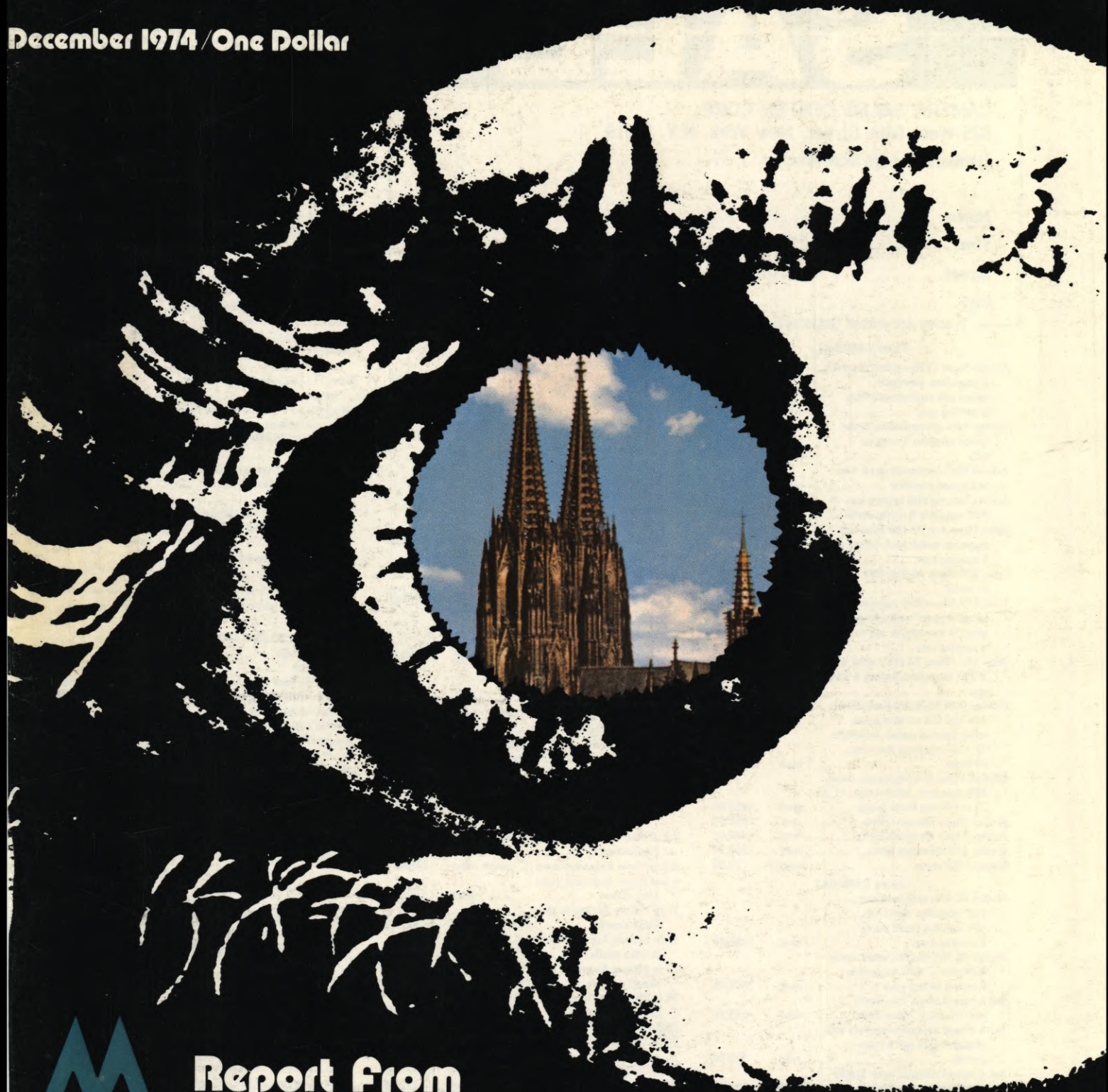


American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

December 1974 / One Dollar



Report From

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35mm F/2 Schneider Xenon Arri mount ..	used	199.50
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50mm F/2 Zeiss Planar Arri mount	new	560.00
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75mm F/2.3 Baltar BNC mount	used	99.50
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Moviola UL20CS w/separate magnetic head	used	2200.00
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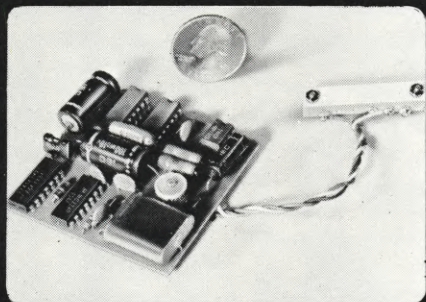
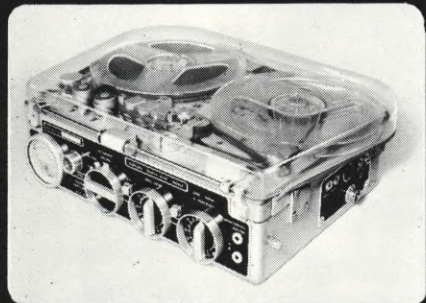
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American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

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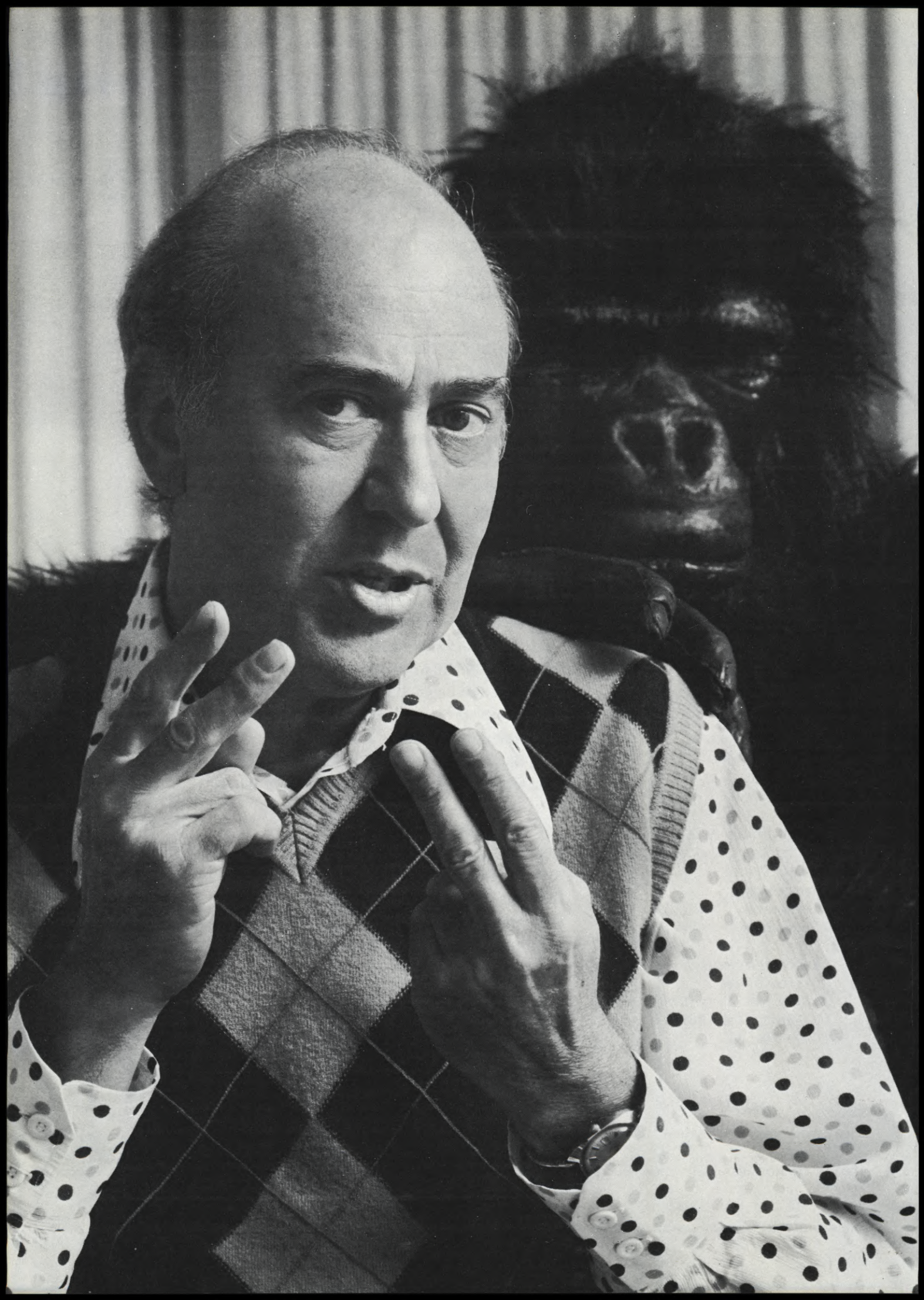
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ON THE COVER: A graphic tribute to *Photokina 1974*, the "World Fair of Photography" held biennially in Cologne West Germany. The eye is focused on the towers of the Cologne Cathedral, famed landmark of this busy city on the Rhine, which has become a kind of symbol for *Photokina*. Cover design by JAY KLAPPERMAN.

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“People laughed.

“When I directed ‘Where’s Poppa?’, a serious film about the problems of old age, people laughed. Another picture I did, ‘The Comic’, with Dick Van Dyke, people laughed.

“Now, I’m not so immodest as to think that what I wrote or directed and put in front of them made them laugh, because I was serious. Those were serious pieces as far as I was concerned. And ‘The New Dick Van Dyke Show’ is a serious work. But people laugh.

“So I have to assume that it’s because Kodak makes funny film.

“When people say they’re laughing at my film, it’s really Kodak’s film. But then again it’s mine because I bought it from them. I think they sell the same film to some of my friends because their films make people laugh, too.

“I understand that they also have a serious film that they sell to Swedish and Russian directors. And that film is almost certain not to make people laugh.

“I’m negotiating for the film rights to ‘Dante’s Inferno’, and if I do secure them, I’ll order Kodak’s serious film.”

Carl Reiner. Writer, director, actor, interviewer of a 2013-year-old man and a personal friend of Mel Brooks. Currently producing “The New Dick Van Dyke Show.”



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CINEMA WORKSHOP



By ANTON WILSON

IMAGE SHARPNESS

Feminine mystique appears to be a popular phrase these days, but among cinematographers there seems to be more mystique associated with lenses. There are so many different parameters that must be considered when designing a lens and an equally staggering number of variables must be considered when determining the performance of a lens. When evaluating a lens, one must consider chromatic aberration, spherical aberration, astigmatism, acuteness, resolution, contrast and that all-encompassing question: "Yeah, but is it sharp?"

Rather than looking at lenses from the designer's point of view (what makes a lens sharp?), we'll take a look from the cameraman's angle (so how come the image is soft?).

The problem of getting a sharp image through the lens has been aggravated by the complexity of the zoom lens. When developing a fixed-focal-length lens, the designer can optimize parameters for that particular focal length. Not so with a zoom lens. The designer of a zoom lens is constantly faced with compromises and trade-offs. It is impossible to design a zoom lens that will compensate all aberrations equally throughout the zoom range. It is true that every zoom lens will exhibit varying degrees of aberration correction as the focal length is changed.

Actually, a zoom lens will display its best compensation at only two or three specific focal lengths. At all other values during the zoom, correction will

be plus or minus these optimum parameters. So, if a zoom lens appears to be sharper at certain focal lengths, one may assume it is a problem with the original lens design — right? Not quite.

Rarely can a soft image be blamed on this phenomenon of zoom lens design. Technology has reached the level where these deviations from optimum correction are kept to a minimum and only in rare and exacting circumstances will these deviations be visually apparent. In most cases a less than perfect image is the result of damage to the lens, improper lens seating or improper use of the lens.

In many cases it is within the power of the cameraman to improve the image through the lens. Every lens has an optimum aperture. This is usually between two and three stops down from wide open. For an $f/1.8$ lens, the optimum aperture would be about $f/4$. True, there will be a greater depth-of-field at smaller apertures, but the image will not be sharper. As the lens is stopped down, a phenomenon known as diffraction begins to degrade the image.

Diffraction occurs around the edge of the iris blades and can best be described as a bending of the light rays. (FIGURE 1). The construction of the iris can affect the amount of diffraction. A better lens will minimize diffraction by incorporating good iris design, optimum materials and fine blade-edge finish. Although the manufacturer can attempt to minimize diffraction, it is always present. And the smaller the aperture, the greater the diffraction

effect. Because these peripheral rays are bent where they should be straight, the net result is a softening of the image. The optimum aperture is, thus, a compromise point. At wider apertures, diffraction is less, but aberration correction is not as good. At smaller apertures diffraction softens the image. In general, the best aperture, as previously stated, is two to three stops down from wide open.

The rate of image degradation caused by diffraction is dependent on the focal length of the lens. The physical size of the aperture in a wide angle lens will be smaller than the aperture of a telephoto at the same "f" stop. For example, the aperture of a 10mm lens at $f/2$ will be $1/8$ the size of that of an 80mm lens at $f/2$. It should be obvious, then, that the problem of diffraction will be more severe at shorter focal lengths. The threshold point where diffraction will seriously degrade the image will occur sooner with a wide-angle lens. A cameraman may feel secure stopping a telephoto down to $f/11$ - $f/16$. However, for a shorter focal length lens, severe diffraction will begin much sooner — at $f/8$ or $f/5.6$, depending on focal length.

This boils down to the following: for maximum sharpness, try to film at the optimum aperture. The only reason for stopping down to a smaller aperture would be to gain depth of field, but only at the expense of overall sharpness. The visual effect of image degradation due to diffraction will be more apparent at shorter focal lengths and, thus, stopping down wide angle lenses to small apertures should be particularly avoided.

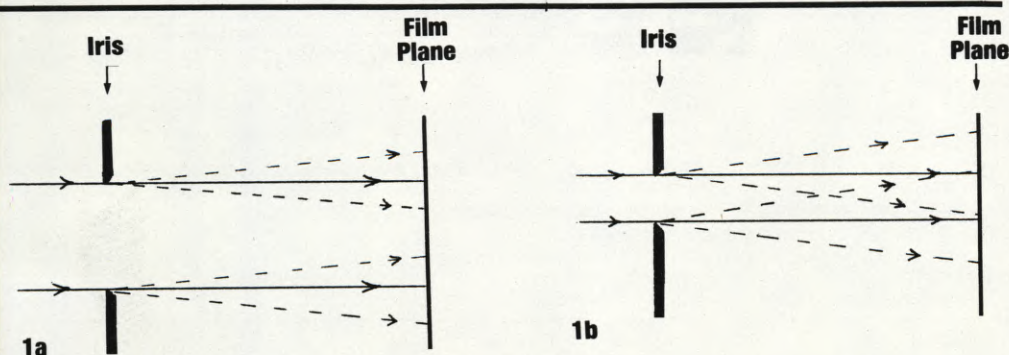
These rules hold generally true for zoom lenses, also. This may explain why an image goes slightly soft as it is zoomed to wide angle at very small apertures. If going to a larger aperture aggravates this condition, the cause is more probably improper lens seating, rather than diffraction.

In terms of sharpness, it is generally better to employ neutral density filters than to stop down much past the optimum aperture. However, if not properly done, filtering can hinder, not help, the situation.

This will be our next topic. ■

DIFFRACTION: As light passes through the edge of the Iris, it begins to propagate as a new spherical wave front emanating from the Iris edge. FIGURE 1a shows a bundle of parallel light and two such diffraction rays from each edge. Although diffraction is always present, in FIGURE 1a the diffraction rays are few relative to the bundle of light, but in FIGURE 1b, where the Iris opening is much smaller, the diffracted rays now comprise a significant portion of the incoming light. The image will be proportionately impaired.

FIGURE 1



1a

1b

The Camera That Shot Lincoln

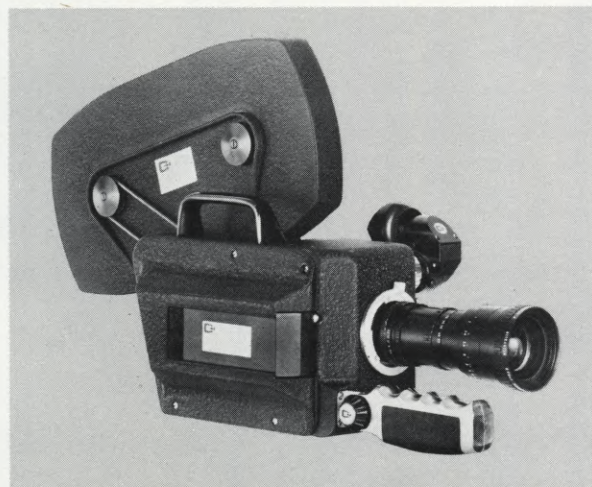
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See the results for yourself. Hal Holbrook as "Sandburg's Lincoln" airs on NBC-TV. Consult your newspaper for dates and time. "Sandburg's Lincoln" was produced by David L. Wolper Productions. George Schaefer, producer-director. Howard Schwartz, A.S.C., director of photography. American Banking Association and Eli Lilly and Co., sponsors.

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rosco says

ROSCOFLEX ...further reflections on light control. Part III

In Parts I and II, we reviewed the five basic ROSCOFLEX reflecting materials as part of the Rosco Cinegel Light Control Media. These provide light control by reflection, with varying degrees of "reflection/diffusion".

In this segment of the ROSCOFLEX story, we will describe a set of media with "reflection/filtering" properties. The filter, in these members of the 'FLEX family, is actually the protective cover film of these laminated materials.

ROSCOFLEX-C: Cool . . . intended for use on reflector boards. Regular sunlight reflectors reflect only the sun component of daylight, and not the sky, resulting in fill light that is warmer than daylight. For the "cooler" look, ROSCOFLEX-C gives soft reflection combined with a light blue filter. This corrects the reflected sunlight to a better match with daylight.

ROSCOFLEX-G: Gold . . . a Soft reflector suitable for the early or late in the day look . . . or just to get a "warm" lighting quality.

ROSCOFLEX-D: Daylight . . . provides "daylight-conversion" by reflectance . . . designed for bounce-lighting applications. When 3200° Kelvin light is reflected from this material, it is suitable for daylight fill. Where an even cooler look is desired, Rosco Tough ¼ or ½ Booster Blue can also be put on the light source. ROSCOFLEX-D is used to line Soft-Light reflectors to provide "daylight shadowless fill", and at higher efficiencies than when using a transmission filter.

ROSCOFLEX "filter/reflectors" are supplied in 54 inch wide rolls. These media are further evidence of Rosco's continuing commitment to serving the real needs of cameramen everywhere. Write for the new Cinegel chart, and your personal set of Cinegel swatch books.

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QUESTIONS & ANSWERS

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



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

Q I have an urgent problem at hand and you could provide the answer to my question. My question is what do studio effects men use to create the effect of bullets entering and exiting a body, clothing shot away and blood expelled as in "Wild Bunch", "Bonnie & Clyde". I would like to know how this is done and how I might be able to get the materials to create the same effect for the camera.

A Bullet effects are usually created by small explosive squibs that the effects man installs and fires off on electric impulse. The blood can be supplied by blood sponges, blood reservoirs that can be punctured and tubes that can squirt blood are also part of the effects man's techniques that are limited only by the ingenuity of the men involved and the visual effects desired. The safety factors of the use of the explosive charge near the human body are the special effects man's province and responsibility and it is a very serious responsibility.

The blood should be a special fluid that will photograph realistically, and that will have the proper color and viscosity and also be washable so costumes are not stained. Theatrical beauty and/or makeup supply outlets usually have this blood. Specifically, a very effective product is NEXTEL simulated blood manufactured by the 3M Company.

Q How does one figure exposure for snow, water and sand? for shooting against the light at sea, on the beach or on slopes covered with snow? My scenes are flat and overexposed.

A A good incident light-meter should give an accurate exposure setting, but many people refuse to believe the small stop indicated. They reason that because the sun is overcast in snow and fog conditions, that the photographic value of the light is thereby reduced. In reality, the light is only scattered and thus, even intensified. Because of the flat-light, it is photographically better to err on the side of underexposure rather than that of overexposure.

Likewise an incident light-meter should properly indicate the exposure

in your second set of examples. Photographing against the light, such as in a sunset, would indicate that the sky is the object of interest and, therefore, exposure should be set for that, leaving foreground objects in silhouette. In those sand and snow scenes, the bright foreground may dominate your scene, thus attracting attention from the distant interest. In some cases you can improve the situation by using a graduated "Sky Filter" in an *inverted* position before your lens to tone down the unwanted brightness of the foreground. A Polascreen filter is ideal for removing unwanted reflections from water surfaces.

Q What is the purpose of a viewing filter?

A The monotone filter or viewing glass enables you to look at a scene and see contrasts and relative tone as they will be recorded on the film.

Q Is there any difference in shooting color film for television transmission than in shooting color for theatrical or industrial films?

A There is no basic difference in actual production techniques, lighting (although lighting ratios should be short, on the order of 2 to 1 or even 1½ to 1), or general camera work. Of course, long shots should be held to a minimum and closer shots used as much as possible, as with all television work. Although there are now vast numbers of color sets in use, there is still a large portion of black and white sets in use. Great care must be taken that the monochromatic, or gray scale values, of the colors employed, are not alike or the black and white television picture will lack contrast. Players' costumes, titles, furniture may be "lost" against the background if they both reproduce in the same shade of gray. Pre-production black and white stills should be made of the various color combinations actually filmed in color and checked on a closed-circuit black and white television receiver to be certain they will reproduce properly.

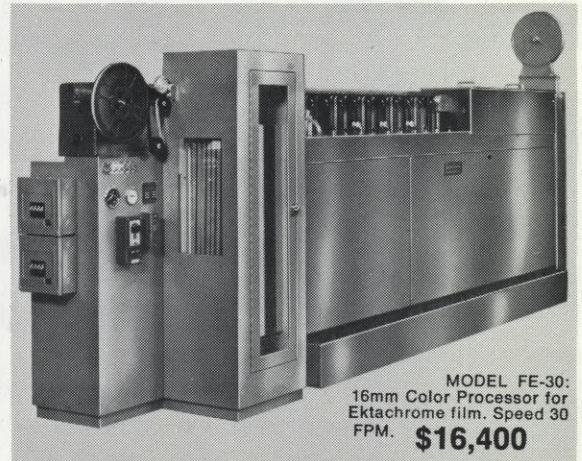
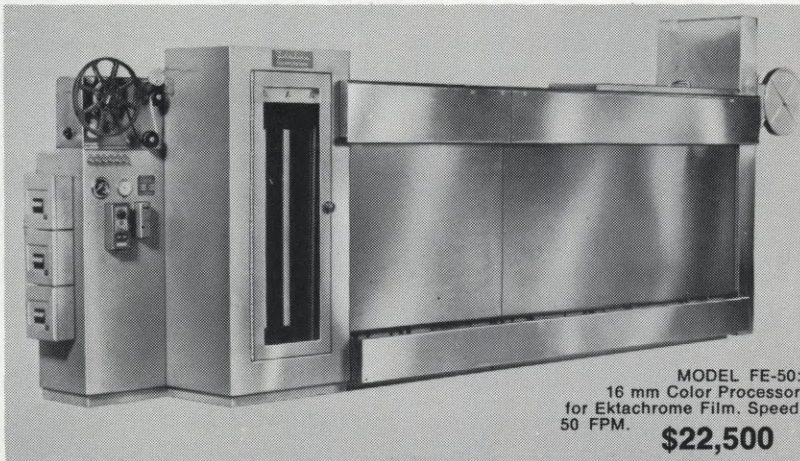
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TV Networks and Stations: NBC, CBS, ABC, WMAL, WXYZ, WWL, WJXT, WTOP, WCKT, WTVI, WNEW, WPIX, WOR, WNAC.

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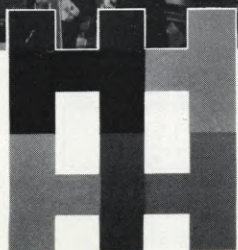
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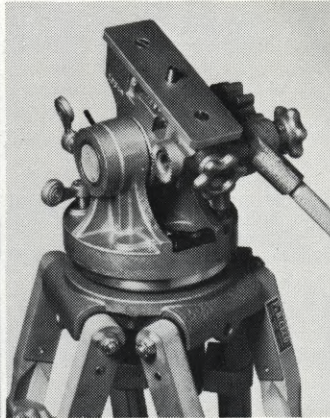
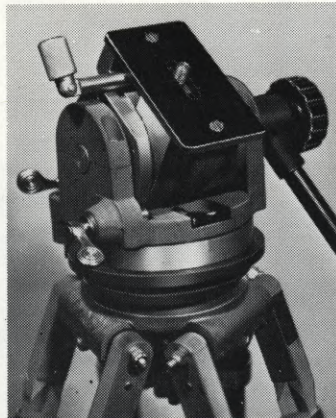
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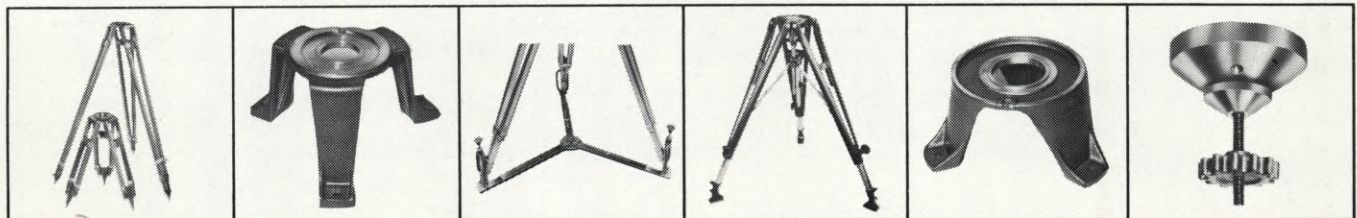
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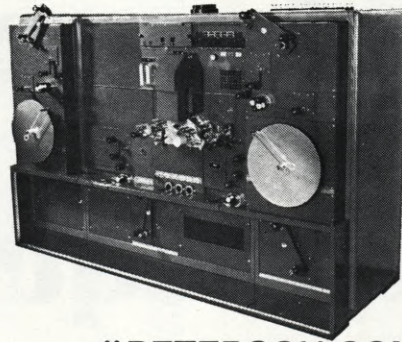
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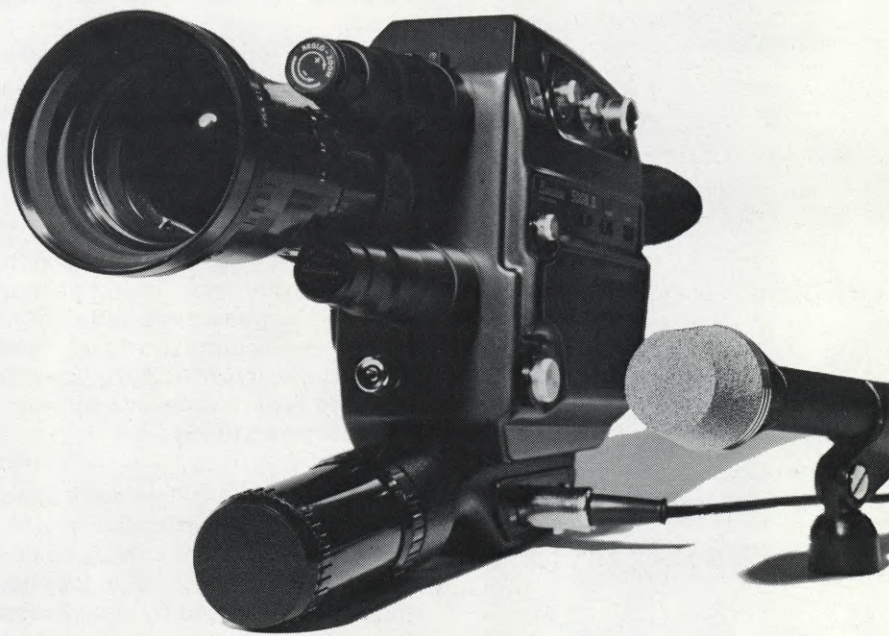
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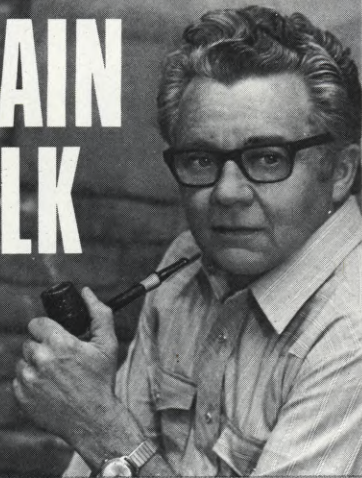
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PLAIN TALK



by *J. Carl Treise*

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THE BOOKSHELF

By **GEORGE L. GEORGE**

HAPPY HOLIDAY!

Richard Lawton, in *A WORLD OF MOVIES*, traces 70 years of film history through some 800 portraits of stars, an exceptionally beautiful collection of photographs ranging from the early flickering images to the glossy techniques of today. (Delacorte \$19.95 till 12/31/74, \$25. thereafter)

A large size volume by Tony Thomas, *THE FILMS OF GENE KELLY*, details the career of the versatile star, choreographer and director in a highly-readable text with over 400 well-selected stills. (Citadel \$12.)

An unusually interesting survey, *CARS OF THE STARS* by George Barris and Jack Scagnetti documents with abundant illustrations some 300 customized models owned by performers or specially created for use in Hollywood films. (Jonathan David \$16.95)

A unique assemblage by Mildred Constantine and Alan Fern of *REVOLUTIONARY SOVIET FILM POSTERS* offers 56 color and b&w reproductions of placards used to advertise such early classics as Eisenstein's "POTEMKIN", Dovzhenko's "EARTH" and Turin's "TURKSIB". (Johns Hopkins U. Press \$12.95)

A popular form of art is displayed by Ralph Stein in *THE PIN-UP*, an esthetic celebration of feminine pulchritude from 1852 to now, as represented by over 200 superlative photographs of movie stars and other breathtaking beauties. (Playboy Press \$17.95)

Exploring a facet of the latest hobby — amassing the most improbable artifacts — Cecil Munsey's *DISNEYANA* surveys the colorful world of "Walt Disney Collectibles" in a big, lavishly-illustrated book, informative and exciting. (Hawthorn \$19.95)

John Kobal's king-size *FIFTY SUPERSTARS* will delight every movie fan with its attractive compilation of film posters, portraits and biographical sketches of all-time screen favorites, eloquently introduced by John Russell Taylor. (Crown \$9.95)

An absorbing and delightful book of reminiscences, Garson Kanin's *HOLLYWOOD* evokes in literate style with urbane wit and engaging candor such legendary characters as Goldwyn, Laemmle, Chaplin, Garbo, Barrymore and others who helped Kanin to "learn the business." (Viking \$8.95)

FACTS AND THEORIES

The 25th annual edition of John Willis' *SCREEN WORLD 1974* offers its well-established, comprehensive pictorial and statistical survey of all films released last year in the U.S., with full production credits, Academy Awards, obits and other vital statistics, and over 1000 stills. (Crown \$9.95)

* * *

A summary of 70 years of film making, *A COMPANION TO THE MOVIES* represents Roy Pickard's judiciously reasoned selection of 100 English-language film classics, with detailed indexes of directors, writers, cameramen, composers, actors, etc. (Hippocrene \$8.95)

In *FILM AND REALITY*, Roy Armes discusses the historic development of the naturalistic trend in movies from the early documentaries of Robert Flaherty and Dziga Vertov, through Stroheim's brutish "GREED" to the current cinéma-vérité and television's searching sociological reports. (Pelican \$1.95)

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A systematic approach to the study of cinema, Andrew Tudor's *THEORIES OF FILM* offers clear statements concerning the six schools of movie-making he defines as the main trends of the medium, with a perceptive discussion of the individual authorship of films. (Viking \$6.95/3.25)

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A knowledgeable survey of the most enduring and popular cinema genre, Philip French's *WESTERNS* considers the maturing of its audience as evidenced by postwar changing themes, when psychological complexities supplanted the essential innocence of much of its earlier periods. (Viking \$6.95/3.25)

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Judith Crist's expert *TV GUIDE TO THE MOVIES* is a handy compilation of thumbnail descriptions, with cast lists, comments and recommendations, of some 1500 films that can currently be seen on the home screen. (Popular Library \$1.50)

Included in Robert LaGuardia's *THE WONDERFUL WORLD OF TV SOAP OPERAS* are complete plot summaries of the main daytime dramas from "ALL MY CHILDREN" to "SOMERSET", together with "everything you've ever wanted to know about your favorite daytime serials." (Ballantine \$1.50)

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Stanley Appelbaum's twin picture quiz books, *SILENT MOVIES* and *THE HOLLYWOOD MUSICAL*, challenge the memory of film scholars and buffs ingeniously through uncaptioned stills, with detailed answers provided in an informative appendix. (Dover \$2.50 ea.)

THE SCREENWRITER'S CRAFT

The script of *BROTHER CARL*, the psychologically involved film written and directed by Susan Sontag, and strikingly photographed in b&w by Rune Ericson and Björn Thormaehlenius, is a daring and highly personal artistic statement. (Farrar Straus Giroux \$10.95/4.95)

Carl Theodor Dreyer's manuscript for *JESUS*, a film he did not live to make, is an invaluable document of the director's visionary power and tragic view of the world. Also included are three essays by Dreyer, tributes by fellow directors and a memoir by Danish playwright Preben Thomsen. (Dial \$9.95/2.95)

Aptly edited by John Weightman, *MASTERWORKS OF THE FRENCH CINEMA* assembles the scripts of René Clair's "THE ITALIAN STRAW HAT", Jean Renoir's "GRAND ILLUSION", Max Ophüls' "LA RONDE" and H.G. Clouzot's "THE WAGES OF FEAR", all classical examples of the various genres that established France's reputation for original and innovative filmmaking. (Macmillan \$10./4.95)

Writer-director Wolf Rilla's informative and helpful textbook on scriptwriting, *THE WRITER AND THE SCREEN*, affords expert guidance on the techniques of the craft, dealing effectively with plot, dialogue and characterizations as well as with camera angles, editing and production logistics. (Morrow \$6.95)

How a novelist and screenwriter reached the peak of his career is told by John Leverence in *IRVING WALLACE: A WRITER'S PROFILE*, a factual, enlightening and humorous account of Wallace's personality, life and creative travail. (Popular Press \$6.95)

* * *

DIVIDENDS OF PERMISSIVENESS

A comprehensive look at the who, how and why of the pornoflick industry, *SINEMA* by Kenneth Turan and Stephen F. Zito, is a serious and well-researched exploration of the sociological, artistic and human aspects of the genre. (Praeger \$8.95)

IN *DIFFERENT STROKES*, John Warren Wells tells with candid humor of his alleged experience as writer, director and star performer in the X-rated picture of that name. (Dell \$1.25)

* * *

Prof. Arthur Knight, in his copiously illustrated *SEX IN CINEMA*, discusses last year's "adult" films from "LAST TANGO IN PARIS" to "DEEP THROAT", the new "liberated" stars and the continuing battle with the censors. (Playboy Press \$1.75)

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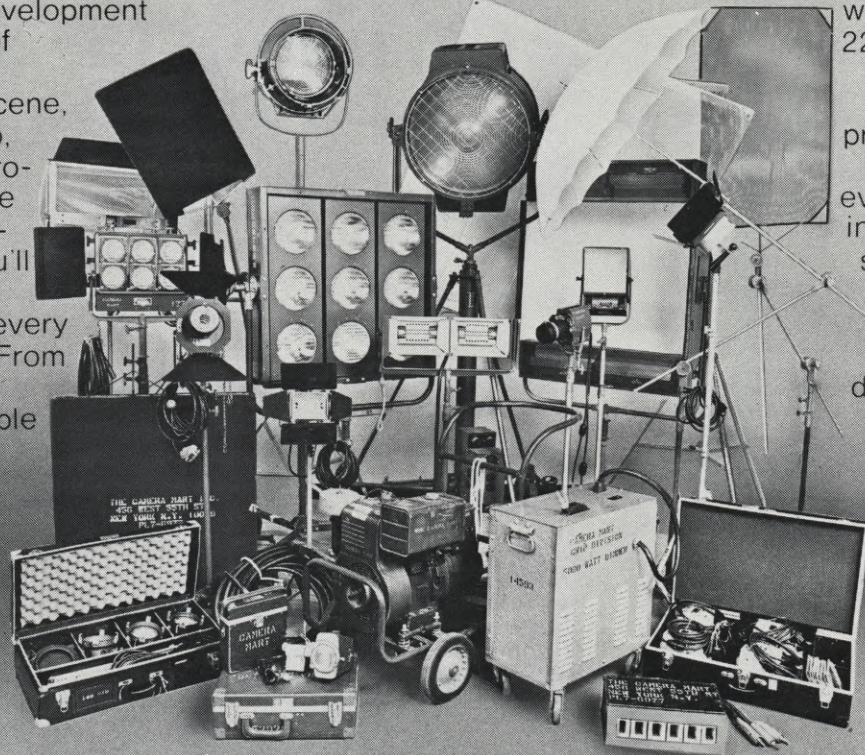
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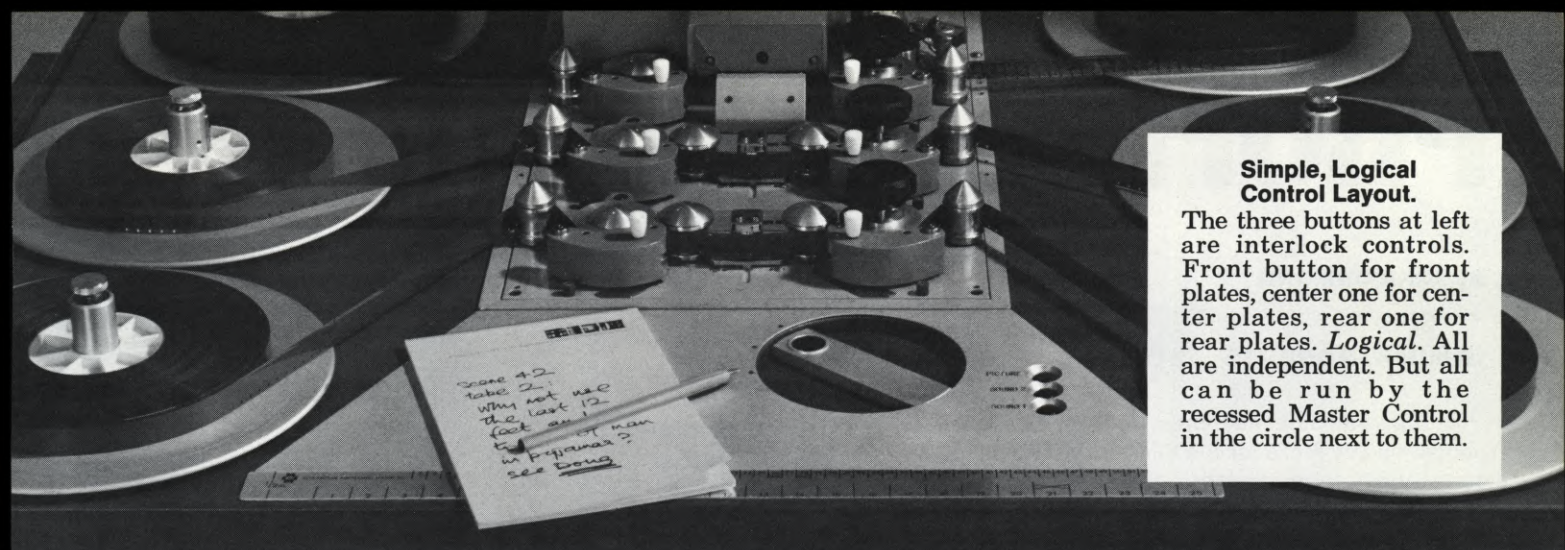
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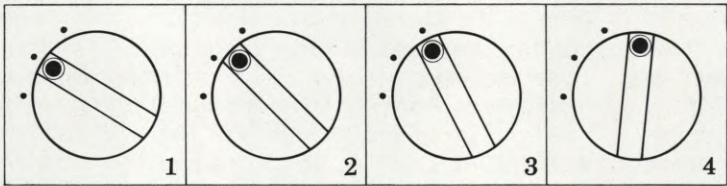


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PROFILE: A.S.C.

By JOHN ORMOND

IRMIN E. ROBERTS, ASC

In the realm of moviemaking, few people qualify more for the title of "unsung hero" than the special effects man. Little is known about his work outside the studios, and few members of the filmgoing public give him much consideration. Yet, without this talented and versatile member of the moviemaking team, many of the most memorable and awesome film sequences would not have been possible.

One of the most successful — and most popular — exponents of the special effects art is Irmin E. Roberts, ASC, who has been doing his "thing" before and behind the motion picture cameras since way back in 1926. That was when Roberts went to work at Paramount studios, in Hollywood's salad days.

"The special effects departments came about not only for the sake of economy, but also because many directors and producers realized that scenes sometimes could be done *better* by the special effects people than if they were done on an actual location," maintains Roberts.

A man of great energy and enthusiasm, Roberts has worked for the best. His film credits read almost like a Who's Who in Hollywood, with major productions for such producers and directors as DeMille, Stanley Kramer, Alfred Hitchcock, Norman Taurog, Edward Dmytryk, Hal Wallis, George Cukor, Billy Wilder, Michael Curtiz and George Stevens.

During the making of more than 150 motion pictures, Roberts has traveled to every continent, and has worked under all kinds of conditions.

For example, he and his colleagues endured monsoons and 120-degree heat in the filming of "ELEPHANT WALK" in the lowlands and highlands of Ceylon. In "SECRET OF THE INCAS", Roberts worked in the Andes at altitudes in excess of 12,000 feet, in extreme cold. For "MARACAIBO", he was back in the jungles again, this time in Venezuela.

"That was a picture we did for Cornel Wilde, who was both producer and director," Roberts recalls. "I went down there with the assistant director and a small crew, and we filmed everything

with doubles and process plates. We kept the film in our icebox, then came back to Hollywood.

"Everybody was so surprised. The doubles looked like the real people in the cast. So Cornel Wilde was able to use a lot more of the footage from Venezuela than he had anticipated."

During that filming of "ELEPHANT WALK" in Ceylon, Roberts came to realize that Lady Luck was very much on his side. He flew in to Colombo, Ceylon, aboard a new Comet jetliner, and left the plane there. During its subsequent flight across the Persian Gulf from Ceylon, that Comet blew up in mid-air, with total loss of life.

"That was a tough picture for me, though," he reminisces. "Vivien Leigh was replaced in the lead by Elizabeth Taylor, and I had to make special plates for the Liz Taylor scenes, which were supposedly done on a plantation near Kandy. As it turned out, we had to do most of the picture all over again at London, because of the change of Taylor for Leigh."

Not all of Roberts' locations have been big problems, though. For Hal Wallis' "GIRLS, GIRLS, GIRLS", he had the luxury of a three-month tour of duty in Hawaii. And for Wallis' "FUN IN ACAPULCO", he labored almost four months in the lush tropics of Mexico's Riviera. In 1960, he had another toughie: four months at Miami Beach for Jerry Lewis' "CINDERELLA".

During his career, many of his films have won Academy Awards for photography for special effects, though he himself has never been the recipient of the coveted Oscar.

It was Roberts' work on "WAR OF THE WORLDS" that led to that George Pal production winning an Oscar for special photography. And Roberts did it again on George Stevens' memorable western, "SHANE".

On that occasion, though, Roberts *did* get some of the credit.

Loyal Griggs, ASC, one of Hollywood's most distinguished directors of photography, was awarded the Oscar for "SHANE". When he went to collect his statuette, Griggs turned to the huge audience and said, "I really didn't win this! Irmin Roberts won it with his second unit."

When Roberts is cornered and asked about the "secrets" of his cinematic art

by students or inquisitive members of the general public, he tends to "clam up" a little. It's understandable, since this is his bread and butter, and a man's value nowadays is in what he knows — and what other people don't know!

One of his favorite stories, though, concerns an assignment he took for the film, "FRENCHMAN'S CREEK", which was photographed near Fort Bragg, in Northern California, in 1944.

"For one particular sequence, we had to construct a miniature castle, which was about four feet high, and set it against a real background of coastline and rolling hills. The castle had to look like it was really there, in the middle of this country scene."

Roberts and his masters of trick photography did their job so well that, when the "dailies" were shown to the studio chiefs in New York a couple of days later, they were furious.

