



MGM PROJECTIONIST Purdon C. Young, who developed the Variscope, studio's wide-screen projection lens auxiliary. Variscope mounts on regular projector lens. Picture size on screen can be quickly zoomed from one width to another by means of control knob.

## MGM's Variable Wide Screen Projection Lens

With the aid of the Variscope, theatres can screen films of any aspect ratio with the same projection lens.

By FREDERICK FOSTER

Setting focus and screen size is a simple three-step operation: First, the correct matt is inserted in the projector aperture; second, the Variscope is adjusted for the desired aspect ratio or picture width; and third, the projector lens itself is then focused in the usual manner.

The general procedure for the theatre projectionist is to make these adjustments in advance and to run a test screening to determine the proper Variscope settings, lens focus, etc., for the recommended aspect ratios of all films on the program. The necessary cue marks are then made as a guide so that it is unnecessary to make any distracting lens adjustments after projection of a picture begins.

A theatre owner having projectors equipped with Variscope auxiliary lenses, can accept for screening in his house pictures of all aspect ratios, providing he has a screen of suitable height and width.

At a recent demonstration on MGM's experimental sound stage, Young projected scenes from the studio's "Kiss Me Kate" up to 77 feet in width with excellent definition. In previous tests, pictures were projected with the Variscope up to 150 feet in width. Subsequently demonstrations of the lens were given before members of the S.M.P.T.E. in Hollywood. Using a standard 35mm projector lens coupled with the Variscope, Young screened scenes from "Kiss Me Kate" in all aspect ratios. Approval of the lens was unanimous as a result, and plans are now being made to demonstrate the Variscope at the forthcoming S.M.P.T.E. convention in New York City early this month.

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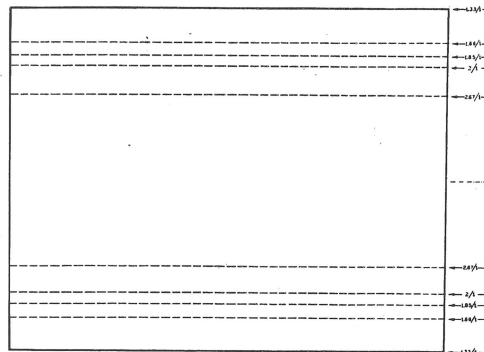


CHART shows wide-screen aspect ratios in common use today. Normally, a separate wide-angle lens is required for each. The Variscope enables one lens to project pictures in all four ratios.

IN ADDITION TO super-wide-screen CinemaScope, Hollywood today is making feature films for wide-screen presentation in four recommended aspect ratios (screen picture sizes): 1.85-to-1, 1.75-to-1, 1.66-to-1, and the conventional 1.37-to-1. Until now, an exhibitor wishing to show films in all wide formats required one or more pairs of wide-angle projection lenses in addition to the pair of standard lenses.

At present, a suitable wide-angle lens must be mounted in each projector in place of the standard lens each time a picture is to be screened in a format other than the standard 1.37-to-1. This operation becomes all the more complex if there are two or more films on the same program requiring different aspect ratio projection.

To meet this problem, Purdon C. Young, special projectionist at Metro-Goldwyn-Mayer studios in Hollywood, has developed a zoom-type auxiliary lens, which makes it possible to screen pictures in all aspect ratios when it is coupled with a standard 35mm projection lens.

The new lens, which has been tradenamed Variscope, will provide a range of aspect ratio projection from 1.37-to-1 to the panoramic 2.66-to-1. The need for separate wide-angle lenses for each aspect ratio is no longer necessary.

In use, variable screen size is achieved by simply changing position of the Variscope front lens element, and inserting a matt of the correct size in the projector aperture. The lens adjustment is achieved by sliding a knob in a slot in the side of the Variscope lens barrel. Framing this slot is an engraved scale plate to aid in quickly setting the Variscope lens at previously determined points. The scale position for any given aspect ratio, for example, can be indicated on the side of the lens barrel with a grease pencil or by noting the figure on the scale plate.

ONE OF THE INEVITABLE conclusions that invariably is reached in any study of 3-D motion pictures today is that the success of 3-D depends as much as anything else on careful if not precise control in projection. Recent investigation has shown that much of the eye discomfort of theatre patrons viewing 3-D films is due not so much, if at all, to the photography or the viewing glasses, but to imperfect projection of the picture.

