# CAMERA FLARE JB Harlin

Anyone that has been involved seriously with photography understands the problem of flare. Most of the time flare is a very undesirable and annoying problem that ruins a great photograph. Sometimes flare is used as an artistic addition, but mostly it is just an annoyance. A lot has been written about lens flare and how to avoid it. But there is another kind of flare that plagues the LF and ULF photographer that is just as destructive and annoying.

Do you sometimes notice your negatives have more exposure along the edges? Is there uneven exposure which is especially noticeable along the edge of your negatives in a continuous tone area like the sky? Is this unevenness something that comes and goes? You may notice that the problem is more prevalent with some lenses. It may appear worse when photographing in bright sunlight. The problem can be a gradual edge fog or it can be a very distinct line. If you experience this frustrating problem, you could be seeing another kind of flare.

The problem tends to worsen as you move to larger formats. My wife had this problem when she first started using her new 8x20 camera. Dark lines along the edge of the film ruined several negatives. It took some time, effort and experimentation to track down the cause of the problem, but once the source was discovered and understood, the fix was not so complicated. Let's take a look at what is going on.

# LENS FLARE

Lens flare is an undesirable effect that occurs when non-image forming light strikes the lens and is reflected onto the film. The effect is usually a characteristic geometric shape whose sides depend on the shape of the lens aperture. Lens flare can lower the overall contrast of the photograph and is, in most instances, an undesirable consequence of the sun, or other light source, striking the front surface of the lens. Lens flare can take numerous forms, but usually includes one or several combined geometric shapes, light streaks, or overall fogging of the film resulting in lowered contrast.

Anyone familiar with lens flare will tell you the way to avoid it is to keep the sun or any other point source of light from striking the front element of the lens. But lens flare is not the issue here.

## INTERNAL FLARE

Lens flare is not the only type of image degrading flare that is of concern to LF and ULF photographers. There is another flare that is especially detrimental to large format

photographers. Internal flare, or Camera Flare, is a real and sometimes hard to diagnose problem that can arise when using a view camera. It is compounded when lenses with very large image circles are used.



#### Figure 1

This is a portion of an 8x20 contact print from a test negative that displays strange fogging at the edge. Notice how there is a distinct line of extra exposure along the side and top of the image.

Camera Flare is simply unwanted light reflecting around inside the camera. No matter how well treated with non-reflective material, the interior of the camera will always contain some stray light that is not absorbed. This stray light reflects off the interior surfaces inside the camera. If the light entering the camera is bright enough, this reflected light can be of sufficient intensity to fog the film.

The problem is made worse by the fact that most LF lenses have very large image circles. If you are using one of the banquet formats the problem can be even worse. As mentioned earlier, it was when my wife began using an 8x20 camera that Camera Flare became a major problem.

As an example, consider this. In order for the lens to cover an 8x20 sheet of film, it needs to have an image circle that is 21.5 inches (the diagonal dimension of 8x20) or larger. Let's say we are using a lens with an image circle of 25 inches. Along the long side of the film, the image circle goes less than 2 inches beyond each end of the film... but. . . along the short side of the film, over 8 inches above and below the film is

illuminated. Inside the 8x20 camera this extra illumination above and below the film reflects around inside the camera. This extra light is a major source of Camera Flare.



Figure 2

In the illustration above, the white circle represents the image circle of the lens projected on the camera back. In this example, drawn to scale, the circle is 25 inches. The shaded rectangle represents a sheet of 8x20 film. Note the large area of illumination above and below the film that is not necessary for forming an image on the film.

Camera Flare is especially troublesome for landscape photographers. Because landscapes are often made in bright light, the problem of Camera Flare is always a concern. If you have ever had a negative that displays uneven fringing around the edges of the frame, especially noticeable in the sky area or any even tone area running along the edge of the frame, you are seeing Camera Flare. Now let's be specific about this problem.

Please note that the above statement is true if the camera is known to be light-tight. Camera Flare is only a valid source of strange fogging of the film if you are certain there are no light leaks in the camera. First you must be sure the bellows is light tight and that the camera back properly fits the film holder. There is also a possibility of light leaking around the lens board or the camera back. If you have checked the camera thoroughly for leaks and you are certain, without a doubt, the camera is light tight, and you still see strange fogging at the film edges, you can be pretty sure the fog is caused by internal Camera Flare.

