Stereo Viewing Scoop 150 Years Old

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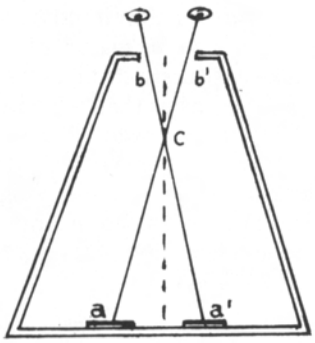

Wheatstone's aid for cross-eyed free viewing. Points **a** *and* **a'** *are the drawings, and points* **b** *and* **b'** *are the edges of the aperture cutting off parallel vision. The optic axes cross at* **c** *where a needle point was to be placed to facilitate fusion.*

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tude. When, indeed, objects are placed at such a distance that in regarding them the optic axes remain parallel, our notions upon these points are entirely derived in the ways already explained. But when they are situated nearer, the sensation attending each degree of inclination of the optic axes enters as an important element into our estimate. Mr. Wheatstone has shown, in a paper he is about to publish, that if by artificial means the usual relations which subsist between the degree of inclination of the optic axes and the visual angle which the object subtends on the retina be disturbed, some extraordinary illusions may be produced. Thus the magnitude of the image remaining constant on the retina, its apparent size and distance may be made to vary with every alteration of the angular inclination of the optic axes. The author also proves, that the adaptation of the eye to distinct vision exercises no modifying influence on these perceptions; and, contrary to the opinions of Dr. Wells and other eminent optical writers, that there exists no necessary connection between this adaptation and the convergence of the axes.

One of the most remarkable results of Mr. Wheatstone's investigations respecting binocular vision is the following. A solid object being placed so as to be regarded by both eyes, projects a different perspective figure on each retina; now if these two perspectives be accurately copied on paper, and presented one to each eye so as to fall on corresponding parts, the original solid figure will be apparently reproduced in such a manner that no effort of the imagination can make it appear as a representation on a plane surface. This and numerous other experiments explain the cause of the inadequacy of painting to represent the relief of objects, and indicate a means of representing external nature with more truth and fidelity than have yet been obtained. It would require too much space to enter upon the physiological views to which these experiments have led their author.

For perfect vision with the human eye, it seems requisite that the rays of light should undergo no reflection after reaching the retina. To provide for this object, the delicate membrane called the choroid, which immediately contains

Charles Wheatstone, born in 1802, probably made the very first stereo drawings between 1830 and 1832. He viewed them with free viewing techniques, for which he designed simple aids. He also designed the mirror stereoscope in those years, having one made in 1832 by the Newman firm in Regent Street, London. This is clear from an 1856 letter by instrument maker R. Murray, in which he says that accounts of the firm show the stereoscope was made in the latter part of 1832.

The very first publication on Wheatstone's stereoscopic inventions was not done by himself. They were briefly mentioned in the third edition of the textbook "Outlines of Human Physiology" by Herbert Mayo, published in 1833. Historical articles on stereoscopy often refer to page 288 of that work, which is entirely reproduced here. As far as I know, this first document on stereoscopy has never been reproduced before. It is a photostat from the copy of the book in King's College Library in London. Mayo