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THE  
HYGIENE OF THE EYE.

AN ADDRESS TO PHYSICIANS.

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OF PHILADELPHIA.

READ BEFORE THE NORTHERN MEDICAL ASSOCIATION,  
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THE HYGIENE OF THE EYE. AN ADDRESS TO PHYSICIANS.

BY CHARLES A. OLIVER, A.M., M.D.,  
Of Philadelphia.

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We, as physicians, in our endeavors for the well-being of others, are apt to disregard our own demands, and totally neglect ourselves, even where there is cognizance of some defect or want in our system, and this is nowhere more vividly shown than in the organ of vision. For this reason, which I may safely claim as sufficient, I feel justified in bringing before you this address, in hope that the hints here set forth may prove of value and service.

The conditions rendering an eye incapable of its proper functions in an easy unconscious manner, may be conveniently divided into two kinds:—

1st. All those which are extraneous or separated from the organism.

2d. Those dependent upon the system, especially the eye itself.

Before I shall give you these causes, it will be necessary, for the understanding of their proper signification, to explain the meaning of the terms accommodation and convergence. (This was chiefly done by the aid of a series of diagrams and sketches.)

Among the first, improper light is paramount. How many of us endeavor to read by insufficient illumination, either natural or artificial, causing an unconscious approach of the object to the eye, in the compensation of enlargement for indistinctness, thus producing a decided strain upon the ciliary and extra-ocular muscles in their efforts to maintain proper accommodation and convergence. This undue muscular effort means fatigue, and yet we neglect rest, continuing the strain until the muscles give out. I advise you all to give your eyes proper light, plenty of it; the diffuse, steady, white daylight.

Motion, especially when irregular and unrhythmical, is a second great factor. The overworked physician trying to steal a few disconnected phrases from a current journal, as his carriage jolts along; what is he doing? Exercising his ocular muscles in a variety of anatomical gymnastics; relaxing and contracting them in exact but unknown proportions, to keep the ever jumping word fixed upon his macula lutea—and

then wonders, with a possible sage conclusion of general relaxation, last night's work—why his eyes feel so strained. Take the same individual and ask him to walk and balance himself on a slack rope for a few minutes, and he would most certainly refuse, and yet notice the parallelism. Your time may be valuable, but I venture to say, that the knowledge you acquire during traveling will barely compensate for the consequent eye strain.

Improper positions may now be considered. To hold a book in such a position as to demand continued action of a comparatively unused extra-ocular muscle, means strain of that muscle. Take the oft attempted plan of reading while lying down or stooping. You can easily understand that in either of these cases muscular action will soon become unsteady. We should so hold our book that the muscles will be properly and evenly balanced. The best position being, that of the light coming from the left and behind; hence, always be careful to place your desk or writing table so that the light may fall over the left shoulder.

Do not hold your work too near your eyes, as here the accommodation and convergence will be overtaxed in the same manner as explained in the paragraph on insufficient illumination.

Never buy cheap reading matter, as it always means bad paper, imperfect and small sized type, improperly ruled and gauged. Choose a book with good paper, holding large, well printed, widely separated black words; and see that every page, if of any considerable width, is double columned. Nothing can be gained in the purchase of badly gotten up books.

Much has been said of the comparative values of the different kinds of artificial light; and there have been many attempts to substitute a light as nearly simulating daylight as possible: the requirements being steadiness, whiteness and brilliancy. It is generally accepted that the improved form of Argand lamp—using a pure refined oil through a properly trimmed wick, allowing the light to pass through a slightly blued transparent chimney, and then reflected on the work by a bluish or white shade—is doubtless the best we now possess.\* How electricity can be so managed and reduced in its illuminating power, as to be applicable to general use, remains for the future to tell, although Dr. Leon Foucault, reports that recent investigations have shown that its use is productive of conjunctivitis, kera-

\* It is a good plan to have the upper half of the chimney rendered translucent by grinding, so that the movable tips of the flame may be hidden.

titis and retinal anæsthesia comparable to that produced by insolation.

In the second division of causes, among the most important, we may enumerate, first, the use of the eyes for near work, when the vital energies are not at their best. I advise you all to read or write during the morning hours. If you must read at night, never persist when you feel sleepy or overcome with fatigue, as the ciliary muscle and the extra-ocular muscles will have a disposition to relax, and hence, proper accommodation and convergence will not be maintained—thus producing decided exertion and consequent strain.

It is a good rule to frequently interrupt all near work, so that we may give the muscular apparatus rest—remembering that the ocular muscles work just as hard in a two hours' reading, as do the leg muscles in a two hours' walking.

Every man, from age, loses, more or less, his power of accommodation, that is, loses tone of the ciliary muscle, accompanied by senile changes in his refractive apparatus—merely a local expression of a general want of tonicity—true decay. This is termed presbyopia or old sight. Then it is that he must compensate for this loss by artificial change of refraction—by the use of artificial lenses—spectacles. Do not for a moment

think that anything can be gained by the postponement of their use. When, through age, you find yourself unable to read as you were wont, fit yourself with a pair of spectacles; and by so doing, there is no reason why your eyes shall not be capable of comfortably doing much near work.

A matter which may seem trivial, is ventilation during the use of artificial light; but when we consider the double combustion of oxygen, it really becomes a matter of great importance. Dr. Carter, in his little work on "Eyesight, Good and Bad," says, he has found that the evil effects of direct radiation can be easily prevented by the interposition of a transparent screen, containing a substance nearly impervious to heat rays. He had a large, flat glass cell filled with a saturated solution of alum in water; and found, by actual experiment, that it intercepted  $26^{\circ}$  of heat, without becoming sufficiently warm itself to radiate in any appreciable manner. This suggestion is of great practical importance and well worthy of trial.

I shall now speak of the so-called injurious effects of the microscope. In its employment, we must be guided by several important rules:—

- 1st. Never prolong its use.
- 2d. Frequently interrupt work.

3d. Alternate the use of the eyes.

4th. Avoid a stooping position of the head.

5th. Choose good, steady illumination, either natural or artificial.

If these rules are faithfully carried out, it cannot cause injury.

Remember that no eye, however good its condition, can be safely used with impunity. We often hear of a pair of eyes capable of almost incalculable strain. Carefully follow that pair of eyes through their life's journey, and you will most certainly find a time when they will break down.

It is my belief that much better scientific work would be done, more comfort experienced, and many absolute dangers avoided, if our eyes were properly and regularly worked; carefully exercised and frequently rested; while taking due care not to allow the progression of what appear trivial conditions.

NOTE.—Extensive use has been made of the works of Harlan, Carter and Mitchell.

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