"The New York people wanted to fire everybody, for having the nerve to build a big castle for a movie, when everybody then was stressing economy and the war effort!" Roberts chuckles.

That film won an Oscar for art direction and interior decoration — but not for special effects.

"The studio didn't put the film up in that category," Roberts recalls, wryly. "It would have won, hands down!"

Nevertheless, there has been much that has gone right in the life and times of Irmin Roberts.

In 1976, for instance, he will celebrate his 50th (fiftieth) wedding anniversary. He and his wife, Nelle, plan another long trip to celebrate that one. They have two grown-up children.

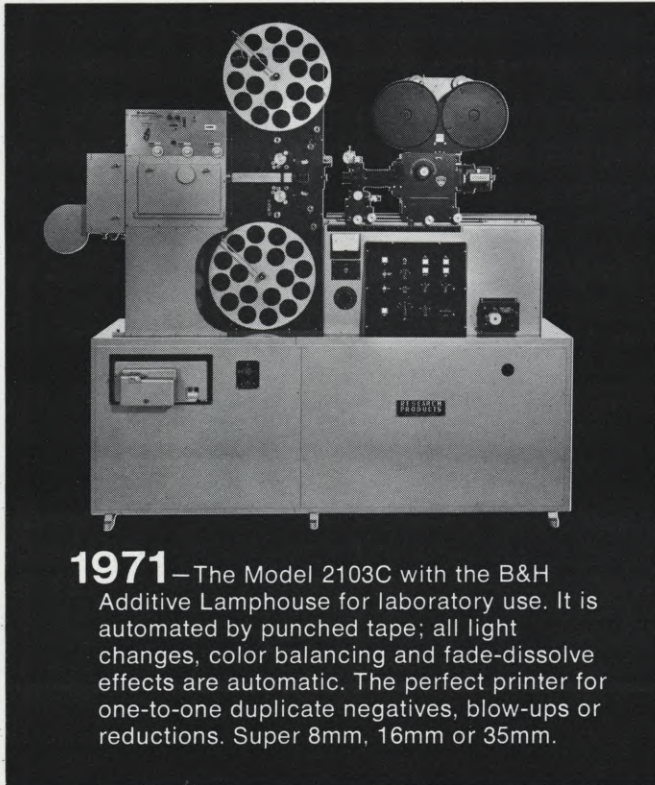
He has been around the world three times. Last year, he took a tour by bus from Finland, through Russia to Poland. He'd still like to see the Wall of China and explore South Africa, though.

He and Nelle have a four-bedroom home in Palos Verdes which they purchased 12 years ago, overlooking the Pacific Ocean in Los Angeles. Roberts plays golf twice a week, at the Los Verdes Country Club.

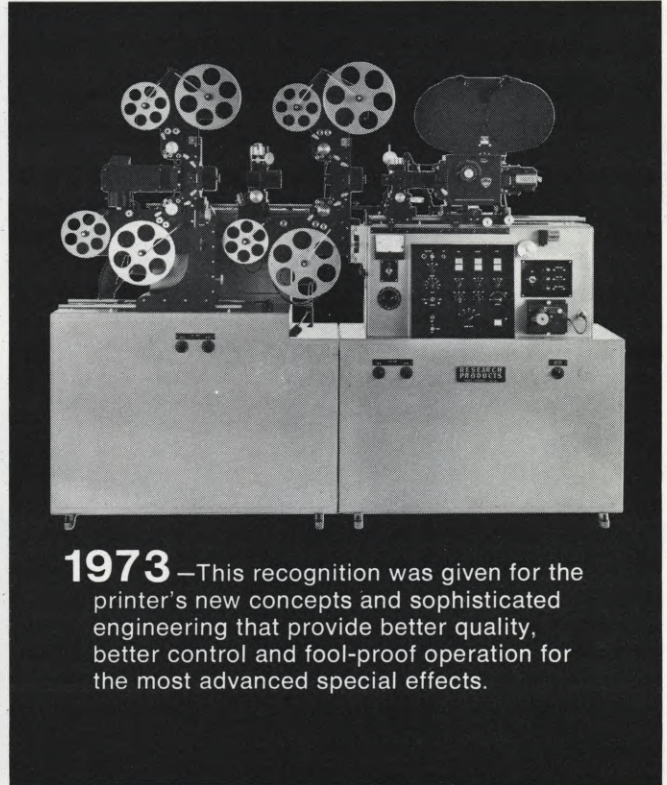
He was a member of the Academy's Special Effects Committee for eight years, retiring from that committee early in 1974. He has been a member of the Masonic Scottish Rite at Long Beach for more than 20 years. And, most important to Irmin, he has been a member of the American Society of Cinematographers since 1933.

"Just think," says Roberts, with a twinkle in his eye, "I could have been an electrical engineer, like my folks wanted me to be. Look what I would have missed!"

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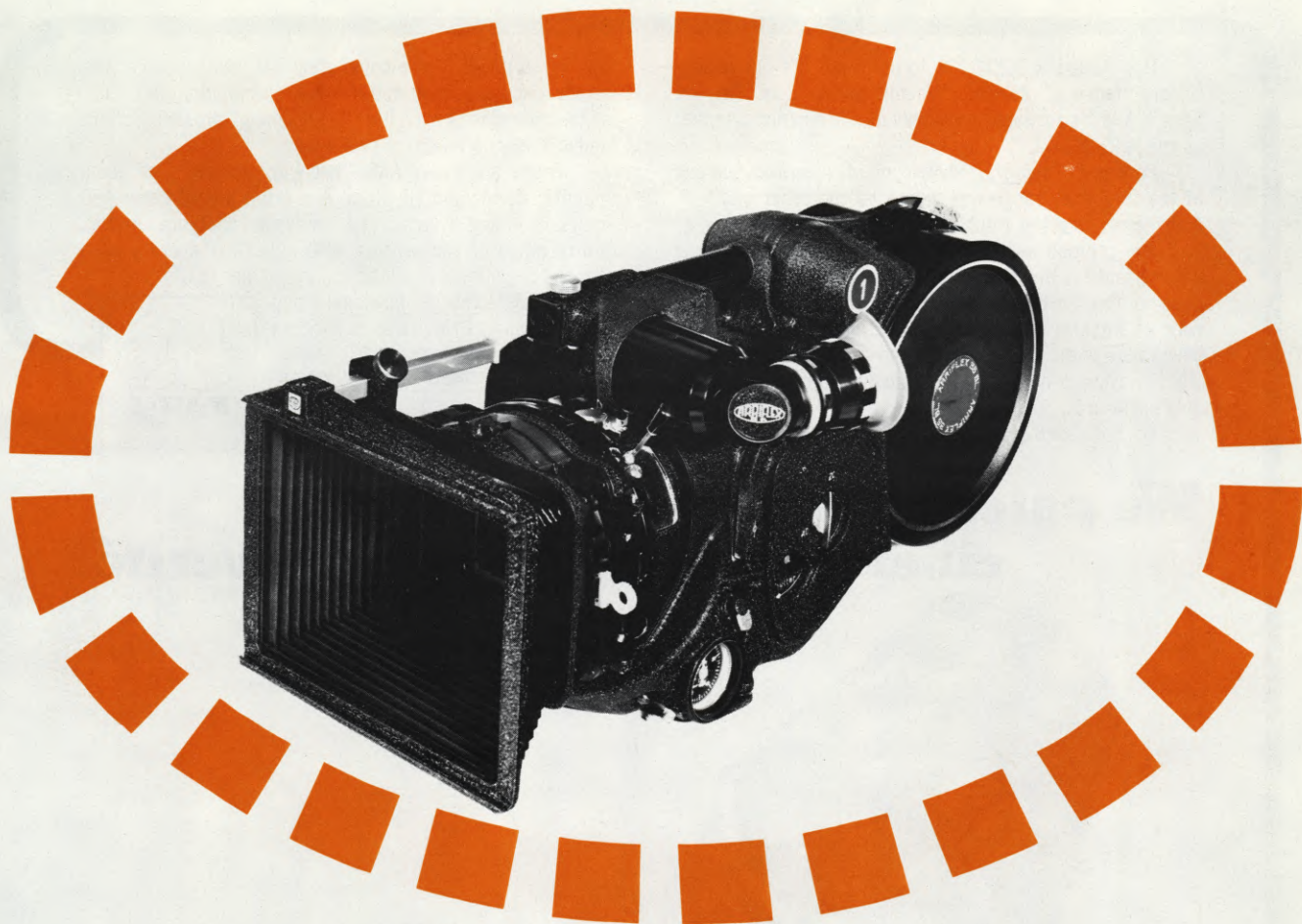
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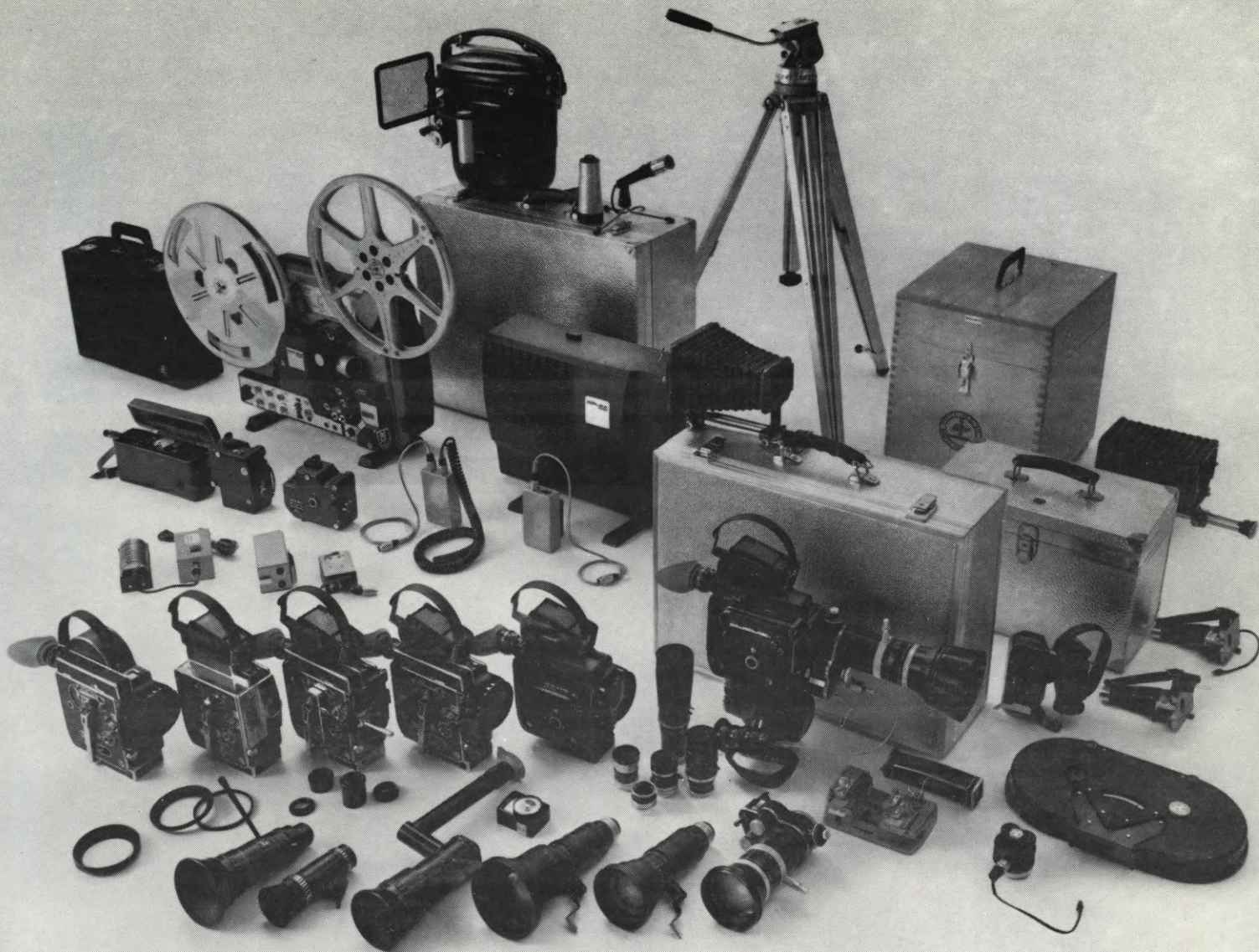
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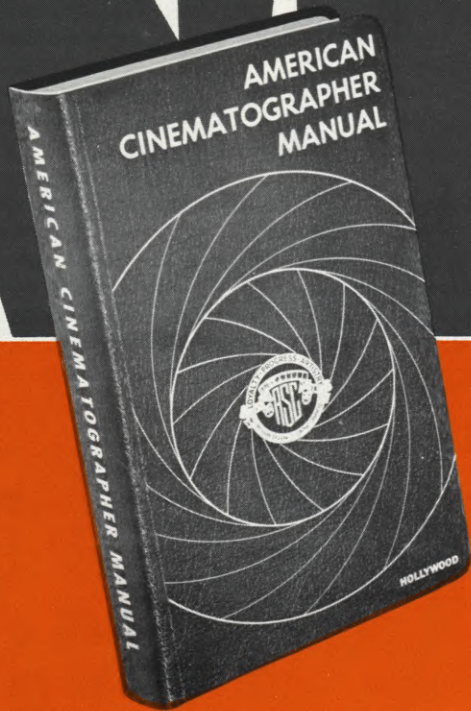
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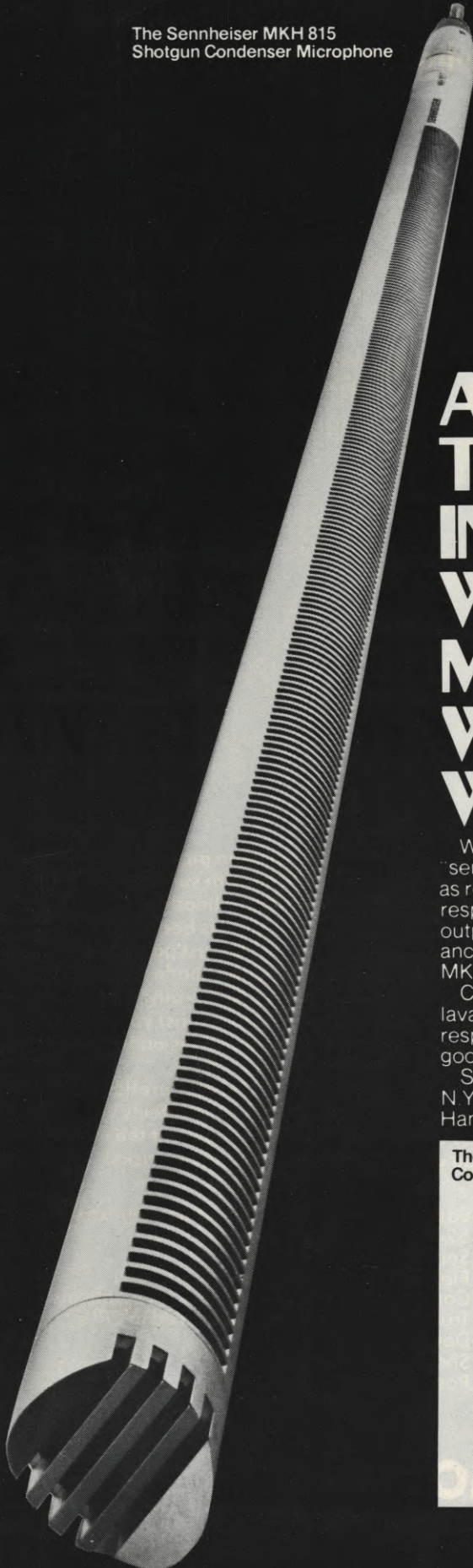
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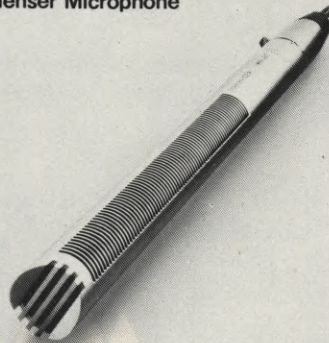
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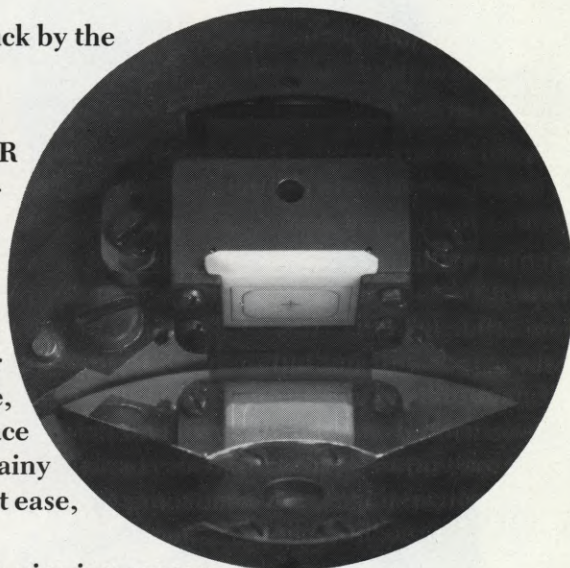
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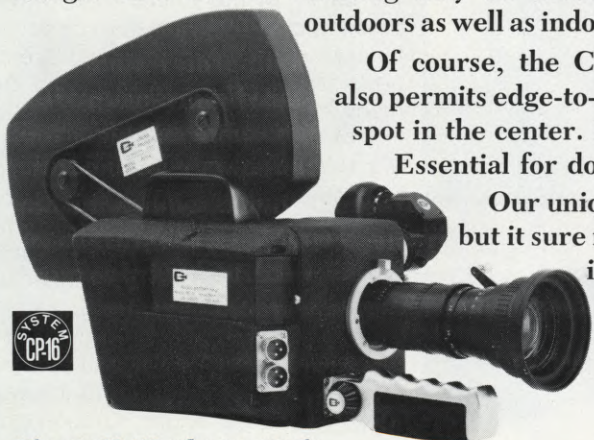
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photokina

74

By **HERB A. LIGHTMAN**

Photokina 1974, the 13th biennial "World Fair of Photography", held in Cologne from Sept. 27 through Oct. 3, was attended by 98,000 visitors from 117 nations, including 31,600 foreign visitors. This represents a remarkable growth in trade attendance from abroad.

It is interesting to note that the official attendance figure was computed by counting the number of tickets sold, without multiple counting of tickets covering repeated visits and without inclusion of complimentary tickets, exhibitors' permits, press cards, etc. Obviously, the total attendance was considerably greater than the number of tickets sold.

Taking part in *Photokina* this year were 777 direct exhibitors, and another 48 represented firms from 27 nations, occupying a gross floor space of 968,400 square feet in 11 spacious halls of the vast exhibition complex on the banks of the Rhine River. Among those included were 430 direct exhibitors and a further 48 represented firms from countries other than Germany.

The United States provided the greatest number of foreign firms represented at Cologne with 93 direct exhibitors. Other foreign nations with sizable representation included: Japan (77), Great Britain (61), France (59), Italy (46) and Switzerland (24).

This year, the governing board of *Photokina* instituted a couple of radical (and some say *controversial*) changes in format. First of all, the duration of the fair was cut from the usual nine days to





seven days. Every exhibitor representative that I talked to welcomed this change, pointing out that not only was it a punishing (and expensive) grind to staff a booth for a full nine days, but that most of the professionally "important" visitors usually attended during the first four or five days.

The second change, identifying *Photokina* quite specifically as a trade fair, limited attendance to trade representatives and professional photographers. It was my personal impression that, while the general public was not actually barred from attending, the high single-admission price (20 marks, or approximately \$8.35 American) effectively discouraged most of the sightseers.

At the risk of sounding like some kind of elitist, I must say that I, for one, welcomed the latter change—as did all of the exhibitor people with whom I spoke. In previous years, *Photokina* has been so crowded with amateurs and curiosity-seekers that it proved most difficult for legitimate trade representatives to get close enough to the booths to conduct their business. It was a common sight to see little kiddies



loading up with technical brochures (which they would certainly never read), with many exhibitors running out of brochures as a result.

Speaking of brochures, I must say that it is appalling to me how many exhibitors show up at *Photokina* to display carefully developed new products—but with no brochures available to explain those products. Or, if they do have brochures, these are printed in only one language (usually German), forcing the rest of us to go looking for an interpreter. It would seem obvious that if these exhibitors would take the trouble to provide full brochure material printed in German, French and English, it would be well worth the extra expense and greatly to their own advantage.

Since *American Cinematographer* readers are primarily interested in professional motion picture production and sound equipment, I shall confine my observations to such products, while acknowledging that by far the greater amount of floor space at *Photokina* was devoted to amateur and professional still photography equipment.

Most of the professional filming equipment was concentrated in Halls 11 and 12. This year there was no single item of equipment that captured the imagination of those attending, becoming a conversation piece, as in years past. Nor were there any really revolutionary new developments in terms of *major* equipment. The key word here is "major", because there were many new smaller items displayed—ingenious gadgets and gizmos of very definite value to the industry. Also, there was a good deal of redesign and upgrading of major equipment items previously introduced. *Photokina 1974* seemed to be an occasion for consolidation and refinement of design—of re-thinking in terms of economics and technical direction. From this standpoint, the fair was solid and gratifying, however disappointing it may have seemed in its lack of technical "blockbusters".

Considering the primary interests of the readers of this journal, I would say that the most important developments represented at *Photokina* fell into the following major categories: metal halide (HMI) lighting equipment, ultra-fast lenses for 35mm cinematography, flat-bed editing consoles and professional Super-8 sound cameras and allied equipment.

Let us consider first the matter of metal halide lighting equipment — probably the most important lighting breakthrough since the introduction of tungsten-halogen lighting. For years, engineers have sought to design

daylight-type lighting units that would provide an intense degree of illumination, while consuming a relatively small amount of current, the ultimate dream being lightweight units that might replace the extremely cumbersome and uneconomical "Brute" and "Titan" arc units.

Metal halide lighting, originally designed to light huge sports arenas and the like, seemed to hold promise of accomplishing these objectives, since they operate at lumens-to-watt efficiencies almost four times greater than that of tungsten-halogen units. At the previous *Photokina* (in 1972), a few small units of this type were displayed—just enough to whet the appetite—but three major drawbacks prevented them, at that time, from being taken seriously as potential lighting sources for cinematography. First, there was the necessity for a heavy and cumbersome ballast unit to accompany each luminaire. Secondly, there was a delay in re-start time amounting to as much as 15 minutes. Third, and most critical, was the fact that under certain conditions having to do with power source frequencies and shutter angles, a flicker would develop when these units were used for cinematography.

At *Photokina 1974*, despite the fact that none of these three very serious drawbacks had been completely eliminated, no less than ten major manufacturers of lighting equipment displayed metal halide units for use in television and cinematography. In the case of two of these manufacturers, laniro and LTM, very complete lines of luminaires, specifically designed to accept the HMI lamps, were on display. Moreover, in almost every case, the manufacturers of this equipment were quite positive in stating that the problems of ballast size, re-start time and flicker stood just on the brink of being solved. If that is true, then we can

shortly expect these HMI units to have an almost revolutionary effect upon motion picture lighting—even though they may not quite replace Brute and Titan arcs.

Elsewhere in this issue, Thomas H. Lemons and Anton Wilson comment in much greater detail upon the HMI units displayed at *Photokina 1974*.

While on the subject of lighting, I must make mention of a major development introduced at *Photokina* by Ryudensha Co. Ltd. of Japan. As is generally known, tungsten-halogen lamps for studio lighting have several important advantages over their incandescent counterparts, namely: smaller size, constant light output, constant color temperature and longer lamp-life. Their one comparative disadvantage is that their original cost is considerably higher. It would appear that this cost differential is due mainly to the expensive quartz envelope which is used in the manufacture of a tungsten-halogen lamp.

In seeking to retain all of the abovementioned advantages of the tungsten-halogen lamps, but at a much lower cost, Ryudensha has developed its ECOLAM line of lamps which perform similarly to tungsten-halogen quartz lamps, but which utilize a highly purified hard glass envelope instead of the costly quartz. The resulting ECOLAM lamps cost approximately 40% less than quartz tungsten-halogen lamps and only slightly more than corresponding incandescent types.

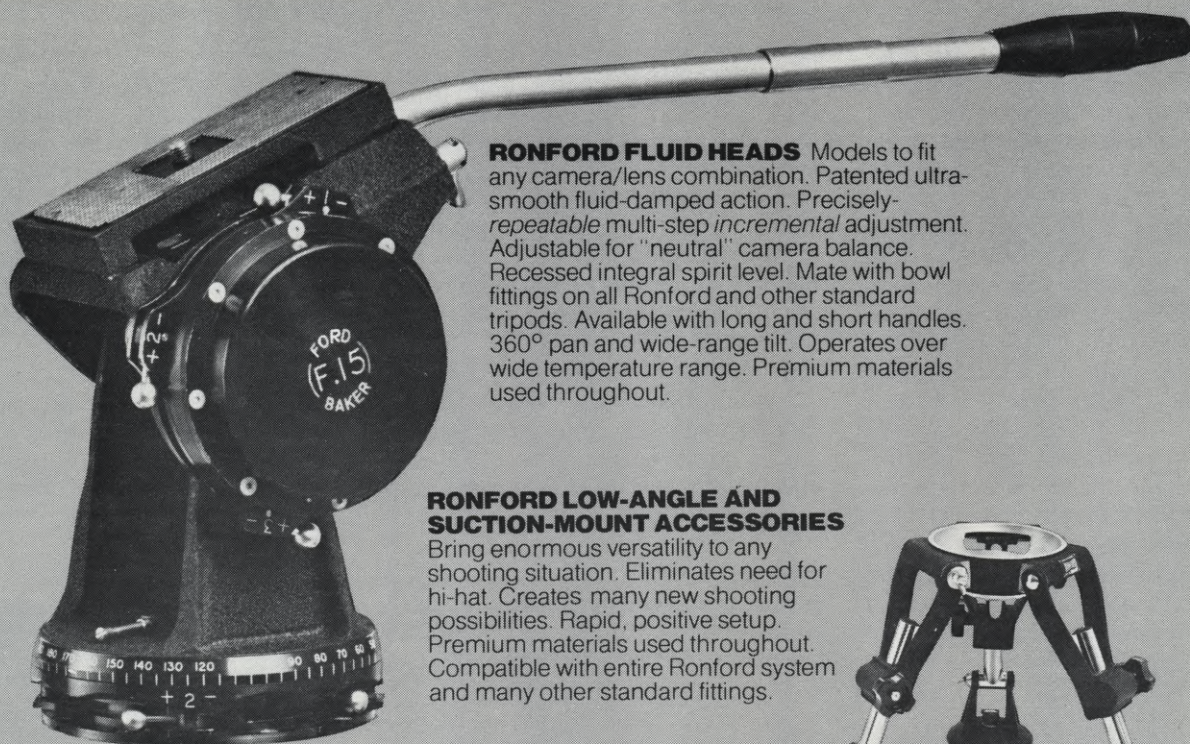
Ever since Kodak introduced its 5254/7254 color negative stocks, with a speed of ASA 100 and the capability of being force-developed one or two stops more, there has been a great deal of interest in shooting with available light or, at the most, very little added artificial light—hence a demand for ultra-fast lenses to fit 35mm motion picture

Continued on Page 1466

The enormous complex of exhibition halls on the banks of the Rhine River which, every two years, is the site of Photokina, the "World Fair of Photography". In the background (top) can be seen the Cologne Cathedral, famed landmark of the city, which has become a symbol for Photokina.

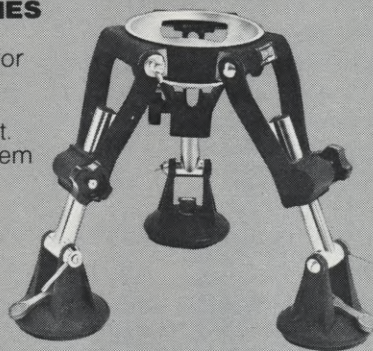


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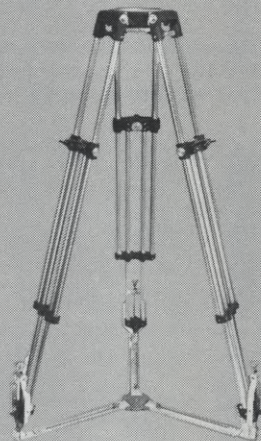
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METAL HALIDE (HMI) LIGHTING AT PHOTOKINA '74



Metallogen lighting has been a long time coming, but ten equipment manufacturers demonstrated their faith in the principle by displaying examples of such lights at Photokina

By ANTON WILSON

On the basis of sheer space, probably more area at *Photokina '74* was devoted to lighting equipment manufacturers than any other particular aspect of professional motion picture equipment. And of all the lighting equipment being displayed there was no doubt that the new Metallogen or metal-halide type lights were receiving the greatest attention. These lights, which employ the HMI lamps, are probably the biggest breakthrough in lighting technology since Tungsten-Halogen was introduced. The name of the game is efficiency and the HMI lamps can put out three to six times more light than an incandescent lamp of similar wattage.

An incandescent lamp works on the principle of heating an element until it glows. Unfortunately only about 15% of the energy put in comes out as visible light. The other 85% comes out mostly as unwanted heat.

The new HMI lamps are actually miniature arcs inside a small quartz

The new LTM 3-light location fresnel HMI kit. These were the only lighting units at Photokina utilizing the new 200-watt Metallogen lamps. Note that only one ballast unit is needed to operate all three lights. An HMI lamp is actually a miniature arc contained within a small quartz bulb.

bulb. The HMI bulb can achieve efficiencies of 45%, about three times greater than an incandescent. Moreover, the HMI lamp emits a light spectrum almost identical to that of daylight. Since incandescent sources lose about 50% efficiency when filtered to daylight color balance, the HMI has almost six times the output of a daylight (blue) filtered incandescent of similar wattage.

What this boils down to is that a 1200-watt HMI lamp will put out almost as much light as an incandescent 5K. Under daylight balance the 1200-watt HMI will put out the remarkable equivalent of 7000 incandescent watts.

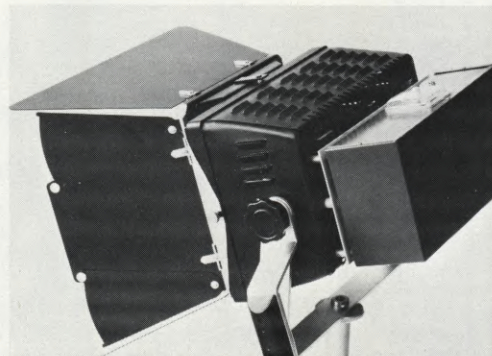
The HMI lamps require a special ballast to facilitate operation. The ballast box accomplishes two things. It provides a very high voltage for ignition (as high as 65,000 volts) and a constant current regulation during operation.

The Cremer lamps, which are made in France, are particularly interesting, since they can be converted from HMI

to incandescent by simply changing the lamp head tray. Thus, the 4000-watt HMI can become a 10,000 watt incandescent in the studio. Likewise, the 2500-watt HMI becomes a 5K incandescent; the 1200-watt HMI, also a 5K incandescent; and the 575-watt HMI becomes a 1K incandescent. These ratings are 6000°K for the HMI lamps and 3200°K with incandescent bulbs.

The laniro line of HMI lights is called the "QuartzColor Daylight" series and is comprised of 575-watt, 1200-watt and 2500-watt units.

The laniro units are focusable



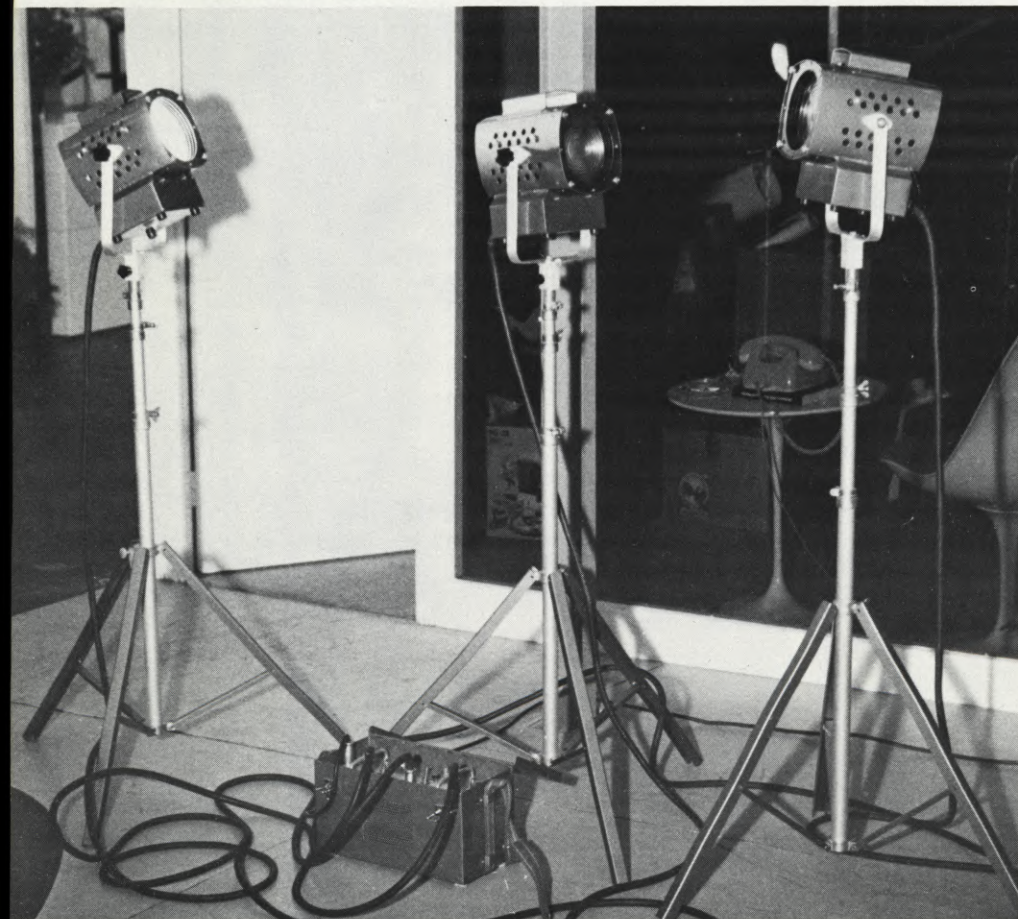
The Kobold DLf 1200-watt focusable spotlight, one of a line of four lightweight reflector-type units. The lamp weighs 5 kg.

fresnels with about a 10-to-1 spot-to-flood ratio on axis. They incorporate hour meters into the housing. This is a nice feature, since HMI bulbs drop 1°K of color temperature per hour of use. Even though the bulbs will last close to 600 hours, the service life is usually considered about 200 hours, after which color temperature degradation becomes excessive.

In most cases, the ballast weighs between two and three times as much as the lighting head. For example, the laniro 575-watt head weighs 6.4kg and its ballast 12 kg. The 1200-watt is 13 kg and 18.5 kg respectively, while the 2500-watt package is 15.2kg and 29 kg.

Kobold has introduced a line of lightweight reflector type units. The series consists of two 575-watt units, a

Continued on Page 1456



MORE ABOUT HMI LIGHTING AT PHOTOKINA '74



By **THOMAS H. LEMONS**

There were ten manufacturers of metal halide (HMI) lighting equipment represented at *Photokina '74*. These included: LTM, Ianiro, Cremer, Kobold, Reiche & Vogel/B. Delschaft, Arri, Keller, Mole-Richardson GmbH, Cima International and Alpha Spektrum GmbH of Munich.

LTM of France displayed what was probably the most complete line of HMI equipment and it included fresnel spotlights, open floodlights, soft lights and beam projectors. One of their massive beam projectors, for example, produces a very narrow beam of 12,000,000 candlepower, which may not have great significance in day-to-day motion picture work, but could certainly prove interesting for specialty lighting effects.

Ianiro introduced their new line of QuartzColor Sirio Daylight fresnel lens spotlights which (running true to form for Ianiro equipment) were rugged, well-built, and of very sound design, both mechanically and photometrically (uniformity of field and good spot-to-flood ratios).

Cremer exhibited applications of the HQI light source made by Osram and

The Ianiro 575-watt and 1200-watt "QuartzColor Daylight" lamps, using HMI bulbs. The ballast units shown are on the floor.

Phillips, which is the light source originally developed for the Munich Olympic Games. Available were 1000, 2000 and 3500-watt lamps used in both floodlight and soft light modes.

Another manufacturer exhibiting was Kobold, with a line of open-faced floodlights. These are more efficient than fresnel units, but do not create the narrow center beam high-intensity that fresnel spotlights produce at spot. In fact, I would characterize the general floodlights developed for HMI by such manufacturers as Kobold, Cremer and LTM (all of whom have similar units) as starting where the fresnels stop and going from flood to wide-flood. This is an efficient producer of energy, but it must be used at a much closer range than you would normally use a fresnel lens spotlight.

It should be pointed out that all of the manufacturers displaying standard fresnel systems for use with HMI shared the common problem, namely the inefficiency of an arc light in a fresnel lens spotlight, where the arc is not a point source, as it is in high-intensity carbon arc units and plano-filament-type incandescent lamps. For example, in the Cremer line of fresnel lens spotlights, the 2500-watt and the 4000-watt HMI fresnels both have approximately the same maximum center beam intensities. The only difference is in the fields covered at spot. Again, my point in relation to the fresnel lens spotlight is that, considering the arc brightness and distribution of energy from the arc, its limitations in collecting the light from the arc and creating a beam with the lens and reflector combination restrict its ability to obtain an efficient system with the light distribution available from the HMI type of arc lamp. To put it more succinctly, there has not yet been developed a reflector that efficiently collects this type of light and images it for the fresnel lens.

The arc itself is approximately three times brighter than an incandescent filament, but it is a line source that varies from approximately 1/2-inch to 1 1/4-inch in length in the 575-watt to 4000-watt sizes. This arc brightness is

Continued on Page 1473

A rundown on the various types of Metal Halogen lighting at Photokina, including the problems that remain in adapting this amazing new equipment for use in the motion picture industry



The Cremer 4000-watt HMI light. This luminaire is particularly interesting because it can easily be converted to a 10K 3200°K spotlight.

Kobold Model DLf 575 HMI light. This lightweight reflector-type unit burns 575 watts and is focusable. Note ballast unit on floor.



QUARTZCOLOR SIRIO DAYLIGHT (HMI) SPOTLIGHTS



Anticipating the wave of the future right now, Ianiro introduces a versatile line of Metal Halide lamps which, despite current bugs, promises an exciting new light source for cinematographers

A range of spotlights designed to use the latest metal halide lamps, Sirio spotlights introduce a new era in lighting for location filming or television outside broadcasts.

Sirio spotlights use HMI discharge lamps that have an efficacy of 85-96 lumens per watt, (nearly four times greater than filament lamps) and an equivalent colour temperature of 5600K with low-power consumption.

HMI Lamps

The lamps used are of the metal halide family, with mercury and argon as the basic elements to achieve the arc discharge. Other rare earth metals

are added to provide a large number of emission lines which appear as a continuous spectrum.

The initial colour temperature is equivalent to 5600K and the average colour temperature decrease during life is 1K per hour of the operation; although colour temperature slowly decreases with use, colour rendering and luminous efficacy remains reasonably constant throughout the useful life. The luminance (brightness) decreases to around 80% after 500 hours (Illustration 2). The useful life is governed by the acceptable colour tolerance of the film stock or television requirement, but is normally in the

region of 200 hours.

Quartzcolor Daylight spotlights are provided with hour counters so that operating time can be recorded.

HMI lamps need a short warm-up time, around 1 minute to 90% light output and 3 minutes to full colour stabilization. Re-ignition can take place at any time after switch-off.

Technical & Safety Precautions

The light produced by the discharge lamp is not as constant as a filament lamp and fluctuates at twice the frequency of the A.C. power supply. This means that care has to be exercised when use with a motion picture camera

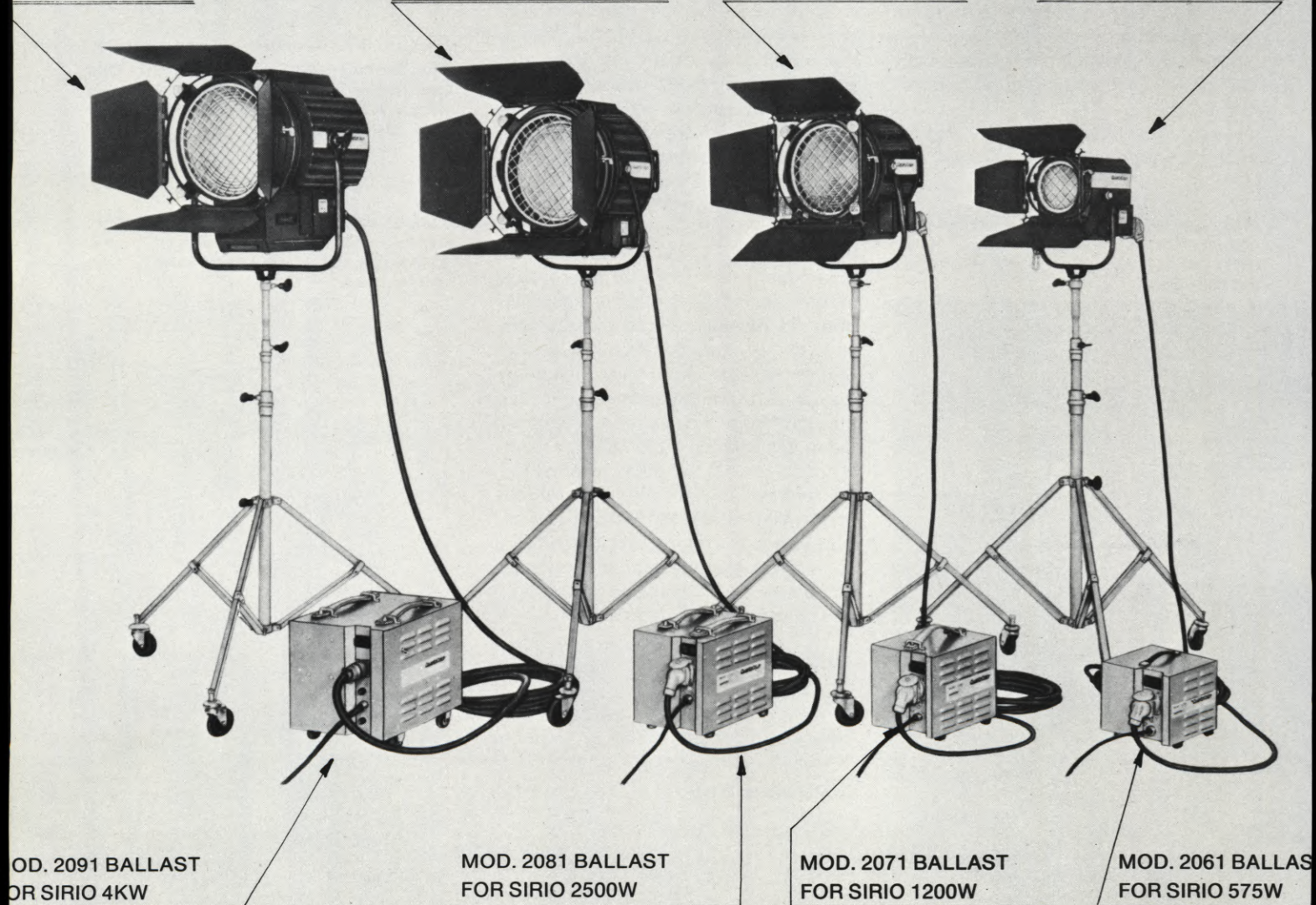
Four new QuartzColor Sirio Spotlights by Ianiro, ranging from 575 watts to 4000 watts. Utilizing HMI discharge lamps, they have an efficacy of 85-96 lumens per watt (nearly four times greater than filament lamps) and an equivalent color temperature of 5600°K, with low power consumption. Up until now, a flicker problem has been experienced with these lamps when filming under certain conditions, but an early solution to the problem seems eminent.

MOD. 2090 SIRIO
4KW H.M.I. (M.O.)

MOD. 2080 SIRIO
2500W H.M.I. (M.O.)

MOD. 2070 SIRIO
1200W H.M.I. (M.O.)

MOD. 2060 SIRIO
575W H.M.I. (M.O.)