In most cases, faulty projection of 3-D lies entirely with the lack of synchronization between the twin stereo films. The Polaroid Corporation has demonstrated, with the aid of its new 3-D electronic sync control device, that when the two films are out of sync as much as  $\frac{1}{2}$  to  $\frac{3}{4}$  of a frame, serious eye discomfort results for the viewer.

Others, besides Polaroid Corporation engineers have discovered this of course, and have sought a simple remedy. The most practical appears to be the recently announced Nord System, developed by Roy Clapp. This process involves putting both right and left eye images on a single film, so that the two are projected absolutely in sync by a single projector. There are other advantages, too.

Because illumination from the same projector lamp house flows through the two images, illumination of both on the screen is always equal.

The Nord equipment has the Polaroid filters for projection built in—all pre-set and properly angled—to insure the best 3-D projection.

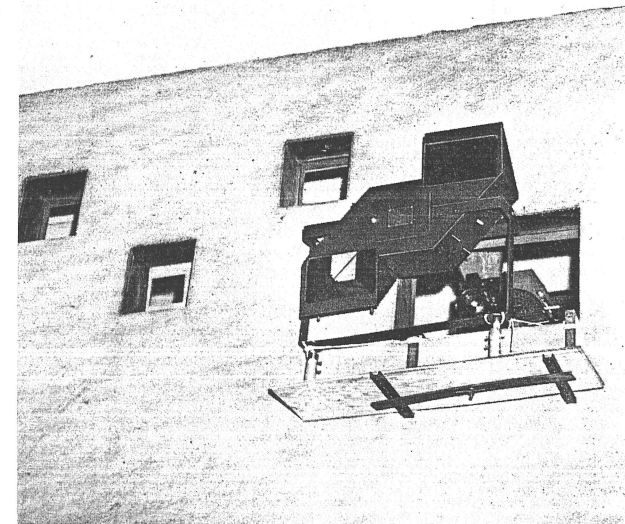


FIG 1—Showing simple installation outside projection booth of the new Nord 3-D sin strip projection system. Units are also available for installation inside the booth. Op system rotates the twin film images 90° and throws them on theatre screen erect.

## Simplified Single-film System For 3-D Exhibition

Nord System, which puts twin 3-D images on single strip of 35mm film, insures synchronization and cuts production and exhibition costs.

By ALVIN D. ROE

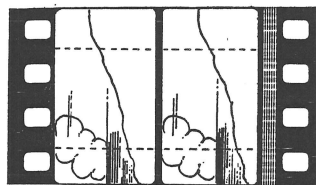
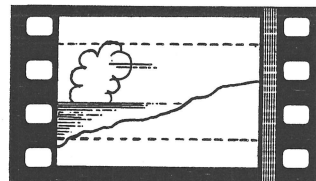


FIG. 2—Diagrams show conventional film frame (top) with wide-screen aspect ratio indicated by dotted lines, and the same frame area (below) with the twin 3-D images side by side as in the Nord System.

Print cost is cut in half, because both images are printed on one film; prints are made by standard release print methods.

3-D film programs can be handled the same as regular films without the need for intermissions, and no extra projectionist is required. In short, the Nord System provides 3-D with standard 2-D type operation. No retraining of personnel is required; there is nothing new that the projectionist has to learn. In case of a film break, splicing can be done without fear of throwing the two 3-D images out of sync, as is often the case where 3-D is on two separate films.

Actually, the Nord System gives film producer substantial control the presentation of his 3-D films, far as the synchronization problem concerned.

The Nord System consists of a method of optically printing 3-D to a single 35mm film, with the head to toe, as shown in Fig. 2 printed in wide-screen format of 1.37; and 2) the Nord stereo projector unit, which is an optical device with moving parts, having no mechanical coupling with the projector, and is mounted between the projector and the screen. There are two models

(Continued on Page 509)

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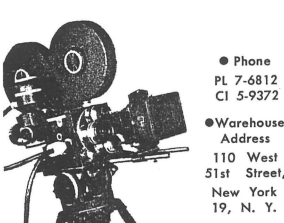
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# Current Assignments of A.S.C. Members

Major film productions on which members of the American Society of Cinematographers were engaged as directors of photography during the past month.

