External sync input (slave your BL from any pilot source).
- ★ No camera width increase; camera fits in case with unit attached.
- ★ Accuracy better than 1/6 frame per 400' (± 10 ppm) -4°F to $+140^{\circ}\text{F}$.
- ★ All controls safely recessed.
- ★ Bypass Button allows for immediate mode change back to camera governor-controlled speed.

OTHER FEATURES: • Snaps right on in seconds; no tools. • Lightest and most compact unit: 12 ozs. and streamlined. • Variable speed range 8-50fps. • Hundreds field-proved in Europe for over two years. • Immediate delivery. • Unconditional 1 year guarantee.

OTHER JENSEN SUPER PRODUCTS

Synchronizer-Resolver 205S

Time Sync Generator 550 for all recorders

Camera Speed Indicator 516

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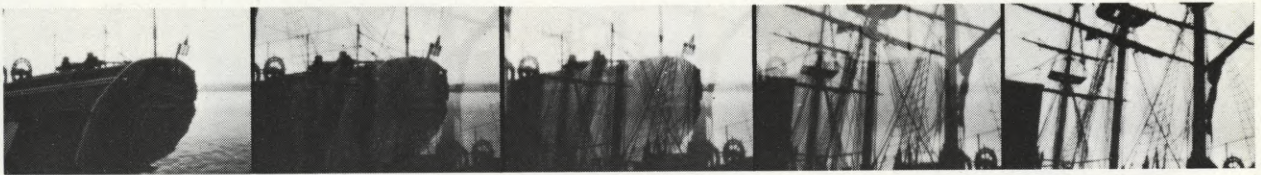
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YOUR CINE
EQUIPMENT
SOURCE

FOR
SOUTHEASTERN U.S.A.

CARIBBEAN
BAHAMAS

Only two cameras in the world can make all these statements. The new Nizo S-560 and S-800.



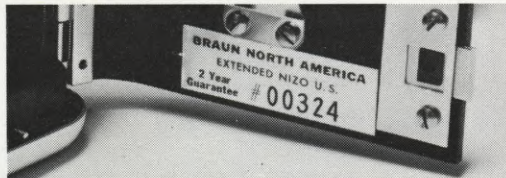
- 1** *Automatic built-in lap dissolve.* This simple pushbutton device automatically fades one scene into another. A Nizo first.



- 2** *Variable speed shutter.* It allows you to compensate for extreme light conditions. A Nizo first.



- 3** *Built-in intervalometer.* This lets you make time-lapse films without any attachments. Nizo introduced it in 1968.

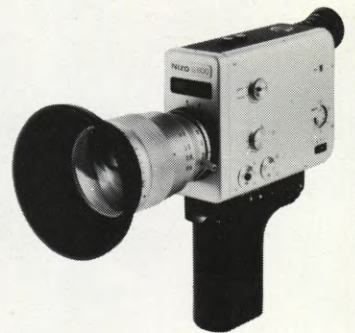


A silver label with the guarantee number is affixed to the inside of the film chamber door. It is your assurance that the camera has undergone a 100% inspection according to an 18 point standard and carries the extended U.S. 2 year guarantee.

- 4** *Extended U.S. 2 year guarantee.** A recent Nizo innovation is an extended U.S. 2 year guarantee on these two cameras.



The new Nizo cameras embody the latest in technological advances — most of these capabilities were developed by Nizo and most remain Nizo exclusives. And when you've had an opportunity to examine the other features of the new Nizo S-560 and S-800, you'll see we haven't stinted anywhere else. To mention only a few: incomparable Schneider Variogon zoom optics with as much as an 11.4 to 1 zoom ratio; automatic metering that works all the way up to ASA 160; built-in sound synch pulse generator; and instant slow motion. The suggested retail price is \$595 for the S-560 and \$695 for the S-800. See your dealer for a complete demonstration. He'll have some statements of his own to make concerning the amazing new Nizo movie cameras.



BRAUN Nizo

The engineering flawless. The design dominated by logic.

* If within two years from date of purchase a Nizo S-560 or S-800 movie camera fails to function because of defects in materials or workmanship and the unit is returned to an authorized service center, Braun North America will, at its option, repair or replace the unit without additional charge. Batteries, misuse or tampering excluded.

For information write: Braun North America, A Division of The Gillette Company, Dept. 86, 55 Cambridge Parkway, Cambridge, Mass. 02142.
In Canada: Braun Electric Canada, Ltd., Mississauga, Ontario.

Price is subject to change without notice.

NEW LIGHTING FROM RDS



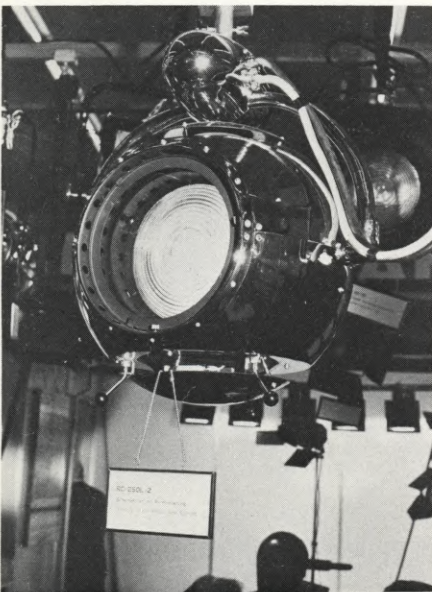
The "Lighting Wizard of Japan" arrives at *Photokina* bearing a new bag of electrical wonders to make motion picture and television production more efficient

Ever since it collaborated with Colortran in the design of the original Academy Award-winning quartz-iodine (tungsten-halogen) lights, which ultimately revolutionized motion picture and television lighting throughout the world, the RYUDENSHA CO. of Japan has been blazing a trail in the design and manufacture of ever-more-advanced lighting units and accessories.

The company's latest group of developments in this area was prominently displayed at *PHOTOKINA 1972* and received much attention from visitors to the World Fair of Photography.

Sometimes referred to, and with good reason, as "The Lighting Wizard of Japan" (see *American Cinematographer*, June 1970), RYUDENSHA's affable President, Mr. Keiichiro Ryu, was on hand with a large staff to demonstrate his company's latest wares at *PHOTOKINA*.

Following are brief descriptions of some of the more outstanding items:



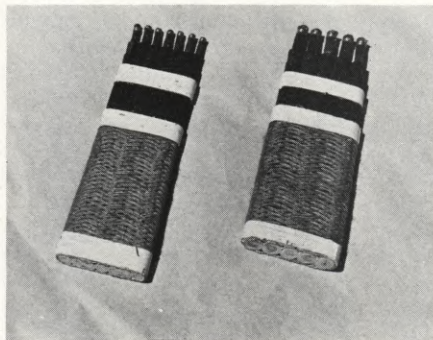
RDS REMOTE-CONTROL SPOTLIGHT

RDS, which designed and installed the extremely complex automated lighting set-up for the many studios of the giant NHK television station in Tokyo, has now come up with a futuristic-looking remote-controlled 2KW spotlight for

television and motion picture studio use.

The handsome chromed globular unit features full remote control of the panning, tilting and focusing operations, all from a single control. While motorized lighting units have been built by several other manufacturers and are now being widely used, particularly in Europe and the Far East, the unique characteristic of the RDS light is that the controlling motors are built into the luminaire itself—not added on externally, as with other motorized lights. Conventional lights with motorized functions, have tacked the motors on to automate what was originally a set of manual operations, but they are clumsy in appearance and heavy in weight. The RDS remote-control lights, with their integral motors are, by comparison, much more "streamlined" in appearance and considerably lighter in weight. They are also much more silent in operation.

All of this is the result of a complete redesign of the basic luminaire, making it also possible to be cooled much more efficiently.



RDS FLAT FLEXIBLE CABLES

One of the foremost problems in motion picture or television studio lighting is designing cable configurations that will roll up evenly and not become tangled when the battens or luminaires move up or down. Conventional round cables not only tend to become hung up on barndoors and nicked by them, but require a rather large space alongside the batten to accommodate their random bulk.

The first flat cables designed to solve

these problems originated in Germany and were placed inside canvas covers which were then sewed up. While this system has worked reasonably well, it is fairly clumsy and expensive.

Using the original flat cable idea as a starting point, RDS encloses the multiple conductors of its cables in a sheathing of tough woven linen, which not only fits much more snugly than the canvas, but is much less expensive.

RDS cables are available with five, six or seven conductors, as required.

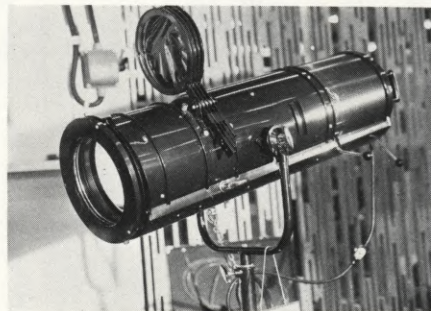


RDS MINI-LIGHTING KIT

Last year RDS introduced a very small, light-weight location lighting kit containing three lights with complete accessories, all fitting into a sturdy metal case.

Now it introduces an even smaller and lighter-weight mini-kit with two lights. The new kit contains two very miniaturized, professional-type key lighting luminaires that put out a great deal of light for their size. In addition, there are two very light-weight, but sturdy stands, two barndoor units, two cables and two scrims.

All of this packs into a very compact, rugged metal case and the entire portable ensemble weighs only 10 pounds.



RDS FOLLOW SPOTLIGHT

The RDS 1KW Tungsten-halogen Follow Spotlight series has been de-

Continued on page 1440

INDUSTRY ACTIVITIES

SMPTE PROGRESS MEDAL AWARD TO NORWOOD L. SIMMONS

Norwood L. Simmons, Assistant Vice-President of Eastman Kodak Company, has been awarded the Progress Medal of the Society of Motion Picture and Television Engineers for 1972. The Award was presented at the Annual Awards Presentation of the Society at the Century Plaza Hotel, Los Angeles, Monday, October 23.

The premier award of the Society, the Progress Medal, is given to Dr. Norwood L. Simmons in recognition of the energies and talents he has contributed during his professional career to the advancement and growth of the motion picture industry, first by means of his own technical efforts and inventions, and later by his leadership and guidance in bringing to fruition the technical contributions of many groups and individuals in engineering developments through the years.

Norwood L. Simmons joined the Eastman Kodak Company in 1937. From 1941 to 1966 he was with the Motion Picture Film Department's West Coast Division in Hollywood, becoming General Manager in 1964. In 1966 he moved to Rochester and in 1969 became General Manager of the Motion Picture and Education Markets Division and an Assistant Vice-President of the Company.

A native of North Carolina, Dr. Simmons graduated from the University of North Carolina in 1933 and obtained an M.S. degree from the California Institute of Technology in 1935 and a Ph.D. in 1937 from the University of North Carolina. He is Past President and Fellow Member of the SMPTE, a Fellow of the British Kinematograph, Sound & Television Society, and a member of the Society of Photographic Scientists and Engineers and the Academy of Television Arts and Sciences.

Dr. Simmons is an Associate Member of the American Society of Cinematographers and of the Academy of Motion Picture Arts and Sciences. He holds seven patents relating to motion picture films and has had numerous articles published in professional journals.

In his early years Dr. Simmons originated a new antihalation layer for motion picture films, which is still in general use. During the period of the introduction of Eastman Color Films, Dr. Simmons played an important role in the technical liaison involved in solving the problems encountered in the use of these films and in the definition of

their characterization.

The Progress Medal Award was presented by SMPTE President Wilton R. Holm at a ceremony following the Get-Together Luncheon that opened the Society's 112th Technical Conference at the Century Plaza Hotel.

JACK L. WARNER DONATES \$250,000 FOR AFI THEATRE AT THE KENNEDY CENTER

Jack L. Warner, one of America's most celebrated motion picture producers, has given \$250,000 to The American Film Institute to build AFI's film theatre at The John F. Kennedy Center for the Performing Arts. His gift will enable AFI to complete construction by early next year. The theatre will serve as a national showcase for outstanding motion pictures.

George Stevens, Jr., the Director of The American Film Institute, said: "This gift from one of the most renowned leaders of the movie industry is the decisive gesture in bringing film to the place of prominence it deserves in the cultural life of the nation's capital."

Roger L. Stevens, Chairman of the Board of the Kennedy Center, expressed the appreciation of the Kennedy Center Trustees for Mr. Warner's generosity: "We have been anxious to have motion pictures become a part of the daily life of the Kennedy Center and Mr. Warner's gift will make this a reality by early next year."

Mr. Warner is co-founder of Warner Bros. Pictures and a prominent philanthropist. He pioneered sound pictures with *THE JAZZ SINGER* (1927) and the studio, under his aegis, received Academy Awards for such films as *THE LIFE OF EMILE ZOLA* (1937), *CASABLANCA* (1943), and *MY FAIR LADY* (1964), the latter personally produced by Jack L. Warner. Among many honors accorded Mr. Warner are the Irving G. Thalberg Memorial Award (1958) and the Order of the British Empire. In 1965, he wrote an autobiography, *My First Hundred Years in Hollywood*. For more than twenty years a sign at Warner Bros. was prominently displayed, quoting a *New York Times* editorial about the Warner Bros. operation: "Combining good citizenship with good picture making."

On November 12, the Kennedy Center and The American Film Institute will join in honoring Mr. Warner at a gala performance of his new film

"1776", which will be the first motion picture premiere at the Kennedy Center. The "1776" showing is a special benefit to raise funds to support operations and programming of AFI's theatre. The film is a Columbia Pictures release.

The new film theatre will be a 224-seat structure designed by the architectural firm of Hardy Holzman Pfeiffer Associates in New York. It will combine the finest motion picture projection and viewing capabilities. The American Film Institute will program daytime showings of special short films for Kennedy Center visitors, children's programs in the afternoon and a "cinematheque" repertory of classic and contemporary films from around the world each night.

The Film Institute will offer interim film programming at the Kennedy Center Eisenhower Theater beginning November 19, during construction of its new facility.

The American Film Institute established a national film repertory program in January 1970 to bring classic films and the work of contemporary filmmakers to public attention. First at the National Gallery of Art and then at L'Enfant Plaza in Washington, the AFI Theatre presented more than 1,000 films and was hailed by *Saturday Review* critic Arthur Knight for providing "some of the most imaginative and provocative programming in the United States . . . It has become a unique and indispensable part of Washington's cultural life."

THE AMERICAN FILM INSTITUTE AND LITTLE, BROWN TO PUBLISH A SERIES OF FILM BOOKS

George Stevens, Jr., Director of The American Film Institute, John F. Kennedy Center for the Performing Arts in Washington, and Arthur H. Thornhill, Jr., President of Little, Brown and Company of Boston, have announced that Little, Brown and Company of Boston will be the publisher of a series of books on film including Institute-sponsored projects and outstanding manuscripts which receive the endorsement of The American Film Institute.

Each of the books in the series will bear the designation, AN AMERICAN FILM INSTITUTE BOOK. The first two titles of this series will be *ON DIRECTING* and *FILMMAKERS ON FILMMAKING*.

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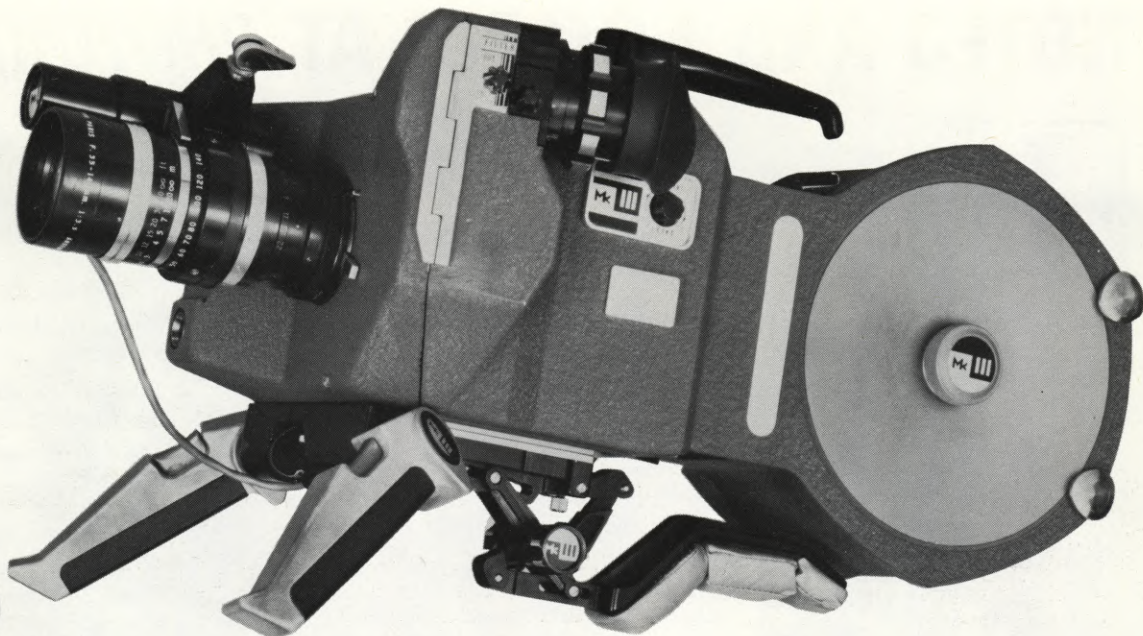
ADVENTURES IN LIFE

AN
ALAN LANDSBURG
PRODUCTION
for NBC Television

IN ASSOCIATION WITH
ENCYCLOPAEDIA
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The Professional Pioneer

Announcing the New **MITCHELL MARK III**

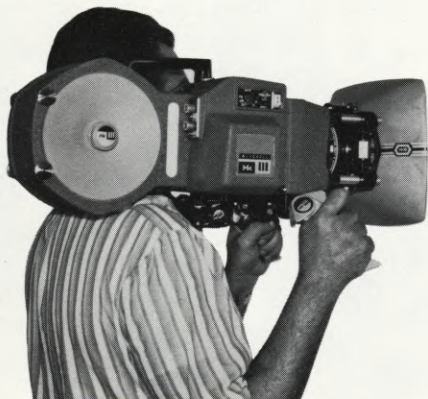
Mitchell Bridges a Half-Century of Motion Picture Camera Generations

The finest compact and mobile 35mm professional camera available in this new era of cinematography.

Since 1921, the Mitchell camera has been the "standard of quality" throughout the world. The new Mark III is another landmark in Mitchell's pioneering tradition. Light in weight but heavy in performance, the Mark III has the distinctive features perfected by its predecessor PLUS . . .

LIGHT WEIGHT — Magnesium castings are used to keep the weight, less lens, to 23 pounds without sacrificing Mitchell quality.

SILENT — New design techniques insure the camera output sound level is in the 30 DB range.



FILM TRANSPORT — The world-famed Mitchell MK II intermittent movement proven for all types of operations from animation to high speed. Dual register pins with dual pulldown claw assure absolute film control. 170 degree adjustable shutter.

CRYSTAL REGULATED MOTOR — Accuracy is plus or minus 15 parts per million at all speeds for precision sound synchronization. Variable speeds of 8 - 16 - 24 - 25 - 28 - 32 FPS. Automatic out-of-sync light is visible in viewing system. Automatic slate system fogs film in gate and sends signal to tape recorder.

