Use And Abuse Of The Zoom Lens

When the script specifies a dolly shot, a zoom lens often can serve the purpose and thereby cut production costs.

By JOSEPH V. MASCELLI

ZOOM LENSES are seeing increasing use in the hands of TV newsreel cameramen, 16mm cinematographers, and not a few amateur movie makers. However, many professional cameramen in the fields of industrial, educational, and documentary film production remain "anti-zoom" in attitude and insist on making a dolly shot when a zoom lens would serve the purpose and save time and money for the producer. The faults of the first zoom lenses—poor resolution, spherical abberations, light loss and a general lack of overall sharpness throughout the zooming range—prejudiced many of these cameramen following the initial tests, and they naturally think of any zoom lens in the light of earlier experiences.

The zoom lens of today—whether Zoomar or Pan-Cinor—is a greatly improved instrument. Placed on a camera turret along with standard lenses it can be used interchangeably without detection in the screened result. It will match regular lenses in sharpness and color quality and will intercut perfectly. The latest Pan-Cinor is available with a reflex finder that permits viewing through the lens while filming, thus eliminating the parallax problem. Use of any zoom on a mirror-reflex camera, such as the Arriflex or Camerette, eliminates both parallax and focusing problems, since these cameras permit the image to be focused and viewed at all times through the reflex finder.

Admittedly, the zoom lens will never replace the camera dolly. Only the dolly shot gives the impression that the camera is actually going somewhere. Only when the camera moves do people and objects move past each other. This absence of space parallax in zoom shots destroys the illusion of movement, since the camera shoots from a fixed viewpoint. Thus a zoom lens can be used to photograph flat copy with the same results achieved in a dolly shot—but it can not duplicate the three-dimensional effect of a dolly shot.

In the extreme, the zoom lens gives the impression of an optical effect since it appears to magnify or reduce the size of objects. At its best it can closely imitate a moving camera. Clever use of the zoom lens therefore can cancel its inherent faults and multiply its assets. Its value to the small producer is incalculable because it offers the speedy solution to modern filming problems where the script demands camera movement, despite a small budget that limits use of dollies, track, extra personnel and the time consumed in setting up and in rehearsing both actors and crew. This is particularly important on location where it is often impossible to transport a dolly, lay track over uneven ground and accomplish filming without seriously delaying production.

The least effective zoom shots are made when the camera is filming a scene from a distance (particularly from a high angle) with nothing in between the camera and the action. Rather than the illusion of traveling through space, the audience receives the impression that the scene is being magnified and brought closer. It is as if the cameraman suddenly switched to a telephoto.

Nevertheless, a zoom lens imaginatively used on scenes of this kind can benefit from the peculiar attributes of the zoom device. The necessary illusion of space parallax can be implied by carefully placing people or objects at various distances in the scene so that, as the zoom progresses, they appear to move past one another and slide into or out of the scene. In such instances, shooting "straight on" should be avoided. Shooting from a three-quarter angle will increase the three-dimensional effect. Also, excellent use can be made of framing devices, such as doorways, arches, iron grilles, overhanging tree branches, etc., by having them come into the picture and surround the view as the zoom picture's borders widen. In this way there is created the illusion of the camera actually moving back during the shot to reveal the framing device.

Zooming action must be slow and smooth to approximate the movement of a good dolly shot. A roughly-executed zoom, particularly one that starts with a jerk and then chatters hesitantly, is the poorest of techniques. In order to emulate a dolly or tracking shot in zooming you must imitate the action of the moving camera. In professional practice a dolly starts up slowly, moves smoothly and steadily and then decelerates to a stop. The speed is varied, of course, according to the action being filmed. In the same way zooming should start slowly, then swing into a precise and definite speed to match the action, then glide to a stop. Don't bang the end of the zoom lever into its final position abruptly. Visualize how the shot would appear if it were being filmed from a dolly and imitate the action with the zoom lens.