## CAMERA FLARE CAUSED BY THE BACK

Camera Flare can be caused by the design of the camera back. Some wooden camera backs, due to their design, are especially susceptible to internal flare. Any internal

structures forming the camera back that sit physically in front of the film holder can be considered suspect. Any object in the light path from the lens to the film plane can reflect unwanted light onto the film. Any surface in the camera back, especially along the edges of the film area, that form a 90 degree angle to the film surface, could reflect unwanted light onto the film.



#### Figure 3

Look closely at this inside view of a 4x5 camera back. Note how the inner structure of the back that forms the parameter of the film area is beveled. This bevel reflects stray light away from the film and reduces Camera Flare.

Beveling all surfaces around the parameter of the film plane will drastically reduce the amount of stray light reflected onto the film during exposure. . . especially along the edges of the film. A router with a beveling bit can be used to easily knock off any sharp angles in the camera back. This relatively simple modification greatly reduced the edge flare in my wife's 8x20 camera. I also took the time to check every other camera we use to be sure the inside of the back is properly beveled.

## **CAMERA FLARE CAUSED BY THE BELLOWS**

The bellows is another surface that can reflect light inside the camera and cause Camera Flare. Though not as destructive as the distinct lines of fog along the edges of the film caused by the camera back not being beveled, bellows flare can also degrade the image. Because the bellows is made up of many surfaces randomly arranged at many angles, the light reflected can be less concentrated on any one portion of the film. Thus any fog from the bellows tends to be more generalized. Also the bellows is farther from the film which also helps to lessen any fogging.

Always keep the bellows centered as much as possible and do not allow it to sag. Always use the bellows support tabs. When the bellows is extended when using a long lens, it is a good idea to put something under it to help keep it from sagging into the light path.

## THE FILM HOLDER

One other source of unwanted edge density, though not directly caused by the camera nor Camera Flare itself, could be the film holder. This is especially true when using wooden holders. The interior of the holder, on all four sides of the film, should be blackened. Some wooden holders are bare, light-colored, wood on the inside. These areas around the parameter of the holder should be blackened to help reduce edge flare.

## THE LENS SHADE

A lens shade or compendium bellows mounted to the front of the lens can be your best defense against general Camera Flare. Refer back to the example above using the 8x20 camera. By attaching a panoramic bellows shade to the lens, it is possible to vignette the extra, unneeded, lens coverage at the top and bottom of the film and keep that extra light from entering the camera. Less light inside the camera means less Camera Flare reaching the film.



### Figure 4

Again, using a graphic representation of a lens with a 25 inch image circle and 8x20 film, by using a properly adjusted lens shade, extraneous light is stopped before it enters the camera. The image circle of the lens is reshaped to more closely match the film dimensions.

The typical round rubber lens hood may be good in helping eliminate lens flare, but will not help much when Camera Flare is diagnosed as the problem. What is needed is an adjustable bellows-type shade of similar proportion to the film size you are using. The idea is to reshape the image circle of the lens to more closely match the film proportions.

The use of a lens shade with most any size view camera is a good practice. All cameras have some amount of internal flare. Depending on the lens and the lighting conditions, the use of a lens shade can improve the overall quality of your negatives. When using a lens shade be very vigilant and don't let the shade protrude into your image area. Check and recheck as you set up and focus the camera. Be sure to check again once you have all movements adjusted and the lens stopped down. By carefully adjusting the lens shade you can eliminate, or at least minimize, Camera Flare to a level that is manageable. And, don't forget that it will also help prevent lens flare.



**Figure 5** A good adjustable lens shade is your best defense against Camera Flare. For the banquet formats, you should use a panoramic shade that closely approximates the proportions of the film you are using.

Solving any problem is just a matter of understanding the mechanism at work, then devising a suitable solution. For us, a few minor changes has eliminated the uneven exposure along the film edge caused by Camera Flare. If you see the signs of Camera Flare on your film, you should take a close look at the camera design and consider a lens shade. Camera flare can never be completely eliminated, but it can be reduced significantly.

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