REFLEX VIEWING — Rotary mirror, brilliant F2.0-6.2 power viewing. Generous 6mm diameter exit pupil provides maximum eye comfort.

MAGAZINE — Co-axial, 400 and 1000-foot capacities.

When it is time to design a better professional camera, Mitchell will produce another new Award Winner.

For further details contact your nearest Mitchell representative.

Australia	Birns & Sawyer (Aust.) Pty. Ltd.
Hong Kong	Salon Films, Ltd.
India	Cental Camera Company Private, Ltd.
Japan	NAC Incorporated

MITCHELL
CAMERA CORPORATION



666 W. Harvard Street, Glendale, California 91209 (213) 245-1085

NOTED AND NOTABLE AT *PHOTOKINA 1972*



A veritable *smörgåsbord* of new and advanced equipment for the professional film-maker stimulates a great degree of interest at the World Fair of Photography



STEENBECK ST 1900 16mm EDITOR



STEENBECK ST 1400 35mm EDITOR



STEENBECK TECHNISCOPÉ EDITOR

NEW EDITING CONSOLES FROM STEENBECK

ST 1900 6-plate 16mm MOTION PICTURE EDITOR

Operation arrangements

Track 1: Picture; Picture with compos-

ite optical sound; Picture with magnetic striped sound

Track 2: Magnetic sound centre track

Track 3: Magnetic sound centre track

On request: Track 2 and 3: Magnetic sound edge track; Track 3: separate optical sound

Points of interest

Brilliant and sharp picture.

A picture up to 80 cm in width may be projected onto a separate screen in darkened room with picture projection enclosure removed.

The 12-watt amplifier, solid state plug-in modules, reproduces excellent sound.

Speaker is mounted on a swivel arm for convenience.

Slide attenuators control the volume.

Picture and sound can be decoupled from interlock individually, tracks can then be moved forward by hand.

Supplied with film plates for core wound film material up to 350 m (or approximately 1200 feet) and flanges for metal reels. Four film plates with 600 m capacity on request.

Take up and supply of film occurs with greatest care.

The editor is equipped with one counter, normally min./sec. 25 f.p.s. Counters for meter/decimeter, and footage on request.

One plastic dust cover is included in the basis price.

All mechanical and electrical components are easily accessible through hinged table top.

Pedestal assemblies of console may be unscrewed, editor is then portable for transport in average motor-car.

On special request: Picture scanning via TV camera.

Drive: see motor drive system ST 3204

Film speed: 25 f.p.s. On request: 24 f.p.s.; When ordering ST 62: 24 and 25 f.p.s.

Power requirements: 110/125/220/240 V 50-60 Hz maximum power consumption 800 watts.

ST 1400 AND ST 1400C 4-plate 35mm MOTION PICTURE EDITOR

Operation arrangements

ST 1400

Track 1: Picture; Picture with composite optical sound.

Track 2: Magnetic sound 17,5/35mm; 1 channel

On request:

Track 1: Picture with composite magnetic sound; 1 or 4 channels

Track 2: Magnetic sound 35mm; 3 or 4 channels; Optical sound

ST 1400 C

Track 1: Picture (standard); Picture (CinemaScope); All other tracks: see ST 1400

Points of interest

Brilliant and sharp picture.

A picture up to 80 cm in width may be projected onto a separate screen in darkened room with picture projection enclosure removed.

The 6-watt amplifier, solid state plug-in modules, reproduces excellent sound.

Speaker is mounted on a swivel arm for convenience.

Slide attenuators control the volume.

Picture and sound can be decoupled from interlock individually, tracks can then be moved forward by hand.

Supplied with film plates for core wound film material up to 350 m (or approximately 1200 feet) and flanges for metal reels. Film plates with 600 m capacity on request.

Take-up and supply of film occurs with greatest care.

One plastic dust cover is included in the basis price.

All mechanical and electrical components are easily accessible through hinged table top.

Pedestal assemblies of console may be unscrewed, editor is then portable for transport in average motor-car.

On special request: Picture scanning via TV camera.

Drive: see motor drive system ST 3204

Film speed: 25 f.p.s. On request: 24 f.p.s.; When ordering ST 62: 24 and 25 f.p.s.

Power requirements: 110/125/220/240 V 50-60 Hz maximum power consumption 800 watts.

NEW WIDE-SCREEN FORMAT EDITING CONSOLES

Also shown at PHOTOKINA 1972, and stimulating considerable interest, were new Steenbeck Editing Consoles to accommodate the 35mm Techniscope and Super-16 extended-frame formats.

For additional information, contact: W. STEENBECK & CO., 27/29 Hammer Steindamm, 2 Hamburg 76, West Germany.



COOKE VAROTAL VARIABLE FOCUS MOTION PICTURE LENS FEATURED BY RANK PRECISION INDUSTRIES

This variable-focus lens is the first designed by Rank Taylor Hobson as a standard 35mm motion picture format lens. The new lens was exhibited on the new Arriflex BL-35 camera, as well as on the new Mitchell studio camera and on a Mitchell BNC camera, as modified by Cinema Research.

A feature of the Cooke Varotal is its inclusion of major focal lengths in one lens. Its basic 5:1 ratio is 20mm to 100mm and makes the new lens extremely versatile for use in a wide variety of shooting conditions.

The Cooke Varotal's minimum object focal distance of only 13.4 inches between subject and front of the lens, 18 inches from film plane, combined with its wider angular field of view (58° horizontally), makes it ideal for shooting on smaller sets, close-in situations and locations, according to Rank.

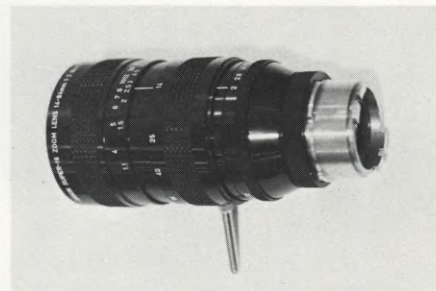
Use of the Cooke Varotal makes possible tighter shooting schedules by eliminating set-up time—necessary when up to seven interchangeable lenses were used by film studios for similar production requirements.

Resolution and definition of the Cooke Varotal are reported to be higher than those of any previously available motion picture variable focus (zoom) lenses. This means that for the first time excellent definition is possible from such a lens for virtually every film studio picture need.

An 80% light transmission factor gives the lens a T stop of T/3.1 (F/2.8). This feature was achieved through use

of a special high-quality glass, combined with new types of anti-reflective coatings on all glass surfaces. The front element is fixed. Therefore, filters and matte boxes can be mounted in contact with the front of the lens. The lens is available in manual, servo or motorized versions and can be used in extreme conditions of temperature and humidity.

Additional information on the Cooke Varotal may be obtained by writing Rank Precision Industries, Inc., 411 East Jarvis Avenue, Des Plaines, Illinois 60018.

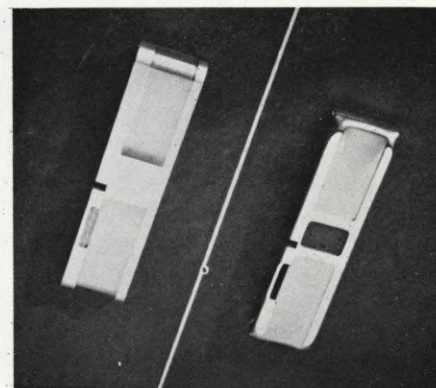


NEW CANON SUPER-16 ZOOM LENS

Canon introduces the first zoom lens especially designed to cover the Super-16 format. It is a 14mm-to-84mm, T/2.0 vari-focal lens comprised of 12 components, 16 elements. Its overall length (from front vertex to focal plane) is 171.51mm.

With a 6x zoom range, the new lens is of the Canon Mechanical Compensation type.

Canon designed this new lens to accommodate the growing interest in Super-16 as a feature format. Up until now, few, if any, of the commercially available 16mm zoom lenses have proved suitable for covering the field afforded by the expanded frame area of Super-16.



RICHTER FULL-SUPPORT PRESSURE PLATE FOR 16mm

ARRIFLEX CAMERAS

With the objective of fully realizing the potential sharpness of today's high-acutance films, Ken Richter has designed a new Full Support Pressure Plate to replace the factory pressure plate available on 16mm Arriflex cameras.

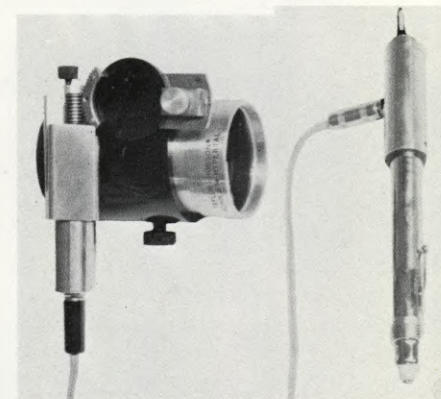
Earlier Arri pressure plates were designed to avoid halation from reflection of bright image areas off the pressure plate when using old style film without anti-halation back coating. With this type of pressure plate the film is unsupported except by the edges during exposure.

The new, Full Support Pressure Plate holds film flat over entire image area during exposure. The hard chrome finish has a special 10 mu semipolish to avoid adhesion of slick film base material.

Full Support means a stable focal plane and thus sharper images.

For 150 line per mm. resolution, the focal plane of film must be held within .01 mm. Even flat steel, the same thickness as film, will sag more than this, so flexible plastic film base must have full overall support at moment of exposure to register maximum sharpness of good lenses on the new high acutance films.

For further information, contact: Richter Cine Equipment, Essex, New York, U.S.A. 12936.



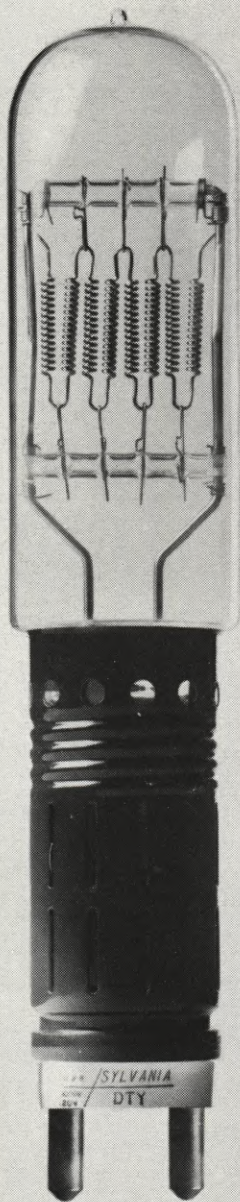
TELE-FOCUS DEVICES FOR CONTROLLING PROJECTION SHARPNESS

THE MAGIC WAND

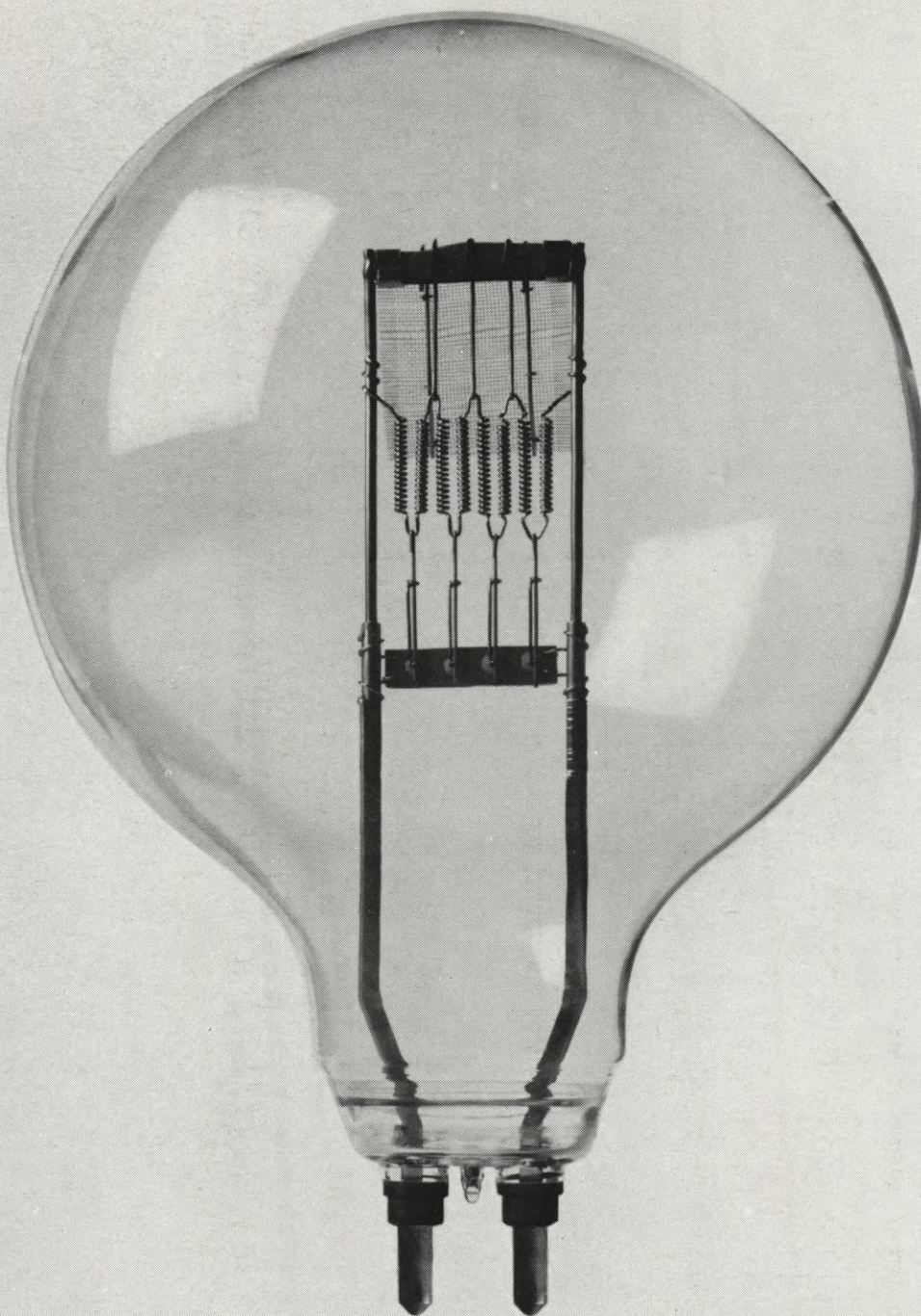
Self-contained, battery, powered remote control unit permits critical focus of cine film projectors from position close to screen. Unit uses no current except when actually changing lens position.

THE RADIO LINK PROPORTIONAL REMOTE FOCUS SYSTEM

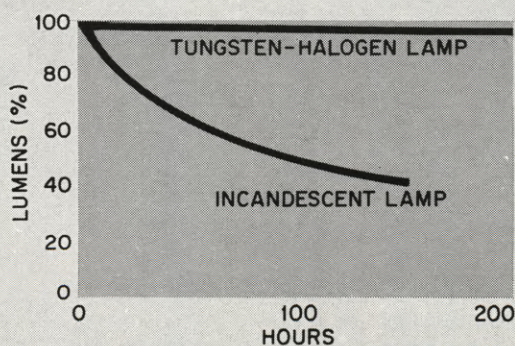
Continued on Page 1442



10 KW TUNGSTEN-HALOGEN LAMP.



10 KW INCANDESCENT LAMP.



WE'VE CONQUERED THE DROOP.

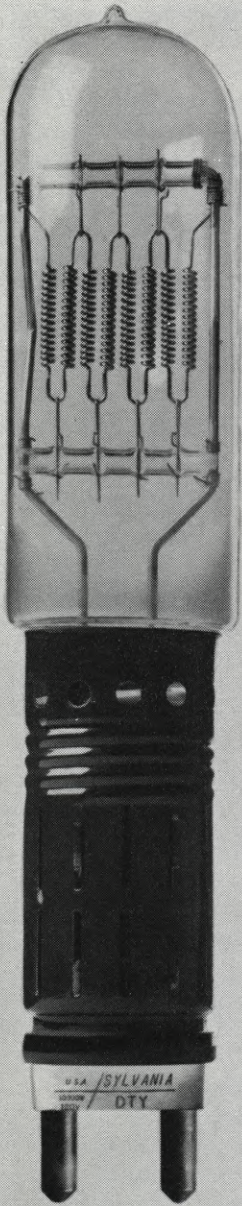
If you've ever watched those big, fat incandescents deteriorate, you know what a big, fat pain-in-the-neck that is. Their lumen output sinks and their color temperature drops, as the graph shows.

Now Sylvania tungsten-halogen lamps have come to the rescue.

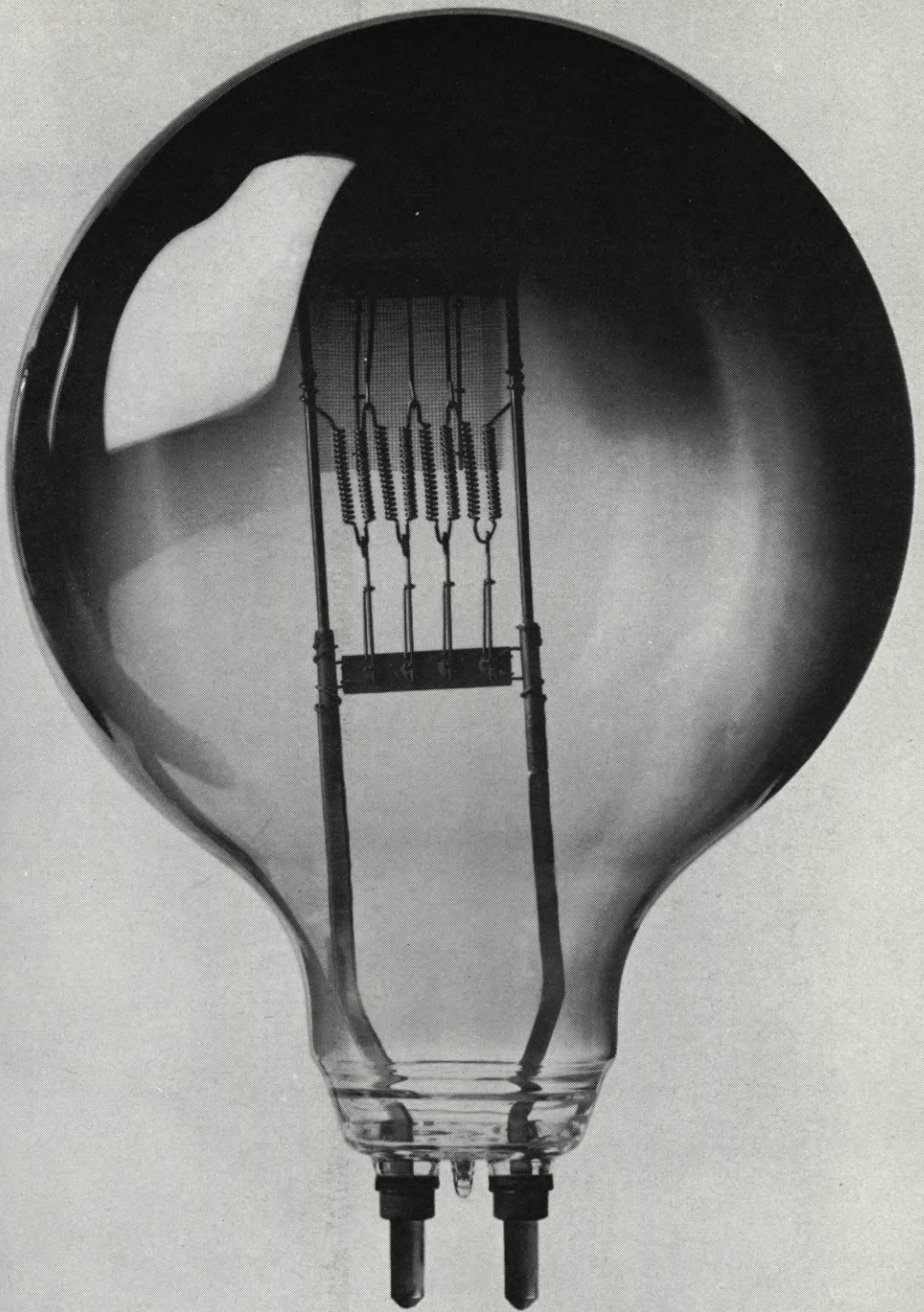
They don't blacken with age, so light output and color temperature don't go into a slump.

