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In All Solidity And Reality : A Stereoscopic Exhibition Proposal

Emily J. Wagner
Ryerson University

IN ALL SOLIDITY AND REALITY: A STEREOSCOPIC EXHIBITION PROPOSAL

by

Emily J. Wagner

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Abstract

This essay and exhibition proposal explores the importance of stereographs at specific points in the history of photography. It includes a brief analysis of stereographs made by Louis Jules Duboscq-Soleil, Warren Thompson, Carlton E. Watkins, B.K. of Paris, Underwood & Underwood, Keystone View Company, and Nickolas Muray. It addresses the difficulties implicit in the display of stereographs; they require an interactive viewing experience and a stereoscope in order to be viewed in three dimensions by a general audience. The necessity for an interactive viewing experience can risk damage to the objects being displayed and the inclusion of stereoscopes presents technical issues related to human vision and accessibility. This thesis proposes a design for a stereoscope that circumvents some of these issues. Both the stereoscope design and the essay pertain to the possible inclusion of stereographs within the context of the proposed 2010 history of photography survey exhibition at George Eastman House.

Acknowledgements

The idea for this thesis began with the encouragement of my academic advisor, David Harris, for which I am extremely grateful. To my first reader, Mike Robinson, thank you. I would also like to thank the entire staff of George Eastman House with special gratitude to Alison Nordström for her many wonderful suggestions, Jamie Allen for her ongoing help and patience, Todd Gustavson for sharing with me the history of the stereoscope, and Joe Struble for helping to navigate the collection. I am deeply indebted to my father, Russell Wagner, for years of woodworking tutelage and blade sharpening, and for generously letting me take over his bench for two weeks. I offer many thanks to Bill Hibbert and Nicholas Graver for generously sharing their knowledge of stereoscopy with me. Jon Golden of 3D Concepts and Arnold VanDenburgh of A.J. VanDenburgh Wood Products were helpful in answering many questions about design and stereo exhibition. Many thanks also to Megan Friedel of the Oregon Historical Society for sharing her stereo exhibition experience. I am extremely grateful also to Christopher Schneberger for introducing me to many methods of stereoscopic display through his artwork.

I am indebted to Alana West for her humor and much-needed aid both inside and outside of the library, to Andrew Youngman for his continual academic and emotional support, and to my mother, Paula Wagner, for supporting me during my thesis writing even while struggling to finishing her own. Lastly, I owe a debt of gratitude to Allan Phoenix for his editorial skills and ongoing encouragement.

To My Grandpa Wagner

Table of Contents

List of Illustrations

Section 1:

Introduction

We refer, of course, to the stereoscope; which, by reason of the law of binocular vision, and by means of a few slides of glass, cardboard, or metal, as the case may be, enables us to see with wonderful and beautiful distinctness a distant scene or an absent friend, not as in a picture, but standing out in all solidity and reality, as if we were looking out a window.

-*Eclectic Magazine*, April 1857[1]

The most significant form of visual imagery in the nineteenth century, with the exception of photographs, was the stereoscope. It is easily forgotten now how pervasive was the experience of the stereoscope and how for decades it defined a major mode of experiencing photographically produced images.

- Jonathan Crary, *Techniques of the Observer,* 1990[2]

As curators explore the cultural context of photography, stereographs are being used more in exhibitions than they have been in the past. However, stereographs are difficult to exhibit because they are designed to be viewed with the optical assistance of a stereoscope. This paper addresses two main questions. Firstly, of the many stereographs in the collection of George Eastman House, which examples should be selected to give the public a sense of the role that the stereograph has played throughout history? This question will be addressed through the written description of the significance of stereographs chosen from the collection to represent both the strengths of the holdings at George Eastman House and the history of stereoscopy. Secondly, how can museums exhibit original stereographs so that they can be seen in three-dimensions without risking damage to the object? To answer this question, I will examine the ways that several institutions in the past have addressed this problem in exhibitions. I will design and build a prototype exhibition stereoscope in response to the difficulties inherent in publicly displaying stereographs. Finally, the paper will include an exhibition proposal for the

[1] "Stereoscopic Journeys," Eclectic Magazine 40, no. 4 (1857): 560.
[2] Jonathan Crary. *Techniques of the Observer*, 125.

inclusion of stereographs displayed in exhibition-ready stereoscopes in the 2010 survey of the history of photography exhibition at George Eastman House.

Stereoscopy is based on the phenomena of binocular vision. Our eyes, spaced approximately 2 1/2 inches apart, each see the world from slightly different angles. When these two disparate angles are merged by the brain, they produce the visual sensation of depth. A stereograph reproduces the disparate images that our eyes see. The stereoscope then assists our brain in merging the two separate images, producing the illusion of three-dimensional depth. The invention of the stereoscope by Charles Wheatstone in 1838 predates the announcement of photography by six months; however, only with the flourishing of the new discovery of photography did the stereoscope achieve widespread popularity. Photography brought a level of reality to an image that was simply unattainable through the line drawings that preceded it in the stereoscope.

While the popularity of stereographs waxes and wanes, for nearly ninety years, from the early 1850s to the late 1930s, stereographs were a popular and widely circulated form of visual media. Photography and stereoscopy co-evolved in such a way that the technical evolution in one influenced advancements in the other and increased the popularity of both. Both were seen as scientific achievements and sources of entertainment; yet stereoscopy is a relatively little studied and under exhibited branch in the history of photography. Stereoscopy, often thought a Victorian gimmick, has rarely been seriously considered in the realm of museums and photographic discourse. However, stereoscopy is hardly as inconsequential a branch as many written and

exhibited surveys of the history of photography would lead you to believe.[3] Howard Becker gives one explanation of this oversight by many historians, "...stereography did not endure, instead it eventually declined, and turned into a dead end. Failure is as interesting as success, sociologically, but history usually ignores it."[4] What this assessment fails to take into account is that stereography did not simply die out. It evolved into different uses and continues to exist to this day, though in quite a different form than it did during the late nineteenth and early twentieth centuries. Though it is no longer the most widely distributed form of visual media, it still finds many a niche, including popular entertainment (3-D movies), souvenirs and playthings (View masters), military and scientific purposes, as well as having a following among amateur photographers and artists.[5]

While many factors have contributed to the lack of attention paid to stereographs by historians, a key factor that should be considered is that the experience of viewing a stereograph is a difficult one to convey in book form. The low quality of half-tone reproductions is not conducive to stereoscopic viewing because the print screen interferes with the three-dimensional illusion. Difficulties also lie in the exhibition of stereographs. Exhibiting them on the wall as framed objects is contrary to their nature and makes it difficult or impossible to see them as they were meant to be experienced.

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[3] In his literature review, Robert DeLeskie notes some of these deficiencies. "Turning to the important post-Second World War references, the lack of detailed historical or socio-cultural accounts of stereography is immediately apparent." Robert DeLeskie, "The Underwood Stereograph Travel System: A Historical and Cultural Analysis" (master's thesis, Concordia University, 2000), 5-14.
[4] Becker, Howard S. "Stereographs: Local, National, and International Art Worlds" in *Points of View*, 89.
[5] There has been a noticeable increase in the release of 3-D movies thanks, in part, to recent advancements in digital 3-D projection. See David M. Halbfinger, "With Theaters Barely Digital, Studios Push 3-D" (New York Times: March 13, 2008).

During an exhibition, if stereographs are exposed, as they were in the type of viewers popular during the nineteenth and early twentieth centuries, they can easily become damaged through handling. The solution that I have seen most frequently used is to leave a few small plastic viewers around for visitors to use. This is a practical, inexpensive solution to a difficult problem. Unfortunately, it fails to provide the same quality of viewing as contemporaneous stereoscopes. A performative and active viewing experience is essential to the appreciation of stereographs. The perception of a three-dimensional image was and is an important aspect of the taking and viewing of stereographs. Stripped of this context they lose a significant aspect of their meaning.

Review of the Literature

While stereographs have been overlooked or given minimal consideration by many historians, there are those who have acted as advocates to the study of the history of stereoscopy. William Culp Darrah was one of the most influential and notable of these historians. *Stereo Views: A History of Stereographs in America and Their Collection* (1964) and *The World of Stereographs* (1977) have become seminal works in the study of nineteenth century stereoscopy. *Points of View: The Stereograph in America – A Cultural History* (1979), edited by Edward Earle and containing contributions from a number of historians, is another important work and differs considerably from the ground covered by Darrah. These essays analyze the cultural context of stereographs in the United States. Darrah, writing mainly with collectors in mind, touched only briefly upon cultural history in his indispensable works.

A more recent history of stereoscopy *Paris in 3D: From Stereoscopy to Virtual Reality 1850-2000* (2000) is useful for covering nineteenth century stereoscopic formats as well as modern developments in stereoscopy. Additionally, it includes information about formats, such as tissue stereographs, that enjoyed greater popularity in France than the United States. While all of these sources are useful in understanding the history of stereo*graphs*, the history of stereo*scopes* is available in Paul Wing's *Stereoscopes: The First One Hundred Years* (1996). The understanding of contemporaneous stereoscopes is, of course, very important in designing a viewer for exhibitions. Without this crucial work, it would have taken far longer to understand the optics and mechanisms that have historically made stereoscopes function properly.

Historian Jonathan Crary has written two influential books that include discussion of the relationship of stereoscopy to Victorian perception. *Techniques of the Observer: On vision and Modernity in the Nineteenth Century* (1990) and *Suspensions of Perception: Attention, Spectacle, and Modern Culture* (1999) were influential in my understanding not only of the cultural history of stereographs, but of the impact of stereoscopy on modern perception and the stereoscope's role in understanding aspects of the brain related to vision. Crary's work reinforced my conviction that the dimensionality of stereographs is not a trivial gimmick. To the contrary, stereoscopy had a profound affect on Victorian concepts of vision and perception that has continued to impact how and what we see to this day.

A number of theses and dissertations have been written in recent years on specific topics within stereoscopy. Much of the research in these papers is not published elsewhere and was extremely helpful, both by providing a comprehensive bibliography of

source material and in presenting new cultural analysis to this under-researched field of study. Two such papers were Laura Schiavo's "'A Collection of Endless Extent and Beauty': Stereographs, Vision, Taste and the American Middle Class, 1850-1880" (Ph.D. diss., George Washington University, 2003) and Robert DeLeskie's "The Underwood Stereograph Travel System: A Historical and Cultural Analysis" (master's thesis, Concordia University, 2000). Both were essential in forming an understanding of the widespread popularity of certain types of stereographs at the beginning of the twentieth century.

In addition to these papers, there were many essays, both historical and contemporary, that were crucial to forming my perspective on the topic. I would be remiss not to mention the writings of one of the greatest advocates of stereoscopy, Oliver Wendell Holmes, who wrote three articles in the *Atlantic Monthly* championing the then new photographic format, "The Stereoscope and the Stereograph" (1859), "Sun-Painting and Sun-Sculpture; with a Stereoscopic Trip Across the Atlantic" (1861), and "Doings of the Sunbeam" (1863). It is also necessary to mention a source related to the particular physical and intellectual difficulties facing the exhibition of stereographs, Glenn Willumson's essay, "Making Meaning: Displaced materiality in the library and art museum" in *Photographs Objects Histories: On the Materiality of Images* (2004). The concerns raised in this essay about the materiality of stereographs in exhibition have remained always in the back of my mind while working on my research and designing the stereoscope.

Section 2:

Process of Selecting Stereographs from the Collection

George Eastman House has an outstanding collection of stereographs. There are over 47,000 in a variety of formats and media that span the history of photography. To choose from such a comprehensive collection was no easy task. I knew from the outset that while I wanted to highlight the history of stereoscopy through specific examples, I also wanted to represent strengths in the collection. The condition of the stereographs under consideration was a major concern. While albumen stereographs are prevalent, chemical deterioration of the image is a common issue. The uneven deterioration of a stereograph can interfere with the three-dimensional illusion, especially when this deterioration takes the form of spots or faded highlights. Extensive handling of the unprotected image surface has also played a part in the poor condition of many albumen stereographs. Damage on one or both sides of a stereograph typically floats above the image plane when viewed through a stereoscope and is very distracting. Seemingly small or inconsequential damage on a print can seriously detract from a stereograph seen in three dimensions. Stereographs also vary greatly in quality. Pirated stereographs were common during the peak of the format's popularity, and many were produced with poor focus or image alignment. Because these cheap and poorly reproduced stereographs also have very poor image quality and depth, they are not the best choice to highlight either the format or the collection.

In addition to singling out images that are rare and in good condition, I specifically wanted to include images that were significantly transformed through stereoscopic viewing. Stereographs taken at a great distance from their subject, for

example, usually show little enhanced dimensionality when seen through a stereoscope. This is due to the fact that there is little disparity between the left and right images of the stereograph. Many photographers, aware of this fact, positioned people or objects in the foreground to accentuate the stereoscopic effect. It is also possible to create a hyper stereo by increasing the distance between the lenses to achieve a greater illusion of depth for distant objects. When a photographer has considered the dimensionality of the stereograph's composition, it is apparent in the image. While some photographers seem to have used the stereoscopic format primarily because of its popularity among consumers, others used innovative compositions to take advantage of the unique potential of the format. If the dimensionality of the composition has been considered, the stereoscopic effect is a transformative part of the image.

I have sought images in the collection that have this transformative quality, examples that offered the viewer something different when seen in three dimensions than when they were seen in two. With this selection for the proposed exhibition, I hope to present objects that produce visual delight and curiosity in the viewer. A comprehensive survey of the history of stereography could be an exhibition in and of itself. However, because this is only a proposal for the inclusion of several stereographs within a larger survey of the history of photography, I have done my best to single out images that not only represent some of the achievements of stereography throughout history, but which also stand out as exceptional examples of the unique qualities inherent to the format.

Art, Science, and the Discovery of Stereoscopy

The stereoscope is the general panorama of the world.

-Antoine Claudet, *Photography in its Relation to the Fine Arts*, 1860[6]

Due in large part to the exceptional quality of the Gabriel Cromer collection, one area in which George Eastman House has particularly strong holdings is early French daguerreotypy. The stereographs in this collection are of exceptional quality and rarity and are thus an important inclusion in the proposed exhibition. Among these daguerreotypes are stereographs made by photographers important to the development and spread of stereography such as Louis Jules Duboscq-Soleil, Warren Thompson, Antoine-Francois Jean Claudet, and Alexis Gouin. Also included are works by less well-known makers, many of whom remain unidentified. The examples I have selected for exhibition are exceptional for their image quality, dimensionality, and maker.

Before Duboscq began making daguerreotypes, he worked as an optician and inventor. As a prominent designer of optical instruments, the inventor of the lenticular stereoscope, Sir David Brewster approached Duboscq in Paris about manufacturing his new invention. As the photo historian Janet Buerger writes, "...it is primarily because of Duboscq's manufacture of stereo-viewers that stereography became so popular after 1850. For this alone he ranks as one of the pivotal figures in photographic history."[7] Duboscq was a master of still-life photography. Due in part to his fascination with the scientific phenomena of the day, he often turned his camera towards subjects of

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[6] Antoine Claudet. "Photography in its Relations to the Fine Arts," *The Photographic Journal* VI (June 15, 1860): 266. This essay addresses the evolution of photography and stereoscopy both as an art and as a science.