## AMERICAN SOCIETY OF CINEMATOGRAPHERS

FOUNDED January 8, 1919, The American Society of Cinematographers is composed of the leading directors of photography in the Hollywood motion picture studios. Its membership also includes non-resident cinematographers and cinematographers in foreign lands. Membership is by invitation only.

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### ALLIED ARTISTS

- HARRY NEUMANN, "Dragonfly Squadron," (3-D), with J. Hodiak and B. Britton. Lesley Selander, director.
- HARRY NEUMANN, "Bomba and the Green Idol," Ford Beebe, director.
- ELLIS CARTER, "Aftow In The Dust," with Sterling Hayden, Lesley Selander, Dir.

### COLUMBIA

- HENRY FREULICH, "The Kiss and the Sword," (Technicolor) Richard Castle, dir.
- METRO-GOLDWYN-MAYER
- JOSEPH RUTTENBERG, "Miss Baker's Dozen," (Anseo Color) with Greer Garson, Robert Ryan, Robert Z. Leonard, director.
- PAUL C. VOGEL, "Rose Marie," (Technicolor, CinemaScope) with Ann Blyth, F. Lamas, H. Keel, Mervyn LeRoy, director.
- GEORGE FOLSEY, "Executive Suite," (Wide Screen) with W. Holden, J. Allyson, B. Stanwyck. Robert Wise, director.

### REPUBLIC

- JACK RUSSELL, "Hell's Half Acre," with Wendell Corey, Evelyn Keyes, Marie Windsor. John H. Auer, producer-director.

### R.K.O.-RADIO

- WILLIAM SNYDER, "Rangers of the North," (3-D, Technicolor) with Victor Mature, Piper Laurie, W. Bendix. Louis King, director.

### 20TH CENTURY-FOX

- LUCIEN BALLARD, "Prince Valiant," (Technicolor, CinemaScope) with Robert Wagner, Janet Leigh, Debra Paget. Henry Hathaway, director.
- CHARLES G. CLARKE, "Night People," (Technicolor, CinemaScope) (Shooting in Germany) with Gregory Peck, Rita Gam. Nunnally Johnson, producer-director.
- HAROLD LIPSTEIN, "Three Young Texans," (Panoramic Prod.) (Wide-screen) with M. Gaynor, K. Brasselle, and J. Hunter. Henry Levin, director.
- LEO TOVER, "Man In The Attic," (Panoramic Prods.) (Wide-screen) with J. Palanca, C. Smith. Hugo Fregonese, director.
- MILTON KRASNER, "We Believe In Love," (Technicolor, CinemaScope) with Clifton Webb, Jean Peters, Jean Negulesco, director.
- EDWARD CRONJAGER, "Gatling Gun," (Panoramic Prods.) with Van Johnson, Joanne Dru. Rudy Mate, director.
- LLOYD AHERN, "Gorilla At Large," (Panoramic Prods.) with Cameron Mitchell, Ann Bancroft. Harmon Jones, director.

### UNIVERSAL-INTERNATIONAL

- JOHN SEITZ, "Saskatchewan," (Technicolor, Wide-screen) with Alan Ladd, Shelly Winters. Raoul Walsh, director.
- CARL GUTHRIE, "Yankee Pasha," (Technicolor, Wide-screen) with Jeff Chandler, Rhonda Fleming, Joseph Pevney, director.
- WILLIAM DANIELS, "The Far Country," (Technicolor, Wide-screen) with James Stewart, Ruth Roman. Anthony Mann, director.
- MAURY GERTSMAN, "Fort Laramie," (Technicolor, Wide-screen) with John Payne, Mari Blanchard. Jesse Hibbs, director.
- CARL GUTHRIE, "Johnny Dark," (Tech., W-screen) with T. Curtis, G. Sherman, dir.
- RUSSELL METTY, "Magnificent Obsession," with J. Wyman. Douglas Sirk, director.

### WARNER BROTHERS

- WILFRID CLINE, "Rear Guard," (3-D, War. Col.) with G. Madison. David Butler, dir.
- ROBERT BURKS, "Dial M For Murder," (3-D, War. Col.) Ray Milland. A. Hitchcock, director.
- PEV MARLEY, "Phantom Ape," (3-D), with K. Malden. Roy Del Ruth, director.
- SIDNEY HICKOX, "Them," (3-D, War. Col.) Gordon Douglas, director.

### INDEPENDENT

- CLIFF STINE, "Americano," (Eastman Color, Wide-screen), Budd Boetticher, dir.
- LESTER WHITE, "Silver Dollar," (Cin.Col) (Wide-screen), Fred Sears, director.