MOD. 2091 BALLAST
FOR SIRIO 4KW

MOD. 2081 BALLAST
FOR SIRIO 2500W

MOD. 2071 BALLAST
FOR SIRIO 1200W

MOD. 2061 BALLAST
FOR SIRIO 575W

to avoid flicker resulting from the exposure per frame varying in a regular manner. Thiflicker can be avoided if the film camera is operated with a (172°) shutter at 24 FPS or 180° shutter at 25 FPS giving an exposure time of 1/50th of a second. The camera needs to be synchronised with the mains, or the motor crystal controlled to guarantee filming speed. These lights are not suitable for variable speed cinematography.

The emitted radiation of HMI lamps starts at about 220nm in the ultraviolet region, the lamps are practically ozone free and the spotlight lens acts as an ultraviolet filter that prevents any possibility of radiation burns (sunburn) that might otherwise be experienced. All Quartzcolor spotlights are fitted with a safety cut-out that prevents the lamp being ignited if the lens door is open or the lens removed.

The efficiency of the Sirio spotlights in practical terms when used for daylight balancing is remarkable, a 2500W model for example, produces a light output equivalent to a filtered 10,000W incandescent spotlight.

Power consumption for the 2500W is only 12 amps compared with 41.5 amps of the 10kW on 240V supply. There is also a considerable reduction in the heat transmitted by the Sirio spotlight as a result of the lower wattages.

The use of the lightweight high-power Sirio spotlights, which operate on readily available A.C. power supplies, will reduce the freight, handling and power supply costs associated with conventional equipment.

Unlike other discharge lamps, the HMI lamp used in the Sirio spotlights has a short warm-up time and an instant restart if switched off.

Ballast units are not built into the lampheads, so that unnecessary weight does not have to be lifted, as for example when mounting spotlights on a tower or scaffold rig and remote on/off switches are provided on the ballast in addition to those on the lamphead. ■

COMMENTS ON DISCHARGE LAMPS

By MARIO DE SISTI

Head of Engineering
QuartzColor, Ianiro S.P.A., Rome

At the last *Photokina* (1972) we displayed only a prototype of a 2500-watt HMI lamp, but this year we have presented a completely new range of QuartzColor HMI lamps — 575-watt, 1200-watt, 2500-watt and 4K. The 4K has been shown for the first time at

Photokina.

Up until now there has been a problem of flicker in the use of these discharge lamps for motion picture production, but only under certain conditions. For example, when film is shot at 25 frames per second, with a crystal motor on the camera and the generator controlled at 50 cycles, there is no problem. Complete films have been made using discharge lamps exclusively in this way and the producers have been very happy with the result.

However, when filming is done at 24 frames per second, there is still some problem with the flicker. We have been studying this problem and working very hard to solve it and we feel that by next year we will have an electronic ballast unit to control the flicker effect. We have also been working on the problem of sound insulation and we hope to present at FILM '75 (June, 1975 in London) a new concept for solving this problem.

Many producers have used the HMI lamps successfully for exterior fill lighting, working with 3-phase 220-volt current. But, of course, they cannot use them for key lighting. Many other people besides ourselves are working on this problem. We think that the best solution will be the electronic ballast and we hope to have it ready by next year.

We have been displaying at *Photokina* a 1000-watt CSI lamp from Thorne. The CSI, another new source, is also a discharge lamp, but it is a little bit different from the HMI in that the color temperature averages about 4000°K. The CSI has certain advantages over the HMI, however. For example, the value of the peak of the light is a bit higher — nearer to 40%, as compared to 20% for the HMI — and the CSI lamps are about one-third the cost of the HMI units. Of course, for the CSI lamps you need a 1/2-blue filter to raise the color temperature to that of daylight. Likewise, if you want to use it as a 3200°K source, you need a slight filter correction to bring down the color temperature.

Up until now, another problem with discharge lamps — both HMI and CSI — has been the necessity of waiting 10 to 15 minutes after a lamp has been turned off before re-starting it. But now, with a new type of ballast that has been developed, it is possible to re-start the lamp immediately, even when it is very hot.

Controlling the color temperature of HMI lamps is quite simple. If you go up with the voltage, the color temperature drops down; if you go down with the voltage, the color temperature goes up. The tolerance for color temperature



The 2500-watt Sirio Daylight luminaire. These QuartzColor spotlights are provided with color counters, so that operating time can be recorded.

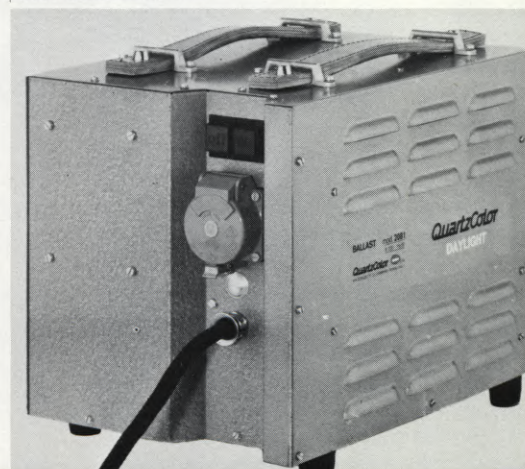
varies quite widely from one lamp to another. For example, the Osram people rate the lamps at 5600°K — plus or minus 400°. Since this means that there is a possible variation of 800°, we have developed a ballast with a voltage selector that ranges from 210 to 250 volts. If you want to raise the color temperature of the lamp, you turn the voltage down — and vice versa.

Another advantage of this voltage selector ballast is that you can use it to extend the useful life of the lamp. Since discharge lamps lose about 1°K per hour of burning, it has been common practice to discard them after 200 hours. But with the voltage selector, you can simply turn the voltage down and raise the color temperature of the lamp back up to normal. You will lose some lumens when you do this, but the color temperature will remain correct. We feel that this is an important advantage.

In addition, we have put an on-off switch on our ballast units, so that the lamps can be switched on or off from the ballast, as well as directly from the spotlight. This becomes very convenient when you have lamps mounted

Continued on Page 1478

Model 2081 ballast for the 2500-watt unit. HMI lamps need a short warm-up time, around three minutes to reach full color stabilization.



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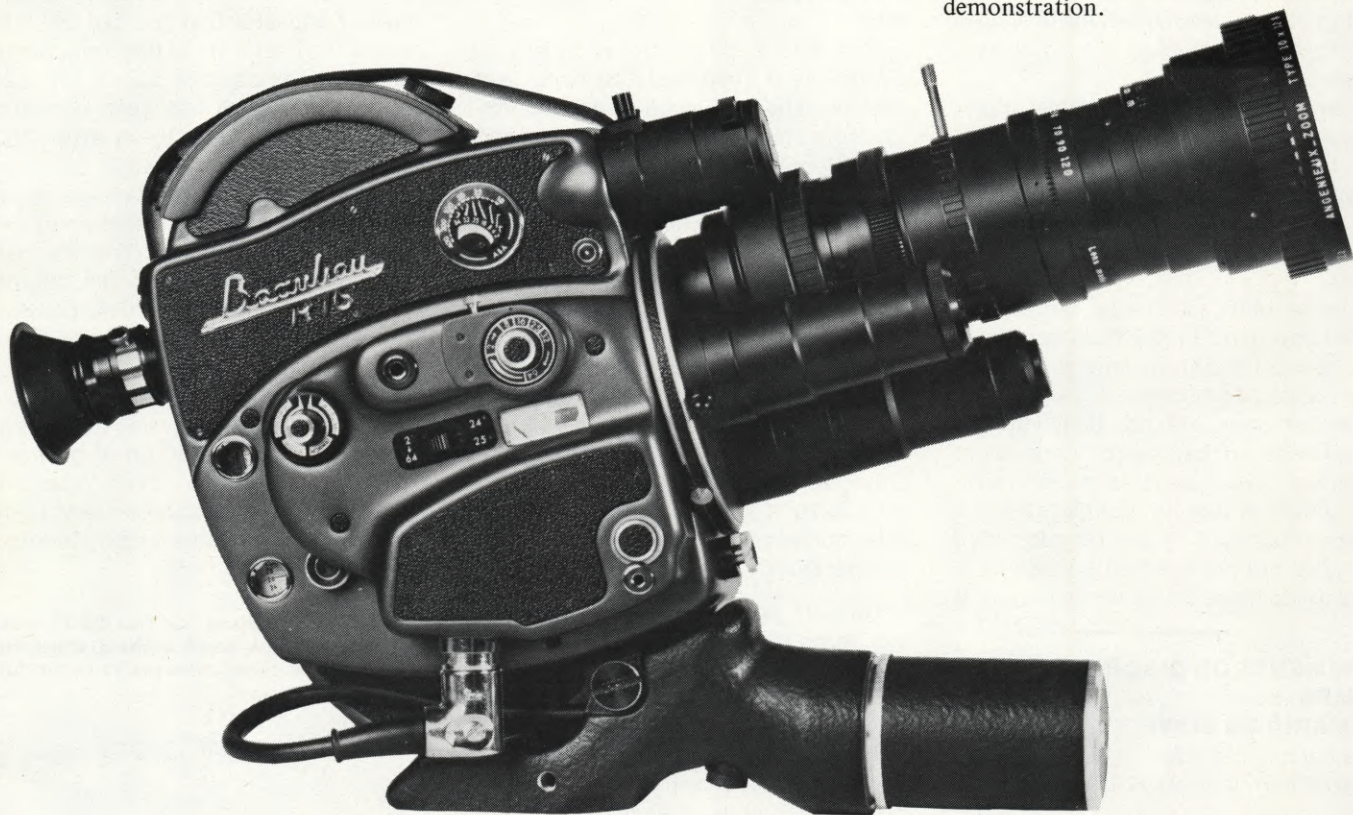
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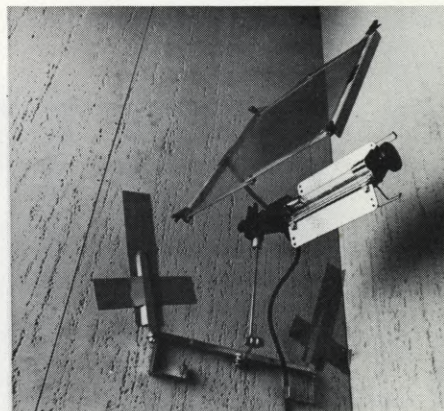


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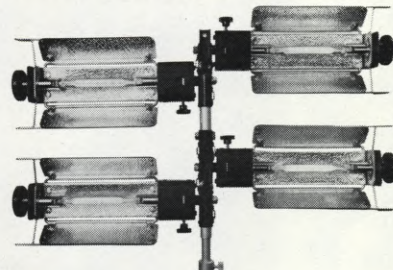


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series. And a family of snap-together flags held by flexible arms. Using these and other components, Tota-Light can be stacked, diffused, converted in seconds to a softlight,



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NEW FROM ARRIFLEX



A set of new ultra-fast Zeiss lenses, a new combination crystal-controlled vari-speed, single-frame motor, and the exciting new 16SR camera going into production at last—highlights from Arnold & Richter at Photokina

As usual, the Arnold & Richter booth at *Photokina* (displaying Arriflex cameras and accessories, Arri processing machines and Arri lights) was a focal point of interest for the crowds attending the show.

At previous *Photokinas*, this booth has been the site of the respective debuts of the Arriflex 35BL and Arriflex 16SR cameras. Both of these cameras were present this year, updated in various ways, and the welcome announcement was made that the 16SR is at last in production and will be available for delivery in February, 1975.

While Arnold & Richter did not surprise the crowd with another new camera at this *Photokina* (as if they really needed one), there were on display several new accessories that should prove most interesting to cameramen.

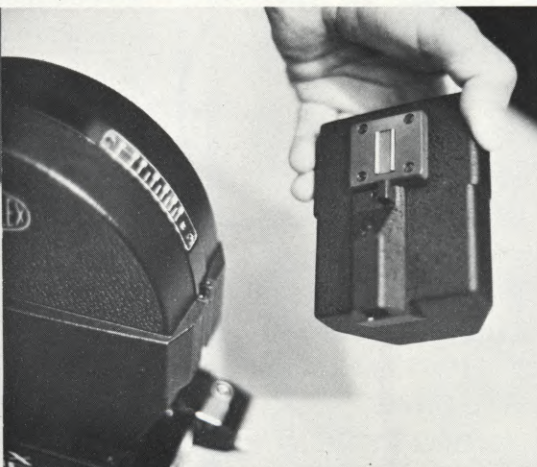
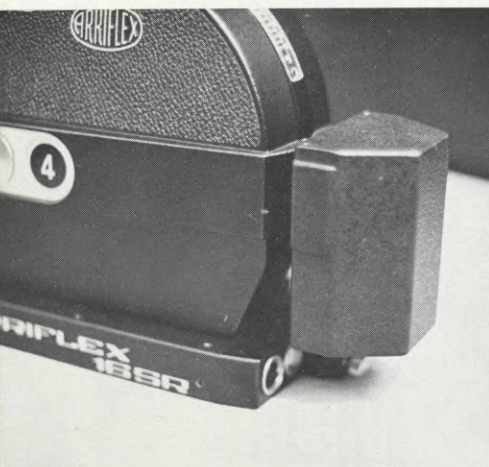
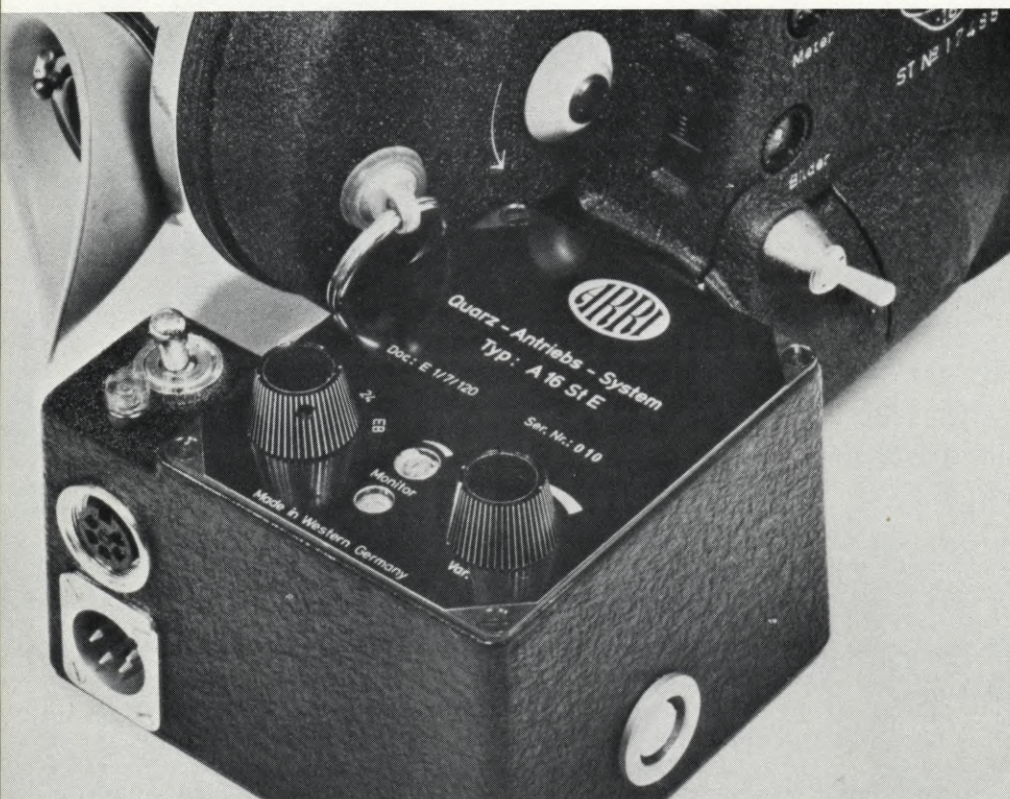
In the following interview, Volker Bahnemann, Vice President and General Manager of Arriflex Company of America, provides a brief rundown on these items:

QUESTION: Would you tell me about the new Zeiss "Super-Speed" lenses for 35mm cameras that are on display here?

BAHNEMANN: The new Zeiss Super-Speeds are the first series of

Motor control for a new combination crystal-controlled, vari-speed, single-frame motor for the Arriflex 16S and 16M cameras. The new control is for 24-25 frame operation, has a variable-speed range of approximately 4 through 75 fps, a single-frame capability (1/15 second), and external sync input with phase control mode. It is designed as a 12-volt system and can be powered with the existing 16BL or 35BL Arriflex batteries.

(LEFT) The Arriflex 16SR now has a new "on board" battery added at the rear of the camera. This results in even better balance for shoulder operation, elimination of the power cord and, in fact, makes the camera a completely self-contained system. (CENTER) The battery camera adheres to the 16SR body by means of a magnet. (RIGHT) The battery pack automatically pivots up and out of the way as the Arriflex quick-change 400-foot magazine is lifted off of the 16SR.





25mm, T/1.4 "Super Speed" Zeiss Distagon

Optical Construction	10 lens elements, including 1 aspheric lens, in 9 lens groups.
Field Angle	For: Academy/Full Aperture
	Diagonal: 55°/60°
	Horizontal: 46°/50°
	Vertical: 34°/38°
Focusing Range	Infinity to 10"
Dimensions	Largest overall dia.: 76mm 3"
	Overall Length: 88mm 3.4"
	Weight (approx.): 550gm 19.1oz.



35mm, T/1.4 "Super Speed" Zeiss Distagon

Optical Construction	8 lens elements, including 1 aspheric lens in 6 lens groups.
Field Angle	For: Academy/Full Aperture
	Diagonal: 41°/45°//
	Horizontal: 34°/36.5°
	Vertical: 25°/28°
Focusing Range	Infinity to 15"
Dimensions	Largest overall dia.: 76mm 3"
	Overall Length: 88mm 3.4"
	Weight (approx.): 540gm 19oz.



50mm, T/1.4 "Super Speed" Zeiss Planar

Optical Construction	7 lens elements in 5 groups.
Field Angle	For: Academy/Full Aperture
	Diagonal: 32°/34.5°
	Horizontal: ±6°/28°
	Vertical: 19°/21°
Focusing Range	Infinity to 27.5"
Dimensions	Largest overall dia.: 76mm 3"
	Overall Length: 88mm 3.2"
	Weight (approx.): 410gm 11.5oz.



85mm, T/1.4, "Super Speed" Zeiss Planar

Optical Construction	6 lens elements in 5 groups
Field angle	For: Academy/Full Aperture
	Diagonal: 18°/20°
	Horizontal: 15°/16°
	Vertical: 11°/12°
Focusing Range	Infinity to 40"
Dimensions	Largest overall dia.: 76mm 3"
	Overall Length: 76mm 3"
	Weight (approx.): 590gm 21oz.

professional motion picture lenses developed for contemporary large-aperture, low-light-level cinematography. They are not modified still-camera lenses, but rather a completely new optical series designed specifically for motion picture use to yield images of the highest quality in ideal or difficult lighting conditions and with normal or forced color film processing.

These new Zeiss lenses use singly, or in combination, advance design concepts including aspheric elements, moving lens elements, and

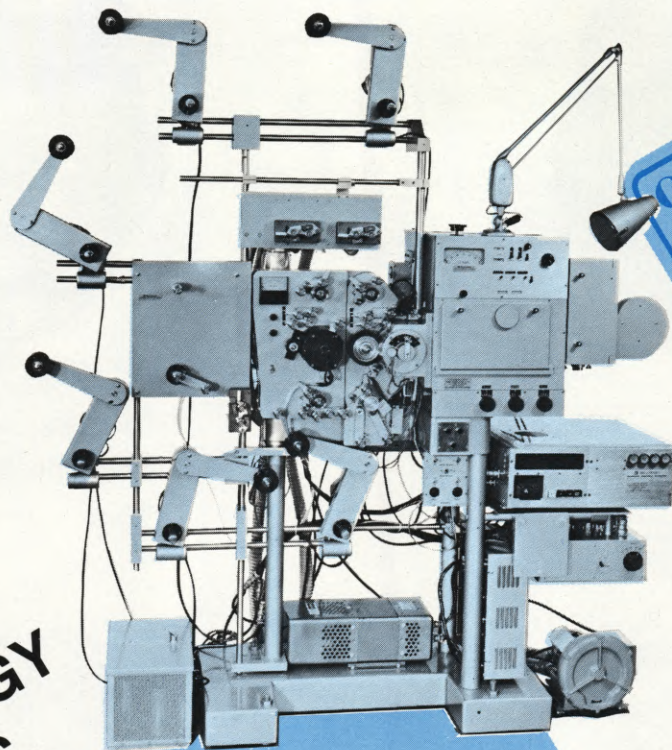
multi-coating. Moving, or "floating" elements, as they are sometimes called, are lens groups connected to the focusing mechanism, as in a zoom lens, but they are employed in advanced fixed-focal-length design to correct field curvature and neutralize optical aberrations, particularly those at close distances. The new set consists of a 25mm F/1:1.2, a 35mm F/1:1.2, a 50mm F/1:1.3 and an 85mm F/1:1.4. All lenses in the series are T/1:1/4. The already-available 16mm Distagon F/2, completes the focal length range on the

wide angle side. (To design and manufacture a shorter than 25mm focal length to cover full aperture with a T/1.4 lens opening is a question of economics, since a lens of that type would have to sell at a much higher price).

I could say many fantastic things about the new Zeiss lenses, but until you see their unexcelled performance on the screen, their optical capabilities are difficult to believe. Our test films indicate optical characteristics we

Continued on Page 1468

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Robin Lehman
and Arri 352C

"We had to chip the ice off the Arri to change magazines!"



Arri 352C keeps running
despite temperatures down to
37°F below zero.

"Shooting the geysers in Yellowstone Park, we were constantly bathed in steam that froze solid on the camera."

Colter's Hell

That's film maker Robin Lehman describing the shooting of *Colter's Hell*. And this: "We were there throughout January, and the temperatures never rose higher than 10°F above zero. At one point, it went down to 37°F below."

Brittle Film

"To change magazines, we sometimes had to chip the ice off the camera with a knife!" says Mr. Lehman. "Loading was difficult, too — because if you wrapped the film around two fingers, it would snap."

No Heaters

"The Arri had no special lubrication. No heaters, no blimp. But we ran more than 28,000 feet of 5254 through it, without losing a frame."

Colter's Hell won the Golden Bear award for best short at the Berlin Film Festival. Says Mr. Lehman: "I think the camera deserves a prize, too, for holding up under those conditions."

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BACKED BY SERVICE

NEW BOLEX H-16 EL CAMERA



The newest model of a famous 16mm camera utilizes modern electronics for improved filming accuracy and versatility

By ERNST WILDI

Light measuring by means of a silicon cell is likely to replace the presently used method with a Cadmium Sulphide cell, because of its built-in favorable characteristics and advantages. A silicon cell is extremely sensitive and reacts instantly to the slightest changes in brightness. It, therefore, permits most accurate diaphragm adjustment. It has no memory; as a result, a silicon cell can be pointed toward the brightest light and immediately afterwards toward a dark area or vice versa without having

to wait until the needle settles down.

A silicon cell, furthermore, is extremely rugged, practically unaffected by temperature, and, therefore, works as accurately in the tropics as in the arctic. It is equally sensitive to all colors from blue to red, which can be important when color filters are used for special effects, or when filming under colored lights in a studio, stage or nightclub. These are some of the reasons why Bolex incorporated a silicon cell in the latest EL Camera.

To take full advantage of the silicon's

diaphragm manually, or if he needs a system where the diaphragm adjusts itself automatically while filming (as for panning from light to dark areas or vice versa), when following a moving subject or in a daylight single-frame sequence, where the light changes (a sunset), the Bolex EL Camera can be equipped with a lens having a built-in automatic aperture system, such as the Vario-Switar 16-100mm (FIGURE 2).

With such a camera and lens combination, the filmmaker has a choice of using the automatic system in the lens or the manual system in the camera. The measuring method of the camera's built-in meter can be classified as a center-weighted system measuring a center field, which is approximately 35% of the total image area (FIGURE 3). This is a good compromise, since exposure is not affected by extremely bright or dark picture areas near the borders, which are unimportant parts of the scene. The meter reading, therefore, should be extremely accurate for the majority of lighting and subject conditions. The EL meter measuring the light behind the lens has naturally all the other advantages of through-the-lens measuring systems.

It shows the filmmaker at all times accurately what area is measured — the area seen in the finder (or, in the Bolex System, the 35% center area). The measured area depends on the focal length of the lens and changes



(ABOVE) FIGURE 1 — On the Bolex H-16 EL camera, the silicon light measuring cell is automatically moved out of the aperture by depressing the release button and moved back in by depressing the cell lever. (BELOW LEFT) the Vario-Switar 16mm-100mm lens, with fully automatic diaphragm adjustment and power zoom.

measuring accuracy, the cell is right at the aperture, where it receives the full amount of light coming through the lens and measures the same amount of light reaching the film. This naturally requires setting the aperture before the camera starts running as depressing the release button automatically moves the cell out of position. It is moved back into the measuring position by depressing the cell lever (FIGURE 1).

If the filmmaker prefers a system where he need not adjust the

FIGURE 3 — Silicon cell measures shaded area (about 35% of the total field). Two red lighted diodes below indicate correct aperture when they are of equal brightness.



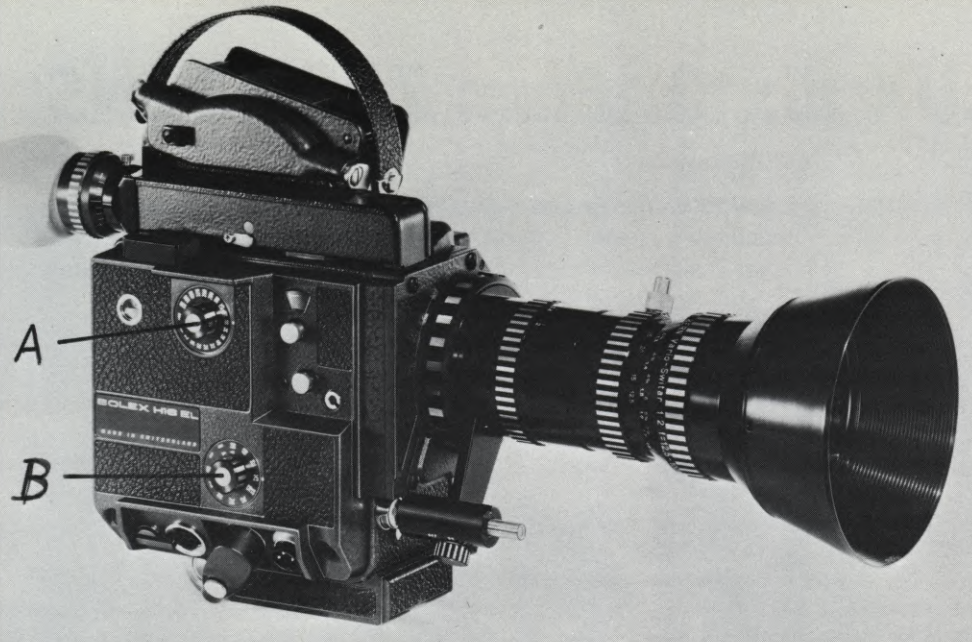


FIGURE 4 — The Bolex EL camera, with film speed settings as high as 630 ASA (control A) and running speed control (B). The ASA setting is coupled to all of the camera speeds from single-frame to 50 fps. The aperture set by the lighted diodes is, therefore, correct at all running speeds.

with the focal length. In an indoor scene with wide-angle lens, it may measure a 50° angle — in a nature scene, with telephoto a 3° angle.

Through-the-lens metering systems are especially valuable when filming subjects far away with a telephoto or subjects close to the camera with macro lenses or extension tubes. In this case, the filmmaker need not consider exposure increases which are necessary when extension tubes or bellows are mounted between camera and lens. Since the cell in front of the film plane measures the light reaching the film, it provides correct and accurate exposures regardless of what closeup accessories may be used. The

same is true when color filters are used in front of the lens or in the gelatin holder behind the lens. In either case, the light is measured through the filter and correct aperture setting is obtained without considering filter factors. This is true especially since the silicon cell reacts to all colors equally.

In most light-measuring systems, in hand-held meters, in systems built into 35mm still cameras, Super-8 or 16mm motion picture cameras, the reading is usually indicated by something like a galvanometer with moving needle or other moving indicator. While this is convenient, it is a somewhat delicate instrumentation which must be treated with a certain amount of care and

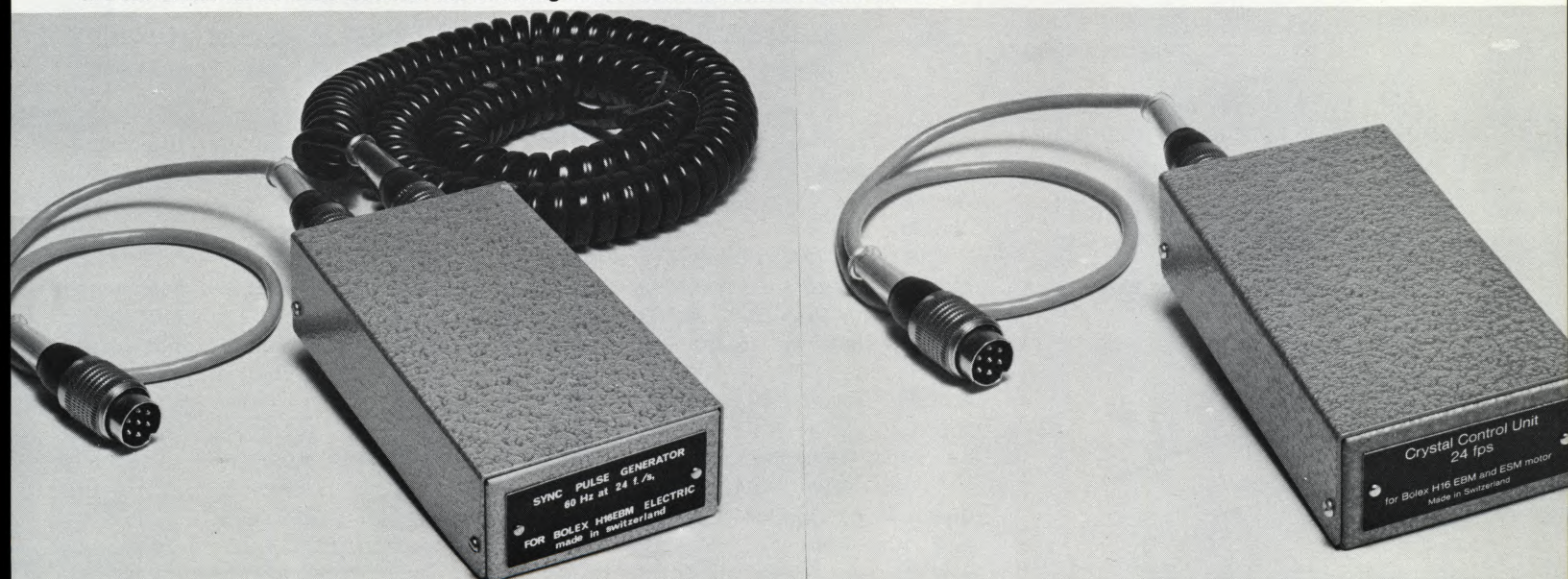
respect. Since Bolex wanted to construct an extremely rugged and reliable 16mm camera, the needle indication system was replaced by two diodes which change brightness as the lens diaphragm is opened or closed. They are visible in the reflex finder below the viewing field (FIGURE 3). The lens is set to the correct aperture when the two diodes have equal brightness.

Since the method is based on a comparison of two lighted fields, diaphragm adjustment is quick and extremely accurate, to within 1/4 f-stop. Frequently a filmmaker may want to shoot a scene at one stop over or under, either for bracketing exposure or for intentional under- or over- exposure of the scene. This is possible on the EL Camera without removing the eye from the reflex finder. The moment either the diode marked + or — goes dark, the lens aperture is one stop under or over. The meter is made for film sensitivities up to 630 ASA, which are set on dial A
Continued on Page 1448



FIGURE 5 — The running speed control, with speeds from 10 to 50 fps, single-frame (S), reverse running (R), and crystal-controlled operation (CRYS).

(LEFT) FIGURE 6 — Sync-pulse generator, with three-foot cable to camera and coiled cable to tape recorder. (RIGHT) FIGURE 7 — Crystal sync control with camera cable. The accessory is also available for 25 fps. The sync-pulse generator and crystal accessories are the same small units used on the existing Bolex EBM cameras or ESM motors.



NEW ANGENIEUX 15x10 16mm ZOOM LENS



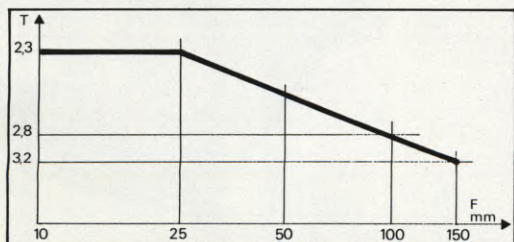
Photokina '74 was the scene for the introduction of the new Angenieux 15x10, 10-150mm, T/2.3-T/3.2 zoom lens for the 16mm cine format. In this very compact package, Angenieux has aimed to provide the cinematographer with maximum capability in a single zoom lens. Offering both a long zoom range and the highest magnification of any 16mm zoom lens now on the market, regardless of close focusing distance, the 15x10 promises to be a very welcome tool for today's filmmakers.

About 7mm shorter in length than the Angenieux 12-120, the 15x10 offers a wide angle at a minimum focal length of 10mm, with a 15x zoom range to provide a maximum focal length of 150mm. Of special interest is the ability of this lens to focus down to 32" (80cm) from the image plane, while still retaining zoom capability. Now, for the first time, a cameraman can zoom down to cover a field size as small as 1" x 1-3/8" (26x36mm), while leaving a reasonable working distance of 24" (60cm) between the front lens and the object for proper lighting and camera manipulation.

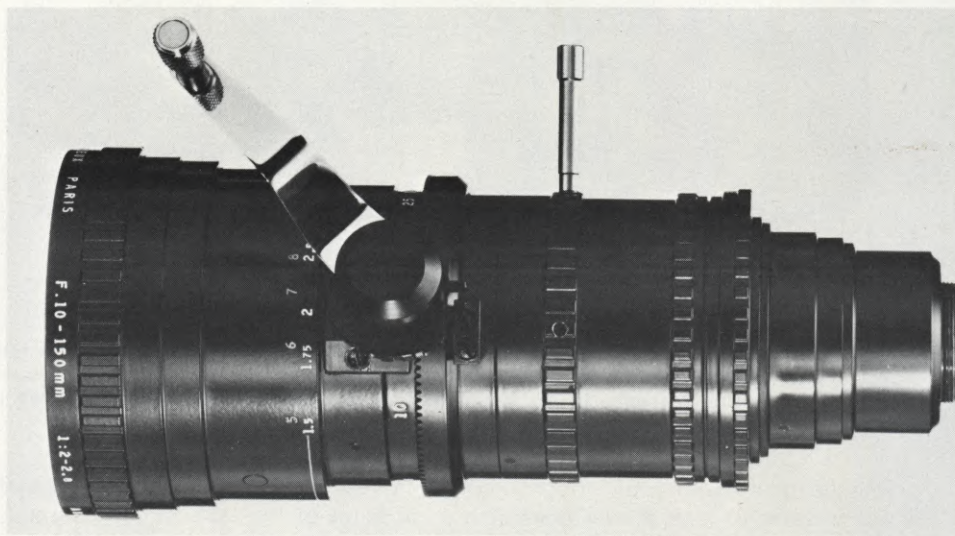
In order to minimize the size and weight of the lens, Angenieux has elected to make three compromises, resulting in a combination of unmatched versatility and compactness. When utilizing the additional focusing range between 32" (80cm) and 5 feet (1.50m), all focal lengths between 40mm and 150mm can be utilized. However, at the wider angles vignetting takes place, which becomes portholing at 10mm.

Secondly, because depth of focus depends upon focal length, magnifica-

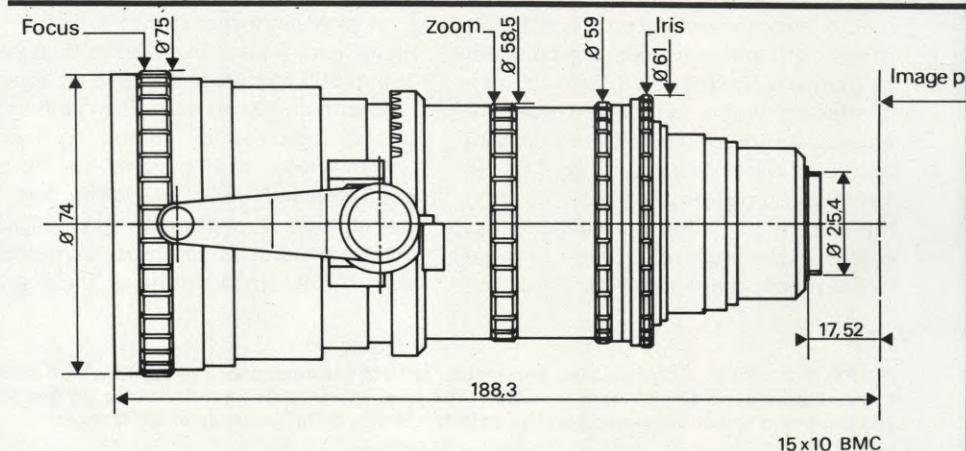
Chart below shows how, at open iris, the maximum aperture of the lens is affected by the focal length. Otherwise, aperture remains constant throughout zoom range.



A new 15-to-1 zoom lens, which is actually shorter than its 10-to-1 counterpart, offers a long zoom range and the highest magnification of any zoom lens on the market, regardless of close focusing distance



The new Angenieux 15x10 16mm zoom lens was designed as a compact package and is actually 7mm shorter than the Angenieux 12mm-120mm zoom lens. With a maximum focal-length of 150mm, it can focus down to 32 inches from the film plane, while still retaining zoom capability. It can cover a field size as small as 1" x 1-3/8", while leaving a reasonable working distance of 24 inches between the front lens and the object.



SCHEMATIC DIAGRAM OF THE NEW ANGENIEUX 15x10 ZOOM LENS

tion and aperture, the lens should be stopped down to T/8 when zoomed to the extreme focal length position of 150mm.

The third compromise results in the maximum aperture reducing as the focal length increases. At 10mm, it is T/2.3, while at the 150mm focal length it becomes T/3.2. The aperture remains constant throughout the entire zoom range at T/3.2 or smaller iris openings. No further compromises exist when utilizing this lens at focusing distances of 5 feet or more from the image plane.

Most cameramen will be pleased to

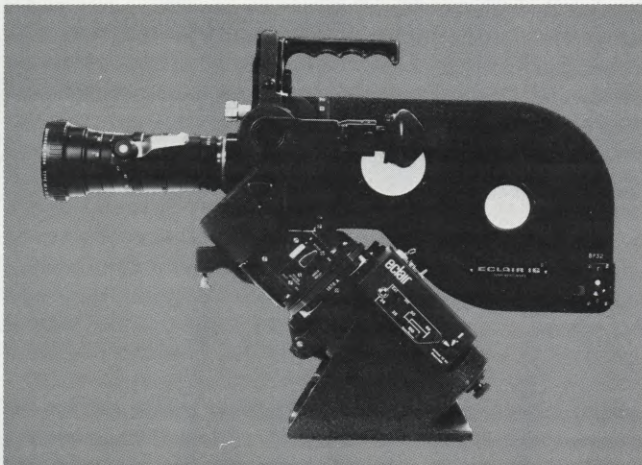
note that this lens will mark the beginning of a new era in that the iris is calibrated in "T" stops only. Of course, only "T" stops should be utilized for setting exposure.

Thanks to sophisticated design and to the use of presently available exotic glasses, aberrations are minimized, with no adverse effect of temperature changes.

The Angenieux people are convinced that the many features of this lens will be of great benefit to the professional 16mm cine industry, as they feel that the 15x10 offers a great many advantages over existing lenses.

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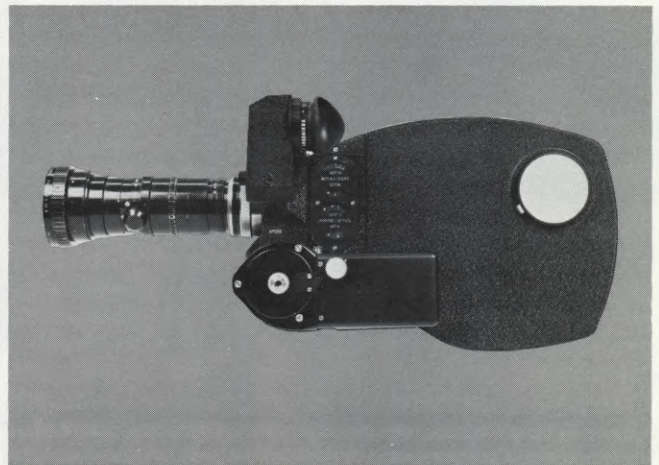


Eclair 16mm NPR

The precision, handcrafted French-made Eclairs are available again for immediate delivery. This includes the world-famous Eclair NPR and ACL cameras, plus the complete line of Eclair equipment.

The NPR is now outfitted with an improved BEALA crystal control motor that allows cordless sync sound shooting in addition to a selection of variable speeds. Plus, of course, all the other features that have made the NPR the premier 16mm reflex camera in the world.

The ACL has an all-new, heavy duty, variable speed crystal control motor that incorporates the most mod-



Eclair 16mm ACL

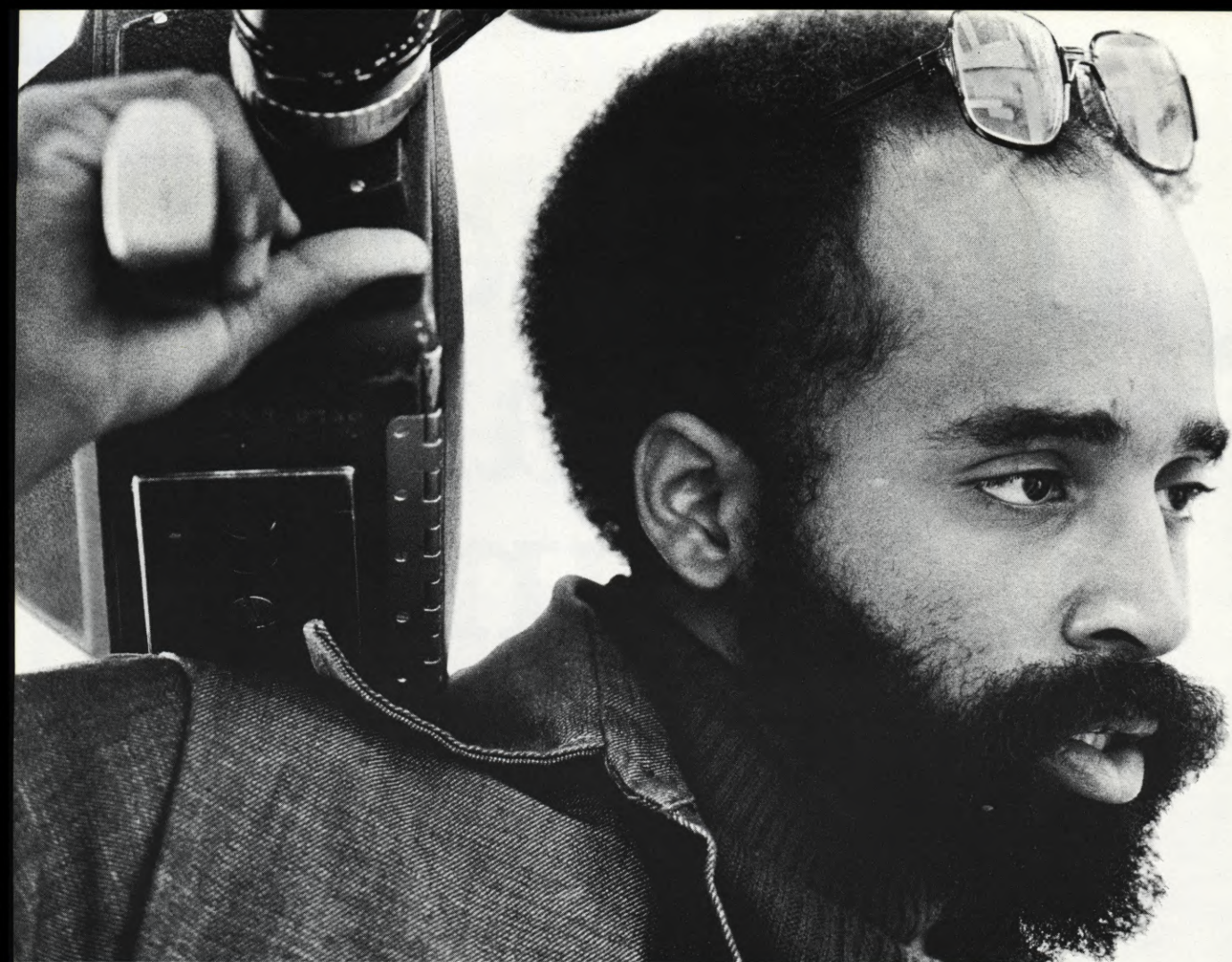
ern electronic components and offers total reliability plus filming speeds of 8, 12, 24 or 25, 50 and 75 fps. And, a complete range of instant snap-on coaxial magazines, both 200 and 400-foot capacities.