[7] Janet E. Buerger. *French Daguerreotypes* (Chicago: University of Chicago Press, 1998), 103. Buerger also points out that the reason that Duboscq has not received wider acclaim is the rarity of his work, most of which is in the Cromer collection at George Eastman House.

achievement or curiosity in this field. One such example is *Still-life with scientific instruments* (fig. 1). This image includes optical instruments displayed by Duboscq at the Crystal Palace exhibition of 1851, among them a lenticular stereoscope of Brewster's design.[8] That a stereoscope would be included among the other instruments shown illustrates its association with other contemporaneous scientific achievements, and also demonstrates Duboscq's commercial stake in the advancement of stereoscopy.[9]

Though an American by birth, Warren Thompson practiced photography in Paris from around 1847 on, and was considered French by his contemporaries in both America and France.[10] By 1853, Thompson established the studio where he would continue to work for the rest of the decade. This studio was notable for its production of life-size portraits and was one of the first studios to become successful at large format photography. However, stereo daguerreotypy remained a specialty of Thompson's throughout the decade. Through this medium he created the fascinating series of self-portraits held in George Eastman House's collection today. In these self-portraits he references popular themes in the visual arts such as the artist, hunter, armor collector, and *penseur* (figs. 2 and 3).[11] His self-portrait as an artist is particularly interesting in comparison to Duboscq's still life of scientific instruments. In this image, he portrays himself as an artist by surrounding himself with the expected paraphernalia including

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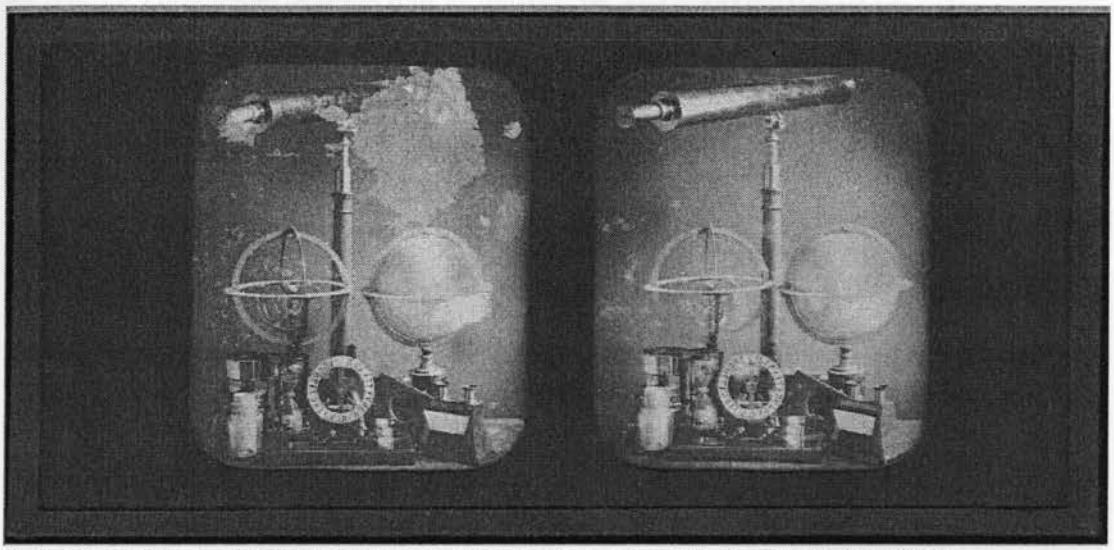
[8] Buerger. *French Dageurreotypes*, 104.

[9] It should be noted that another popular stereoscope for viewing daguerreotypes was developed by Mascher and patented in 1853. In Mascher design, the viewing apparatus was incorporated into the case of the daguerreotype. While his design met with commercial success, especially in the US, it hasn't been included in this exhibition proposal due to the difficulty that the design and fragility of the case presents in attempting to make the stereographs available to 3D viewing by the public. See Paul Wing, "Daguerreotype Viewing Cases", In *Stereoscopes: The First One Hundred Years*. (Nashua, NH: Transition Publishing, 1996), 75-84.

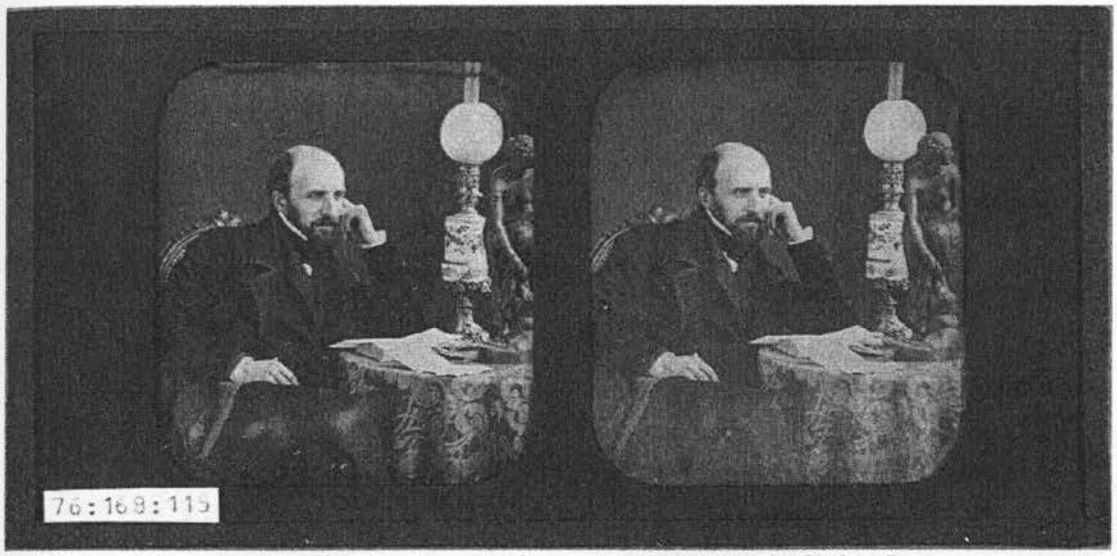
[10] Mascher's stereoscope pat'd March 8, 1853. Kilburn's design reg'd in England on January 12, 1853 is quite similar and poses the same difficulty. Buerger. *French Dageurreotypes*, 108.

[11] Buerger. *French Dageurreotypes*, 110.

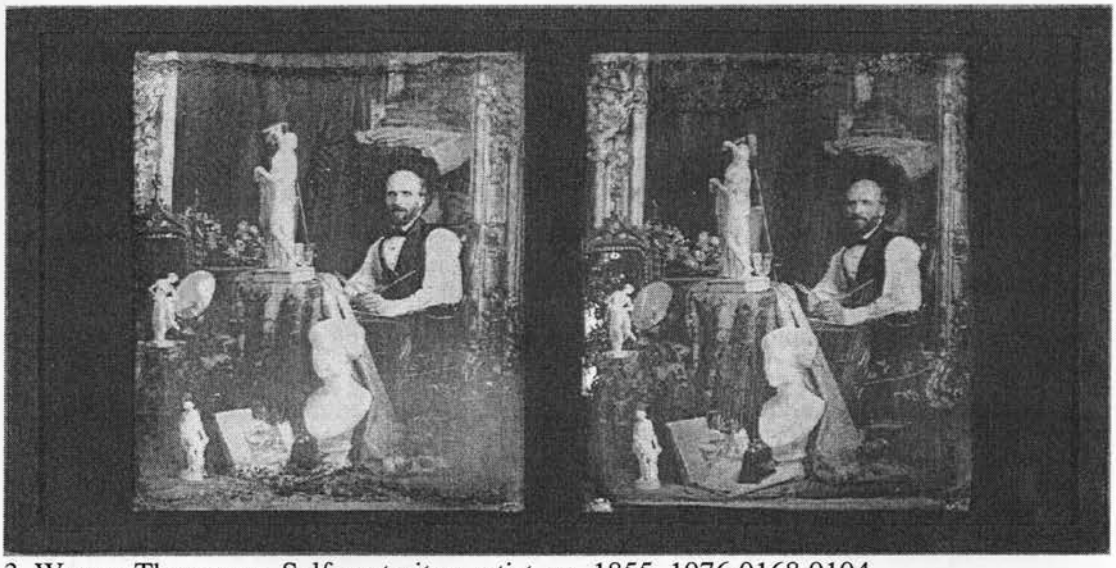
paintings, busts, and brushes; however, he also includes a stereoscope prominently positioned in the foreground. While Duboscq has allied the stereoscope with the sciences, in this image Thompson has associated the stereoscope with the arts. At a time when the delineations between photography as art and photography as scientific document had not been fully established, these two images attest to the creativity and enthusiasm of the practitioners of this nascent medium.



1. Jules Duboscq. Still life with scientific instruments. 1851. 1970:0012:0001



2. Warren Thompson. Self-portrait as thinker. ca. 1855. 1975:0168:0115.


3. Warren Thompson. Self-portrait as artist. ca. 1855. 1976:0168:0104.

Photographing the Western Frontier

One of the most interesting accessions to our collection is a series of twelve views, on glass, of scenes and objects in California, sent us with unprovoked liberality by the artist, Mr. Watkins. As specimens of art they are admirable, and some of the subjects are among the most interesting to be found in the whole realm of Nature.

-Oliver Wendell Holmes, Doings of the Sunbeam, 1863[12]

Beginning around 1812, the belief that the United States was destined or divinely ordained to expand across the North American continent became part of the American conscience and governmental policy. This national belief in Manifest Destiny resulted in business, government, and the general public taking an interest in the expanding Western frontier. As photographic technology improved, field photography became increasingly important to the exploration of the American West.[13] Whether to serve government surveys, industrial interests, or the commercial success of the photographer, these images played an important role in the expansion of the Western frontier.

By 1858, the California based photographer Carleton E. Watkins had begun to establish his reputation as a field photographer using the wet-plate collodion process. The remarkable stereographs made by Watkins challenge the assertion, made by one historian, that "...top photographers only took stereo views after they had made their 'real' picture, with a monocular camera, and they only did it to enhance their profits."[14] Watkins was a commercial photographer, and ultimately all of his work was made to enhance his profits, but his stereographic work was not a side note or anomaly in his

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[12] Oliver Wendell Holmes, *Soundings From the Atlantic*. (Boston: Ticknor and Fields, 1864), 252.
[13] William S. Johnson, Mark Rice, and Carla Williams. *1000 Photo Icons: George Eastman House*. Edited by Therese Mulligan and David Wooters. (Cologne: Taschen, 2002), 197.
[14] Robert Hirsch. *Seizing the Light: A History of Photography*. (Boston: McGraw-Hill, 2000), 93.

career. While the mammoth-plate photographs made by Watkins are renowned as masterpieces of landscape photography, his lesser-known stereographic work was produced in greater quantity and sold in greater numbers. The stereo format used equipment that was less bulky and plates that were far easier and cheaper to produce than the mammoth plate format.[15] Therefore, it is unsurprising that Watkins would choose this format for more experimental views and to explore locations for his mammoth plates.[16] Though stereographs were cheaper to produce and financially profitable, economics alone does not explain why Watkins favored this format. Stereoscopic photography was a tool that Watkins used to probe the possibilities of perception and dimensionality. The photo historian Douglas Nickel asserts, "The extraordinary optical faculties of the stereo led Watkins, as it did other photographers, to formulate a wholly different kind of picture with it, one that capitalized upon its three-dimensional effects...Watkins intuitively understood the genius of the stereo to live less in its pretense of solidity than in its cultivation of the ephemeral – the way it turned photographic reality into illusion."[17]

Glass stereographs are remarkably beautiful in their fine detail and luminosity, characteristics that surely enticed Watkins to produce them. While their fragility and expense meant they were not mass-produced in the quantities of card stereographs, they enjoyed enough popularity to prompt a contributor to Humphrey's Journal to write, "If any one question can be said especially to interest photographers at the present time, it is that of transparencies for the stereoscope. Numerous artists in every part of the country

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[15] At a fraction of the size of a mammoth plate, it is logical that a stereographic negative used less material and was easier to transport as well as to technically produce.

[16] "The smaller, facile stereo format allowed Watkins to experiment in ways that the heavy and cumbersome mammoth-plate format could not." Megan Friedel and Terry Toedtemeier. "Picturing Progress: Carleton Watkins's 1867 Stereoviews of the Columbia River Gorge," *Oregon Historical Quarterly* 109, no.3 (2008): 388.

[17] Douglas R. Nickel. *Carlton Watkins: The Art of Perception.* (San Francisco: San Francisco Museum of Modern Art, 1999), 28.

are anxious to produce them with certainty, whilst the public on their part are equally desirous of purchasing."[18] The glass stereographs made by Watkins stand out as truly remarkable not only for the medium he chose but because of his perceptive ability to use the dimensionality of stereography to its full advantage. The views held by George Eastman House were taken in Yosemite in 1861, long before its designation as a national park. He used foreground detail, encroaching branches, and reflections in water to enhance the dimensional effect of the format (fig. 4 and 5). In an especially effective example, *Distant view of Half Dome and Vernal Fall*, Watkins obscures the scenery in the image with giant trees, creating the sensation that the viewer is peeking at the landscape as through the fingers of a hand (fig. 6). The subject is not only the astonishing scenery, but also the startling illusion of dimensionality. It is a view that was created to be seen in three dimensions, that loses much of its legibility when seen only in two.

4. Carlton E. Watkins, River View. Cathedral Rocks. 1861. 1982:2364:0011.

[18] T. F. Hardwich. "Photographic Comments – Transparencies for the Stereoscope." *Humphrey's Journal* XIII, no. 6 (July 15, 1861): 89.

5. Carlton E. Watkins, River View-Washington Column. 1861. 1982:2364:0013.

6. Carlton E. Watkins, Distant view of Half Dome and Vernal Fall. 1861. 1982:2364:0018.

The Origins of Cinema and Home Entertainment

One-reel films of the motion picture novelty period exploited visual styles and themes of the stereoview cards that had preceded them historically. It was a natural evolution for stereo card genres to migrate into the nascent medium of the motion picture.

-Ray Zone, *Stereoscopic Cinema and the Origins of 3-D Film*, 2007[19]

Almost as soon as photography was applied to stereoscopy, attempts to make moving stereoscopic images emerged. In 1849, the inventor of the stereoscope, Charles Wheatstone, contacted the inventor of the Phenakistoscope, Joseph Plateau, with the idea of creating moving stereoscopic images.[20] Attempts were also made by Antoine Claudet in the early 1850s to build a device to show moving stereoscopic pictures, though his contemporary, Jules Duboscq, was the first to patent such a device in 1852.[21] In 1861, Coleman Sellers patented a stereoscopic moving picture peep show called the Kinematoscope.[22] Eadweard Muybridge and Etienne-Jules Marey, two important figures in the development of motion picture photography, both made stereoscopic images during the course of their experiments. While it would take some time before moving stereoscopic images were developed, even in its still form, stereoscopy lent itself to narrative subjects and to a sensory experience that later was to become associated with moving pictures and home entertainment.

Tissue stereo cards were produced mainly in France and experienced their greatest popularity between 1870 to 1895. They work on the same principle as Daguerre's Dioramas, in which different colors and scenery become visible depending on

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[19] Ray Zone, *Stereoscopic Cinema and the Origins of 3-D Film, 1838-1952*. (Lexington: The University Press of Kentucky, 2007), 15.
[20] Ibid., 25.
[21] Ibid,, 26.
[22] Ibid., 31.

whether they are lit from the front or from behind.[23] In the case of Dioramas, painting the back of the canvas produces this effect. In stereoscopic tissues, the effect is achieved by tinting the back of an albumen print on thin paper, backing this with a layer to diffuse the light and protect the colored tissue, and adhering these layers together between two boards with windows on both sides to allow the passage of light through the tissues. Tinting on stereographs can be, and frequently is, quite sloppy. Poor processing of stereographs has often resulted in the chemical deterioration of the image, particularly in the case of albumen prints on tissue. In *Les Cocottes, Chez Satan*, the tinting is done with a high level of skill, and the prints have sustained relatively little chemical deterioration (fig. 7 and 8). This scene was created using an elaborately sculpted model of a scene showing Satan with his "cocottes" or prostitutes. At the time when this card was created, it would have been received in much the same way that people today view a movie with some new and surprising special effect. This image is a part of the *Diableries* series, a theatrical subject dealing humorously with death and the afterlife that would have been familiar to contemporaneous viewers.

Comedic subjects were favored for narrative sequences. Domestic scenes dealing with the differences between the sexes and the trials and tribulations of married life were as popular during the turn of the century as they are in television sitcoms today. By 1897 the Underwood & Underwood company had purchased the photo printing facilities of Jarvis and Bierstadt and had begun to published large quantities of stereographs.[24] By the time they shut down their stereo operation and began to disband their collection of

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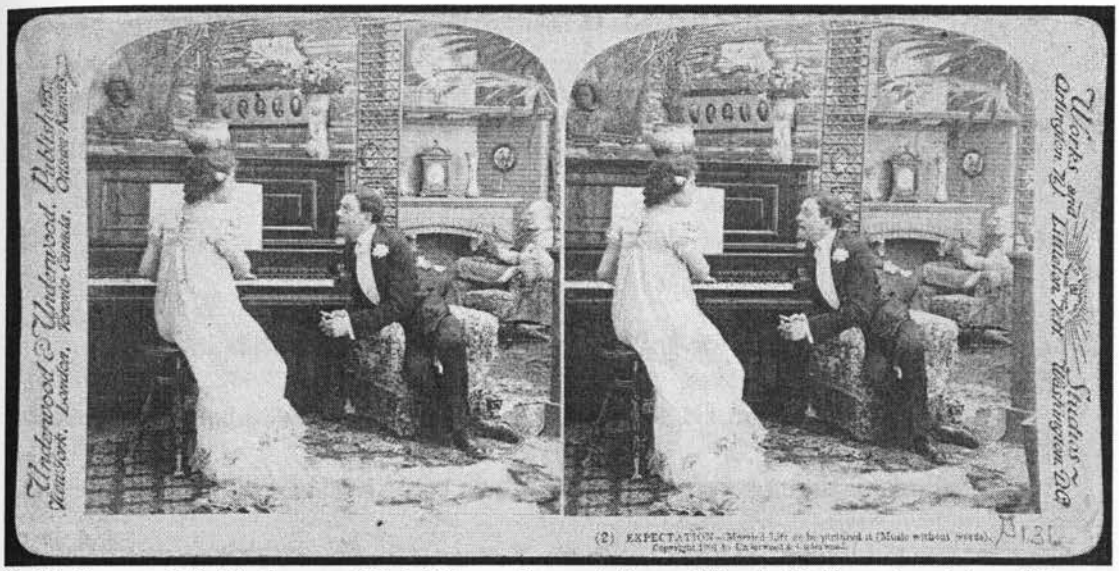
[23] Both the connection to Dioramas and the time lapse of tissues foreshadowing the techniques of cinema are made by Ray Zone. *Stereoscopic Cinema and The Origins of 3-D Film*, 20-22.
[24] William Culp Darrah, *The World of Stereographs*. (Gettysburg, PA: W. C. Darrah, 1977), 47.

negatives in 1920, they had published between 30 to 40 thousand distinct views.[25] Among these were a humorous domestic narrative sequence copyrighted in 1901 (fig.9 and 10). The series of seventeen images follows a young couple from the early stages of courtship to married life. The punch lines of the cards have a familiarity about them because they utilize stereotypes about marriage and gender that are still in use today. The husband is lustful, reluctant to give up his freedom, and prone to staying out late with the boys; the wife, once a blushing bride, after marriage becomes a nag, a bad cook, and resentful of having to run a household. It could be the theme of any number of modern sitcoms. The humor is designed to appeal to a broad audience with universally recognizable comedic stereotypes in a familiar narrative sequence. Stereographs with narrative sequences such as these were very popular during the early twentieth century, and they were used for entertaining both guest and family members in the home, much as television is used today.