That means you don't have to keep

70 HOURS LATER.



10 KW TUNGSTEN-HALOGEN LAMP.



10 KW INCANDESCENT LAMP.

fiddling with the studio lights or camera settings. You get constant color rendition on color film and save money on print correction.

Tungsten-halogen lamps outlast the incandescents 2-to-1. (Or even 3-to-1, since you may have to throw away the blackened lamps before they conk out.)

Then there's size. Why should anyone want big, heavy glass balloons when he can have nice, slim little

lamps that are easy to handle and store?

We've developed two complete lines of Sylvania tungsten-halogen lamps.

The first is a line of direct replacements. These lamps fit into the big, old sockets vacated by the big, fat incandescents.

The second is a line of even smaller tungsten-halogen lamps that you can use to replace our replacements once

you've gotten rid of the old sockets and fixtures. They fit into entirely new, smaller, more efficient fixtures.

Ask us about both our lines. Right away.

Before another 70 hours go by.

We'll be glad to send you an illustrated brochure on each line. For your copies, write: Sylvania Lighting Center, Danvers, Mass. 01923.

GTE SYLVANIA

THE X. UNIATEC CONGRESS IN EAST BERLIN

Film and TV technicians from many countries have a rare opportunity to meet and discuss equipment, techniques and other matters pertinent to production in their industries

The X. Congress of the *Union Internationale des Associations Techniques Cinematographiques (UNIATEC)*, which met in East Berlin recently was interesting in that it brought together several hundred engineers and technical delegates who rarely have a chance to meet and exchange ideas. Those representing Eastern European and Southeast Asian countries, for example, are not often encountered at an SMPTE Conference and, as a result, technicians living in the Western nations have little first-hand knowledge of their motion picture and television techniques, equipment and attitudes toward production.

It was truly an international conference—so much so, in fact, that all of the papers presented were given instant simultaneous translation into English, Russian, French and German by a corps of hard-working interpreters shut up in soundproof booths at the rear of the conference hall. Each attendee had checked out to him a miniature transistorized receiver on which he could select his choice of language. Even so, it must sometimes have been rough going for the representatives of such countries as North Korea, Czechoslovakia, Poland, North Vietnam, Cuba, Rumania, Hungary and Bulgaria, unless—as may be assumed—they were all bi-lingual in one of the translated languages offered.

There were only two Americans present at the UNIATEC Congress: Technical Consultant Milton Forman and *American Cinematographer* Editor Herb Lightman, and they were very considerately provided with their own per-

sonal German-English interpreter who bridged the communications gap beautifully.

In the evening of the first day's program, an official welcoming cocktail party, given by the Congress President, Prof. Dr. A Wilkening, was held at East Berlin's towering Interhotel Stadt Berlin, where many of the delegates to the Conference were quartered. The Scientific-Technical Advisory Council of the German Democratic Republic Film Industry joined, as official hosts, in welcoming visitors from the various countries represented.

On the following evening the delegates were further welcomed at a lavish dinner reception organized by VEB Fotochemisches Kombinat Wolfen Film Industries.

Visitors to the Conference were given an opportunity to make field trips to the State Film Archives of the GDR, the DEFA Film Copying Works and the DEFA Feature Film Studio. DEFA occupies the former facilities of UFA, the vast studio complex that was the center of the German film industry prior to World War II.

An extra-curricular high-point of the Conference was the invitational premiere of the "Utopian" DEFA film, "EOLOMEA". Though it certainly posed no threat to "2001: A SPACE ODYSSEY", the science-fiction feature, photographed in 70mm and a rather pastel ORWO-Color, included some interesting miniatures and special effects. The premiere was held in the beautiful modern International Film Theatre and

stars and technicians who worked on the film were on hand to accept the applause of the audience.

About 50 of the visitors to the Congress were invited to attend an "intimate" dinner party, presented in a private dining room of the beautiful Cecilienhof Palace in nearby Potsdam. The Palace, former residence of the German Crown Prince and his wife (after whom it is named), was later the site of the Potsdam Conference, where representatives of the Allied powers met to decide the fate of post-war Germany. The main hall where Churchill (later replaced by Atlee), Stalin and Truman conferred about the famous round table, has been left intact, together with the anterooms used by the various delegations as their headquarters during the Potsdam Conference.

After the dinner held in this historic palace, an informal discussion was held relative to the present state-of-the-art of the motion picture and television industries. Several of those attending were asked to express their sentiments on the subject.

U.S.A. delegate Milton Forman, aided by a perspiring interpreter, sounded off boldly by criticizing those assembled for being "too polite" to each other in their analysis of the problems currently facing the film industry internationally. He added that only by being most brutally candid with each other could we hope to solve these mutual problems on a world-wide scale.

Herb Lightman, when called upon, pointed out that motion picture technology can no longer be regarded realistically as an aloof entity—an end in itself. He added that the artistic quality and economic health of the industry are inextricably bound up with the new technology, which now and in the future must be evaluated with these pragmatic goals in mind.

On the final evening of the Conference, following the premiere of "EOLOMEA", all members of the X. UNIATEC Congress were invited to a closing reception and buffet hosted by the GDR Minister of Culture, Herr Klaus Gysi. The affair was staged in the Yellow Hall of the "Kongresshalle" at the Alexanderplatz and included the presentation of awards of the VIII

Delegates from all over the world meet to hear papers in the Conference Hall of East Berlin's Interhotel Stadt Berlin, headquarters for the UNIATEC X. Congress. Simultaneous translations of the papers were made available in English, French, German and Russian, with each man present provided with a transistorized receiver to hear the language of his choice.



International Technical Film Competition.

During the course of the Conference, many interesting presentations were made, but the one which obviously most impressed those attending was a demonstration of Vidtronic tape-to-film transfers, presented by L.B. Happé, of Technicolor (Great Britain).

Following is a list of speakers and the subjects they covered during the course of the Conference:

PAPERS PROGRAM OF THE X. UNIATEC CONGRESS

(NOTE: In case of multiple authors of a paper, the name of the lecturer has been italicized.)

B. N. KONOPLEV, USSR

Sowpolykadr—a new cinematographic system in the USSR

W. R. HOLM, USA (Delivered by MILTON FORMAN)

A systems approach to motion picture production

W. KLEINDIENST, GDR

An approach for a general criterion of picture quality

F. PILÁT, CSSR (Czechoslovakia)

The means for animation techniques in Czechoslovakia

C. BAUDSON, J. M. BRUN, J. DALLET, D. ISABELLE, M. THERON, France

Animation of spatial form by electronic computer (with demonstration)

J. ALLEN and E. STETTER, Great Britain

The production of wide-range, low-distortion optical sound-tracks utilizing the Dolby noise reduction system (with demonstration)

J. SLÁDEK and J. STRUSKA, CSSR (Czechoslovakia)

Approximating of the Preisach-diagram: means of improving electro-acoustic parameters of magnetic sound recording materials

W. HOEG and K. WAGNER, GDR

Aspects of stereophonic sound transmission in television programmes

A. HERMAN and H. RZECZKOWSKA, PR Poland

Fundamental properties of magnetic tape influencing frequency response

A. KACHEROVICH, USSR

A new method of calculating auditoriums of high seating capacity

V. NAUMBURGER, GDR

The artificial generation of voice and its possibilities of application (with demonstration)

G. FOERSTER, Austria

Picture recording with VCR-system (with demonstration)

G. TAUS, CSRR (Czechoslovakia)

New possibilities of using television in education

W. R. HOLM, USA (Delivered by MILTON FORMAN)

New audio-visual technologies being developed by the Motion Picture and TV Research Center, Hollywood

D. CRAVEN, Great Britain

The changing role of the television news agency in contributing to world television news coverage and distribution

A. LEHR, GDR

The influence of physiological-optical conditions on stereo-cinematography

M. FORMAN, USA

A new 35mm studio camera

M. BAPTISTE, France

Limits and technological possibilities for cinematographic use of the 16mm film gauge

L. B. HAPPÉ, Great Britain

Demonstration of colour cinema films made using the Vidtronic technique

H. PIETRZOK, GDR

Problems of long-time storage of colour film materials destined for cinematography

I. M. FRIDMAN and G. I. BELORUSSEZ, USSR

Technical problems of preserving works of film art and film documentaries for the future

E. H. A. E. ZWANEVELD, Netherlands
Motion picture laboratory work-flow and control

L. B. HAPPÉ, Great Britain

Automatic replenishment for multiple processing machines

J. RISTOW and J. NEUMEYER, GDR

Friction and wear of cinema films:

measurement, analysis and practical importance

W. DYBCZYNSKI, PR Poland

Measurements of film shrinkage

J. WEISFLOG and J. TAMM, GDR

NC 3—a new negative colour film material

R. DESPREZ, C. DOSTES, K. FERRIER and H. FREISZ, France

A new negative film with high resolving-power for photographic sound recording

E. H. A. E. ZWANEVELD, Netherlands
Water pollution and economy by motion picture laboratories

E. KRIETSCH and M. BIEDERMANN, GDR

On the microstructure of gelatine and the qualities of films deriving from it

NGUYEN-AN-VINH, DR Vietnam

The dynamic critical space frequency for the sensation of sharpness in cinematographic pictures

W.-D. SENDE, GDR

Applied printing tests for television purposes carried out with ORWOCOLOR positive film

J. MAERKER and H.-R. POHLENZ, GDR

Qualities of colour rendering of films at higher densities and subjective determination of permissible tolerances

K. BERGT, GDR

Sensitometric judgment of colour films for television purposes

G. BODEN, GDR

Aspects of possible improvement of speech transmission in films

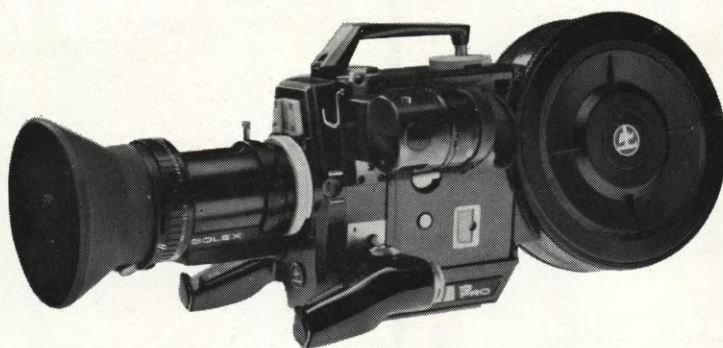
G. ZIMMERMANN, GDR

Importance of dialogue audibility in modern film and means of influencing it

A. J. KUPERMAN and L. G. TARASENKO, USSR

Continual double-row reeling of a film loop

cut along dotted line



How much do you want to know about BOLEX 16 PRO?

I'd like to know more about:

THE MAGAZINE

- Coaxial for 400' reels or cores.
- Compact light and inexpensive
- Sprocketless design for quick loading
- Footage counters for each chamber
- Rear-mounted for optimum mobility

FILM THREADING

- Fully automatically in 3 seconds
- Fully automatic film take-up in 400' magazine
- Signal light tells when camera is ready to shoot
- Light signals when empty
- Built-in cutter for removing partially exposed film

MOTOR DRIVE

- Crystal controlled for sync sound filming
- One electronically controlled motor for all filming needs
- Variable speeds 16 to 50 fps; 16-100 fps models available
- Forward and reverse
- Single frame filming
- Instant start and stop—no blank frames between scenes

SOUND

- Double system at 24 or 25 fps
- Super quiet—no blimp needed
- Wireless synch sound shooting with accuracy ± 1 frame per 1,000 feet
- Automatic slating lamp
- Single system sound model available

FILMING AUTOMATION

- Fully automatic exposure control
- Variable speed power zooming
- Variable speed power focusing
- All controls built into handgrips
- Manual over-rides on all controls
- Remote control possible for all functions

EXPOSURE CONTROL

- Automatic, through-the-lens
- Manual over-ride
- Film speeds of 12 to 1600 ASA
- Meter coupled to camera speed control
- f-number visible in viewfinder
- Audible signal when insufficient light

LENSES

- Wide range of zoom lenses
- Extreme wide angle lens
- Rugged bayonet mount
- Lens controls coupled to servo motor
- Silent operation of powered lens controls
- Shock-absorbing rubber lens shade

VIEWFINDER

- Practically flickerless mirror shutter reflex viewing
- Camera stops without mirror blackout
- Possibility of right or left-eye viewing
- 20X magnification
- Instant change from ground glass to clear glass
- TV and 16mm frame markings
- Can be rotated 45, 90, and 180 degrees
- Indicates f-stops
- Remote viewing possibility

FILM TRANSPORT

- Very low pressure required at pressure plate
- High-precision single tip claw transports and registers film
- Superb picture steadiness better than 0.1%

POWER PACK

- 12V rechargeable battery
- Plug-in electronic modules
- Plug-in crystal synch controls
- Outlets for connecting tape recorder, time lapse units and other accessories
- Choice of powerbelt or powerpack
- Signal light on camera shows condition of battery
- All of the above

BOLEX 16 PRO

If, in addition to information, you'd like a demonstration of the Bolex 16 PRO, write Pailard Incorporated, 1900 Lower Road, Linden, New Jersey 07036. We'll notify you when we'll be in your neighborhood.

NAME _____

AFFILIATION _____

STREET _____

CITY _____ STATE _____ ZIP _____

For countries outside the U.S.A., write Bolex International S.A., 1450 Ste. Croix, Switzerland

cut along dotted line



When split-seconds count... you either get it, or you don't!

That's the challenge all cinematographers face.

And that's why sports and documentation pros are turning to the 16mm *actionmaster/500* . . . not only to get it — but to get it all; pros such as Bob Bagley, Dave Marks, John Jay, Dick Borden, Ron Eveslage and many others.

The *actionmaster/500* operates at 24 and 500 frames per second with five other speeds in between. It lets you pre-set any two speeds and instantly switch between the two whenever you wish. Other unique features are interchangeable ground glasses that let you instantly change to the format you require at any given time; and continuous reflex viewing with image always correct — in two-axis 360° rotation. *No other camera can provide all these features in one package!*

Its 200', 400' and 1200' daylight-loading magazines, with built-in pin-registered movements, can be interchanged in just a few seconds!

Accessories include the famous Apex add-on automatic exposure control, variable shutter from 7½° to 160°, power zoom, portable power pack, carrying case, etc.

Actionmaster/500, manufactured by Photo-Sonics, Inc., is a direct by-product of their 36-year record of exceeding the most rigid requirements for cine and high-speed photography.

For complete information about the *actionmaster/500* write Instrumentation Marketing Corp., exclusive distributors, 820 South Mariposa Street, Dept. A, Burbank, California 91506; or phone (213) 849-6251.



ACTIONMASTER / **500**
the one the pros use

If you're thinking SENNHEISER, think Camera Mart.



The Mikroport System.

Mikroport Transmitter SK 1007/1

A 'High Band' wireless microphone system that affords a reliable radio link between microphone and recorder or sound reinforcement amplifier.

The sound quality meets the highest professional standards. The unique high output power of the transmitter in the VHF frequency range above 150 MHz allows an operation distance of at least 500 feet without interference.

A commercial VHF communication receiver has been modified by Sennheiser Electronic Corp. (N.Y.) and specially matched to the characteristics of the transmitter Model SK 1007/1. This receiver is available as Model R 1011. Fully tuneable operation between 148 and 178 MHz a fixed channel with crystal control can be selected. One crystal is supplied with the unit, a second fixed channel may be added by ordering another optional crystal.

Sennheiser MKH 815 Transistorized Condenser Microphone

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



Sennheiser MD 214 Lavalier Microphone

Provides natural voice quality. Reduces interference of rustle caused by rubbing of housing and cable against clothes. Rectangular design reduces microphone rolling from side to side on the wearer's chest. Pressure-operated moving coil microphone with omnidirectional characteristics. Cable removes easily in case of damage.

Sennheiser MKH 415 Transistorized Condenser Microphone

A combination of a pressure gradient receiver microphone and an interference microphone.

Cardioid directional pattern at low and medium frequencies. Close-talking effects are relatively small. Particularly suited for use by soloists, and its unusual length of 10" makes it also very desirable for reporters.

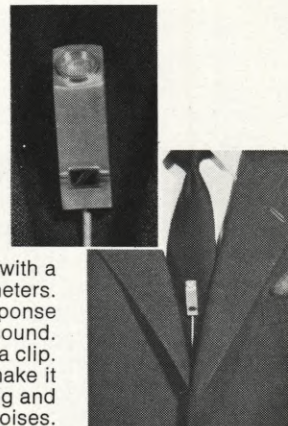


Sennheiser MK 12 Condenser Lavalier Microphone

A small high quality microphone with a membrane diameter of only 6 millimeters.

Smooth, resonance-free response provides a clear and natural sound.

Fastened to clothes by a clip. Omnidirectional characteristics make it largely insensitive to handling and rubbing noises.



For complete prices and details on these and other Sennheiser microphones write or phone:



THE CAMERA MART INC.
456 W. 55th ST., NEW YORK, N. Y. 10019 • (212) 757-6977
RENTALS ○ SALES ○ SERVICE

FASTEST HANDLING SINGLE SYSTEM SOUND CAMERA IN THE WORLD.

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112th SMPTE TECHNICAL CONFERENCE

Held October 22-27 at the Century Plaza Hotel in Los Angeles, the 112th SMPTE Technical Conference and Equipment Exhibit was one of the most comprehensive and interesting programs presented by the Society for some time. It covered a wide spectrum of film and television subjects, with emphasis on practical application, rather than purely theoretical engineering information.

