

# A BRIEF HISTORY OF STEREOGRAPHS AND STEREOSCOPIES\*

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## Abstract

Examines the history of stereoscopes and stereographs, including their cultural impact and changes in technology. Provides context for resources in the Travelers in the Middle East Archive (TIMEA). Part 1 of a 4 part course called "History through the Stereoscope."

Stereographs (also know as stereograms, stereoviews and stereocards) present three-dimensional (3D) views of their subjects, enabling armchair tourists to have a "you are there" experience. The term "stereo" is derived from the Greek word for "solid," so a "stereograph" is a picture that depicts its subject so that it appears solid. Stereographs feature two photographs or printed images positioned side by side about two and half inches apart, one for the left eye and one for the right. When a viewer uses a stereoscope, a device for viewing stereographs, these two flat images are combined into a single image that gives the illusion of depth.

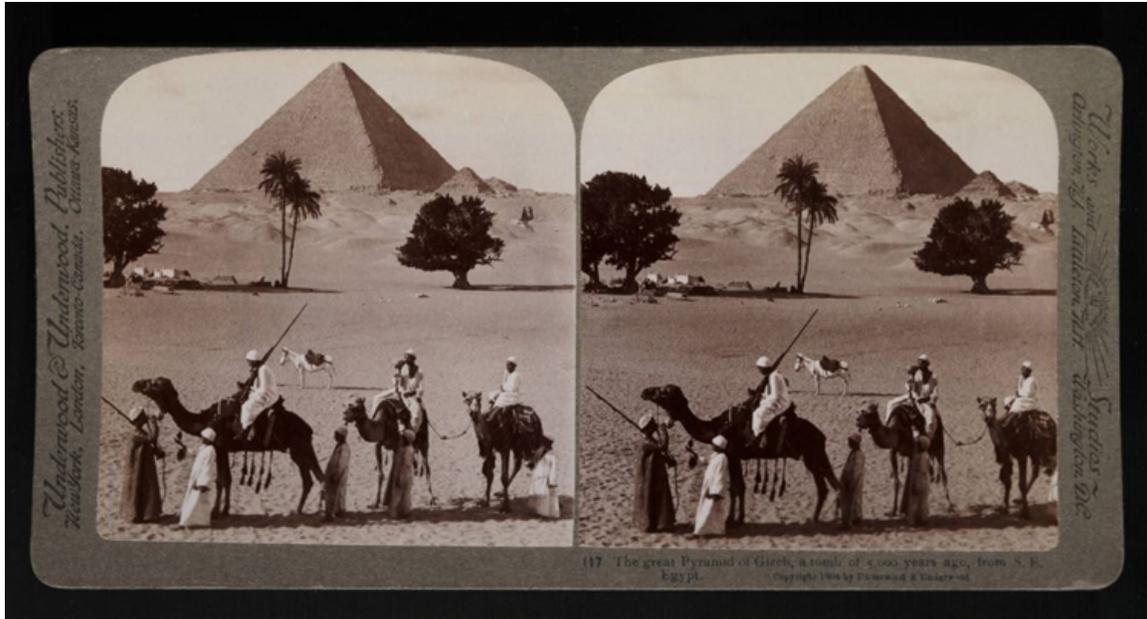
Stereoscopes work the way that vision works. Since our two eyes are positioned about two inches apart, we see everything from two slightly different angles, which our brain then processes into a single picture that has spatial depth and dimension. In 1838, Charles Wheatstone published a paper that provided the scientific basis for stereography, showing that the brain unifies the slightly different two-dimensional images from each eye into a single object of three dimensions. Wheatstone's early stereographs were drawings rather than photographs.

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### The Great pyramid of Gizeh



**Figure 1:** "The Great pyramid of Gizeh, a tomb of 5,000 years ago, from S.E. Egypt." Stereograph. NY: Underwood and Underwood, 1908. From TIMEA<sup>1</sup>. (August 19, 2006). <http://hdl.handle.net/1911/5586><sup>2</sup> Note how only half of the tree on the left side of the left frame is visible, while two-thirds of the same tree can be seen in the right frame.

