

grows, gets harder and less elastic, and the ciliary muscle has a greater struggle than ever, especially in hyperopic eyes, to make the refractory lens sufficiently convex for reading and other similar purposes. When the individual has reached the age of forty, or thereabouts, the lens has become so firm that it cannot be readily made more convex by relaxing the fibres that "hold it down" in front, and as time passes on, and the lens gets still harder, convergence of the rays (so as to make in reading a clear image on the retina) must be accomplished by the use of stronger and stronger convex glasses.

This is the reason why long-sighted persons are obliged to hold their books, papers, etc., farther away from them as they advance in years, and why so many decidedly *hyperopic* individuals who do much near work require glasses (convex glasses, recollect) for comfortable reading, writing, etc.

The converse is true of eyes that are too large, and consequently too long from cornea to retina. These belong to *myopic* or short-sighted people.

In spite of all efforts to relax itself sufficiently, the myopic image is focused by the ciliary muscle in front of the retina; then the rays cross and form a blurred image on the back of the eye. The only thing to do is to get close to the object so that the rays are more divergent, or to wear concave glasses which accomplish the same end.

Here the ciliary muscle has not much to do, and does that little within a narrow range; like Bre'r Fox, it mostly "lies low;" and as a matter of demonstration, the ciliary muscle of the long-sighted eye is developed to twice the size of that of the myopic eye, and is much larger than in the emmetropic eye. Indeed we find in this fact an example of a rule universal in the human organism: an organ constantly used develops in size and strength;

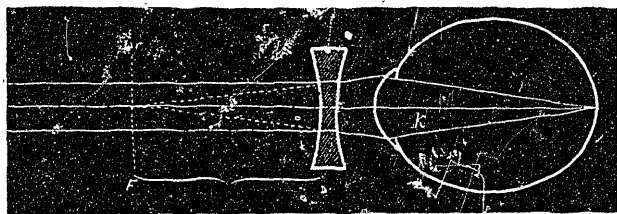


FIG. 8.

Showing how concave glasses act in focusing rays of light on the retina of a short-sighted eye.