

STEREO PICTURES IN THIS MOUNT WERE NOT TAKEN BY VIEW-MASTER:
AN ILLUSTRATED DESCRIPTION
OF THE
VIEW-MASTER PERSONAL STEREO SYSTEM

by
Jamie Powell Sheppard

A thesis
presented to Ryerson University
in partial fulfilment of the requirements for the degree of
Master of Arts
in the Program of
Film and Photographic Preservation and Collections Management

Toronto, Ontario, Canada, 2016

© Jamie Powell Sheppard 2016

Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I authorize Ryerson University to lend this thesis to other institutions or individuals for the purpose of scholarly research.

I further authorize Ryerson University to reproduce this thesis by photocopying or by other means, in total or in part, at the request of other institutions or individuals for the purpose of scholarly research.

I understand that my thesis may be made electronically available to the public.

*Stereo Pictures in this Mount Were Not Taken by View-Master:
An Illustrated Description of the View-Master Personal Stereo System*

Jamie Powell Sheppard

Master of Arts, 2016

Film and Photographic Preservation and Collections Management

Ryerson University

Abstract

The View-Master is a beloved toy, well-known to many. However, most people are unaware of the View-Master Personal Stereo system for creating one's own View-Master Personal Reels – an unusual combination of vernacular imagery and three-dimensional photography. Unfortunately, little has been written about this system, and the institutional collections of Personal Reels are limited.

This thesis describes the View-Master Personal Stereo system and establishes its place in the combined history of both amateur and stereoscopic photography. It reviews the history of View-Master and amateur stereoscopic systems, examines the View-Master cameras and accessories, follows the decline of mid-century amateur stereoscopic photography, and discusses users and collectors of the system.

The result is a compilation of information that both defines the View-Master Personal Stereo system and constitutes an argument that the View-Master Personal Reels have a place in institutional collections of vernacular photography.

Acknowledgements

This thesis would not have existed without the support of my second reader, Dee Psaila-Furniotis. I am so incredibly grateful for her encouragement to pursue the scary, lesser-known path.

Many thanks are due to my first reader Marta Braun, who held my hand and was endlessly patient as she guided me through transforming plain statements of fact into a coherent narrative.

I must express my profound gratitude to my Evil Photo Twin and Triplet, Karen Leist Bassett and Lisa J. Huber. Their joint belief in me inspired me to apply to this program, and the final draft of this thesis benefited greatly from their suggested edits.

Special thanks must go to the 3-D community of authors, collectors, enthusiasts, and practitioners, especially: Mary Ann and Wolfgang Sell, Sheldon Aranowitz, Keith Clatworthy, Wim Colpaert, Steven Guynn, Bjarne Lauder, Dalia Miller, Ronald Schalekamp, David Starkman, and Harry zur Kleinsmiede. They opened their collections to me, answered countless questions, directed me towards additional resources, and provided rare imagery.

I am most grateful to Rae Hatherton, whose guidance and support helped me through each step of visualizing and completing this project.

I would especially like to thank my classmate Kate Kaluzny for her friendship, support, and shared downtime with “ze little grey cells.”

And finally, my deepest love and thanks to my husband Kevin Sheppard, who uprooted his life for me to pursue this program, constantly cheered me on, and held me up through the tough parts.

Dedication

This thesis is dedicated to all that are overlooked, be they people, places, or things.



Fig. 0.1 An owl peers through a View-Master Model C Viewer
Photo courtesy of Wolfgang Sell

Table of Contents

AUTHOR'S DECLARATION	II
ABSTRACT	III
ACKNOWLEDGEMENTS	IV
DEDICATION	V
TABLE OF CONTENTS	VI
LIST OF FIGURES.....	VIII
1. INTRODUCTION.....	1
2. LITERATURE SURVEY.....	4
PRIMARY SOURCES.....	4
LITERATURE ON VIEW-MASTER.....	5
LITERATURE ON VERNACULAR IMAGERY.....	6
LITERATURE ON STEREO PHOTOGRAPHY	7
3. THE VIEW-MASTER: ITS HISTORY AND RISE	9
4. AMATEUR STEREOSCOPIC SYSTEMS.....	15
5. THE VIEW-MASTER CAMERAS AND REEL MOUNTS	17
THE VIEW-MASTER PERSONAL STEREO CAMERA.....	17
THE VIEW-MASTER STEREO COLOR/MARK II CAMERA	22
VIEW-MASTER PERSONAL REEL MOUNTS	24
ALTERNATIVE MOUNTS	31
CUTTING AND INSERTING FILM INTO PERSONAL REEL MOUNTS.....	35
6. THE DECLINE OF AMATEUR STEREO SYSTEMS.....	39

7. VIEW-MASTER PERSONAL STEREO SYSTEM USERS AND COLLECTORS	44
PRESERVATION	52
8. CONCLUSION	55
RESOURCES	57
PRINT RESOURCES	57
ARTICLES	57
WEBSITES	58
INSTRUCTIONAL MANUALS	59
PATENTS	60
ADVERTISEMENTS AND PRICE LISTS	60
INTERVIEWS	60

List of Figures

FIG. 0.1 AN OWL PEERS THROUGH A VIEW-MASTER MODEL C VIEWER PHOTO COURTESY OF WOLFGANG SELL.....	V
FIG. 1.1 THREE-TONE BROWN VIEW-MASTER PERSONAL STEREO CAMERA PHOTO BY KEITH CLATWORTHY	1
FIG. 3.1 VIEW-MASTER MODEL A VIEWER PHOTO BY KEITH CLATWORTHY	9
FIG. 3.2 GRUBER’S PATENT ILLUSTRATION HTTPS://WWW.GOOGLE.COM/PATENTS/US2189285	12
FIG. 4.1 MOUNTED REALIST FORMAT STEREO PAIR PHOTO BY JOHN ALAN ELSON HTTPS://COMMONS.WIKIMEDIA.ORG/WIKI/FILE:REALISTBRANDMOUNT.JPG	16
FIG. 5.1 VIEW-MASTER PERSONAL STEREO CAMERA PHOTO BY KEITH CLATWORTHY	17
FIG. 5.2 ONE OF WILLIAM GRUBER’S KODAK BANTAM SPECIAL CAMERAS PHOTO BY WOLFGANG SELL	18
FIG. 5.3 THREE-TONE BROWN VIEW-MASTER PERSONAL STEREO CAMERA PHOTO BY KEITH CLATWORTHY	18
FIG. 5.4 REMINDER PLATE PHOTO BY KEITH CLATWORTHY.....	19
FIG. 5.5 EXPO SURE PLATE PHOTO BY KEITH CLATWORTHY.....	20
FIG. 5.6 UPPER AND LOWER GATES FOR FILM TRACK PHOTO BY KEITH CLATWORTHY	21
FIG. 5.7 FILM EXPOSED WITH THE PERSONAL STEREO CAMERA PHOTO BY JOHN ALAN ELSON HTTPS://COMMONS.WIKIMEDIA.ORG/WIKI/FILE:VMCAMSTRIP.JPG	22
FIG. 5.8 STEREO COLOR/MARK II CAMERA PHOTO BY KEITH CLATWORTHY.....	23
FIG. 5.9 STEREO COLOR/MARK II DIAGONAL FILM TRACK PHOTO BY KEITH CLATWORTHY.....	24
FIG. 5.10 FILM EXPOSED WITH THE STEREO COLOR/MARK II CAMERA PHOTO BY KEITH CLATWORTHY	24
FIG. 5.11 PATENT ILLUSTRATION HTTPS://WWW.GOOGLE.COM/PATENTS/US2783563	25

FIG. 5.12 OUTER REEL LAYERS REMOVED ON RIGHT TO EXPOSE ALUMINIUM SPIDER PHOTO BY WOLFGANG SELL.....	25
FIG. 5.13 SAWYER’S PERSONAL REEL MOUNT, VERSO	26
FIG. 5.14 SAWYER’S PERSONAL REEL MOUNT, RECTO.....	27
FIG. 5.15 AN EARLY “PERSONAL PHOTOGRAPHS, MADE BY” REEL	28
FIG. 5.16 GAF PERSONAL REEL MOUNT.....	28
FIG. 5.17 VIEW-MASTER INTERNATIONAL GROUP PERSONAL REEL MOUNT	28
FIG. 5.18 LEFT REEL WITH FILM SHOT WITH PERSONAL STEREO CAMERA, RIGHT REEL WITH FILM SHOT WITH STEREO COLOR/MARK II CAMERA PHOTO BY STEVEN GUINN	29
FIG. 5.19 BELGIAN PERSONAL REEL, VERSO	30
FIG. 5.20 BELGIAN PERSONAL REEL, RECTO.....	30
FIG. 5.21 REEL MASTER 3D KIT, BACK OF CARD, INNER SECTION	32
FIG. 5.22 REEL MASTER 3D KIT, FRONT OF CARD, OUTER SECTION	32
FIG. 5.23 FRESA VOLANTE PERSONAL REEL MOUNT, VERSO	33
FIG. 5.24 FRESA VOLANTE PERSONAL REEL MOUNT, RECTO	33
FIG. 5.25 MEOPTA PERSONAL REEL MOUNT PHOTO COURTESY OF RONALD SCHALEKAMP	34
FIG. 5.26 VIEW-MASTER EMPLOYEE MOUNTING CUSTOMERS’ PERSONAL REELS PHOTO COURTESY OF WOLFGANG SELL	35
FIG. 5.27 FILM CUTTER 1 PHOTO BY KEITH CLATWORTHY.....	36
FIG. 5.28 FILM CUTTER 2 PHOTO BY KEITH CLATWORTHY.....	36
FIG. 5.29 ROY ROGERS MOUNTING PERSONAL REELS PHOTO COURTESY OF WOLFGANG SELL	37
FIG. 6.1 DEMO REEL 4, REFLECTIVE VIEW.....	42
FIG. 6.2 DEMO REEL 4, TRANSPARENT VIEW.....	42
FIG. 6.3 DEMO REEL 5, REFLECTIVE VIEW.....	42

FIG. 6.4 DEMO REEL 5, TRANSPARENT VIEW42

FIG. 7.1 AD LITERATURE, FEMALE FIGURE PLACED IN LINE WITH PHRASE “SO SIMPLE TO OPERATE”
.....44

FIG. 7.2 AD LITERATURE EMPHASIZES THE FAMILY IMAGE COURTESY OF KEITH CLATWORTHY.....45

FIG. 7.3 ADVERTISEMENT FOR REEL-O-RAMA PIN-UP REELS IMAGE COURTESY OF WIM COLPAERT
.....46

FIG. 7.4 REEL-O-RAMA PIN-UP REEL #3, MARY PHOTO COURTESY OF BJARNE LAUDER.....46

FIG. 7.5 *NEW ZEALAND PHOTOGRAPHY COLLECTED* EXHIBITION. IMAGES FROM F.R. LAMB
PERSONAL REELS ON WALL TO LEFT, VIEWERS WITH FACSIMILE REELS ON TABLE TO LEFT
PHOTO BY MUSEUM OF NEW ZEALAND TE PAPA TONGAREWA49

FIG. 7.6 REEL FROM THE F.R. LAMB COLLECTION PHOTO BY MUSEUM OF NEW ZEALAND TE PAPA
TONGAREWA50

FIG. 7.7 BOX CONTAINING 130 PRODUCTION REELS AND TWO PERSONAL REELS PHOTOGRAPHIC
HISTORY COLLECTION, SMITHSONIAN’S NATIONAL MUSEUM OF AMERICAN HISTORY50

FIG. 7.8 PERSONAL REELS, GREEK CHURCH, VERSO PHOTOGRAPHIC HISTORY COLLECTION,
SMITHSONIAN’S NATIONAL MUSEUM OF AMERICAN HISTORY51

FIG. 7.9 PERSONAL REELS, GREEK CHURCH, RECTO PHOTOGRAPHIC HISTORY COLLECTION,
SMITHSONIAN’S NATIONAL MUSEUM OF AMERICAN HISTORY51

1. Introduction

As a photographer who uses and collects vintage film cameras, I struggle with Gear Acquisition Syndrome, or G.A.S., a common malady within the photographic community. I spend more time than is wise browsing online auction sites for new additions. During one such search on eBay, I stumbled across a camera I had been unaware of (fig. 1.1). The three-tone brown colour scheme initially attracted me, but a surprise occurred when I looked more closely. Inscribed on the camera's front in silver were the words "View-Master Personal Stereo Camera."