Subject topics for the various sessions (several of which ran concurrently) included: *LABORATORY PRACTICES, PHOTO-INSTRUMENTATION, SOUND RECORDING AND REPRODUCTION, TELEVISION SYSTEMS, SPECIAL INTEREST PAPERS AND PHOTSENSITIVE MATERIALS, MOTION-PICTURE TAKING SYSTEMS, THEATER PRESENTATION PRACTICES, SPECIAL INTEREST PAPERS (FILM AND TAPE), and COMMUNICATION SATELLITES AND CABLE TELEVISION.*

The Conference was kicked off on Monday, October 23 at a Get-Together Luncheon and Awards Presentation, the Guest Speakers at which included Jack. L. Warner, Frank Capra and Roy B. White, President, NATO.

The first event of special interest to motion picture production people was a panel discussion on *The Flexibility of Motion Picture Film*. It was preceded by the following papers: *A Short History of Eastman Color Film Stocks*, Roderick T. Ryan, Eastman Kodak Co.; *Applications for Film the Manufacturer Did Not Intend*, Sidney P. Solow, Consolidated Film Industries; *Improvisation in the Small Motion Picture Laboratory*, Clive Tobin, Alpha-Cine Laboratory; and *The Shrinking of Film Format and Equipment*, William Newbern, Media Design Center.

The panel discussion that followed concerned itself mainly with the evolving technology within the motion picture industry and the proliferation of usage of the smaller film formats: Super-8, 16mm and Super-16.

Of greatest interest to film-makers, quite understandably, was the session devoted to *MOTION PICTURE TAKING SYSTEMS*, and it included the following papers: *The AMPTP Electro-Explosive Safety System*, Frank P. Clark and Peter Vlahos, AMPTP Research Center; *High-pressure Xenon Lamp*

Safety—A Case History, Frank P. Clark, AMPTP Research Center, and Richard B. Glickman, Consulting Engineer; *Super-16—The State of the Art*, Herb A. Lightman, Editor, *American Cinematographer*; *The Director Looks At Motion Picture and Television Technology*, Marc Daniels, Director of Motion Picture and Television Films; *New Technology in Film-making—A Systems Approach*, Edmund M. DiGiulio, Cinema Products; *Decision-Making in Camera Design*, Roger W. Seymour-Lee, J.A. Maurer, Inc.; *Exposure Control in Modern Cinematography*, Mehrdad Azarami, University of Southern California, Dept. of Cinema; *The Snorkel Camera System for Motion Picture and Television Production*, N. Paul Kennworthy, Jr., Kennworthy Snorkel Camera Systems, Inc.

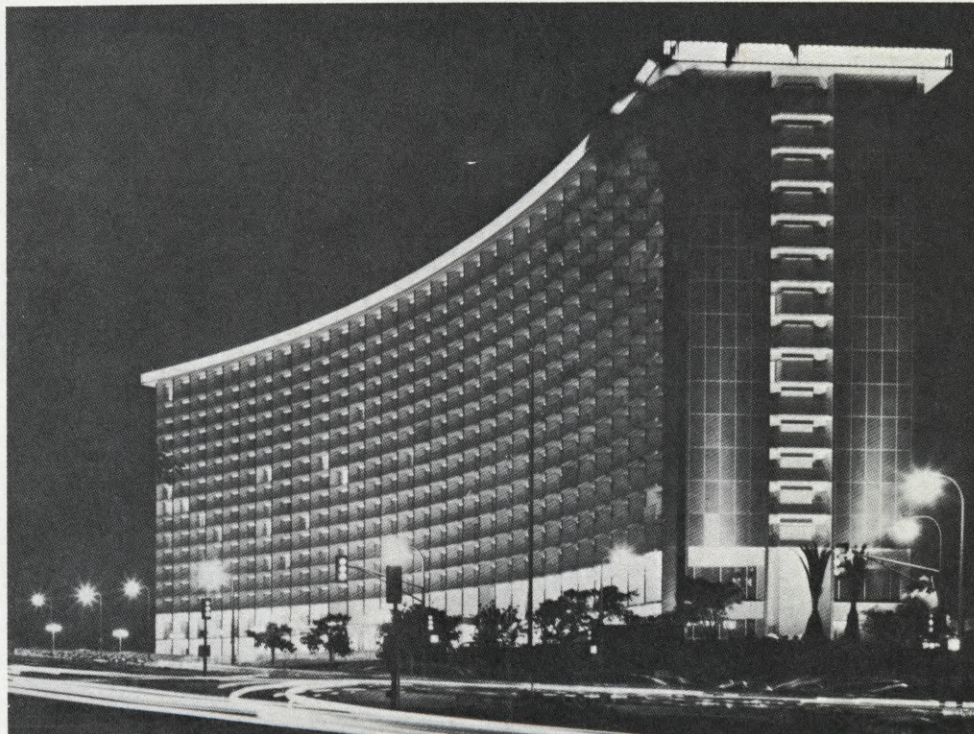
Mr. Lightman's paper on *Super-16—The State of the Art* drew an especially large and interested crowd. It was illustrated by eight minutes of 35mm blow-ups from Super-16 original. These were random clips from release prints of commercial features shot in Super-16 in Sweden. They had been very kindly provided by Swedish camer-

aman Rune Ericson, who is largely responsible for having developed the Super-16 format for commercial purposes. For many in the audience, it was their first viewing of Super-16 blow-ups shown on a large screen.

Further on in the Conference, there were *SPECIAL INTEREST PAPERS (FILM AND TAPE)*, which included: *Existing-Light Concepts in Motion Picture Color Photography*, Donald M. Gorman, Eastman Kodak Co.; *Small Formats*, George Kent, Audio Graphics Films; *Professional Prints for the Professional Super-8 Producer*, Robert A. Colburn, Geo. W. Colburn Laboratory, Inc.; *Film vs. Videotape in Syndication*, John P. Ballinger, Vidistrib; and *Computer-Animated Films and Videotapes*, Patricia R. Lehman, Computer Image Corp.

One of the most striking and practical demonstrations of the Conference was *COLOR IT RIGHT!*, A Special Presentation by Columbia Broadcasting System, which used triple slide projectors to illustrate a very lucid discussion of parameters required in the photogra-
Continued on Page 1437

The Century Plaza Hotel in Los Angeles, site of the 112th SMPTE Technical Conference and Equipment Exhibit. The Conference was one of the best in recent years in terms of presenting papers of practical interest to those engaged in motion picture production. The Equipment Exhibit, mostly featuring items already shown at the recent *PHOTOKINA 1972*, drew sizable crowds.



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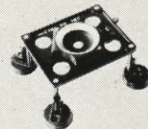
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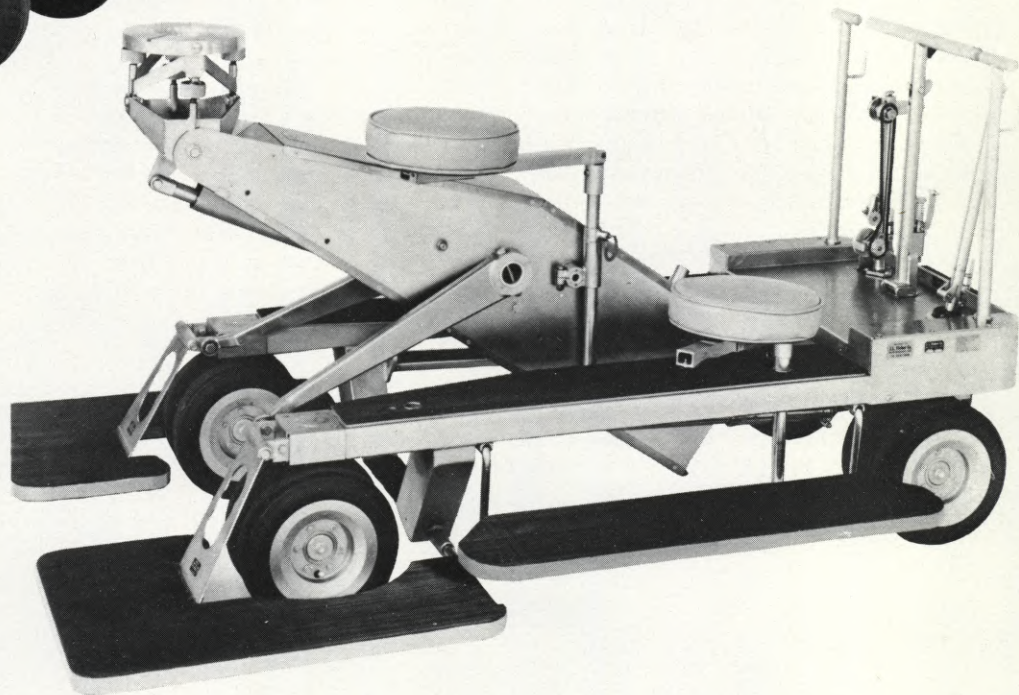


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THE FIFTH ANNUAL ATLANTA INTERNATIONAL FILM FESTIVAL

Extended to 10 days of screenings of the world's best films, seminars, equipment exhibits and nostalgic retrospectives, the Atlanta Festival ends up in the black

Looking back at the Fifth Annual Atlanta International Film Festival—dubbed "10 GREAT DAYS IN AUGUST"—one can sincerely say that it was a resounding success.

All of the ingredients were there: more than 1500 entries from 32 countries, World Premieres of two "big" features, screenings of films representing the entire spectrum of motion picture production, a couple of fine retrospectives, a sprinkling of interesting celebrities, a meaningful equipment exhibit, significant technical seminars, large and enthusiastic crowds at most of the screenings, social activities that were posh without being too much—and, for the first time since its inception, a financial tally that was slightly "in the black". This makes it, we're told, the only self-supporting film festival in the world.

Festival Director J. Hunter Todd and his small but dedicated staff deserve such success, because they all worked very hard to make it happen. And those who backed the Festival with contributions and subscription memberships deserve the satisfaction of knowing that they helped make possible a fine forum for the showing of some outstanding films.

At least 1000 out-of-town guests were graciously hosted during the run of

the Festival and it is estimated that more than 30,000 local Atlantans attended one or more of the screenings.

The Festival kicked off with a World Premiere of the exciting Warner Brothers action-adventure feature, "DELIVERANCE". This was particularly apropos, because the John Boorman-directed film had been shot entirely on location in the wilds of Georgia, just about 100 miles north of Atlanta. Also, the original novel and the screenplay had been written by Georgia's famous resident poet, James Dickey. A sell-out Opening Night crowd enthusiastically applauded the film.

Another fine feature that received its World Premiere at the Festival was Martin Ritt's poignant "SOUNDER", released by 20th Century-Fox. A touching tale of a poor but dignified family of Southern black sharecroppers, "SOUNDER" reached across all barriers of race and class to hit the audience hard in their emotions.

If one were to isolate the difference between this year's Festival and those of past years, the most important distinction would be the emphasis on features rather than on shorts. There were plenty of fine short films shown, but there were more features presented than ever before. Moreover, many of them were "first features" made by young film-

makers. Among the features screened were; "DULCIMA", "PANDORA", "WHO FEARS THE DEVIL", "NO DEPOSIT-NO RETURN", "WHAT DO I TELL THE BOYS AT THE STATION?" (Super-16), "THE HOME-COMING", "FOR SUCH AS WE", TRUMAN CAPOTE'S "THE GLASS HOUSE" (Feature for Television), "MAKE A FACE", "MAN IS NOT A BIRD", "CRUSHPROOF", "IGOROTA", "SLAUGHTER", "WET EARTH, WARM PEOPLE", "COUNT YOUR BULLETS", "IS THERE SEX AFTER DEATH?", "THE ONLY WAY HOME", "THE POLICEMAN" (Academy Award nominee from Israel), "RAINBOW BRIDGE", "BUSHMAN", "10 DAY WONDER", "ARRUZA", "FALSE WEIGHT", "CONFESSOR" and "ARNOLD'S WRECKING COMPANY".

Among the retrospectives, there were screenings of Frank Capra's "MR. SMITH GOES TO WASHINGTON" and "LOST HORIZON" (with Mr. Capra on hand to hold seminars on his films), Otto Preminger's "TELL ME THAT YOU LOVE ME, JUNIE MOON" (with Mr. Preminger also present), Walt Disney's "THE THREE CABALLEROS" and "THE LADY AND THE TRAMP", and a Horror Seminar, featuring clips from several of the outstanding thrillers of the past.

Most of the directors whose films were shown and who were present conducted afternoon seminars and the film students especially (of which there were many) found these particularly interesting.

Budd Boetticher, director of "ARRUZA" fascinated the seminar crowd as he told about his five-year struggle to complete the film and get an eventual release for it. (Joseph E. Levine—AVCO EMBASSY). He certainly shook stars out of some of the young eyes trained upon him, as he recounted the difficulties, financial and otherwise, which he had encountered in making this film.

Peter Watkins, the young firebrand director of last year's award-winning "PUNISHMENT PARK", presented a well-attended seminar on contemporary film-making, during which he also told

The beautiful Symphony Hall of Atlanta's imposing Memorial Arts Center served again as the site of the screenings for the Festival.



it like it is. The idea seemed to be to let the dilettantes in the crowd know in advance what they might be bartering away in blood, sweat and tears, should they choose to sell their souls to the Devil, Cinema.

In contrast, Frank Capra was optimistic, while remaining realistic, about the future of the motion picture, both as an art form and a commercial commodity. His two beautiful films were very enthusiastically received by the young viewers, most of whom hadn't even been born when the pictures were originally released, and his lucid and witty seminar enthralled the overflow crowd which attended.

It would be impossible to comment individually on all of the fine short films that were presented in a myriad of categories, but one deserving of very special mention was the Silver Phoenix Award-winner for Short Subjects, Mike Hoover's absolutely incredible 15-minute paean to mountain-climbing, "SOLO", in which Hoover "starred" and functioned as Director/Cameraman. Produced by David Adams for Pyramid Films release, the picture has some of the most thrilling action and photography ever put on film.

This year there were even more awards than last year, several new categories relating to television film and tape having been added (see Page 1410 for a complete listing of the awards). Screening and preliminary judging had been done over a period of several weeks by a devoted "Committee of 100" Atlanta-based experts in the arts. The final judging and selection of winners in all of the major categories was done by a blue-ribbon jury consisting of critics Liz Smith and Rex Reed, Director Peter Bogdanovich, Stanley Paley of Playboy Productions and *American Cinematographer* Editor Herb Lightman. Incredibly enough, although each of these judges had screened the films and done his judging independently, they agreed unanimously on the winners in every category.

The formal Awards Banquet was held in the Grand Ballroom of the Sheraton Biltmore Hotel, which had served as headquarters for the Festival this year. Not only was the affair a sell-out, but it was actually oversold and the overflow of guests had to be accommodated in a smaller dining room adjacent to the Ballroom.

The Atlanta International Film Festival has, for the last five years, managed to maintain a top standard of quality in film presentations, as well as in its conduct of the affair itself. May it continue to do so for many years to come. ■



Crowds, mostly of young people, packed Symphony Hall for the screenings. Especially well-received were the retrospectives, featuring such oldies but goodies as Frank Capra's "MR. SMITH GOES TO WASHINGTON" and "LOST HORIZON".

Festival Director J. Hunter Todd meets with Georgia Governor Jimmy Carter to outline the scope of this year's Festival. The Governor enthusiastically endorsed the event and encouraged motion picture companies to shoot more pictures in Georgia, just as "DELIVERANCE" was filmed there.





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Golden Phoenix
Best of Festival
 "DELIVERANCE"
 Warner Brothers Studios
 Burbank, California

Silver Phoenix
Best Feature
 "SOUNDER"
 20th Century-Fox
 Hollywood, California

Best TV Film
 "THE GLASS HOUSE"
 Tomorrow Entertainment
 Los Angeles, California

Best Short Subject
 "SOLO"
 Pyramid Films
 Santa Monica, California

Best Documentary
 "MAN'S REACH SHOULD EXCEED
 HIS GRASP"
 N.A.S.A.
 Washington, D.C.

Best Experimental
 "FLOATING OPERA"
 Fritz Rolland
 Atlanta, Georgia

Best TV Commercial
 "ORCHESTRA, ROULETTE, PROP
 SINGER"
 Fire Escape Ltd.
 Chicago, Illinois

Gold Medal
Best Actress
 Cicely Tyson
 "SOUNDER"

Best Actor
 Jon Voight
 "DELIVERANCE"

Best Supporting Actor
 Ned Beatty
 "DELIVERANCE"

Best Supporting Actress
 Oaxchitl
 "COUNT YOUR BULLETS"

Best Director
 John Boorman
 "DELIVERANCE"

Best Editor
 Tom Priestley
 "DELIVERANCE"

Best Cinematographer
 Tony Imi
 "DULCIMA"

Critic's Award
 "COUNT YOUR BULLETS"
 Brut Productions
 New York, New York

Critic's Award
 "ARRUZA"
 Avco Embassy
 Budd Boetticher
 Hollywood, California

Tara Award
Best Film by a Southern Producer
 "LIKE A CROW ON A JUNE BUG"
 Producers Funding Company
 Los Angeles, California

The Golden Dove
Best Film Dealing with World Peace
 "HELLO, I NEED TO TELL YOU
 SOMETHING"
 Cine/Graphique
 AT&T
 New York, New York

Forward Atlanta Award
Best Film by an Atlanta Producer
 "WESTERN"
 Shelton Productions
 Atlanta, Georgia

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 "IS THERE SEX AFTER DEATH"
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 "MAN IS NOT A BIRD"
 Grove Press
 New York, New York

Bronze Medal
First Feature
 "BUSHMAN"
 Bushman & Company

Low Budget Feature
 "NO DEPOSIT-NO RETURN"
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Documentary Feature
 "WET EARTH & WARM PEOPLE"
 National Film Board of Canada
 New York, New York

Foreign Feature
 "IGOROTA"
 Nepumoceno Productions
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Continued on Page 1428

CINEMA WORKSHOP

Continued from Page 1348

SEALED CELLS—The entire case of the cell is hermetically sealed. This means that the battery is virtually maintenance-free. All gases and chemicals are held within the cell. The cells can be fully enclosed in a molded plastic case or metal container. Moreover, they can be operated, charged and stored in any position. (Almost all sealed cells have some provision for venting if an emergency arises. This will be discussed later.)

LONG-LIFE—Sealed nickel-cadmium cells have an extremely long life—whether measured by charge/discharge cycles or years of operation. The exact life of a Ni-Cad battery is greatly dependent on the methods by which it is charged and used. This important relationship will be the topic of a complete Workshop in the future. Under proper conditions one can expect a range of 300 to 1000 charge/discharge cycles. For shallow discharges, the cycle life can exceed 20,000. If the battery is not frequently used, the cells will maintain their ability to cycle over a period of many years.

OVERCHARGE PROTECTION—The sealed Ni-Cad battery is designed to accept an indefinite overcharge at the C/10 rate. For a battery rated at 2 amp-hours, the 'C' rate charge/discharge would be 2 amps. Thus the C/10 rate charge would be 2/10 of an amp, or 200 milliamps. At this rate, the battery will fully charge in 14-16 hours and can withstand an overcharge of weeks, months, or even years, with no permanent damage. In addition, the charging mechanism is very simple.