Between the 1840s, when stereographs were first made, and the 1930s, when they were supplanted by movies and other media, millions of stereographs were produced. In the late 1830s and 1840s, scientists such as Niépce, Daguerre and Talbot created the processes that made photography possible and these were soon used to produce stereographs. In 1850 Sir William Brewster invented an inexpensive viewing device for stereographs called the lenticular stereoscope. This device is a closed box that has one or two openings for light; two lenses are located on the top and enable the viewer to see a three-D image on the floor of the box.

In 1851, stereographs captured the public notice when they were displayed at the Great Exhibition and praised by Queen Victoria. Businesses such as the London Stereoscopic Company quickly developed technologies for mass-producing stereographs; indeed, between 1854 and 1856 the company sold over half a million stereographs. In America, doctor and writer Oliver Wendell Holmes helped to popularize stereographs by inventing a hand viewer and promoting the creation of stereograph libraries. Ultimately stereoscopes ranged from small, inexpensive hand-held devices to large pieces of furniture that could display a changing series of up to 100 stereographs.

<sup>1</sup><http://timea.rice.edu>

<sup>2</sup><http://hdl.handle.net/1911/5586>



**Figure 2:** “A reproduction Holmes stereoscope.” “Stereoscope.” Wikipedia. 11 August 2006 <http://en.wikipedia.org/wiki/Stereoscope><sup>3</sup>

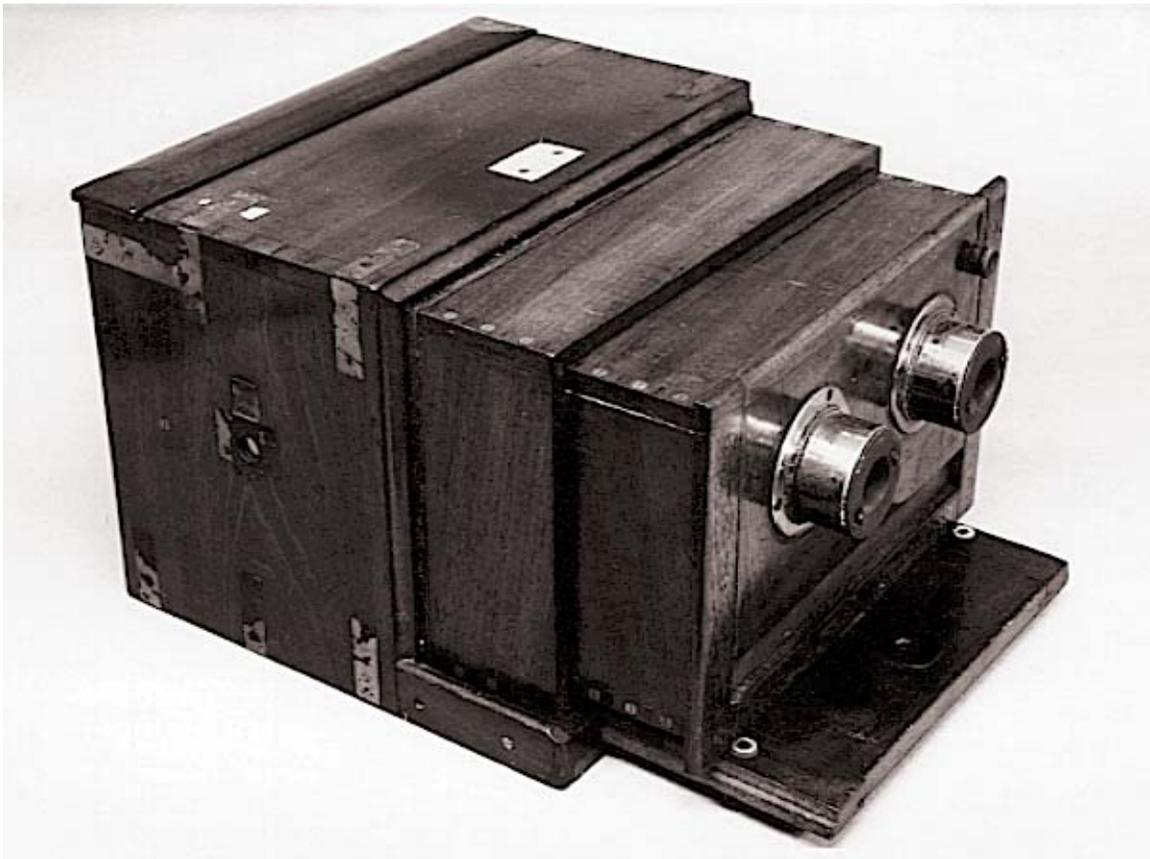
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Stereographs came in a variety of formats that reflected the era and region in which they were produced. At first stereotypes were produced as daguerrotypes (printed on copper) and ambrotypes (printed on glass), but stereographs became much more common once they began to be printed on card stock, which was less expensive and more stable. Paper stereographs mounted on flat cards were generally produced between 1857 and 1890, while those mounted on a “warped” gray card were generally produced between 1892 and 1940 (Darrah, 10-11). Early stereographs measured approximately 3 1/2 x 7 inches, but during the 1870s larger