The secret in zooming is: slow and smooth, with an almost imperceptible combination of panning and tilting to keep the action perfectly composed throughout the shot. Use of the new fluid heads, particularly on a transverse pan and tilt, will greatly aid in achieving professional smoothness. The fluid head can be started without a jerk because there is no inertia to overcome and it can be panned and tilted without chattering. With a little practice an accomplished cameraman can coordinate the zooming action and the fluid head movement with a smoothness that captures a flowing scene rivaling the best in dolly shots.

The possessor of a zoom lens, particularly if recently acquired, will tend to use it on every possible shot to the exclusion of other lenses. This is tantamount to making every scene a dolly shot! Restraint therefore must be employed so that zooming is utilized only when the action calls for camera movement. Use of the zoom lens is simply a means to an end, not an end in itself. The zoom effect must be justified. It is logical only when it enhances the action and aids in dramatically telling the story.

Another common fault in using this lens is to zoom both ways. Only when the script calls for dollying in and out should one zoom back and forth. In some instances, such as in single-system newsreel filming where it is impossible to cut the camera because of the sound track, the only way to get back to the long shot is to return the zoom to its original position. This is poor photographic technique and should be avoided whenever possible. Constant readjustment of the zooming lever for slight correction should also be avoided since it gives a jerky appearance to the scene. Once you have made the zoom, leave it alone and continue filming without minor adjustments.

It is not always necessary to employ the entire zooming range—often a slight zoom, like a short dolly movement, is all that is needed. Don't be a show-off. Use the lens with discretion; consider it another tool to aid in the story telling. Remember, when the zoom lens steals the scene by detracting from the story it should be discarded.

The zoom lens can even be utilized to simulate a tracking shot in which the actors appear to walk along with the camera tracking directly in front of them at a fixed distance. This calls for a good assistant on the follow-focus, one who can change focus as the actors approach, while the cameraman operates the zoom lever. A shot of this type is begun with the zoom lens in telephoto position, with the actors about 35 or 40 feet distant, as for a medium two-shot.

As the actors walk slowly toward the camera the assistant changes focus while the cameraman swings the zoom lever to maintain constant image size. The actors will be able to walk up to within ten feet of the camera before reaching the end of the zoom. This type of scene is best filmed against a plain sky, wall or backdrop, since the spacial relationship between the actors and the background will appear to be constantly shifting as the zoom progresses. The background will appear to be close to them in the beginning (as in a telephoto shot) and, of course, appear to be greatly separated at the end of the zoom (as in a wide-angle shot). However, this strange background behavior will go unnoticed if the action in the scene is sufficiently interesting. Here the zoom lens is a wonderfully simple, effective and inexpensive way to fake a tracking shot.

The versatility of the zoom lens can be extended when combined with follow-focus filming. Here the same focusing rules apply to the zoom lens as to the standard lenses on the camera; however, depth of field will vary during the follow-focus shot since the zoom lens will function both as a tele-

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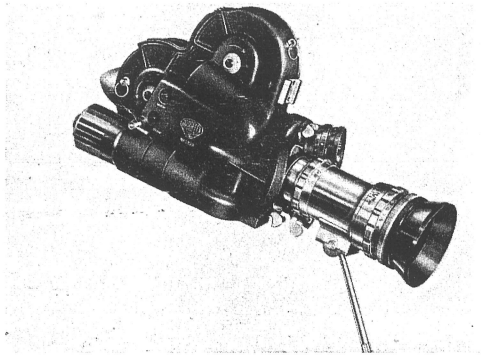
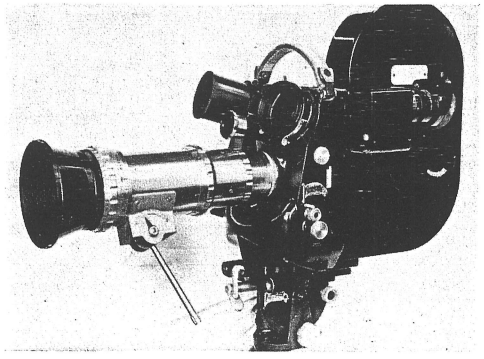
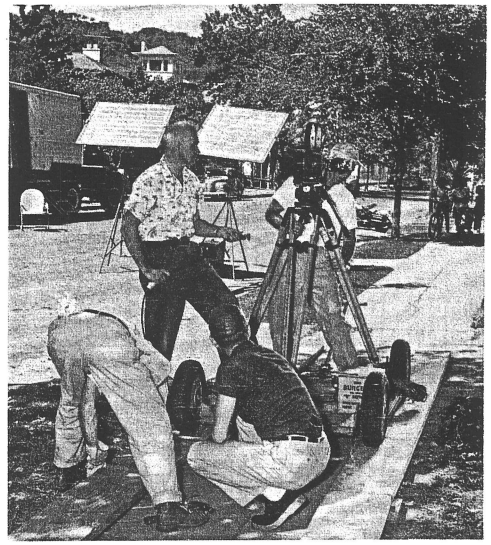