HIGH RATE CHARGE/DISCHARGE—The Ni-Cad battery is capable of delivering very high rates of discharge, even as high as 30C or 60C. Thus, a 4 amp-hour cell can deliver over 200 amps under certain conditions without any damage to the cell. The Ni-Cad can also take fast charge cycles as short as one hour or even 10 minutes. (Special sophisticated chargers are required for charging Ni-Cads at anything above the C/10 or "overnight" rate. This is why the "overnight" rate remains the most popular and foolproof.)

LONG STORAGE LIFE—Ni-Cads can be stored for several years with no appreciable loss in capacity. After several charge/discharge cycles, the cell will

regain full-rated capacity.

FLAT DISCHARGE CURVE—The Ni-Cad battery will maintain an almost constant voltage as it is discharged. It is only after the cell is over 80% depleted that the voltage will begin to drop. Many other battery types will display a voltage curve that is continually decreasing as the battery is discharged.

These are some of the assets of the Ni-Cad cell and indicate why the industry has chosen this type of battery. Next we will take a closer look at the Ni-Cad and discuss those methods for charging and discharging that will result in the longest life and best performance from this system. ■

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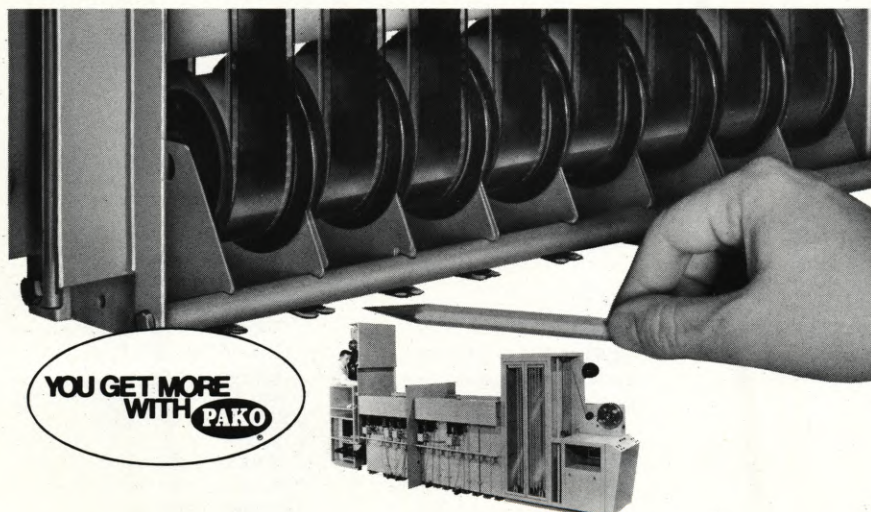
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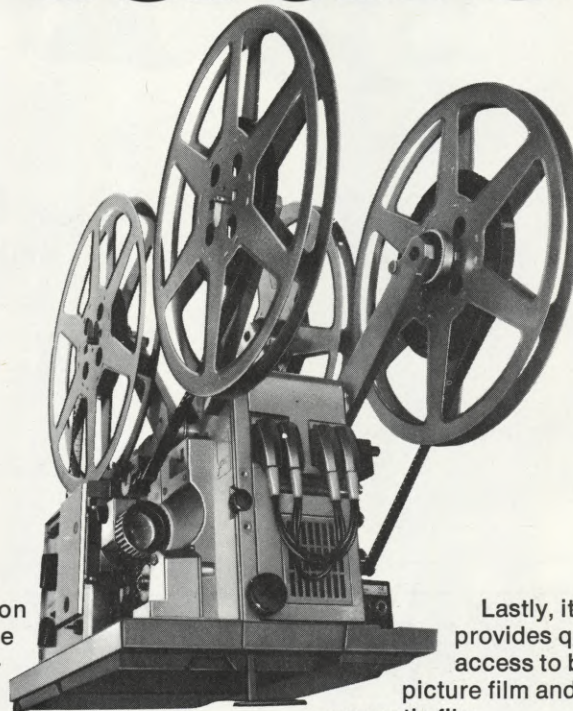
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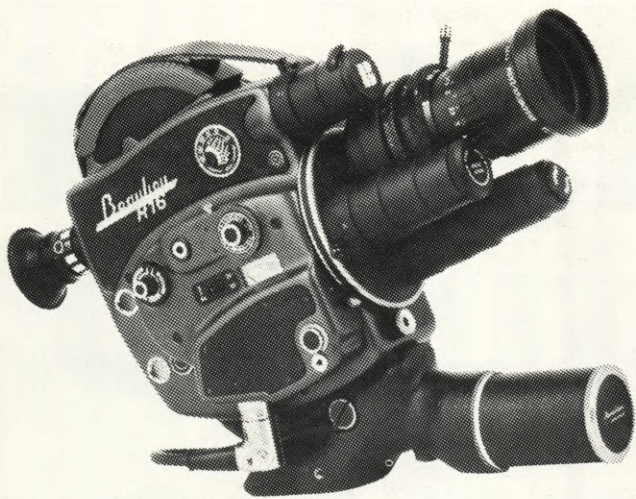
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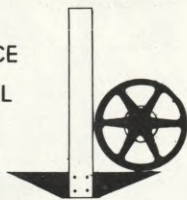
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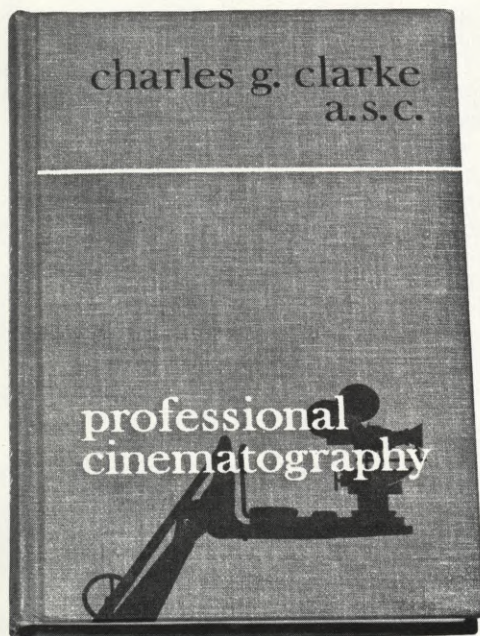
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ABOUT THE AUTHOR: Charles G. Clarke, ASC, a top Director of Photography at 20th Century-Fox for many years, and an ASC member, taught Advanced Cinematography at the University of California at Los Angeles, where he recognized a need for practical professional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

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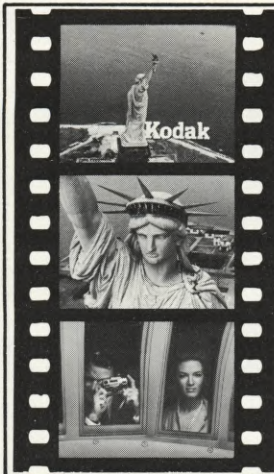
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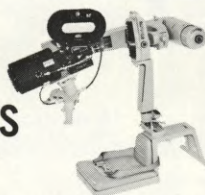
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ARRIFLEX 16SR CAMERA

Continued from Page 1367

AUTOMATIC DIAPHRAGM

For the first time an automatic diaphragm for the taking lens with internal camera release has been realized in a professional motion picture camera. Focusing is therefore always done with wide-open lens iris. Stopping down to the taking aperture occurs just prior to camera switch-on. After stopping the camera the lens iris opens again.

This, in effect extends the convenience of modern single lens reflex cameras to professional cinematography. Built into the ARRIFLEX 16SR is an internal lens release mechanism. The standard zoom taking lens, the 10mm-100mm Vario-Sonnar, has an automatic lens iris, which means that the cameraman always views the scene with the lens wide open, and only at the instant of exposure, when the camera is switched on, does the lens close down to the taking aperture—to reopen when the camera is stopped again.

This means that with the shutter-stopping system, Arriflex has duplicated the function of the instant-return mirror in a modern single lens reflex camera and, with the automated lens iris, has duplicated the automatic diaphragm of the SLR still camera. This combination has made possible the incorporation of an automatic exposure control system into the camera.

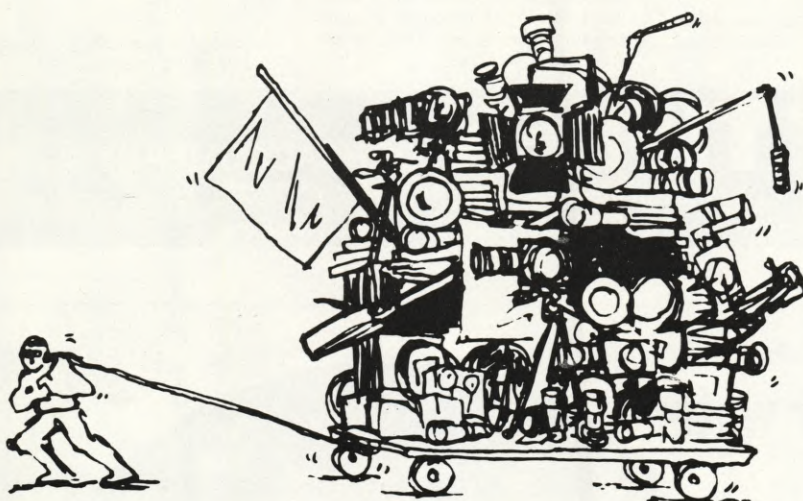
For automatic exposure, the diaphragm ring of the taking lens is brought to position "A" and, in this position, the servo motor, with attached cam, will ride the pin of the lens iris and, by means of a servo loop, created by the measuring cell of the exposure meter and the amount of light passing through the lens, the correct exposure will be adjusted and the cam riding the pin in the lens will activate the lens iris to the correct aperture.

TIME-BASED MARKER SYSTEM

The camera has provision for a time-based editing-marking system. It is equipped for crystal-control cordless synchronization with a tape recorder having its own crystal control, but there is, in the present mode of operation, no possibility for transmitting a start-mark to tape. One has to resort to the old clapper system, which is not ideal for the mobility one seeks in such an operation.

In Europe there have been endeavors to standardize a time-based editing-marking system, but such standardization is not yet available. When it does become available, however, it can be

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incorporated into the 16SR by means of the provision in design already made. Provision has also been made for the incorporation of a video viewfinder system.

SUPER-16 ADAPTATION

Easy adaptation to the Super-16 format has been taken into consideration in the design of the ARRIFLEX 16SR. The optical elements of the taking lens—the mirror shutter and the viewfinder—are all in one plane. For Super-16 conversion, the optical axis of the taking lens and of the viewfinder must be relocated. In the new camera, the front portion of the housing can be removed and a new front casting substituted which has a relocated lens receptacle and relocated viewfinder mounting. It is a simple and straightforward switch of front castings which can be done at any authorized Arriflex service facility. Of course, the aperture plate must be changed, too, but no changes in the magazines are necessary.

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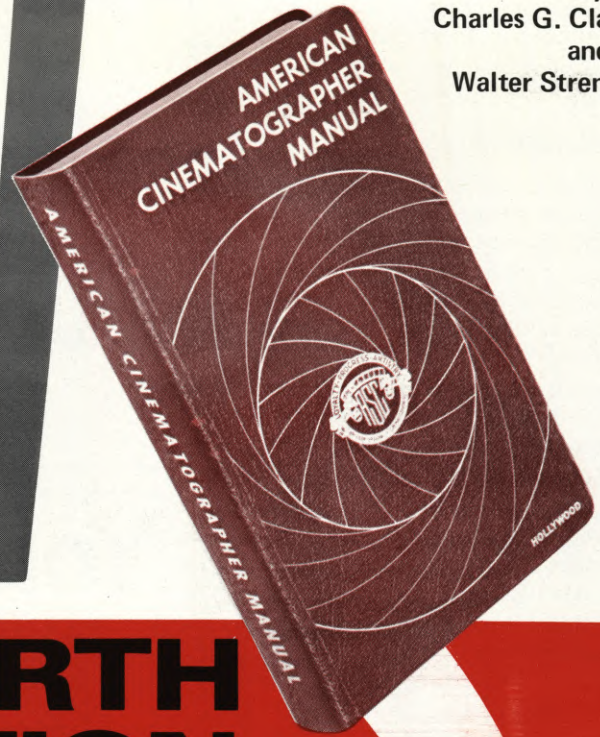
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THE LOWELL TOTA-SYSTEM

Continued from Page 1369

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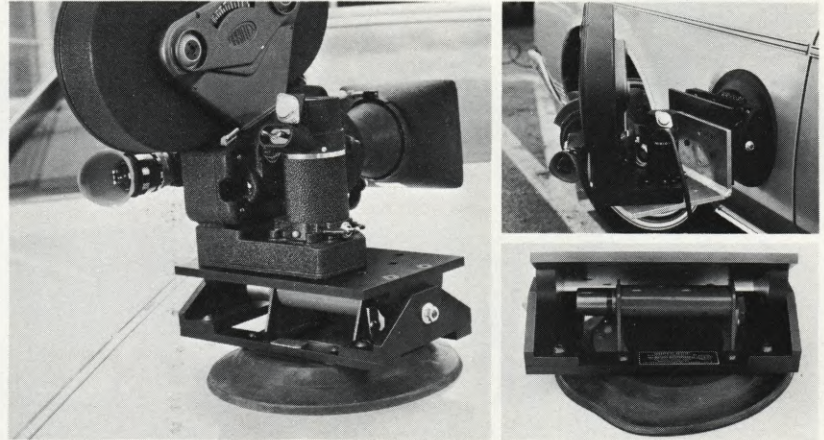
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For further information concerning the Lowel Tota-System, contact: Lowel-Light Photo Engineering, 421 West 54th Street, New York, N.Y. 10019. ■

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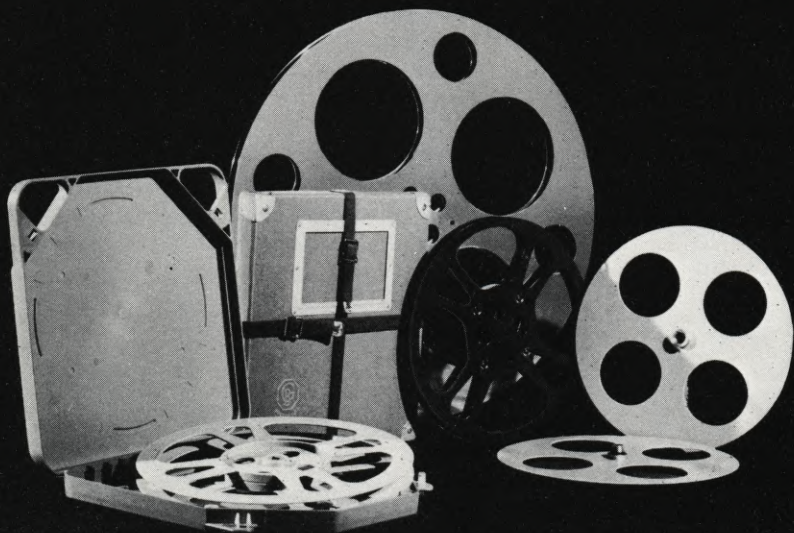
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BOOK REVIEW

"D.W. GRIFFITH'S 'THE BATTLE AT ELDERBUSH GULCH'", by Kemp R. Niver. Edited by Bebe Bergsten. 1972: Locare Research Group, Los Angeles. 65pp prof. illus. \$5.95

This well-illustrated book is the third in a series on the early development of the American motion picture by A.S.C. Associate Member Kemp R. Niver. It examines D.W. Griffith's 1913 two-reel "featurette", THE BATTLE AT ELDERBUSH GULCH, a film that the master director rated as "the third best picture he ever made; the other two being JUDITH OF BETHULIA and THE BIRTH OF A NATION", according to a report in the *Motion Picture News* of June 28, 1915.

D.W. Griffith is generally considered the screen's greatest and most important director. It can be claimed that Griffith is the father of motion picture directorial technique. Griffith perfected virtually all of the cinema devices and innovations we take for granted today: dramatic use of the close-up, parallel action, cross-cutting, the moving camera, back lighting, the fade-out, the panoramic long shot. Most of these techniques appear in THE BATTLE AT ELDERBUSH GULCH, a film that should be closely examined and studied, and this is precisely what the author has done in this book.

THE BATTLE AT ELDERBUSH GULCH is the story of an Indian attack on a western frontier settlement in the 1870's. The film centers on a young couple (Robert Harron and Lillian Gish) who almost lose their baby to the Indians and also on a mischievous young girl (Mae Marsh) and her puppies, inadvertently the cause of the Indian attack in the first place. The girl saves the baby from the Indians and the U.S. cavalry arrives in the nick of time to save the settlement of Elderbush Gulch. All this will be familiar to today's moviegoer or TV fan, and perhaps it was even in 1913-14 when this film was first shown. But Griffith's creative direction and unsurpassed flair for screen story-telling makes it an enthralling picture. And it is no small achievement to re-create the feeling of seeing this picture via the printed page. However, the author has somehow managed to do just that.

He has done this by reproducing virtually every scene in the picture by frame enlargements from the original print, filed in 1913 with the Library of Congress. Each still is supplied with a running commentary by the author ex-

plaining the story progress, as well as the directing technique employed by Griffith.

Mr. Niver explains why *THE BATTLE AT ELDERBUSH GULCH* is an important film as well as a milestone in Griffith's career as a director. It all adds up to an engrossing book—one that will be welcomed by all students of the American motion picture.

GEORGE J. MITCHELL
A.S.C. Associate Member

NEW BEAULIEU 16MM "EURATOM" MEDICAL CAMERA AVAILABLE FROM HERVIC

Hervic Corporation/Cinema Beaulieu very proudly announces the availability of the new Beaulieu 16mm medical camera... the Beaulieu R16B "Euratom" camera.

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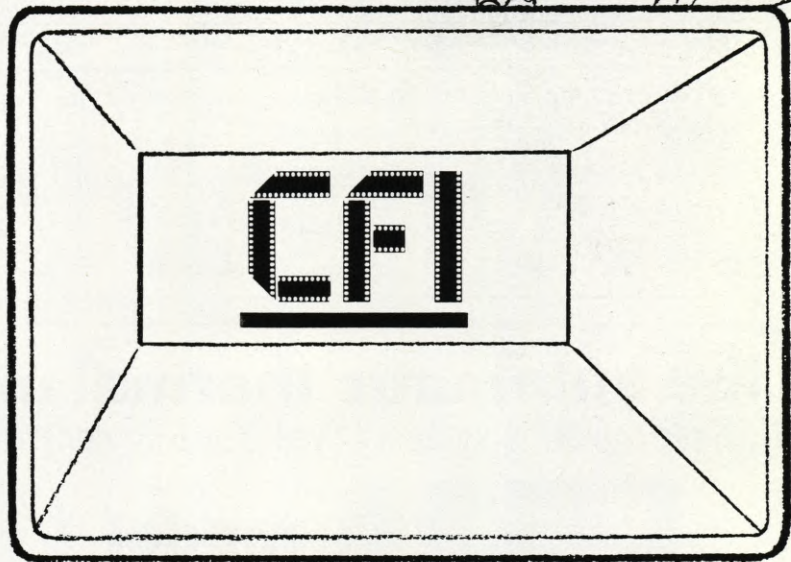
The most unique feature of the Beaulieu "Euratom" 16mm camera is its automatic exposure system which eliminates the need for expensive variable light sources. According to the light intensity measured by the photo electric cell of the camera, the "Euratom" patented variable-density disc rotates to the correct density for exacting exposure. Consequently, if the light level varies continually during the taking of a shot, then the disc itself revolves constantly in either direction so as to maintain a constant flow of light onto the film.