Be sure to specify "Made in France" when ordering your new Eclair. Accept no substitutes. French Eclairs are available for immediate delivery. Again!

For the complete line of French Eclair cameras, including the NPR, ACL, Cameflex CM-3, GV-16 and GV-35, contact your local dealer or the E-Cam Company.

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“One reason I rent from Duncan is—no dust.”

“You can pick up a Duncan camera and run,” says CBS News cameraman Robert Tutman. “And you know it’ll work.”

“**S**hooting News, there’s no time to run tests. But as soon as you walk into Duncan’s, you can see it’s a clean shop. No dust.”

IN A HURRY

“I rent only when my own camera quits,” says Mr. Tutman. “And I’m *always* in a hurry. I called Frank Marasco at home

one night — and he opened up the rental shop for me at 7:15 the next morning.”

HELPFUL

“Another time, I ran into Duncan’s with my own camera. There were three other jobs in line ahead of me. But the guy took a half-hour out of his lunch break, to fix mine right away.”

“With Victor Duncan, you *know* the camera will work. It saves a lot of nerves.”

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The last thing a cinematographer can afford is a closed mind. Especially when it comes to selecting equipment. Because anything less than maximum mean missed opportunities and unwanted compromises. With this in mind, we designed the ACL to accept the widest variety of professional motion picture lenses, as well as a considerable variety of others.

For more information on the wide variety of quality lenses available exclusively from us in CA-1 mounts, please write or call.

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ECLAIR ACL SINGLE-SYSTEM MAGAZINES



Finally available is the long-awaited development that converts this lightweight hand-held camera into a self-contained filming/recording instrument

Leo Lukowsky, Eclair Corporation of America Executive Vice President, has announced details of the firm's new single system, which was displayed for the first time at *Photokina '74*. Consisting of interchangeable 200-foot and 400-foot single-system magazines and a compact, dual-input solid-state amplifier, the system is compatible with all Eclair ACL cameras, giving present as well as future ACL owners the option of single-system filmmaking.

The magazines, which are outwardly identical to their respective 200-foot and 400-foot double system "cousins," except for the amplifier connector, contain recording and monitoring heads, as well as the more sophisticated transport system necessary for single-system filming. Weighing little more than ACL double-system magazines, the single-system magazines feature the same five-second attach/detach that made the original ACL so popular with professional filmmakers.

Like its double-system predecessor, the single-system ACL magazine is designed with the absolute minimum of moving parts and lavish use of premium materials, in order to insure a long, trouble-free life. One indication of this, according to Mr. Lukowsky, is the fact that the single-system magazine is just as quiet as its less complicated double-system look-alike. Threading is fast, simple and straightforward — and like the double-system ACL, all threading is done when the magazine is initially loaded.

The ACL's pocket-sized amplifier utilizes the latest integrated circuitry

and advanced design to provide the filmmaker with a number of important features.

Dual microphone inputs with individual and master gain control provisions permit the amplifier's characteristics to be tailored to meet the needs of individual filming situations. Fast-attack, slow-release AGC, in addition to a built-in VU meter, give a high degree of overload protection. Automatic monitoring provisions with manual override switch the amplified headphone output from monitoring the microphones (during setup) to monitoring the magnetic sound track as it is being recorded, via a monitor head located just after the record head in the film path. The amplifier also features wide response, low noise and precise equalization, to provide maximum sound quality.

Said Mr. Lukowsky, "It goes without saying that I am pleased and proud to be announcing the availability of the single-system ACL. As you can see from the unit's many features, the single-system ACL is as much of an advancement in single-system filmmaking as the original ACL was for double-system. I'd like to add a word at this time for the many Eclair owners and 'fans' in the industry who have asked why the single-system ACL has not been available before. First, we were determined to create a single-system that did not obsolete the considerable investment many professionals have already made in Eclair equipment—so we waited until we had a magazine fully compatible

with our 'standard' ACL body. Second, we were determined, from the ACL's very inception, not to release any system component that could not meet our own high standards of performance — so we waited until we could produce a single-system magazine that is as silent as its double-system 'ancestor'... with impressive specifications in all areas of performance. I think that once you try the single-system ACL, you'll agree it is worth the wait."

For further information, contact: Eclair Corporation of America, 62 West 45th Street, New York, N.Y. 10036. Phone (212) 869-0490. ■

TECHNICAL DATA ON THE ECLAIR SINGLE-SYSTEM SOUND MAGAZINE

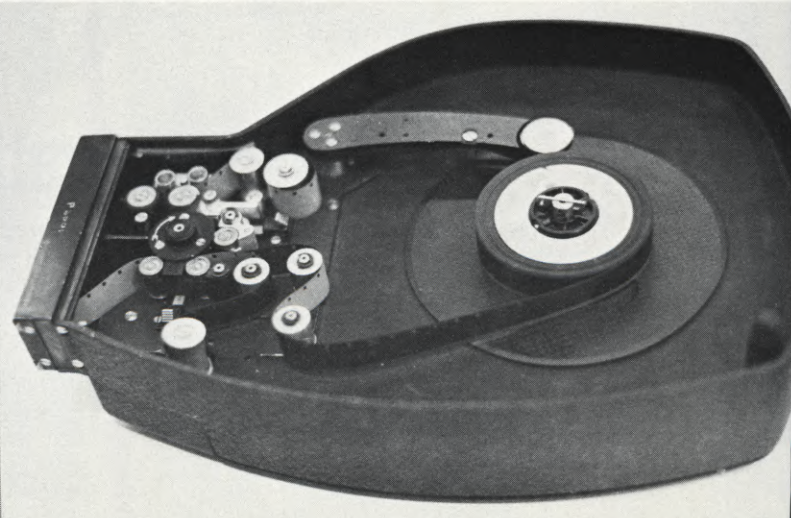
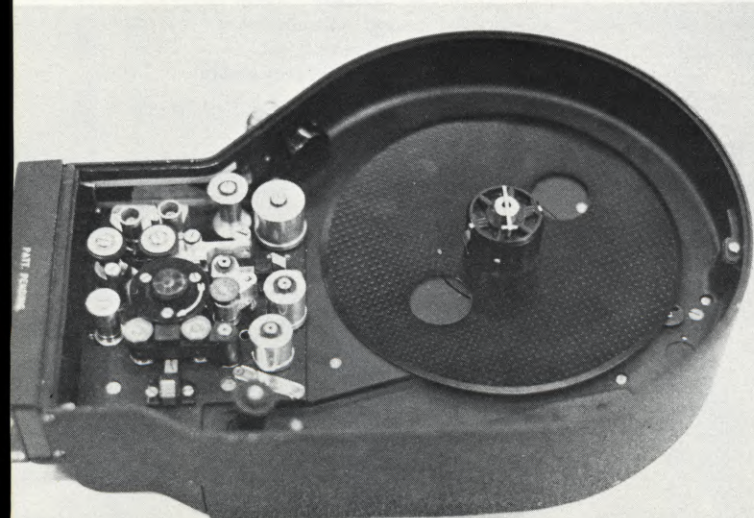
The function of the mechanism in the single-system sound magazine is to control the movement of the film across the record and playback heads.

The record and playback heads are mounted to a duralium block with dummy heads to maintain the outside edge of the film in correct orientation.

The angular adjustment of the heads is achieved by readily accessible screws and locknuts (2) located inside the dummy heads. The accuracy of the machining of the head mounting blocks in terms of squareness and parallelism ensures that no other adjustment of the heads is necessary.

The flywheel is mounted inside the counter cover in a position that locates the flywheel spindle between the heads. The flywheel spindle is driven

(LEFT) The new interchangeable 200-foot single-system sound magazine developed for the Eclair ACL camera. (RIGHT) The 400-foot model of the single-system magazine. These magazines are compatible with all Eclair ACL cameras, giving present, as well as future, ACL owners the option of single-system film-making. Included in each magazine is an amplifier connector, recording and monitoring heads, and the more sophisticated transport system necessary for single-system filming.



via the film surface by 2 friction drive wheels. These drive wheels are mounted on ball bearings and have precision-ground polyurethane tires.

The friction drive arm is a pivoted assembly with an override stop mounted towards the rear to obviate the possibility of overstressing the sensing spring when lacing up the film. This spring is mounted on the forward end of the friction drive arm and is operated by the compensator arm which is a freely pivoting arm using identical wheels to the friction drive arm and a ball bearing to contact the sensing spring. There are also 2 stop pins in the body casting to contain the movement of the compensator arm within the limits required.

On starting the camera the compensator arm will be pulled in by the film against the sensing spring and create the required pressure between the flywheel spindle and the friction drive wheel until the flywheel has gained the necessary momentum (this run-up time is 2-3 seconds). It will then take up a working position somewhere between the stop pins and will be seen to "float" as it senses and corrects fluctuations in film speed.

This mechanism is capable of ironing out wow and flutter down to below 0.3%.

SPECIFICATION

Sensitivity

At input I and input II (when auxiliary gain control turned fully clockwise.)

Master gain control fully clockwise.
400 μ V RMS at 1 K Hz for 350 μ A RMS through the record head.

Frequency Response

Flat within \pm 3dB overall from 150 Hz -10 K Hz when film played back through standard bass-compensated amplifier.

Noise level

Through record amplifier only.

With master gain control fully clockwise; 600 ohm across input I and input II off.

37dB below 350 μ A recording current.

Total Harmonic Distortion (Recording Amplifier)

From either microphone input to record head.

5% @ 350 μ A record current @ 1 K Hz when master gain control is fully clockwise.

5% when A.G.C. is operative; for 350 μ A record current. (Input just sufficient to produce that level of record current, i.e. 150 μ V input).



Fore and aft views of the pocket-sized amplifier used with the new ACL sound magazines. It features dual microphone inputs with master gain control, plus fast-attack, slow-release AGC, in addition to a built-in VU meter. The amplifier also features wide response, low noise and precise equalization.

5% Input 6dB above 150 μ V.

5% Input 20dB above 150 μ V.

Automatic Gain

Control Characteristic

Threshold level 150 μ V RMS at Input I (and Input II with auxiliary gain control fully clockwise).

When input is suddenly increased by 20dB above threshold level, A.G.C. responds in less than 10 milliseconds.

When input is now reduced to the threshold level from 20db above 2.5 seconds elapse before the maximum sensitivity is re-attained, ensuring that short quiet parts during loud passages are not reproduced with dis-

proportionate loudness on playback.

Bias Level

5mA RMS at 60 K Hz.

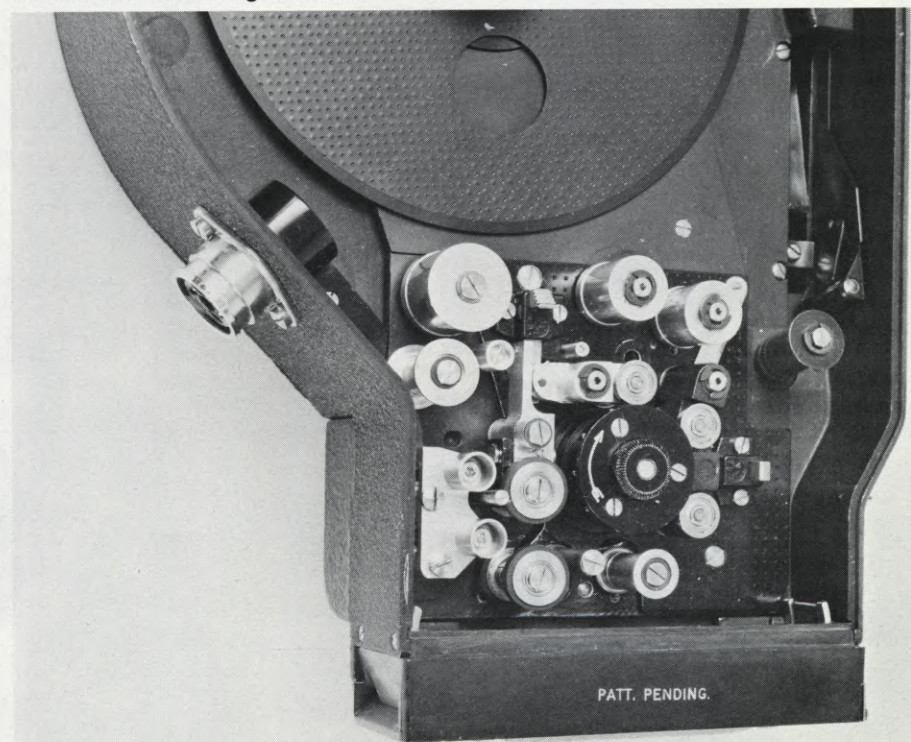
(Measured across 10 ohm in series with record head and includes power "leaking" through the capacitance of the magazine/amplifier cable. It does, however, correspond closely with bias level from TOS-101 amplifier).

Recording Frequency Response

Measured across 10 ohms in series with record head: bias oscillator in-operative.

Reference level ODB at 1 K Hz is 100 μ A RMS record head current. ■

Outwardly the new single-system magazines are identical to their respective 200-foot and 400-foot double-system "cousins", but inside each one is a monitor head located just after the record head in the film path, so that the magnetic sound track can be monitored as it is being recorded.



NEW CANON 35mm HIGH SPEED ASPHERIC LENSES



Ultra-fast lenses with aspherical elements that reduce flare, sharply improve definition and contrast, and make night-for-night cinematography by available low light particularly successful

Among the new developments unveiled at *Photokina '74* which commanded considerable interest was a full line of aspheric high-speed prime lenses for use in professional 35mm cinematography.

Designed to cover the range of focal lengths most commonly used by professional cameramen, the line includes: 24mm T/1.6, 35mm T/1.4, 55mm T/1.4 and 85mm T/1.4. In addition, for extreme wide angle filming,

there is an 18mm T/2.8 Canon lens.

The new lenses were specially designed for use with professional 35mm lenses and are supplied in BNCR-type mounts.

These lenses were developed as part of a research program carried out jointly by the Canon Company of Japan and Cinema Products Corporation of the U.S.A.

According to Ed DiGiulio, President of Cinema Products, the new lens

series is most ideal for night-for-night photography with available light. By causing the marginal rays to be in sharp focus, and, at the same time, rejecting random or spurious rays, the aspheric lenses reduce flare sharply and improve definition and contrast of the scene regardless of the variations of light level. This results in photography that is clear, sharp, well-defined and well-balanced, with good

Continued on Page 1492

CANON LENS K-35 24MM T/1.6

Specifications

Focal Length	: 24mm
Maximum relative aperture (T-stop)	: 1:1.6
Lens construction	: 8 Components 10 Elements
Wavelength range for color correction	: 400-700m μ
Image format covered	: 22.05x16.03 dia. 27.26mm
Angular field of view	: 48.4x36.2 dia. 58.2°
Minimum object distance	: 0.3m
Clear aperture of front glass	: 50.8mm ϕ
Clear aperture of rear glass	: 35.2mm ϕ
Overall Length lens only	: 72.02mm



CANON LENS K-35 35MM T/1.4

Specifications

Focal Length	: 35mm
Maximum relative aperture (T-stop)	: 1:1.4
Lens construction	: 9 Components 10 Elements
Wavelength range for color correction	: 400-700m μ
Image format covered	: 22.05 x 16.03 dia. 27.26mm
Angular field of view	: 34.4 x 25.4 dia. 41.9°
Minimum object distance	: 0.3m
Clear aperture of front glass	: 48.0mm ϕ
Clear aperture of rear glass	: 37.0mm ϕ
Overall Length lens only	: 87.10mm



CANON LENS K-35 55MM T/1.4

Specifications

Focal Length	: 55mm
Maximum relative aperture (T-stop)	: 1:1.4
Lens construction	: 6 Components 8 Elements
Wavelength range for color correction	: 400-700m μ
Image format covered	: 22.05 x 16.03 dia. 27.26mm
Angular field of view	: 22.7 x 16.6 dia. 27.8°
Minimum object distance	: 0.6m
Clear aperture of front glass	: 44.2mm ϕ
Clear aperture of rear glass	: 32.8mm ϕ
Overall Length lens only	: 56.74mm



CANON LENS K-35 85MM T/1.4

Specifications

Focal Length	: 85mm
Maximum relative aperture (T-stop)	: 1:1.4
Lens construction	: 6 Components 8 Elements
Wavelength range for color correction	: 400-700m μ
Image format covered	: 22.05 x 16.03 dia. 27.26mm
Angular field of view	: 15.1 x 11.0 dia. 18.6°
Minimum object distance	: 0.9m
Clear aperture of front glass	: 68.0mm ϕ
Clear aperture of rear glass	: 32.8mm ϕ
Overall Length lens only	: 74.20mm





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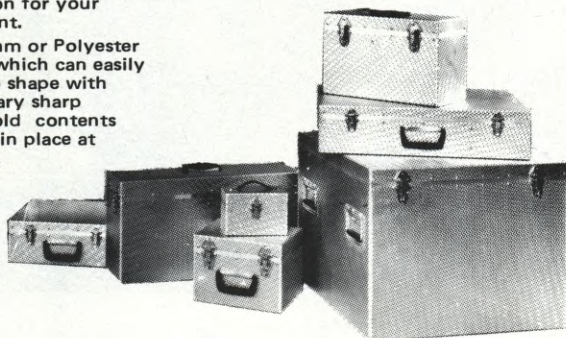
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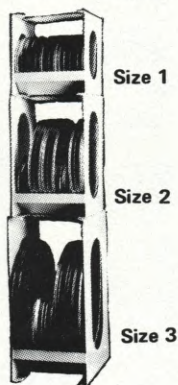
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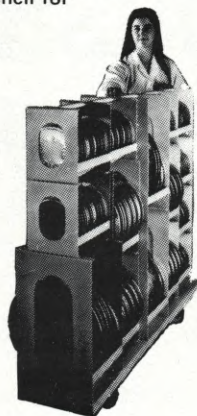
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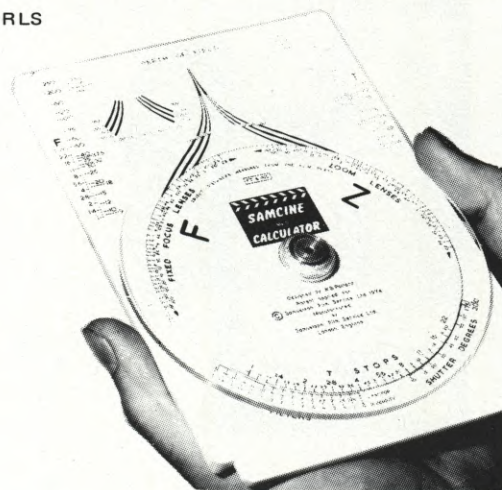


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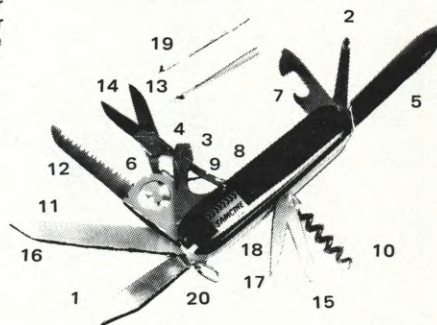
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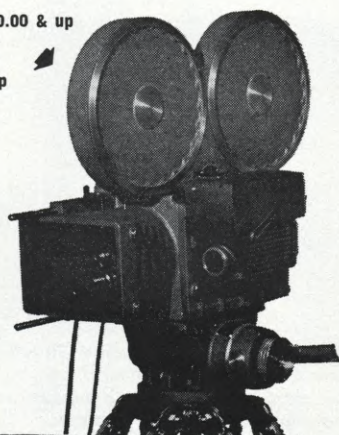
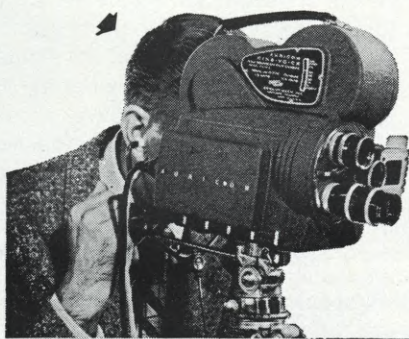


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NEW FROM CINEMA PRODUCTS CORPORATION



A studio model of a popular newsreel camera — plus the new Crystalink wireless receiver, a new zoom control, orientable viewfinder and automatic exposure control

Photokina 1974 marked the first international showing of Cinema Products' new CP-16R reflex camera, which utilizes the same basic transport mechanism as the standard CP-16 camera, and incorporates a rotating mirror shutter for reflex viewing. (This reflex version of the CP-16 was first introduced at the SMPTE Convention in New York, in October, 1973. It was subject to a full and detailed product report

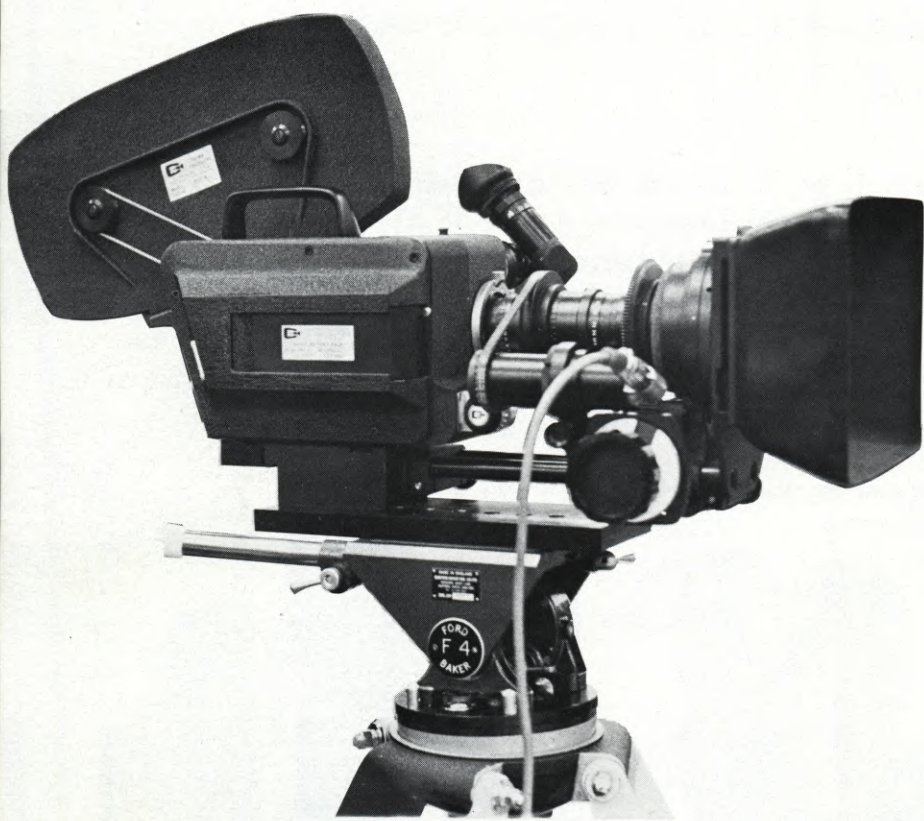
which appeared in the December 1973 issue of *American Cinematographer*.)

What was shown for the first time was the studio version of the CP-16R. In this version, the camera is mounted on a riser block which carries matte box rods. The rods support a follow-focus mechanism fully adjustable to accommodate both zoom and fixed-focal-length lenses, a full production matte box capable of carrying an assortment

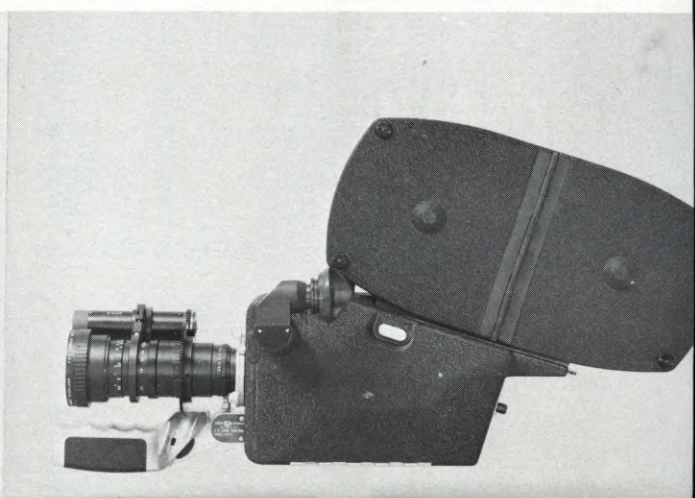
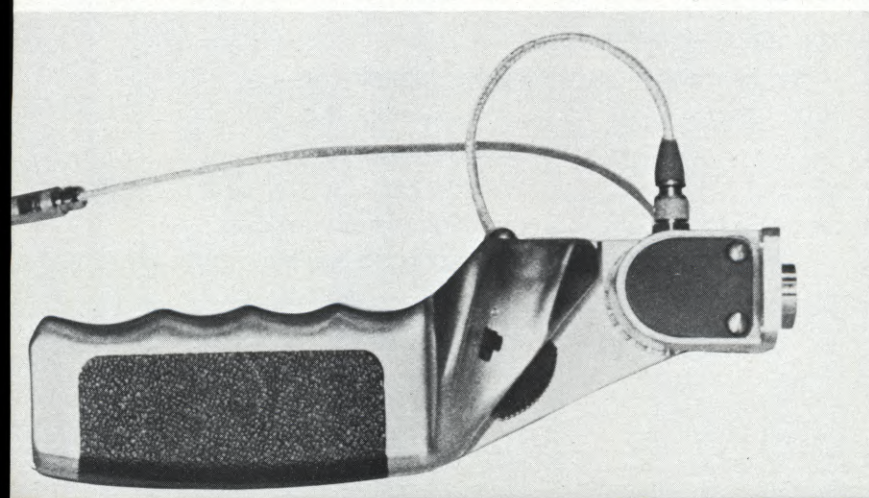
of 4" square or round filters, rotating Pola screen, sliding diffusion, and neutral grads. Also supported from the rods is a J-4 type zoom motor which is coupled to the lens through a belt drive for maximum sound isolation. Measured on the weighted "A" scale at three feet from the front of the optical flat in the matte box, the complete rig had a sound level of 27 dB pulling film. (The studio version of the CP-16R was used to film the six one-hour segments of Wolper Productions' special, "SANDBURG'S LINCOLN". It was described in detail in *American Cinematographer*, September, 1974.)

Also shown for the first time was Cinema Products' new erect-image orientable viewfinder. It varies from the Angenieux design in that the optics are folded forward so that, in shoulder-held operation, the eyepiece is still in the same place as it is with the CP-16 standard finder, approximately 1" behind the film plane. The new erect-image viewfinder features the capability of a quick-release eyepiece assembly which can then be replaced by a 10" extension to provide maximum convenience for tripod operation.

The Cinema Products erect-image viewfinder has an additional unique feature, which is that the image-erecting prism can be rotated and fixed in any position, so that the operator can define or establish what the erect orientation will be for any particular purposes that he has in mind. All elements in the erect-image viewfinder have multiple-layer anti-reflective coatings for maximum transmission efficiency and image contrast.



(ABOVE) The studio version of the CP-16R camera, complete with follow focus mechanism, a full production matte box and an operating sound level of 27 db. **(BELOW)** The Cinema Products J-5 Zoom Control, shown off and on the CP-16 camera for which it was specially designed. The servo feedback system circuitry and thumb-activated direction/proportional speed control of the J-5 Zoom Control are all compactly packaged in the handgrip of the CP-16 camera.



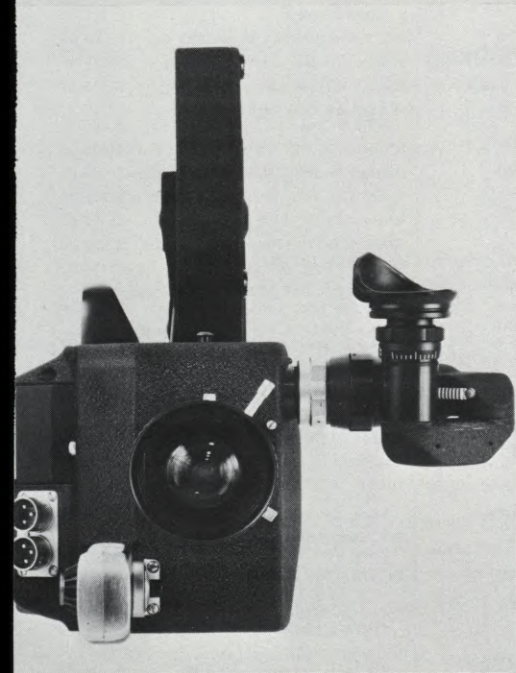
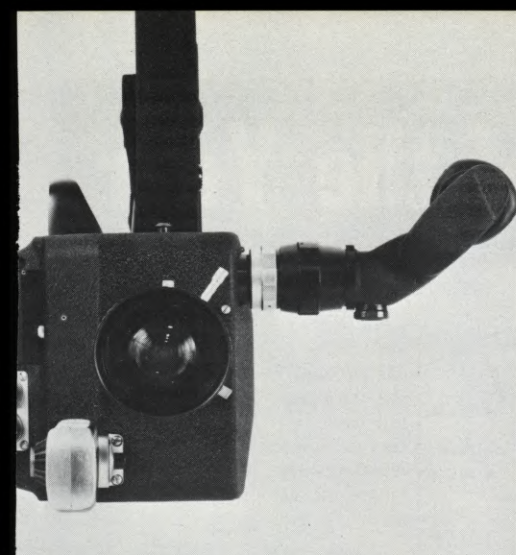
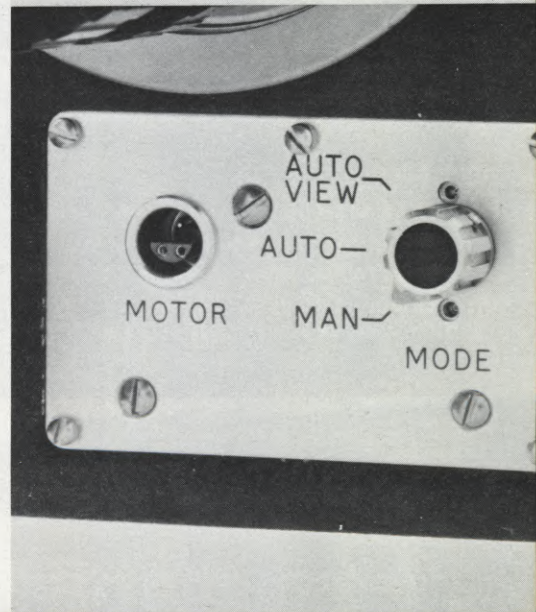
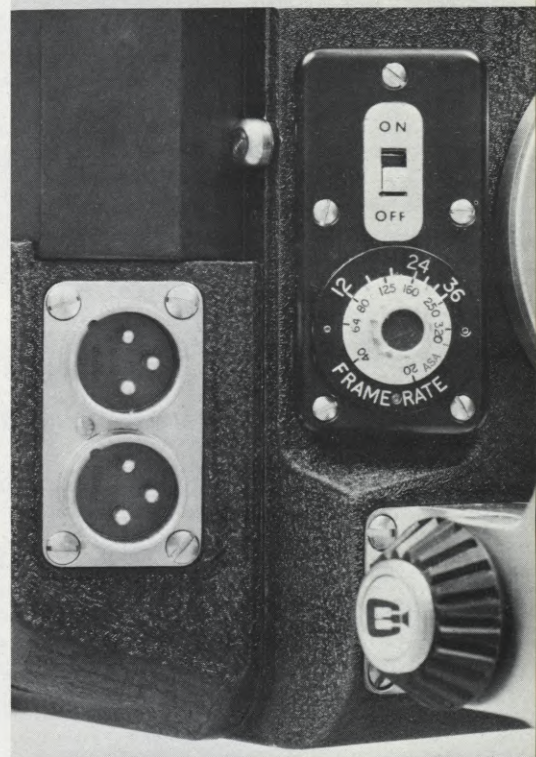
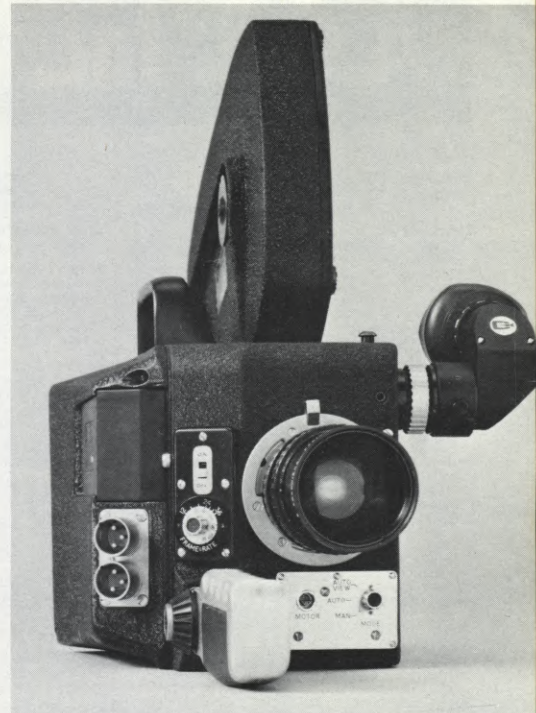
(TOP RIGHT) Front of the CP-16R camera, showing elements of the new automatic exposure control system. **(CENTER)** On-off switch and frame-rate scale appear on semi-automatic model. **(BOTTOM)** Additional plate offering three operating modes appears on fully automatic model.

Automatic exposure control system and meter indications in viewfinder for the CP-16R camera

Cinema Products' new combination exposure meter and fully automatic exposure control system were demonstrated for the first time at Photokina. The metering system employs a through-the-lens silicon photo cell as the measuring device. Using silicon with proper filtering results in excellent, linear, low light level performance, as compared with that achieved with a CDS cell, which has a tendency to become very sluggish and non-linear at low light levels. The sensor is so oriented that the effect is to give heavy center-weighting to the scene in the vertical direction, with a lesser amount of center weighting in the horizontal direction. This is done on the theory that most scene lighting imbalance is the result of overhead lighting; whereas, when the camera is panned, it is not desirable to have wide fluctuations for minor changes in light along that axis. Instead of using a conventional meter (which is susceptible to damage) for the display, the CP exposure control system utilizes a series of seven Light Emitting Diodes that appear in the viewfinder along the bottom edge of the frame. A mask in front of the LEDs causes a "0" (zero) to be seen at the center with the symbols +.5, +1., +1.5 going to the right, and -.5, -1., and -1.5 going to the left. Each symbol indicating, of course, one ASA half-stop. The "0" indicates the correct exposure.

The exposure control system is available in two versions. One version is semi-automatic, where the exposure correction is accomplished by turning the iris manually. The second version is fully automatic. This version has a small drive motor mounted to the zoom lens and coupled into the system so as to provide a fully automatic closed servo loop. This fully automatic version allows the operator to select one of three operating modes: semi-automatic, fully automatic, and "auto/view". In this "auto/view" operating mode, the iris goes to the full open position whenever the camera is turned off.

Also displayed above the aperture in the viewing system are four indicators
Continued on Page 1458



(ABOVE) Cinema Products' new erect-image orientable viewfinder shown in two of its many positions. **(BELOW)** Cinema Products' new wireless receiver, designed by Vega Electronics for use with the CP-16 cameras.



PROFESSIONAL SUPER-8 AT PHOTOKINA '74



The Super-8 format loses its amateur standing and explodes into professionalism with a flood of highly sophisticated cameras, projectors, flat-bed editing consoles and allied accessories

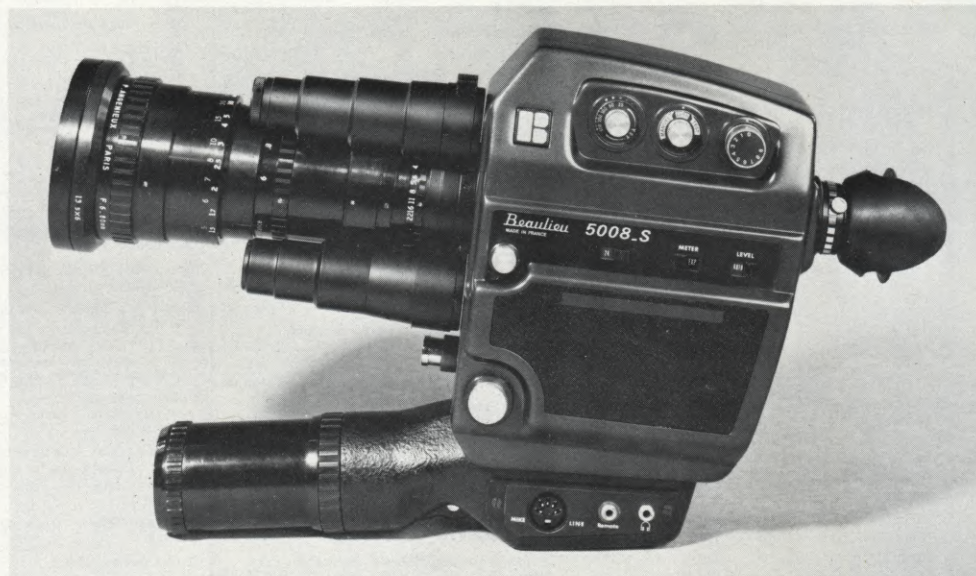
By ANTON WILSON

"You've come a long way, Baby!" is a statement that might well apply to the Super-8 format, judging from the proliferation of highly sophisticated and definitely professional Super-8 equipment featured at *Photokina '74*.

The new Super-8 cameras at the show included many units definitely designed for the professional market, incorporating both single-system and double-system (pilotone, as well as pulse) sound systems. It would appear that the manufacturers of Super-8 equipment are serious about the professional market, having created an entire system from camera and sound recorder to transfer, editing and projection units. It will take an entire special issue to cover the current state-of-the-art of Super-8, so for now I will try to mention briefly the more noteworthy new items.

The most important addition to the Super-8 scene is "The Super-8 Sound Recorder" offered by Super-8 Sound, Inc. of Cambridge, Massachusetts. This

The new Bauer T50 Super-8 sound projector features 800-foot capacity, 18 and 24 fps projection and an f/1.3 16.5mm-30mm zoom lens.



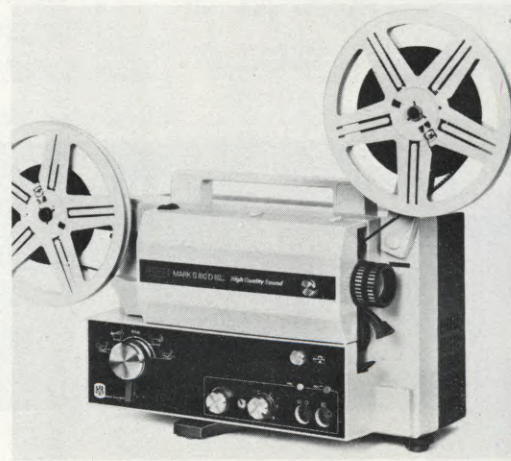
Clearly the "hit of the show" at Photokina '74 in the realm of professional Super-8 equipment was the superb new silent-running Beaulieu "5008-S" Single/double-system Super-8 sound camera, with its amazing 6mm-80mm f/1.2 (T/1.4) Angenieux zoom lens. The handsome new professional camera features a TTL automatic iris, plus exposure meter and VU meter readings visible in the viewfinder.

unit fills the void that has existed in the Super-8 field since its inception. It facilitates professional type double-system recording compatible with almost all of the better Super-8 cameras, with no modification of the camera. The recorder is a reel-to-reel unit using Super-8 sprocketed full-coat. It has built-in provision for 60Hz or 50Hz pilotone, as well as pulse-type sync signals. In addition, it can accept 50Hz or 60Hz from the line. These features, along with the built-in self-resolver, not only provide for all types of recording, but facilitate professional resolving or transfer to other professional equipment. As if this were not enough, the unit also has built-in crystal-sync. Super-8 Sound also has an accessory crystal that plugs into most Super-8 cameras, forming a complete crystal-sync system.

In the area of cameras, there is no doubt that the new Beaulieu "5008S" Single/double-system Sound Camera has created the greatest stir. (FIGURE 1). Actually, the camera itself is only half the story. Its Angenieux 6mm-80mm zoom lens is an equally magnificent achievement. In addition to the unprecedented zoom range of 6mm to

80mm (more than 13-to-1), the lens can focus to almost two feet from the front element throughout the entire zoom range. This capability makes possible zooming into a field only one inch by 1.3 inches wide. Most important, the lens is an f/1.2 and a T/1.4. This is amazing, since most Super-8 cameras that advertise f/1.8 are actually T/3.0 or

The new Eumig "H.Q.S." (High Quality Sound) Super-8 projector has a frequency response of 70-12,000 Hz and f/1.2 12.5mm-25mm zoom lens.

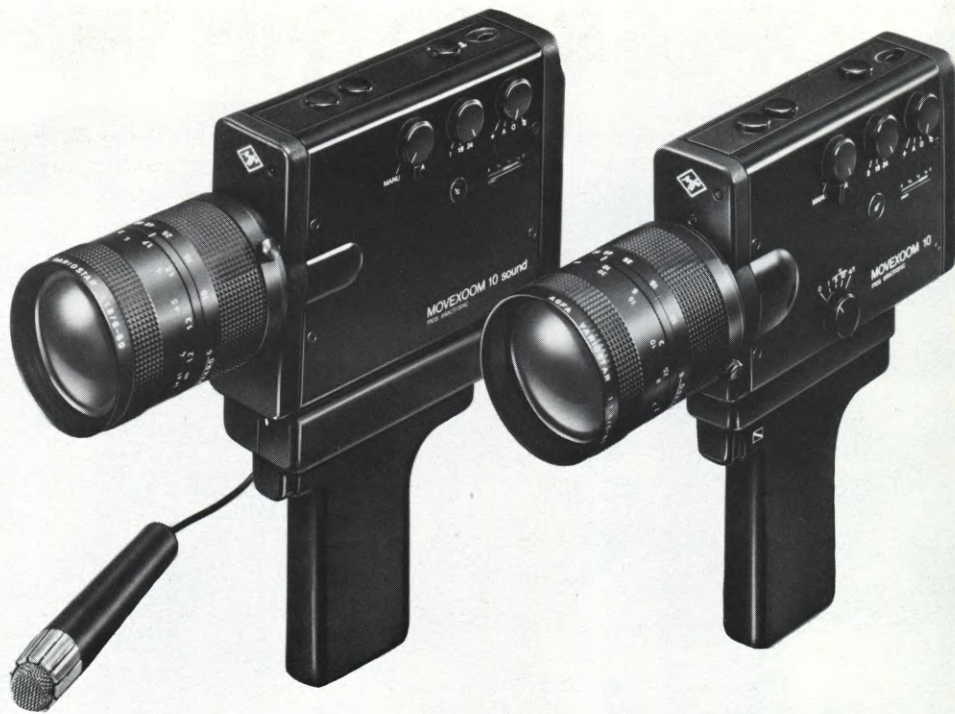


worse. This is due to poor lens coatings and the use of beam-splitter-type viewfinders. The Angenieux lens, however, uses superior coating and, coupled with the Beaulieu mirror-reflex shutter, keeps the light loss to a minimum. This camera-lens package is actually faster than the so-called XL type cameras. Add to all these features automatic TTL iris control, power zoom, and a fantastic single system-sound recorder; the Beaulieu "5008S" is quite an impressive package.

Nizo cameras, manufactured by Braun, have always been known as an excellent line of quality Super-8 cameras. Now they have added the Nizo "Professional" model. This camera incorporates a Schneider 7mm-80mm zoom f/1.8 lens. The "Professional" model designation most likely refers to the 50Hz pilotone output and the built-in clapper lamp for automatic slating. Unfortunately, this model is only available with a 50Hz, 25 fps system and will not be made available for 60Hz, 24 fps use. This will obviously limit the camera to European distribution.

