

Fig. 1, page 3, represents a 10 inch lens, at a distance of 20 inches from an object, F. The lens is supposed to be divided into two equal parts, of 20 inch focus each: the first half renders the diverging pencil parallel, and the second half converges the parallel pencil to a focus, at 20 inches from the lens; $\frac{1}{10} - \frac{1}{20} = \frac{1}{20}$.

(Dr. Giraud-Teulon, of Paris, has ascribed the origination of the above theory to Mr. J. Z. Laurence, of London, to whom we are very much indebted, for his praiseworthy efforts to popularize this, hitherto neglected, field of Physiological and Pathological Optics.)

Let me next direct your attention to certain optical considerations, which have a most important application, in the treatment of optical defects of the eye.

You may remember that in a former experiment, a 10 inch lens was held ten inches from a white wall, so as to show the miniature inverted picture of the window, &c., 20 ft. distant; and that when the lens was brought to a distance of 60 inches from the window, it was found that the image of the window was formed 12 inches behind the lens, instead of 10 inches, and that at 10 inches, the image was so indistinct as to be scarcely recognizable.

Now suppose that a 12 inch lens be immovably fixed 12 inches from the same wall, it will then be in a proper position to bring parallel rays to a focus on the wall, where it will form an inverted picture of the window, and objects at a distance beyond the window.

If we now bring the flame of a lamp, for instance, to a distance of 60 inches from the lens, no distinctly defined image of the flame will appear upon the wall; but if, by any means, we can render the pencil parallel that diverges from the flame, the 12 inch lens will then converge it accurately to a focus upon the wall, where we will have an inverted image of the flame.

From the knowledge that we have now obtained, we know that a 60 inch lens placed in front of the 12 inch lens will render these rays parallel. All that we have to do then is to combine a 60 inch lens with the 12 inch lens: the 60 inch lens to render the rays parallel that diverge from the flame, 60 inches distant, and the 12 inch lens to converge these rays to a focus, at the principal focal length of the lens. This is exactly what we do in supplying old people with convex spectacles. Their eyes are constructed to bring parallel rays to a focus, on the retina; but the rays from near objects are too divergent to be focussed upon the retina without artificial aid; this deficiency is what we supply with suitable glasses.