The automatic exposure control system of the Beaulieu "Euratom" 16mm medical camera thus serves two major functions:

- automatic and precise control of the amount of light admitted to the camera to match the shutter speed and aperture,
- and full automation of the exposure so as to relieve the cameraman of any need to measure or adjust the brightness of the subject image.

The price of the new Beaulieu R16B "Euratom" medical camera is \$1,995.00. For further information on this new medical camera write to Hervic Corporation/Cinema Beaulieu, 14225 Ventura Boulevard, Sherman Oaks, California 91403.

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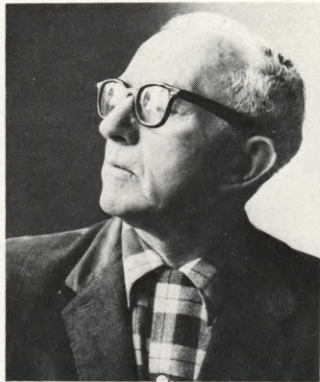
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AÄTON 16mm CAMERA

Continued from Page 1373

performance, since it has no "track record" of use on production in the field. Its designers estimate that production models will be available to the industry early in 1973.

The AÄTON 7 was developed and produced under the direction of the development group which was behind the Eclair ACL: Francois Weulersse, Hugues Vermeille, Robert Leroux, and Jean-Pierre Beauviala, who have recently been joined by Jacques Lecoer (designer of the ACL's internal structure) and Maurice Lavaud (manufacturer of Eclair NPR).

GENERAL TECHNICAL SPECIFICATIONS OF THE AÄTON 7 CAMERA

- Universal lens mount; completely silent; reflex viewing; clip-on coaxial 400 foot magazine.
- Format: Standard 16 - 7.46 X 10.4 mm (0.293" X 0.395"). Super-16 - 7.46 X 12.4 mm (0.293" X 0.484").
- 16 and Super-16 lens mount for Arri-flex, Eclair, Canon, Aäton, and some "C" mount lenses.
- Weight: 12 lbs. without lens.
- Overall size: (14-5/8" X 9-1/8" x 5-7/8") 370 X 230 X 150 mm without lens.
- Temperature range: (0 to 140° F) -20° + 60°C.

OPTICAL VIEWING

- Wide rotating mirror (185° fixed opening) for reflex viewing.
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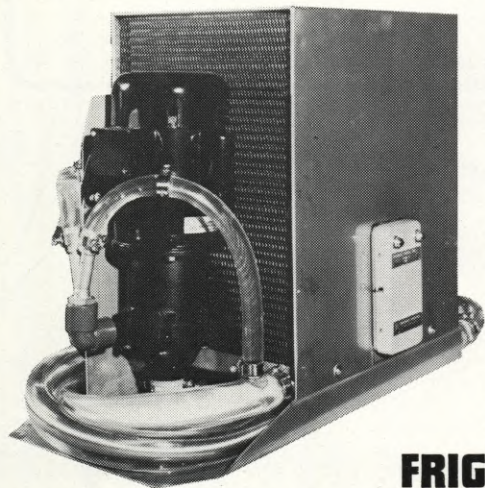
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- The camera's internal structure is specially designed to make easy and accessible both adjustments and sub assembly replacements.

FUTURE DEVELOPMENTS (for delivery in 1973)

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2. Chronometric marking (2).
3. Light measurement:
 - high sensitivity: 1600 ASA at 25 f/s;
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 - use with fast lenses (F 0.95).

For further information, contact:
AÄTON Beauviala, B.P. 31, 38001
Grenoble, FRANCE. ■

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Availability is scheduled to begin on or about April 1, 1973. For more detailed information, please contact Mr. Eric Falkenberg, Technical Executive, Eclair Corporation of America, 73 S. Central Avenue, Valley Stream, New York 11580 (516) 561-6404

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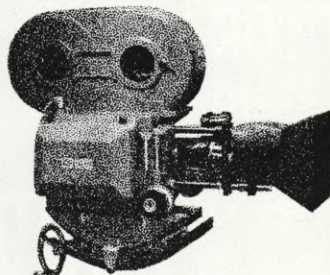
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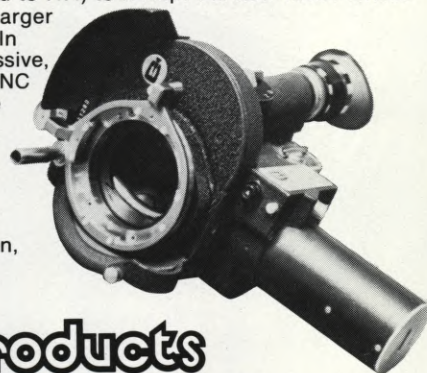


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HELIVISION II MOUNT

Continued from Page 1372

the cameraman can concentrate on his composition with ease.

This newest version of Helivision II employs an important reduction of the head bearing system, thus increasing the headroom in the Bell Jet Ranger and Hughes 500 configuration. Substitution of needle bearings has reduced the friction in the articulation of the head unit to an absolute minimum, so that the camera and the arm can really "float", giving a sort of "weightlessness-in-space" appearance. Pressure of only one gram is enough to float the entire camera-lens system in any direction, yet the camera will remain absolutely stable and without movement or vibration in any given position with no outside influence.

Vibration absorption is complete throughout the range of the zoom objective and Helivision II was shown with its accessory mounting brackets, demonstrating clearly its ability to adapt quickly to small, inexpensive helicopters, as well as big, more expensive ones. Jaeger heavy-duty twist-lock connectors assure the electronic operations of the zoom and focus controls in the shock-mounted handles and, as before, there is the Hedén servo-motor remote focus control unit for the assistant cameraman if a difficult follow-focus is required.

The electronic zoom and focus controls in the handles are now a completely enclosed module which may be easily and quickly replaced with a dummy handle unit. Thus, if the filming to be done only requires a fixed-lens shot, there is a saving of rental fees on the part of the user.

In its Jet Ranger configuration, Helivision II still weighs only 37 kilos, including 35mm Arriflex and 25/250 zoom. The unit shown in the photo is a mount for Bell 47G, the small, economical helicopter with the plastic bubble cabin. Not only is this unit completely mobile through all practical shooting angles through the door area of the machine, but it can also be swung to shoot straight forward through the helicopter's nose. Just three days before the *Photokina* opened, this same unit was shooting a TV commercial on the North Wall of the Eiger, one of the Alpine "killer mountains". When asked how it went, the camera operator blew a kiss into the air and exclaimed, "Prima!"

World main agent for Helivision is Bernard Oresner, 120 Av. de Suffren, 75015 Paris, France and Helivision is being installed in dealerships in the world's major film-making centers. ■

"RED CAGEL STORY"

Continued from Page 1426

camera to be aimed in almost any direction, while the gyro provided stability.

An additional problem was powering the camera's stabilizer. I didn't like the idea of carrying extra batteries that could break loose during the shooting. I decided to power the Kenyon KS6 from the car's electrical system. This, too, presented problems. Stock-cars do not have generators or alternators. They power their electrical systems from the battery only and I didn't want to drain Red's battery any faster than necessary. The thought of his ignition system going dead at one hundred miles an hour was, to say the least, unpleasant.

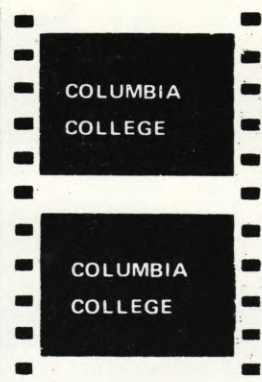
The film opens with Red at work. Glazing is not the most exciting job but Red does it well and has worked for his present employer about fifteen years. Working for the U.S.I.A., as with any client, budgetary requirements must be kept in mind and this limited the amount of time we could spend at any one location. I lit Red's shop with quartz lights, then spent half a day photographing Red at work using an Arri-S for most of the shooting and an Eclair NPR for the sync-sound portions. We photographed Red cutting, checking, buffing, and storing glass from as many angles as we could in order to bring out the interesting aspects of his job, and provide good visuals. The rest of the first day's shooting was spent trying to capture the enthusiasm and spirit of Red and his crew as they worked on his car, preparing it for the next race.

Red is a superb driver, with twenty years of experience and no hesitation to experiment with ways of getting an extra mile or two an hour out of his vehicle. Filming him and his assistants at work provided more challenges. We could not give away any of the speed secrets he had developed over the years. A further restriction was the cramped working space, crowded with Red's assistants (plus tools and automobile accessories) working on his car. They also tended to look directly into the camera from time to time.

The rest of the film was shot at the Speedway. And even with a good deal of planning I knew I would still end up tethered to a seat hanging on to my camera shooting film and trying to forget where I was.

The Speedway is located in a residential area and though it is surrounded on two sides by a soundwall designed to lower the noise, there are strict County

Continued on Page 1441



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FILMING "THE RED CAGEL STORY"

Author finds filming from a speeding race-car a hair-raising, but exhilarating experience, as he films an ordinary tradesman who races as a hobby

By JOHN F. SCHAEFER

Hand-holding a fifteen-pound camera and gyro-stabilizer while being driven around a race track at more than a hundred miles an hour, I began wondering what I was doing there. I was making a film for the United States Information Agency.

As Director of Photography for Audio Visual Specialties, a Washington, D.C. based documentary film production company, I've done many assignments for the United States Information Agency. They have run the full gamut from 2 1/2-minute news clips to the production of 1/2-hour shows. The work has always been interesting. And it has taken me to many locations. None were as interesting or as challenging as the one called "THE RED CAGEL STORY".

The assignment began when U.S.I.A. producer/director George Doloney telephoned to ask if I wanted to bid on a film. I said yes. Next he asked me if I would ride in—and film from—a racing car, during a race. Without much consideration I said, "Sure, what do I have to lose?" After agreeing to bid, I realized that I could lose *everything*—my camera, equipment and, most important, my life. I'm certain if my insurance agent had known what I was up to, he would have protested.

The Director, George Doloney, began work on the film in April, 1972, a month before the shooting began. The idea was to show a grassroots American participating in a typical American activity. What could be more American

than stock-car racing, a form of racing enjoyed mainly in the United States? Feeling that stock-car racing would have word-wide appeal he got in touch with N.A.S.C.A.R., the sanctioning body for stock-car racing. From them he learned two things: the nearest track to Washington was the Beltsville (Md.) Speedway, and there would be only night racing until September—which would create difficulties, as the film would have to be shot before then. At the Beltsville Speedway George met with Jim Parsley, the track promoter, who was very helpful and suggested that the man to work with would be Red Cagel, a stock-car driver and one of the best.

Meeting Red Cagel wasn't encouraging. He had lost a leg at the Charlottesville Motor Speedway ten years earlier when he went up against a wall and a barrier post sliced through his car and left leg. But after talking with Red and Jay Livingston, the owner of the car Red drives, I realized I would be in the hands of a very capable driver.

Both men were receptive to the idea of filming Red as he raced but pointed out that it would cost a nominal amount to modify the car so that I could film from inside it. The Director gave the go-ahead.

Red is a quiet, unassuming man, a glazier by trade. He races as a hobby. On first impression you wouldn't guess he is a champion driver. He has a wife, two children, and spends a good deal of his time working with paraplegics and amputees at military hospitals near

Washington.

The intent of the film was to show Red's life style. The writer had called for the portrayal of Red as a complete man, not just a race driver. We had to be careful that the race wasn't dominant.

As Director of Photography, I decided to shoot from inside the car myself. The specter of filming inside a careening race-car while remaining calm enough to do the job properly began to dominate my thinking.

I had to figure out how to mount a camera inside the car so that interior scenes could be filmed during a race, with as much stability as possible. The only solution was to have a special chair welded into the passenger side of the car. This chair had to be lower than usual because I'm tall (6'3") and I had to have freedom of movement during the race, which meant only a lap-belt could be used in the chair. The camera, an Arri-S, with a Kenyon KS6 gyro-stabilizer attached, had to be suspended inside the car in a way that would permit it to be aimed in any direction.

I solved this problem by running two bungee cables twice around the front and rear roll bars, giving the equivalent strength of four cables. I ran parachute cable from the front to the rear of the camera, which was then hooked to the bungee cords with a custom-made S-hook which allowed the camera to move back and forth freely. The bungee cords provided both support and shock absorption. This arrangement allowed the

Continued on Page 1425

(LEFT) George Doloney, Director of "THE RED CAGEL STORY" lifts his stop-watch to time a scene during filming. (RIGHT) The author, John Schaefer (left) discussing a shot with cameraman Ben Tubb. Three Arriflex S/B cameras were used for hand-held wild shooting during races and an Eclair NPR was used to shoot sync-sound footage.





(LEFT) While assistant holds a portable light, cameraman shoots a scene of mechanic changing a tire inside Red Cagel's workshop. (CENTER) Cameraman films Red's assistants as they swarm over the car, checking it out for the big race to come. (RIGHT) Filming the tricky scene of Red coming to a dead stop directly in front of the camera.



(LEFT) Cameraman George Rosenberg preparing to shoot a scene from the manlift. (CENTER) The manlift made an excellent camera platform, but began to sink and had to be "pumped up" periodically. (RIGHT) Changing cameras in the car. The author had a special chair welded into the passenger side of the car to accommodate his height and facilitate shooting.

(LEFT) Schaefer shooting from Red Cagel's car during a high-speed run. (CENTER) A point-of-view shot from Red's car. Although this race was staged for the cameras, with Red scheduled to win, the drivers got carried away and drove hell-bent-for-leather to beat him. (RIGHT) Cameraman George Rosenberg films crowd and tie-in shots from grandstand.



(LEFT) The author shooting Red during the actual race. Local laws prohibited him from coming along for that ride. (CENTER) Cool cameraman standing in the middle of the track as the cars whiz by him. (RIGHT) Red Cagel himself. U.S.I.A. film depicts life style of an ordinary tradesman who lost a leg in a previous race, but still pursues his extraordinary hobby.



ATLANTA AWARDS

Continued from Page 1411

Documentary Films—Historical

Gold
LORDS OF THE MANOR
Modern Talking Picture Service
New York, New York

Silver
COLONIAL CHRISTMAS AT
WILLIAMSBURG
Prime TV Films
New York, New York

Bronze
YORKTOWN: THE WORLD
TURNED UPSIDE DOWN
Gittelman Film Associates
New York, New York

Documentary Films—Medical and Health

Gold
HAVE A HEART
Tantalus, Inc.
Hollywood, California

Silver
THE SURGEON
Cal Dunn Studios, Inc.
Chicago, Illinois

Bronze
"F" WARD
CTV
Toronto, Ontario, Canada

Documentary Films—Political

Gold
GEORGE McGOVERN BIOGRAPHY
Guggenheim Productions
Washington, D.C.

Silver
THE PUBLIC WILL
Allegro Film Productions
New York, New York

Bronze
THE FIRST BLACK HURRAH
WKYC TV
Cleveland, Ohio

Documentary Films—Public Relations

Gold
PAN AM'S WORLD
Peckham Productions
New York, New York

Silver
A.B. DICK AND THE CHANGING
WORLD
Take Ten, Inc.
Chicago, Illinois

Bronze
AIRBORNE
N.W. Ayer & Sons, Inc.
College Park, Georgia

Documentary Films, Public Service

Gold
THE RINGER
Hearst Metrotone
Washington, D.C.

Silver
BOMBS
Motorola Systems, Inc.
Chicago, Illinois

Bronze
CRUEL AND UNUSUAL
PUNISHMENT
CB Communicators
Pittsburgh, Pennsylvania

Documentary Films, Recruiting

Gold
LOST AND FOUND
Hearst Metrotone
Washington, D.C.

Silver
MAN-SIZED JOB
Avon Productions, Inc.
New York, New York

Bronze
GREEN SCENE THREE
U.S. Army Information Unit
Washington, D.C.

Documentary Films, Religion and Ethics

Gold
WHO SHOULD SURVIVE?
Guggenheim Productions
Washington, D.C.

Silver
AFTER THE FIRST
Franciscan Communication Center
Los Angeles, California

Bronze
REINCARNATION
Moynihan Associates
Milwaukee, Wisconsin

Documentary Films, Safety

Gold
HOT STUFF
National Film Board of Canada
New York, New York

Silver
WINTER WALKING
U.S. Postal Service
Motion Picture Branch
Washington, D.C.

Bronze
AND THEN IT HAPPENED
Seven Oaks/Starbecker
Silver Spring, Maryland

Documentary Films, Sales and Marketing

Gold
THIS ONE BRAND ALONE
D'Arcy MacManus International
St. Louis, Missouri

Silver
PRE-SORTING FIRST CLASS MAIL
Vision Associates
New York, New York
U.S. Postal Service
Washington, D.C.

