been wearing glasses of 10 inch focus, or as they are sometimes called No. 10 convex, or simply + 10 (plus 10).

The method, however, that is usually adopted, depends upon a property of convex lenses that will be more fully explained further on.

If, for instance, you hold up a 10 inch convex lens at a distance of 10 inches from a white wall—the wall being about 20 feet from an open window, opposite—there will appear, behind the lens, upon the wall, an inverted, miniature picture of the window, and trees or buildings, &c., in front of the window. If the lens be held at a greater or less distance from the wall than the focal length of the lens, the inverted picture will be·indistinct. Measuring the distance therefore that the lens must be held from the wall, to produce the sharpest picture, will give the focal length of the lens.

Suppose, now, that we bring the lens to within, say 5 feet of the window, and hold a sheet of white paper at the principal focal distance behind the lens, viz., at ten inches, we will find a change in the inverted picture, there will still appear distant buildings, trees, &c. but the sash of the window will be very indistinct. If, however, we move the sheet of paper 12 inches from the lens—that is, two inches farther from the lens, we will again see the image of the sash but scarcely any trace of the buildings, trees, &c. This experiment is an illustration of the fact that the nearer an object approaches the front of a convex lens, the farther will be its image behind the lens; thus, when an object is 5 feet or rather 60 inches from the front of a 10 inch convex lens, the inverted image is found to be 12 inches behind the lens; when 30 inches, it will be 15 in.; when 20, that is, double the length of the focus, the image will be double the length of the focus behind the lens; viz., 20 inches; when 15 inches, the image behind the lens will be removed to 30 inches. As the object approaches the principal focal distance of the lens the image recedes much more rapidly; thus, when at 12 inches, the image will be 60 inches; when at 11, the image will be 110 inches behind the lens. When however we bring the object to within 10 inches of the lens—that is, at its principal focus, there will be no image formed behind the lens, as the rays after passing the lens will be parallel.

(I would strongly urge you, gentlemen, to perform all these experiments for yourselves, as in that way only can you become familiar with these important principles. These latter experiments can be performed best in a dark room—taking for an object the flame of a lamp or candle).