Agfa-Gevaert has come up with a very interesting professional quality Super-8 sound camera. The "MOVEXOOM 10 Sound" is a single/double-system camera. The lens is a 6mm-60mm f/1.8 with a so-called "Macro" feature. What makes the camera particularly interesting is the myriad features it possesses: two-speed power zoom, TTL automatic iris, MOS integrated circuitry, speeds of 9, 18, 24 and push-button 54 fps, with automatic iris compensation. A motor control allows for single-frame, four-frames-per-pulse, one-frame-every-30-seconds, and a 10-second delay for getting into the picture. A variable shutter is also included with a truly unique trigger system. Normal "on-and-off" is accomplished by pulling the trigger halfway in. By pulling the trigger all the way in and immediately releasing it, an automatic lap dissolve occurs. The camera continues to run as the shutter gradually closes. When the shutter is completely closed, the motor stops, reverses, and back-winds the film back to the beginning of the fade out. When the trigger is pressed for the next scene, the fade-in completes the dissolve. The entire process takes less than three seconds and is fully automatic.

It is amazing that Agfa has managed to pack so many features into one compact camera. Most other single-system cameras are 18 and 24 fps only. Not only has Agfa added 9 and 54 fps, but also an intervalometer and variable shutter. I am sure many Super-8



Artist's rendition of Agfa-Gevaert's "MOVEXOOM 10 Sound" (left) and silent cameras, shown in prototype form at Photokina '74. The sound model is single/double-system, with two-speed power zoom, f/1.8 6mm-60mm lens, TTL automatic iris, MOS integrated circuitry, speeds of 9, 18, 24 and push-button 54 fps, with automatic iris compensation. Delivery of this camera is said to be a year away.

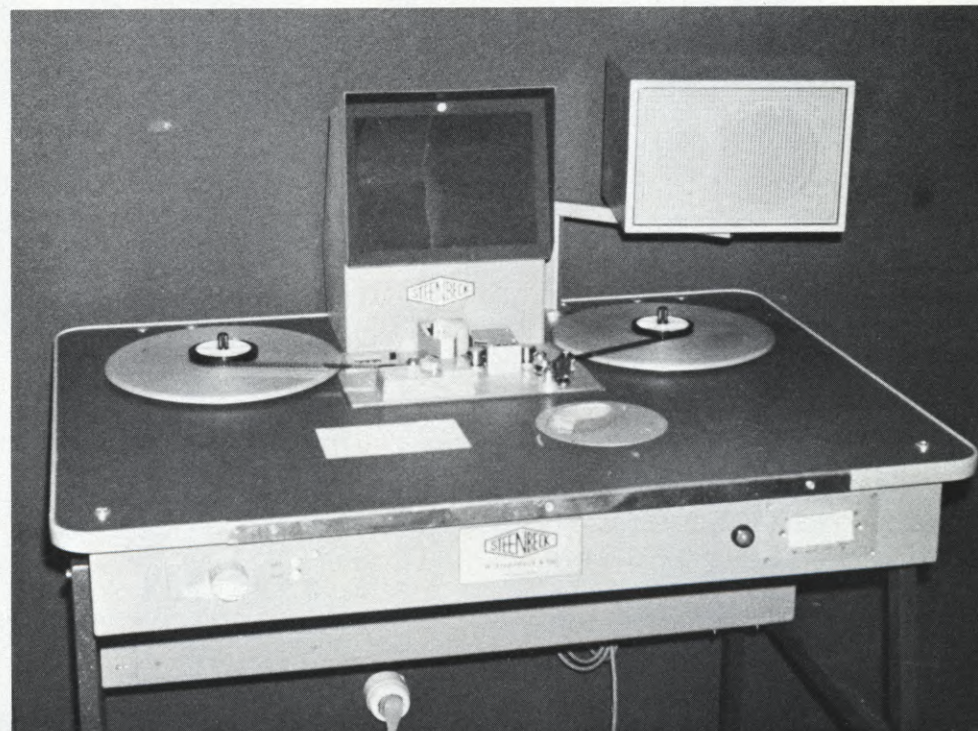
aficionados will be eagerly awaiting the arrival of this jack-of-all-trades camera. It may be a considerable wait, however. What was shown at *Photokina* was only a prototype, with delivery of the production models estimated as being about a year away.

The designers of Super-8 equipment have not been idle in the projection department. The new Eumig H.Q.S. projectors are quite impressive. The H.Q.S. stands for "High Quality Sound" and that is no misnomer. Their presentation at *Photokina* included a mini-

theater employing the H.Q.S. projector. One could hardly believe the sound was emanating from an 8mm projector sound stripe. Would you believe a frequency response of 70-12,000Hz? Each machine comes with its own frequency response chart recorder read-out, similar to those provided with Nagra recorders and Sennheiser microphones. The mechanical aspects of the machine are equally impressive. A two-piece removable gate is all-metal construction with spring-loaded side

Continued on Page 1470

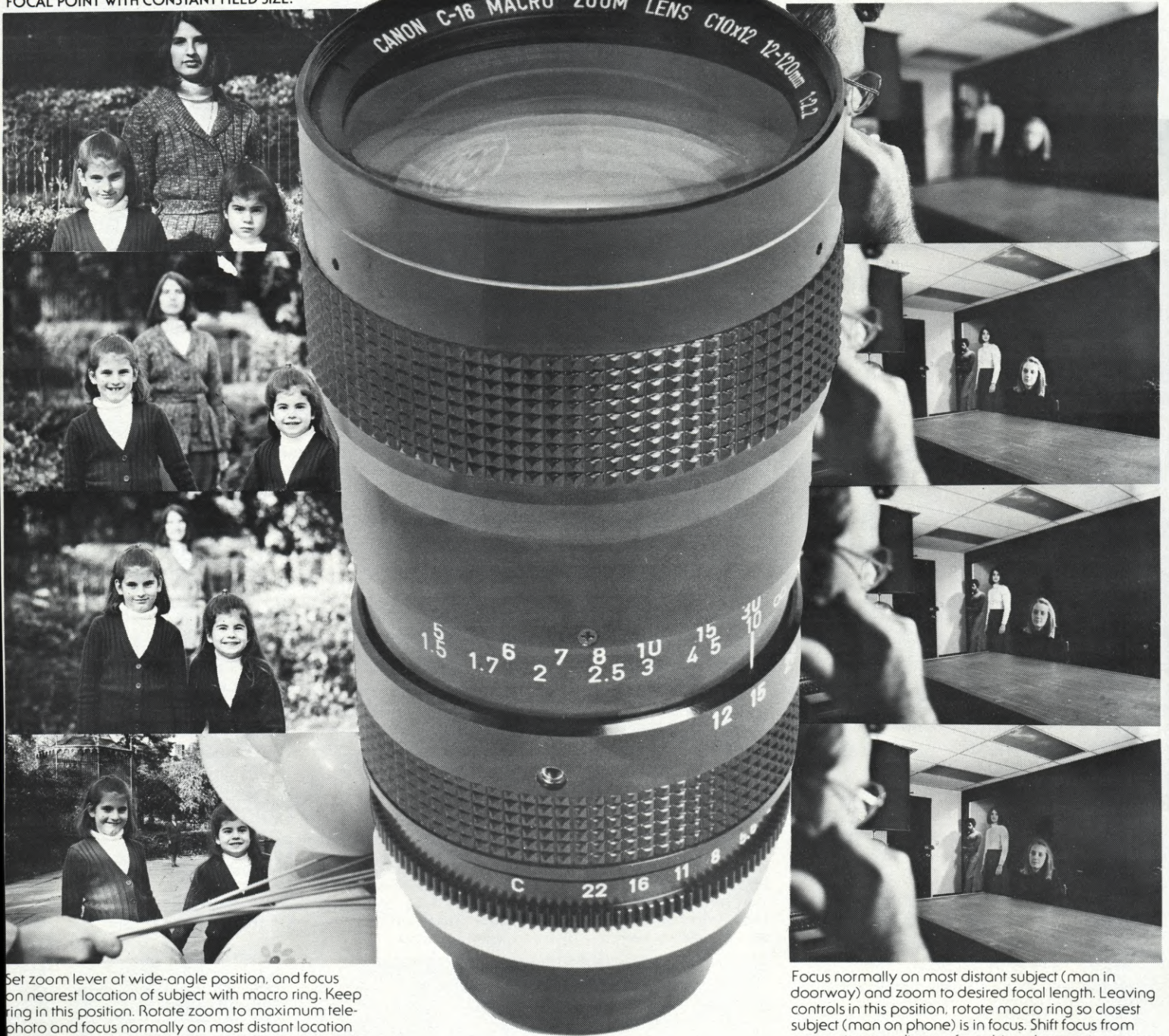
New at Photokina was Steenbeck's ST 18-S Super-8 single-system sound flat-bed editing console—designed, no doubt, in anticipation of a switch to Super-8 for television newsmaking in some quarters. No less than four new flat-bed Super-8 editing consoles were displayed at the show (some with provision for 16mm sound tracks), as well as editing benches by three manufacturers.



PEOPLE SAID THIS WAS IMPOSSIBLE

"DOLLYING" WITH A ZOOM LENS — CHANGING FOCAL POINT WITH CONSTANT FIELD SIZE.

RACK FOCUSING FROM EXTRA CLOSE-UP TO NORMAL OR DISTANT SUBJECT.



Set zoom lever at wide-angle position, and focus on nearest location of subject with macro ring. Keep ring in this position. Rotate zoom to maximum telephoto and focus normally on most distant location of subject. Use zoom control to "follow focus" subject, which will remain constant in size.

Focus normally on most distant subject (man in doorway) and zoom to desired focal length. Leaving controls in this position, rotate macro ring so closest subject (man on phone) is in focus. Shift focus from near to intermediate to far subjects by rotating macro ring to full off.

If the Canon F/2.2 C12-120 Macro Zoom did nothing more than focus as close as 1mm from its front surface, or reduce chromatic aberration to near-theoretical limits, it would be a remarkable lens. But it does more.

Far more. With the Canon 10 x 12 Macro, you can rack focus cleanly from extreme CU's to long shots; "dolly" alongside a subject, without moving at all; even alter the perspective between near subject and

distant background. For a demonstration of this remarkable lens, as well as the many other Canon optics, including the exclusive Macro 13.5—135 Canon Super-16, see your Canon dealer... or contact us for more information.

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NEW NAGRA IS-D COMPACT RECORDER



A compact recorder from Kudelski, with one-third less size and weight than the Nagra IV, but presently lacking a few of the refinements necessary for motion picture recording

The NAGRA IS-D is a compact, self contained tape recorder which meets the quality specifications and the standards required in the broadcasting industry: recording and playback on full track 1/4" tape, speed 7 1/2 in/s.

Tape transport with three motors: capstan motor with tachometric speed stabilizer, reel motors electronically controlled by tension arms. Very fast tape winding and rewinding; the reels are locked on stop but released for editing. Three magnetic heads enabling tape monitoring during recording. Two balanced inputs for dynamic microphones and one unbalanced high impedance line input, speech filter and modulometer. The NAGRA IS-D can be used as a remote broadcast amplifier with balanced line output, 4.4 V into 600 ohms.

Exchangeable battery case with fast fixing device, containing eight 1.5 V cells, of the most usual D-type, or case with rechargeable sealed nickel-cadmium batteries.

SPECIFICATIONS (typical values)

Microphone input for 200Ω dynamic type, 0.2 mV for 0 dB

Line input unbalanced, impedance 100 kΩ, 218 mV for 0 dB

Line output balanced, 4.4 V on 600Ω at 0 dB and 1 kHz

Loudspeaker amplifier 0.5 W

Performance obtained by recording:

Frequency response at 20dB: 50 Hz 15 KHz ±2 dB

Signal-to-noise ratio at 0 dB, ASA A weighted, with NAB equalization and 3M 206 tape: 70 dB; with CCIR equalization and LGR 30P tape: 68 dB

Distortion at 0 dB = 320 nWb/m, 400 Hz, h3<1%

Tape speed accuracy 7 1/2 in/s ±0.1%

Wow and flutter, DIN 45 507 weighted peak-to-peak value, <±0.15%

Internal power supply: eight 1.5 V, R20 type batteries; with Leclanché Powerful 609 length of use by non-stop recording 8 h; by recording 2 h every 24 h length of use 18 h

Permissible operating temperature between -22 and +158°F

Dimensions without handle and connector supports 10 3/4 x 8 x 3 1/8"

Weight with batteries and tape 10 lbs

OTHER VERSIONS

IS-DE: identical to IS-D version, but with universal microphone preamplifier (for dynamic and capacitor microphones), level metering switchable to modulometer, super-VU-meter or PV-meter; reference generator supplied as an option.

IS-DT: identical to IS-DE version, but with two tape speeds, 7 1/2 and 3 3/4 in/s, and two tape type settings for each speed. A combined circuit with automatic level control and reference generator is supplied as an option.

MORE ABOUT THE NEW NAGRA IS-D COMPACT RECORDER

That the new Nagra IS-D recorder, introduced at *Photokina '74* is one-third smaller and one-third lighter in weight than the Nagra III and Nagra IV models that now serve as the standards of the motion picture industry will come as welcome news to those who find the larger models a bit wearying to haul

around for on-the-run filming.

But initial enthusiasm — at this point in time, at least — becomes somewhat tempered when one considers a few fundamental facts. First, the IS-D, despite its considerable reduction in size and weight, is not that much less expensive than the larger models — 20% less, at the most, according to a company representative.

This fact might not be significant if the IS-D matched the larger machines feature-for-feature. In reality it is, in its present form, a somewhat stripped-down model, lacking the versatility of the Model III and IV machines and several of their refinements.

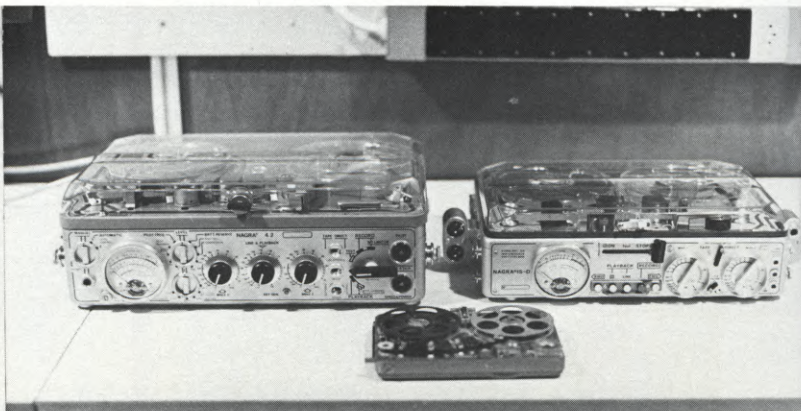
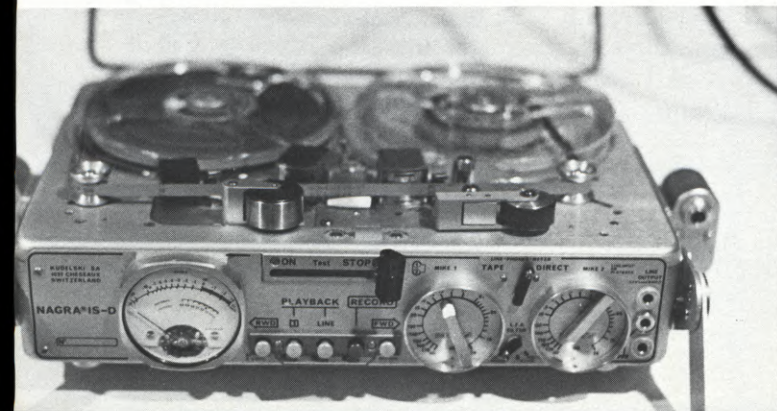
In its *present* form — and that fact should be emphasized — the IS-D is perfectly adequate for the broadcasting industry and what features it does have are up to the high standards characteristic of Kudelski products. However, its use as a motion picture sound recording instrument is currently somewhat limited.

For example, the present model does not have a neo-pilotone capability. Promised "by the end of 1975" are an internal crystal-sync generator and an external synchronizer.

One nice feature that it does have is an external battery case (containing eight 1.5-volt cells) which can be changed in a matter of seconds, without having to burrow into the machine itself.

The Nagra IS-D is a step in the right direction — smaller size, lighter weight. If and when the manufacturer adds the refinements necessary for high-quality motion picture sound recording, it should receive a warm welcome from film-makers. ■

(LEFT) The new Nagra IS-D recorder, introduced at Photokina '74, presently meets all of the standards of the broadcasting industry, but lacks the versatility of the Nagra IV and some of its refinements. The manufacturer plans to make this model available with an internal crystal-sync capability and an external synchronizer by the end of 1975. (RIGHT) A size comparison of three types of Nagra recorders. (Top left) The Nagra IV, currently the standard of the industry. (Right) The compact new Model IS-D. (Below) The tiny Nagra SN.



NEW ECOLAM HARD GLASS-TYPE HALOGEN LAMPS



A line of unique new lamps which, by substituting hard glass for costly quartz, offer all of the advantages of tungsten-halogen, but at the low cost of incandescent lamps

When tungsten-halogen lamps (or "quartz-iodine", as they were originally called) were introduced some years ago, they were justly hailed as a most significant breakthrough in lighting for still and motion picture photography — so important, in fact, that the Academy of Motion Picture Arts and Sciences has twice presented Scientific/Technical awards to developers of this type of equipment.

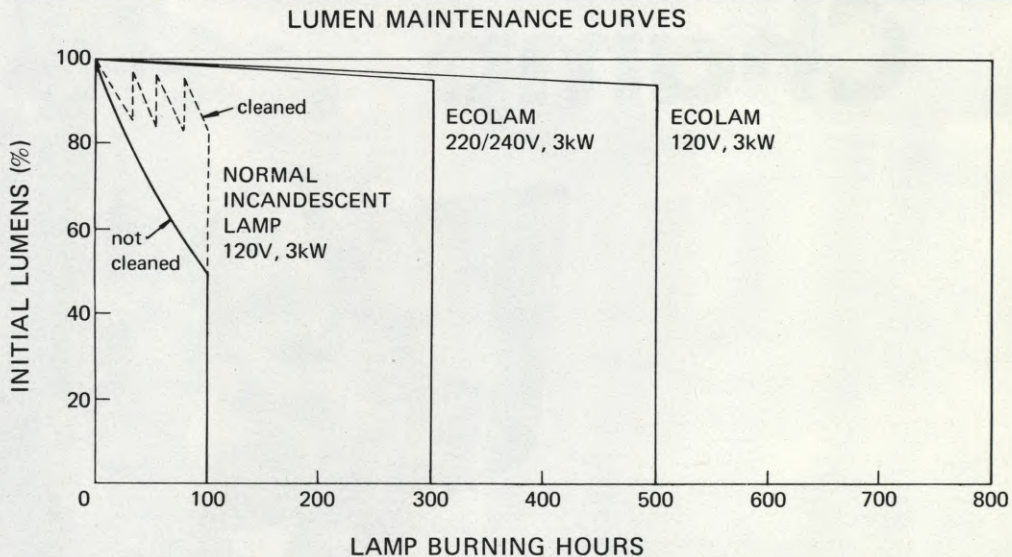
The advantages of tungsten-halogen lighting are obvious: small units that put out a great amount of light, and a considerably longer effective lamp life, due to the fact that they retain intensity and color temperature on a consistent level right up to burn-out.

The one disadvantage of these lamps up to now has been cost. They are expensive — considerably more so than incandescent units of identical wattage. As it turns out, the main factor responsible for the sizable increase in price is the expensive quartz envelope that is required to manufacture a tungsten-halogen lamp.

Many have made the statement that it would be ideal to develop a lamp with all the plus characteristics of tungsten-halogen, but with a price tag more like that of an equivalent incandescent lamp.

That is exactly what Ryudensha Co. Ltd. of Japan has done in designing and manufacturing its new ECOLAM Hard Glass Halogen lamps, introduced at *Photokina '74*.

Representing a significant breakthrough in design and manufacture, the ECOLAM lamps are compact in size as compared to incandescent lamps, although their cost is similar, and they have all of the desirable features of tungsten-halogen. (Left to right) 3000-watt, 2000-watt, 1000-watt and 500-watt ECOLAM lamps.



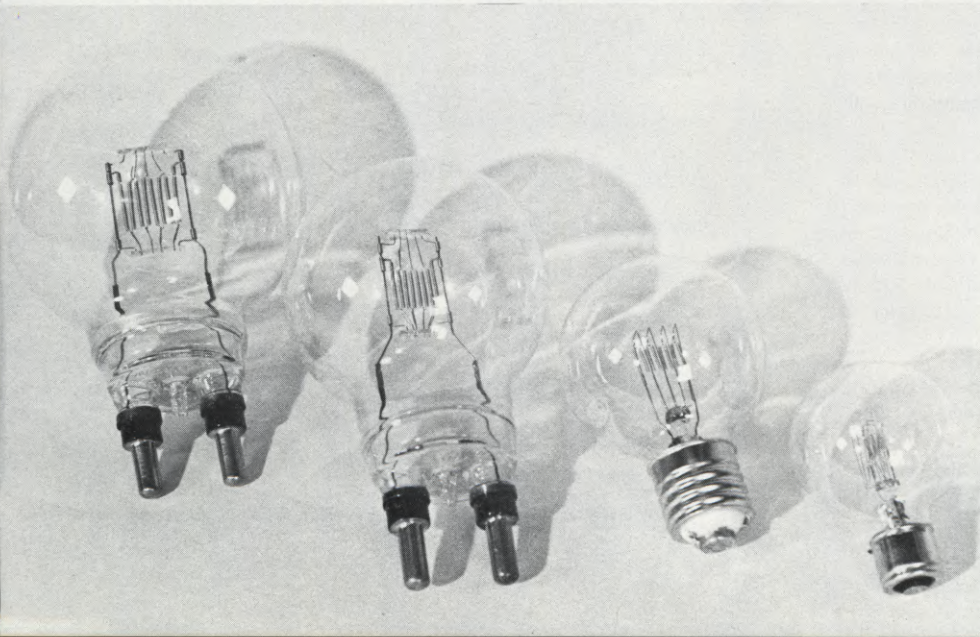
Ordering Code	Volts	Watts	Base	L.C.L. (mm)	Filament	Operating Position	Color Temp.	Average Life (120V lamp)
HG5-32	120/220/240	500	Med. Pref.	45	C-13	Base down to Horizontal	3,200	100
HG10-32		1,000	Mog. Screw	105				150
HG20-32		2,000	Med. Bip.	90				300
HG20-32L		2,000	Mog. Bip.	127				300
HG30-32		3,000	Mog. Bip.	127				500
HG30-32L		3,000	Mog. Bip.	148				500
HG50-32		5,000	Mog. Bip.	148				600
HG50-32L		5,000	Mog. Bip.	165				600
HG100-32		10,000	Mog. Bip.	254				800

Note: The 220/240V type ordinarily have about 20–30% shorter life.

The RDS ECOLAM is a revolutionary new alternative for stage or studio illumination, skillfully combining the advantages of halogen and ordinary incandescent lamps. The ECOLAM halogen-filled lamp is not constructed of quartz, as are conventional tungsten-halogen lamps. Instead, a highly purified hard glass (borosilicate) is utilized. The result: compact size (one-half that of incandescent types), constant color temperature, and extraordinarily long life. All of this at the economical prices normally associated with conventional incandescent lamps.

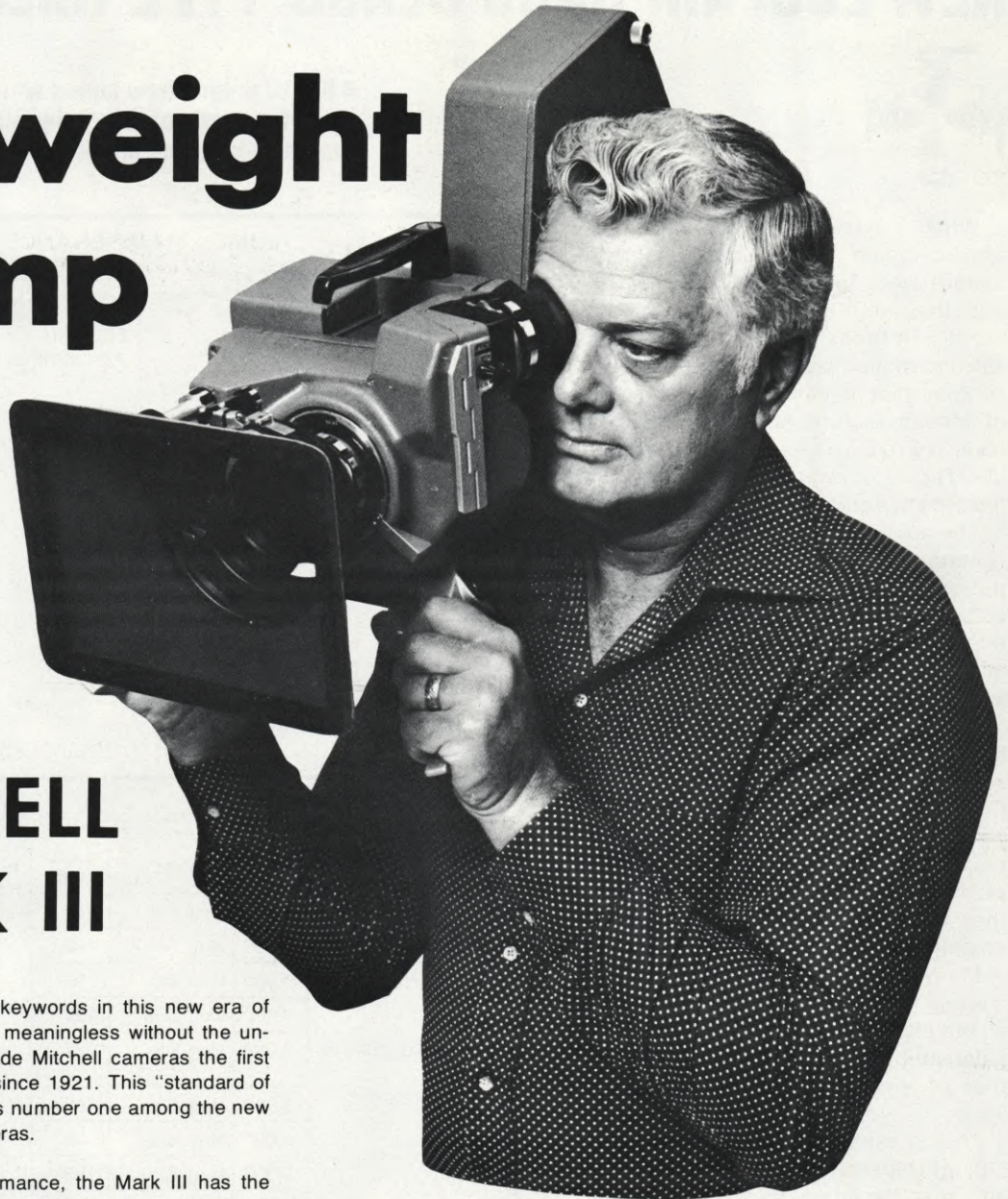
The manufacturer describes ECOLAM as having "five times longer life at one-half the size of non-halogen

Continued on Page 1460



The Lightweight Champ

MITCHELL MARK III



Compactness and mobility are the keywords in this new era of cinematography, but both would be meaningless without the unparalleled performance that has made Mitchell cameras the first choice of professional film makers since 1921. This "standard of quality" is why the Mitchell Mark III is number one among the new 35mm professional "shoulder" cameras.

Light in weight but heavy in performance, the Mark III has the distinctive features that made its predecessors famous — and more!

LIGHT WEIGHT — Magnesium castings are used to keep the weight of the camera to 25 pounds without sacrificing Mitchell quality.

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

FILM TRANSPORT — The world famous Mitchell intermittent movement used in the Mark III has been proven over many years in predecessor cameras for all types of filming. Dual register pins with dual pulldown claws assure absolute film control.

CRYSTAL CONTROL — The DC motor is crystal controlled to assure plus or minus 15 parts per million accuracy for precision sound synchronization. The same accuracy is maintained at all variable speeds of 8-16-24-25-28-32 fps. 50 and 60 Hz sync pulse output for cabled sound recording. Automatic out-of-sync light is visible in the viewing system. The automatic slate system fogs film in the gate and sends a signal to the tape recorder.

REFLEX VIEWING — Rotary mirror reflex shutter with brilliant F2.2 — 6.0 power viewing optics. Generous 6mm diameter exit pupil provides maximum eye comfort.

LENS MOUNT — BNCR lens mount; accepts any zoom or prime lenses mounted for BNCR cameras.

MAGAZINE — 400 and 1000 foot capacities.

For further details contact your nearest Mitchell representative:

Australia & New Zealand — Filmtronics, Pty. Ltd.

Hong Kong — Salon Films, Ltd.

India — Central Camera Private, Ltd.

Italy — Equipaggiamento Cinematografico Europeo s.r.l.

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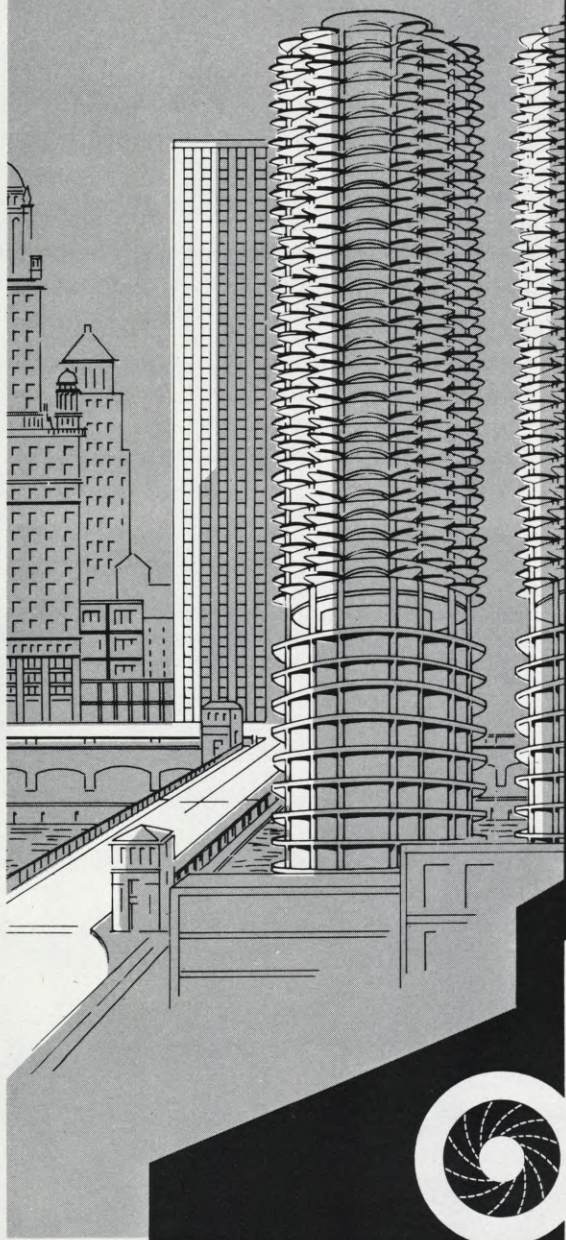
Installation has now been completed on our new film processor for Eastman Negative II types 5247 (35mm) and 7247 (16mm).

Ours is a custom made machine, designed exclusively for this new negative and incorporates a sprocket drive to prevent the picture area from ever contacting a roller.

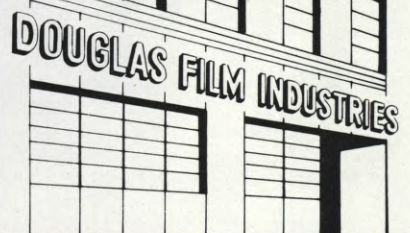
With process temperature established at over 100°, extreme care must be used to eliminate any contact with film guides and rollers during process. A sprocket drive accomplishes this.

It is hoped that many of you will start using this new photographic tool and when you do, please feel free to check with us on the "care and handling" of color negative.

The rules are far stricter than the methods used in conforming ECO.



DOUGLAS
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10 W. KINZIE ST.
CHICAGO, ILL. 60610
AREA 312-664-7455



THE MINIMIC BY TRANSOUND



A new subminiature microphone, smaller than a dime, that can be utilized as a lavalier or hidden microphone for motion picture work, with a minimum of clothing noise

The MINIMIC is a subminiature microphone designed to incorporate the latest advances in electret and transistor technology. Its unique design uses an extremely low current, field effect transistor; actually deposited inside the capsule.

The frequency response is selected to perform ideally as a lavalier microphone, but is not so radically adjusted so as to compromise its use as a "hidden" microphone in motion pictures, nor is it "peaky", which could prevent its use in music recording.

Mechanical design considerations were high on the priorities list, as major problems exist with all other small lavaliers in three areas: clothing noise, inadequate cables and awkward shapes. The Transound Company, designer and manufacturer of MINIMIC, believes that it has overcome these problems. Their electret is housed inside a silicone rubber boot, isolating it from the case. The case is constructed of a very smooth and slick plastic, so that clothing will glide over it with a minimum of noise. Special cable was made, using a polyurethane outer sheath for strength and flexibility, a pure copper braid with 99% wrap and two extremely flexible silicone rubber-covered inner conductors.

The slightly rectangular shape of the MINIMIC helps keep it in place and prevents it from rolling around. Its small size is an aid to concealing it anywhere.

The MINIMIC electronic specifications make it ideal for a wide range of applications. Motion picture and television audio engineers will appreciate its high sensitivity and "reach", its immunity to clothing noise pick-up and ease of concealment. Music recording engineers will appreciate all the advantages inherent in a small, virtually zero-mass diaphragm. Its slight midrange and high frequency boost could be very useful in miking strings or other instruments needing high clarity and definition. Whatever the particular area of interest in sound, the MINIMIC belongs.

MINIMIC SPECIFICATIONS:

Size: .460" l x .330" w x .326" d

Frequency Response: ± 1 dB 50 HZ to 3KHZ. Gradual rise to + 3dB at 5 KHZ then flat at 15 KHZ. Overall response: +3, -1 dB 50 Hz to 16 KHZ.

Noise (A weighted): 26 dB SPL nominal (1KHZ SPL equivalent of noise)
Equivalent Vibration Sensitivity: 70 db SPL (1 Khz SPL equivalent of 1 G)

Output Impedance: Microphone is designed to work into 150 to 600 ohm inputs

Battery Voltage Range: 1.1 to 20 VDC
Battery Drain: 10 to 50 microamps (max.)

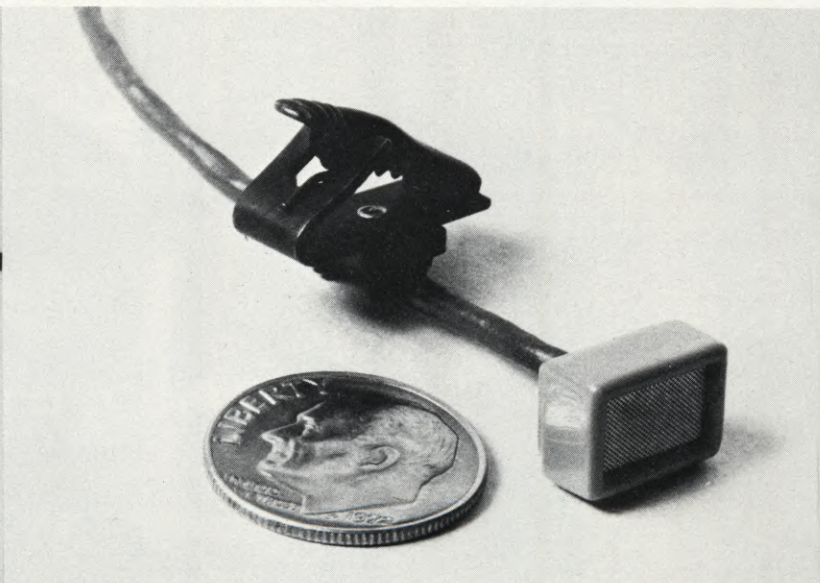
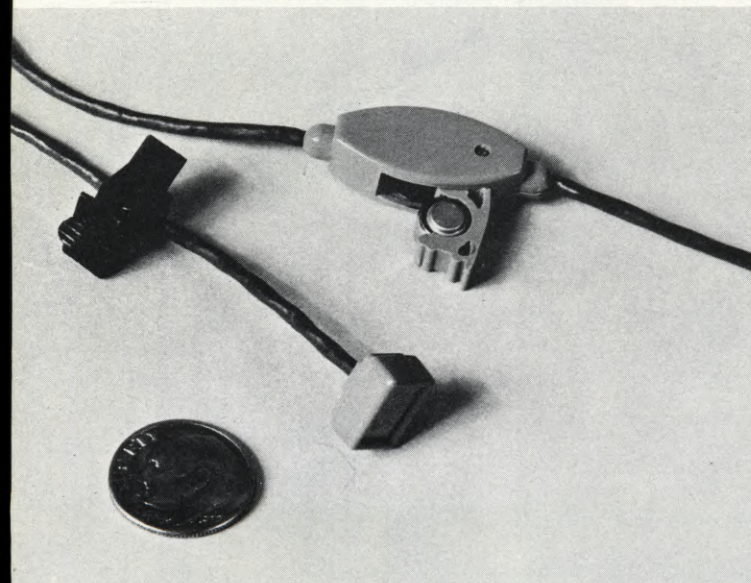
POWER SUPPLY

The MINIMIC is available with an inline power supply which facilitates use of microphone where a DC voltage of 1.1 to 20 volts is not available. In keeping with the very small size of the microphone, the power supply was designed to be as small as possible. A common hearing aid battery is used. Expect at least 1,000 hours of use. If the MINIMIC is not to be used for a period greater than one month, remove the battery from the supply.

The MINIMIC is easily powered by whatever amplifier, transmitter or tape recorder it is plugged into. In most cases, only one or two resistors are required. If modification of equipment is not practical, the inline power supply is necessary.

For further information, contact: IMAGE DEVICES INCORPORATED, 811 NW 111 Street, Miami, Florida 33168. Phone: (305) 751-1818. Telex 51-9348. ■

(LEFT) The new MINIMAC subminiature microphone, shown with its power supply above. The power supply was designed to be as small as possible, in keeping with the tiny size of the microphone. It uses a common hearing aid battery, which gives at least 1,000 hours of power. (RIGHT) A closer look at the MINIMAC, which is smaller than the dime coin placed next to it. The case is constructed of a very smooth and slick plastic, so that clothing will glide over it with a minimum of noise.



NEW KEM RAPID-S SIX-PLATE EDITING CONSOLE



The KEM Universal is probably the most imposing of all flat-bed editing tables. A huge, heavy machine, built like a tank and resembling the control console of a spaceship, the KEM Universal can do just about anything that an editing machine ought to be able to do. Admirable as it is, however, there are those who feel that from the standpoint of size, cost and complexity, it is just a little bit more editing table than they really need. For those who have been somewhat overwhelmed by the elegant Universal, the manufacturer has now come up with a console that stresses compactness, simplicity of operation and cost economy. Introduced at *Photokina '74*, the new KEM Rapid-S six-plate editing console is stripped down for action, while retaining many of the highly

sophisticated features for which its Big Brother, the Universal, has become justly famous.

This is what the KEM people have to say about the new Rapid-S:

We think of the editor as an artist, not as an operator. This is why we have built our new table with all our experience, and with the editor in mind.

It's not a computer, not a "flatbed" — it's more like a super-synchronizer. Very simple. Very basic. Single lever variable speed control with instant stop action. Manual interlock inching. Separate frame counters for each transport.

There is no feeling of a machine running you. A big bright picture and high-fidelity sound give you everything that's in your film. Your mind is free for creativity, which no machine can ever

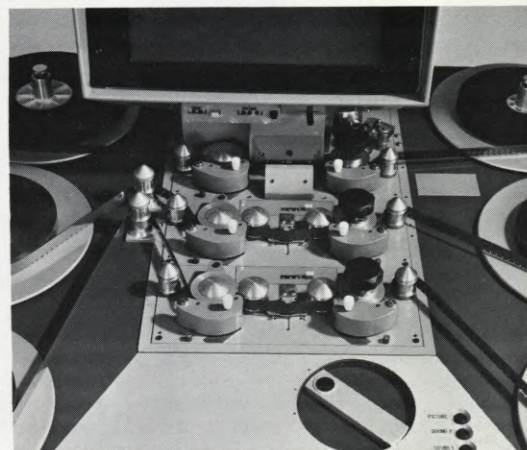
The new KEM Rapid-S is only 42 inches wide. The picture is the one furthest from the operator and its core spindle is only 26 inches from the table's front — which eliminates stretching. Inching manually can be done with all three transports in interlock, or any one independently — or any two. Each transport has its own frame counter, independent of the others.

A new flat-bed editing console, incorporating many of the features for which KEM is famous, but with the accent on compactness, simplicity of operation and lower cost

provide. — Think about it!

KEM Rapid-S designed for simple and time-saving operation.

This new line of equipment was developed by KEM for the filmmaker who likes the convenience of working with one picture and two soundtracks in any interlock combination, but who does not need the versatility of the Kem Universal.



Closeup of KEM Rapid-S table top showing simple, logical layout of the controls. Master control lever is in recessed circle to left of the interlock control buttons.

The new design of the film transport — very much like the good old synchronizer with picture and track in one line — has a parallel straight threading path with pull-out sync points on each side. Large knobs for manual interlock inching and separate frame counters on each transport.

Three push-buttons with light indicator make any interlock combination possible. The recessed single-lever variable speed control with instant-stop button lets you run slowly frame-by-frame, or faster to hear sound modulation. There is a notch for correct sound-speed, but you scan just as fast as you want to follow the dialogue and the action. If you move the lever to the left, you reverse the process all the way up to high speed. Torque motors rewind full 1000' roll in less than a minute.

With a screen size of 8.5x11.5 inches,
Continued on Page 1458



THE AaTON 7 16mm REFLEX CAMERA



A unique 16mm sound camera, which made an impressive debut in prototype form at *Photokina '72*, returns this year refined, improved and ready for production

The Aaton camera, first shown at *Photokina* two years ago, was touted as the dawning of a new era in 16mm film-making. During the period between [*Photokinas*, Aaton spent the two years developing, refining and improving its characteristics. At this year's *Photokina*, Belden Communications, Inc. and Aaton showed the first production models that will be marketed by Belden Communications, Inc. in the United States during the Winter of 1974. Some of the highlights of the Aaton camera are listed below:

- ... Designed and balanced to fit on a human shoulder for effortless shooting over a long duration.
- ... Low noise level: 30 dB \pm 1 measured 1 metre from film plane.
- ... Aaton positive claw movement: ensures low noise level which is stable in time with camera aging; the absence of vibrations contributes to high definition.
- ... The height of the camera is 8 inches. The camera fully loaded with 400' of film and a 12-120mm lens weighs approximately 16.5 lbs.
- ... 400' coaxial magazine, usable for 16 or Super-16 without adaptation.
- ... Rotating mirror shutter: automatic stop in viewing position.
- ... Positive locking miniature BNCR type lens mount with adaptors for Cameflex, Arriflex mounted lenses, etc.
- ... The viewing plane is in front of the film plane.
- ... Field of observation 20% larger

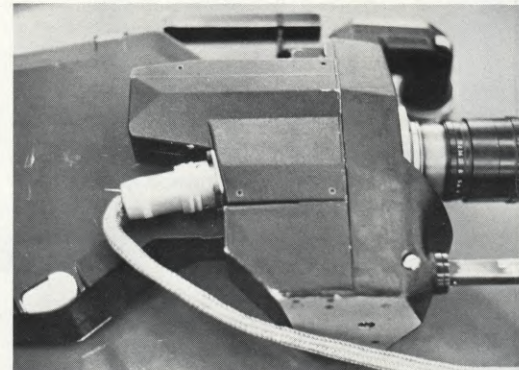
than Super-16 frame.

