

with comfortable heads, but before they are dressed the headache has been started by the necessary toilet preparations, and it increases in severity with the advancing day. Sunrise and all-day headaches they are, with some of these very susceptible persons, whose eyes see differently for the different curvatures of their cornea.

Every object in nature will radiate light from every exposed surface, and the eye catches some of these rays. Where the cornea is regularly curved light from any and all directions is accurately focused on the retina, and while we see everything perfectly, we are not aware that we have eyes, so painlessly do they function. To the abnormally sensitive astigmatic eye, this varied direction of light beams transmitted through, and irregularly refracted by the varied curvatures of the cornea, necessitates nearly a choreic action of the ciliary muscles. From this perpetual changing of focus, now for one part of the cornea and then for another, fatigue of the muscles and pain in the eyes must soon be induced, even to the extent of making sunlight annoying.

This irregular shape of the cornea can be detected if the eye views a drawing similar to a clock dial, traversed by groups of black radiating lines of equal size and distinctness. By a well-formed eye these groups of lines are seen with equal sharpness of outline and of the same degree of blackness. By an astigmatic eye some of these groups of lines are brought out much more boldly than others. While some remain black others of these black lines may appear gray, and at times even red or blue; and instead of standing out boldly in the group they run together as if they were one solid line. The faulty lines are always at right angles to those most clearly seen. With the clock dial card, if the lines running from 12 to 6 o'clock are brightest those from 3 to 9 o'clock will be most blurred. If those from 10 to 4 are the most clearly defined, the blurred lines will be in the direction of 1 to 7 o'clock, and so on for any other series of lines. If a cylinder lens be selected, which will make the dull lines as bright as the clear ones, this peculiar eye-glass, when carefully set at the proper angle, will equalize vision, and will remove the discomfort which the use of the eyes had formerly produced.

The ordinary spectacles, worn by the masses, are called spherical lenses, being sections of a sphere or ball. Such are the glasses worn by near-sighted and by old persons. The peculiar glasses which correct irregularities of corneal refraction are called cylinder lenses, because they represent a slice of glass taken from the length of a round bar or cylinder. The spherical and cylinder glasses bear the same relation to each other as would an open umbrella to a wagon top. The cylinder lens has, as it were, a ridge pole over which the curvatures of the lens are made, while the spherical lens curves in all directions from a central point. In the use of cylinder glasses the ridge pole or plane surface is always set in the

direction corresponding to the clearest lines of the clock dial, and the curved surfaces of the lens are put necessarily in the direction of the blurred or discolored lines of the dial. Such cylinder glasses alone can give rest to the weary muscles in astigmatic eyes, for without them these irregularly curved eyes can not secure rest except during sleep.

A very useful law can be laid down for the guidance of physicians in the treatment of their eye complaining patients, viz., that headaches which come on with the use of the eyes, and which disappear during the rest which a night's sleep brings to the weary eyes, do not usually depend upon gastric, hepatic, cerebral, or uterine troubles, as is so commonly believed.

When school girls from 12 to 18 years of age complain of eyes and head aching, after hours of close application, and are not annoyed in this way during vacations or times of eye rest, inquiry is yet made by the family physician concerning the menstrual functions. Any tardiness in the appearance of this discharge, or any deviation in its amount of frequency from what the physician has established in his own mind as the normal, is deemed too often a sufficient and satisfactory explanation for all the head and eye discomforts. According to their theory when the monthly discharge becomes regular, the head and eye troubles will disappear; but permanent relief does not come as was expected. When young men complain of these identical symptoms of eye pains and headache after hours of study, I sometimes wonder why, from professional habit, their menstrual functions should not be also inquired about, for the same explanation might as truthfully be accepted for them.

In this connection I will also say that these eye-headaches, disappearing after sleep, have their origin neither in malaria nor in a bilious derangement, notwithstanding the fact that these terms are used every day in connection with them by patients and physicians. Neither quinine, calomel, morphine nor pessaries will prevent this kind of eye headache, although building up the system in feeble persons will help the eye muscles and relieve them. The careful adjustment of proper glasses, by correcting the painful muscular effort, alone will cure them. Rest is a very frequent prescription with physicians for such painful eyes. It will quiet temporarily the pain, but what permanent good can it possibly secure? When upon the use of the eyes the head aches, and when painless heads are made painful by reading, with very few exceptions, it is the abnormal curvature of the cornea which causes the eye and head pains. How can rest bring about a correction in these faulty curvatures? Might as well expect rest from walking to make a shortened leg grow to the length of the other, as to expect a shorter curve in one direction of the cornea to grow out in the dimensions of the other longer meridians by resting the eyes from reading or sewing. We can readily see