Bronze
THE PAPER CAPER
Marketing
Fred A. Niles Communications
Chicago, Illinois

Bronze
3M INTERNATIONAL
Sales
Empire Photosound, Inc.
Minneapolis, Minnesota

Documentary Films, Scientific and Research

Gold
PLAYING DICE WITH THE
UNIVERSE
Hobel-Leiterman Productions, Ltd.
Toronto, Ontario, Canada

Silver
OCTOPUS, OCTOPUS
Metromedia Producers Corporation
Los Angeles, California

Bronze
THE UNKNOWN CONTINENT
Leonaris—Film
West Germany

Documentary Films, Social Welfare

Gold
FIFTH STREET
Threshold Films
Hollywood, California

Silver
SOME OF YOUR BEST FRIENDS
U.S.C.
Los Angeles, California

Bronze
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Boston, Massachusetts

Documentary Films, Sports

Gold
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Tomorrow Entertainment
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Silver
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Bronze
THE BOXER
Bob Thurber
Valley Stream, New York

Documentary Films, Travelogue

Gold
ENGLISH SPOKEN HERE
McDonnell Douglas Corporation
Santa Monica, California

Silver
THE EXPERTS
Peckham Productions
New York, New York

Bronze
SOUNDING THE WORLD
Paramount Pictures
Hollywood, California

Short Subjects, Animated

Gold
EVOLUTION
Learning Corporation
New York, New York

Silver
DELICIOUS CATASTROPHE
Films Inc.
Wilmette, Illinois

Bronze
THE THREE ROBBERS
Weston Woods Studios, Inc.
Weston, Connecticut

Short Subjects, Dramatic/Fictional

Gold
FROG STORY
Gidron Productions
Sun Valley, California

Silver
CHARLIE BENSON'S RETURN TO
THE SEA
Victor Nunez
Tallahassee, Florida

Bronze
THE MATTER WITH ME
Monroe-Williams Productions
Miami, Florida
Oxford Films Distributor

Short Subjects, Lead-Ins and Trailers

Gold
THE POSSESSION OF JOEL
DELANEY
Papp Film Services, Inc.
New York, New York

Silver
WELCOME HOME, JOHNNY
BRISTOL
Elinor Bunin Productions
New York, New York

Bronze
N.E.T. OPERA
Computer Image Corporation
New York, New York

Short Subjects, Live Action

Silver
DANSE OF ECSTASY
Group One Film's Ltd.
Scarsdale, New York

Bronze
THE SERPENT'S GIFT
Frank Flynn Productions
Opa-Locka, Florida

Short Subjects, Mixed Media

Gold
DENMARK 43
Learning Corporation
New York, New York

Television Commercials, Animated

Gold
THE STRANGER
Snazelle Films
San Francisco, California

Silver
THE LITTLE STICK OF GUM THAT
HAD NO FLAVOR
Summerstar Productions
New York, New York

Bronze
LITTLE RED SKATING HOOD
Kim & Gifford Productions
New York, New York

Television Commercials, International

Gold
SHELL AUTOSTRADAS
Audio Kine Africa Studios (PTY)
Capetown, South Africa

Silver
TOLEDO
Audio Kine Africa Studios (PTY)
Capetown, South Africa

Bronze
SEVEN SEAS CANE SPIRIT
Audio Kine Africa Studios (PTY)
Capetown, South Africa

Television Commercials, Less Than 30 Seconds

Gold
GOOD VALUE
Handley & Miller, Inc.
Indianapolis, Indiana

Silver
LIGHTS
Kim & Gifford Productions
New York, New York

Bronze
TWO WAY SPLIT
Lampert Agency
New York, New York

Television Commercials, Live Action, 30 Seconds

Gold
ROLLING TIRES
Ogilvy & Mather, Inc.
Houston, Texas

Silver
BODY BEAUTIFUL
Viafilm, Ltd.
New York, New York

Bronze
FLOAT A LOAN
Grey Advertising, Inc.
Los Angeles, California

Television Commercials, Live Action, 60 Seconds

Gold
LIFE STYLE
Grey Advertising, Inc.
Los Angeles, California

Silver
CASABLANCA
Viafilm, Ltd.
New York, New York

Bronze
ARE YOU AFRAID OF
SHAKESPEARE?
Cinematrix
Minneapolis, Minnesota

Television Commercials, Longer Than 60 Seconds

Gold
PERFUME
Needham, Harper & Steers/West
Los Angeles, California

Silver
GABE & WALKER
Needham, Harper & Steers/West
Los Angeles, California

Bronze
RATES II—HELICOPTER
Al Paul Lefton Company, Inc.
New York, New York

Continued on Page 1434

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REPORT FROM PHOTOKINA

Continued from Page 1363

after Holland with 8,695, Belgium with 6,303, France 3,337, Great Britain 2,079, Switzerland 1,770, Italy 1,516, being followed by Japan with 1,230, Austria 983, Sweden 653, Denmark 504, Spain 355, Norway 282, Finland 265 and Yugoslavia with 253.

Finally, a glance at the future: The photographic industry has its own dynamic force which is reflected in the development of Cologne's PHOTO-KINA. This will also continue in future.

All of the foregoing, as presented by Herr Ebert, is certainly most impressive. But since I have an admitted special bias—a particular interest in professional motion picture equipment—I am forced to observe that (as David Samuelson so aptly put it) the event was somewhat less than a "vintage" PHOTOKINA.

Perhaps we were all a bit spoiled by the last (1970) PHOTOKINA, which introduced, in one spectacular fell swoop, such extraordinary professional filming equipment as the Arriflex 35BL camera, the Eclair ACL camera and the miniaturized Nagra SN recorder. There was no such towering triumvirate of genuine breakthroughs this time.

In the sphere of 35mm equipment the pickings were relatively lean. To be sure, the new Mitchell Mark III hand-held camera was on display, but it had already been launched with much fanfare a couple of months before in Hollywood and elsewhere (see *American Cinematographer*, August 1972). Cinema Products' handsome and streamlined studio camera designed around the

Mitchell NC and BNC movement was shown and attracted considerable interest. The revolutionary new Panaflex camera was not shown at all, it being the feeling of Panavision that, since their equipment is strictly for rental, there would be no point in showing it at a trade fair.

It must be said that the most impressive "surprises" at PHOTOKINA 1972 were in the area of 16mm filming equipment. Clearly the "hit of the show", Arnold & Richter's unique new Arriflex 16SR camera stimulated a flood of interest. Crowds packed the ARRI stand to get a glimpse of this super-sophisticated beauty, which has all of the professionalism of a studio camera, but the compact portability of the smallest newsreel camera. Four working prototypes of this camera were on display to examine and fondle, but company representatives stressed the fact that the camera would not appear on the general market for another year.

Another exciting 16mm camera shown (but only to a few chosen people, it seems) was the unique Åton sound camera. Designed by Jean-Pierre Beauviala and other members of the team that developed the Eclair ACL, it drew attention because of its electronic versatility and the way the throat of its magazines molds around the shoulder for hand-held work.

Another 16mm camera making its debut at PHOTOKINA was the Vinten-Coutant 16. A bit cumbersome in contrast to the other two aforementioned hand-held cameras, it nevertheless embodies some very advanced features. A working prototype of the Super-16 model was on display and attracted



A night scene on the Cologne riverfront, with the towers of the West German city's famous Cathedral silhouetted against the sky. The vast complex of exposition halls that houses the Photokina is located just across the river. Ships in foreground are steamers that ply the Rhine, but during crowded Photokina-time they serve as floating hotels for visitors.



considerable interest.

The Super-16 format was much in evidence elsewhere. Eclair, for example, was exhibiting its factory-modified Super-16 model and such firms as KEM and Steenbeck had their Super-16 film viewing and editing consoles on display.

In the way of lighting, there were metal discharge lamps from Cremer and high-impact plastic luminaires from Ianiro and Berkey Technical. But the big news in that category was the ingenious Tota-System of miniaturized location lighting introduced by Lowel-Light. The tiny Tota-Lights, with fold-out reflectors, look almost like toys because of their diminutive size, but they are very professional in design, ruggedly constructed and throw out a tremendous intensity of light.

Also of interest in the lighting area were several exotic items presented by Ryu-Den-Sha of Japan. These included totally automated studio luminaires, a micro-miniature two-light location kit, a very light-weight fresnel lens and a line of versatile, miniaturized dimming consoles.

In the way of sound equipment, there was a plethora of new microphones shown; long ones, short ones, shotguns and rifles, wireless models and even a couple that can "zoom" to change directional angle.

Both Nagra and Stellavox showed advanced models which, however, had been previously introduced. There were hot rumors that Kudelski had designed a new and much smaller Nagra—somewhere between the standard Nagra and the miniature SN in size—but no such animal made its appearance.

The biggest news in Super-8 was the new WILCAM W-1 single-system/double-system sound camera, which is not a modification of any other equipment, but an original design incorporating crystal-sync and many of the other sophisticated features flaunted by its 16mm big brothers.

In addition to these major items, there was a profusion of small gimmicks and gadgets, lenses and tripods, but nothing really revolutionary—except the unique Hydro-ped from O'Connor Engineering Laboratories. The Hydro-ped is O'Connor's answer to the conventional tripod, long a thorn in the sides of cameramen. Made of light-weight metal and with the capacity of hydraulically leveling itself on any surface, it is a single-column support that will accommodate any camera weighing up to 100 pounds.

Many of the most interesting items at PHOTOKINA 1972 were shown in working prototype form only, with no track record to validate their perform-



ance. Moveover, delivery in most cases, could not be promised for months, or even years. Bolex even exhibited a jazzy prototype of a camera which, admittedly, it has no intention of producing.

One wonders why companies do this—unless they hope to get feedback from the crowd for possible improvements to be made before freezing their designs for production. For those who wait, however, it is a frustrating business, and I would think that these firms lose a lot of business to other companies

in the meantime.

Even though this was by no means a "vintage" year for PHOTOKINA, it was important to attend, and the huge turnout of trade people from other countries—especially America and England—attested to this.

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ARRIFLEX 35 BL REVISITED

Continued from Page 1376

unqualified praise from all of the cameramen who had a chance to operate them.

Since modifications to the camera have been very extensive since 1970, *American Cinematographer* asked the man most directly responsible for the camera's design, Arnold & Richter Design Engineer J. Gerb, to explain what changes have been made and to describe the characteristics of the new Arriflex 35BL now in production.

The following are his remarks:

THE ARRIFLEX 35BL TODAY

By J. GERB

Design Engineer, Arnold & Richter KG

Our main goal in modifying the camera was that of noise-reduction and this was accomplished primarily by changing over from gear-drives to belt-drives exclusively. In the 1970 edition of the camera we still had the electromagnetic pilotone generator, driven by gears, which made considerable noise. In addition, we had the connection between the two cam-shafts made by means of a spiral gear. We have changed both of these mechanisms. Also, we have simplified the magazine, so that now the standard magazine runs only forward. As a result of this change, we got seven gears out of the magazine and it is now operated by means of a toothed belt. For trick work, we have a new forward/backward magazine now on the drawing board. Also on the drawing board we have a 1000-foot forward-running magazine which is the same size as the standard 120-meter magazine.

One of the biggest changes was made in the camera's housing. Previously the outer housing was a magnesium casting, but we learned that adequate sound insulation could not be realized with such a low specific weight material, so we had to change from magnesium castings to aluminum castings. Of course, this sacrifices weight and the camera is now about 15% heavier than it was before.

In addition, we managed to get our moving parts within the movement very much lighter. At Cologne in 1970 our claw element weighed four grams. That has now been reduced to two grams, making the mass forces very low, so that even at a higher operating speed, 75 frames per second, the camera has only a 50-db sound emission. The sound emission at 100 frames must still be measured.

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The lens blimp was redesigned, but mainly for optical reasons. We had previously been making it in aluminum, so the lens blimp was already quite effective. We achieved better insulating joints between the rubber suspended inner core and the outer housing and we have less sound emission through the slot around the lens holder. Of course, without the lens blimp, in the case of the zoom, we have appreciably more noise—about 33 dbs.

At Cologne in 1970, the camera ran at 33-34 dbs. With all the changes that have been made since then, the noise-level is now down to 28 dbs, one meter from the microphone, with the camera running at 24 or 25 frames per second.

We found, even after we had successfully silenced the camera mechanism by changing from gears to toothed belts, that the magazines were still responsible for an enormous sound emission, so we had to change this design, also. We now have an aluminum casting for the rim of the magazine cover and, for the wall, we have steel plates with an insulating material sandwiched between the two steel sheets. This resulted in a big gain in noise-reduction—4 to 5 dbs.

Further changes in the camera have been made mainly to the magazine. The magazine is now fitted with a footage-counter on its back side. The magazine locks have been changed, too, for easier handling. The footage counter on the camera has been changed and we have an easier-to-handle reset device. The little hand-drive, for use when you want to turn the camera without using the battery, has been simplified and, incidentally, made easier to manufacture.

The main carrying handle of the camera has been reinforced by means of a second support at the rear. A supplementary revision applies to the support for heavy zoom and telephoto lenses. This is realized by a support on the back side of the camera, if the operating handle is detached. In place of the supporting shaft, there is a sliding member to hold the fronts of different variable-focus lenses using various adaptors. This makes variable-focus lenses of different makes easy to change. In addition, the detached operating handle is then fitted onto the holder base.

The 1000-foot magazine is on the drawing board and will be finished in about six months. In addition to the existing lens blimp, there is a new arrangement for three filter stages—two 3-inch and one 4-inch. The lens blimp will be partly redesigned to get supplementary extension, so that it can house Arri lenses.

All in all, the camera is much quieter and more efficient than it was in 1970. ■

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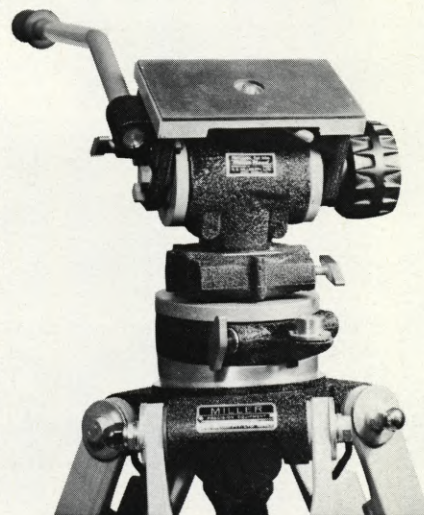
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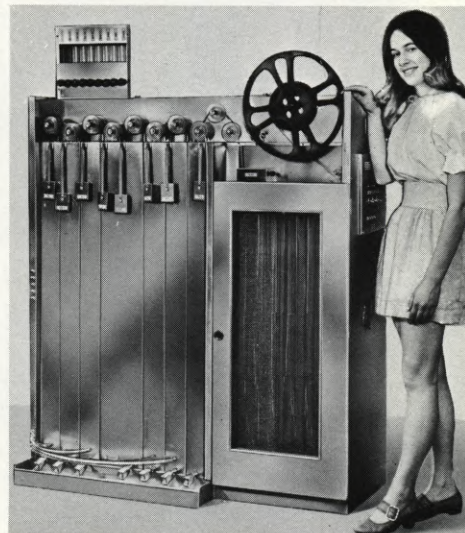
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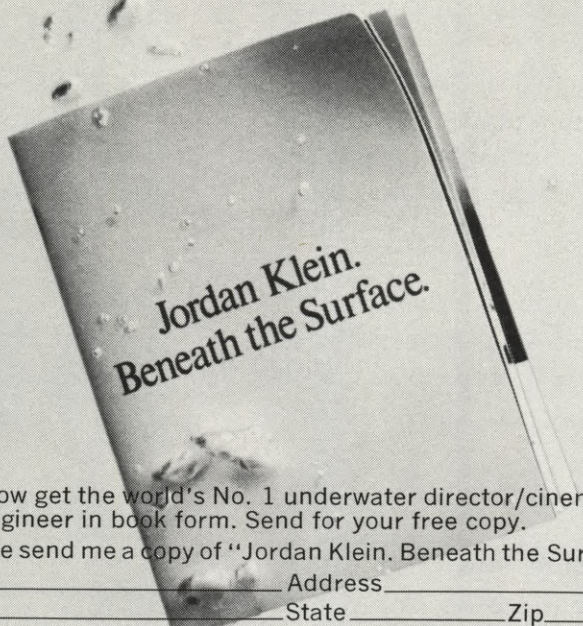
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ATLANTA AWARDS

Continued from Page 1429

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Bronze
PERSPECTIVE
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Washington, D.C.

Television Commercials, Political

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Silver
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Houston, Texas

Bronze
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St. Louis, Missouri

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Springfield, Illinois

Silver
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Eli Productions

Bronze
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Trafco
Nashville, Tennessee

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Silver
93/KHJ
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San Francisco, California

Bronze
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Talkies
High Point, North Carolina

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WILCAM W-1 CAMERA

Continued from Page 1377

construction and consists of three separate circuit boards, all of which snap in and out for instant servicing. A highly efficient AGC, working on both microphone pre-amps independently, which will not affect frequency response, is also incorporated and can be switched to manual operation if desired. All the amplifier controls are situated in the back of the camera so as to keep the microphone cords out of the operator's way. For the ultimate in sound recording control, the VU meter is situated in the viewfinder just under the picture area. The camera has a playback head and separate playback amplifier for instant film track monitor. There is a connector for an external three-channel amplifier; the film track monitoring feature for the camera operator is still retained when using the external amplifier.

The camera is a true reflex, having a rotating mirror shutter. A filter wheel is also fitted, having one clear filter and the option of any other three color-correcting gelatins. The viewfinder will show the cast of whatever filter is in use. The filter is in the light meter optical path, so this automatically compensates for the filter in use. A level pointer is visible at the top of the finder which shows when the camera is exactly horizontal.

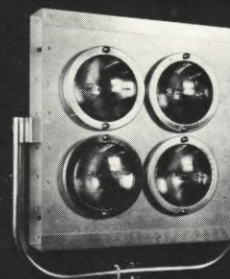
The power supply for the camera and amplifier is a pocket-size nicad module which will run eight 200-foot magazines. A separate battery charger is supplied with the camera which also works as a battery eliminator when AC is available.

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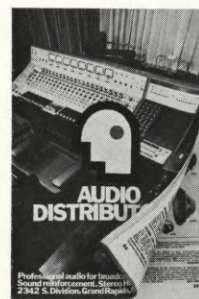
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SMPTTE CONFERENCE

Continued from Page 1403

phy of motion picture film for optimum color rendition on telecine systems.

The event which sparked the largest attendance of the Conference, including a sizable turnout of A.S.C. Directors of Photography, was *ROUNDTABLE DISCUSSION: The Great Film-Tape Debate—Coexistence or Conflict?* The discussion was preceded by an elaborately planned and organized demonstration of the relative merits, quality-wise, of videotape and film for (1) presentation on telecine systems and (2) projection on large theatre-size screens. A series of scenes, interior and exterior, high-key and low-key, had been photographed simultaneously with a video camera, a 16mm film camera (loaded with ECO) and a 35mm film camera (loaded with Eastman 5254 color negative).

A series of color monitors had been set up all around the Conference hall and the first part of the demonstration involved projection over the telecine system of videotape, 16mm film and 35mm film clips of the identical scenes. In this demonstration there was (perhaps surprisingly) very little, if any, difference in sharpness and general quality between the 16mm and 35mm film clips. But the videotape had a slight, but discernible, edge over both film formats.

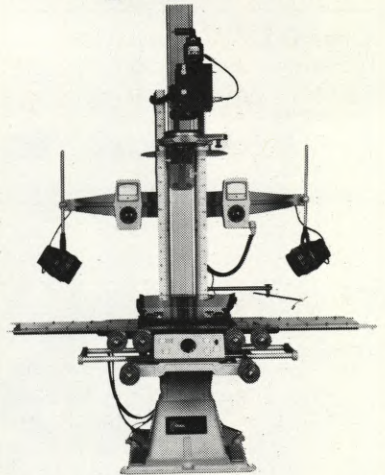
However, when the same scenes were projected on the large screen, it was a completely different story. The 16mm tape-to-film transfers had been made by CBS, using their laser system, and the 35mm tape-to-film transfers had been made by Vidtronic Division of Technicolor. In both cases, the tape-to-film transfers suffered dismally by direct comparison with the identical scenes shot originally on 16mm and 35mm film respectively.

Wilton R. Holm, Moderator of the panel, explained that the Image Transform organization had been invited to participate in furnishing tape-to-film transfers for the demonstration, but had declined to do so. After seeing how the transfers came out second-best to film, one might observe that they were wise in doing so.