<sup>3</sup><http://en.wikipedia.org/wiki/Stereoscope>

sizes emerged, including the 4 x 7 inch “cabinet,” the 4 ½ x 7 inch “deluxe,” and the 5 x 7 inch “imperial” cards. By the late 1850s, the standard thickness of cards was .04 inches. Curved mounts became prominent in the 1880s, after B. W. Killburn found that a mount with a slight curvature could increase the illusion of depth.

Initially photographers created stereographs by taking one photograph, then slightly shifting the camera to a new position. Cameras with multiple lenses were eventually used, although some photographers employed a rig with two cameras. (For more on stereograph cameras, see <http://stereographer.com/cameras.html> ). Photographing for stereoscopes required the photographer to position the camera carefully to get the best vantage point.



**Figure 3:** "Sliding Box Binocular Stereoscopic Camera, ca. 1865 ." From the Museum of the History of Science, Oxford<sup>5</sup>'s exhibition "The Technology of Photographic Imaging" <http://www.mhs.ox.ac.uk/cameras/index.htm><sup>6</sup>. This camera, manufactured by W. W. Rouch of London, uses two single landscape lenses of 100 mm focal lengths.

Between the 1840s and the 1920s, stereographs served as an important method of entertainment, education, and virtual travel—predecessors to contemporary forms of media such as television and movies. As Burke Long argues, “Mass-produced and relatively cheap, the integrated system of mechanical viewer and

<sup>4</sup><http://stereographer.com/cameras.html>

<sup>5</sup><http://www.mhs.ox.ac.uk/>

<sup>6</sup><http://www.mhs.ox.ac.uk/cameras/index.htm>

photographs became fashionable for classroom pedagogy, tourist mementos, and parlor travel to exotic places of the world” (90). People viewed stereographs at homes, schools, and churches, gazing at images documenting almost every subject imaginable from astronomy to zoology. According to stereograph collector and historian William Darrah, stereographs were used to teach millions of American children about geography, natural history, and a range of other subjects (50). Many in the nineteenth century embraced photography as a medium that, unlike other arts such as painting, presented the “truth” through exact rendering of a scene. Stereographs seemed even more real and more engaging by simulating three dimensions. Oliver Wendell Holmes called stereographs “sun sculptures” and commented, “All pictures in which perspective and light and shade are properly managed, have more or less the effect of solidity; but by this instrument that effect is so heightened as to produce an appearance of reality which cheats the senses with its seeming truth” (16).

By the 1920s, movies and printed half-tone images supplanted stereographs as the leading photographic medium. However, 3-D imaging experienced a resurgence in the 1950s, when the ViewMaster, a stereoscopic device which used a round disc that displayed seven images, was popularized. Initially the ViewMaster was sold as a tourist souvenir, but eventually it became more of a children’s toy—indeed, it was named one of the top 50 toys of the twentieth century. A few contemporary artists use stereography as an expressive medium, while people now don stereoscopic glasses (and data gloves) to explore computer-generated 3D virtual reality environments.

## 1 References

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