- ... Viewfinder is orientable and extremely bright with magnification 11x.
- ... Crystal DC brushless motor: 24/25 fps with slaved mode and variable speed.
- ... Chronometric marking. Driven by crystal clock. Allows immediate synchronization of the smallest isolated sequence. (Aaton patent.)
- ... Complete protection from polarity inversions of power supply (10 A fuse in base of camera). Spare fuse is under the metal plate set around the tripod screw receptacle.
- ... Automatic stop in viewing position.
- ... Out of crystal warning by noticeable flickering in viewfinder (3FPS flicker in viewfinder).
- ... Exterior slaving for filming on television screen with Atelan accessory. (Accessory for exterior 50 and 60Hz slaving; applications; playback; filming on television screen; etc.)
- ... The Aaton battery clips directly onto the camera; 10 cadmium nickel 1.2V cells, 1.2Ah; weight: 600 grams.
- ... Tripod attachment: 3/8" tiedown screw thread in triangular camera base.
- ... The camera housing: has no effect on the respective positions of the functional components; it is a removable cover protecting the inside parts from shocks, dust, and light.
- ... The handgrip: it is adjustable

along a support rod fixed to the camera housing.

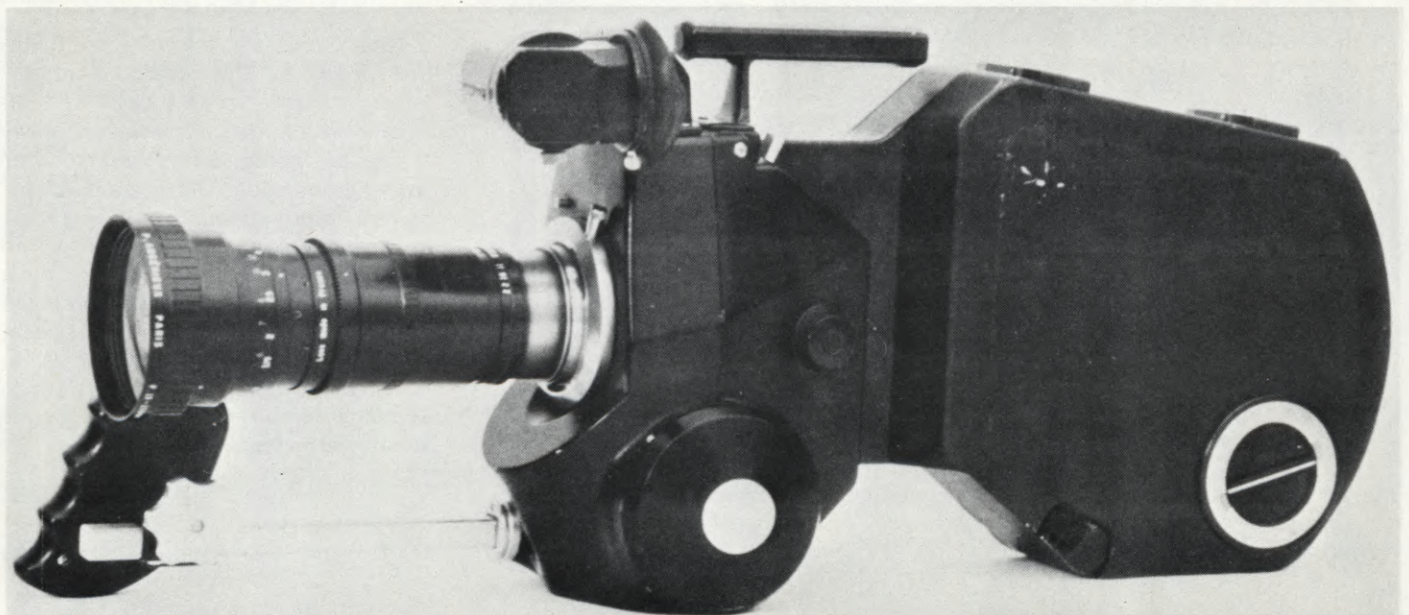
... Aaton offers as a standard accessory a video tap plug for the Aaton video TV camera that shoots simultaneously with the camera from the same point of view (through the lens). The miniature Aaton 30 video system was initially designed as an electronic viewfinder to be added to film cameras; this explains its low power drain and its exceptional capability to be phase-synchronized to external signals.

For further information regarding the Aaton camera, contact: Belden Communications, Inc., P.O. Box 92, Radio City Station, New York, N.Y. 10019. Tel: (212) 889-9432. ■



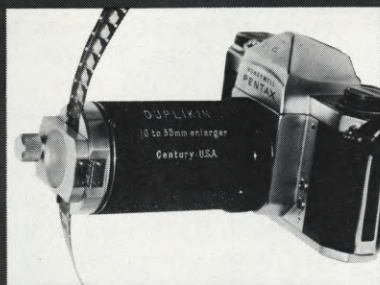
A standard accessory is a video tap plug for the Aaton video camera that shoots simultaneously with the same point of view through the lens of the film camera.

The Aaton 7 16mm Reflex Camera has a most unusual profile. The hollow formed by the confluence of the magazine's throat and the curve of the camera's body fits snugly onto the shoulder, providing a balance so comfortable that the camera seems almost weightless, although it actually weighs 16.5 lbs with film and 12mm-120mm lens. The camera offers exterior slaving for filming on television screen with Atelan accessory.



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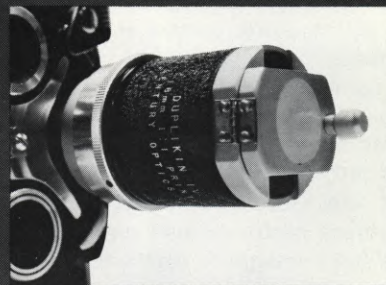
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BOLEX H-15 EL CAMERA

Continued from Page 1421

(FIGURE 4). It is coupled to all the camera speeds from single-frame to 50 fps. The aperture set by the lighted diodes is, therefore, correct at all running speeds.

The camera running speeds are set on dial B (FIGURE 4), which has engraved speeds of 10, 12, 18, 20, 24, 25, 32, 40, 50 fps (FIGURE 5). All speeds are electronically controlled. The camera motor is also equipped with an electromagnetic *start* and *stop*, which assures that the camera starts and stops instantly and with the rotating 170° shutter always in the closed position. There is no visible over-exposure of the first frame at speeds up to 40 fps. While this instant *start* and *stop* may be of relative little value to the real pro who edits every scene, it will undoubtedly be appreciated in news filming, in coaches' films, in research

meter as all the other speeds are.

For automatic time-lapse filming, a simple timer can be connected to the electrical remote release cord.

The Bolex EL motor also runs in reverse (setting R) at 18 fps. This is not meant for reverse filming, but for rewinding the film when producing double and multiple exposures, split-screen scenes, superimposed titles in the camera, or for rewinding partially exposed film. A single-frame counter permits accurate rewinding of film. The counter is also valuable in single-frame filming.

Professional film registration and steadiness is of utmost importance in a double exposure, since the slightest unsteadiness is visible by the movement of one image against the other. Absolute picture steadiness is, of course, important in all professional 16mm filmmaking, especially when films are blown up to 35mm. This professional picture steadiness, which, in many cameras, is obtained by two components, a claw and a registration pin, is accomplished in the Bolex EL by one: a so-called registration claw which was developed in 1955 and which not only moves the film from one frame to the next, but registers each frame in exactly the same position in relation to the aperture. The picture steadiness has proven to be professional in every respect and at all speeds, including single-frame filming.

Starting and stopping the camera is done with the front release on the camera, the release on the camera grip, the release on the zoom lever of Vario-Switar lenses, or with a remote release cable which is plugged into the 3-pin side socket on the camera, permitting, for instance, releasing from the tripod panhandle.

The camera motor is driven by

rechargeable nickel Cadmium batteries. A small 0.45 AH battery sufficient to drive six 100' rolls is so compact that it can be attached to the camera's lid, thereby eliminating any long cable connections. The total weight of the EL camera body and battery is 7 lbs. The larger 1.2 AH battery for 20 100' rolls or five 400' magazines can be carried in a pocket or on a shoulder strap. Both batteries can be charged in about 14 hours with a standard charger or with a fast charger in 30 minutes, at which point they reach 90% of capacity. With the rapid charger, the EL camera can also be run on AC after the battery has been charged for at least one minute.

While the Bolex EL cannot be considered a "blimped" camera, it is far more quiet than any previous Bolex model and should permit sound filming in the majority of locations without additional blimping. An accessory barney, to cover either the 100' camera or the camera equipped with 400' magazine is available.

Sync-sound filming is possible with sync pulse-generator (FIGURE 6), in which case the speed dial is set to 24 fps (25 fps in some countries); or with crystal (FIGURE 7), in which case the dial is set to "crys". The sync-pulse generator and crystal accessory are the same small units used on the existing Bolex EBM Cameras or ESM motors.

The automatic slating which has been with Bolex for a number of years is not only incorporated into the EL model, but has been improved to the point where the slating lamp is operating only when the sync-pulse generator cable is plugged into the camera. For silent filming, therefore, it is not necessary to remove the slating lamp from the camera, in order to avoid fogged frames. As a further step in

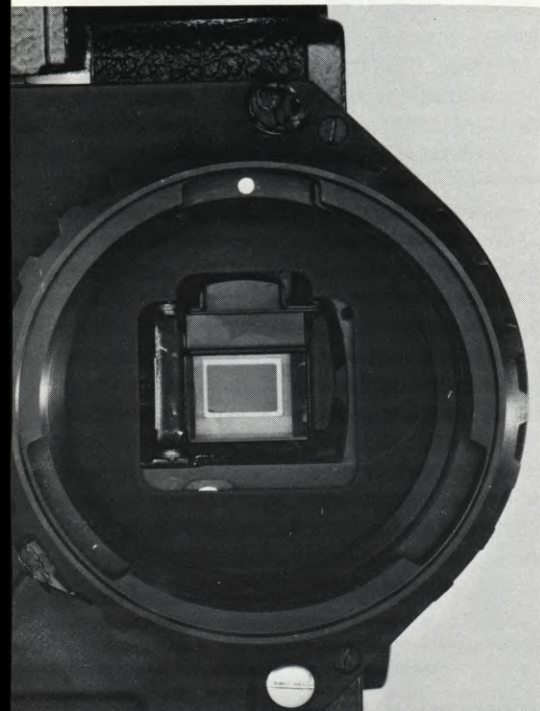
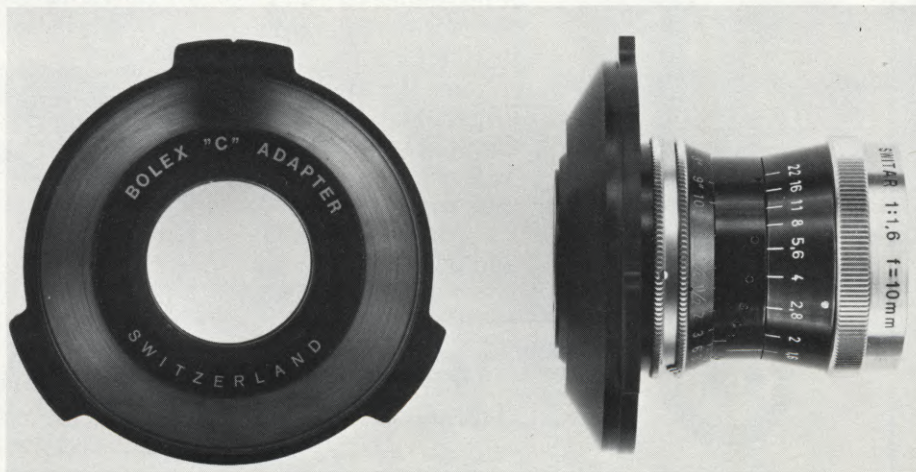
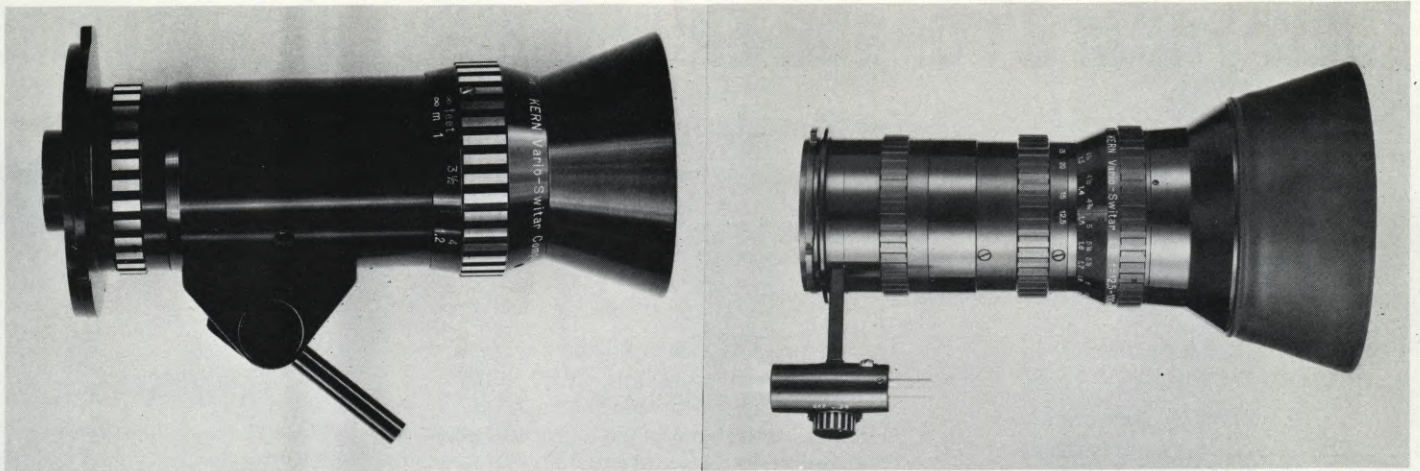


FIGURE 8 — Large (2-1/2" diameter) Bolex bayonet mount, with the beam-splitting prism mounted in a steel frame behind it.

films or in sequences with very short scenes. It also permits some stop-motion sequences without having to resort to single-frame filming. The Bolex EL however, is readily equipped for single-frame filming without buying or attaching an animation drive. The built-in motor provides single frames of absolutely even exposures by simply setting the speed control to S. The exposure time is 1/40 of a second and is automatically coupled to the exposure

FIGURE 9 — The Switar and Yvar "C" thread lenses can be used on the EL camera through employment of a C-mount adaptor. All the lenses designed for the other Bolex bayonet models can, therefore, be used on the EL, with or without adaptor, including the extremely fast f/1.1 standard 26mm lens, the fast 10mm f/1.6 wide-angle and the compact Vario-Switar 17mm-85mm f/3.5 zoom.





(LEFT) FIGURE 10 — The compact Vario-Switar, with 5:1 zoom range is only 4 inches long and weighs 12 ozs. (RIGHT) FIGURE 11 — The new Vario-Switar 12.5mm-100mm f/2 lens has a pre-set aperture arrangement when the diaphragm is fully open for focusing, and stops down automatically when the release is depressed.

eliminating mistakes in sound filming, when the sync cable is connected to the camera, the camera runs only if the speed dial is set to one of the sync speeds, but not when set to accelerated motion or slow-motion.

The ruggedness built into the EL camera is carried over into the lens mount, which is the bayonet type already found on some other Bolex models (FIGURE 8). Its large 2½" diameter with reliable double lock (which prevents lenses from falling out accidentally when turning the knurled locking ring), makes the lenses practically part of the camera body. Bolex has so much confidence in this lens mounting, that they illustrate (and, we can assume, suggest), carrying the entire camera by the lens.

"C"-type thread lenses can be mounted by means of an adapter (FIGURE 9). All the lenses designed for the other Bolex bayonet models can,

Continued on Page 1472

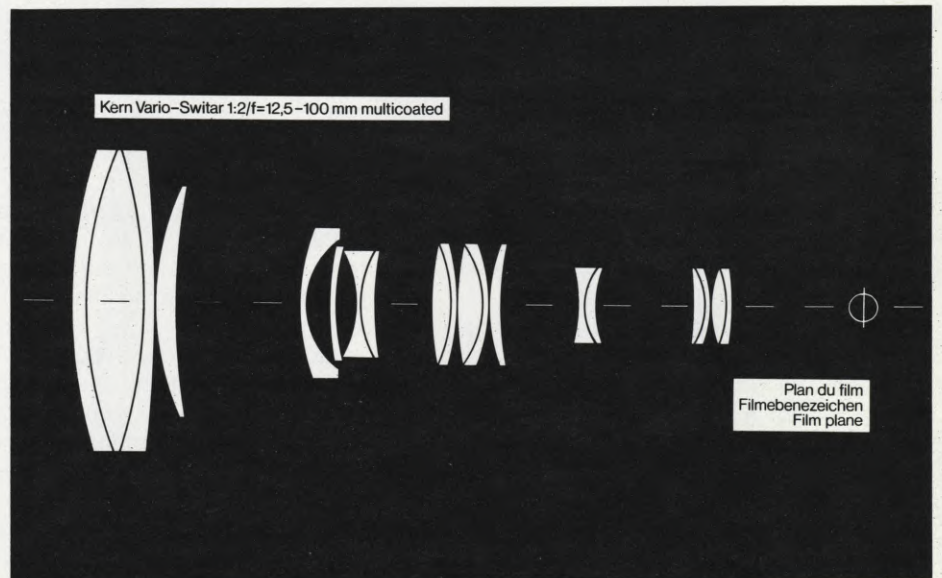
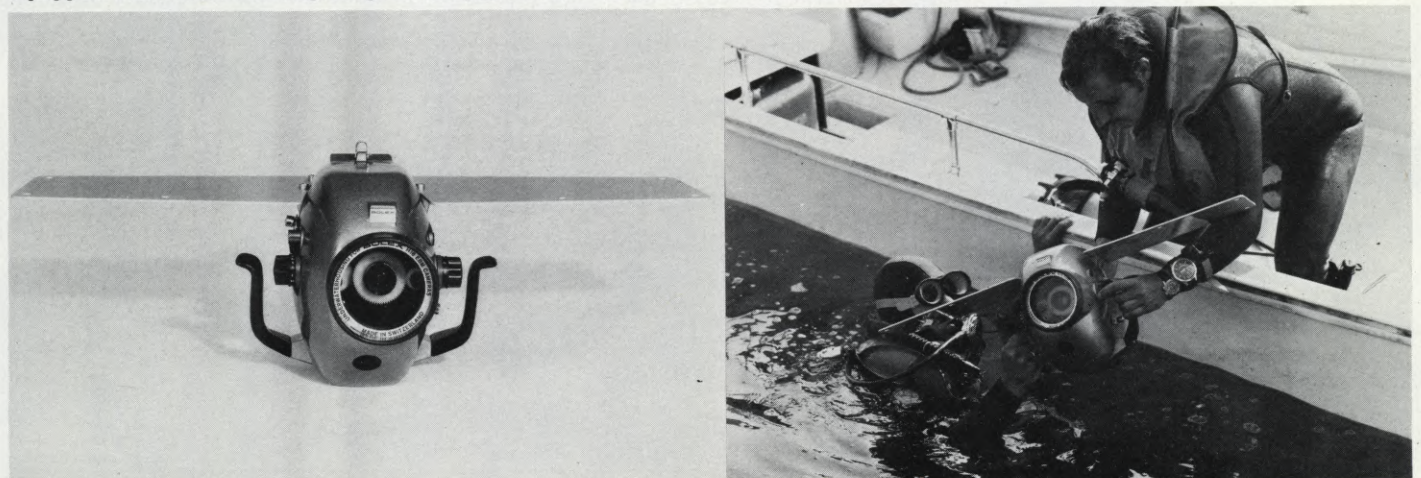


FIGURE 12 — Nineteen lens elements provide the Switar with sharp quality from the 100mm extreme all the way down to the short 12.5mm focal length. The lens is multi-coated and has manual diaphragm adjustment with automatic stop-down. This means that the diaphragm is always fully open for focusing and stops down to the pre-set aperture before the camera starts running.

(LEFT) FIGURE 13 — The Bolex underwater housing for the electrically-driven cameras. It permits aperture and distance setting of the 10mm f/1.5 or 26mm f/1.1 lenses. (RIGHT) FIGURE 14 — The underwater housing, designed for depths down to 320 feet, is equipped with two stabilizing wings which permit smooth underwater camera movement.



NEW FROM O'CONNOR ENGINEERING LABORATORIES



By **CHADWELL O'CONNOR**

President, O'Connor Engineering Laboratories

MODEL 150-XR FLUID PAN AND TILT HEAD

At Photokina we introduced for the first time our new Model 150-XR O'CONNOR Fluid Pan and Tilt Head. This head was designed to fill two requirements: first, to handle Cinema Products' new XR-35 Reflex Camera; and second, to take the place of our original Model 200.

In appearance the Model 150 is more modern. We had an industrial designer help us with the outside architecture to give it a more modern appearance and to blend in with modern cameras such as the XR-35.

This head has several new features which make it doubly attractive. Both the drag and tilt adjustments have dial indicators reading from 0 to 9, indicating the amount of drag setting. This allows the photographer to reset a given setting for the amount of drag he desires for a given shot. The camera platform is adjustable so that the camera with all attachments can be balanced over the center of rotation. The plate can also be permanently fastened to the camera, so that it can be snapped on and off the head in a matter of seconds. A special safety lock prevents the camera from falling in the event that the operator does not tighten the plate prior to tilting.

The new Model 150-XR O'Connor Fluid Pan and Tilt Head, which was designed to fulfill two requirements: first, to handle Cinema Products' new XR-35 reflex studio camera and second, to take the place of the O'Connor original model 200 head. An industrial designer helped give the outside architecture a more modern appearance.

The head is designed for cameras weighing from approximately 80 to 180 pounds. A special torque bar counter-balances the weight of the camera in all tilt positions. Two torque bars are available: one for cameras around 100 pounds and one for cameras around 150 pounds.

The unit is constructed primarily of magnesium for light weight. The entire unit weighs only 25 pounds. This is almost 20 pounds lighter than the Model 200.

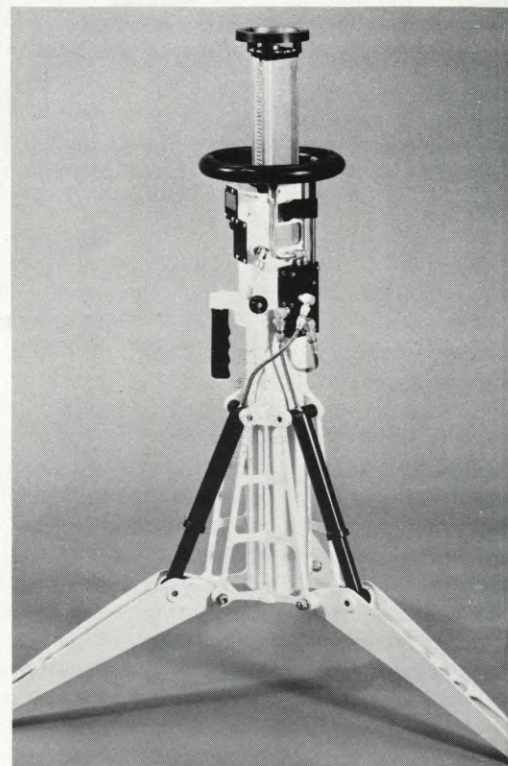
THE NEW MODEL 102-B HYDRO-PED:

Our Hydro-Ped was first introduced at Photokina in 1972. It aroused considerable interest at that time because it was the first attempt to replace the conventional tripod.

The idea was first conceived after we did a considerable amount of testing on conventional tripods. We found that the most important requirement was that the top plate should not rotate resulting from forces applied when panning, nor should the top plate tilt when subjected to tilting forces on the handle and the torque produced by the counter-balance springs. We further found that lateral stability was the least important. A conventional tripod is best in lateral

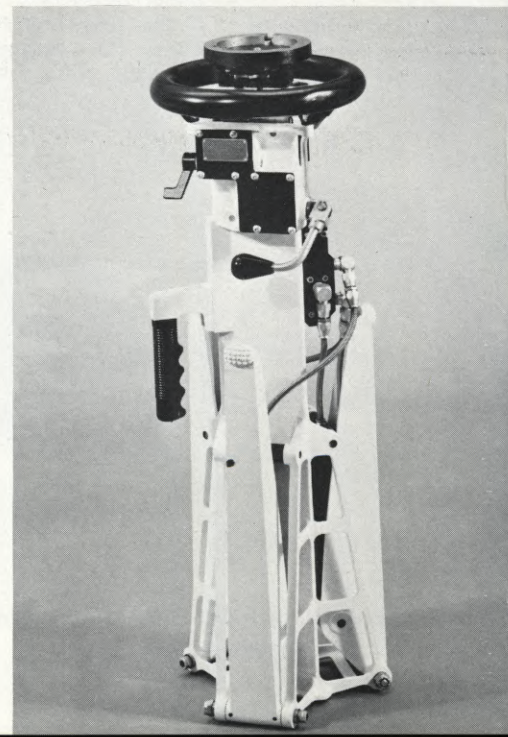
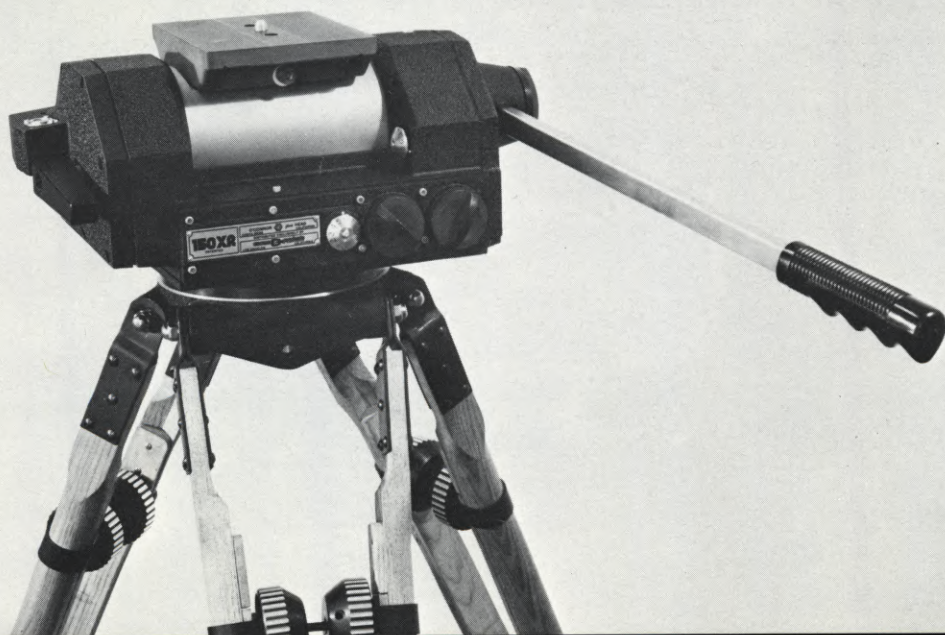
Continued on Page 1458

A new, more modern, Fluid Pan and Tilt Head for studio motion picture cameras, plus a new fully hydraulic model of the Hydro-ped, designed to replace the conventional tripod



The new Model 102-B Hydro-ped has not only hydraulically-coupled legs for fast leveling, but a smoothly operating hydraulic column, as well.

The entire Model 102-B Hydro-ped folds up into a package 30 inches long and 10 inches in diameter. Weighing under 30 pounds, it will support cameras weighing up to 100 pounds.



"MILLER"...

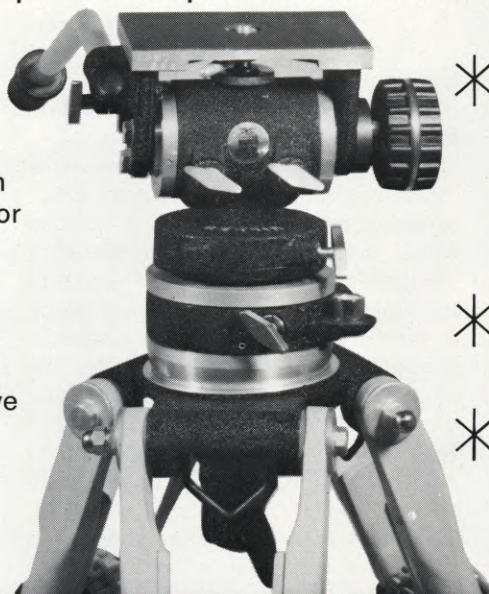
ALWAYS ONE STEP AHEAD

The new Senior "F" and Light Professional Tripod Heads to supplement present "Miller" Lines.

FEATURES INCLUDE:

- * Pan Unit permits (full 360°) horizontal traverse between full fluid drag and free slip for filming fast moving objects or events.
- * Full fluid action tilt (full 90°) either way with more positive tilt control and Lock, in any traverse.

Model shown is LP-2
PROFESSIONAL FLUID HEAD



- * The "F" Head will support medium weight 16mm Cameras up to 15 lbs. and the LP-2 Professional Fluid Head will support up to 30 lbs. Both are available with or without the Slip Pan Unit.
- * Slip Pan Units are available to convert older "Miller" Fluid Head models for this use.
- * There is a Miller Tripod ideally suited to every Miller Head.

U.S.A. PATENT NO's. 3,712,571 and 3,592,429
Others Pending.

MILLER PROFESSIONAL EQUIPMENT

6500 Santa Monica Boulevard / Hollywood, California 90038 / Phone: (213) 466-5105

CRYSTALINK Wireless Receiver

for CP-16 Reflex and Non-Reflex Cameras.



Designed by
Cinema Products
in cooperation with
Vega Electronics.

The extremely sensitive and powerful Crystalink wireless receiver unit features the use of *helical resonators*, a device which permits the frequency to which the receiver is tuned to pass freely while blocking any strong adjacent frequencies that would normally overload conventional front end amplifiers.

The Crystalink wireless receiver (Model CL-1) is mounted between the CP-16 camera body and the Crystasound amplifier, adding approximately 1" (25mm) to the width. The Crystalink wireless receiver is powered by the same NC-4 battery pack which powers the entire CP-16 camera system (including the Crystasound recording system).

The back panel of the fully professional Crystalink wireless receiver consists of an on-off switch, a volume control, and a field signal strength meter which indicates if there is sufficient RF signal strength to insure quality reception.

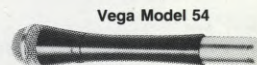
The Crystalink VHF wireless receiver can be used in conjunction with the Vega cordless transmitter (Model 55) and the Vega cordless microphone/transmitter (Model 54), as well as similar units. Receiver/transmitter frequency combinations can be specified for many of the popular radio/mike frequencies.



Crystalink Wireless Receiver — shown in use with interchangeable flexible spiral antennas.



Vega Model 55



Vega Model 54

For further information, please write to:

cinema E products
CORPORATION

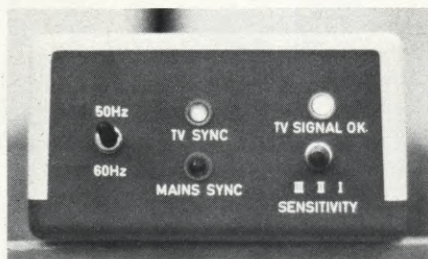
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NOTED AND NOTABLE AT PHOTOKINA '74



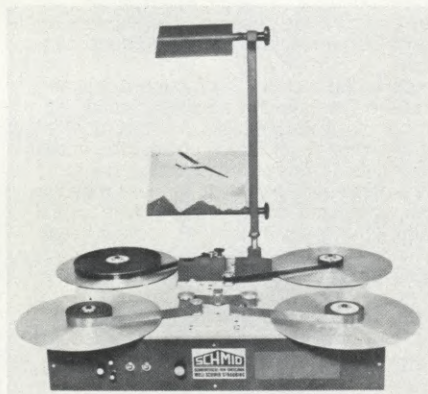
Gadgets and gizmos and a myriad of sophisticated accessories to aid the film-maker in his work



JENSEN TV FRAME SYNC SYSTEM (MODEL 518)

This unit can be used with any crystal camera motor or control which has provision for external reference to control the camera motor. (e.g. the Jensen 505 Crystal Unit for Arri 16 BL) Jensen 518 becomes the external reference, and bars on the TV screen can be seen frozen in the frame. The bar can be moved by pressing a button on the frame shift unit to the edge of mirror image in viewfinder, guaranteeing bars will never be in the film frame. The unit actually senses blanking bars from TV set and they stay out for the whole scene. Note that crystal camera speed is never the same as mains reference.

For further information, contact: Image Devices Incorporated, 811 NW 111 Street, Miami, Florida 33168, U.S.A.



MINI-DIPLOMAT FOUR-PLATE FILM EDITING TABLE

The Mini-Diplomat Four Plate Editing Table is a remarkable new development in the flat-bed editing field, and is especially designed for professional film-makers. Special Features:

Compact Size 24" wide by 17" deep, weight approximately 75 pounds.

Quiet operation.

Self-contained screen and wall projection.

Synchronous interlock of projection and sound.

The editing table incorporates a rotating prism projection system, which projects the picture onto a special screen surface via a vertically mounted adjustable mirror located at the rear of the editing table. The projected image is bright and clear, allowing several people to view it simultaneously. The picture head and sound head can be decoupled for locating picture and sound start marks. Running speed of 24 f.p.s., synchronous or variable speed up to three times normal. Simplified threading is accomplished through a trouble-free sprocket gate assembly. Sound reproduction is accomplished by a 6-watt amplifier and speaker which is built-in. With very little effort, this compact editing table folds into an easy to carry package.

For further information, contact the exclusive U.S. distributor E-Cam Company, P.O. Box 3955, North Hollywood, California 91609

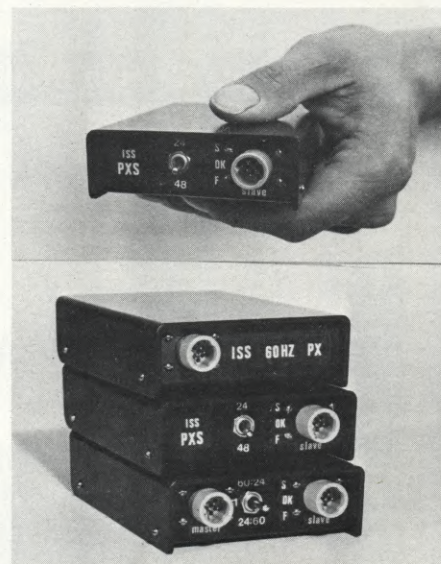
OSRAM SL 1000 — SAFETY LIGHTING UNIT FOR CINE AND STILL PHOTO APPLICATIONS

The Safety Lighting unit model SL 1000 presented by OSRAM is the first unit for Cine and Still photo applications in the 1000-W class. The 1000-Watt halogen lamp, as well as the reflector, are protected by a safety cage provided with a temperature resistant concave safety glass. This cage, which meets stringent German VDE requirements, is designed with cooling fins. The four prongs arranged to protect the glass allow the unit to be put aside in any position after operation.

The OSRAM SL 1000 is a high-performance lighting unit in which a Superphot (R) Halogen Lamp developing 1000-W ensure optimum intensity and excellent colour quality, due to the axial configuration and computer designed facet-reflector. Bright illumination of the object periphery up to the wide-angle range of a Super-8 lens

is simultaneously achieved. The lamp can easily be replaced once the protective cage has been removed. Fuse and power switch are accommodated in the upper portion of the handle. For settings requiring indirect lighting, the lamp can be tilted up through 90°.

The OSRAM SL 1000 is compatible for a wide variety of applications. It being suitable as a hand lamp, but also useful as a camera-integrated light with the aid of a filter key (kodak system). It can, of course, also be mounted on a Camera Bar. Filter key and camera bar are supplied complete with the unit and a 4-meter cable provides adequate freedom of action.



ISS POCKET RESOLVERS

The ISS Pocket Slaves are designed for filmmakers seeking the utmost in portable and economic resolvers. The three miniaturized resolvers, the Pocket Slave (PS), the Pocket Crystal Slave (PXS), and the Pocket Crystal (PX) are each slightly larger than a package of cigarettes and weigh only 9 oz. Each is contained in a rugged case of anodized black aluminum, and all are pin- and connector-compatible with each other and with the Cine-Slave CS-5 and CS-4.5 universal resolvers, as well as with all equipment modified for either the CS-5 or the CS-4.5.

The Pocket Slave and the Pocket Crystal Slave are designed to work with any motion picture camera of any

guage, a wide range of recorders, and with some projectors. The Pocket Crystal will record an accurate sync pulse on any recorder.

For further information, contact: Inner Space Systems, Inc., 102 West Nelson Street, Deerfield, Wisconsin 53531. (608) 764-5900



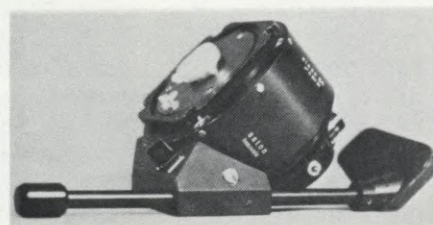
CRYSTACHEK MODEL X-24E or X-25E (PIX "C")

Strobe unit converts sync pulse from crystal in Nagra (or other recorder or crystal source) from 60Hz to 24FPS or (50Hz to 25FPS with X-25E) so crystal reference from recorder can be matched to the camera(s). If there is any apparent movement in the stroboscoped movement of the camera the fault can be located by switching the Crystachek to the internal crystal mode. This will indicate whether or not the camera is on speed, therefore narrowing down which piece of equipment is not on accurate crystal speed or reference.

Small and portable unit is designed for field use, utilizes handy replaceable AA cells which last for many months.

Apparent movement in the camera mechanism can be timed and will indicate precise frames or fractions out of sync.

For further information, contact: Image Devices Incorporated, 811 NW 111 Street, Miami, Florida 33168, U.S.A.



ALCAN 54 CRYSTAL MOTOR FOR ECLAIR NPR CAMERA

Shown at *Photokina '74* was the new ALCAN 54 Crystal Motor for the Eclair NPR camera, a flat-base motor for attachment onto all tripod platforms. It has a sliding shoulder grip to adjust the viewfinder's position in relation to the eye. It holds a good shoulder position,

because the rod's position and the motor's form allow the hand to remain on the camera body. The motor weighs approximately 4 pounds and is the smallest and lightest crystal motor available for the Eclair NPR. It features an easily interchangeable modular electronic circuit which facilitates repair work and maintenance.

Additional characteristics of the ALCAN 54 Crystal Motor include:

1. Quick change modules with I.C. for cutting downtime.
2. Motor is smallest and lightest on the market for the Eclair NPR.
3. Large base with shoulder pad protects camera falling from a vertical position, even with zoom and without magazine.
4. Complete protection from polarity inversions of power supply because of 10A fuse base.
5. Speed controlled by 5MHz high-stability crystal.
6. Automatic stop in viewing position.
7. Out-of-crystal warning by flicker in viewfinder.

For further information, contact: Belden Communications, Inc., P.O. Box 92, Radio City Station, New York, N.Y. 10019. Phone: (212) 889-9432



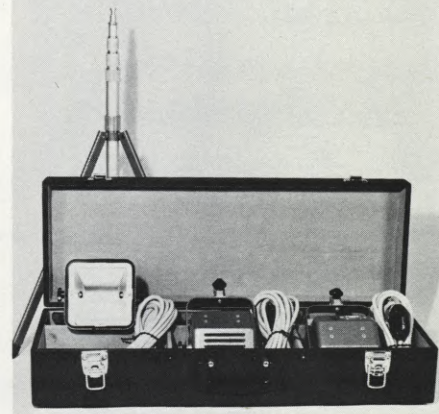
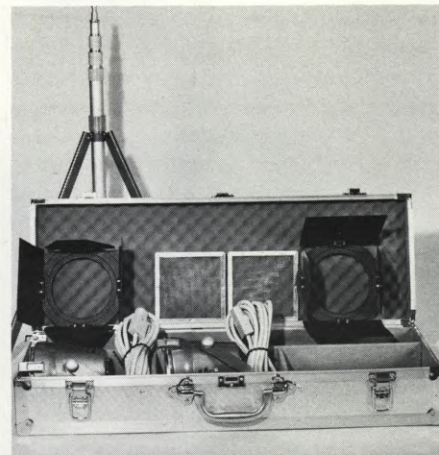
NEW HI-SPEED LENSES FOR 35mm CINEMATOGRAPHY AVAILABLE FROM MITCHELL CAMERA CORPORATION

A set of four hi-speed lenses custom-mounted for use on Mitchell BNC, BNCR, S35 RB and the new Mark III cameras are now available from Mitchell Camera Corporation.

All lenses contain multi-coated fluorite elements, are mounted in helical focusing Mitchell BNC mounts with integral focusing gear, and have extra large calibrations plus a deep set filter holder that accepts two Series VIII filters immediately ahead of the front lens element.

Focal lengths and speeds are 28mm T1.8, 35mm T1.3, 55mm T1.1 and 85mm T1.7.

For additional information write or call Mitchell Camera Corporation, 666 West Harvard Street, Glendale, Calif. 91209. Telephone: (213) 245-1085.



TWO NEW LOCATION LIGHTING KITS BY RDS

Shown for the first time at *Photokina* were two new compact lighting kits by Ryudensha Co., Ltd. of Japan specifically designed for on-location filming and TV. The sturdy-Lite Pop Kit (ABOVE TOP) includes two 650-watt Mini-Key Lights, with 10-foot cords having in-line switches, 15 feet of extra extension cord, 4-leaf barndoors, single scrims and two lightweight aluminum stands which extend to eight feet but fold-up to 25 inches. Everything packs neatly into a sturdy aluminum case.

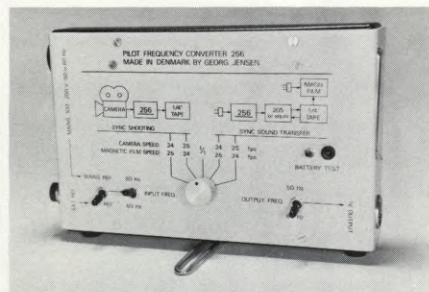
The Cat-Kit (ABOVE BOTTOM) is a non-focusing "quartz" lighting kit that is simple, compact and lightweight. It provides extremely high-intensity il-



lumination (as bright as 1,100 lux at three meters distance for an individual unit) with its 800-watt tungsten-halogen lamps.

Consisting of three miniature broad lights and three "POP" stands with related accessories, the Cat-Kit weighs an unbelievably scant 17 lbs. 8 oz. Operation is on 120V/230V AC, with 650-watt or 800-watt double-ended quartz lamps. Friction tilt clamps are controllable with one rapid action. A baffled ventilation slot ensures cool ventilation. The lighting equipment comes packed in a black vinyl-sheathed carrying case.

For further information, write to: RDS-TEK, P.O. Box 19, Beverly Hills, California 90212.

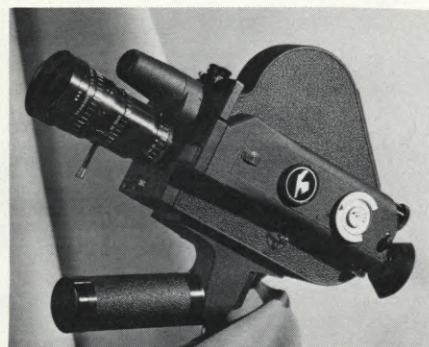


NEW MODEL 256 SYNC-PULSE CONVERTER FROM JENSEN

Shown at *Photokina '74* at the Image Devices Incorporated stand was the new Jensen 50-60 Hz, 24-25 fps, 120-220V AC-DC Converter Model 256.

The new unit is designed to correct or convert any sync-pulse material, tape or otherwise, from any combination of 24-25 fps and 50 or 60 Hz, using 120V or 220V power supply.

For further information, contact: Images Devices Incorporated, 811 NW 111 Street, Miami, Florida 33168. Phone: (305) 751-1818.



PATHE ELECTRONIC DS 8 CAMERA

The Pathe Electronic DS 8 is a Super-8 camera which combines all the characteristics of professional equipment with the ease of an amateur camera.

Its performances are the same as that of the Pathe Electronic 16mm.

The Pathe Electronic DS8 camera will only use Double Super-8 film, which is 16mm film with Super-8 perforations on both edges.

This film is exposed twice inside the camera. Consequently, a 30m (100 feet) Double Super-8 film, once processed, will become a 60m (200 foot) Super-8 film.

The lens is changeable and is mounted on a three-lens turret for 3 "C" mount lenses, made of solid brass with positive lock. Adapter rings allow the use of certain "still camera" lenses.