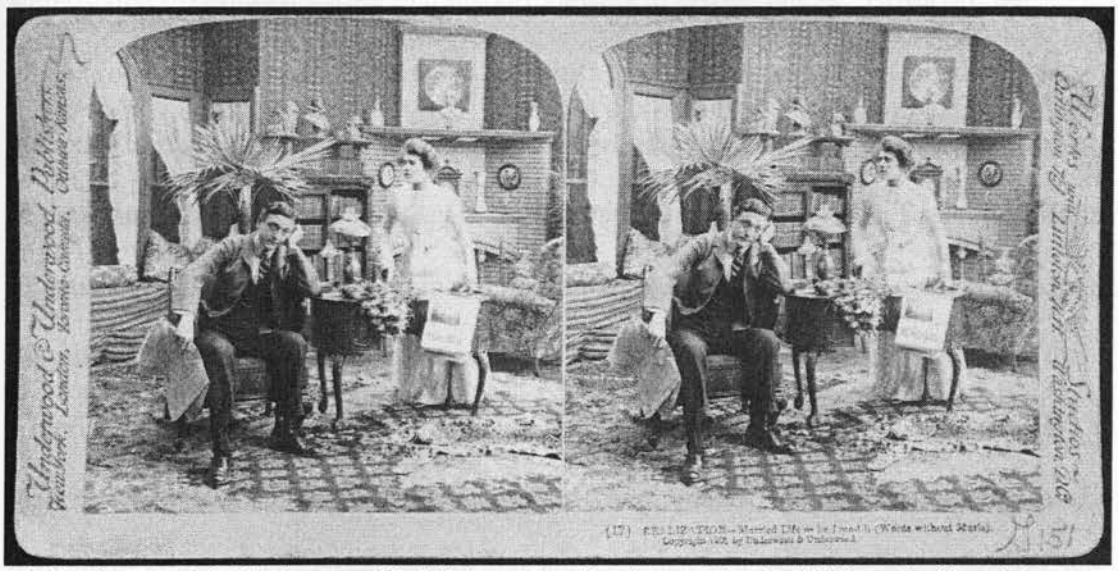
[25] Ibid., 48.

7. B.K. Les Cocottes, Chez Satan. ca. 1875. 1971:0107:0001 (reflected light)

8. B.K. Les Cocottes, Chez Satan. ca. 1875. 1971:0107:0001 (transmitted light)



9. Underwood & Underwood Publishers. Expectation – Married Life as he pictured it (Music without words). ca. 1901. 1981:1966:0002



10. Underwood & Underwood Publishers. Realization – Married Life as he found it (Words without Music). ca. 1901. 1981:1966:0017

Travel and Photojournalism at the Turn of the Century

Now, as the result of considerable study and careful observation, I am convinced that it is possible for a person to gain by the proper use of these stereographs the essentials of the experiences of actual travel. Naturally, then, I am convinced that the stereograph must hold an indispensable place in the home and school.

-D.J. Ellison, *Italy Through the Stereoscope*, 1900[26]

Underwood & Underwood was neither the first nor the last publishing company to produce large quantities of stereographs to appeal to the armchair traveler. Before Underwood & Underwood emerged on the market, large operations, including the London Stereoscopic Company, E. & H. T. Anthony, Rerrier, Adolphe Braun, J. Andrieu, and the Kilburn Brothers, were all producing views that capitalized upon the stereoscope's presumed ability to transport viewers to distant places. However, the Underwood travel system reinvented the format for travel views and extended their audience to middle and lower class Americans searching for worldly experience outside of their financial means. In an essay in the Quarterly Journal of Speech, Brenton J. Malin asserts that, "The stereoscope promised middle-class audiences a more literal access to the cultural knowledge and cultural capital of more mobile, moneyed classes."[27] As the American middle class grew in numbers during the early twentieth century, so too did their desire to have a broader understanding of distant places, both inside and outside of the United States.[28] The travel system was not designed as a mere parlor amusement, but as a means to educate and elevate a middle class seeking distinction from the lower

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[26] D.J. Ellison, *Italy Through the Stereoscope* (New York: Underwood & Underwood, 1900), 11.
[27] Brenton J. Malin. "Looking White and Middle-Class: Stereoscopic Imagery and Technology in the Early Twentieth-Century United States." *Quarterly Journal of Speech* 93, no.4. (November 2007): 409.
[28] For a more in depth consideration of the Underwood travel system see Robert DeLeskie. *The Underwood Stereograph Travel System: A Historical and Cultural Analysis*. (Master's Thesis, Concordia University, 2000).

economic, and often newly immigrated class of manual laborers. Instead of individual views, the Underwood & Underwood company created large sets devoted to specific regions that were often accompanied by maps and separate texts to educate the viewer on the subject he or she was visually experiencing through the stereoscope.[29]

While the company did, as Malin suggests, establish the "stereoscopic perspective as an especially white, middle-class way of looking," it also made available to a wider audience a visual experience of cultures outside of the United States.[30] These depictions often reflected the underlying imperialism and racism of the time; however, there were also favorable, if somewhat stereotyped, characterizations of people in foreign countries. In the stereograph depicting Burmese men and women sifting gravel for rubies, for example, the text on the back of the stereograph characterizes the ruby hunters as skilled and honest in their work (fig 11, see Appendix B for full transcription of verso). This stereograph is characteristic of travel views in its composition. The photographer has positioned workers both in the foreground and background, accentuating the three-dimensional illusion. The stereograph depicting workers in a lemon grove in Sicily takes this foreground to background contrast to an extreme. The photographer has chosen to include branches in the foreground that, through the stereoscope, reach out towards the viewer in a startlingly realistic way. While in two dimensions the branches seem merely to obscure the subject of the photograph and create compositional confusion, in three

[29] Several books designed to accompany a set of stereographs can be found in the George Eastman House library, including James Ricalton. *China Through The Stereoscope: A Journey Through The Dragon Empire at the Time of the Boxer Uprising* (New York: Underwood & Underwood, 1901). and D.J. Ellison, *Italy Through the Stereoscope* (New York: Underwood & Underwood, 1900).

[30] Brenton J. Malin. "Looking White and Middle-Class: Stereoscopic Imagery and Technology in the Early Twentieth-Century United States," 404.

dimensions they project themselves towards the viewer and become the subject instead of an obstruction (fig. 12).

Early in the stereograph's history, it was recognized as a useful tool in documenting events, natural disasters, and political upheaval. In an 1861 issue of Humphrey's Journal, one correspondent writes, "The *materiel* of the army photographer should answer to the following requirements: it should be light, occupy but a small space, be convenient to move and handle, and, lastly, should be of a moderate price. The stereoscopic apparatus fulfills these various requirements better than any."[31] It also had the advantage of producing multiple proofs from a single negative, and the images could be used either singly or as a stereo pair. The benefits of using a stereo camera for photojournalism continued to be recognized well into the twentieth century, when stereos were considered to be an important tool in public education and mass media until their decline beginning around 1925.[32] The trade in stereographs was enhanced by coverage of the Spanish-American, Boer, and the First World War by companies such as Underwood & Underwood and, later, the Keystone View Company (fig. 13 and 14).[33] Both to educate and entertain, stereographs brought the visual reality of warfare on European fronts back to a distant audience in the United States.

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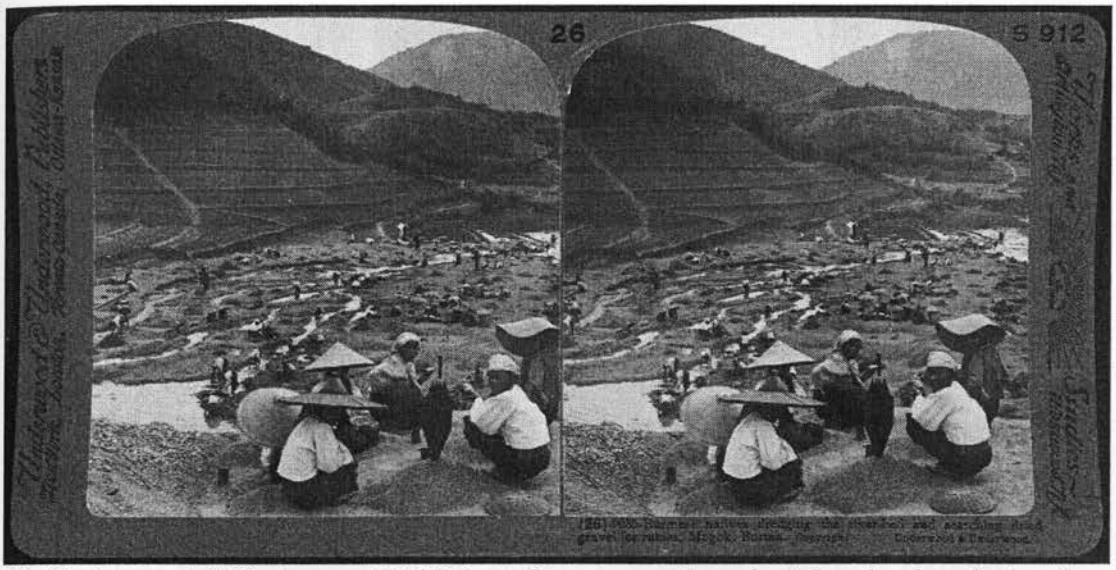
[31] "Photography in Paris," *Humphrey's Journal* XIII, no.2 (May 15, 1861): 26. The author is paraphrasing a paper written by the photographer Disderi that was presented to the Minister of War on the photographic instruction of the army.

[32] 1000 Photo Icons: George Eastman House, 465. See also Helmut Gernsheim. *The History of Photography Volume II – The Rise of Photography 1850-1880: The Age of Collodion.* (London: Thames and Hudson, 1988), 69.

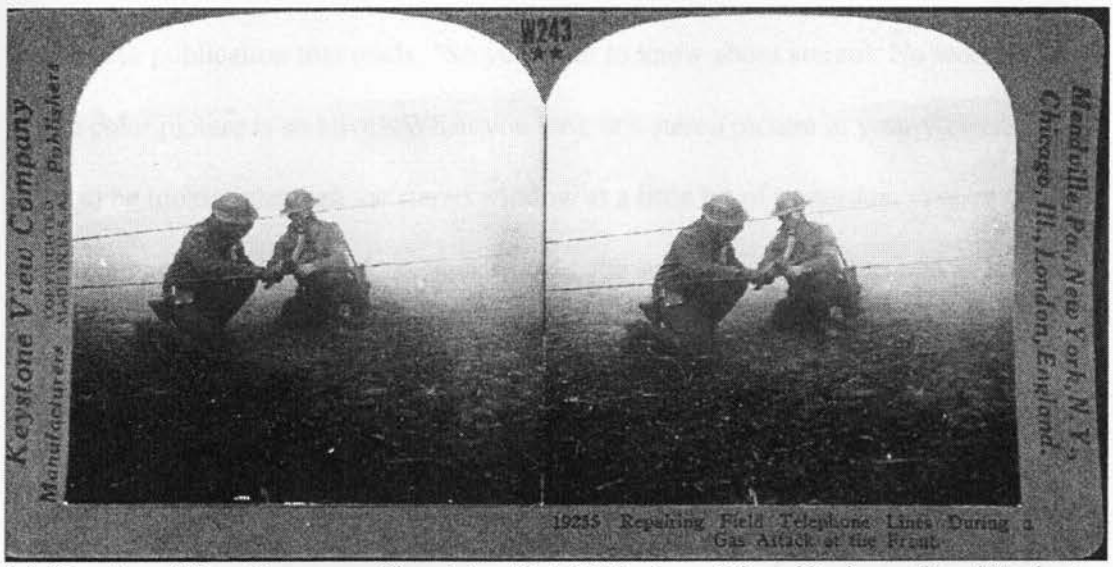
[33] Michael Carlebach, *The Origins of Photojournalism in America.* (Washington: Smithsonian Institution Press, 1992), 37.



11. Underwood & Underwood Publishers. Burmese natives dredging the river-bed and searching dried gravel for rubies. ca. 1906. 1983:2745:0026.

12. Underwood & Underwood Publishers. Picking lemons in a grove on the Conca d'Oro (Golden Shell), outside Palermo, Sicily. ca. 1906. 1983:2298:0012.

13. Keystone View Company. Ghastly glimpse of Wounded Belgians in Hospital, Antwerp, Belgium. ca. 1918. 1976:0147:0123.



14. Keystone View Company. Repairing Field Telephone Lines During a Gas Attack at the Front. ca. 1918. 1976:0147:0243.

A New Era for Amateur Stereoscopy

Today, thanks to the perfection of 35mm color film and precision cameras, stereography has become more popular than ever, and the indulgence of the experts has given way to the astonishment of thousands who have never before experienced the thrill of taking and viewing color photographs in three dimensions.

-Beaumont Newhall, "Looking Back at Stereo", 1954[34]

Though the popularity of stereographs waned after World War I and never quite regained the ubiquity they enjoyed at the turn of the century, they continued to have periods of renewed popularity and interest, especially among amateur photographers. The introduction of Kodachrome in the 1930's was a key factor in the popularity of the 35mm stereo slide format.[35] It offered a stable color medium that was relatively easy for amateur use. The advertising literature of the day was aimed at the amateur consumer, as in a Kodak publication that reads, "So you want to know about stereo! No wonder! A stereo color picture is so alive! When you look at a stereo picture in your viewer, you seem to be looking through the stereo window at a little bit of yesterday. You're back there again, seeing your children, your friends, the scenery. . . almost as real as on that day you tripped the shutter."[36] The stereo 35mm slide format became a favorite for amateur photographers, and many local 3-D clubs in the United States that still operate today began during the resurgence of interest during the 1950's.[37]

Nickolas Muray was not an amateur.[38] His career as a photographer lasted from the early 1920's to the mid-1960's and included some of the most successful portrait and

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[34] Beaumont Newhall, "Looking Back at Stereo", *Stereo Realist Manual* (New York: Morgan & Lester, 1954), 391.

[35] This format is widely referred to as the "Realist" format, though other companies, including Eastman Kodak, produced 35mm stereo cameras.

[36] "Picture it in Stereos," *Kodak Publication No. C-7.* (Rochester: Eastman Kodak Company, 1955), 3.

[37] More information on stereo clubs can be found on the National Stereoscopic Association website at http://www.stereoview.org/3d%20club.htm

[38] Muray may have disagreed with this statement. Paul Gallico writes of Muray, "In Hungarianism – that is to say, the love of life, gregariousness, the artistic eye, diversity of mediums and interests, love of food and

advertising photographs of his time.[39] Muray rose to the new challenge of the nascent medium of color photography. He began doing commercial work in color as early as 1928, and in 1930 converted his studio into one of the first color labs in the United States.[40] About the medium, he wrote, "Color calls for a new way of looking at people, at things, and a new way of looking at color."[41] Muray is best known for his celebrity portraiture and commercial work made during the twenties and thirties. However, he also used his camera to photograph friends and family as well as to document his many travels. During the 1950's, he used a stereo camera for this purpose, creating the 1,638 stereo slides in the Muray archive at George Eastman House. Ranging in date from around 1949 to 1955, most have retained the vibrant color associated with Kodachrome transparencies, and stand as a testament to Muray's eye for color and for the stereo format. He used the dimensionality of the format to produce vivid and present images. His stereographs show an awareness of how best to reproduce dimensionality through perspective, subject matter, and light. He shows a consideration of the relationship of the foreground to the background and captured ephemeral moments in such a way as to make them feel very present – especially when seen in three dimensions (fig. 15-17).