Fig. 1.1 Three-tone brown View-Master Personal Stereo Camera
Photo by Keith Clatworthy

I was familiar with the View-Master as a toy, having spent countless hours with it as a child in the late 1970s and early 1980s. The small, sturdy, simple to use plastic stereoscopic viewer was perfect for children. The cardstock reels, containing seven pairs of vibrant colour transparencies that resolved into three-dimensional images, were simply inserted into a slot at the top of the viewer. Adult assistance and supervision were unnecessary.

But this camera was not a toy. The lettering "stereo" on the front upper middle area of the camera and the presence of two lenses indicated that it was a stereo camera, which raised questions. Had View-Master attempted to branch out into the camera market? When did they make this attempt? If so, did that mean that one could create his or her own View-Master reels?

I began researching the camera, or more accurately, I attempted to research it. This was a frustrating undertaking, as there was no single source on View-Master, and most materials were

devoted to its iconic role as a toy. I would find one or two sentences here and there in books on stereoscopic photography, but these provided little information beyond an acknowledgement of the existence of the camera. Many of the books that treated the subject at greater length were not available at local, university, or even institutional libraries, not even as options through interlibrary loans, which forced me to purchase my own copies and then wait sometimes months for their arrival. I was often unaware of a particular component or accessory to the camera until I stumbled upon it on eBay. I gradually discovered instructions, advertisement literature, various accessories, and blank reel mounts online. I also found blogs and websites on the history of View-Master. Unfortunately, the information occasionally conflicted, and sources on the data were not always provided. These findings indicated an entire subset of the View-Master format that is virtually unknown, except to extreme enthusiasts and collectors: the Personal Stereo system.

I found the answer to at least one of my questions when I chanced upon some View-Master Personal Reels, filled with personal photographs, listed for auction on eBay. It looked like one *could* make his or her own View-Master reels! I subsequently discovered auction lots containing reels from anonymous travellers' vacations, both national and international. Images taken from everyday life included birthday parties, graduations, living rooms, backyards, families, pets, and automobiles. One auction listed reels from an Air Force serviceman's wedding. Another portrayed an elderly woman on her deathbed and subsequent funeral. It was fascinating to encounter these familiar themes — themes typically found in a family photo album — in such an unfamiliar setting. The reels were filled with vernacular imagery — an unusual hybrid of amateur and stereoscopic photography.

But further research turned up little on these objects and their history. This thesis arose as I attempted to address such lacunae. I aim to establish a context for the Personal Reel in the combined history of both amateur and stereo photography by tracing the history of the View-Master, the Personal Stereo system, and Personal Reels made with it. To do so, I will identify the

process of manufacturing, examine the market for amateur stereo photography, analyse the failure of the Personal Stereo system, and make the case for the Personal Stereo Camera as an important tool of vernacular photography.

2. Literature Survey

The general literature on View-Master addresses the viewers and reels as toys, rather than addressing the camera or Personal Reels. Any mention of the View-Master Personal Stereo system in the available literature simply refers to the existence of the products. There is no discussion about the use of the Personal Reels or their value as photographic objects. Much of this literature is also self-published, emphasizing the lack of photographic historians' recognition of the reels. No photographic historian has written on the topic; it has been left to the 3-D aficionados and collectors such as Sheldon Aronowitz, David Starkman, Harry zur Kleinsmiede, and others described below to remedy this neglect. I suspect this neglect is not intentional, but rather a simple lack of awareness. Consequently, this makes the literature survey more of an exercise in searching for what does not exist.

Primary Sources

The View-Master Personal Stereo Camera was accompanied by a thirty-page illustrated step-by-step instruction manual, *View-Master Three Dimension Photography*.¹ The content and illustrations are light-hearted and quirky, making the View-Master system inviting to the non-professional camera user. Advertisements included in the manual provide insight into the company's targeted audience, the family.

As explained below, a View-Master Film Cutter matching the specific camera model was necessary for consumers who desired to mount their Personal Reels themselves rather than have it done by a View-Master dealer or the company's mounting service. Similar to the camera manual, the illustrated *Personal Reel Making with the View-Master Film Cutter* manual deftly guides the user through

¹ *View-Master Three Dimension Photography* (Portland: Sawyer's Inc., 1952).

each step.² The publication claims: “Reel making is easy!”³ However, it is evident from the instructions that constructing Personal Reels demanded a significant amount of time and effort.

Literature on View-Master

Gretchen Jane Gruber, daughter of View-Master inventor Wilhelm (later changed to William) B. Gruber, released her self-published book *View Master: The Biography of William B. Gruber* for View-Master’s 75th anniversary.⁴ She presents the book informally to provide an engaging personal perspective of View-Master’s development and history. While lacking detailed technical material or information about the Personal Stereo system, the author suggests additional resources for the technological history of the View-Master.

Mary Ann and Wolfgang Sell have authored the only books specific to View-Master history. The Sells have been avid View-Master collectors for over thirty years, with a collection of over thirty thousand reels, in addition to a large assortment of viewers, various products, technology, and one-of-a-kind prototypes. Their goal is to one day open a museum dedicated solely to View-Master. The Sells are active members of the National Stereoscopic Association, where they hold various leadership positions. Their website and online posts contain considerable information about View-Master history. Their book *View-Master Memories - History of View-Master 1939-2000*, co-authored with former View-Master employee Charley Van Pelt, contains a comprehensive and helpful cultural and technical history of View-Master, which has been invaluable to my research.⁵

² *Personal Reel Making with the View-Master Film Cutter* (Portland: Sawyer’s Inc., 1952).

³ *Ibid.*, 2.

⁴ Gretchen Jane Gruber, *View Master: The Biography of William B. Gruber* (Minneapolis: Mill City Press, Inc., March 1, 2015).

⁵ Mary Ann Sell and Wolfgang Sell, *View-Master Memories - History of View-Master 1939-2000* (Self-published, 2000).

The Sells' earlier book, *View-Master Viewers, an Illustrated History*, lists viewer models chronologically, many including facsimiles of advertisements.⁶ The accompanying 3-D View-Master reels containing images of the viewers and other products make this book unique.

Literature on Vernacular Imagery

Geoffrey Batchen is a professor of the History of Photography, who has focused his career concentrating on the importance of snapshot photography, that is, the photographs of everyday life that we call “vernacular photography.” Batchen’s “Snapshots: Art History and the Ethnographic Turn” explains his concern about the exclusion of vernacular photographic objects from the canonical art histories of photography, as well as the absence of an accurate language to discuss them and the practice of vernacular photography.⁷ View-Master Personal Reels are primarily a 3-D version of the snapshot, and thus his argument is helpful in calling for their inclusion in this larger discussion.

“Looking at the Family Photo Album: A Resumed Theoretical Discussion of Why and How,” by social anthropologist Mette Sandbye, asserts that amateur family photography has been neglected by aesthetic schools of thought, but anthropological scholars have been investigating them and have recognized them as objects of importance.⁸ Sandbye explains that amateur family photography communicates the social and cultural aspects of everyday life. View-Master Personal Reels can be classified as amateur family photography. Sandbye’s statement that photographic

⁶ Mary Ann Sell and Wolfgang Sell, *View-Master Viewers, an Illustrated History* (Borger: 3-D Book Productions, 1994).

⁷ Geoffrey Batchen, “Snapshots: Art History and the Ethnographic Turn,” *Photographies* 1, no. 2 (2008): 121-142. DOI: 10.1080/17540760802284398.

⁸ Mette Sandbye, “Looking at the Family Photo Album: A Resumed Theoretical Discussion of Why and How,” *Journal of Aesthetics and Culture* 6 (2014). <http://dx.doi.org/10.3402/jac.v6.25419>.

studies have overlooked amateur family photography provides a foundation for my argument that View-Master Reels have also been neglected.

Literature on Stereo Photography

Julius B. Kaiser's *Make Your Own Stereo Pictures* takes a brief look at the history of stereoscopic photography, but is chiefly concerned with the various contemporary systems available.⁹ He explains the science behind the process, offers instructions for the picture taking process, and compares the pros and cons of the different systems. Kaiser discusses the different components of the View-Master Personal Stereo system, including the camera, reel mounting, and the Stereo-matic 500 Projector. It was helpful to have an unbiased, professional opinion of the View-Master camera published just a few years after its release. Understanding the basic characteristics of these products suggests their attraction for the users.

Amazing 3-D, by Hal Morgan and Daniel L. Symmes, serves as a useful and approachable introduction to three-dimensional imagery.¹⁰ While the bulk of the book concentrates on 3-D movies and comics, it also offers a brief history of 3-D and how it works, as well as a chapter on stereoscopic photography. Chapter 2, "Reels to Realists," covers the introduction and rise of View-Master, as well as the Stereo Realist camera and successive amateur stereoscopic systems. The book comes equipped with a pair of anaglyphic glasses and contains over one hundred and twenty-five anaglyphic images and comics, making it a successful balance of information and entertainment. The sense of nostalgia it evokes, and the examination of the heyday of 3-D imagery (1950–1955), gives valuable insight to popular culture at that time.

⁹ Julius B Kaiser, *Make Your Own Stereo Pictures* (New York: The Macmillan Company, 1955).

¹⁰ Hal Morgan and Daniel L. Symmes, *Amazing 3-D* (Boston - Toronto: Little, Brown & Company (Canada) Limited, 1982).

Keith Clatworthy's *The Collectable Stereo Viewers Guide* is a technical history and description of stereo viewers from 1939 until the late 1990s.¹¹ Clatworthy is a private collector who owns and operates the 20th Century Stereo Viewers website, which he started in 2003. The website, along with the accompanying online forum he started in 2005, has been one of the most helpful resources I have encountered. Clatworthy's book contains many colour side-by-side comparisons of various models of stereo viewers, including a history of View-Master viewer models. Three pages are devoted to the specifications and general use of the View-Master Personal Stereo Camera and the Stereo Color/Mark II Camera. Another page contains a paragraph mentioning the Personal Reels as a possibility for the individual to create his or her own stereo reels, as well as listing the additional View-Master accessories required for Personal Reel assembly.

The findings of my literature survey showed that the emphasis had been placed on a general history of View-Master, with few comprehensive references available on the entire history of the Personal Stereo system. This lack prompted further research through interviews on View-Master and related products, viewing the few institutional collections that exist, examining personal collections, reviewing patents, and reading user manuals and advertisement literature.

¹¹ Clatworthy, Keith, *The Collectable Stereo Viewers Guide* (Self-published, 2006).