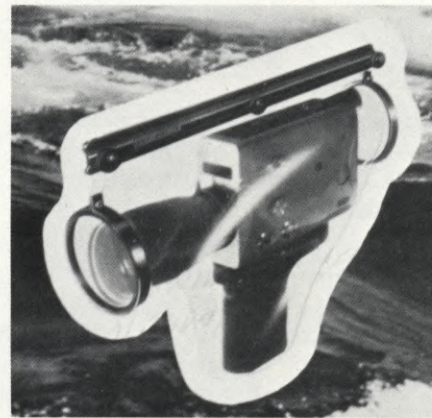
The speeds range from 8 to 80 fps — forward and reverse.

The exposure selector provides 5 positions: run, continuous run, frame-by-frame, "B" exposure and lock.

The camera features two sound synchronization systems, one Pilot tone 60 Hertz at 24 frames per second (50 Hertz at 25 fps) which can be used with "Pilot tone" tape recorders and one single-pulse-per-frame synchronization system for use with the new pulse systems presently being introduced.

The Pathe Electronic camera can be fitted with a 400-foot magazine with integrated electric motor, provided for uninterrupted filming for 2x20 minutes with Double Super 8mm films, at 24 frames per second.

For further information, contact: Pathe-Movie-Sonics, 221 Rue Lafayette, 75010 Paris, France. Tel. 206 97 51.



UNDERWATER BAG FOR FILM CAMERAS

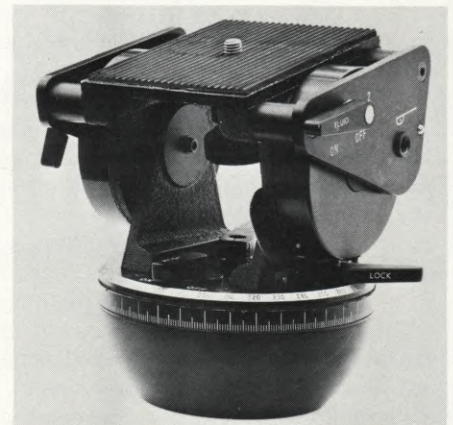
Most 16mm and Super-8 cameras in common use today can be put into this bag made of transparent plastic resistant to salt water. The bag is fitted with glass plates which come in front of the lens and behind the viewfinder. By means of a clamping bar, the opening of the bag can be closed tight so that no water can get in. In this way, the camera can be used and released in the normal

manner, and you are able to look through the viewfinder whenever necessary. In addition, it is even possible to adjust the camera focus and to use the zoom when your camera is in the bag. A strap has been provided so that you can hang the bag round your shoulder to make things even easier.

The EWA-MARINE underwater bag for film cameras is ideally suited for filming while you are sailing, swimming, snorkeling and diving, and provides absolute safety for your camera down to a depth of 32 ft. (10 meter). Thanks to the clamping bar the bag is air-tight and can, therefore, also be used to protect film cameras against desert sand.

The manufacturer assumes a full warranty for the product.

For further information, contact: Goedecke & Co., G.M.B.H., Raiffeisenplatz 2, D-8000 Munich 83, West Germany. Tel: 08 11/49 40 99.



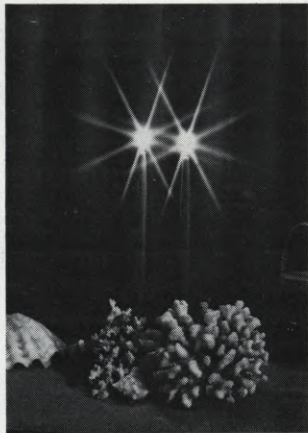
DUFORT COMBINATION FLUID HEAD

Dufort's exclusive "fluid or free" movement gives complete versatility. Fluid or free pan — fluid or free tilt — just set the controls for the combination that you need. The fluid units have a silk smooth action and are factory sealed for long trouble-free life, allowing unconcerned operation in heavy rain and damp conditions, also detachable and interchangeable tilt units give a personal choice of light or heavy tension. As the construction of the Dufort Combination Head is modular, all parts can be replaced easily and quickly if damaged. Positive action pan and tilt locks that stop "creep" and ball-type levelling are standard features. The whole unit is superbly styled and craftsman engineered for rugged reliability.

Special Features: height-7½"(19cm); weight-11lbs(5kg); width-7½"(19cm); length-6"(15.25cm); fits standard
Continued on Page 1460

Special Effects

TIFFEN



STAR EFFECT

Highest quality optics to create star burst effect. Use individually or in combination to achieve effect desired. 4-point available in 1mm, 2mm, 3mm grids; 6 and 8-point in 2mm, 3mm and 4mm grids. Supplied in series sizes, direct screw-in rotating mounts, 4½" and 138mm diameter, squares and rectangles.



FOG EFFECT

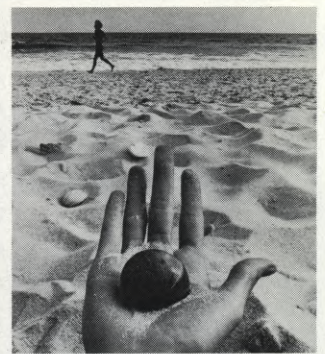
Natural fog conditions can be simulated by the use of Tiffen Fog Filters #1, #2, #3, #4 and #5. Variations can be created by using combinations of these filters. Density of the fog effect can also be controlled by changes in exposure and development. Supplied in series sizes, direct screw-in sizes, 4½" and 138mm diameter, squares and rectangles.

LOW CONTRAST FILTERS

Designed for the cinematographer seeking to effectively desaturate and mute on-screen colors by pre-selected degrees: to soften shadows and to blend make-up in portraits, without altering lighting: indoors or out. TIFFEN LOW CONTRAST FILTERS range in effective degrees from minimal to maximum in filters #1-#5.

DIFFUSION FILTERS

Supplied in grades 1 through 5. Highest quality optical glass; full edge to edge controlled patterned surface. Complete range of diffusion effects from slight overall image softening to complete diffusion with flaring highlights, misty appearance and the blending of colors. Lighting, subject and background will alter the amount of diffusion. May be used in combination or with other color filters for additional effects. Available in series, direct screw-in, square and rectangular sizes.



SPLIT FIELD LENSES

Breathtaking close-ups . . . with sharp distant detail . . . with Tiffen split field lenses that fit like a filter. Available in +½, 1, 2, 3 diopters in series sizes 6-9, 4½" and 138mm diameter too!

CLOSE-UP LENSES

To extend the close up capabilities of your camera's lens, Tiffen manufactures a range of Close-Up lenses in various diopter capabilities. Range +½, 1, 2, 3. Available in series sizes, direct screw-in sizes, 4½" and 138mm diameter.

TIFFEN

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METAL HALIDE LIGHTING

Continued from Page 1410

1200-watt unit and a 2500-watt unit. One of the 575-watt units, Model DL 575, is fixed-focus, while model DLf 575 is focusable. Model DLf 1200 and DLf 2500 are both focusable. The weight specification for these Kobold units definitely verify their compact lightweight appearance: DL 575, head 3.5 kg and ballast 8.5 kg; DLf 1200, 5 kg and 17 kg; DLf 2500 12 kg and 27 kg. This is remarkable when you consider that the 5 kg. 1200-watt unit will put out the equivalent of between 5000 and 10,000 watts of daylight-balanced incandescent light.

LTM also showed a complete range of lights employing HMI lamps. The LTM line is quite diversified, offering both a fresnel spotlight series, as well as a lightweight reflector-type system. Both series are available in 575, 1200, and 2500-watt capacities. Probably the most interesting lights in the LTM line are in their new three-light kit. This system had the only units at *Photokina* employing the new 200-watt HMI bulb. Another unique aspect is the one common ballast for all three mini-fresnel spots. Here is a compact kit that puts out the equivalent of three 1000-watt daylight-balanced incandescent lights, yet draws only 600 watts total.

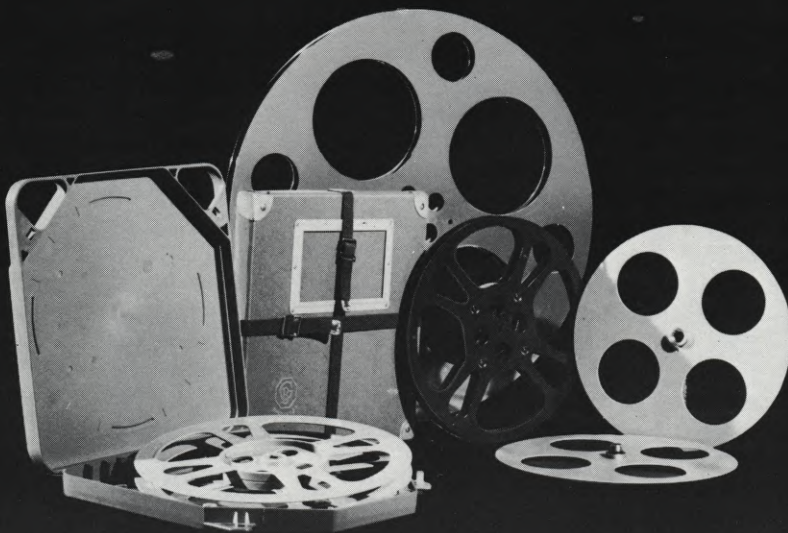
These new HMI-type lights seem to offer a lot of advantages: Three to six times the efficiency and less than half the heat output of similar incandescent lights. However, these systems do have their problems, limitations and drawbacks. The greatest limiting factor is the flicker problem. These lamps exhibit more than 50% modulation of light intensity at twice the applied frequency of the line current. Thus, on a 50Hz line, there will be a 100Hz flicker, and a 60Hz line will cause a 120Hz flicker. While this presents no problem for television, motion picture cameras can be used only with synchronous motors and at frame rates that are exact fractions of the flicker rate. In the U. S., 24 fps is compatible with 120Hz. Likewise, 25 fps is compatible with 100Hz. However, governor or variable-speed motors will not work with the currently available lights.

Most of these lights are relatively heavy, especially with their ballast. They are obviously quite a bit more expensive than comparable capacities of incandescent. Thus, there is no weight saving and, economically, there is no advantage at first glance. Moreover, if the raw stock is balanced for 3200°K and the filming is indoors, these lights offer only about a two-to-one gain in efficiency over incandescents.

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These lights were designed from the inception for outdoor location work and this is the area in which they really excel. For daylight fill they offer their maximum efficiency gain of almost six-to-one over incandescents. This also allows lighter or longer electrical feed cables, or only 1/6 the voltage drop over identical cables. This efficiency also means six times more light from a given finite amount of available current, a consideration that could be of prime concern when only two or three 1500-watt circuits are available.

These lights should quickly become popular on location, probably replacing Mini-Brutes and Maxi-Brutes. One 1200-watt HMI light will put out more daylight than a Maxi-Brute. Considering the cost of dichroic incandescent bulbs, the HMI systems are economically advantageous and of comparable weight to incandescent systems in this application.

The HMI lamp will be even more attractive with a new type of ballast that has been developed. This new system should cut the flicker modulation from 50% down to 5%, precluding the necessity of sync motors on the cameras. This new ballast will be available from almost all major lighting manufacturers early in 1975. While incandescent bulbs will probably enjoy a long reign as the standard of studio and indoor location lighting, there is little doubt that HMI systems will soon dominate outdoor locations. ■

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CINEMA PRODUCTS

Continued from Page 1433

that light up to show any of the following conditions: "B" for low battery; "S" to indicate that the camera is running out of sync; "F" to indicate that 380 feet of film have passed through the camera; and finally, a "VU" will blink to indicate proper modulation if the Crystasound amplifier is part of the camera package.

Crystalink wireless receiver

Also shown for the first time was Cinema Products' new wireless receiver, which was designed by Vega Electronics specifically for use with the CP-16 cameras. The new Crystalink receiver features a highly selective front end employing helical cavity resonators which provide excellent rejection of spurious signals or cross-talk from closely adjacent channels. The receiver was demonstrated with a small pocket transmitter and a miniature lapel mike.

J-5 Zoom Control

Also demonstrated at *Photokina* was the J-5 Zoom Control, designed specifically for use with CP-16 cameras. The servo feedback system circuitry and thumb-activated direction/proportional speed control of the J-5 Zoom Control are all compactly packaged in the CP-16 camera *handgrip*. In addition, the J-5 Zoom Control motor has been specially designed to be extremely quiet, compact and lightweight.

XR35 Studio Camera

Cinema Products showed its XR35 studio camera at the last *Photokina* 1972. The model that was shown this year already had some of the design updates they had incorporated into the camera. The most notable improvement is an electronic footage counter which is located in the magazine blimp housing, directly above the follow-focus knob, so that it is in a very convenient position to be viewed by the camera assistant.

The 150XR Fluid Head

The 150XR Fluid Head was designed by O'Connor Engineering specifically for use with the XR35 camera. The 150XR utilizes a torsion bar rather than the coil springs used on the 200 head, so that smoother tilting action is achieved. Fluid action is continuously adjustable in both pan and tilt. Magnesium construction makes the 150XR about 20 lbs. lighter than the 200 head, yet it handles cameras of the same weight. ■

KEM RAPID-S EDITOR

Continued from Page 1445

the top of the table measures a compact 32x40 inches. In tilted position you can move the equipment through the smallest doors, and with legs removed it fits easily into a station-wagon.

The table comes in three different types: interchangeable 16/35; non-interchangeable in 16 or 35mm; 16mm with picture interchangeable to Super 8. The counters are either footage or min./sec.. Accessories are: Sound-reader/Rewind Flange, Footpedal, Storage Boards (left and right), and 2000' Plates.

FEATURES OF THE NEW KEM RAPID-S SIX-PLATE EDITING CONSOLE

One Control Simplicity

The KEM gives you all that with *one* Control Lever. Plus an Instant Stop button on *that lever*. Instant stops, at any speed.

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Big, handy inching knobs are mounted on each transport path. You can inch manually with all three transports in interlock, or any one independently — or any two.

3 Frame Counters

Each transport has its own frame counter, independent of the others — or interlockable, of course. The Rapid-S is like a super synchronizer.

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With KEM's optics, you can clearly distinguish one frame from another. The image stays as bright on freeze-frame. Heat filter. Image area on screen measures 8½ x 11½ inches.

High Fidelity Sound

The sound is fantastic — full and brilliant. You can play it really loud, for the feel of what it will be like in the theater. And whatever's on your track, you'll *hear* it.

Engineering Quality

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O'CONNOR ENGINEERING

Continued from Page 1450

stability and quite poor in the other two requirements.

In view of the above, we decided to consider it as a structural problem and put it on a computer to see whether, in fact, there wasn't a better configuration for supporting moving picture cameras. After many hundred feet of computer read-outs we were astonished to find that a tripod was, in fact, not the best configuration for holding cameras, so we designed the Hydro-Ped.

The first unit introduced two years ago had hydraulically-coupled legs for fast leveling and adjusting to any irregular surface, even to accommodating a stairway; however, the column was mechanical with ratchet control.

We manufactured a relatively short run of these units and sent them all over the world for comments. The only objection was that the column was awkward to adjust and noisy with its mechanical ratchet.

As a result of the above comments, we re-designed the column and introduced a vastly improved Hydro-Ped at this *Photokina*.

The new Hydro-Ped, known as the Model 102-B, not only has the hydraulic legs used on the earlier units but also has a hydraulic column with a surcharged fluid applied in such a way that it counterbalances the weight of the camera in any vertical position. The column fluid can be throttled to control the speed of raising and lowering. This, combined with the smoothness of operation, permits shots to be taken with the column in motion. All of this is done silently.

The legs of the new Hydro-Ped are designed to accept wheels so that the unit can be used as a dolly. The wheels are readily removable and are arranged in such a way that they can be retracted for rigid shots or lowered for moving the unit or for dolly operation.

The entire unit folds up into a package 30-inches long and 10-inches in diameter. It is provided with a suitcase-type handle so that it can be easily carried. The entire unit weighs just under 30 pounds—yet it is capable of handling cameras up to 100 pounds. Each unit is tested at the plant before shipping with a dead weight of 400 pounds.

The acceptance of the new unit at *Photokina* and in the field has been very gratifying. The television people are particularly interested in the new unit for their new lightweight video cameras. ■

NEW SPECTRA TRICOLOR FILM-BALANCED METER



A simplified, but critically precise, instrument that goes far beyond the scope of a mere "color temperature meter" to measure the full spectrum of light as color film sees it

Photo Research, of Burbank, California, introduced at *Photokina '74* an outstanding new product, the Spectra® Tricolor™ METER.

Photo Research realized some years ago that simple "color temperature" meters, which measure only blue and red light, are not spectrally selective enough to provide balance information. (They're only valid for ideal "blackbody" sources — but much available light shooting has to be done under fluorescents and mixed ambients).

To be meaningful, you have to measure the green light as well as the blue and red so that the meter *sees the light as the color film sees it*.

Photo Research introduced the first film-balanced 3-color meter a few years ago and won a technical Academy Award for this contribution. Since then, some of the photo world's most respected documentary and commercial photographers have told us how valuable this tool is.

To be helpful to the working photographer, a color meter has to be fast, convenient, and provide useful data — specifically, which correction filters to use. And that's just what the new Spectra® TriColor™ meter does.

Continued on Page 1478



The new Spectra Tricolor Meter from Photo Research, a lightweight, naturally contoured instrument, is simply pointed with one hand and the trigger pulled. The color temperature of the light is instantaneously read by two separate meters that simultaneously indicate the Blue/Red and Green/Red values through computer-matched color filters, seeing the full range of color in the light source just as the color film sees it.

(LEFT) A scene shot uncorrected under fluorescent lighting. The characteristic green cast is very much in evidence. (RIGHT) The same scene corrected by means of the filter pack predicted by the Spectra Tricolor Meter. The new instrument was designed for cinema, TV and still photographers — particularly commercial, news and documentary film-makers who cannot control fluorescent and mixed-ambient and fill lighting of such locations as stadiums, sports arenas, stores, offices and public buildings.



ECOLAM HARD GLASS LAMPS

Continued from Page 1441

incandescent lamps."

In actuality, the life of the ECOLAM is extra long, exceeding that of the quartz tungsten-halogen lamps in actual use. It is easy to use, with no special handling requirements; it is completely free of seal trouble and explosion danger.

RDS ECOLAM lamps present an ideal "middle choice" between conventional tungsten-halogen and incandescent lamps — all the superb features of tungsten-halogen at about half the price. The new lamps are noted for constant brightness and color temperature. Eliminated are fluctuations in brightness caused by aging — ECOLAM lamps are constantly as fresh as new until the filament breaks. They are compact and have standard bases, so that presently used lighting fixtures need not be modified.

FEATURES OF ECOLAM HARD GLASS HALOGEN LAMPS

1. Constantly high light output.
2. Stable color temperature (3200°K) throughout the lamp's life.
3. Lamp life is three-to-four times that of non-halogen lamps, greatly reducing the need for bothersome replacement.
4. Base available in med. bipost, mog. bipost, and mog. screw.
5. Lamp size is minimized, enabling the application of 2K, 3K and 5K ECOLAM lamps to respective 1K, 2K and 3K light housings.
6. Low-noise construction. No filament "sing" or "buzz" while in operation.
7. The unit operates at normal atmospheric pressure, rendering it absolutely safe from explosion while burning.
8. Burning positions available from base-down to horizontal.

For further information, write to RDS-TEK, P.O. Box 19, Beverly Hills, California 90212. ■

NOTABLE AT PHOTOKINA '74

Continued from Page 1454

35mm Arriflex bowl fitting; Temperature range -10°C to 60°C.; flat base allows head and camera to stand free; no lubrication required, all bearings dry; tilt units insulated from pan base to assist in sound damping; 360° scale on pan; single degree divisions optional; adjustable angle pan bar for either left or right hand operation, is made in two sections for short or normal use; smooth braking on pan and tilt; recessed circular spirit level; adaptor plates to fit Mitchell and Vinten

tripods.; tilt -70° forward -70° backward.

For further information, contact: Keeline Productions, 1 Spring Villas, Broomfield Place, LONDON W.13, England. Tel: 579-3447

THE NEW OXBERRY "ELECTROSYNC" SOLID STATE OPTICAL PRINTER

Oxberry has now added to its family of Optical Printers a new Printer line incorporating the optical and physical capabilities of its well known 1600 and 1700 models with the technology of the space age.

The reliability and durability of the new high performance drive systems offer solid state electronic controls with the extended capabilities and maintenance-free operation of electronic servos.

Some of the features of the new printers are as follows:

- 1). Independent servo motors for camera and each projector featuring motors that mount directly to the drive train with the least possible number of mechanical couplings. They are reliable, quiet and maintenance free.
- 2). Novel synchronization schemes making the synchronization between camera and projectors less critical and more reliable. There is no mechanical linkage between the units.
- 3). Extended speed range is made possible by the new drive and synchronization schemes. This permits a larger range of stop motion operational speeds with push button control from 60 — 360 rpm and continuously variable from 0 — 360 rpm. A high speed rewind capability at speeds up to 720 rpm for projectors and camera is also available and can be controlled by a predetermined counter system to wind to any frame number desired at high speed.
- 4). Constant speed pull-down system enabling the camera drive to utilize a constant speed for film pull-down regardless of exposure speeds. This feature is a great time saver at low exposure speeds of 60, 120 and 180 rpm increasing the total operational speed of the printer. At high speed operation the constant speed pull-down reduces film wear by gradual acceleration and deceleration of the film during transport.
- 5). Modular construction of the electronic control and drive servos featuring independent interchangeable servo controllers plug in circuit boards with solid state components and circuit breaker protected systems.
- 6). Electronic frame counters displaying in large bright numbers the frame counts of the camera and projectors. Each counter can be made to count forward and reverse with or

posed to the direction of the drive. There are no moving parts, no maintenance required and extremely high applicability.

7). Digital speed readout is provided by a digital counter indicating the camera speed from "0 to 720" rpm."

8). Expansion capability to four-headed printers and optional follow-focus for the aerial-image units.

POM CRYSTAL SPEED METER

POM CRYSTAL SPEED METER is a new moderately priced device, like a light meter, to be used on location or on the work bench, to accurately verify motion picture cameras' sync speed (24 or 25 fr.) by simply holding in front of the lens and looking through the reflex finder. Non mirror-shutter cameras use accessory gate prism. Rugged, crystal controlled, operates 200 hours on inexpensive 9 volt battery. Nothing to wear out. A circle of red dots remain steady on correct speed or rotate in either direction to show error, giving instant information. May be filmed as permanent proof. \$275.

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NEW FIXED LENS ADAPTER OFFERS TV CAMERAS CINE RANGE OF PHOTOGRAPHY

Comquip Inc. of Glen Rock, N.J., has introduced a new fixed lens adapter for television cameras that for the first time permits the use of a wide variety of both 35mm cine and single lens reflex camera lenses without distortion, loss of light or vignetting.

Designed for plumbicon TV cameras, the new unit allows television to duplicate the full range of 35mm cinematography, including extreme wide angle, macro and special effect shots not possible with TV zoom lenses. Due to the unique construction of the new adapter — which includes a total of 17 different elements — virtually any available 35mm cine or SLR lens can be employed with no loss of light or vignetting, according to Comquip.

The Comquip unit, priced at \$1850.00, includes an adapter for Arriflex mounted lenses as standard equipment. Adapters for a wide variety of other lenses including Nikon, Canon, Pentax, Minolta, Leica, and Konica are available as options. Mounts are available for most handheld and studio TV cameras including Editel, Fernseh, Norelco and RCA.

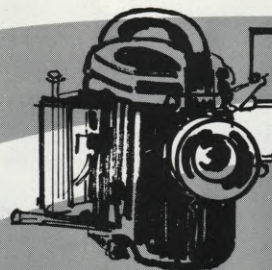
Additional information on the adapter, mounts, and accessories is available from Comquip Inc., 366 South Maple Avenue, Glen Rock, N.J. 07452.

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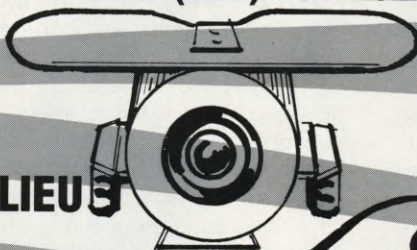
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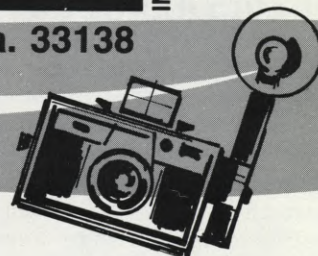
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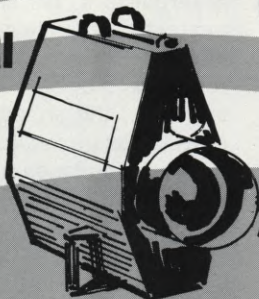
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ETHNOGRAPHIC FILMING IN NORTHERN AFGHANISTAN

A three-and-a-half-month filming excursion to a small village in the north of Afghanistan turns out to be a most exotic and rewarding experience

By DAVID HANCOCK

In June of 1972, Herbert Di Gioia and I were contracted by the American Universities Field Staff to make a series of documentary films in Afghanistan for The National Science Foundation. We were to be on location in a small village in Northern Afghanistan for three-and-a-half months, and had only ten days to organize ourselves and the equipment at the project's headquarters, The National Film School of Great Britain.

The project was part of a series of ethnographic films documenting traditional rural cultures undergoing shifts toward modernization in five different ecological zones in the world. We had been shooting observational documentary films in the United States for several years, particularly in the Northeast Kingdom of Vermont where we did a series, "JANUARY WORLD PART I AND II" and "CHESTER GRIMES", dealing with the rapid cultural change occurring there. We looked forward to applying the ideas and methods we had developed to a culture outside our own. We planned to shoot and edit the Afghanistan series as if the films were intended for an Afghan audience, rather than taking the attitude, as many filmmakers do, of trying to "package" or translate the Afghan culture for Americans.

Our work is based on an open, co-productive and co-operative, interaction between us as people (not just as a film crew) and the people being filmed. Their concerns and perspectives shape the filming, rather than our emphasis on a particular topic or cultural

analysis. We feel that in doing this, topics are presented in the proportion that they are important to those people and that culture, rather than being over or underemphasized or distorted because of the film-makers' cultural concerns. This attitude follows from the sense that film as a medium is best suited to deal with the specific and the concrete rather than the abstract and the general. For this reason, we concentrate on the lives of specific individuals and, through the multiplicity of their individual perspectives, the films, because they are a series, build up a mosaic of the community far richer than if we had made a single film which merely illustrated a particular analysis of the culture's patterns.

It seems to us both naive and limiting to pretend that the camera and the film crew aren't there. The interaction of the film-makers with their subjects is a part of the event being filmed and, as such, should be included. We try to do so, not as a surface narcissistic acknowledgement of the filmic illusion, but as a part of the film's evidence in which the impact of the film-makers: presence is part of determining the credibility or authenticity of what they have documented. The argument over "objectivity" in direct filming situations has always struck us as being sort of a "red herring" that leads people away from the genuine aesthetic problems of this approach to film-making.

To keep the interaction between us and the people we are filming, as much as possible, on a person-to-person

basis, we try to minimize the intrusion of the mechanical aspects of film-making. We use quiet, portable, equipment with automatic slating; we have its operation totally familiar to us and, because we have worked together for a number of years, we have a sense of what each other is doing without having to verbalize it. We shoot in long takes and try to complete an action in a single shot rather than fragmenting it. We don't rely on conventional "covering the angles" in the shooting or the editing. As much as possible we shoot at a normal social distance from people, rather than standing back away from a conversational group.

Everyone in the British film industry was extremely helpful during our pre-production stay there, but it took us a little while to sort out the differences in terminology and standards between England and America. Although the films were intended primarily for American distribution, they were to be edited in England. We immediately encountered the lack of international standardization of frame rates, sync signal frequencies, center vs. edge-track sound, etc. As the co-director and camera operator, I spent a good deal of time talking with British cameramen and consulting the labs. I decided to shoot Eastmancolor Negative 7254 for a number of reasons. The extremely contrasty lighting situations we anticipated made its broad response and latitude desirable. Using a single camera stock was appealing in that one would never be stuck with the wrong

(LEFT) Filming the hotly-contested wrestling contests that are a part of Jeshn, the Afghan National Celebration. An impromptu riot started when one team accused the other of cheating. (CENTER) The film-makers, wearing the local style of clothing for its comfort and utility, set up to shoot late-afternoon exteriors. The Rycote windscreen for the Sennheiser 415 microphone proved very valuable. (RIGHT) The author looks gloomily at the World War II Russian generator that was the only remaining source of power after their Honda had cracked its carburetor.





(LEFT) The author takes a break, while soundman Herb DiGirola changes tapes on the Nagra 4.2 in the bazaar. When they first arrived, he was called "the man with the ears" because of his headphones. **(CENTER)** The film-makers share breakfast and the shade with workers winnowing wheat at Mullah Ata's compound in the hills above the village. The wind which separates the wheat from the chaff also blew tiny particles into every aperture of the equipment. **(RIGHT)** David Hancock checks the focusing system of the Eclair NPR in the equipment room of the crew's compound in Aq Kupruk.

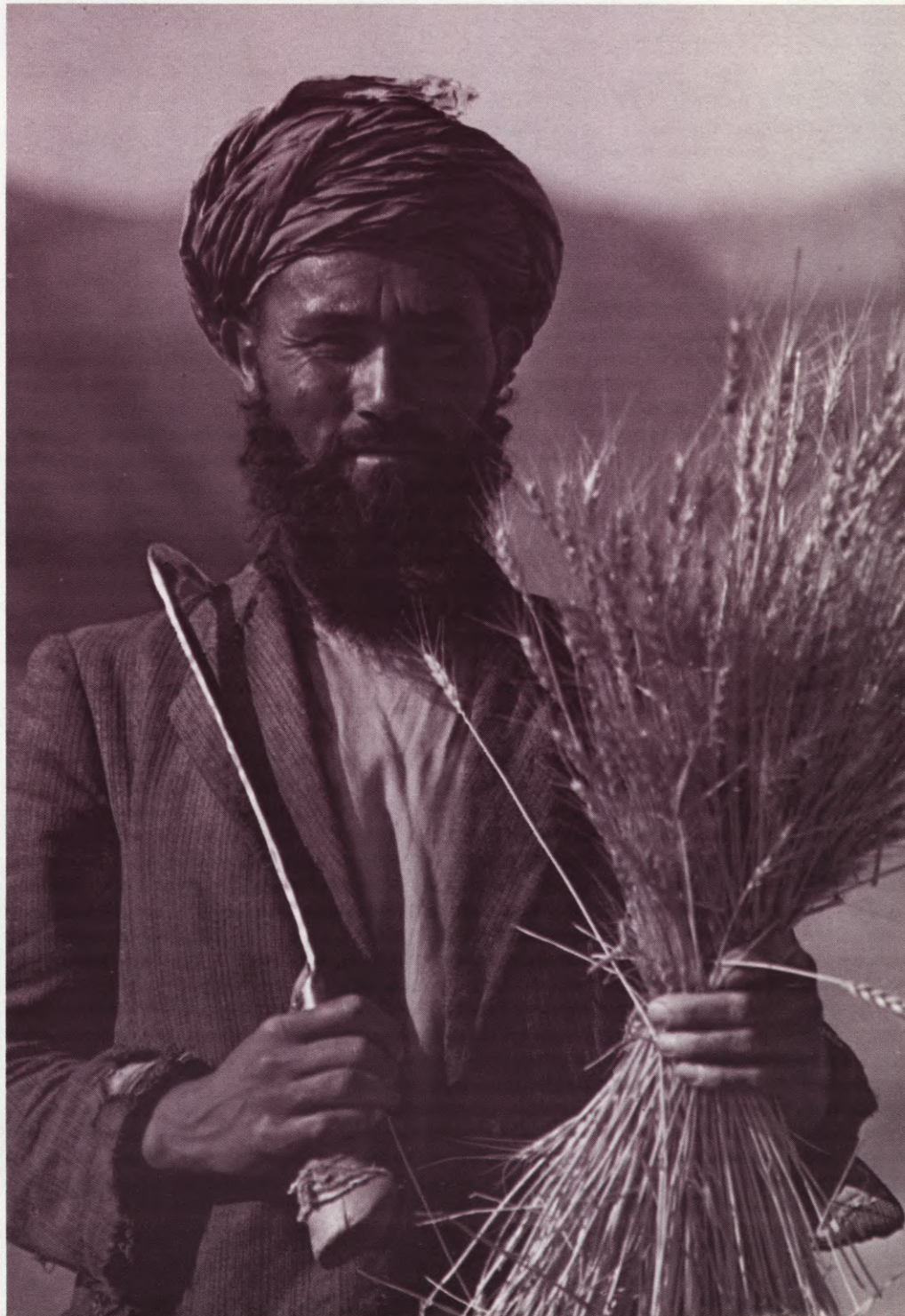
speed stock in the camera, and its color quality promised to be the most pleasing in rendering the monochromes and delicate pastels of the wheat-covered hills and river valley in which we would be filming. Another factor in favor of shooting negative was that the British labs are used to handling it because British television uses 16mm 7254 negative for almost all of its film production. I shot extensive tests and, because of the extremely contrasty lighting situations we would be in, decided to overexpose the highlights on the negative and to print down later to bring up the shadow detail in the final print.

In the past, American labs had tended to discourage one from shooting Eastmancolor negative in 16mm because they felt it was too easily scratched. In all, we exposed over fifty thousand feet of it and, under the worst conditions imaginable for dust and dirt, had literally almost no negative scratching in the camera or during processing.

We knew that once we arrived on location on the north side of the Hindu Kush (the extension of the Himalayas that runs across Afghanistan), we weren't going to leave again for the entire three-and-a-half months. The remoteness of the village promised to make communication with the studio and lab difficult and time-consuming. We tried to foresee every possible problem and organized the necessary materials and spare parts to do on-location repairs, because sending equipment back or getting new equipment back or getting new equipment from England would have thrown us completely off schedule and forced us to miss important events.

At the beginning of July we flew from London to Kabul, Afghanistan's capital. It took an entire day to get the equipment and materials through the Afghan customs. As a result, I became skeptical of our system for getting exposed film out of the country and lab reports

With his sickle in hand, an itinerant laborer filmed cutting the wheat harvest in the hills above Aq Kupruk turned out to be a most photogenic subject. To keep the inter-action between themselves and the people they were filming as much as possible on a person-to-person basis, the film-makers tried to minimize the intrusion of the mechanical aspects of shooting. Thus, they used quiet, portable equipment with automatic slating.





The crew stands in the shallows of the Balkh River to film scenes of village youths playing the famous "buzkashi" goat-grabbing game in the water. The river flows through the village of Aq Kupruk, providing power for its mills and irrigation for its gardens. In this unique game, contestants on horseback fight furiously for possession of a headless goat. In this case the crew (and equipment) got thoroughly splashed.

and rushes back in. The crew consisted of Herbert Di Gioia taking sound, myself operating the camera, and Toryalai Shafaq, from Afghan films, as our excellent and very understanding interviewer and interpreter.

We had had very little time to learn the language before we arrived; but being immersed in another culture in which no other language is spoken, forced us to quickly pick up enough of a vocabulary to allow us basic verbal communication. Not having a sophisticated understanding of the language was a continual frustration we never really overcame. When filming people's interpersonal relationships, the emotional emphasis doesn't necessarily correspond directly to the specific verbal content of the dialogue.

It took us several days to drive from the capital, up over the mountains, through the Turkistan plains near the Russian border and back into the foothills of the Hindu Kush to the village which was our location. The last part of

the journey was done over the dry river beds and narrow tracks which often are the roads linking one village to another. During the last fifty miles, in one day the Land Rovers broke three axles and a differential. Because of the fear of bandits, no one travels at night in this part of the country. We were amazed at the speed with which our driver, Cambar Ali, replaced the broken parts and got us on our way again. I remembered having foolishly thought when we started that carrying that many spare axles was being overly conservative.

Ac Kupruk, the village in which we spent three months, is located on the north side of the Hindu Kush and is surrounded by wheat-covered hills. The Balkh River flows through it, providing power for its mills and irrigation for its gardens. The village is on the traditional caravan route of the Pushtun nomads as they return with their sheep, goats and camel trains from their summer pastures in the mountains to their winter quarters on the plains.

Their interaction with the villagers was one of the things we planned to document during our stay.

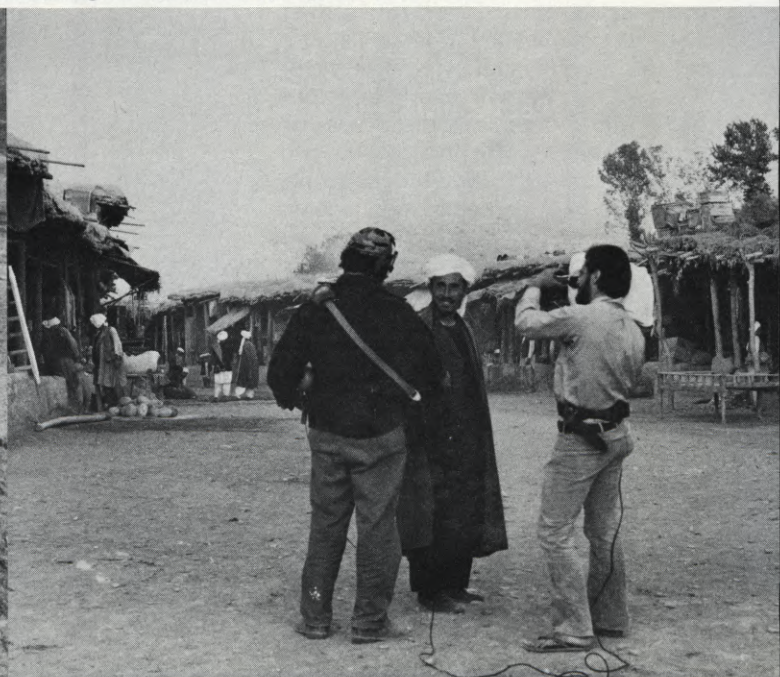
We started shooting within three days of our arrival and gradually our presence in the bazaar became part of the daily life of the village and its inhabitants. I was immediately glad that I had chosen to shoot the 7254 negative film. We often shot in the shaded parts of the bazaar in which the difference in f-stop between the shade and sun covered the entire range of the lens's aperture ring. I found myself having to follow f-stop from f/2.2 to f/22 as somebody passed from the shade of a shop into the intense sunlight of the dusty street.

My main lens was the Angenieux 9.5-to-95 zoom. Its extreme wide angle and ability to focus within three feet were very important. With this lens and the excellent sound barney for our Eclair NPR from Optical and Textile Company in England, Herb and I were able to film sitting crosslegged on the carpets in people's shops as part of a normal conversational group. If I had had to stay back five or six feet, as I would have with some other lenses, I would have been standing in the street outside the group, and the mechanics of the film process would have been emphasized, rather than our participation as people.

We had a BEALA motor on our main Eclair NPR camera and had intended to use crystal sync with automatic radio slating to our Nagra 4.2. However, our slating system never reached us and we assumed that the English customs had mistakenly seized our "black box". We fell back on what had served us well in the past, Eclair/Nagra bloop slating and cable sync. For the kind of shooting we were doing, silent and com-

Continued on Page 1467

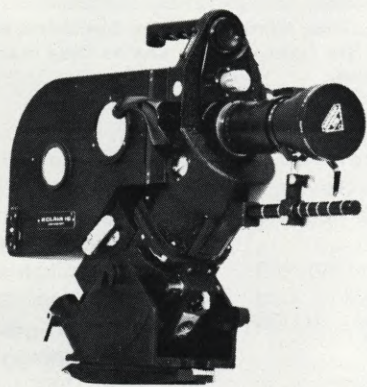
(LEFT) David Hancock and Herb Gioia look very much at ease in their native costumes (for a couple of graduates of the UCLA Ethnographic Film Program) as they set up to shoot. The white barney on the camera not only muffled camera noise, but helped to reflect heat away from the vulnerable film magazine. (RIGHT) In the bazaar, Hancock operates the camera, while Gioia shakes hands with Mullah Ata (a religious leader and storekeeper, who is a major figure in one of the films). Whether they were shooting or not, it would have been impolite not to exchange greetings when meeting one of the local people in the street.



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REPORT FROM PHOTOKINA '74

Continued from Page 1408

cameras.

At *Photokina*, several manufacturers indicated that they were responding to this demand by introducing lines of ultra-fast lenses. The new high-speed aspherical lenses by Canon include a 24mm T/1.6, 35mm T/1.4, 55mm T/1.4 and 85mm T/1.4.

High-speed lenses from Mitchell Camera Corporation, custom-mounted for use on Mitchell BNC, BNCR, S35RB and the new Mark III cameras include a 28mm T/1.8, 35mm T/1.3, 55mm T/1.1 and 85mm T/1.7.

The new high-speed lenses from Zeiss specially developed for Arriflex 35mm cameras include a 25mm Distagon, 35mm Distagon, 50mm Planar and 85mm Planar—all rated at T/1.4.

While on the subject of lenses, one must make mention of the new Angenieux 15-to-1 T/2.3 zoom lens for 16mm cinematography introduced at *Photokina*. With a zoom range from 10mm to 150mm, it is actually 7mm shorter than Angenieux's 10mm-to-120mm zoom. While not a macro lens, it can focus down to cover a field of 1" x 1-3/8" from a working distance of 24 inches, and zoom back from that setting to a field area of 15 x 21 inches.

Photokina featured a proliferation of new flat-bed editing consoles by KEM, Steenbeck, Moviola and several other manufacturers. The new models emphasized simplicity and compactness, while retaining sophisticated operational characteristics. For example, KEM, noted for its imposing and complex Universal model that resembles the control console of a spaceship, presented its new very compact RAPID-S 6-plate table that normally handles one picture and two soundtracks in any interlock combination. The table comes in three types: interchangeable 16mm/35mm, non-interchangeable in 16mm or 35mm, and 16mm with picture interchangeable to Super-8.

One of the most intriguing new additions to the flat-bed editing console category is the super-portable Schmid "MINI-DIPLOMAT", a tiny 4-plate 16mm machine that is approximately 2-1/2 feet long, 18 inches wide and 7 inches deep. The plates and viewing screen with mirror are detachable, making a very compact package indeed.

It was very plain at *Photokina 1974* that Super-8 has come into its own as a professional medium. Everywhere there were sync-pulse generators and other types of synchronizers to adapt existing Super-8 cameras for double-



In the evening the sun dips low, silhouetting the Cathedral and the railroad bridge across the Rhine. This is the sight visitors see as they leave *Photokina* to cross over to the city each evening.

system sound shooting. Shown was a prototype of a new Agfa-Gevaert single-system sound camera (looking very much like a Nizo in configuration), built to accept the Ektasound 50-foot cartridges. The attendant on duty said that it would be available on the market in another year.

At the Kodak booth the professional 200-foot model of the Super-8 Ektasound camera was being demonstrated. Film shot with it was processed immediately in Kodak's portable processor and then projected.

Far and away the most impressive piece of equipment in the way of Super-8 sound cameras was the new Beaulieu "50008S" single/double-system sound camera (See *American Cinematographer*, October 1974). This handsome, beautifully engineered camera has "professional" written all over it and tends to make its competitors seem like toys by comparison. Even the asinine demo film being shown at the Beaulieu booth could not diminish the technical excellence of the camera's picture and sound. (Some of the more important Super-8 items at *Photokina* are treated in detail by Anton Wilson elsewhere in this issue.)

At the Arnold & Richter booth, the Arriflex 35BL was being shown in its latest production form, as was the Arriflex 16SR. Attendants at the ARRI booth assured visitors that the latter camera (now equipped with self-contained Duro-pak battery) is finally ready to go into production.

Cinema Products was proudly displaying the sleek final version of its "studio" CP-16R, frozen for production from the two hand-made modifications rigged for the shooting of the "SAND-BURG'S LINCOLN" television series (See *American Cinematographer*, September 1974).

Cinema Products was also showing the prototype of its new automatic exposure control system for the CP-16 cameras.

At *Photokina 1972* the rumor persisted that there was, somewhere on the premises, a prototype of a new Nagra recorder that was somewhat smaller and lighter than the standard model—nothing as tiny as the miniature Nagra SN, but a model somewhat comparable in size to the Stellavox. The rumored new model failed to surface at the last *Photokina* (or if it did, this reporter and everyone he talked to failed to see it), but this time it did, indeed, appear in the form of the new Nagra IS-D recorder. Measuring 10-3/4 x 8 x 3-1/8", as compared to the 13-1/8 x 9-1/2 x 4-1/2" dimensions of the standard Nagra IV, it weighs 10 lbs (with batteries and tape), in comparison to the 15 lbs 9 oz weighed by the Nagra IV. To put it more simply, the new Nagra IS-D is approximately two-thirds the size and weight of the Nagra IV. Although it is fully professional in every respect, it is a somewhat stripped-down model, lacking some of the more esoteric refinements possessed by its sophisticated big brother.