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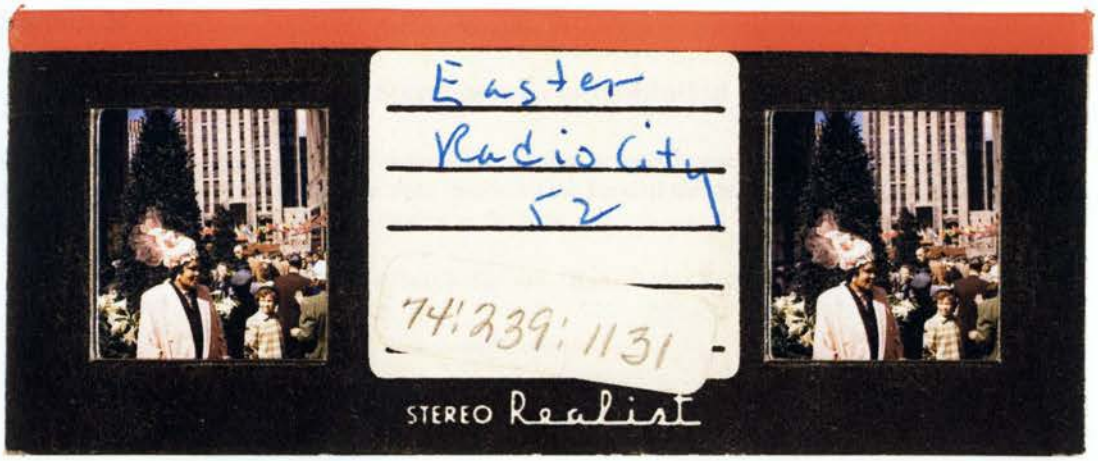
entertaining – he was strictly professional. It was in photography and fencing that he continued to insist that he was an amateur, and of the former his own self-analysis was, 'As a photographer, I am just a good plumber.'" Paul Gallico. *The Revealing Eye: Personalities of the 1920's in Photographs by Nickolas Muray and Words by Paul Gallico.* (New York: Atheneum, 1967), XIV.

[39] Robert A. Sobieszek, *Nickolas Muray: An Exhibition from the Collection of the International Museum of Photography at George Eastman House.* (1974).

[40] Marianne Margolis, *Muray's Celebrity Portraits of the Twenties and Thirties: 135 Photograpphs by Nickolas Muray*, introduction.

[41] [41] Robert A. Sobieszek, *Nickolas Muray.* (Rochester: International Museum of Photography at George Eastman House, 1974), n.p.



15. Nickolas Muray. Easter, Radio City. 1952. 1974:0239:1131.

16. Nickolas Muray. Mike in the pool. 1951. 1974:0239:1169.

17. Nickolas Muray. Michael and Nicky, Central Park. 1950. 1974:0239:1203.

Section 3:

Stereographs in Exhibition

With regard to the special conditions under which we look at the stereoscopic scene, a word only is required; that is, that we look with our eyes shut-in by the hood of the stereoscope, so that all our immediate physical surroundings are shut away from us.

-Albert E. Osborn, "Remarkable Results from Stereographs", 1900[42]

Stereoscopes isolate viewers in the space of the stereograph through the use of a hood and the immersive illusion of depth. This personal method of viewing creates difficulty in presenting stereography in a public museum, and in attempts to exhibit stereographs, museums have met with varying degrees of success. Some institutions have chosen to exhibit them as framed objects without any regard or provision for seeing them in stereo. Historian Glenn Willumson writes, "The traditional exhibition practice of matting and framing images behind glass... cannot easily encompass the presentational demands of the stereograph, thus making it difficult for it to enter the gallery space of the museum."[43] One way that institutions attempt to make three-dimensional viewing available when exhibiting stereographs in a frame is to leave plastic handheld viewing devices sitting nearby or hanging from string. Unfortunately, due to the poor optical quality and the public's unfamiliarity with their use, these glasses fail to provide the same viewing experience as original Victorian stereoscopes.

There must be a certain level of interactivity when viewing a stereograph, and this level of interactivity is part of what makes their exhibition such a difficult problem.

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[42] Albert E. Osborn, "Remarkable Results from Stereographs", *Italy Through the Stereoscope* (New York: Underwood & Underwood, 1900), 577.
[43] Glenn Willumson, "Making Meaning: Displaced materiality in the library and art museum," In *Photographs Objects Histories: On the Materiality of Images*. Edited by Elizabeth Edwards and Janice Hart. (London & New York: Routledge, 2004), 69.

Before there was an increase in concern for the protection of original photographic objects, it would have been acceptable to display them, as George Eastman House has in the past, in antique viewers, allowing the visitors in the museum to enjoy them in their original context.[44] These stereoscopes, however, are valuable objects and examples of fine woodworking in their own right, and they are susceptible to damage from frequent handling. Many have moving parts that, as is inevitable through regular use, must be repaired or replaced as they wear out or break; they frequently have delicate wood finishes that wear away over time; because they were not designed for modern use, they also do not offer the protection to stereographs that is required by museum preservation standards. The stereograph may be exposed to handling or may be damaged by the stereoscopes' own mechanisms.

Despite potential mishandling and damage, many institutions have found innovative ways to exhibit their stereographs without exposing the original objects to undo risk. George Eastman House and the J. Paul Getty Museum have both used replica stereoscopes to provide modern museum patrons a viewing experience similar to what the Victorian viewer of the stereographs would have experienced. These replicas harkened back to the elaborate designs of relatively rare parlor stereoscopes. Known as the "Holmes" or "Holmes-Bates" stereoscope, the most common design during the late nineteenth and early twentieth centuries was invented by Oliver Wendell Holmes and uses a hood to block light and distractions from the user's peripheral vision. It also utilizes a septum between the eyes to block the right eye from seeing the left image and

[44] In the past, George Eastman House has exhibited Southworth and Hawes stereo dageurreotypes in an original parlor stereoscope and also had a tall free-standing parlor stereoscope available for use by the general public. Both sustained the type of wear and damage that is to be expected from prolonged public display. Todd Gustavson, conversation December 4, 2008.

visa versa.[45] In a recent exhibition, the Oregon Historical Society used Holmes stereoscopes with the rail and card holder sawed off so that people would be able to hold them against cases containing Watkins' stereographs (see fig. 18).[46] While using this method for exhibitions is a vast improvement over the plastic, handheld lenses, the rail and holder are designed to keep the stereograph parallel and steady to the eyes. Without this, it can be difficult for people to know how to align their eyes with the image and to hold the viewer steadily in a focused position.

The Oregon Historical society and other institutions, such as the San Francisco Museum of Modern Art (SFMOMA), have used new technologies in an attempt to create optimal viewing conditions for their exhibited stereographs.[47] In the exhibition *Carlton Watkins: The Art of Perception,* SFMOMA provided access to approximately 200 stereo images through the use of digital surrogates, special eyeglasses with LCD lenses, and a software interface designed by the multimedia firm Perimetre Design. SFMOMA employed ". . . 21st century innovations to bring 19th-century images back to the broad public for whom they were originally created."[48] The Oregon Historical Society, in addition to their Holmes stereoscopes, also exhibited stereographs electronically, using monitors and specially designed glasses for the display of digital surrogates (fig. 19).

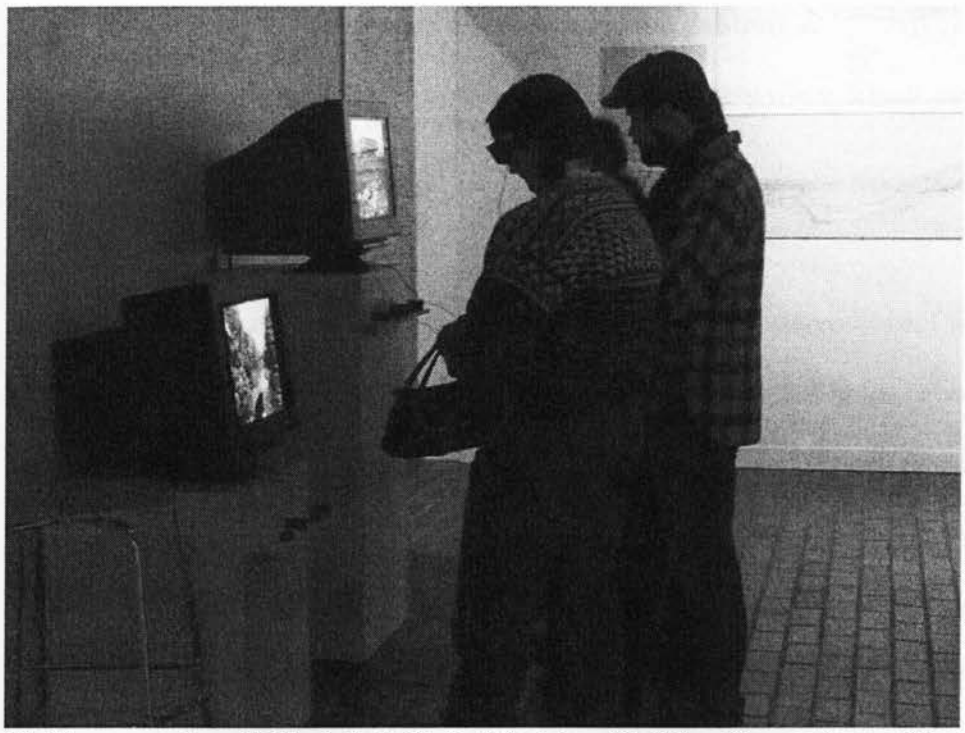
The use of digital surrogates is a complex issue, as the viewing experience cannot help but be altered through the use of such a different format from the original, and the

[45] An in depth history and explanation of this stereoscope can be found in Paul Wing, "The Holmes-Bates Scope," in *Stereoscopes: The First One Hundred Years* (Nashua: Transition Publishing, 1996), 85-108.
[46] Megan Friedel, e-mail message to author, February 10, 2009.
[47] San Francisco Museum of Modern Art, "Carleton Watkins: The Art of Perception," www.tfaoi.com/newsm1/n1m599.htm (accessed April 15, 2009).
[48] Ibid.

sensation of viewing the original is partially lost in the translation.[49] Stereographs are remarkable for their ability to make distant places and people seem pertinent and present before the viewer. The use of a digital surrogate places a literal and figurative screen between the modern viewer and the original experience of viewing the stereograph. Digital stereo display is continuing to evolve and offers some interesting options, but curators should be aware of the transformation that occurs when an image is divorced from its material object.

18. Stereographs exhibited in "Carleton Watkins: Stereoviews of the Columbia River Gorge." Image courtesy of the Oregon Historical Society.

[49] For a more in depth look at the implications of transforming material objects into digital reproductions see Joanna Sassoon, ""Photographic Materiality in the Age of Digital Reproduction." In *Photographs Objects Histories: On the Materiality of Images* (London & New York: Routledge, 2004), 186-202.



19. Stereographs exhibited digitally in "Carleton Watkins: Stereoviews of the Columbia River Gorge." Image courtesy of the Oregon Historical Society.

Designing a Stereoscope for Exhibition

A mere machine, in order to sell in the American market, must not only be effective, but it must be well proportioned and arranged with an eye to please.

-The Photographic News, 1860[50]

When I began to consider the design for an exhibition stereoscope, I was enamored with the idea of basing it on a type of parlor viewer that holds between 15 and 100 stereographs on a belt inside a cabinet. This style, both elegant and practical for use in a Victorian parlor or library, used knobs on the side of the cabinet to bring successive stereographs into view.[51] However, the longer I considered this design, the more I was convinced of its impracticality for exhibition purposes. As the Photo Technology Curator at George Eastman House, Todd Gustavson, pointed out to me, "It is inevitable that anything with moving parts in an exhibition will break."[52] Stereoscopes that have been on exhibition at George Eastman House in the past clearly bear witness to this fact. Wear and tear on any object that is exposed to handling is unavoidable, but the addition of moving parts makes repairs and expensive upkeep an absolute certainty. Another drawback to this design is that the inclusion of many images in a viewer could cause the exhibition to bottleneck when crowded, since only a single person can use the stereoscope at one time. Additionally, the stereographs stored in such a cabinet are difficult or impossible to view without looking through the eyepieces. For many who

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[50] "Influence of the Stereoscope upon Popular Taste," *The Photographic News* (June 29, 1860): 107.

[51] For further information on this style of stereoscope see Paul Wing, *Stereoscopes: The First One Hundred Years* (Nashua: Transition Publishing, 1996), 44-48.

[52] Todd Gustavson in a discussion on December 4, 2009 kindly shared his experience with me of fixing stereoscopes that had, indeed, broken when exhibited in the past.

have eye conditions that prevent or impede them from seeing in stereo, this would deny them access to the stereographs.

Having considered a number of design options for a stereoscope that could overcome these issues while still having the benefits of the parlor stereoscope, I came to the conclusion that the answer was to use the simple and practical design of the Holmes viewer and adjust it to fit the needs of a modern exhibition. The advantages of the Holmes viewer are many: the design is simple and basic, making it easy to modify it to the needs of an exhibition; the prismatic lenses used in this design mean that interocular adjustment is less of a concern than with achromatic lenses; it doesn't have a fixed distance between the lenses and the stereograph, allowing the viewer to adjust the focus. Furthermore, as previously mentioned, it has the advantage of reducing peripheral distractions using a hood and septum. In my design, the width of the hood has been increased to accommodate eyeglasses.[53]

The major drawback of using the Holmes stereoscope in exhibitions is that, in its unaltered form, it offers no protection to the stereograph. To amend this situation, I designed a frame for the stereograph into which the rail of the stereoscope is inserted. Thus, the protective and aesthetic advantages of a frame are paired with the visual experience of the stereoscope in a single device. I was adamant that its use should be apparent without any instruction, diagram, or confusion. There is no part hanging loose or on a tether because, in addition to looking cluttered, loose objects are tempting for children to swing, break, or run off with. It also had to be designed so that transparent or translucent stereographs could be lit from behind.

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[53] This problem with antique hoods was brought to my attention by Nicholas Graver, a noted collector and stereo enthusiast, in a conversation on January 14, 2009. He rightly pointed out that the hood is unnecessary for stereoscopic viewing, though it does seem to improve the overall quality of viewing.

Though the final design has addressed many of the problems that arise with the exhibition of stereographs, there are some issues that remain. I chose to display the stereograph so that the viewer extends from the wall at a 45° angle. The angle makes it easier for tall people to bend down to look into the stereoscope, making it possible to hang the stereoscope lower than if the lenses were perpendicular to the wall. However, hanging height is still an issue for wheelchair users and for shorter museum attendees. An informal survey of ten adults ranging in height from 4' 11" to 6' 1" indicated that all felt comfortable using the stereoscope when it is mounted between the 50" to 53" range. However, all those who participated in this informal poll could, with only mild effort, use the viewer at a significantly lower position. Logically, a tall person can bend down more, but a short person cannot become taller unless a stepstool is made available. I would therefore recommend a hanging height of around 48" to the top of the frame. This leaves the centerline of the stereograph at 44". The Smithsonian guideline for accessible exhibition design suggests hanging objects at a 40" centerline to provide visual accessibility to wheelchair users.[54] Though my suggested hanging height is 4" above this recommendation, it is a reasonable compromise and will offer the greatest ease of accessibility to the majority of all users; because the stereograph is not enclosed, it will not make the image completely inaccessible to any user.

Hanging height is not the only issue that arises with the design. While the stereoscope has been considerably altered to provide more strength than its Victorian counterparts, it is still made of wood, and wood is never invincible. The handle has been reinforced, the rail thickened, and the frame has been hung from a fitted French cleat

[54] Smithsonian Accessibility Program, "Smithsonian Guidelines for Accessible Exhibition Design," http://www.si.edu/opa/accessibility/exdesign/sectionb.htm (accessed June 4, 2009).

which gives it great strength.[55] However, with enough determination, a child or mischievous adolescent could potentially cause some damage. This is a risk that concerns any museum display, especially an interactive one such as this. It is advisable to alert security guards to this risk so that they can dissuade aggressive users. Lighting is another issue that must be considered in installation. Lights must be carefully adjusted to avoid shadows and reflections. The daguerreotypes in particular are finicky because of their reflective surface. If possible, I recommend using the projected lights with shutters that have been used previously to exhibit daguerreotypes at George Eastman House.[56] The stereographs that require transmitted light must have a fixture attached to the wall cleat inside of the frame. I recommend the use of a UV filtered florescent light fixture, such as the Hera® Slimlite™ T4.[57] This fixture has a long bulb life and generates very little heat; however, it should still be wired to a timer switch to protect the stereographs from prolonged exposure to light.[58]

A final issue in the design is the matter of cost. I had hoped to create a stereoscope that would be simple enough to be built inexpensively. I arrived at a design that is simple in appearance and function but labor intensive in its construction. The design uses materials efficiently, and the major expense is not the wood, lenses, or hardware, but the physical labor and craft required in assembly. Built by a skilled woodworker on a custom basis, the stereoscope's cost may be prohibitive for a single

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[55] A French cleat is a hanging system utilizing two pieces of wood, each with a beveled edge. One piece is anchored to the wall and the other to the object being installed. The angle secures the object close the wall and offers a broad surface that can be screwed into the wall in multiple places, dispersing the weight.