3. The View-Master: Its History and Rise

The public first encountered the View-Master Model A stereoscopic viewer and accompanying reels at the 1939 World's Fair in New York City and San Francisco's 1940 Golden Gate



Fig. 3.1 View-Master Model A Viewer
Photo by Keith Clatworthy

Exposition,¹² where they could be purchased from souvenir stores.¹³ Manufactured in Portland, Oregon, the View-Master was a handheld stereoscopic viewer, similar in function and purpose to 19th-century viewers (fig. 3.1). By the 1870s, stereoscopes and stereo views, in the form of plates or cards, had become a regular household entertainment item, much like televisions are today. More than five million stereo views were produced in just the United States alone.¹⁴ The viewers ranged from inexpensive, simple wooden instruments that held a single stereo view card to large, expensive, decorative pieces of furniture that could hold thirty or more stereo view cards on a rotating belt.¹⁵

The word “stereoscopy” is a combination of the Greek words “stereós,”¹⁶ meaning solid or three-dimensional, and “skopía,”¹⁷ indicating viewing or seeing. We perceive depth in our vision thanks to binocular vision. Our eyes, on average positioned approximately 63.5 mm apart, provide us with two slightly different but overlapping views of an object. Our brain merges the two

¹² Sell and Sell, *View-Master Memories*, 14.

¹³ Morgan and Symmes, *Amazing 3-D*, 25.

¹⁴ William C. Darrah, *The World of Stereographs* (Gettysburg, PA: W.C. Darrah, 1977), 6.

¹⁵ “Images with Stereo Viewers and Some of Our Viewers,” accessed May 20, 2016, <http://brightbytes.com/collection/stereoviewers.html>.

¹⁶ “stereo-,” accessed May 01, 2016, <http://www.dictionary.com/browse/stereo->.

¹⁷ “-scopy,” accessed May 01, 2016, <http://www.dictionary.com/browse/-scopy>.

overlapping images, resulting in a single image containing depth.¹⁸ The simplest method of illustrating this principle is to hold one finger in front of you, gaze at the scene beyond it, and alternate closing the left and right eyes. The position of your finger appears to shift slightly when viewed with only one eye. However, when you gaze directly at your finger with both eyes, you can perceive that it is in a closer focal plane to you than the distant scene.¹⁹

Stereoscopic (subsequently referred to as “stereo”) photography works on this same principle. A camera possessing a pair of lenses with a separation of approximately 63.5 mm produces a left and right image of a scene on one substrate such as a photographic plate, film, or paper. The substrate bearing the pair of images is placed into a stereoscope, also containing two lenses at the same separation. Peering through the stereoscope limits vision solely to the stereo pair and the brain fuses the two images into one scene with depth.²⁰

Rather than replace one stereo card or plate containing a single scene with another, typical of a 19th-century viewer, the View-Master incorporated a lever within the viewer that allowed one to advance through seven stereo pairs of images mounted onto a 9 cm (diameter) reel. Typically, the image pairs, a total of fourteen frames of 16 mm Kodachrome colour slide film, depicted seven tableaux from a specific theme. One inserted a reel into the viewer; brought the viewer up to his or her face and looked through the lenses as one would a pair of binoculars; pointed the viewer at a light source; and pressed the lever to advance from one scene to the next. The View-Master was an instant success, with over one thousand dealers selling viewers and reels by 1941.²¹

View-Master’s creator was William Biller Gruber, a German photographer, piano tuner/repairman, and inventor who immigrated to the United States in 1924. He envisioned View-

¹⁸ Kaiser, *Make Your Own Stereo Pictures*, 2.

¹⁹ Morgan and Symmes, *Amazing 3-D*, 9.

²⁰ Kaiser, *Make Your Own Stereo Pictures*, 4.

²¹ John Dennis, “Seven Billion Windows on the World: View-Master Then and Now,” *Stereo World* 11 (1984): 6.

Master as a significant assistance to education, with entertainment as a lesser goal. Scenes and topics formerly inaccessible without specialized knowledge or the means to travel would be available to everyone – brought to life in the schoolroom or living room by beautiful, affordable colour transparencies in three dimensions. Gruber was visiting the Oregon Caves with his wife Norma in the summer of 1938 when he encountered Harold Graves, president of Sawyer’s Photo Service Inc., a photo finishing company that specialized in picture postcards.²² Gruber’s unusual homemade stereo rig, two Kodak Bantam Special cameras with synced shutters that fired simultaneously, caught Graves’ attention, and he asked Gruber about it. Once introduced the two men realized their shared interests and agreed to meet later that evening, where Gruber shared his concept, described below, for a new improvement over the 19th-century stereo viewers and stereo view cards. Graves was impressed with Gruber’s idea and agreed to consult with his business partners at Sawyer’s Photo Service Inc. The partners were all in accordance, although due to financial difficulties they were unable to purchase Gruber’s idea outright, offering instead a commission percentage dependent upon the amount of objects sold. This decision had a far-reaching impact, as it allowed Gruber to continue his involvement with the company, creating new designs and reel content until his death in 1965.

Under Sawyer’s Photo Service Inc., View-Master sold approximately six million stereoscopic viewers through six thousand dealers by the early 1950s.²³ The restriction of raw materials was lifted at the end of World War II, allowing View-Master to increase production to meet the dealers’ rising demands.²⁴ In 1951, View-Master’s strategic purchase of Tru-View, another stereo entertainment company, not only eliminated its primary competition, but also gave it the rights to use Disney

²² The following account is taken from Sell and Sell, *View-Master Memories*, 10-14.

²³ Dennis, “Seven Billion Windows on the World: View-Master Then and Now,” 8.

²⁴ *Ibid.*, 7.

characters in a new product line.²⁵ This opened the floodgates to a new market — the children born during the baby boom following World War II. Children’s themed reels were being produced en masse by the early 1950s.²⁶ Over one billion reels and one hundred million viewers were sold by 1984.²⁷ View-Master has continued to manufacture reels and viewers for over seventy-five years, only relatively recently, in 2000, having limited production solely to children’s themes.

Wilhelm Gruber’s concept for a stereo viewer was ingenious and quite logical. His goal was to improve upon the 19th-century stereoscopes and black and white paper stereo views by introducing a compact viewer that allowed one to view multiple transparent colour scenes, the 3-D experience heightened by the film’s natural colour and disappearing quality.²⁸ Gruber was greatly impressed with Kodachrome, released to the market in 1935 in 16 mm movie format, and in 35 mm/135 roll format the following year. He believed that the film’s vibrant colour, clarity, and lack of grain were perfect for his idea: to photograph original pairs of stereo scenes onto 828 format (28 x 40 mm image size) or 135 format (24 x 36 mm image size) Kodachrome film; duplicate the pairs en masse onto the smaller 16 mm (10.26 x 7.49 mm image size) Kodachrome film; and then cut the images out of the film and insert them into mass produced, round supports.²⁹ The smaller size of the final images would be irrelevant because each eyepiece in the viewer

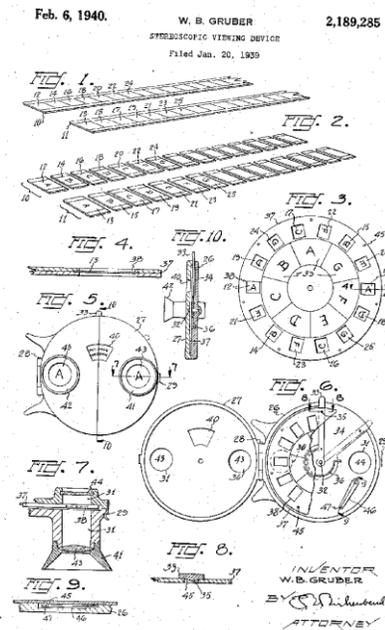


Fig. 3.2 Gruber’s patent illustration
<https://www.google.com/patents/US2189285>

²⁵ Sell and Sell, *View-Master Memories*, 207.

²⁶ Dennis, “Seven Billion Windows on the World: View-Master Then and Now,” 8.

²⁷ *Ibid.*, 5.

²⁸ Kaiser, *Make Your Own Stereo Pictures*, 11.

²⁹ Sell and Sell, *View-Master Memories*, 11.

would contain a biconvex lens to refract the light, causing the image to appear larger, at a magnification of 5X.³⁰ After much thought and experimentation, he determined that a round disc or reel, measuring approximately 3.5 inches across, could hold seven stereo pairs of 16 mm film that are diametrically separated by the 63.5 mm necessary for proper viewing. Gruber determined that implementing an odd number of scenes, in combination with skipping a window as the reel was rotated, would allow for each half of a scene to line up in the correct orientation across the reel from its mate, avoiding inverted images. Each stereo pair is labelled one through seven in a counter-clockwise direction. As the lever was depressed on the upper right of the viewer, an internal clip hooked into a rectangular cut-out on the reel and turned it clockwise, bringing the following stereo pair into view, and then sliding into the next rectangle (fig. 3.2).

The content and purpose of the View-Master reels (henceforth referred to as production reels) can be divided into three broad categories of scenic, educational, and commercial. The scenic production reels illustrated various destinations around the United States American West and were titled “Seven More Wonders of the World”, the modern world’s nod to the Seven Wonders of the Ancient World, and more directly, a reference to the seven scenes offered on the reels. Early views included Boulder Dam, Nevada (now known as Hoover Dam); Crater Lake, Oregon; Hawaii; and various National Parks. Thus, View-Master reels, like some 19th-century stereo view cards, explored topics such as U.S. travel and entertainment.

However, many would be surprised to learn that View-Master also produced some highly specialized reels. In 1942 the United States government commissioned the company to produce military personnel training reels. Exact details are unknown as the project was semi-classified, and the surplus was destroyed once the war ended.³¹ Mary Ann and Wolfgang Sell have determined that

³⁰ Wolfgang Sell, email to author, June 02, 2016.

³¹ Sell and Sell, *View-Master Memories*, 229.

at least eight different sets were produced.³² Many of these sets, containing multiple reels, also included the second viewer model: the Model B.³³ Servicemen used the reels to study topics such as aircraft identification for air-to-air combat and pilot training, aircraft range estimation for ground-to-air combat, ship identification for ship-to-ship combat, and aircraft bullet spray patterns for avoiding enemy fire.³⁴ John Dennis estimates that approximately one hundred thousand Model B viewers and between five to six million reels were ordered.³⁵ It is interesting to note that without this commission, the company might not have survived due to wartime restrictions on materials.³⁶

View-Master also published a number of reference texts, complete with illustrating reels, which were placed in slots inside the books or offered as a special boxed set with a viewer. Titles with reels photographed by William Gruber, View-Master inventor, include: *Alpine Wildflowers*, 1946; *Succulent Plants*, 1947; *Mushrooms in their Natural Habitat*, 1949; *A Stereoscopic Atlas of Human Anatomy*, 1962, at Stanford Medical School; and *Chinese Art in Three Dimensional Color*, 1969.³⁷

View-Master began offering custom commercial advertising reels in the early 1940s. A minimum of fifty reels was required, at a cost of \$1.25 USD each, with an option to include viewers. Salesmen ventured out into the world with View-Master reels and viewers in their promotion kits. Companies such as Coco-Cola, Chrysler, Anheuser-Busch, and Pan American World Airways made use of this unique vehicle for advertising.³⁸

³² Ibid.

³³ Ibid., 230.

³⁴ Ibid.

³⁵ Dennis, "Seven Billion Windows on the World: View-Master Then and Now," 7.

