

The Optical Defects of the Eye, and their Treatment, by the Scientific use of Spectacles. BY A. M. ROSEBRUGH, M.D.

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The following pages were written as an introduction to a course of lectures recently delivered by me on the diseases of the eye. I have not thought it necessary to alter the form, as I propose publishing them as a pamphlet, hoping that they may be useful, not only to the members of my ophthalmic class, but to Canadian medical students generally.

In their preparation, I must here acknowledge my indebtedness to the elaborate works of Mr. J. Z. Laurence and Mr. J. Soelberg Welis, of London, and especially to the very comprehensive treatise of Professor Donders, of Utrecht, published in 1864, by the New Sydenham Society.

CHAPTER I.—OPTICAL CONSIDERATIONS.

The eye is pre-eminently an optical instrument, and the phenomena of vision all depend upon the laws of optics. Hence, a knowledge of some, at least, of the elementary principles of light is essential to a correct appreciation of the physiology of the eye. The diagnosing of optical defects of the eye,—long and short sight, &c., &c., and their treatment with the scientific use of spectacles, require some knowledge of the laws of refraction, and the properties of convex and concave lenses.

The philosophy of the ophthalmoscope can hardly be understood unless the principles of both refraction and reflection are thoroughly mastered.

You will, therefore, I hope, not consider the time ill-spent if, before proceeding with the investigation of diseases of the eye—you review with me some of the elementary principles of optics which lie at the foundation of all ophthalmic science.

The *nature* of light is not known. I can no more tell you what light is, than your professor of physiology can tell you what life is. We know that the sun shines, but how it shines we cannot tell.

"Two different theories have been advanced of the more intimate nature of light." "One, the *Newtonian* (*corpuscular*) conceives that each luminous point is constantly giving off a succession of luminous corpuscles which follow each other in uninterrupted succession on an imaginary line or axis like a string of beads on a rigid thread."

The *undulatory* theory (Christian Huyghens') on the other hand considers space as pervaded by a subtle gaseous fluid or ether; that luminous bodies have the power of communicating to this ether a wave