## TELEVISION

(The following directors of photography were active last month in photographing films for television, or were on contract to direct the photography of television films for the producers named.)

- LUCIEN ANDRIOT, "Life of Riley" show, Hal Roach.
- NORBERT BRODINE, "Crown Theatre," Bing Crosby Enterprises.
- DAN CLARK, "Favorite Story," Ziv TV.
- EDWARD COLMAN, "Dragnet," Mark VII Prods.

- ROBERT DEGRASSE, "Make Room For Daddy," D.P.I. and Marterto Prods., Inc.
- GEORGE DISKANT, "Four Star Playhouse," Four Star Prods.
- KARL FREUND, "I Love Lucy," Desilu Prods.
- FRED GATELY, "The Big Town," Gross-Krasne Productions.
- BENJAMINE H. KLINE, "Fireside Theatre," Frank Wisbar Productions.
- HAL MOHR, "The Joan Davis Show," Joan Davis Productions.
- WILLIAM MELLOR, "Adventures of Ozzie and Harriet," Stage 5 Productions.
- ERNEST MILLER, "Hopalong Cassidy," William Boyd Productions.
- VIRGIL MILLER, "You Bet Your Life," (the Groucho Marx Show), Filmcraft Productions.
- KENNETH PEACH, "Ramar of the Jungle," Arrow Productions.
- ROBERT PITTTACK, "Cavalcade of America," Jack Chertok Productions.
- WALTER STRENGE, "My Little Margie," Roland Reed Productions.
- MACK STENGLER, "The Liberace Show," Snader Telescription Corporation.
- HAROLD STINE, "Superman," Superman, Inc.
- PHILIP TANNURA, "The Burns and Allen Show," McCadden Corporation.
- STUART THOMPSON, "Your Jeweler's Showcase," Sovereign Productions.
- GILBERT WARRENTON, "Chevron Theatre," Revue Productions.

## VARISCOPE LENS

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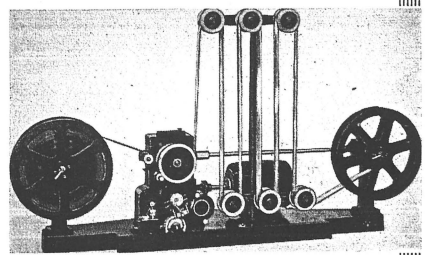
The tremendous success of "The Robe" is certain to set the style for ultra-wide, panoramic type movies. With Variscope, an exhibitor can give panoramic screen treatment to a great many of the films which are now being released by all studios, providing he has the theatre and screen for it. And where these pictures have stereophonic sound, the exhibitor is in position to more successfully meet the competition of CinemaScope films—or, when showing a CinemaScope feature himself, to bring other non-CinemaScope films on the same program up to comparable screen size.

An interesting sidelight on the development of the Variscope lens is the fact it "was born about ten years too soon," according to Young. Years ago, long before the advent of wide-screen movies, Young developed the basic idea for his lens, but didn't know what to do with it. His original Variscope (actually it had not yet been so named) was stored, and it remained almost forgotten until recently when the furor of 3-D and wide-screen movies suddenly electrified the technical staffs of all studios. As Young worked with his MGM associates in developing the studio's 3-D and wide-screen processes, he saw the possibilities his zoom-type projection lens held in the new order of film making. He renewed research and development on the lens, and recently the prototype Variscope was

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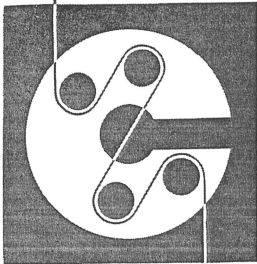
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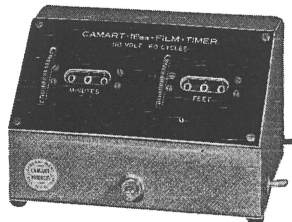
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demonstrated and pronounced highly successful.

The Variscope is now in production by Pacific Optical Corp., Los Angeles. Sale and distribution is to be handled by National Theatre Supply Company, with Young drawing royalties from sales. MGM will not share in the profits in any way. The studio, notable for its efforts in aiding the nation's small film exhibitors, many of whom have been hard hit in the transitional period of wide-screen movies, is elated that this important exhibitor aid was developed at MGM. Officials see in it great new possibilities for the theatre owner. Not every movie house can equip for CinemaScope; but all can now show pictures in any one of the newer wide-screen formats, thanks to the Variscope lens attachment.