[56] This was the method used in the Southworth and Hawes exhibition, *Young America.*

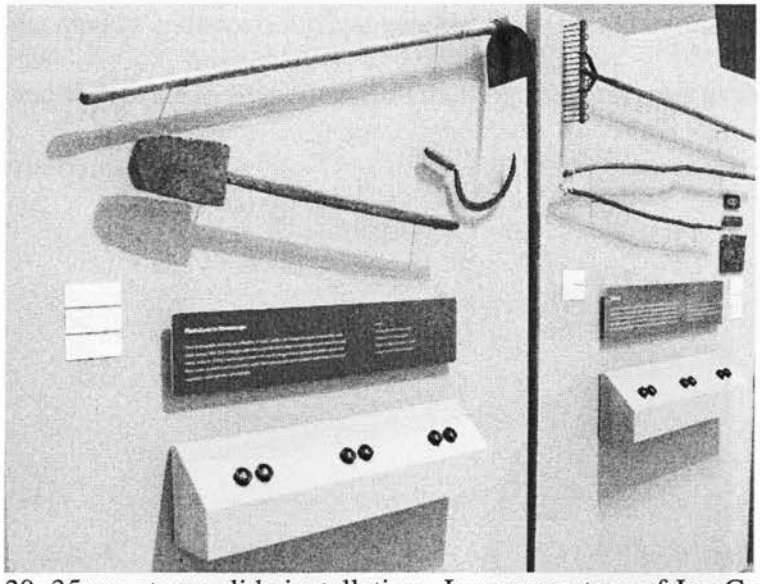
[57] Available through www.outwater.com.

[58] This is the system that was recently used to light the glass positive of Abraham Lincoln exhibited at George Eastman House according to Arnold VanDenburgh in a conversation on June 10, 2009. The timer switch is wired so that the user, by pressing the switch, illuminates the displayed object for a limited period of time, around two minutes.

exhibition (see Appendix A for details of cost). However, the stereoscope has been designed so that it can be as easily reused as a standard frame.[59] This ease of reuse lessens the expense over time if an institution can use it for multiple exhibitions or in permanent installations. Another possible solution to the issue of cost would be to build a number of stereoscopes and to lease them to various institutions as needed. Whether the demand is great enough to warrant such effort has yet to be determined. Though the expense is high, there is no major change that could be made to the design that would lessen the expense without decreasing the safety of the object it displays, its aesthetic appeal, or its functionality.

While it is able to accommodate some range in the size of the exhibited stereograph, the stereoscope is not designed to hold 35mm stereo slides.[60] Because this is the format that Nickolas Muray used for his stereographs, an alternative will be needed to display his work. Luckily, stereoscopes designed to exhibit 35mm stereos are readily available. 3D Concepts is a company specializing in stereo cameras, projectors, and viewers. They offer a line of exhibition stereoscopes designed for the display of 35mm slides, either individually or in viewers with rotary carousels designed to show multiple views.[61] They also offer custom displays based on the exhibition needs of museums (fig. 20).

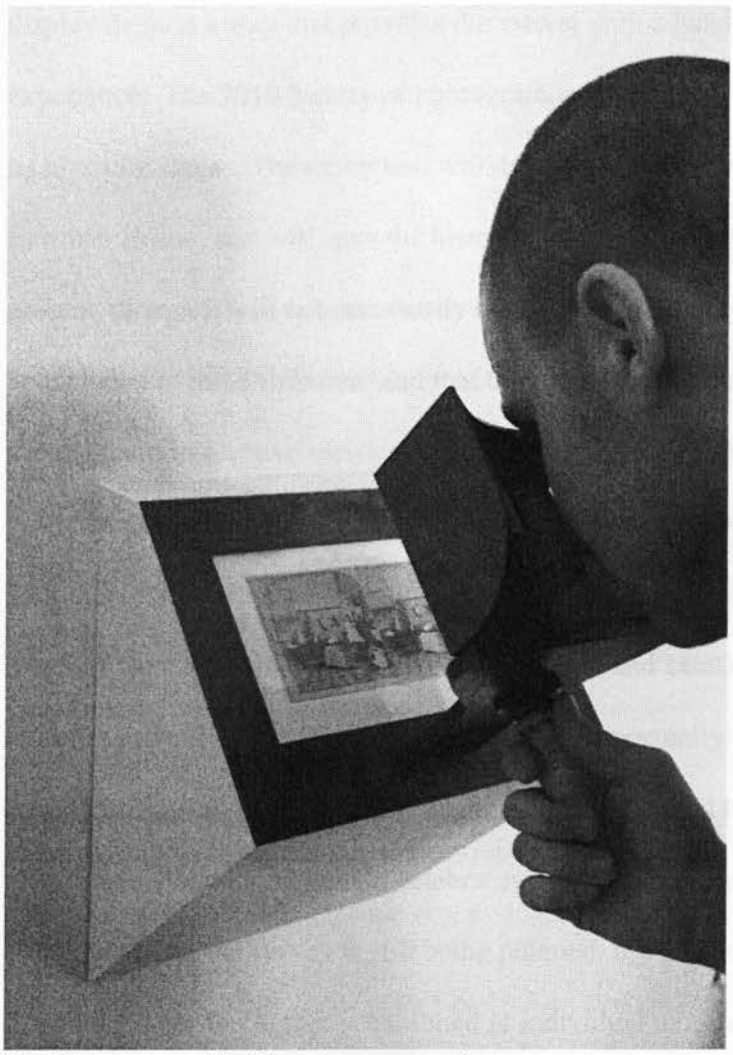
[59] The sides of the box may be painted to match the wall color of the exhibition. While this does add an additional step not required in reusing a frame, it could alternately be left a neutral color and reused without repainting. However, the box has been designed to make painting as simple as possible.
[60] The stereoscope can accommodate stereographs between 5 and 8 inches in width, but is best within a range of 6 and 7.5 inches.
[61] Available at http://www.stereoscopy.com/3d-concepts/viewersexh.html.



20. 35mm stereo slide installation. Image courtesy of Jon Golden at 3D Concepts.

There is no perfect way to exhibit stereographs. Every institution will have a different purpose for each exhibition, and every stereoscope user will have a different ideal viewing method. Solutions have been found, and those interested in exhibiting stereographs will continue to look for new alternatives; however, one thing that remains constant is that stereographs should be seen as their makers intended, in three dimensions. My design offers an alternative method that is suited for the display of valuable original objects in an aesthetically appealing way (fig. 21). This may not be the best method of display, for example, in an exhibition where reproductions of the original stereographs are as useful in conveying the curatorial thesis as the original objects. However, in the case of the proposed George Eastman House exhibition, the use of original objects is an important aspect of my proposal. The stereoscope that I have designed is specifically intended to meet this need while appealing to modern exhibition aesthetics and preservation concerns. At the same time, it has been designed to allude to

the quality craftsmanship and care for detail prized in nineteenth century stereoscopes, and to provide the experience of Victorian stereoscopes to the contemporary museum visitor.



21. Prototype exhibition stereoscope in use.

Exhibition Proposal

Stereographs have been an important and largely overlooked branch of photography. It is crucial that they are displayed in any survey of the history of photography, and in order to fully understand their role and function it is important to display them in a way that provides the viewer with a hands-on, three-dimensional experience. The 2010 history of photography survey at George Eastman House is still in its planning stages. The exhibition will draw from the extensive collection at George Eastman House, and will span the history of photography, from its discovery to the present, though it will not necessarily do so chronologically. I propose that stereographs be included in this exhibition, and that they be displayed in a way that makes them accessible to interactive viewing. The images have been chosen to highlight a range of time periods, media, and uses. Ultimately, it is my curatorial aim to engage an audience with this format because stereographs offer a visual experience that immerses the viewer and they have the capability of providing delight and excitement. It is my firm belief that museum patrons will be enthusiastic about the opportunity to see these original stereographs in an interactive and engaging way. I intend to connect them with a broader photographic history while still celebrating their unique aesthetic attributes.

Because the survey is still being planned, my proposal offers a great deal of flexibility. The stereographs, exhibited in individual units, are open to flexibility in the arrangement and quantity. As proposed, the exhibition includes ten stereoscopic viewers, eight using my design and two designed by 3D Concepts for 35mm stereo slides. One stereograph, *Expectation, Married Life As He Pictured It (Music Without Words)*, should be exhibited in a standard frame instead of a stereoscope and hung alongside the stereograph

from the same series.[62] All stereographs should be installed in pairs according to the divisions outlined in the third section of this thesis, and they ideally should be connected to other two-dimensional works that are either chronologically or culturally related. They should be dispersed throughout the exhibition in connection to their era and cultural context and not installed in a clump based on the similarity of their formats alone.

Alison Nordström, Curator of Photographs at George Eastman House, has suggested that the exhibition will be installed for a prolonged period of time, and that portions of the exhibition may be loaned to other institutions. Because of this, I have offered a list of alternate images that can be used should there be a need for additional images for traveling exhibitions. It is also a concern that, should some of these images be exposed to prolonged display, conservation issues may arise. The daguerreotypes are of particular concern and should be monitored by the conservation department for any increase of deterioration. While the stereoscope has been designed to protect stereographs to the same extent as framing, the same environmental and lighting concerns that exist for any exhibited objects continue to be a consideration.

[62] Because the two stereographs are from the same series, I think it necessary to show only one through a viewer. The framed stereograph is there to show the context of the narrative series.

Conclusion:

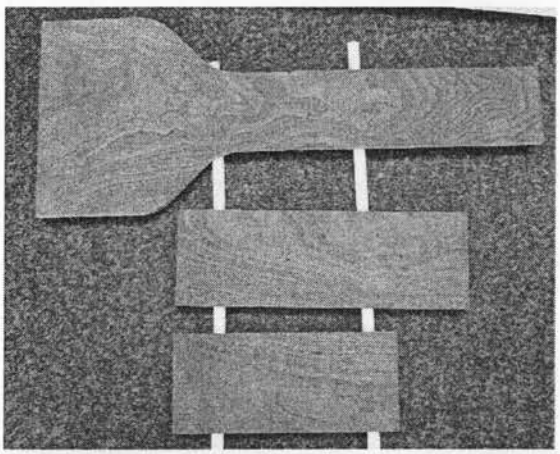
There are inconvenient difficulties associated with exhibiting stereographs. If they are to be seen in three dimensions, they require visitor interaction resulting in preservation concerns. They also require an optical device to provide accessibility to the majority of museum patrons, and the use of such a device can be confusing and tactilely or aesthetically unpleasing. I have provided some examples of solutions used by museums in the past, including the use of surrogates and handheld stereoscopes. After considering both the problem at hand and previously devised solutions, I have offered my own solution to the display of these objects by designing and building an exhibition-ready stereoscope that responds both to preservation concerns and the interactive needs of a public audience. In addition to this, I have provided an exhibition proposal for the inclusion of stereographs in the next survey exhibition of the history of photography to be installed at George Eastman House in 2010. To facilitate the use of these objects in the upcoming exhibition, I have provided brief essays about the historical significance of these stereographs so that my research will be accessible for use in didactics or publications in the future.

The exhibition of original stereographs in three dimensions presents difficulties, but is by no means unattainable. Seen in three dimensions, the stereographs selected for this exhibition are well worth the additional effort that interactive displays necessitate. While maintaining preservation standards is imperative, it is crucial for museums to undertake the challenge of interactively displaying stereographs for the benefit of their visitors. It is the only way that these objects, which have been often overlooked and undervalued in the past, can be appreciated and understood by contemporary viewers.

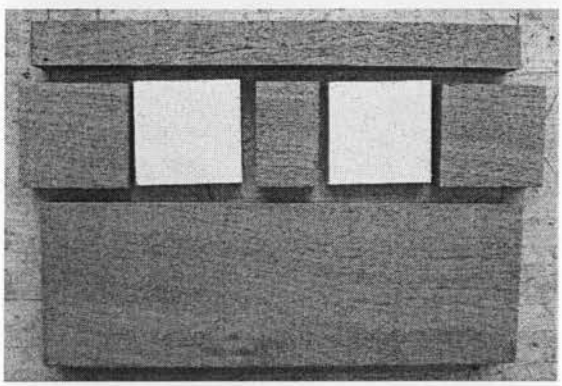
Appendix A: Building the Stereoscope

Assembly:

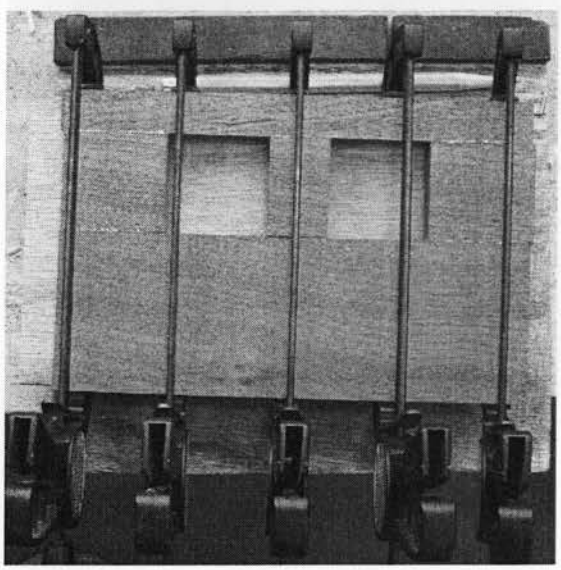
Begin by roughly sawing out and planing the pieces for the hood and rail of the scope. It is best if these pieces are left to age for a couple days because the wood will warp slightly after it has been thinned down.



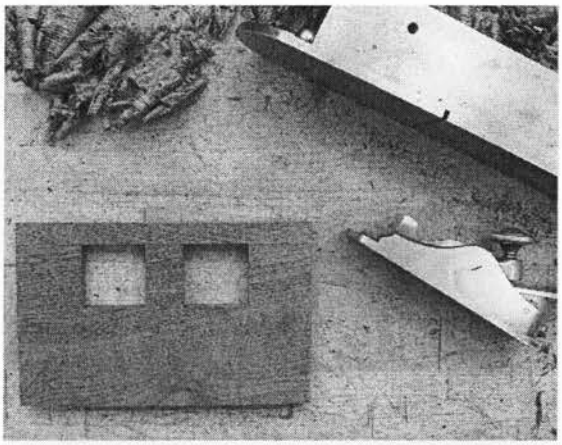
Saw and plane the pieces for the middle layer of the lens board. It is helpful in joining them to make blocks the size of the lenses to assist in spacing. Wax these blocks before gluing for easy removal.



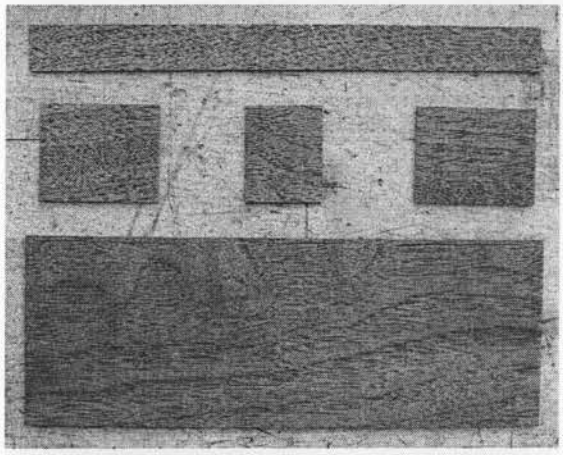
Glue and clamp the middle layer of the lend board. All pieces should be perfectly square and the grain should run in the same direction.



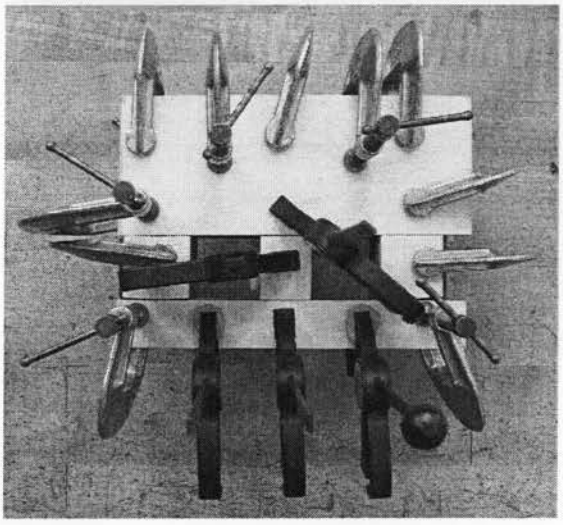
Plane down the middle layer of the lens board until it is the correct width and true on both sides.