The roundtable discussion that followed inevitably paralleled the pro-and-con arguments presented in detail in the October Special "Videotape and Film" Issue of *American Cinematographer*. The consensus arrived at in the discussion was that tape and film can, indeed, coexist, that they complement rather than conflict with each other, and that there would be no predictable advantage in switching the industry exclusively to

Continued on Page 1452

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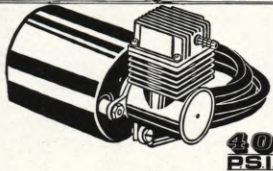
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Continued from Page 1384

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O'CONNOR HYDRO-PED

Continued from Page 1385

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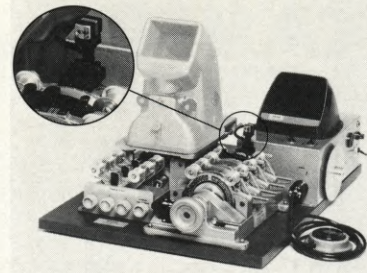
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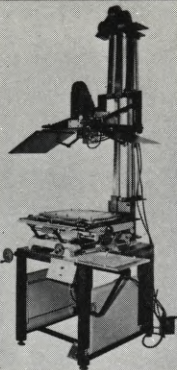
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Continued from Page 1383

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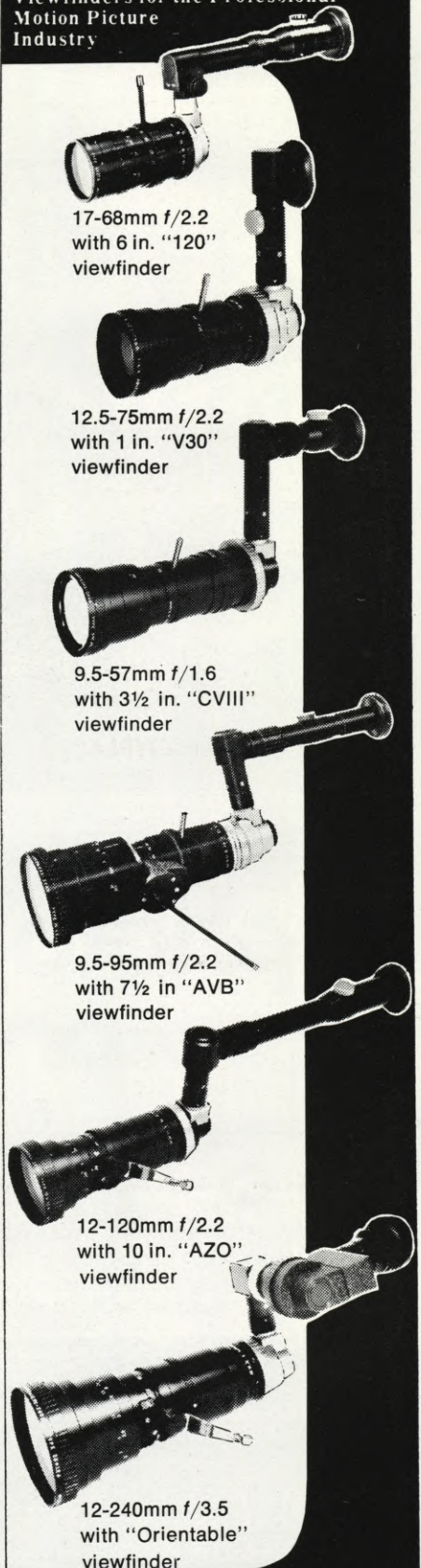
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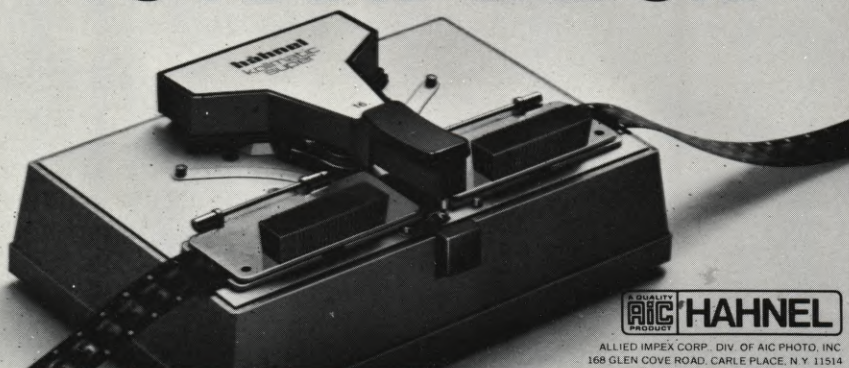
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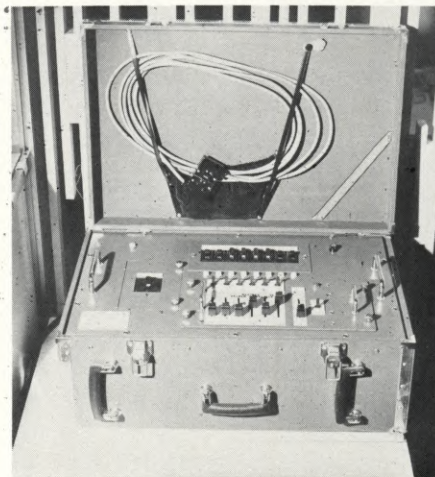
LIGHTING FROM RDS

Continued from Page 1388

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The unit, which is very compact in mass, weighs approximately 80 pounds and is small enough to permit easy transport in the trunk of an ordinary automobile or the deck of a station wagon.

"RED CAGEL STORY"

Continued from Page 1425

regulations against running the cars except between 7 and 11 p.m. Friday nights. We had to have Red coming around the track at full speed and stopping directly in front of the camera (the first of a series of hair-raising experiences to take place that day) and the best time to do that was at 3:00 on the afternoon of the race. Once again, phone calls had to be made—this time to the Prince Georges County Commissioner who proved very helpful and gave permission to run Red's car for an hour in the afternoon.

Even though I had known Red a relatively short time, I had confidence in him as he barreled around the track and came to a stop just in front of the camera. Unfortunately we were afraid that it would look too slow on film and we had to reshoot it! The second time I slowed the film speed to 12 frames per second. The results were satisfactory.

N.A.S.C.A.R. rules do not allow passengers during an actual race so we had to stage a mock race which the Director felt should be won by Red. Jay Livingston helped here arranging the "race" and getting the cooperation of the other drivers who were paid a nominal fee for their participation.

Working out the logistics for both the mock race and the actual race was a bit like choreographing a dance. I had to figure out where accidents were most likely to happen, when and where to put the two other cameramen I was using so they could get maximum coverage—without becoming part of the action themselves and possibly being hurt.

After shooting the pre-race activity in the pits, the spectators queuing up to purchase tickets, and the crowd milling in the stands, it was time for me to climb (the door was welded shut) into Red's car. While in Red's scarlet Chevelle #02 going around the track, I had one cameraman on a manlift over the track at the first turn looking towards the oncoming cars, while the third cameraman was hanging from the flagman's stand shooting cars as they sped away from him towards the first turn.

As we went into the first turn, I realized it was pretty rough riding and the centrifugal force was probably going to be more than I had expected. We took our place in the pack of ten cars participating in the race. I saw the starter's flag going down. We were off!

The drivers were an aggressive bunch. They promptly forgot that the race was supposed to be staged. They all seemed

to feel that this might be their one chance to beat Red Cagel. The pack moved ahead of us. Red said that he could probably work his way through, but that he felt it might be too dangerous with me in the car. I agreed and hung on to my camera for all I was worth.

During a pit stop I convinced the drivers to take it easy for a little while. I exchanged my camera for one with a fresh load and with a 10-100mm Zeiss zoom lens. The second six laps were more successful. The drivers trimmed the lap speed down to 27 seconds per lap, about 90 m.p.h. I was more relaxed and shot some exciting footage. I also had the sound man mount a Sony TC-110 tape recorder in the car with automatic level control for wild track sound. When we finally saw the finished product with the wild track played against it, the result was quite exciting and remarkably steady, considering the speeds and gyrations the car had gone through.

After I had climbed out of Red's car and the real race began, I roved the infield directing the other cameramen via walkie-talkie.

Filming in a situation such as ours would have been very difficult without the use of walkie-talkies. A major problem was exposure coordination between the three cameramen. During the afternoon I used ECO. At night EF was used, first pushed one stop and, finally, two stops. The walkie-talkies allowed me to coordinate this process with my two cameramen. Each of us, at my direction, changed film emulsion and, eventually, exposure index at the same time regardless of our location, due to the radio link between us.

The cameraman shooting from the manlift, George Rosenberg, ran into one small difficulty. As he was filming, he began to feel that his platform was sinking closer to the cars on the track. He put this down to his imagination until his assistant mentioned that it looked like they were lower. By the time this was noticed the manlift was only a few feet above the cars below. The assistant climbed down and found the manlift had a small leak. Thereafter they took turns pumping it back up until the race was over.

Ben Tubb, the third cameraman (working sections of the infield) also had his problems. He noticed that even though the cars didn't look like they were moving over one-hundred miles an hour, they were. When they hit a turn they went into a power slide—which is great for dramatic effect, but is not the safest maneuver to be near. The driver does not have full control of his car.

This upset Ben a bit as he shot through the blue smoke of burning tires and the spray of debris from the track. As the night wore on, the cameramen became distracted from time to time. I guess everyone feels the need to look away from the eyepiece when he hears brakes screaming and smells rubber burning less than twenty feet from where he is standing.

I used three Arriflex-S/B's and one Eclair NPR. The Arri's were used for all hand-held shooting and the Eclair was mounted in the manlift on a tripod. The two film emulsions used were Eastman Ektachrome 7252, while there was sufficient light, and Ektachrome 7242 pushed to ASA 500 for after dark. The film was sent to Consolidated Film Industries' Lab in California to post-fog and push the 7242 two stops. They did an excellent job.

After discussions with the U.S.I.A. director, we edited the film and added the natural sound. The agency had the script translated and their narrators were used to tell Red Cagel's story in fifty-eight languages. The film has been sent to U.S.I.A. posts all over the world to show the story of an ordinary tradesman, who, if asked what he does, will tell you he's a race-car driver. ■

Cameraman lies flat on his back to get an extreme low-angle shot of Red cutting a piece of glass. A glazier by trade, Cagel has been racing cars as a hobby for many years.



THE EDITING MACHINE

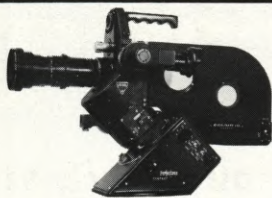
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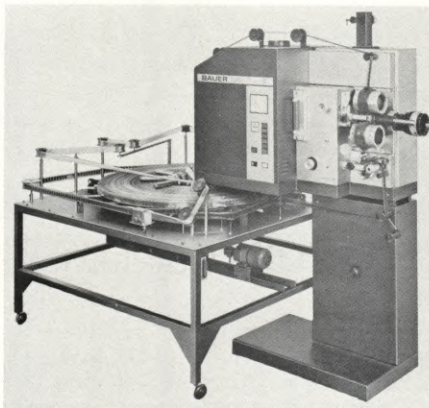
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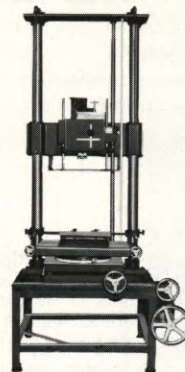
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The rollers are electronically driven. Unlike standard endless loop arrangements the film is pushed out of the inner core of the wind and is fed to the take-up sprocket of the projector. Upon passing the projector the film re-enters the film carriage on the outer end of the film wind.

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In order to save the film from any damage while running through the continuous loop arrangement BAUER has devised the film-saving foil. With this arrangement the film is automatically wrapped into a flexible plastic foil on both sides.

During the showing, the protective foil is separated from the film when it leaves the carriage for projection. In the course of the endless loop arrangement the film returns to this protective foil which enwraps the film completely before it re-enters the endless loop windings. This positively prevents any film emulsion damage. Even after 1,000 presentations you will not find a scratch on a film.

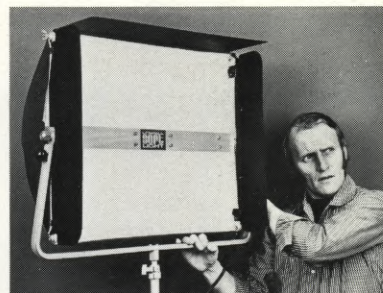
For threading a continuous loop and foil arrangement BAUER offers an "editing carriage". This arrangement can be made at five times the operating speed. When adding the cementing time and the time for setting the automatic cueing foils the preparation time for a continuous loop presentation is about half the standard showing time. The same time is needed to separate the films for return to the leasing company.

From the point of view of operating cost this programming and editing work requires merely the manhours of one normal cinema performance. If such a film program is shown only once there is no saving. There would be an advantage in this only if the operator would do the editing outside his regular work hours.

A substantial saving is guaranteed, however, when such a film program runs several times: already a number of five automatic performances brings an 80% saving in operating cost. If a program runs two weeks with four performances a day the saving can be 98%.

With the aid of the BAUER Continuous Loop Carriage an operator can do the editing for several cinemas independent from the actual showing time. Such an automatic presentation can be started from any point of the cinema—also via a timing clock—so that the operator is able to take over other jobs in the cinema.

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NATIONAL CINE EQUIPMENT INTRODUCES "SCHIZOPHRENIC" HEAD FOR SANER MOTION PICTURES

National Cine Equipment, Inc. recently introduced a new tripod head that provides optimum mounting for cameras with high and low centers of gravity. Dubbed the Model EC, the new Hydrofluid® head is designed for both the Eclair NPR and conventional cameras. By simply rotating the mounting plate, it provides an extremely stable, convenient mount for the NPR; in the upper position, it functions for the conventional camera as a conventional tripod head.

The new "EC" head is equipped with built-in level and telescoping handle. It pans 360° and tilts 90° either side of center, in temperatures ranging from -60° to +350° F.

The multi-purpose EC tripod head is compatible with all NCE Hydrofluid® accessories, including flat-top and ball adaptors, legs and hi-hats.

For further information, contact National Cine Equipment, Inc., 4140 Austin Boulevard, Island Park, N.Y. 11558. Telephone is (516) 889-4600.

DATA PACKAGING ANNOUNCES VIDEO CASSETTE PLANS

Data Packaging Corporation, of Cambridge, Mass., a leading maker of audio and computer tape cassettes and cartridges, has announced plans to become a major supplier of video tape cassettes for independent tape manufacturers and duplicators.

The company revealed that it is now tooling its first video cassette, which will be compatible with the best-selling video cassette system. It can accommodate up to one hour of 3/4-inch tape for color and stereo playback, and is intended primarily for industrial audio-visual users.

Production of the cassettes is expected to start by Spring, 1973. Other models, for use with different playback systems, may be added later, depending on the sales of such systems.

Growing sales of cassette equipment to industrial users was an important factor in Data Packaging's decision to enter the field, according to a company spokesman.

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INDUSTRY ACTIVITIES

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The American Film Institute has also made publishing agreements with the R. R. Bowker Company in New York for a series of reference books, the first of which, THE AMERICAN FILM INSTITUTE CATALOG, Feature Films, 1921-1930, has already been published; and with Acropolis Books, Ltd., in Washington, D.C., for THE AMERICAN FILM HERITAGE released this month and THE AMERICAN FILM INSTITUTE'S GUIDE TO COLLEGE COURSES IN FILM AND TELEVISION, to be released in January, 1973. There are a number of other AFI book projects which have not as yet been assigned to publishers.

Mr. Stevens stated that this method of publishing assures the Institute that the best publishing efforts will be put to the project at hand. "It is for this reason," Stevens said, "that we are extremely pleased that the fine and prestigious firm of Little, Brown & Company will be publishing this particular series."

In ON DIRECTING, such notable actors as Jack Nicholson, Charlton Heston, Leslie Caron and Ingrid Thulin and such equally notable directors as Alfred Hitchcock, Roger Corman, John Huston and Roberto Rossellini discuss the roles of directors and their impact on acting. In FILMMAKERS ON FILMMAKING, professionals from all aspects of film production explore their crafts. Both books will be based on interviews, seminars and research conducted at The American Film Institute's Center for Advanced Film Studies in California.

The American Film Institute is a non-profit, independent organization created in 1967 by a grant from the National Endowment for the Arts, a federal agency, to advance the art of film and television in America. Its activities include film preservation and documentation, the training and support of new filmmakers, repertory film programming, research and guidance to film educators. The Institute's headquarters offices are located at The John F. Kennedy Center for the Performing Arts in Washington, D.C.

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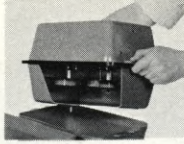
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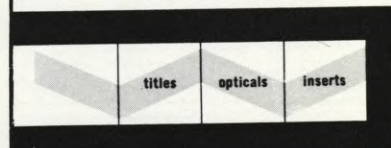
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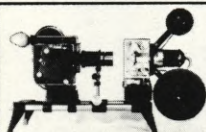
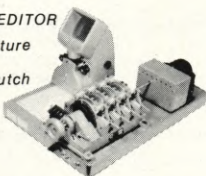
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EQUIPMENT

SMPTE CONFERENCE

Continued from Page 1437

either medium.

The Equipment Exhibit at the 112th SMPTE Technical Conference was a rich and varied one that drew respectable crowds. Most of the new items shown had already been demonstrated at the recent PHOTOKINA 1972 in Cologne. The one notable exception was the interesting new MAURER PRO 16 camera, introduced in working prototype form.

Conversely, the stunning new ARRI-FLEX 16SR camera, which had made a spectacular debut at PHOTOKINA, was conspicuously absent. ARRI representatives explained that they were waiting to give the new camera proper presentation at the 113th SMPTE Technical Conference, to be held in New York next spring.

In passing, it should be noted that the projection facilities at the Century Plaza were excellent—far superior to the less-than-adequate facilities offered at the preceding 111th SMPTE Technical Conference in New York.

SITUATIONS AVAILABLE

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Wanted Arri-S, 400' magazine, Angenieux 25-250, cradle, accessories, BILL LEVY, 20 E. 10th, N.Y., (212) 533-5006.

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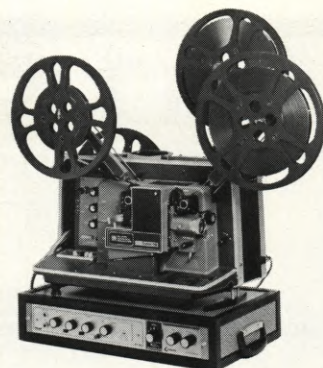
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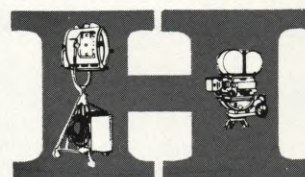
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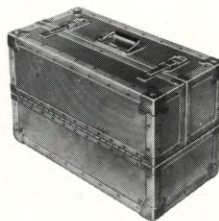
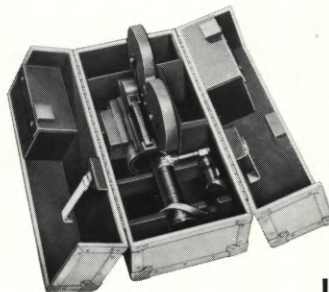
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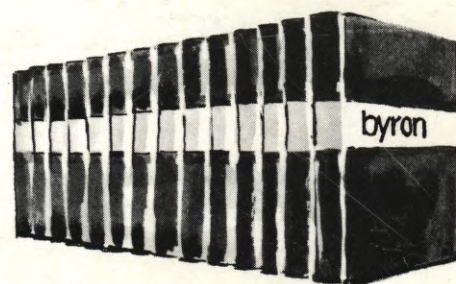
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