BEHIND THE CAMERA —

DAVID SAMUELSON'S TECHNICAL PAGE

FRONT PROJECTION LIMITATIONS

A few years ago Petro Vlahos, then of the Motion Picture and Research Centre, published a paper in the SMPTE Journal (September '71) outlining the possibilities and limitations of front projection process cinematography.

Among the many interesting details was a table showing the minimum distance that any object might be from the camera, bearing in mind the screen distance, the lens focal length and lens aperture, for what he called a 0.0002 inch Half-Gradiant Halo.

Unfortunately, in my book on Motion Picture Techniques there is, amongst the pages dealing with Front Projection (page 114), a ghastly misprint which I didn't pick up at the proof stage and which makes a nonsense of it all.

So, for those planning front projection set-ups who want to know the limitations of the system — and who have an electronic calculator which has a memory — this is the programme: (note, all measurements must be in the same units, in this case inches; but I have divided by 12 at the end to give the answer in feet) 0.008, X, lens stop, X, screen distance (in inches), M+, C, lens focal length (in inches), X, =, M+, C, lens focal length (in inches), X, =, X, screen distance (in inches), ÷, RM, ÷, 12, =. Where M+ = add to memory, C = clear, RM = recall memory.

Don't forget to make certain that the calculator AND THE MEMORY are completely clear before you start. Sometimes you have to press both buttons TWICE to do so.

When I was preparing my TECHNIQUES book I asked Bill Pollard, who designed the Kelly and Samcine Depth of Field Calculators if he could work out for me the formula by which this Half-Gradiant Halo limitation was derived so that I might include in my book (page 115) a table applicable to day-to-day use.

He came back with the simple conclusion that the figures given are exactly the same as the 'NEAR FOCUS' distance of a depth of calculation assuming the screen distance to be the point of focus and a circle of confusion of 1/250 (0.008) in. or 0.02mm viz:

$$\text{Min. object distance} = \frac{f^2\ Us}{f^2 + 0.0008S\ Us}$$

where f = focal length, Us = screen distance, S = lens stop. Example: a camera with a 2.95in. (75mm) lens at f5.6 is set 720in. (60ft.) in front of a projection screen.

$$\text{Min. object distance} = \frac{2.95\text{x}2.95\text{x}720}{2.95\text{x}2.95\text{+(}0.0008\text{x}5.6\text{x}720} = 43.77\text{ ft.}$$

One of the things that I have done in my books is to assume that most people these days have an electronic calculator available to them and that therefore there is no reason why people shouldn't make their *own* calculations for a wide variety of applications, provided they are given the correct order of pressing the buttons. A knowledge of mathematics is unnecessary; it is just a matter of pressing the buttons in the correct order.

If anyone would like to see the full article in the SMPTE Journal which covers both the theory of front projection and some useful information on lining up procedures, brightness and colour matching and limitations, please give me a ring and I will send you a copy.