³⁶ Sell and Sell, *View-Master Memories*, 230.

³⁷ Ibid., 243-250.

³⁸ Ibid., 232-234.

4. Amateur Stereoscopic Systems

Stereoscopic photography has been around almost as long as the invention of photography itself. In fact, only three years after the announcement of the daguerreotype in 1839, Antoine Francois Claudet, a daguerreotypist situated in London, was experimenting with stereo daguerreotypes, and soon the stereo phenomenon became so popular that people wanted to create their own stereo views.³⁹ In the United States, equipment for amateur stereo photography became available after the Langenheim brothers began publishing their stereo views in 1855. During the Civil War, amateur stereo photography temporarily drew to a halt due to a lack of materials, but the practice resumed, and several amateur stereo societies were founded once the war ended.⁴⁰

Kodak's introduction of flexible roll film and its No. 1 box camera in 1888, and its later creation of film that could be loaded in daylight without the need for a darkroom, opened the floodgates to amateur snapshot and stereo photography. The No. 2 Kodak Stereo camera, introduced in 1901, and the Kodak Stereo Brownie camera, introduced in 1905, made stereo photography easier and more affordable for the amateur snapshot photographer. People could record, and later share, their adventures in realistic 3-D.

The end of World War II saw a resurgence in the popularity of amateur stereo photography. There were a number of U.S. companies that offered 35 mm stereo camera systems, beginning with David White's Stereo Realist, advertised as early as 1945 and released to the public in 1947.⁴¹ The image size, approximately 22 x 24 mm, yielded approximately twenty-nine stereo pairs per one thirty-six-exposure roll of 35 mm film and sixteen stereo pairs per twenty-exposure roll.⁴² This

³⁹ Darrah, *Stereo Views: A History of Stereographs in America and Their Collection*, 5.

⁴⁰ Ibid.

⁴¹ Morgan and Symmes, *Amazing 3-D*, 32.

⁴² Kaiser, *Make Your Own Stereo Pictures*, 44.

format became the U.S. stereo standard, a universal size called the Realist format or 5P, indicating that the image area measured five perforations (sprocket holes) across.

Companies that produced 35 mm stereo cameras after the David White Co. included Kodak, Revere, TDC (Bell & Howell), and Wollensak. With the exception of the Kodak's 1954 Stereo Camera, which cost approximately \$89.00 USD (around \$790.00 USD in 2016), the competing companies' prices were comparable to each other. The 1947 Stereo Realist retailed for \$162.50 USD (approximately \$1,740.00 USD in 2016),⁴³ while the 1953 Revere 33 was priced at \$174.50 USD (approximately \$1,560.00 USD in 2016).⁴⁴

This universal format greatly increased consumers' options for viewers and projectors. Stereo pairs photographed with the Realist format could be used interchangeably with any other company's viewing devices using that same format (fig. 4.1). Third party viewers were offered by Armme, Brumberger, Delta, Radex, Stereo Graphic, and Sterling.⁴⁵

The viewing method was limited to one stereo scene, or pair of images, per mount, similar to the 19th-century viewers. This resulted in a relatively fast, easy mounting process, performed either by the photographer

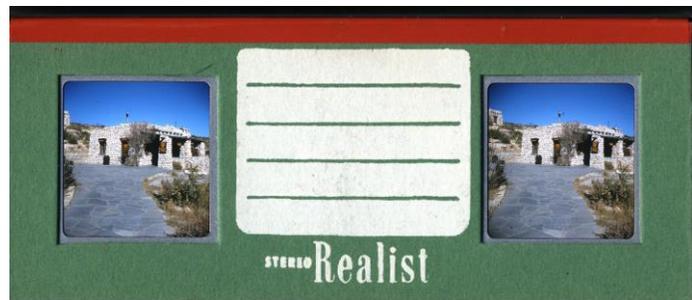


Fig. 4.1 Mounted Realist format stereo pair

Photo by John Alan Elson

<https://commons.wikimedia.org/wiki/File:Realistbrandmount.jpg>

or the lab developing the film. Additional projector accessories such as the TDC Selectron Slide Carriage, which held thirty mounted stereo slide pairs, were necessary for multiple slide viewing.⁴⁶

⁴³ Morgan and Symmes, *Amazing 3-D*, 33.

⁴⁴ *Ibid.*, 45.

⁴⁵ *Ibid.*

⁴⁶ "TDC Selectron Carriage w/Selectron Tray," *3D Stereo Inc.*, accessed June 13, 2016, <http://www.3dstereo.com/viewmaster/pj-sctdc.html>.

5. The View-Master Cameras and Reel Mounts

In 1945, inspired by the stunning colour and grain-less detail of 35 mm Kodachrome roll film,⁴⁷ View-Master commissioned the Stereocraft Engineering Co. of Portland, Oregon, formed by machinists and engineers Karl Kurz and Gordon Smith, to begin experimenting with a consumer-focused stereo camera. It is possible that the David White Company's 1945 full-page advertisement in *American Photography* magazine for its new 35 mm stereo camera⁴⁸ also influenced View-Master's decision. While employed by the L.R. Teeple Company, both Kurz and Smith had already worked with View-Master to develop an automated reel-making machine that increased efficiency in manufacturing its production reels. Following this collaboration, they formed Stereocraft Engineering Co. as a sister company to View-Master.⁴⁹ Due to material shortages during the war, the first camera prototype was crafted out of wood.⁵⁰ A fully metal version was produced in 1946, with a slightly smaller model appearing sometime between 1947 and 1948.⁵¹ The final result, the View-Master Personal Stereo Camera, was released in 1952.

The View-Master Personal Stereo Camera

The camera weighed one pound, nine ounces when loaded with film,⁵² and measured 154 x 86 x 53 mm, with a separation of 61.5 mm between the matched lenses.⁵³ The most common design had a smooth, black, painted,



Fig. 5.1 View-Master Personal Stereo Camera
Photo by Keith Clatworthy

⁴⁷ Wolfgang Sell in discussion with the author, March 05, 2016.

⁴⁸ Morgan and Symmes, *Amazing 3-D*, 32.

⁴⁹ Sell and Sell, *View-Master Memories*, 22.

⁵⁰ Wolfgang Sell in discussion with the author, March 05, 2016.

⁵¹ Ibid.

⁵² Sell and Sell, *View-Master Memories*, 25.

⁵³ Eddie Bowers, "Camera Specifications," *View-Master Resource*, accessed October 01, 2015, <http://www.vmresource.com/camera/cameraspecs.htm>.

metal body with silver dials and silver lines running horizontally along the length of the camera (fig. 5.1). This clean, streamlined appearance was inspired by the Art Deco style Kodak Bantam Special – the camera Gruber used for his pre-View-Master personal stereo rig (fig. 5.2).⁵⁴



Fig. 5.2 One of William Gruber's Kodak Bantam Special cameras
Photo by Wolfgang Sell

Unfortunately, there are no sales records available to confirm how many cameras were manufactured. An educated guess can be made by analysing serial numbers. During more than thirty of collecting, Wolfgang Sell has not encountered a serial number higher than the 26,000-range, which suggests that only twenty-five thousand were manufactured until production ceased in 1956, due to falling sales.⁵⁵

According to Sell, the cameras with serial numbers from 900 to 999 were reserved for View-Master testers and employees. Serial numbers greater than 1,000 were offered to the public. Some of these earlier versions had silver tops instead of the standard black, and the centre Shift Knob, discussed later in this section, was marked “1/2” rather than “A/B.”⁵⁶



Fig. 5.3 Three-tone brown View-Master Personal Stereo Camera
Photo by Keith Clatworthy

Later models, around the 22,000 serial number-range, were given a crackle finish in shades of brown and cream (fig. 5.3).⁵⁷ This treatment

⁵⁴ Wolfgang Sell, email message to author, June 02, 2016.

⁵⁵ Sell and Sell, *View-Master Memories*, 136.

⁵⁶ Wolfgang Sell in discussion with the author, March 05, 2016.

⁵⁷ Sell and Sell, *View-Master Memories*, 25.

camouflaged defects caused by the aging and worn aluminum die casts, which were too visible against the smooth black finish.⁵⁸

The Personal Stereo Camera was available for purchase from View-Master dealers located in photography stores, department stores, and select drug and gift stores. Unlike View-Master's viewers, which cost \$2.00 USD, and its production reels, priced at 35¢ USD each, the camera was quite expensive at \$149.00 USD (around \$1,340.00 USD in 2016), which made it unattainable for most people. However, View-Master heavily marketed the fact that the camera "takes *color* pictures in three dimensions at snapshot cost,"⁵⁹ approximately 12¢ USD at the time. The company made this claim based on the small image size and an unusual lens mechanism and film track that yielded twice the number of images.

Several characteristics made this camera quite unusual. It was designed for anyone, regardless of photographic experience, rendering it easy enough even for beginners. Before loading the film into the camera, the counter and film length indicator, located on the winding knob, would have to be set to remind the user when to stop taking pictures. Once loaded, the user turned the Shift Knob, located on the front of the camera between the two lenses, to "A," which set the lenses to the lower position. A plate on the bottom of the camera, entitled "Important Steps in Loading," served as a reminder (fig. 5.4).

Stereocraft
Engineering used a
similar reminder plate
when they designed



Fig. 5.4 Reminder plate
Photo by Keith Clatworthy

⁵⁸ Wolfgang Sell, email message to author, June 02, 2016.

⁵⁹ "Takes Color Pictures in 3 Dimensions at Snapshot Cost," *Holiday* (advertisement, October 1952).

the Stereo Vivid camera for the Three Dimension Company (TDC) in 1954.⁶⁰

The 25 mm f/3.5 paired General Scientific brand⁶¹ Anastigmat lenses, recessed into the camera body, had a fixed focus from six feet to infinity. The lenses were mounted on a plate that moved vertically, with an aperture range of f/3.5 – f/16. The aperture, labelled “Lens Opening,” and shutter speed dials

were located on the top of the camera above the Expo Sure Easy Indicator plate



Fig. 5.5 Expo Sure plate
Photo by Keith Clatworthy

(fig. 5.5). This plate

bore instructions that guided the user through the picture taking process by offering settings for film speed, time of year, weather conditions, and the subject’s colour.

Film speed options were fairly slow – ranging from 5 to 100. The film speed was set by pushing down on the ASA Film Speed dial to rotate it and matching the appropriate film speed number line with the time of year line, choosing either Summer or Winter.⁶²

The Shutter Speed dial listed selections from Bulb, where the shutter stays open as long as the shutter release button is depressed, to 100 (1/100th of a second.) The user manual recommended setting the shutter speed at 50 (1/50th of a second).⁶³ This is interesting because 1/60th of a second is typically the lowest speed recommended for handheld shooting, and one would not expect a beginner to have a tripod. However, tripod use is recommended on page twenty-three of the manual.

⁶⁰ Sell and Sell, *View-Master Memories*, 24.

⁶¹ Ibid.

⁶² *View-Master Three Dimension Photography*, 11.

⁶³ Ibid.

The Lens Opening dial was rotated to pair the Subject Color line to the appropriate Sky Brightness line. Subject Color options were “Light,” “Average,” and “Dark.” Sky Brightness selections were “Bright Sun,” “Hazy Sun,” “Cloudy Bright,” and “Cloudy Dull.”⁶⁴

These setting selections were a unique combination of ease of use and manual control. Typically an amateur snapshot camera of the 1950s was quite simple, with fixed or extremely limited settings. However, cameras with manual settings for shutter speed and aperture required knowledge and skill. The photographer needed to understand what the aperture and shutter speed numbers meant. Often, an Exposure Index table would be attached somewhere on the camera body. The David White Stereo Realist camera had one such table located underneath the lens cover.⁶⁵ While various sun conditions were listed on the table with suggested exposure setting numbers, the dials were labelled only with the setting number. The users had to remember the recommended number from the chart, whereas they only needed to match the dials of the View-Master camera with the current sun conditions.