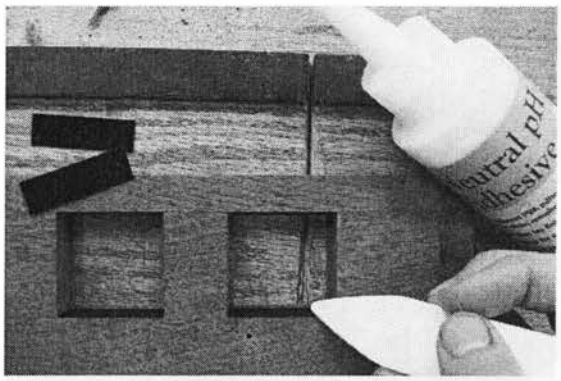
Shape the veneer or outer layers of the lens board. These pieces will hold the lenses in place. The grain should run parallel to the middle layer of the board and all sides should be flat and the corners square.



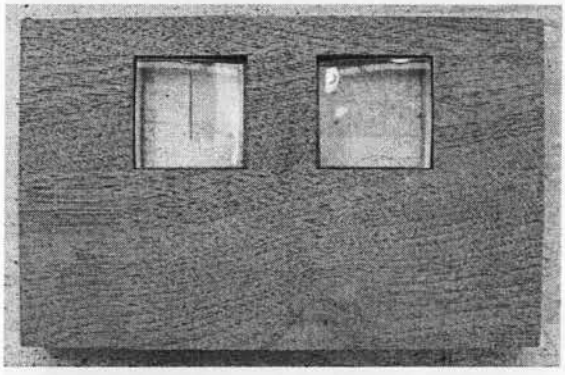
Glue and clamp one side of the veneer into position. Carefully measure the overhang around the lens openings.



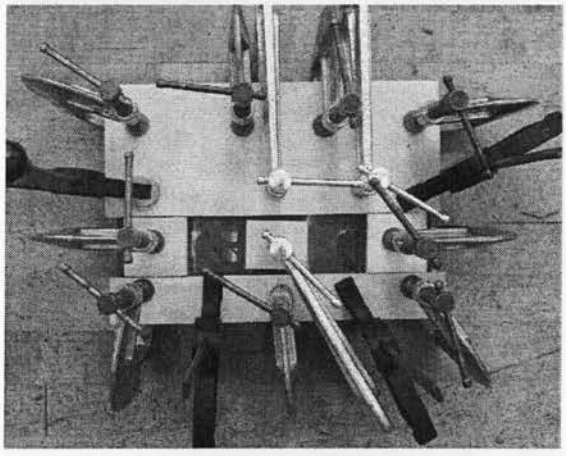
To keep the lenses from rattling in the lens board, black fabric or felt can be used to line the openings. Trim the pieces to size and adhere them to the wood using a flexible adhesive such as bookbinding glue.



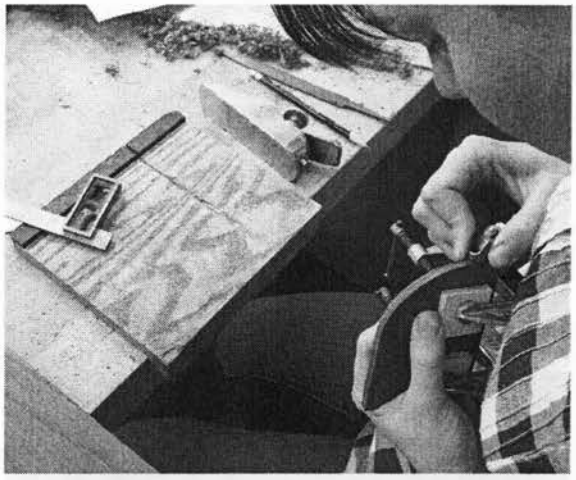
Insert the lenses. Because they are prismatic, they are thicker on one side than the other. The thin side should point inwards. The flat side of the lenses should be against the veneer that has been attached, and narrow blocks should be used to keep the lenses from tipping forwards on the narrow side.



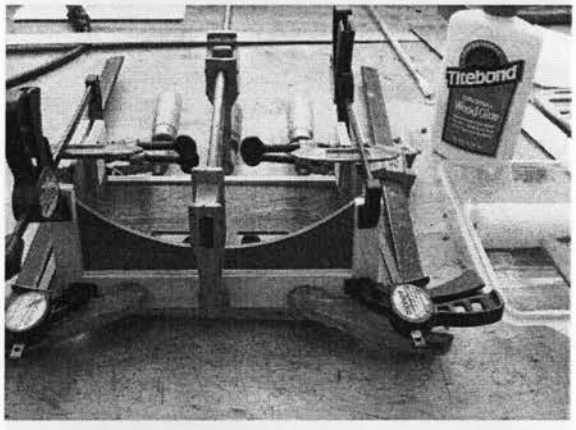
Glue and clamp the other layer of veneer with the lenses in place.



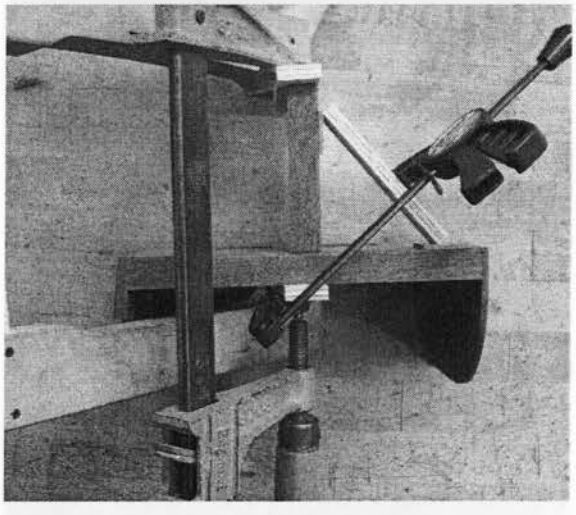
Shape the pieces for the top and sides of the hood. To make the sides symmetrical, it helps to clamp them together while shaping the curve with a finger plane.



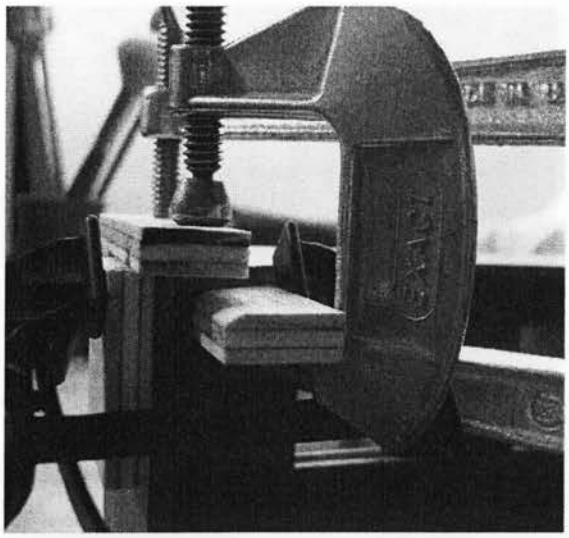
After planing the sides of the lens board true, glue and clamp the hood to the lens board.



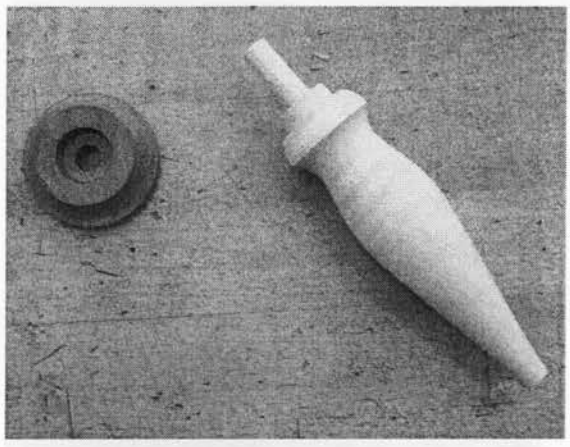
Shape the septum so that it is wider at the bottom than at the top but retains its symmetry. Mark the center point on the lens board and the septum and glue and clamp it into place. Make sure that it is square to the lens board. If necessary, use a brace to correct the angle.



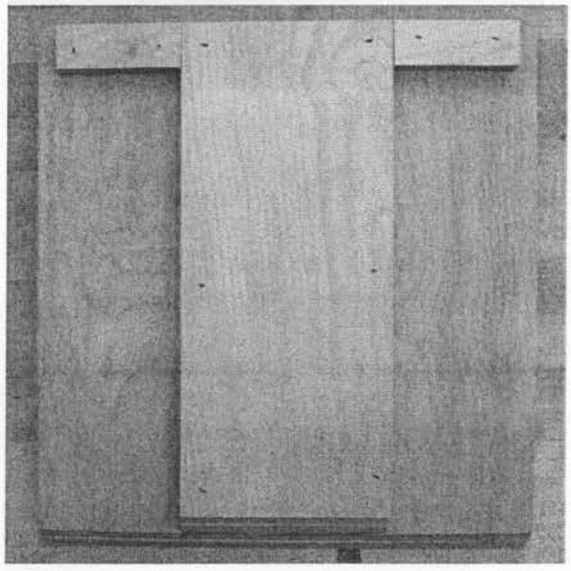
Reinforce the corners of the hood by gluing and clamping small mitered strips along the inside of the joints.



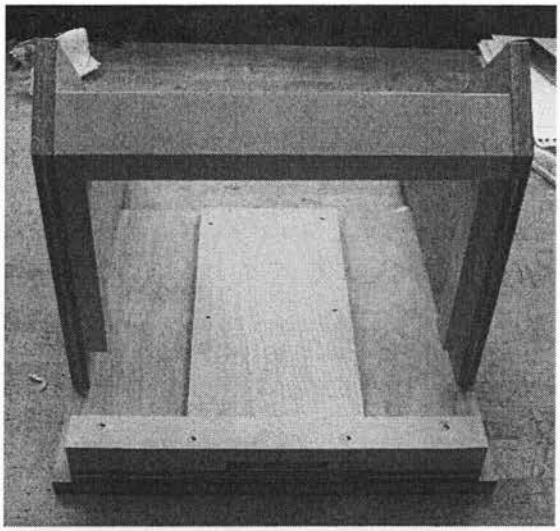
Turn the handle in two parts that fit tightly together. The wider part will be glued to the base of the rail to strengthen the handle joint.



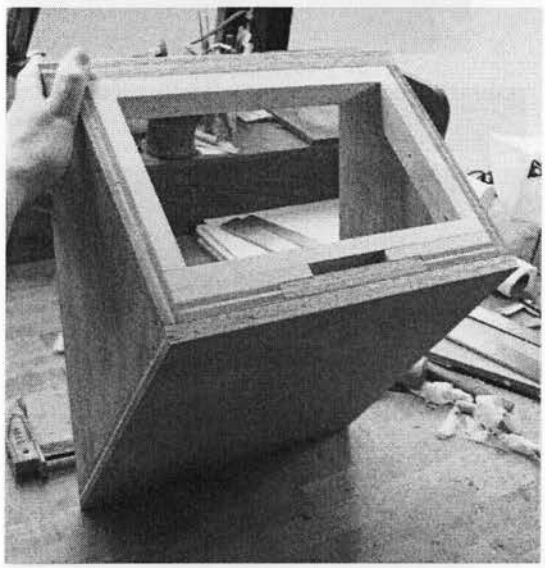
Assemble the bottom of the box. Glue and nail the board for the base of the rail bracket into place. Miter the wall edge at a 45° angle.



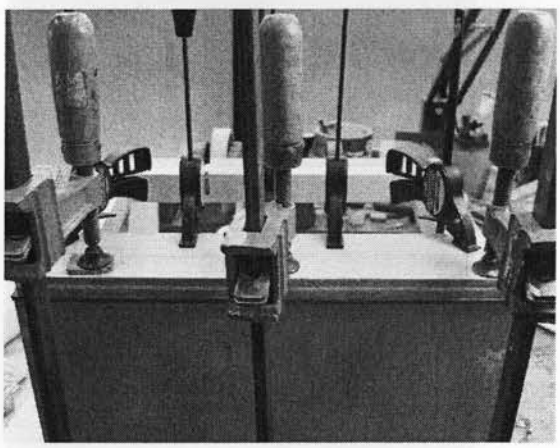
Saw and joint the other sides and the top of the box, including the pieces for the interior bass wood frame.



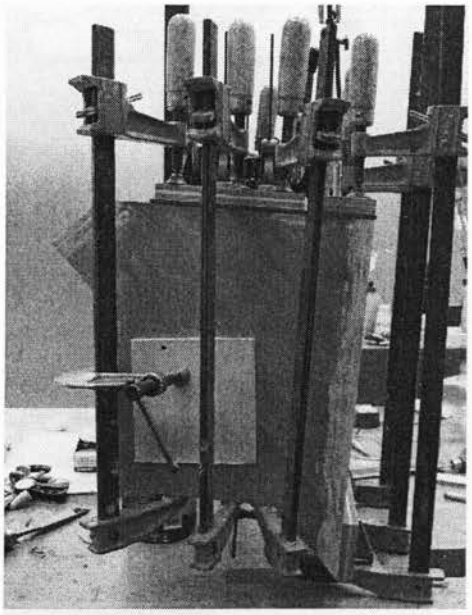
After all of the sides have been nailed into place, plane the front of the box until it is completely flat.



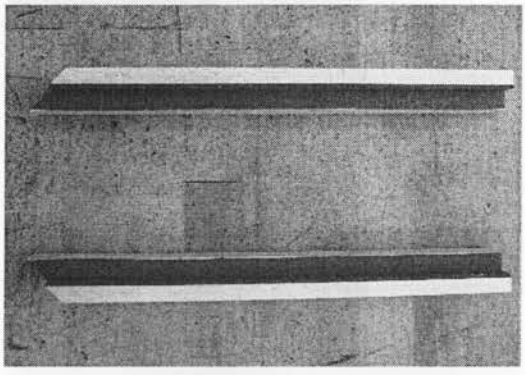
Saw and plane the front veneer to size. This veneer will also serve as the rabbet of the frame and should evenly extend over the edge of the box opening.



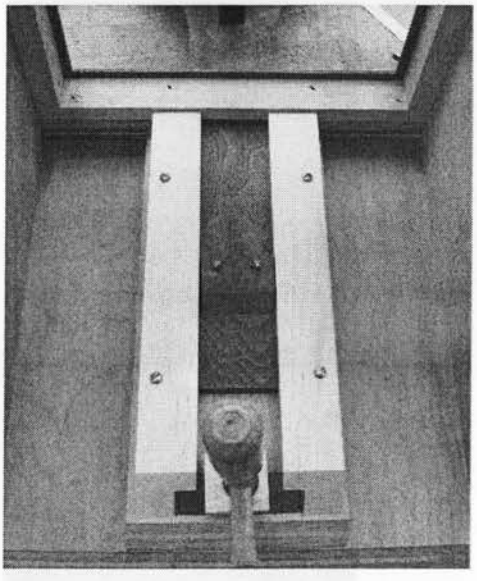
Adhering the veneer requires angled blocks clamped to the sides of the box in order to produce enough pressure between the pieces of wood. While the veneer is drying, wood filler can be used on the nail holes and along the edge of the plywood.



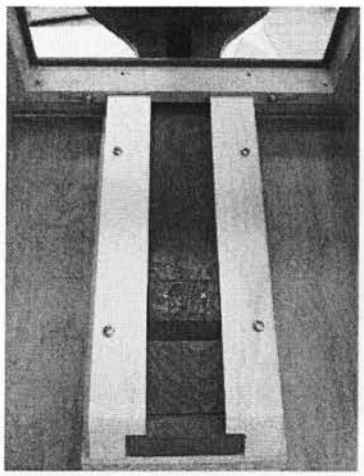
Line pieces for rail bracket with felt and drill elongated screw holes so that they can be adjusted against the rail.



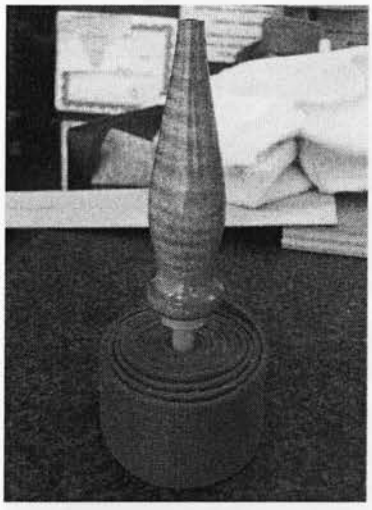
Using brass, pan-head screws add the rail bracket and adjust the tension so that the scope moves smoothly. Glue and clamp a stop block into place at the end of the bracket and saw and plane the rail to length. Screw a stop block on the rail to keep the scope from being removed. This block should be removable so that the scope can be removed if necessary when the box is off of the wall.