In addition to the above major items introduced at *Photokina*, there were a good many smaller accessory items of note and several of the more important ones are treated in detail elsewhere in this issue.

Summing up the impact of *Photokina 1974*, as it applied to motion picture equipment, it must be said, in truth, that this was not one of the more memorable events in the series of biennial shows—that is, if one evaluates such events in terms of how many startling innovations are introduced. On the other hand, as a compendium of the current state-of-the-art in motion picture technology, it served its purpose. More important, it provided a practical forum for the interchange of ideas on a practical basis, a place where visiting technicians could voice their opinions on what is needed, as compared to what already exists. ■

ETHNOGRAPHIC FILMING

Continued from Page 1464

pletely unobtrusive slating is practically a necessity. We can turn the equipment on and off at will, have coherent slating and have never intruded into the situation with a flashing light or mike tap. We knew that in shooting such a large volume of film in a foreign language, accurate roll identification and slating were absolutely essential for us and the Smithsonian Institution's Film Archives. I had worked at syncing up multiple camera crystal sync productions in the past, so I knew what a time and money-consuming headache missed slates and unidentified mike taps can be.

There is a unique wind which blows in the summer in Northern Afghanistan. It carries a slightly oily, very fine, dust south from the Turkistan Plains of Russia into the foothills of Afghanistan's mountains. At the beginning of a long take, the 85N3 filter on the end of the lens would be clean and, at the end, it would have a thick coating of dust and wheat particles. An air syringe proved only partially effective because the oiliness of the "loess", as it's called, made it cling to every surface. Sometimes for days on end the dust would hang in the air, creating a beautiful natural diffusion for the light, but at the same time adding many extra hours of cleaning and maintenance for Herb and me. I established a necessary routine of completely tearing down and cleaning the camera twice a day, as well as doing the ordinary cleaning and maintenance while loading and unloading magazines.

Since there was no electricity in the village, we relied on a portable generator to charge our batteries and to do the transfers of the sound recordings from 1/4-inch tape to cassettes. These were sent down to the capital by Land Rover for transcription and translation. At the same time, the exposed film and 1/4-inch tape were packed in insulated cooler bags and sent along to be flown to the lab in England.

My fears of the film being left on some blacktop runway in the blazing sun as the plane was being loaded eventually proved unfounded. But despite all the formal government permissions and the expeditors at both ends, our system broke down, because the Afghan customs began suspecting that the film cans could be a cover for smuggling hashish out of the country. I was torn between the desire for cabled confirmations of good results from the lab and the paranoia of untrained customs men opening the cans of exposed film to inspect it. Eventually, with the customs and transportation problems



Since there was no electricity in the village, the film-makers relied on a portable Honda generator to charge batteries and make sound transfers. When the carburetor broke down, they spent 10 days without electricity and with gradually dying batteries. Here they dejectedly contemplate the World War II Russian generator which substituted — but just barely.

in both directions, I had to shoot the entire production of over fifty thousand feet of film without seeing any rushes at all. We were back in England, 6,000 miles from the location, before I had a chance to see anything. Even the cables which did manage to reach us arrived so late as to be useful only as comic relief.

We had tried to preplan for any emergency or disaster, but I learned that no matter what you do, the unexpected is bound to happen. When the Land Rover was away on a film run to

the capital our Honda generator sheared a threaded carburetor stud. I repaired it the best I could without a machine shop and waited for Cambar Ali to return. After the additional strain finally cracked the carburetor, we spent an anxious ten days with no power and gradually dying batteries. Eventually we got hold of a pre-World War II Russian generator which took such effort to start that once we got it going we tended to leave it running.

Despite the hard usage and constant
Continued on Page 1480

Hancock waits on a lonely mountaintop to film a caravan of Pushtun nomads returning to the village with their goats, sheep and camel trains from summer pastures in the mountains. The film-makers discovered that they could take the equipment into literally any situation, including the most active. They worked at all hours of the day and night, but at night their Sun-Guns attracted invasions of insects.



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NEW FROM ARRIFLEX

Continued from Page 1417

(cinematographers) have been looking for but have not seen until now. Superior image delineation even at full aperture under low light level conditions, and distortion and flare-free performance with maximum resolving power at full aperture. Unsurpassed image quality is maintained, at all settings, over the entire range of focal lengths.

For example, the tests I recently shot were made at night during the production of a feature film. Taking full advantage of the Super-Speed's T/1.4 aperture and working at light levels so low (4 to 6 foot-candles) that forced processing of EK 5247 had to be employed. The results we obtained at full lens opening with normal, 200 and 400 ASA are nothing short of remarkable. Scenes shot on 34th street under normal street lighting astounded veteran cinematographers and lab men. You could clearly see people in cars . . . feel the texture of a policeman's obviously blue shirt as he directed traffic. There was no flare or ghosting from car headlights moving full into camera, and the picture was richer in color and definition than we have ever seen before on similar night shots.

One of the striking advantages produced by the new Zeiss lenses is their ability to penetrate and record deep into the shadow side, maintaining image sharpness and brilliant color saturation. Even the black values are solid, there is no evidence of image, color or tonal degradation in these tests. These lenses we are certain, will establish a new and vastly improved standard of image quality.

Incidentally, the fact that the Super-Speeds work so well under difficult circumstances really means that they will work even better as conditions improve.

QUESTION: What is the status of the new 16SR Arriflex?

BAHNEMANN: The Arriflex 16SR design is now completed and is in the pre-production phase of manufacture. We have the first series of cameras scheduled for completion by February, 1975. The camera has not changed from the recently shown prototypes, but we have enhanced the hand-grip system and added an "on board" battery at the rear of the camera. This results in even better balance for shoulder operation, elimination of the power cord and, in fact, makes the camera a completely self-contained system.

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fixed-focal-length high-speed lenses for 16mm cameras. They are similar in design to the 35mm Super-Speeds, with maximum apertures of T/1.3 and the same high-quality performance. This new series consists of 12mm, 16mm and 25mm focal length lenses and the existing 8mm Distagon will serve to extend the range on the short end, while the new 35mm Super-Speeds extend the focal length range upward.

Angenieux 12mm-120mm and Zeiss 10mm-100mm zoom lenses are now available with semi and fully automatic diaphragms to permit taking full advantage of the 16SR's built-in exposure control (APEC).

QUESTION: What else does Arriflex have of interest to our readers?

BAHNEMANN: We are showing the exposure control (APEC) for 16S Arriflex.

It will be available by the end of this year on new 16S cameras as well as for installation on existing 16S cameras.

We are also planning to introduce a combination crystal-controlled variable-speed, single-frame motor for the 16S and 16M. The new motor control is a crystal-control unit for 24-25 frame operation, has a variable speed range of approximately 4 thru 75 fps, a single frame capability (1/15 sec), and external sync input with phase control mode. It is designed as a 12-volt system and can be powered with the existing 16BL or 35BL Arriflex batteries.

For the 35BL, we are showing a combination electronic tachometer/counter with storage capability. The unit plugs into the external accessory receptacle of the camera, and mounts on the matte-box shoe. It can be used with all existing 35BL Arriflex cameras.

400-foot magazines for the 35BL cameras are now available in quantities, and are being delivered in increasing numbers.

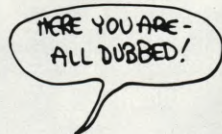
The 1000-foot 35BL magazine is completed; the first series is in production, and a substantial quantity should be available by December of 1974.

An extension finder for the 35BL is in development, and should be available before the middle of 1975.

Other items that might be of interest include our new MINI-dolly, a lightweight camera dolly with a boom-arm lift and differential steering for tight, smooth turns, excellent for location production.

Of course, Arriflex has ongoing development programs, with exciting concepts for future professional cameras and accessories that would be premature to be discussed now. But I'm sure we'll have many equally important innovations to show in 1975. ■

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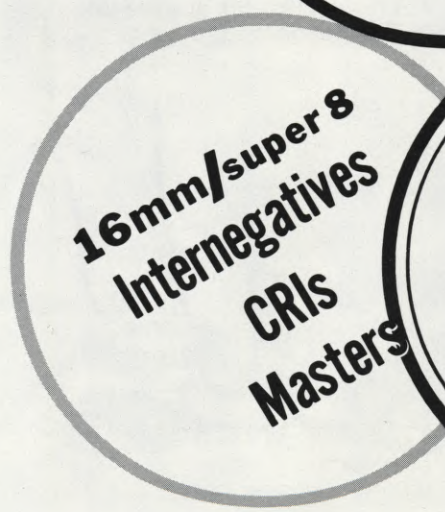


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PROFESSIONAL SUPER-8

Continued from Page 1437

registration rails, as well as the standard axial loading. The metal feed and take-up sprockets are interchangeable for regular 8mm or Super-8. The projector sports an f/1.2 12.5mm-25mm zoom lens. The only drawback to an otherwise superior machine is the automatic gain control, which is not defeatable for recording. This is fine for voice recording, but could pose problems with music.

Bauer has also thrown their hat in the ring with a new line of Super-8 projectors. The two top models, the T50 (FIGURE 4) and the T60, were specifically designed for the "near-professional" market. Features include 800-foot capacity, 18 and 24 fps, forward and backward projection, f/1.3; 16.5mm-30mm zoom lens and a 15 v/150-watt dichroic coldlight halogen lamp. The pressure plate can be removed from the gate for cleaning. The aperture plate is not removable, but with the pressure plate out, there is sufficient clearance to clean the entire gate area. The gate is constructed of a combination of metal and engineering plastic.

It is the sound systems that make these machines really stand out. All functions are push-button controlled. The level controls are all sliding-type linear pots and give the impression of a mini-mixing console (FIGURE 5). The T60 is particularly interesting, as it is a stereophonic machine utilizing the balance stripe as the second channel. This feature can facilitate all kinds of interesting possibilities. In addition to the obvious stereo capability, it can be used for recording two distinct sound tracks, or two-track sound, allowing custom mixing of levels on each projection.

Getting down to the nitty-gritty, the machine boasts a frequency response of 75 to 12,000Hz ± 4 db at 24 fps; wow and flutter less than 0.4% and a S/N of 48 db on the main stripe and an amazing 45 db on the balance stripe; all specifications are record/playback. Probably the most interesting feature is the automatic gain control. Not only is it defeatable for those of us who know what a level control is, but in addition, has two "on" positions. The first position is for voice, and incorporates a two-second average sampling to determine level. The second position employs a 30-second average for music recording. This is a unique and sophisticated feature. To top off the sound portion of this machine are two 20-watt power amplifiers.

These machines do not use synchronous motors and, therefore, will

require a pulser to facilitate transfers. Super-8 Sound, Inc. has a simple one-pulse-per-frame contact they install in non-sync projectors that then facilitates transfer from their Super-8 Sound Recorder full-coat machine. Once this is accomplished, a film can be edited in Super-8 double-system, an answer print made on striped stock, and the sound transferred to the print on the Bauer.

This brings us to the most important aspect of the Super-8 scene: All the new items form a system. A recorder with resolving and pilotone facilities; cameras with pilotone and pulse sync, clappers and single-system; projectors with high-fidelity and mixing facilities; and a complete selection of flat-bed editing tables and benches.

No less than four new flat-bed Super-8 editing consoles were shown at *Photokina*, including a very professional single-system sound unit from Steenbeck (no doubt in anticipation of a switch to Super-8 for television newsfilming in some quarters). New Super-8 editing benches were displayed by three different manufacturers. Among these was a very attractive editing bench from Super-8 Sound Inc. It includes rewinds with differentials, a motorized synchronizer with a unique electric clutch that is foot-actuated, a viewer and sound reader. The sound reader is particularly noteworthy, as the head slides back and forth in a track that is calibrated in frames. While running at sound speed, the head can be moved forward or backward until sync is visually determined and then locked into place. The amount of displacement is read out on the scale. Sort of a poor man's differential counter.

Murray of France also showed a Super-8 editing bench that should be available in this country shortly. Another French editing bench, called a CTM, was previewed in the Beaulieu booth. However delivery dates were uncertain.

Another German manufacturer, EGO, also showed a flat-bed. A flat-bed console is currently available from MKM in Chicago. As the editing field is just blossoming, this area deserves a more detailed treatment, one that is beyond the scope of this report.

My overall impression is that manufacturers and filmmakers are beginning to take Super-8 very seriously. And this is only the beginning. It is obvious that Super-8 equipment will be taking further giant steps toward the professional market. ■

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BOLEX H-15 EL CAMERA

Continued from Page 1449

therefore, be used on the EL with or without adapter. Among the notables should be mentioned the extremely fast f/1.1 standard 26mm lens, the fast 10mm f/1.6 wide angle, the extremely compact Vario-Switar 17-85mm f/3.5 (which weighs a mere 12 ozs. and is only 4" long without sunshade) (FIGURE 10), the Angenieux lenses with a 10:1 zoom range and the fully automatic Vario-Switar. A new lens has been added — a Vario-Switar 12.5-to-100mm f/2 (FIGURE 11). This 19-element lens (FIGURE 12) is claimed to have the well-known Switar quality all the way down to the 12.5mm focal length.

The lens has manual diaphragm adjustment with automatic stop-down, which means that the diaphragm is always fully open for focusing and stops down to the pre-set aperture before the camera starts running. All fixed-focal-length lenses have Macro focusing, automatic depth-of-field scales and pre-set aperture arrangement.

The Bolex EL model has maintained some of the previous H-16 features: the automatic threading of 100' spools, spool ejection, possibility of using gelatin filters behind the lens, and reflex viewing with 13x magnification. The camera takes the same 400' magazine, take-up motor, matte box and shoulder-brace as those made for all the other Bolex H-16 models.

A new accessory is the underwater housing (FIGURES 13 & 14), specifically designed for the electrically driven EL and EBM models. The battery is inside the case. Viewing is through the camera's reflex system, with both aperture and distance setting possible from the outside of the case.

The new Bolex EL Camera is not meant to replace any of the existing models, but is simply the latest and most professional model. With this latest addition, Bolex can offer 16mm cameras in the widest range of prices from the M-5 model which lists around \$500.00 for the camera body to the EL which is scheduled to list around \$3,000.00. ■

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MORE HMI LIGHTING

Continued from Page 1411

approximately 1/4 that of the high-intensity carbon arc used in a "Brute" arc spotlight. This means that unless you could achieve a more efficient manner of collecting the light, the intensity of the beam would be 1/4 that of a "Brute" arc in a similar system.

Arri displayed a line of fresnels and one or two open floodlights. I remember seeing a 200-watt unit (which is a new lamp introduced at *Photokina*) and a 1200-watt unit—so I would assume that they have at least a range of small units, although they did not have much data on these units. They also exhibited units which use the HQI 2000-watt and 3500-watt lamps.

Reiche & Vogel/B. Delschaft exhibited two HMI fresnel lens spotlights and indicated that they are developing a complete line of spotlights, as well as follow spots and special effect projectors. This company is an old theatrical lighting house and I would assume that they will be involved predominantly with HMI in the types of projection systems which they have made over the years for theatrical use.

Keller displayed a series of HMI units ranging from 575 watts through 4000 watts, but nothing unique. They were standard fresnel lens units very similar to many of the units exhibited by the other companies.

Mole-Richardson of Germany exhibited a 1200-watt HMI unit whose housing was made of fibreglass. To my knowledge, this was the only such unit at the show and might indicate a direction toward which they may be heading, as opposed to the metal housings produced by the other companies.

One manufacturer of the amateur-to-commercial photographer type of equipment, Cima International, exhibited a 575-watt HMI unit called the "Reporter Light" which featured a relatively lightweight ballast, as compared to ballasts exhibited by the other companies. This one weighed approximately 16 to 18 lbs., whereas most of the other units weigh 25 lbs. in the 575-watt size. This manufacturer also indicated that it has designed a 200-watt unit for use off of a battery pack. Such system could prove to be quite significant to newsreel photographers, since the 200-watt lamp produces about 80 lumens per watt, roughly three times the output of a tungsten-halogen lamp of the same wattage. Since it is a daylight source, it would be equivalent to 1000 watts of tungsten-halogen light filtered for daylight.

The main problem with any of the HMI equipment is the flicker which is

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experienced under certain conditions when this type of light is used for motion picture photography. HMI lighting, originally developed to be used exclusively for television illumination, has found some limited success in motion picture work, when the frequency of the ballast operation (or the supply voltage) are "in sync". If they are not synchronized, a flicker develops which makes them unusable for this type of shooting. The word prior to *Photokina* was that everyone would have the solution to this problem by the time the show started. The word at *Photokina* was that the solution was still "two to three weeks away." Unfortunately, as in the past, those two to three weeks might stretch into two to three years, but there are a few significant indications of progress that might be reported.

IREM, which is a power supply manufacturer from Italy, has been very active in providing standard HMI ballast, and they currently have a prototype ballast in evaluation at Osram which can be varied through a wide range of frequencies. The one problem with this type of ballast, in my estimation, is that the range of frequencies for lamp operation lies entirely in the audible sound area. IREM's feeling is that the unit can be designed in such a way as to eliminate the noise at the ballast, or that the ballast can be placed at a remote location.

Unfortunately, past experiences with similar ballasts have indicated that, although the sound at the ballast can be controlled, there is an audible noise experienced *at the light itself*, which must be controlled through the use of aluminum housings and non-magnetic components throughout the fixture. Even then, complete success has not been reported. Therefore, at this point, I would classify this particular IREM ballast as "potential" but not the final answer to the total problem.

Another manufacturer of ballast units, Jovy of Germany, is manufacturing a standard reactor ballast and has also developed the capability for a ballast that has an improved wave shape and can provide additional control by monitoring the operation of the ballast in such a way as to insure that the lamp is always at its proper wattage output.

The significance of this is that standard ballasting systems will produce a 10% variation in their power, with only a 5% variation in the input voltage. This could mean that a light operated off of several hundred feet of power line at a remote distance from the source of power would be operating at a low wattage point, due to the line drop. This could be so much of a drop that the

color performance of the lamp would change significantly, or the wattage would vary enough to make the lamp unstable in its operation.

Even worse would be the high wattage that might result if over-voltage compensation were provided from a generator to operate remote lights, and one light happened to be located close to the generator, operating at excessive voltage. This is similar to the problem experienced over the years by the motion picture industry, which uses 3350° Kelvin lamps to compensate for voltage drop in order to insure that the output of the lamp will be 3200° at the end of the line.

The latest information from the Osram lamp engineers is that this type of ballasting is required for the high-wattage lamps especially, to insure that the lamps are always operated within their proper tolerance, in order to provide good color and maintain the desired light output.

In order to regulate these elements more precisely, another manufacturer, Kobold, has developed a ballast which will have a built-in indicator and control capability, so that even when operated on a line that is either high or low in voltage, proper compensation will be available to enable the lamp to be operated at rated wattage.

Another of the equipment manufacturers, Keller, although not demonstrating such a unit at *Photokina*, claims the development of an electronic ballast that operates a 575-watt lamp at high frequency. They are promising delivery of such systems within a few months—but the proof of this pudding is in the seeing, not in talking.

Also not displayed at the show was the prototype of a ballast manufactured by Kobold for a new 200-watt HMI lamp. It operates the lamp off of a square wave system which, by providing a square wave of voltage to the lamp, results in a uniform output of light. This type of concept is similar to that used in previous designs and, again, the proof of its effectiveness will depend upon the results of tests.

Another ballast which is currently a reality (although not shown at *Photokina*) utilizes a new invention in the art of ballasting AC lamps. The subject of a paper at the upcoming SMPTE Conference in Toronto, it is expected to have great significance, not only for motion picture lighting, but for the entire lighting industry.

At *Photokina* it was obvious that a great deal of attention had been paid to the development of 200-watt HMI lamp units. In fact, at the show, LTM, Arri, Kobold and Cima International

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demonstrated such equipment. The 200-watt HMI lamp is definitely slated for use by many of the manufacturers in battery-operated systems. The success of such systems will depend upon the availability of electronic or other advanced types of ballasting, due to the necessity for converting from DC to AC in order to operate the lamps.

One point of caution which should be emphasized, after having reviewed the various designs in detail, is that the operation of HMI lamps without glass between the viewer and the source is dangerous. The ultraviolet output of such lamps is high and very little direct exposure can sunburn the eyeball. This does not seem to result in any permanent damage to the eye, but is most uncomfortable.

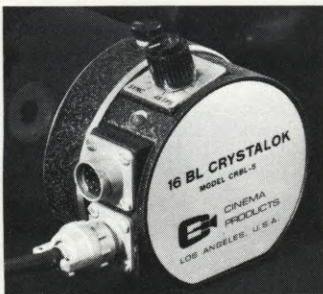
My reason for raising this issue is that most units have a safety switch which will not allow operation with the lamp exposed. (This should also be the case if the lens or cover glass is broken or otherwise removed.) A few of the lights I examined had light leaks through air vents, which allowed direct viewing of the lamp. This, in my opinion, is a hazard that should be eliminated.

Thorne Electric of England exhibited CSI lamp basic arc source units (400-watt and 1000-watt), as well as the PAR-64 1000-watt unit used in England, and now in Canada, for general fill lighting for both television and film.

The CSI lamp has the same problem as the HMI in that it is an AC arc and produces a flicker under certain conditions when used in filming. In addition, the CSI lamp is not as highly controlled color-wise as the HMI and has a wider range of color output. Therefore, it has been used primarily as a fill light source, and not a key light, in its applications to both television and film. It was originally developed in its PAR-64, 1000-watt configuration for sports lighting and, I'm told, is presently being used in England to illuminate two cricket fields.

At Photokina, data about an unusual Thorne CSI lamp system was provided by John Hadland Photographic Instrumentation Ltd. of England, which markets a group of three units to operate off of a three-phase power supply for high-speed photographic applications. Their data indicated that "when the beams are superimposed, the result is a completely flicker-free light."

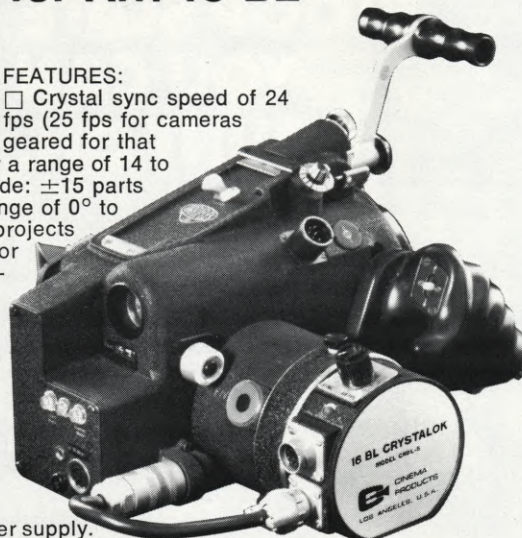
After discussing this with the representative in their booth, I would conclude that their area of expertise is high-speed photography, and that this system does meet their needs.



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Announced at *Photokina* was a version of the 1000-watt CSI lamp which can be hot-started. This is available only in the bare bulb, however, but Thorne's indication was that it will also be available in their PAR-64 configuration in time for the next SMPTE Conference.

Of perhaps minor significance was the exhibit by Sylvania of a 400-watt arc lamp, whose prime purpose is photocopy work and overhead projector applications. It does, however, indicate Sylvania's introduction to the state of the art in the race to develop new arc lamps for use in the photographic and film market.

Another area of significance at *Photokina* (not in the arc light classification, but reverting back to tungsten-halogen systems) was the introduction by a number of lighting fixture manufacturers of new designs in hand-held lights to be used by both amateur and professional motion picture and still photographers.

The safety hazard over the years in regard to the tungsten-halogen open floodlight has been significant enough that by 1975 several of the European countries will have outlawed the manufacture, sale and use of such units. As a result, companies like Kobold, Cima International, Hedler, Osram and others demonstrate new totally enclosed hand-held tungsten-halogen units having wattages up through 1250 watts (actually, 1300 watts, where two 650-watt lamps were used in tandem in a single head.)

Genuinely unique at *Photokina*, and offering a significant advantage, were Cremer's line of HMI fresnel spotlights. The back housing opens up to provide easy access for relamping. In addition, the lamp igniter assembly is removable to permit substitution of a standard tungsten-halogen or incandescent assembly for the HMI assembly. This means that a single unit can do triple duty as an incandescent, tungsten-halogen or HMI system. It can serve as an incandescent or tungsten-halogen system in the studio and an HMI system on location. ■

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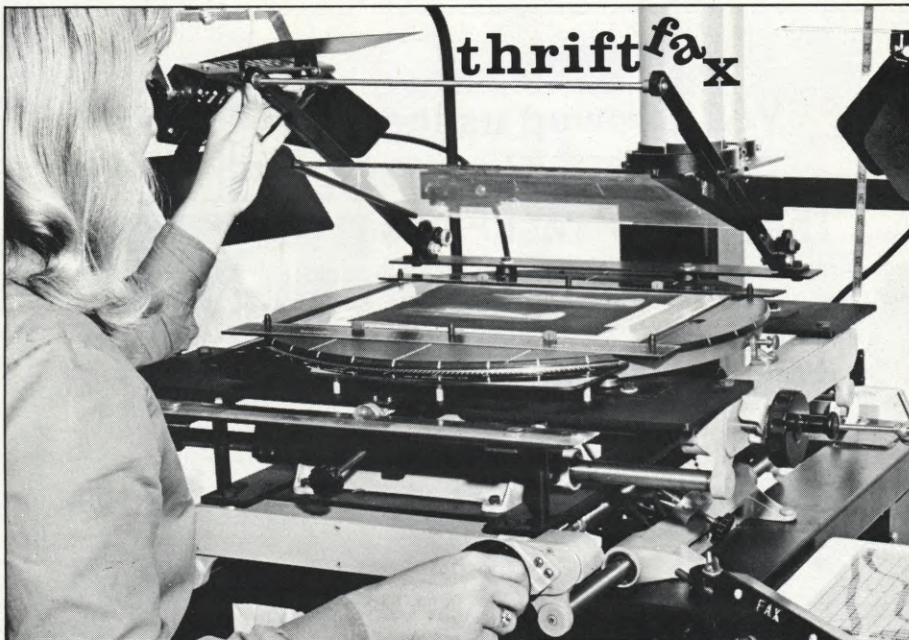


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Continued from Page 1413

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Continued from Page 1459

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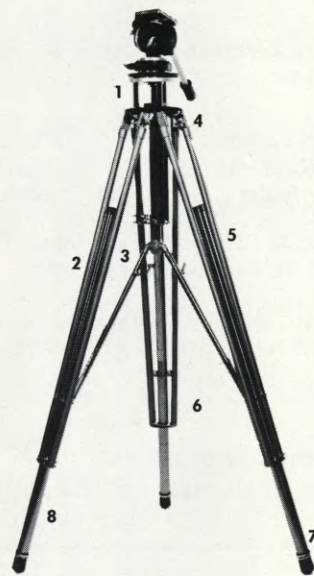
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ETHNOGRAPHIC FILMING IN NORTHERN AFGHANISTAN

Continued from Page 1467

heat and dust (sometimes the end of the lens would get so hot I could hardly touch it), the production equipment had held up extremely well. Aside from the usual necessity of rewiring and soldering cables and battery belts, etc., there had been no real problems, except for a donkey kicking one of the Eclair magazines.

One of the several families we had been filming had a shop in the village, but lived in a compound high in the hills above the river. We often went there to film and stay with the five brothers who divided up the tasks of harvesting the wheat and tending and shearing the sheep. We made the long trip on a ragged assortment of donkeys and horses, since there were no roads. We had survived the mountainous ascents and descents relatively uneventfully until one day, as we neared our house in the village, the donkey I was riding stumbled against a low archway and threw me to the ground. I tried to protect the Eclair and the zoom lens with my body. But, although I could hardly walk for a couple of days, the glass filter on the end of the lens was cracked, the lens hood was bent, and I had to face the fact that the lens and camera had received a severe blow. I performed as many tests as I could to determine that the lens and lens mount were unaffected and the back focus had not been shifted. The hand-test chemicals I had brought along had been fried to uselessness on the way to the location by the merciless heat. I spent three frustrating days on the local governor's hand-crank telephone trying to reach the capital to get Afghan Films, which works in 35mm only, to do a test strip for me. Eventually I had to rely on my own judgment and the focusing tests I had done with a ground glass and a lens chart because the National Holiday arrived before we were able to contact the capital. I knew the lens and mount were undamaged, but knowing and seeing a demonstration in a test are two different things. The first thing I did after arriving back at the studio in England was to confirm on the screen that my judgment had been correct.

"Jeshn", the Afghan National Celebration, occurs in August after the main part of the harvesting has been done, the canals have been repaired and the water mills are grinding the wheat into flour. For a few days the routine of hard work that makes up most of people's lives is broken by wrestling contests, "buzkashi" (the famous goat grabbing game played at high speed on horseback), and evenings of music and dancing. Because women do not

appear in public in the rural areas of this Muslim country, the public entertainment is done by boys and young men. In Aq Kupruk, the local truck drivers brought two dancing boys from the city to dance in one of the tea houses for large audiences made up of a cross-section of the entire male population. We filmed their performance by reinforcing the existing Chinese gas lanterns and adding fill from Sun-Guns. We were able to create a filterably correct lighting that didn't overwhelm the event. Even the bugs stayed away to a large extent.

Filming the buzkashi presented some interesting problems. Aq Kupruk is famous for the river which flows through it and the unique form of this game which, here, is played in the river rather than on the plain. Toryalai Shafaq used our second Eclair with a tripod on the bridge and Herb and I waded into the river with our Eclair and Nagra to get as close to the action as possible. We became so engrossed in the struggle of the more than a dozen riders and their careening horses trying to grab possession of the headless goat that we forgot the dangerous insecurity of our position. Herb was transfixed by the sound of the horses' hooves clattering over the stones and I watched with total fascination through the viewfinder as the knot of horses and riders flashed past, spraying the lens with water. When we thought about it afterwards we were lucky not to have been run over.

One of the greatest things that this project proved to us was the ability to take the equipment into literally any situation, from the most active to the most quiet and intimate. We filmed from horseback, inside the mosque during religious services, up to our waists in the river, from the backs of trucks bouncing over dry river beds, inside the nomads' tents and during the quiet moments of respite from the hours of labor which dominate most people's lives. We worked at all hours of the day and night. We filmed the nomads arriving with their camel trains and setting up their tents at dawn, the bazaar waking up for the day's business, the continuity of daily life up to the quiet tea-sipping conversations of the village men at night. Our outdoor nighttime shooting, however, was severely curtailed by the invasion of insects our Sun-Guns produced.

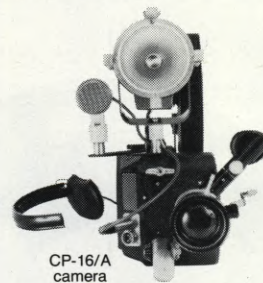
While we were there, we shot what became three films, as well as a great deal of ethnographic, archival footage with the help of Louis and Nancy Dupree, our cultural advisors. We made many friends in Aq Kupruk. The Afghan people's warm and open hospitality allowed a mutual respect and friendship to grow. At first some people felt that Herb was in direct com-

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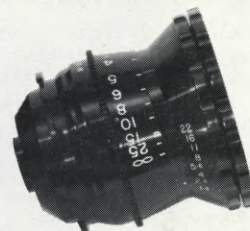
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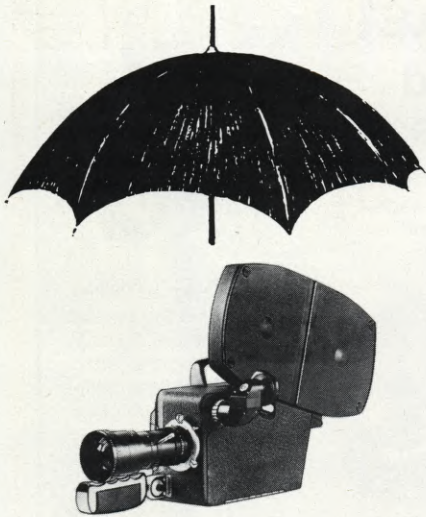
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munication with America via his headphones (he was called the man with the ears) and that the Eclair with its cartridge-like battery belts was for something more sinister than the shooting of film; but the initial rumors as to our purpose gave way to an acceptance of us as people and an understanding of our job as film-makers.

At the end of September we returned to the National Film School's studios in England and began postproduction. We spent four months editing the footage into three films, "AN AFGHAN VILLAGE", "AFGHAN NOMADS" and "NAIM AND JABAR". The first documents the daily life in the village from the beginning of the harvest to the coming of autumn. The second follows the arrival of a group of Pushtun nomads, their interaction with the villagers and their moving on toward their winter homes. The most intense focus of the shooting became the film, "NAIM AND JABAR". We became friends with and followed the lives of two teenage boys. Naim and Jabar worked together as laborers during the summer so that, in the fall, Jabar could return to secondary school in Mazar-i-Sharif, the provincial capital, and Naim could go with him to apply to the Director of Education for admittance. We went with them on their journey to Mazar and filmed Naim's reaction to going outside the village for the first time and the impact of these new experiences on them and their friendship. The three films, when played together, create a mosaic of a community and its people in which the study of culture is humanized. The multiple perspectives of the series enable the way of life to be seen both in broad focus and in the interaction of specific individuals.

I feel we learned a great deal from the project. It demonstrated to me the absolute necessity for careful conceptual and technical preplanning on the one hand, and the need to be able to work with and adapt to any unforeseen event or difficulty on the other. The direct interaction and friendship with people from another culture and the challenging complexities of remote location production make this an extremely rewarding and vital kind of film-making. ■

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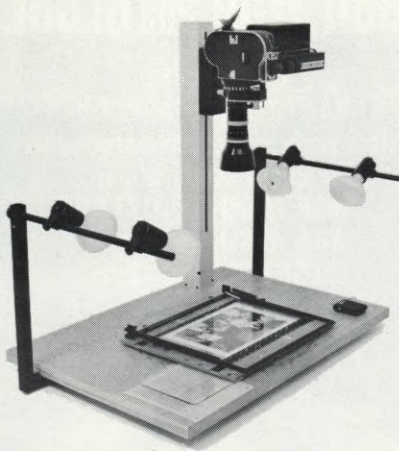
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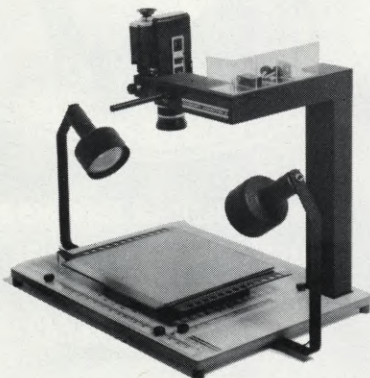
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Madame Jean Gautherie, of Eclair International, in announcing the appointment of E-Cam Company, reported that the Eclair factory in Paris restructured its worldwide distribution program during 1973 and with the addition of E-Cam in the U.S., marketing for the French Eclair line has now been established in 58 countries.

"It gives us great pleasure to announce the appointment of E-Cam Company as our exclusive distributor in the United States inasmuch as this now makes available to the U.S. market once again the NPR camera and spare parts, plus the complete line of Eclair equipment," Madame Gautherie said.

She also reported that the new and exclusive French-developed Eclair products which were introduced by E-Cam at recent S.M.P.T.E. Exhibit in Los Angeles are now available for delivery to U.S. cinematographers. They include the new and improved BEALA multi-duty, crystal control motor for the NPR; the exposure control system for the ACL; the heavy-duty, variable speed, multi-duty crystal control motor for the ACL and the improved, sprocket and belt driven 400-foot coaxial magazine for the ACL.

E-Cam Company will headquarter in the Hollywood area and will wholesale distribute Eclair cameras, accessories and parts in the U.S. on a dealer basis both from a west coast and east coast sales and service facility. E-Cam is located at 5410 Cahuenga Blvd., N. Hollywood, Calif. 91601. Telephones are (213) 466-3700 and (213) 766-3300. General manager of the firm is Sam Getzoff, a veteran in the professional camera sales field.

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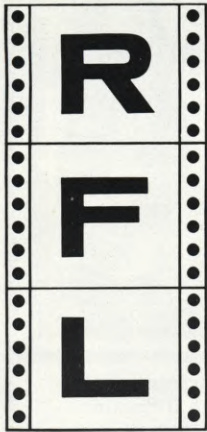


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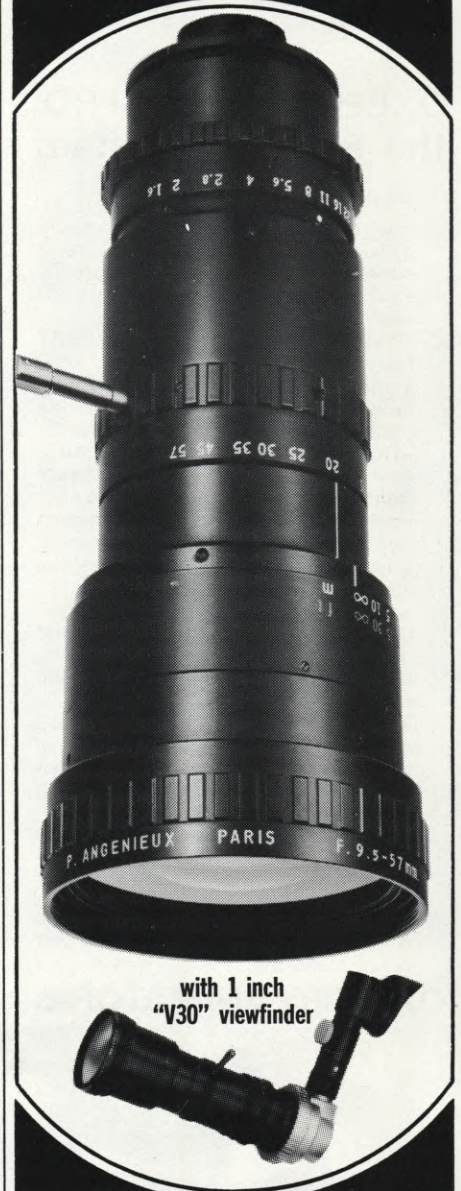
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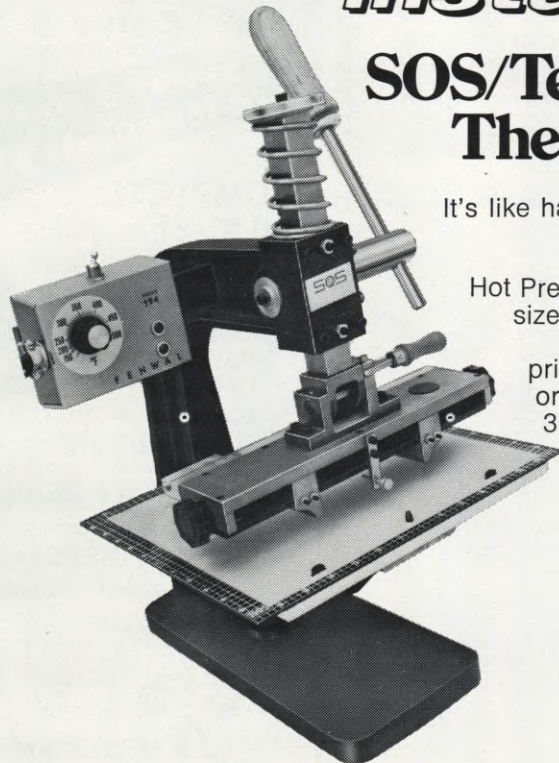
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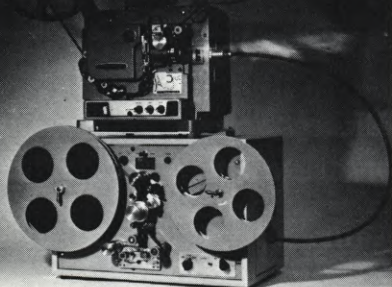
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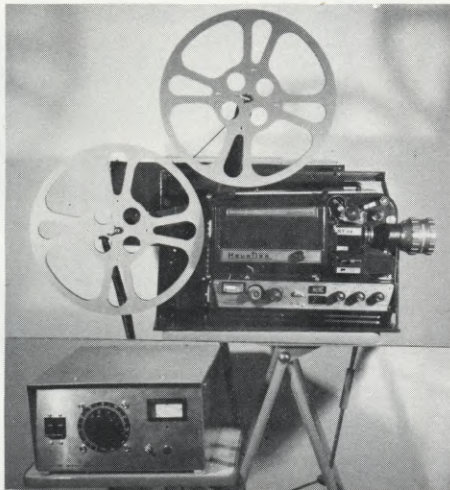
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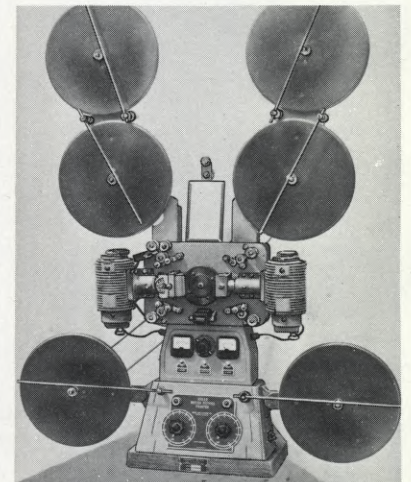
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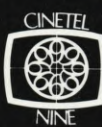
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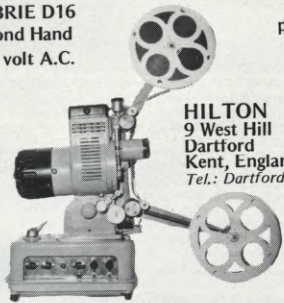
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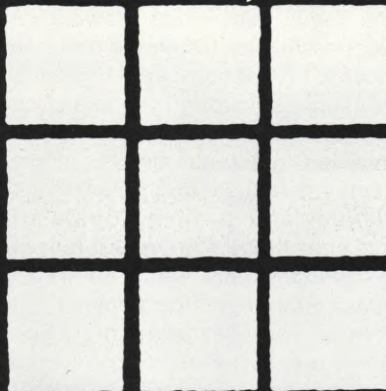
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Continued from Page 1428

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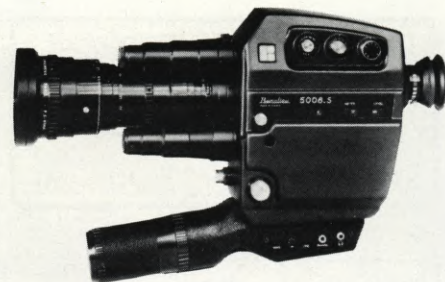
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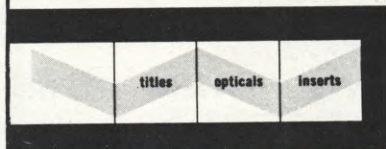
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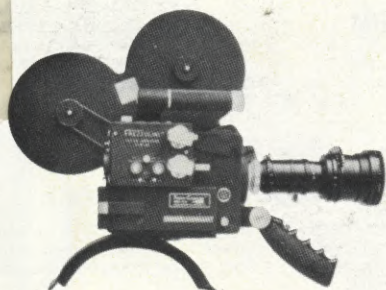
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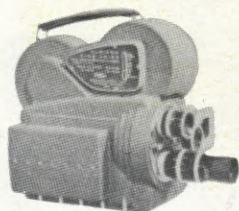
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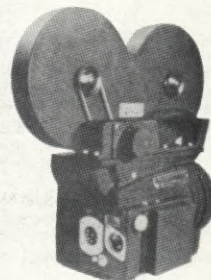
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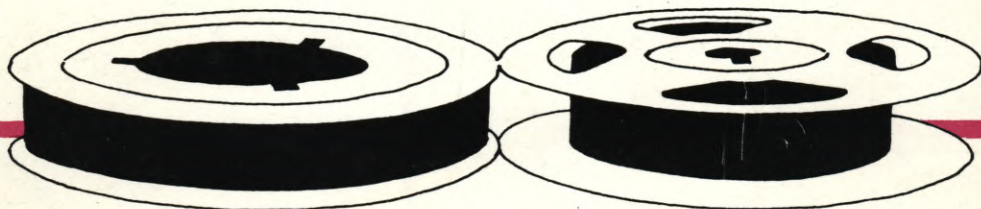
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