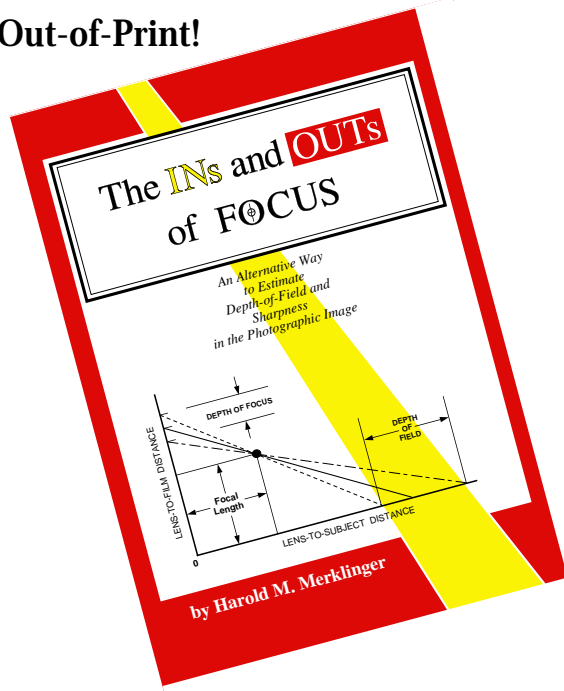


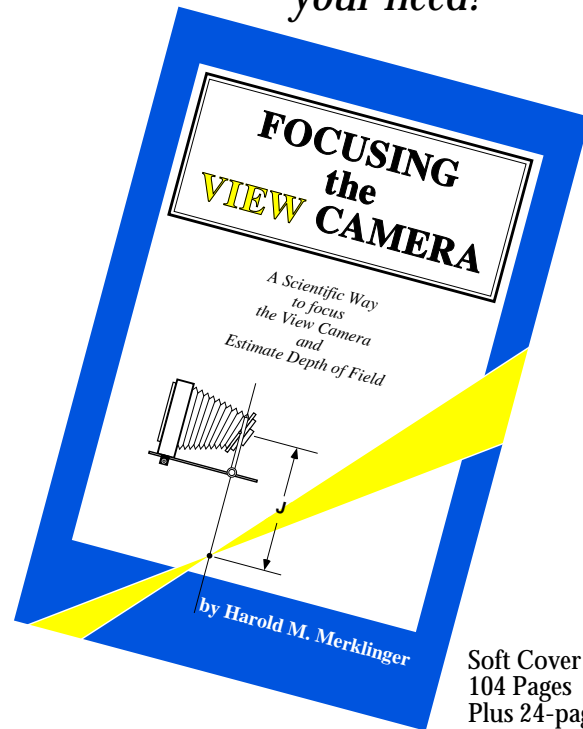
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The **INs** and **OUTs**  
of **FOCUS**

ISBN 0-9695025-0-8

Dear Fellow Photographer,

I wrote *The INs and OUTs of Focus* because I used to be frustrated by depth-of-field results I did not understand. After thinking about the problem in some detail, I developed a new way to analyse the problem. Instead of going by some arbitrary image resolution criterion like the ubiquitous 1/30 millimeter diameter for the circle-of-confusion used in 35 mm photography, I asked what size objects in front of my camera will be recorded in the final image. It's just a matter of turning the optics of the situation around: instead of dealing with the circle-of-confusion at the image, we work with the *disk-of-confusion* at the object.

How big does something have to be in order to be registered in the image? When the arithmetic is through, the answers one gets are sometimes surprising. For example, the old way tells me I need to use f/56 if I want everything sharp from 3 ft to infinity with a 50 mm lens on a 35mm camera. And to achieve this, I focus at 6 ft. The new way says to set the lens aperture equal in size to the smallest object to be recorded, and focus at infinity. I typically want to see the pupil in people's eyes: perhaps 5 millimeters diameter. So set that 50 mm lens to f/10. When the problem is worked through, taking into account diffraction and all that, we find the f/10 lens, focused at infinity, gives better definition of people at almost all distances.