As the user took photographs, the film was advanced a distance of eight perforations, and a series of stereo pair images were exposed along the bottom half of the film (fig. 5.6). Once the user reached the end of the roll, the shutter locked, and one needed to rotate the Shift Knob to the “B” position, which moved the lenses into the upper position. The succeeding pairs of images were then exposed along the upper half



Fig. 5.6 Upper and lower gates for film track
Photo by Keith Clatworthy

⁶⁴ Ibid.

⁶⁵ David White Company, *The Stereo Realist Camera*, 3.

of the film roll. With each photograph taken, the film was reversed back into the film cartridge, fully rewinding once the entire roll was exposed. This process, termed the “Film Miser Shift,” resulted in approximately seventy pairs of images per one roll of thirty-six-exposure 35 mm film. Each film chip measured 12 x 18 mm, with an 11.9 x 12.9 mm image area, and was seven perforations (sprocket holes) wide (fig. 5.7). A twenty-exposure roll of film yielded thirty-seven pairs of images.



Fig. 5.7 Film exposed with the Personal Stereo Camera
Photo by John Alan Elson
<https://commons.wikimedia.org/wiki/File:Vmcamstrip.jpg>

View-Master offered various accessories for the Personal Stereo system. This list, found in advertising literature, included a leather carrying case (\$14.75 USD); blank reel mounts (\$1 USD for six); film cutters (\$19.50 USD); film inserters; Type A colour correcting filters for Kodachrome or Tungsten film (\$4.50 USD); twenty-four-inch and thirty-six-inch close-up lens attachments; and a flash. Additional products could be used interchangeably between the View-Master industry reels and Personal Reels. These included two-dimensional and three-dimensional projectors and viewers, and storage systems such as albums and library boxes.

The View-Master Stereo Color/Mark II Camera

While the Personal Stereo Camera was still being produced, Stereocraft Engineering began research and development on a second model. The many pieces that made up the Film Miser shift required extra labour for production, prompting View-Master to discard the lens-shifting mechanism and reversible film track. Instead, the new design incorporated stereo pairs staggered diagonally on

the film. The Stereocraft Engineering Co. invested a significant amount of time in this design, but it was later handed over to View-Master's Sint-Niklaas Belgium plant for production.

The View-Master Stereo Color Camera was released by the Belgium View-Master plant in 1962, ten years after the Personal Stereo Camera. Since the Belgium plant was not capable of fabricating the camera, it was manufactured by Regula-Werk King KG in West Germany.⁶⁶ Intended for the European market, its design was simpler and thus more affordable to produce. It retailed for \$78.50 USD (approximately \$615.00 USD in 2016), compared to the Personal Stereo Camera's original list price of \$149.00 USD. The same camera, released in the United States, was called the Mark II (fig. 5.8).⁶⁷ Despite the introduction of this new camera, the company did not advertise it as extensively as it did the original camera, only offering it in its catalogue from 1962 to 1971. Wolfgang Sell states that the highest Stereo Color/Mark II serial number he has seen is around 15,000.⁶⁸

This second model was slightly larger than the original, weighing 1.3 pounds without the carrying case⁶⁹ and measuring 160 x 96 x 50 mm.⁷⁰ The Rodenstock Trinar lenses were wider apart, with a separation of 64.54 mm, and the focal length was slightly wider than the Personal Stereo Camera, at 20 mm



Fig. 5.8 Stereo Color/Mark II Camera
Photo by Keith Clatworthy

⁶⁶ Following information from Harry zur Kleinsmiede, email messages to author, June 07, 2016 and July 12, 2016.

⁶⁷ Harry zur Kleinsmiede, email to author, June 07, 2016.

⁶⁸ Wolfgang Sell, email message to author, November 15, 2015.

⁶⁹ Clatworthy, "View-Master MK II Camera," *20th Century Stereo Viewers*, accessed June 09, 2016, <http://www.viewmaster.co.uk/htm/cameramkii.asp>.

⁷⁰ "View-Master Stereo Color (Mark II)," accessed June 07, 2016, <https://www.stereoscopy.com/cameras/vm-color.html>.

instead of 25 mm.⁷¹ Unlike the original Personal Stereo Camera, the shutter speed was fixed at 1/60 second and the aperture settings range was slightly greater at f/2.8 – f/22.⁷² The film chips were only slightly smaller at 12 x 15.5 mm, with the same 11.9 x 12.9 mm image area, and this new system still resulted in approximately seventy pairs of stereo images per thirty-six-exposure roll of 35 mm film. One significant difference was the change to a diagonal film path (figs. 5.9-10).



Fig. 5.9 Stereo Color/Mark II diagonal film track
Photo by Keith Clatworthy



Fig. 5.10 Film exposed with the Stereo Color/Mark II Camera
Photo by Keith Clatworthy

This allowed for the same number of scenes to be taken but through a single pass, instead of shifting the lenses and exposing thirty-six more scenes through a “rewind” pass. This

alteration made the camera more affordable. However, the exposure controls were revised from the simple time of year/sun conditions combination to a more confusing selection of three blocks of colour that best represented the colour of the subject.⁷³

View-Master Personal Reel Mounts

The View-Master Personal Stereo Camera necessitated a specialized, proprietary reel mount, unlike the other competing companies’ systems, which primarily used the standardized Realist

⁷¹ Ibid.

⁷² Ibid.

⁷³ *View-Master Stereo Color Camera*. (Portland: Sawyer’s Inc., 1962), 9.

format. While identical in size and function to View-Master's production reels, the Personal Reel Mounts contained a few key differences.

The flat, circular disc was comprised of seven sealed layers of cardstock and metal foil, rather than the six found in production reels. Two sections, a front and back, contained three layers: a metal foil interior layer sandwiched between two pieces of white cardstock. An additional aluminium “spider” with wedge-shaped arms radiating from the middle acted as a centre layer, sealed between the two sections (figs. 5.11-12). This spider created space for the film chip insertion pockets, and provided extra stability.⁷⁴

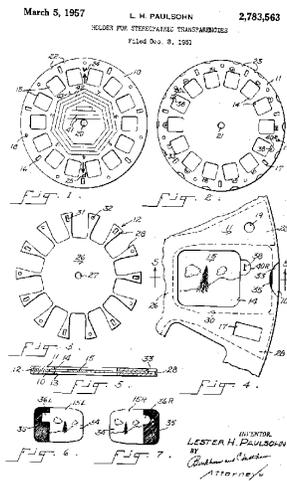


Fig. 5.11 Patent Illustration
<https://www.google.com/patents/US2783563>



Fig. 5.12 Outer reel layers removed on right to expose aluminium spider
Photo by Wolfgang Sell

The entire reel mount measured 9 cm in diameter and 28.26 cm in circumference. A hole measuring .4 cm in diameter was located in the centre of the disc. The centre area measured 5.3 cm in diameter with a 16.64 cm circumference.

⁷⁴ David Starkman, email message to author, April 21, 2016.

Fourteen windows were punched out of the cardstock and foil combination and served as insertion pockets for the film chips. Arranged along the outer circumference of the disc, approximately .7 cm from the edge, each window measured 1 x 1.1 cm and was assigned a number from one through seven, printed in green ink. The skipped-number window between each number from one through seven, as described earlier in the View-Master history section, was obvious when viewing the back of the reel mount. The numbers by each window on the back of the reel mount were enclosed by an open bracket shape, [1, or a closed parenthesis/half circle, 1) (fig. 5.13). The bracket indicated left orientation and the closed parenthesis/half circle indicated right orientation.

These markings matched with the shapes left on the film when exposed through the left and right film gates of the camera and were used as guides when mounting the film chips into the reels. The windows contained small cut out openings on the outer edge of the reel through which the user inserted the 12 x 18



Fig. 5.13 Sawyer's Personal Reel Mount, verso

mm (Personal Stereo Camera) or 12 x 15.5 mm (Stereo Color/Mark II Camera) film chips, either with tweezers or the View-Master Film Insertion Tool. An arrow on the front of the reel mount, pointing up to the letter "V," indicated reel orientation when using the reel in a viewer, while on the opposite end of the reel, an arrow, pointing up to the letter "P," indicated reel orientation when placed in a projector.

The mounts provided a label on both the front and back, for photographers' notations. The back contained the product name, trademark, and patent numbers above and in line with the central hole. The area below the central hole contained text stating the pictures were not taken by the company (hence the title of this thesis) and offered a space for the photographer's name. Wolfgang

Sell suggests that this disclaimer may have been added to disassociate the company from Personal Reels containing nudes created and sold by private studios or individuals.⁷⁵

The label area on the front of the reel mount was more spacious (fig. 5.14). The outer edges of the heptagonal space consisted of three joined lines under each scene number, one through seven. The centre contained extra space for notations. Text to the left of the centre hole included the company name, either Sawyer's, GAF, or View-Master International Group; "Portland, Ore."; and "Made in U.S.A." Text to the right of the centre hole read "Personal Reel Mount."

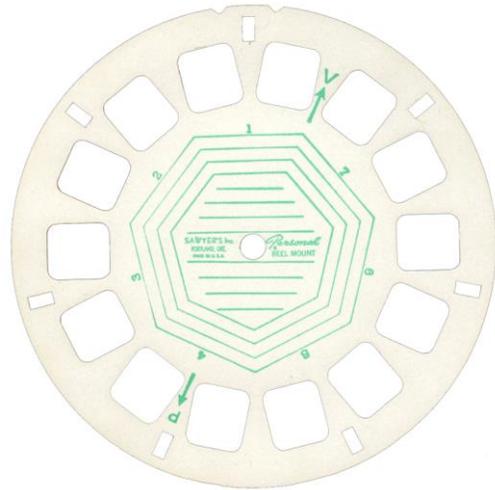


Fig. 5.14 Sawyer's Personal Reel Mount, recto

View-Master has been sold, purchased, and merged with other companies five times since it began in 1939. It was owned by Sawyer's Inc. until 1966, when it was purchased by General Aniline and Film (GAF). In 1981, it was purchased by a group of investors, the View-Master International Group. The name was changed in 1984 to View-Master Ideal when the View-Master International Group purchased the Ideal Toy Company. Tyco purchased View-Master Ideal in 1989, and in turn merged with Mattel Inc. in 1997.⁷⁶ Thus, the text denying company authorship, mentioned above, varied slightly depending on the date the reel mounts were manufactured. Some Sawyer's Inc. mounts, most likely earlier productions, simply read "Made By," with a single green line located below (fig. 5.15). These early mounts were also labelled "Personal Photographs" instead of "Personal Reel Mounts." Text on later productions declared that "Stereo pictures in this mount were

⁷⁵ Wolfgang Sell, email message to author, April 21, 2016.

⁷⁶ Preceding information from "A brief look at View-Master History," *3D Stereo Inc.*, accessed October 01, 2015, <http://www.3dstereo.com/vmhist.html>.

not taken by Sawyer's Inc.” Personal Reel Mounts produced during the GAF era, 1966 to 1981, read “Stereo pictures in this mount were not taken by GAF Corporation” (fig. 5.16).