ARRIFLEX-16 equipped with Pan-Cinor zoom lens.



NEW 35MM Pan-Cinor zoom lens mounted on the Camerette.

THE ZOOM LENS, when combined with follow-focus, can be utilized to simulate a tracking shot for scenes such as this.



WHILE THE ZOOM lens is not a substitute for the dolly, it nevertheless can be utilized by the industrial film producer to simulate many of the photographic effects normally accomplished with the dolly-mounted camera—and with marked savings in production time.

best one currently in use and is patented.

To circumvent the patent two other methods are being tried, both employing the split-beam camera. One is using a black velvet backing dyed to reflect infrared and lighted with standard incandescent lamps. The foreground is recorded through the prism, and the matte of the darks is taken from the mirror reflection on infrared sensitive film through a red filter. At present, the matte is completed by adding the highlights from the foreground negative, as is done in the blue backing process. It is quite possible that in the near future a means of removing all the infrared light from the foreground will be perfected; if so, this system will be comparable to the U.V. process.

The second method, which seems to offer a practical solution to the problem, has been in the experimental stage in England for some time. In this method sodium lights are substituted for the U.V. tubes of the Warner Brothers' process and a Didymium filter is put in the prism mirror. This filter removes the sodium light from the foreground record, resulting in a black background. The matte is recorded from the mirror reflection through a yellow filter on panchromatic film. The main deterrent in this process is that the Didymium filters available at present distort the color recording more than is desirable.

Mr. Peter Vlahos, of the Motion Picture Research Council, informs me that, as of now, one of the filter manufacturers is making a dichroic type filter which will screen out the sodium line on the foreground film and reflect it to the matte film without distorting the foreground color rendition. Since the sodium lamps emit only a single line, namely 589.6 mu, very near the center of the visual band, the problem of chromatically correcting the matte image size, which is evident in both the U.V. and infrared systems is eliminated. This fact would seem to indicate that when the filter problem is solved the sodium lamp process will be put to wide use.—L. B. Abbott.

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photo and a wide-angle. Best results follow where focusing is done with the zoom lens in the telephoto position, where the least depth of field prevails, thus insuring sharp focus at all intermediate points during the zoom.

While follow-focus filming keeps the action sharp as the actors move about the set, great care must be exercised that the zoom does not neutralize movement in the scene by cancelling it. The zoom should not be made in the opposite direction to the action, otherwise the actor will appear to walk toward the camera and at the same time grow smaller because the lens is zoomed to the wide-angle position. The alternative is to zoom to hold the actor constant in size—the same as when tracking with him as he walks—or to zoom cross-screen action.

For example, it would be possible to film action such as described below with the zoom lens set at wide angle at the start: the actor enters the room, walks forward, pauses to look around—at which point the lens is zoomed half way to a medium closeup. The camera then follows the actor from right to left in panning action and zooming is resumed to hold him constant size as he turns and walks toward the rear.

While the zoom lens was never intended as a substitute for the dolly, nevertheless, when used intelligently, it can solve many of the small film producer's photographic problems. It permits big studio results where limitations of low budgets, location shooting, and limited camera crew prevail. Finally, the lens can lend substantial production value to any picture without the need for additional personnel, time and expense when complicated moving camera shots are specified in the script.