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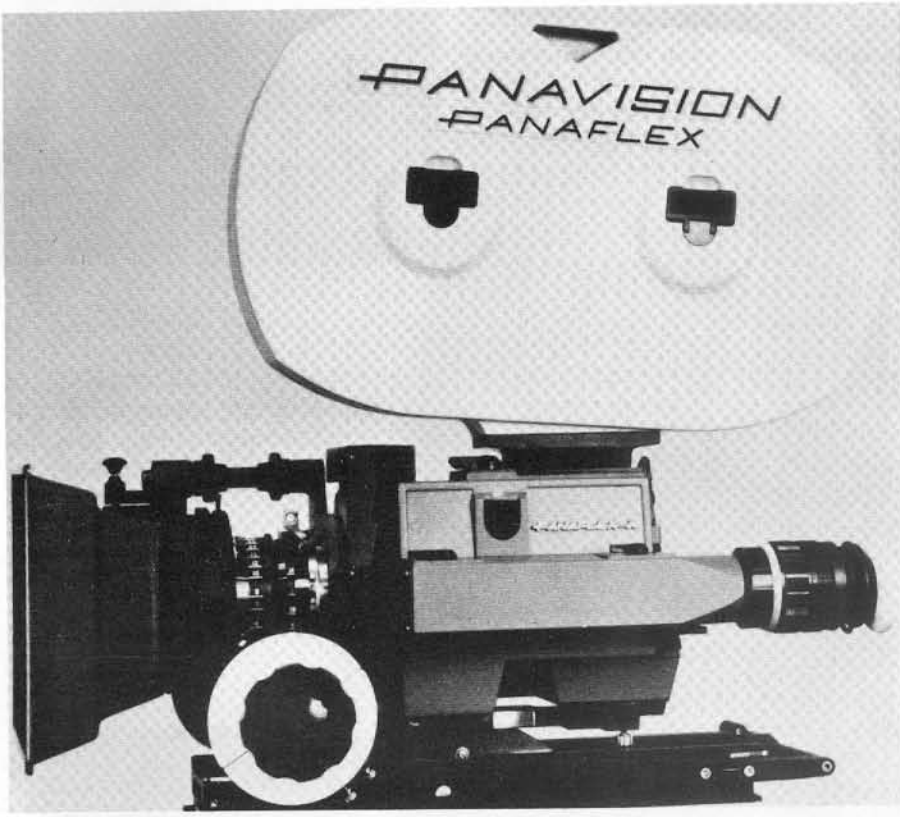
The PANAFLEX 'X'

An Appraisal

by JERRY DUNKLEY



The Panaflex 'X'

Panavision have built their reputation on designing camera equipment with the technician in mind. The finest example of this approach must be the standard Panaflex. Its versatility and ease of operation have been universally acknowledged. The ability to use it on a geared or fluid head, or hand-held, has made it possible to use one camera where previously several were needed.

Apart from the rapid lens change and dual magazine mounting positions, the one feature which, more than any other, makes this camera so useful is the viewfinder design. On a tripod with the short eyepiece the Operator's head takes up no more room than the camera, saving valuable inches in confined spaces. He can crouch with the eyepiece turned up and the lens resting virtually on the ground. With the long eyepiece erected, he can move the camera freely at heights which would previously have left him lying prone behind a static camera.

The zoom image magnifiers have made checking critical focus quicker and more positive. When mounted on a Panahead the eyepiece steady stay has made extreme or rapid tilting a much more controlled exercise. All the facilities that this viewing system offer have made the normal Panaflex a more useful and less tiring tool to use.

Now from the makers of this fine camera comes a new one, which at first glance looks like a Panaflex except that it doesn't incorporate any of the previously described finder systems. Instead it has just a fixed tube as used by Mitchell. No magnifiers, not handholdable, it does give a slightly brighter image but at the expense of a fully rotatable finder with an ever upright image . On the occasions when it is necessary to shoot at very low light levels the ingenious Panaglow on the standard Panaflex is a great aid to accurate framing.

It would seem that the only member of the camera crew who benefits is the Director of Photography. He has a brighter look-through to judge his lighting by. Yet he is still the loser because the set-ups available to him are now only the same as with any old fashioned camera.

From their promotion of this camera Panavision suggest it as a second unit or back up camera. But it is often the second camera that has to work in cramped places like cars or planes or gutters where the Panaflex 'X' viewing system shows up worst. The ability to work comfortably at virtually any height or angle increases concentration and undoubtedly produces finer work.

The Panavision system as a whole makes a big contribution towards this: the Panaflex 'X' a lesser one.

Jerry Dunkley
March 1979

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Yet another reason for being a Guild member is currently being offered here. SAMCINE CASES LTD have been successfully producing solidly crafted, attractive metal cases for a variety of film purposes (and acquiring an enviable reputation in the process) for the past ten years. They have agreed to offer a 10% Discount on all their products to each GBCT member. Opportunities are listed below.

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