For the industry, and particularly its cameramen, the advent of the Variscope holds much promise. It means the producer of non-anamorphic type movies will be better able to compete with CinemaScope productions. The result may well be an early resurgence of wide-screen and 3-D film production, now somewhat curtailed, with consequent increasing assignments for cinematographers. Many of these men, incidentally, see in the Variscope a remarkable new projection tool that gives new scope and luster to their camera work.

PAN CINOR LENS

(Continued from Page 491)

eraman in a recent issue of the *Bolex Reporter*. Said Pennington: "One of the major problems confronting the small producer of motion picture films is his lack of facilities for camera movements. Panning the camera can be done with most any reasonably good tripod, but a dolly shot becomes extremely difficult except under the most exacting conditions. Dolly shots in the field can just about be written off as impossible, and even in the small studio many 'takes' must usually be made to get the desired smoothness in a dolly shot.

"The Pan Cinor lens completely solves this entire problem. The zoom action is smooth, either fast or slow. We find in practice the pictures made with the Pan Cinor are consistently as sharp as those filmed with the best available fixed focal-length lenses. Also the pictures are uniform in exposure and sharp over the entire area of the screen—all the way out to the corners and at any distance.

"Another problem often encountered in the field is to find a position for the camera exactly where you want it. A

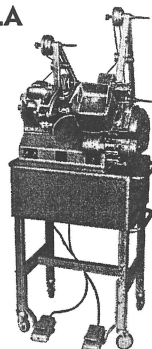
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river, street, fence, runway, or people may be in the way. With the Pan Cinor the camera can be placed almost any reasonable distance from the subject so long as it is the angle wanted, and the focal length of the lens changed to take the exact picture wanted. You don't have to zoom the lens in every case.

"At first the Pan Cinor lens seemed tremendous but we soon found out it is not heavy or awkward in any way, nor does it require any unusual care. We are using this lens almost exclusively for our work in 16mm television, industrial and promotion films, both black-and-white and color. The only difficulty we have found is resisting the temptation to zoom every shot."

It should be pointed out that the use of filters, polarizing screens and diffusion discs is the same with the Pan Cinor as with ordinary lenses. Series VIII filters may be used, and two close-up lenses are available—one for distances between 60 and 30 inches, and another having a focal length of .75mm for distances between 30 and 20 inches.

SIMPLIFIED SINGLE-FILM  
SYSTEM FOR 3-D

(Continued from Page 485)

for permanent in-the-booth installation and the other for mounting outside the booth in front of the projector port-hole, as shown in Fig. 1. In use, the regular projector lens is eliminated and the projection lens of the Nord equipment is used. In projection, the film images are rotated 90°. Width and position of the sound track remains the same as for conventional or 2-D films.

The natural conclusion is to assume that by putting two images on a single frame of 35mm film, the images are reduced to just 1/2 that of a standard 2-D film frame. Roy Clapp explains why this isn't so:

"First we utilize the full silent picture frame area, minus the sound track area. By printing the images in the 1.75 to 1 wide-screen format, they fit perfectly into a single frame, as shown in Fig. 2, and the picture area used is just 7/8ths that of 1.75 to 1 pictures now printed in the conventional manner."

Acceptance of the Nord System must begin with the film producers themselves. Once the studios agree to print their 3-D features for Nord projection, it follows that an increasing number of theatres throughout the country will equip to show 3-D pictures by this method. The initial cost of equipment, said to be quite reasonable, will readily be recouped by consequent savings in booth operation, say Nord engineers.

Last month, Columbia Pictures Corporation became the first studio to com-

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plete arrangements to utilize the Nord System of single-strip 3-D film printing and projection. Following a series of meetings and demonstrations between Columbia Studio executives and Nord company representatives, the studio agreed to make immediately available to any exhibitor who so requests it prints in the Nord System of any of the

studio's films which have been made to date, or which are to be made in 3-D. Roy Clapp, who invented the Nord System, has been an expert on stereoptics for 25 years. He holds numerous patents, and has applied for patents on his new process. Associates with him are Harry Rathner of Minneapolis, and Nathan Supak, also of Minneapolis.