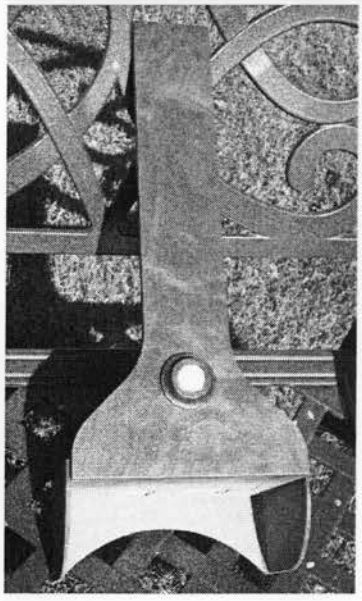
Adhere felt to the blocks to soften the stopping points. Screw the turn buttons onto the inside of the frame. Sand the box and scope with several grades of paper.



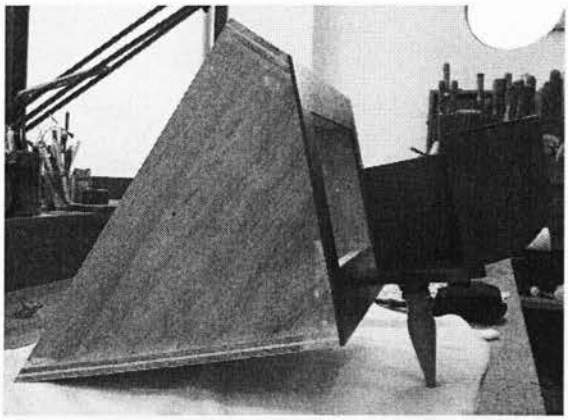
Sand and varnish the handle using several layers of shellac. Avoid applying finish to the point where the handle will be joined to the rail.



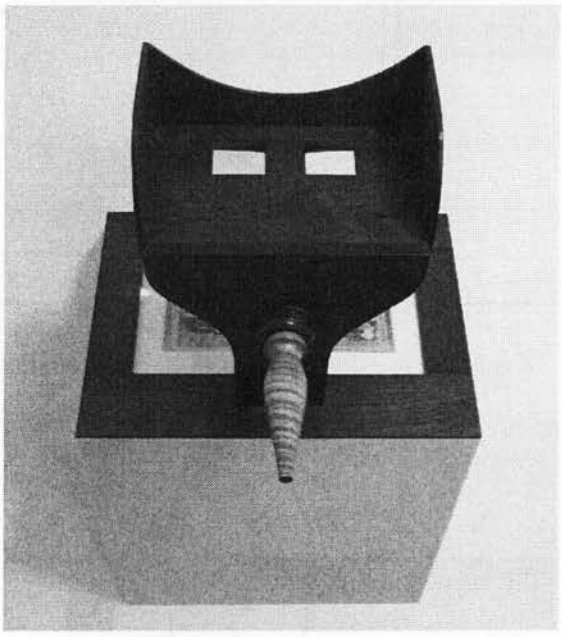
The rest of the scope and box can be finished with several layers of spray lacquer or varnish. Mask off the hole where the handle will be inserted as well as the lenses.



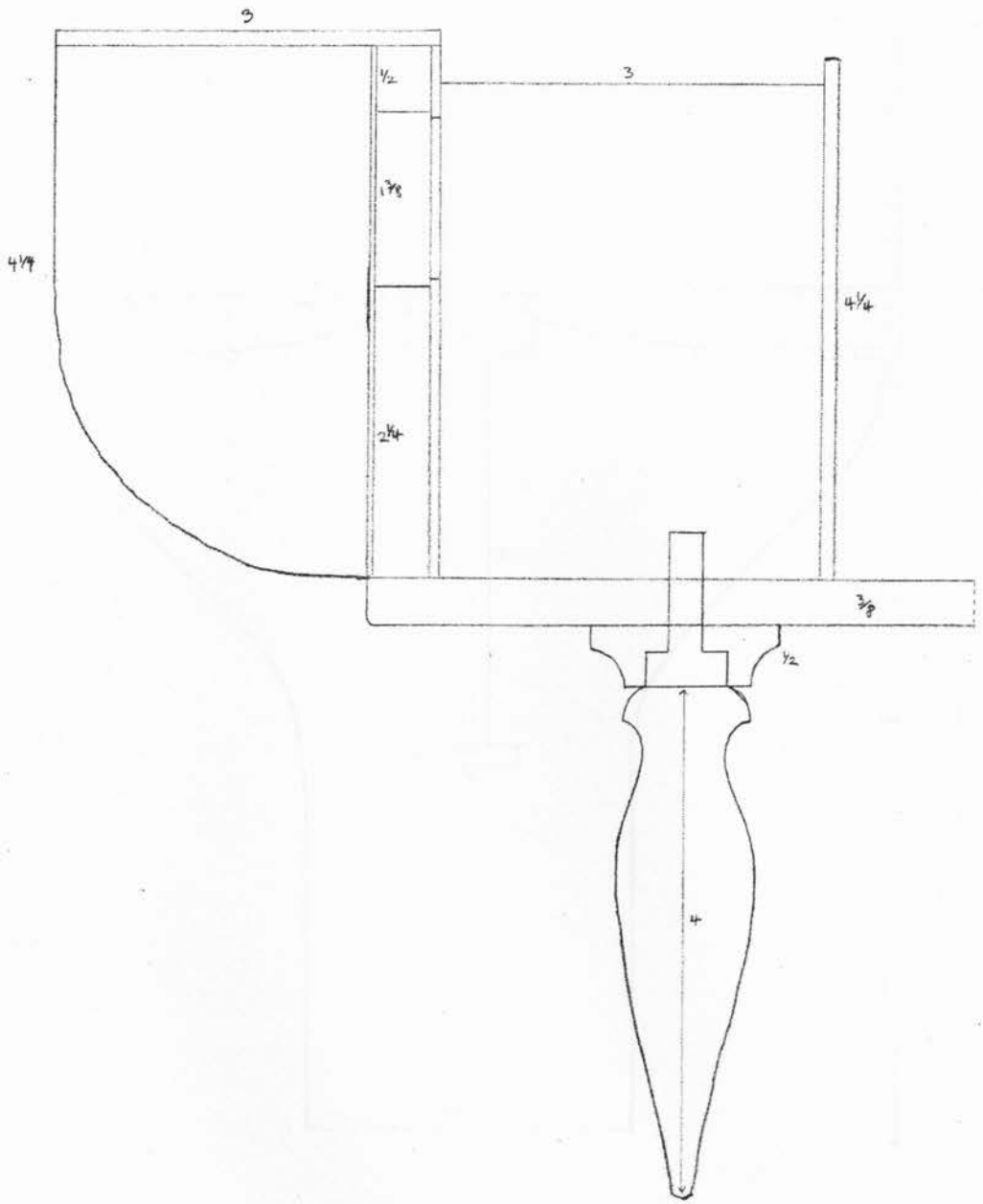
Glue the handle into place. Remove the mask from the lenses and clean any residual adhesive away with a cotton swab and denatured alcohol.



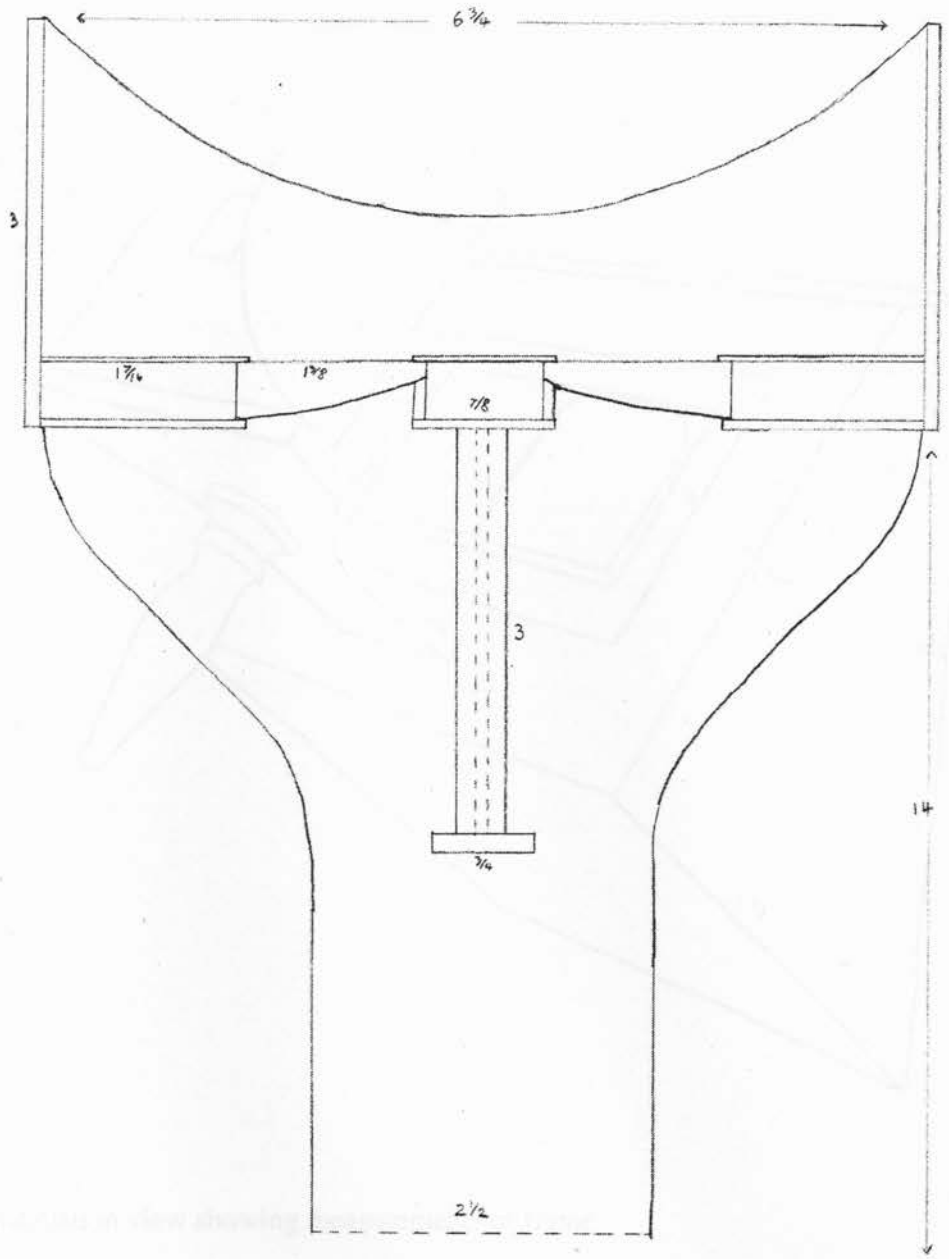
Using tape to mask the edge of the veneer, paint the box using a small roller. Hang from the wall using a French cleat.



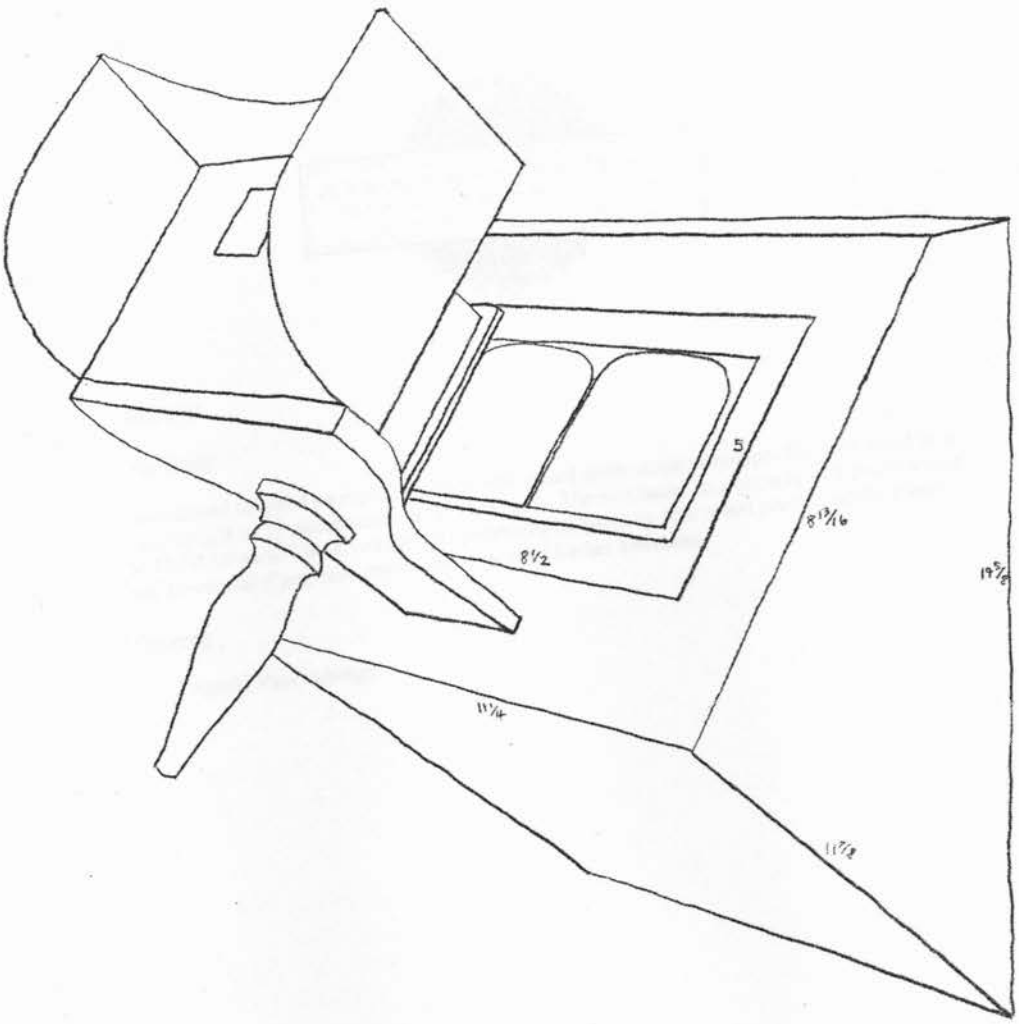
Design Schematics:



22. Side view of hood showing cross-section.

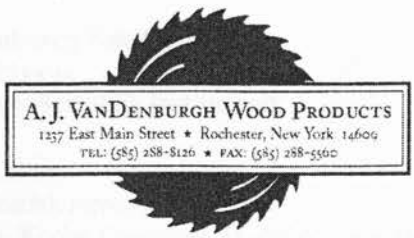


23. Top view of hood showing cross-section.



24. Installation view showing measurements of frame.

Price Quote:



06/09/09

Dear Emily

I am pleased to quote on replicating your wall mount stereoscope prototype. The cost based on a quantity of 8 to 10 pieces would be $995.00 each. The cost based on a quantity of 5 pieces would be $1235.00 each. Thank you for the opportunity to quote on your wood product needs. Please feel free to call if you have any questions or need further assistance.

Sincerely

Arnold VanDenburgh

Appendix B: Exhibition Proposal Checklist

1.

Louis Jules Duboscq Soleil
French (18221894)
Descriptive Title: Scientific Instruments
ca 1851
daguerreotype, stereo
6.5 x 5.4 cm. (each), stereo plate
Gift of Eastman Kodak Company, ex-collection Gabriel Cromer
1976:0168:0100

2.

Warren Thompson
American
Descriptive Title: Selfportrait as an artist
ca. 1855
stereo daguerreotype
7.3 x 6.1 cm. (each)
Gift of Eastman Kodak Company, excollection Gabriel Cromer
1976:0168:0104

3.

Carleton E. Watkins
American (18291916)
RIVER VIEWWASHINGTON COLUMN
1861
collodion stereo positive on glass
5.9 x 7.3 cm. on 8.3 x 17.1 cm. mount.
Gift of C. R. Witherspoon
1982:2364:0013

4.

Carleton E. Watkins
American (18291916)
DISTANT VIEW OF HALF DOME AND VERNAL FALL
1861
collodion stereo positive on glass
6.1 x 7.5 cm. on 8.3 x 17.1 cm. mount.
Gift of C. R. Witherspoon
1982:2364:0018

5.

LES COCOTTES, CHEZ SATAN
From the series: Diableries
ca. 1875
albumen print
Each Image: 7 x 7 cm
Overall: 8.5 x 17.5 cm

Museum Collection, by exchange
1971:0107:0001

6.

EXPECTATION MARRIED LIFE AS HE PICTURED IT (MUSIC WITHOUT WORDS)
ca. 1901
gelatin silver print
Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Museum Purchase; excollection of Richmond W. Strong
1983:1966:0002

7.

REALIZATION MARRIED LIFE AS HE FOUND IT (WORDS WITHOUT MUSIC).
ca. 1901
gelatin silver print
Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Museum Purchase; excollection of Richmond W. Strong
1983:1966:0017

8.

PICKING LEMONS IN A GROVE ON THE CONCA D'ORO (GOLDEN SHELL), OUTSIDE PALERMO. SICILY.
ca. 1906
gelatin silver print
Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Museum Purchase: excollection Richmond W. Strong
1983:2298:0012

9.