Along the way I discovered other things. I learned more about the traditional depth-of-field scale, the focusing scale, soft-focus effects, how to *ensure* an object will be *out* of focus and so on. Some things, like picket fences or striped patterns don't seem to go out of focus at all. I can explain that too.

The **INs** and **OUTs** of **FOCUS**

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I can also now explain why f/8 or f/11 always seems to give me the best results with 35 mm cameras, but f/22 is necessary for medium format cameras.

This book does make use of simple geometry and algebra: you learned it all in high school. Interestingly enough, the worst math is associated with the usual, or traditional, depth-of-field

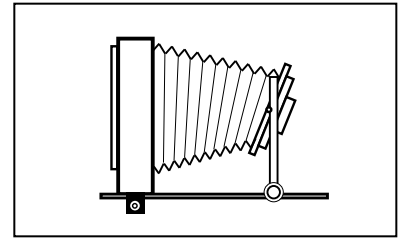
calculations. The math for the new way is actually simpler! (Skip chapter 3, about the old way, if you don't like math.)

How are depth-of-field and depth-of-focus related? It's right on the front cover of the book. That simple diagram also gives you a graphical solution of the classic lens equation:  $1/u + 1/v = 1/f$ .

# FOCUSING the VIEW CAMERA

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**ISBN 0-9695025-2-4**

Then I wrote *Focusing the View Camera* because I couldn't find any books that stated clearly how depth of field worked for cameras with tilted lenses. The little information I could find on the subject was often contradictory. Raymond Clark, President of ImageQuest Corporation, encouraged me to do the analysis and resolve the issues.

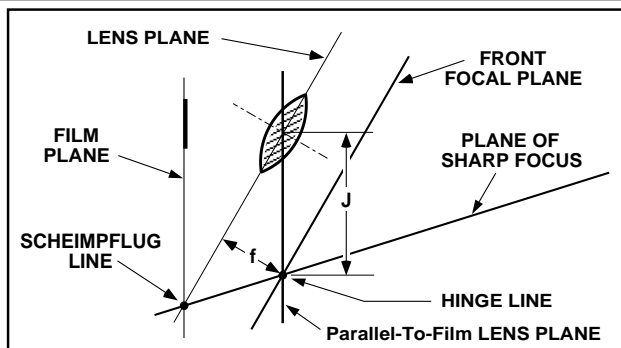
Most serious view camera photographers will be familiar with the Scheimpflug principle. This rule states that the lens plane, the film plane and the plane of sharp focus must all intersect along one line in space. What I discovered is that there are really two such rules. In addition to the one just stated, there's another saying precisely the same thing about the front focal plane, the parallel-to-film lens plane and the plane of sharp focus. Together, these two rules solve the lens equation unambiguously under all circumstances.

The second rule—all on its own—makes setting up a view camera quite easy. With the help of a simple table, we can set the required amount of lens tilt even before the camera is mounted on the tripod! It sure speeds up my work!

The book also contains tables of view camera depth of field, for apertures from  $f/2.8$  to  $f/90$ . And if you don't like to use tables, there's a really simple graphical method as well.

You'll be surprised by just how easy it can be to focus a view camera and estimate depth of field, even, with a tilted lens or tilted camera back.

—Harold.



### About the Author

The author, Dr. Harold M. Merklinger of Dartmouth, Nova Scotia, Canada has been a photographer for over 40 years. He considered becoming a professional photographer, but instead undertook a career in science. His main interests have been in acoustics, and he is a Fellow of The Acoustical Society of America. Today he manages scientific research and development in a variety of areas. Sound, radio, radar etc. share many similarities with optics, and thus his experience as a scientist in these areas has complemented his interest in photography.

### Where to get these Books

Either book (or both books!) may be ordered directly from the author using the coupon below.

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