Fig. 5.15 An early “Personal Photographs, Made By” reel



Fig. 5.16 GAF Personal Reel Mount

More changes can be observed in the Personal Reel Mounts manufactured from 1981 to 1984 under the View-Master International Group. The phrase now read “Stereo pictures in this mount were not taken by View-Master International Group” (fig. 5.17). Collector, author, and publisher Harry zur Kleinsmiede states that he has not seen any of the later company names (View-Master Ideal, Tyco, Mattel Inc.) on the Personal Reel Mounts produced after 1984.⁷⁷ Additionally, at this point the appearance of the word “Personal” at the top of the middle label had been altered. Although the cursive script was retained, the strokes were thicker. The swash extending from the lobe of the uppercase “P”



Fig. 5.17 View-Master International Group Personal Reel Mount

⁷⁷ Harry zur Kleinsmiede, email to author, April 20, 2016.

was much shorter, appearing more as a stub than a curve.

A physical difference can be observed in Sawyer's Inc. Personal Reel Mounts manufactured after the Stereo Color/Mark II Camera was introduced in 1962 (fig. 5.18). The pocket cut-outs

located on the outer edge of the mounts, where the film chips are inserted, were modified from a simple curved shape to a notched shape resembling a sideways letter

“U.”⁷⁸ According to David

Starkman, this alteration was

necessitated by the reduced size of

the black tab area of the film chip taken with the Stereo Color/Mark II Camera and the need to determine if the film chip was situated correctly in the mount. It is possible to make an educated guess as to which camera was used to produce a Personal Reel by observing how much of the black tab area of the chip extends into the cut out area. Film photographed with the original Personal Stereo Camera will visibly protrude to the high edge of the U-shaped the cut out area. However, film photographed with the Stereo Color/Mark II Camera will barely extend beyond the low edge of the U-shaped cut-out.

While the majority of the Personal Reel Mounts encountered are white with green print and manufactured in the United States, there was a style that was manufactured in the U.S. and then shipped to the View-Master Belgium plant for printing and distribution (fig. 5.19).⁷⁹ Printing of these mounts began in 1962, coinciding with the 1962 release of the Stereo Color/Mark II camera,



Fig. 5.18 Left reel with film shot with Personal Stereo Camera, right reel with film shot with Stereo Color/Mark II Camera
Photo by Steven Guynn

⁷⁸ The following description owes to David Starkman, email message to author, April 21, 2016.

⁷⁹ Harry zur Kleinsmiede, email to author, May 06, 2016.

designed and produced in Belgium. The mounts contained maroon text in a similar font with slightly different wording. The “View-Master” logo appeared at the top back of the reel mount in the title, with the revised text, “Personal Reel.” The centre area wording read horizontally across the central hole: “Stereo pictures in this mount were not taken by Sawyer’s.” Patent numbers were located beneath the centre hole, and the bottom area included the words “View from other side.” The numbers by the insertion cut-outs were a different font from the U.S. mounts and were slightly larger. The insertion cut-outs possessed the notched sideways “U” shape. There was no space for photographers’ notations.



Fig. 5.19 Belgian Personal Reel, verso



Fig. 5.20 Belgian Personal Reel, recto

The front of the reel mount had seven individual trapezoids containing a scene number, one through seven, and extra space for notations (fig. 5.20). The heptagonal centre area allowed some space for notations. Text to the left of the centre hole read “Sawyer’s View-Master.” Text to the right of the centre hole read “Personal Reel.” An arrow pointing up to the letter “V” indicated reel orientation when using the reel in a viewer, while on the opposite end of the reel, an arrow pointing up to the letter “P” indicated reel orientation when placed in a projector.

Manufacture of the Personal Reel Mounts ceased in August 2000 when the current owner, Fisher-Price, moved production reel manufacturing from the Portland, Oregon plant to Mexico. The Personal Reel Mount machine had been failing since the early 1990s. Fisher-Price elected not to

repair it and instead discontinued the Personal Reel Mounts.⁸⁰

A number of Personal Stereo system users purchased large quantities of the Personal Reel Mounts before production was terminated.⁸¹ It is not uncommon to find auction lots of blank “NOS” (New Old Stock) Personal Reel Mounts listed on eBay or similar sites, demanding prices sometimes as high as \$5 USD per blank reel. Blank Personal Reel Mounts originally retailed six for \$1 USD.⁸² Considering that one roll of thirty-six-exposure film yields approximately ten Personal Reel Mounts, this is an expensive hobby. This drives some Personal Stereo system users to scavenge Personal Reels containing someone else’s photographs, discard the pre-existing images, and replace them with their own. Online sellers offering completed Personal Reels may even mention this option in the auction description.

Alternative Mounts

Despite the six decades that have passed since the View-Master Personal Stereo Camera was first released, the system is still popular with creators of 3-D images. In fact, two companies created contemporary personal reel mounts as alternatives when View-Master discontinued its Personal Reel Mounts. The Reel Master 3D mounts, first offered in June 2006, were part of a kit requiring additional assembly.⁸³ Two halves of a reel, identical in size, shape, and general design to the View-Master Personal Reel Mounts, were printed and pre-punched horizontally on cardstock, and contained instructions for assembly (figs. 5.21-22). The left inner reel half contained the same printed numbers with guiding symbols as the original View-Master Personal Reel Mounts. However, there were no arrows indicating orientation for placement in projectors. There was plenty of blank space that could be used for notations, although there were no dedicated areas for this. The user had

⁸⁰ Eddie Bowers, “Personal Reel Mounts,” *View-Master Resource*, accessed October 01, 2015, <http://www.vmresource.com/camera/pr.htm>.

⁸¹ Ibid.

⁸² “Takes Color Pictures in 3 Dimensions at Snapshot Cost.”

⁸³ Bowers, “Personal Reel Mounts.”

to apply glue to the left inner reel half and carefully place the film chips across the punched out windows, using a grey printed “spider” for guidance. The user then added glue to the right inner reel half and folded along a centre perforation line so that the two halves lined up, sandwiching the film chips in-between. Once the adhesive was dry, the completed reel could be fully punched out of the card.

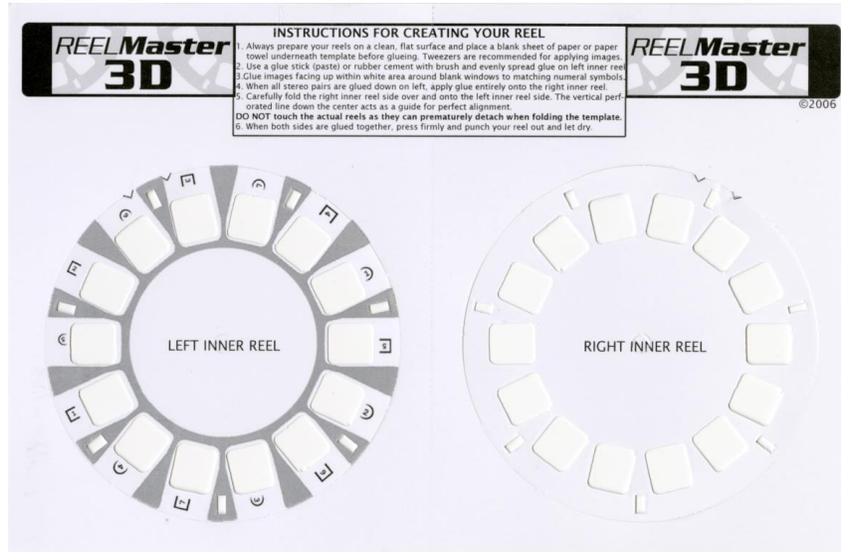


Fig. 5.21 Reel Master 3D kit, back of card, inner section

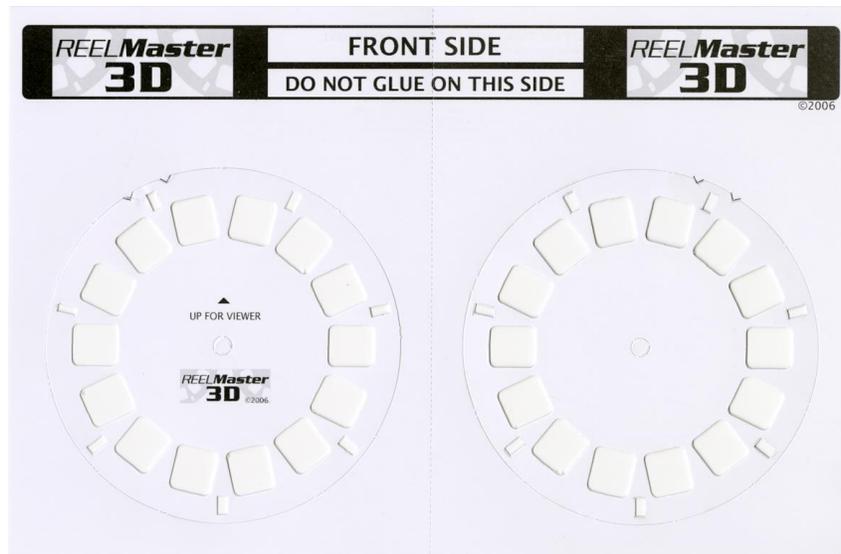


Fig. 5.22 Reel Master 3D kit, front of card, outer section

In late 2007, an American company, Fresa Volante, began taking online orders for its new personal reel mounts.⁸⁴ The mount was identical in size, shape, and general design to the official View-Master Personal Reel Mount. However, it was comprised of three layers, as opposed to the official Personal Reel Mount's seven. A metal "spider," very similar to the original design, was bound by two layers of paper or very thin cardstock. The mount was bright



Fig. 5.23 Fresa Volante personal reel mount, verso

white with red text, and the same printed numbers as the original View-Master Personal Reel Mount, with guiding symbols, were present (fig. 5.23). Two dotted red lines for notations appeared on the mount above the centre hole. On the back centre of the reel, the word "Reel" appeared to the left of the centre hole and "Mount" appeared to the right. The Fresa Volante name and logo were located beneath the centre hole.



Fig. 5.24 Fresa Volante personal reel mount, recto

The front of the mount contained three blank dotted red lines for titles or descriptions underneath each scene number (fig. 5.24). A blank space to the right of the centre hole was designated for the date, with two dotted red lines for further notations above and below. Similar to the Reel Master 3D mounts, there were no arrows indicating orientation for placement in viewers or projectors.

⁸⁴ Bowers, "Personal Reel Mounts."

Several members of the *20th Century Stereo Viewers* online forum relate that they prefer using either empty Meopta personal reel mounts or Meopta commercial reels that have been stripped of the original film chips (fig. 5.25). From 1956 through 1987, Meopta, located in the former European state of Czechoslovakia, offered a line of View-Master look-alike products, the Meopta Stereo Program, including its own personal stereo camera system.⁸⁵ As Milan Kopal relates, Meopta's stereo viewers and reels were interchangeable with View-Master products. Its first stereo camera, the Stereo-Mikroma, offered in 1960, used 16 mm single perforation film. Similar to the View-Master Personal Stereo system, a film cutter was available, along with blank personal reel mounts. The later 35 mm model, the Stereo 35 camera, had a diagonal film track, comparable to the View-Master Color Stereo/Mark II Camera. It also required a different film cutter. View-Master Personal Stereo system users state that they find the Meopta reels sturdier than the View-Master Personal Reel Mounts, with tighter-fitting film pockets and better adhesive.