GHASTLY GLIMPSE OF WOUNDED BELGIANS IN HOSPITAL, ANTWERP, BELGIUM.
From the series: "World War"
ca. 1918
gelatin silver print stereograph
7.6 x 7.6 cm. (each) on 8.8 x 17.8 cm. mount
Museum Collection
1976:0147:0123

10.

Nickolas Muray
American (18921965)
EASTER, RADIO CITY
1952
color transparency
Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm

Gift of Gustav Schwab
1974:0239:1131

11.

Nickolas Muray
American (18921965)
MICHAEL AND NICKY, CENTRAL PARK
1950
color transparency
Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm
Gift of Gustav Schwab
1974:0239:1203

Alternates:

1.

Warren Thompson
American
published title: Self portrait as thinker
ca. 1855
daguerreotype, stereo
Each Image: 6.7 x 6 cm (2 5/8 x 2 3/8 in.)
Overall: 8.5 x 17.4 cm (3 3/8 x 6 7/8 in.)
Gift of Eastman Kodak Company, excollection Gabriel Cromer
1976:0168:0115

2.

Carleton E. Watkins
American (18291916)
RIVER VIEW. CATHEDRAL ROCKS
1861
collodion stereo positive on glass
6.1 x 7.2 cm. on 8.3 x 17.2 cm. mount.
Gift of C. R. Witherspoon
1982:2364:0011

3.

ALIENATION HIS WEDDING EVE AT THE BACHELOR CLUB.
ca. 1901
gelatin silver print
Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Museum Purchase; excollection of Richmond W. Strong
1983:1966:0006

4.

INVITATION "HAVE WAN OF YOUR WIFE'S BISCUIT!"
ca. 1901
gelatin silver print

Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Museum Purchase; excollection of Richmond W. Strong
1983:1966:0012

5.

VEXATION "YOU HEARTLESS WRETCH TO CALL THEM BRICKBATS!"
ca. 1901
gelatin silver print
Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Museum Purchase; excollection of Richmond W. Strong
1983:1966:0013A

6.

EXASPERATION HOME FROM THE MARRIED MEN'S CLUB HE FEARS THE STORM
ca. 1901
gelatin silver print
Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Museum Purchase; excollection of Richmond W. Strong
1983:1966:0016B

7.

BURMESE NATIVES DREDGING THE RIVERBED AND SEARCHING DRIED GRAVEL FOR RUBIES, MOGOK, BURMA
ca. 1906
gelatin silver print
Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Museum Purchase: excollection Richmond W. Strong
1983:2745:0026

8.

REPAIRING FIELD TELEPHONE LINES DURING A GAS ATTACK AT THE FRONT.
From the series: "World War"
ca. 1918
gelatin silver print stereograph
7.6 x 7.6 cm. (each) on 8.8 x 17.8 cm. mount
Museum Collection
1976:0147:0243

9.

Nickolas Muray
American (18921965)
MIKE IN THE POOL
1951
color transparency

Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm
Gift of Gustav Schwab
1974:0239:1169

10.

Nickolas Muray
American (18921965)
MIKE NUDE ON BIKE
1951
color transparency
Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm
Gift of Gustav Schwab
1974:0239:1171

11.

Nickolas Muray
American (18921965)
DOUBLE EXPOSURE
ca. 1954
color transparency
Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm
Gift of Gustav Schwab
1974:0239:1276

12.

Nickolas Muray
American (18921965)
STAMFORD
1954
color transparency
Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm
Gift of Gustav Schwab
1974:0239:1308

Appendix C: Updated Catalog Records

While planning the exhibition proposal, I updated a total of 27 records in TMS at George Eastman House under the instruction of Jamie Allen. Of these, the 14 included here have been chosen for inclusion in the proposal.

1974:0239:1131

Classification: Stereograph
Original photographer: Nickolas Muray
Acquisition Source: MURAY COLLECTION
Donor: Gustav Schwab
Title on Object: Easter, Radio City
Dates: 1952 1952 1952
Description:
Medium: color transparency
Dimensions: Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm
Inscription:
recto (blue ink): Easter/Radio City/52
recto (white print): STEREO Realist
Subject:
hat Authorities\Attributes\Objects\GEH\Subject\dress\
holiday Authorities\Attributes\Objects\GEH\Subject\event\

E Wagner RU09 20090529

1974:0239:1169

Classification: Stereograph
Original photographer: Nickolas Muray
Acquisition Source: MURAY COLLECTION
Donor: Gustav Schwab
Title on Object: Mike in the pool
Dates: 1951 1951 1951
Description:
Medium: color transparency
Dimensions: Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm
Inscription:
recto (pencil): WLS Pool/Mike/1951
recto (white print): STEREO Realist
Subject:
pool Authorities\Attributes\Objects\GEH\Subject\sport\

E Wagner RU09 20090529

1974:0239:1171

Classification: Stereograph
Original photographer: Nickolas Muray
Acquisition Source: MURAY COLLECTION
Donor: Gustav Schwab
Title on Object: Mike nude on bike
Dates: 1951 1951 1951
Description:
Medium: color transparency
Dimensions: Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm
Inscription:
recto (pencil): Mike/nude/on BIKE/Stocklin 51
recto (white print): STEREO Realist
Subject:
at play Authorities\Attributes\Objects\GEH\Subject\people\
nude Authorities\Attributes\Objects\GEH\Subject\people\

E Wagner RU09 20090529

1974:0239:1203

Classification: Stereograph
Original photographer: Nickolas Muray
Acquisition Source: MURAY COLLECTION
Donor: Gustav Schwab
Title on Object: Michael and Nicky, Central Park
Dates: 1950 1950 1950
Description:
Medium: color transparency
Dimensions: Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm
Inscription:
recto (pencil): Michael/Nicky/Central/Park 1950
recto (white print): STEREO Realist
Subject:
children at play Authorities\Attributes\Objects\GEH\Subject\people\

E Wagner RU09 20090529

1974:0239:1276

Classification: Stereograph
Original photographer: Nickolas Muray
Donor: Gustav Schwab
Acquisition Source: MURAY COLLECTION
Title on Object: Double Exposure
Dates: ca. 1954 1950 1959
Description:
Medium: color transparency

Dimensions: Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm
Inscription:
recto (pencil): Double/Exposure/D
recto (red print): MADE IN U.S.A./VIEW FROM THIS SIDE
recto (stamp): 7
verso (red print): KODACHROME STEREO
TRANSPARENCIES
Subject:
at night Authorities\Attributes\Objects\GEH\Subject\cityscape\
lake Authorities\Attributes\Objects\GEH\Subject\landscape\

E Wagner RU09 20090529

1974:0239:1308
Classification: Stereograph
Original photographer: Nickolas Muray
Acquisition Source: MURAY COLLECTION
Donor: Gustav Schwab
Title on Object: Stamford
Dates: 1954 1954 1954
Description:
Medium: color transparency
Dimensions: Image: 2.2 x 2 cm (each)
Mount: 4 x 10 cm
Inscription:
recto (pencil): Stamford/'54
recto (red print): MADE IN U.S.A./VIEW FROM THIS SIDE
recto (stamp): 19
verso (red print): KODACHROME STEREO
TRANSPARENCIES
Subject:
children at play Authorities\Attributes\Objects\GEH\Subject\people\
waterfront Authorities\Attributes\Objects\GEH\Subject\landscape\

E Wagner RU09 20090529

1983:1966:0002
Classification: Stereograph
Publisher: Underwood & Underwood
Seller / Vendor: Mrs. Richmond Strong
Excollection: RICHMOND W STRONG
Title on Object: Expectation Married Life as he pictured it
(Music without words)
Dates: ca. 1901 1896 1906
Description:
Medium: gelatin silver print
Dimensions: Image: 7.6 x 7.6 cm (each)

Mount: 8.8 x 17.8 cm
Inscription:
mount recto (printed): Underwood & Underwood, Publishers./New York, London, TorontoCanada, OttawaKansas./Works and Studios/Arlington, N.J. Littleton, N.H. Washington, D.C./(2) EXPECTATION Married Life as he pictured it (Music without words),/Copyright 1901 by Underwood & Underwood.
mount verso (printed): Expectation Married Life as he pictured it (Music without words). [translated into six languages]
mount verso (stamped in blue ink): 4641
mount verso (stamped in red ink): LOFLAND/Books and Stationary/732 W. 6th ST./Los Angeles, Calif.
Subject:
comic Authorities\Attributes\Objects\GEH\Subject\genre\
domestic Authorities\Attributes\Objects\GEH\Subject\genre\

E Wagner RU09 20090528

1983:1966:0006
Classification: Stereograph
Publisher: Underwood & Underwood
Title on Object: Alienation His Wedding Eve at the Bachelor Club.
Dates: ca. 1901 1896 1906
Description:
Medium: gelatin silver print
Dimensions: Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Inscription:
mount recto (printed): Underwood & Underwood, Publishers./New York, London, TorontoCanada, OttawaKansas./Works and Studios/Arlington, N.J. Littleton, N.H. Washington, D.C./(6) ALIENATION His Wedding Eve at the Bachelor Club./Copyright 1901 by Underwood & Underwood.
mount verso (stamped in blue ink): 4641
mount verso (stamped in red ink): LOFLAND/Books and Stationary/732 W. 6th ST./Los Angeles, Calif.
Subject:
comic Authorities\Attributes\Objects\GEH\Subject\genre\
domestic Authorities\Attributes\Objects\GEH\Subject\genre\

E Wagner RU09 20090528

1983:1966:0012
Classification: Stereograph
Publisher: Underwood & Underwood

Title on Object: Invitation "Have wan of your Wife's biscuit!"
Dates: ca. 1901 1896 1906
Description:
Medium: gelatin silver print
Dimensions: Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Inscription:
mount recto (printed): Underwood & Underwood, Publishers./New York, London, TorontoCanada, OttawaKansas./Works and Studios/Arlington, N.J. Littleton, N.H. Washington, D.C./(12) INVITATION "Have wan of your Wife's biscuit!"/Copyright 1901 by Underwood & Underwood.
mount verso (stamped in blue ink): 4641
mount verso (stamped in red ink): LOFLAND/Books and Stationary/732 W. 6th ST./Los Angeles, Calif.
Subject:
comic Authorities\Attributes\Objects\GEH\Subject\genre\
domestic Authorities\Attributes\Objects\GEH\Subject\genre\

E Wagner RU09 20090528

1983:1966:0013A
Classification: Stereograph
Publisher: Underwood & Underwood
Title on Object: Vexation "You heartless Wretch to call them brickbats!"
Dates: ca. 1901 1896 1906
Description:
Medium: gelatin silver print
Dimensions: Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Inscription:
mount recto (printed): Underwood & Underwood, Publishers./New York, London, TorontoCanada, OttawaKansas./Works and Studios/Arlington, N.J. Littleton, N.H. Washington, D.C./(13) VEXATION "You heartless Wretch to call them brickbats!"/Copyright 1901 by Underwood & Underwood.
mount verso (stamped in blue ink): 4641
mount verso (stamped in red ink): LOFLAND/Books and Stationary/732 W. 6th ST./Los Angeles, Calif.
Subject:
comic Authorities\Attributes\Objects\GEH\Subject\genre\
domestic Authorities\Attributes\Objects\GEH\Subject\genre\

E Wagner RU09 20090528

1983:1966:0016B

Classification: Stereograph
Publisher: Underwood & Underwood
Title on Object: Exasperation Home from the Married Men's Club he fears the Storm
Dates: ca. 1901 1896 1906
Description:
Medium: gelatin silver print
Dimensions: Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Inscription:
mount recto (printed): Underwood & Underwood, Publishers./New York, London, TorontoCanada, OttawaKansas./Works and Studios/Arlington, N.J. Littleton, N.H. Washington, D.C./(16) EXASPERATION Home from the Married Men's Club he fears the Storm/Copyright 1901 by Underwood & Underwood.
mount verso (printed): Exasperation Home from the Married Men's Club he fears the Storm. [translated into six languages]
mount verso (stamped in blue ink): 4641
mount verso (stamped in red ink): LOFLAND/Books and Stationary/732 W. 6th ST./Los Angeles, Calif.
Subject:
comic Authorities\Attributes\Objects\GEH\Subject\genre\
domestic Authorities\Attributes\Objects\GEH\Subject\genre\

E Wagner RU09 20090528

1983:1966:0017

Classification: Stereograph
Publisher: Underwood & Underwood
Seller / Vendor: Mrs. Richmond Strong
Excollection: RICHMOND W STRONG
Title on Object: Realization Married Life as he found it (Words without Music).
Dates: ca. 1901 1896 1906
Description:
Medium: gelatin silver print
Dimensions: Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Inscription:
mount recto (printed): Underwood & Underwood, Publishers./New York, London, TorontoCanada, OttawaKansas./Works and Studios/Arlington, N.J. Littleton, N.H. Washington, D.C./(17) REALIZATION Married Life as he found it (Words without

Music)./Copyright 1901 by Underwood & Underwood.
mount verso (printed): Realization Married Life as he found it (Words without Music).[translated into six languages]
mount verso (stamped in blue ink): 4641
mount verso (stamped in red ink): LOFLAND/Books and Stationary/732 W. 6th ST./Los Angeles, Calif.
Subject:
comic Authorities\Attributes\Objects\GEH\Subject\genre\
domestic Authorities\Attributes\Objects\GEH\Subject\genre\

E Wagner RU09 20090528

1983:2298:0012

Classification: Stereograph
Publisher: Underwood & Underwood
Title on Object: Picking lemons in a grove on the Conca d'Oro (Golden Shell), outside Palermo. Sicily.
Dates: ca. 1906 1901 1911
Description:
Medium: gelatin silver print
Dimensions: Image: 7.6 x 7.6 cm (each)
Mount: 8.8 x 17.8 cm
Inscription:
mount recto (printed): Underwood & Underwood, Publishers./New York, London, TorontoCanada, OttawaKansas./Works and Studios/Arlington, N.J. Westwood. N.J./(12)8565 Picking lemons in a grove on the Conca d'Oro (Golden Shell), outside Palermo, Sicily, Copyright 1906 By Underwood & Underwood, U82121
mount verso (printed): 25
mount verso (stamped): EASTMAN HISTORICAL PHOTOGRAPHIC COLLECTION
Subject:
farming Authorities\Attributes\Objects\GEH\Subject\people\
grove Authorities\Attributes\Objects\GEH\Subject\landscape\

E Wagner RU09 20090528

1983:2745:0026

Classification: Stereograph
Publisher: Underwood & Underwood
Title on Object: Burmese natives dredging the riverbed and searching dried gravel for rubies, Mogok, Burma
Dates: ca. 1906 1901 1911
Description:
Medium: gelatin silver print
Dimensions: Image: 7.6 x 7.6 cm (each)

Mount: 8.8 x 17.8 cm

Inscription:

mount recto (printed): Underwood & Underwood, Publishers./New York, London, TorontoCanada, OttawaKansas./Works and Studios/Arlington, N.J. Westwood. N.J./26/s 912/(26)9035 Burmese natives dredging the riverbed and searching dried gravel for rubies, Mogok, Burma. Copyright Underwood & Underwood.
mount verso (printed): It is a fiveday journey up here from Mandalay, the/last three days spent on horseback, climbing over steep/mountain paths and pushing through tigerhaunted/jungles./The valley where you are now was once the bed of a/great river draining a large district of this northern/part of Burma. The volume of water has been much/reduced partly by nature and partly by the artificial/device of canals, leaving most of the bed dry as you see/it at present. For centuries the Burmese themselves/have resorted here to search the gravel for rubies./These Burmese pay no attention to the methods of/western newcomers, but carry on their operations ac/cording to the custom of centuries past. The men you/see yonder wading in the streams and stooping over/their work are scooping up wet sand and gravel, watching/with sharp eyes for the precious stones. It takes prac/tice to enable one always to distinguish a ruby in the/rough, but expert eyes do unerringly recognize a valu/able stone where a novice might suspect nothing of its/difference from the accompanying waste stuff. These/ruby hunters are exceedingly honest; a man can safely/leave one of these heaps without any guardhe can/leave a handful of sortedout rubies in plain sight while/he goes on an errand./Observe the prevailing use of either European um/brellas or huge straw hats of native manufacture to/protect workers from the fierce heat of the sun. The/valley here is in nearly the same latitude as Calcutta./From Notes of Travel, No. 19, copyright, [blank] by Underwood & Underwood./Burmese natives dredging the river bed for rubies. Mogok, Burma. [translated into six languages]
mount verso (stamped in blue ink): 4641
mount verso (stamped in red ink): FRESNO COUNTY FREE LIBRARY

Subject:

at work Authorities\Attributes\Objects\GEH\Subject\people\
gems Authorities\Attributes\Objects\GEH\Subject\artifact\
river bed Authorities\Attributes\Objects\GEH\Subject\landscape\

E Wagner RU09 20090528

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