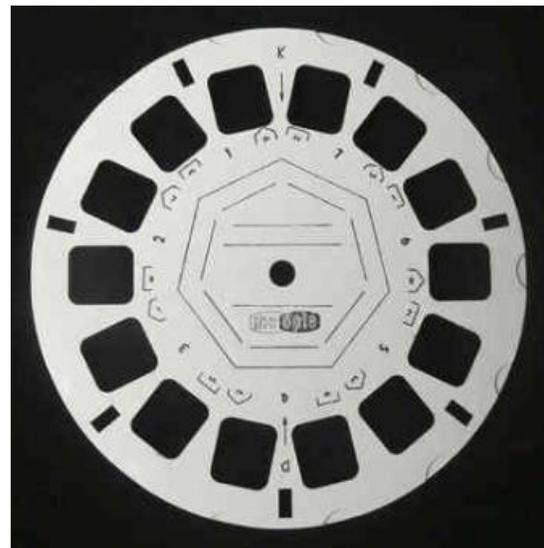


Fig. 5.25 Meopta personal reel mount
Photo courtesy of Ronald Schalekamp

Ronald Schalekamp, owner of 3D Worldshop, undertook some personal research on Meopta reels and noted that some contained a centre spider section formed from plastic, while spiders from other reels seemed to be produced from a thicker metal. Schalekamp feels that these characteristics, combined with what appears to him as a slightly thicker outside layer of cardstock, result in a more robust mount.⁸⁶

⁸⁵ Milan Kopal, "A History and Reference Guide to Meopta Stereo Reels," accessed October 15, 2015, http://www.stereokotoucky.cz/index_en.html.

⁸⁶ "Meopta personal reels?" *20th Century Stereo Viewers*, online forum discussion, accessed May 11, 2016, http://www.viewmaster.co.uk/forum/topic.asp?TOPIC_ID=6570.

The history of Meopta and its products is fascinating. Some of the most interesting objects are its officially sanctioned and commercially produced “Nude Girls” reels, especially those advertising various Meopta products. Unfortunately, there is no space for further research on the subject within this thesis. However, I would suggest that anyone interested in learning more should visit Milan Kopal’s website, *A History and Reference Guide to Meopta Stereo Reels*.⁸⁷

Cutting and Inserting Film into Personal Reel Mounts

The last stage of the View-Master Personal Stereo system involved cutting the film and inserting it into the Personal Reel Mounts.

While some dealers offered mounting services for customers’ developed, uncut film, those who chose not to use the local dealers could send it to the View-Master plant in Portland, Oregon (fig. 5.26). View-Master did not appear to have advertised this service vigorously, having only mentioned it briefly in the 1952 Personal Stereo Camera user manual.⁸⁸ The length of time the service was offered is uncertain. The Stereo Color/Mark II Camera user manual, released ten years after the Personal Stereo Camera in 1962, still



Fig. 5.26 View-Master employee mounting customers’ Personal Reels
Photo courtesy of Wolfgang Sell

suggested the View-Master Mounting Service as one alternative.⁸⁹ An April 1967 View-Master

⁸⁷ Kopal, *A History and Reference Guide to Meopta Stereo Reels*.

⁸⁸ *View-Master Three Dimension Photography*, 14.

⁸⁹ *View-Master Stereo Color Camera*, 18.

Product Price List still included mounting as a service option. One View-Master employee cut the film chips and placed them by order photographed onto an adhesive paper. A second employee, using a Film Inserter, moved the chips from the paper into the waiting reels. The completed reels were shipped back to the dealer for customer pick up.⁹⁰

The option most strongly encouraged by View-Master was to make one's own reels, claiming that it was "...the fastest, cheapest, and most satisfying way" and that the film cutter "...will soon pay for itself."⁹¹ Emphasis was placed on the user as the "...author, director, and film editor."⁹² Of course, this required the purchase of a View-Master Personal Film Cutter and blank Personal Reel Mounts.

In order to mount one's own Personal Reels, it was necessary to use a film die cutter that matched the camera model. Film Cutter 1, designed for use with the original Personal Stereo Camera, made horizontal cuts (fig. 5.27). Film Cutter 2, necessary for images taken with the Stereo Color/Mark II Camera, made diagonal cuts (fig. 5.28).

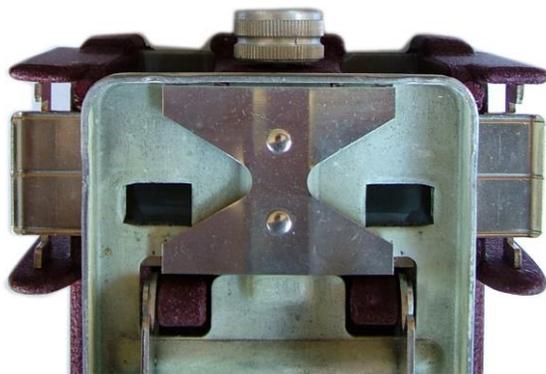


Fig. 5.27 Film Cutter 1
Photo by Keith Clatworthy



Fig. 5.28 Film Cutter 2
Photo by Keith Clatworthy

⁹⁰ Wolfgang Sell in discussion with the author, March 05, 2016.

⁹¹ *View-Master Three Dimension Photography*, 14.

⁹² *Ibid.*, 15.

The user placed the film on a track by fitting the film perforations onto sprocket teeth and then advanced the film with the Sprocket Knob to align each stereo pair with the cutting windows.⁹³ Illumination with a 15-watt lamp below the cutting plate assisted with accurate placement. Once the images and windows were aligned, the user pressed the plate down with the Cutting Lever and separated two “chips” of film from the strip. The chips dropped down plastic chutes on the left and right sides, and were ready for mounting in the reels. The manual recommended that the user mount each stereo pair as it was cut (fig. 5.29).

View-Master encouraged consumers to use the Film Inserter in order to safely hold the film chips, protecting against transference of skin oils or dirt, as well as expanding the film pocket during insertion for easier installation. However, the tool was not required for reel mounting. Tweezers or other third party tools, such as the Spee-D Pocket Expanding Tool currently offered by 3D Stereo,⁹⁴ were and still are an effective alternative.



Fig. 5.29 Roy Rogers mounting Personal Reels
Photo courtesy of Wolfgang Sell

The View-Master Personal Stereo system still retains a dedicated following. Both camera models and cutter models, flash units, cases, filters, blank Personal Reel Mounts, Film Inserters, planar and 3-D projectors, and other various

⁹³ *Personal Reel Making with the View-Master Film Cutter*, 2.

⁹⁴ “Spee-D Pocket Expanding Tool for Reel Mounts,” *3D Stereo Inc.*, accessed June 13, 2016, http://www.3dstereo.com/Merchant2/merchant.mvc?Screen=PROD&Product_Code=SDT-PET.

View-Master accessories can be found on online auctions sites such as eBay. There are websites, blog posts, and online forums dedicated to the View-Master, which share tips for creating one's own reels. *20th Century Stereo Viewers* online forum member Steven Guynn shares his method for mounting

Personal Reels:

Well, you have to punch the film, which has 72 pairs of pictures. Align and orient each pair, open the reel pockets with a metal tool, insert each pair into the blank reel until you have 7 pairs per reel. You can get 10 finished reels from a roll of 35 mm color slide film. It's best to do the work over a light box/table so that you can see what's on the film chips while inserting the chips into the reel pockets. After inserting the film chips, I use a wall paper roller to close the reel pockets to make sure that the film chips don't fall out of the reel pockets. From start to finish, 10 reels will take on average about one hour to complete, or about 6 minutes per reel. You have to take your time because V-M blank reels will fall apart at the pocket if you use too much pressure, weak glue, and blank reels are running about \$5.00/reel. You can use Meopta blank reels and get the time down to maybe 4 to 5 minutes per reel, but still the better part of an hour for 10 finished reels, and that's dependent on experience.⁹⁵

Guynn continues:

As far as the reel expansion tool vs. the film inserter is concerned, I favor the expansion tool because it never touches the film chip emulsion which is very delicate and subject to scratches. I would open the reel pocket using the tool, insert the film chip wearing cotton gloves to avoid skin oils and scratches on the film and perform the entire operation over a light source, light table or light box. It's very tedious work but well worth the effort. Both the reel expansion tool and the film inserter are rare items.⁹⁶

⁹⁵ "Average time to mount VM Personal Reels?" *20th Century Stereo Viewers*, online forum discussion, accessed May 18, 2016, http://www.viewmaster.co.uk/forum/topic.asp?TOPIC_ID=6572.

⁹⁶ Ibid.

6. The Decline of Amateur Stereo Systems

Amateur stereo photography enjoyed only a narrow window of extreme popularity, from roughly 1950 to 1955,⁹⁷ before it fizzled out. Today, apart from collectors and aficionados, View-Master Personal Stereo Cameras and Personal Reels are not well-known to the average person. One reason may be as simple as low volume. The David White Stereo Realist system, advertised as early as 1945 and released in 1947,⁹⁸ had a head start in production over the View-Master Personal Stereo Camera, which was released in 1952. An article on stereo photography and viewing in the September 22, 1950 *Chicago Daily Tribune* referred to the fact that View-Master had yet to provide a camera for amateur stereo photographers.⁹⁹ While production of the View-Master Personal Stereo Camera lasted approximately four years, and production of the Stereo Color/Mark II Camera lasted roughly nine years, production of the competing Stereo Realist camera continued for twenty-four consecutive years, until 1971.¹⁰⁰ Hal Morgan and Dan Symmes, authors of *Amazing 3-D*, state that by the time production of the Stereo Realist camera ended in 1971, approximately one hundred and thirty-one thousand cameras had been manufactured.¹⁰¹ Although manufacturing and sales records for View-Master have not been found, Wolfgang Sell estimates that less than thirty thousand Personal Stereo Cameras were made.¹⁰²

Unfortunately, I have been unable to determine sales or production figures beyond Sell's estimates. As noted above, since 1939 the View-Master company has been sold, purchased, and merged with other companies five times.¹⁰³ According to Wolfgang Sell, collectors have attempted to

⁹⁷ Morgan and Symmes, *Amazing 3-D*, 51.

⁹⁸ Morgan and Symmes, *Amazing 3-D*, 32.

⁹⁹ "New Equipment Gives Pictures Third Dimension," *Chicago Daily Tribune*, Sep. 22, 1950. Retrieved from <http://search.proquest.com/docview/177945883?accountid=46638>.

¹⁰⁰ Morgan and Symmes, *Amazing 3-D*, 51.

¹⁰¹ *Ibid.*

¹⁰² Sell and Sell, *View-Master Memories*, 25.

¹⁰³ "A brief look at View-Master History," *3D Stereo Inc.*, accessed October 01, 2015, <http://www.3dstereo.com/vmhist.html>.

purchase company document archives during these transitions, but they have been refused.¹⁰⁴ Sell and 3-D photographer and collector Sheldon Aranowitz also suggest that the archives may have been lost when production left the original plant in Portland, Oregon. No one knows for sure, other than the current owner, Mattel Inc.'s Fisher Price. The company has not answered my emails requesting information about its archives, which is not surprising behaviour from a corporation of its size and scope.

The View-Master Personal Stereo system also suffered from the fact that unlike other amateur stereo systems whose accessories were either immediately available or could be interchanged, consumers were forced to wait for Personal Stereo Camera accessories. The flash unit was not released to the market until September 1952,¹⁰⁵ a few months after the camera's release, and the View-Master Stereo-matic 500 3-D projector was not offered until 1953, a year after the camera's release.¹⁰⁶ The two close-up attachments were not available until January 1953.¹⁰⁷ View-Master's first (and only) focusing viewer, the Model D, which was illuminated and had 7.35X magnification over the standard 5X, was not released until Christmas 1954.

There were other, more practical issues affecting the popularity of the View-Master Personal Stereo system. The camera was expensive at \$149 USD (approximately \$1,300 USD in 2016). The company later lowered the price to \$89.50 USD (approximately \$802.00 USD in 2016), before they discontinued the camera in 1955. Additional purchases, such as a film cutter and blank reels, were necessary if users wanted to construct their own reels. Unlike other 35 mm stereo systems such as the Stereo Realist, these accessories were not universal, but proprietary. A film cutter specific not

¹⁰⁴ Wolfgang Sell in discussion with the author, March 05, 2016.

¹⁰⁵ "New Personal Camera Flash Attachment Now on Market," *View-Master Dealerscope*, October 1952, 1.

¹⁰⁶ Sell and Sell, *View-Master Memories*, 137.

¹⁰⁷ "Stereo Close-Up Attachment Now Available for Camera," *View-Master Dealerscope*, January, 1953, 3.

only to View-Master, but also to the model of camera, was required. This also applied to close-up lens attachments, flashes, film mounts, viewers, and projectors.

View-Master images were small and difficult to see without magnification and proper illumination. This characteristic compared poorly to the Realist format, which was large enough to easily determine image details with the naked eye.

Moreover, construction of the reels required time and effort. Despite View-Master's assurances of the system's simplicity and role as a family pastime, it is difficult to envision children having the patience to carefully cut and place the tiny film chips. In their book *View-Master Memories*, Mary Ann and Wolfgang Sell share that some employees were disappointed in the amount of work required.¹⁰⁸ Apparently, even one company executive had his doubts about the process, worrying that the "...convenience of taking a roll of film to the corner drug store for processing and printing would win out over the great 3-D effect realised by using the Personal camera."¹⁰⁹ Consumers had the option to send their film to View-Master for mounting, but in doing so lost control over image selection and order. Other 35 mm stereo systems contained only one scene per mount, resulting in a much simpler and quicker mounting process.

In an effort to revive sales once initial interest decreased, View-Master sent salesmen out to various camera stores to conduct factory demonstrations.¹¹⁰ The goal was to hook potential customers by taking their picture with the camera. Once the film was developed, the picture was mounted in a dedicated Personal Demo Reel that contained one empty pocket and six other Personal Stereo system promotional scenes. There were two different Personal Demo Reels, the "DR-4 Starred In" (figs. 6.1-2), and "DR-5 Starred In" (figs. 6.3-4). The finished reel was returned to the camera store, which contacted the potential customer. When the potential customer returned

¹⁰⁸ Following information taken from Sell and Sell, *View-Master Memories*, 136; 178.

¹⁰⁹ Ibid.

¹¹⁰ Ibid.

for the free demo reel the camera store would again attempt to make the sale. But even these attempts did not turn the tide.



Fig. 6.1 Demo Reel 4, reflective view



Fig. 6.2 Demo Reel 4, transparent view



Fig. 6.3 Demo Reel 5, reflective view



Fig. 6.4 Demo Reel 5, transparent view

To some extent, the View-Master Personal Stereo system's failure to thrive was not isolated. All amateur stereo systems were limited by certain practical characteristics. One needed to use a stereo viewer or 3-D projector, along with special polarized glasses and metal screen, in order to achieve the experience of depth. Otherwise, there was nothing to set the images apart from everyday

flat, or planar, images. The Stereo Realist camera, for example, also suffered a decline in sales, despite its star-studded promotional line-up. While View-Master was rolling out free demonstrations, Stereo Realist was implementing free weekend loans of its camera in an effort to reverse flagging sales.¹¹¹

Motion pictures, in the form of television and home movies, were the most formidable threat. One Macy's advertisement quite clearly identifies the enemy: "You'll find your View-Master as much fun as TV! (Maybe more – no commercials.)"¹¹² Kodak released the Brownie Movie Camera in February 1951 for \$47.50 USD (approximately \$440.00 USD in 2016).¹¹³ Its Brownie Movie Projector, released in October 1952, retailed for \$62.50 USD (approximately \$570.00 USD in 2016).¹¹⁴ Together, these products still cost less than most 35 mm stereo cameras. The ability to make and view one's own colour movies seemingly dealt the final blow to amateur stereo photography.

Yet perhaps more than the small number of Personal Stereo Cameras produced and the system's struggle for popularity, View-Master's iconic role as a toy overshadowed its other products. When people think about View-Master, they often do not realize that the reels contain photographic film, let alone that the images are in 3-D. Because the Personal Reels are identical in shape, size, and general design to the production reels, they could easily be mixed in with them in storage and overlooked or discarded.

¹¹¹ Morgan and Symmes, *Amazing 3-D*, 51.

¹¹² Macy's advertisement, *New York Times*, (December 04, 1952).

¹¹³ "The List Of Brownie Movie Cameras & Brownie Movie Projectors," *The Brownie Camera Page*, accessed June 17, 2016.

¹¹⁴ *Ibid.*

7. View-Master Personal Stereo System Users and Collectors

The View-Master Personal Stereo Camera was designed for amateurs. Advertising and various printed materials, such as instruction sheets and price lists, make it clear that the View-Master Personal Stereo Camera was

marketed to families. It was designed for average consumers "...who have never graduated from the box camera"¹¹⁵ and was easy to use. Simplicity and ease of use are repeated again and again in company advertising, although interestingly enough, it is often the female/mother figure that appears next to these claims, rather than children, suggesting that women are generally inept (fig. 7.1). The November

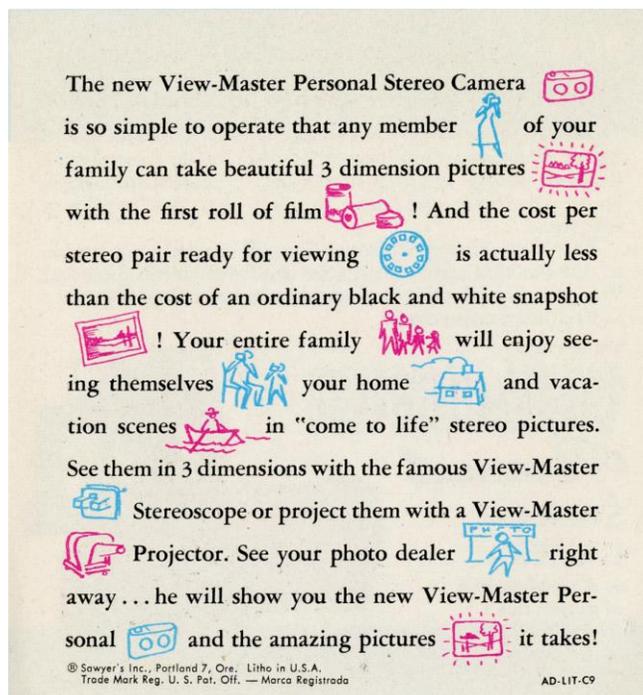


Fig. 7.1 Ad literature, female figure placed in line with phrase "so simple to operate"

1955 volume of *View-Master Dealerscope*, a newsletter distributed to View-Master employees and dealers, states that "A husband can give the Personal Camera to his wife"...because "the Personal Camera is as suited for women as for men, since the ease of operation makes it unnecessary for the user to have prior experience with cameras of any kind."¹¹⁶ As heads of the household, men were responsible for finances, and advertisements that contained male figures holding the camera often commented on the thriftiness of creating colour stereo slides for the same cost as a black and white snapshot. Finally, View-Master advertisements emphasized the potential for family involvement, reflecting the culture of family values in the 1950s (fig. 7.2). Families were urged to photograph

¹¹⁵ Kaiser, *Make Your Own Stereo Pictures*, 49-50.

¹¹⁶ "No Camera Experience Needed," *View-Master Dealerscope*, (November 1955), 3.

each other during gatherings, assemble the reels together, and view their memories together using View-Master's 3-D projector along with polarized glasses and a metallic screen: "Your entire family will enjoy seeing themselves, your home, and vacation scenes in 'come to life' stereo pictures."¹¹⁷

These advertisements also frequently referred to the "View-Master Family" of stereo products.

The subjects of most View-Master Personal Reels reflect the tastes and world of their target audience. Similar to family albums, the images portray family members, vacations, weddings, funerals, birthdays, random social gatherings,

interiors and exteriors of homes, vehicles, fishing trips, local events, etc. My private collection of approximately one thousand Personal Reels contains scenes from everyday family life, popular tourist destinations such as Niagara Falls and Alcatraz, and antiquated structures in various countries. Looking at reels from the beginning of more than one family's trip, which contain shots out of an airplane window, or the family members grouped around the loaded car, is an experience of déjà vu. We often see the very same types of imagery in family albums.

Yet we also find the same types of amateur imagery that were historically excluded from the family photo album. While searching for Personal Reels for my own private collection, I discovered a black sheep of the View-Master Family of products: the pin-up, risqué, or nude Personal Reels. This theme is seemingly undocumented, but has belonged to the history of the photographic medium since its inception. Search any online auction for "pin-up stereo slides," and the query will yield many pages of results, the majority of which were taken with the Realist format. Some of these



Fig. 7.2 Ad literature emphasizes the family
Image courtesy of Keith Clatworthy

¹¹⁷ View-Master, AD-LIT-C9.

images are clearly amateur, with poor lighting and composition. One Rockaway, New York company, Reel-O-Rama, offered pin-up images of six different women, mounted in View-Master Personal Reel Mounts (figs. 7.3-4). The advertising copy reads: “Breath taking, beautiful models, that you can almost REACH in, and hold in your arms...”¹¹⁸ Those ordering for the first time qualified for an included Model C viewer if they purchased all six reels.



Fig. 7.3 Advertisement for Reel-O-Rama Pin-Up reels
Image courtesy of Wim Colpaert



Fig. 7.4 Reel-O-Rama Pin-Up Reel #3, Mary
Photo courtesy of Bjarne Lauder

View-Master Personal Reels are vernacular photographs. Unfortunately, vernacular photographs are often overlooked, discarded, or destroyed. It is common to run across anonymous family photo albums and loose photographs at estate sales or flea markets. Sadly, most families do not pass them down to the next generations. Just as family photo albums are no longer part of the arsenal of family collecting processes, having been supplanted by smart phones and social media, View-Master Personal Reels also lie outside most museums’ paradigmatic approach to collecting.

¹¹⁸ Reel-O-Rama, “Life-Like Natural Color Pin-Ups,” advertisement.

Yet, the growing regard for vernacular photography might create a change in this attitude. The late 1990s witnessed a shift in institutional collection and display practices. Some institutions no longer restricted themselves to collecting iconic imagery from the canon of photographic art, but introduced amateur and vernacular works as well.¹¹⁹ One example is the International Center of Photography (ICP), which, in 2010, announced its acquisition of the Barbara Levine collection of vernacular photography that was amassed over a period of thirty years. The fact that a renowned institution such as ICP acquired vernacular photographs suggests that these items play a role in the history of photography.

This shift in collecting was not strictly limited to museums. Swann Auction Galleries, founded in 1941 and located in New York City, concentrates on sales of unusual antique works on paper. On April 17, 2014 it held what it claims to be the first ever auction composed solely of vernacular photographic objects.¹²⁰ An auction of vernacular photographic objects implies that they possess value and can be used to validate their inclusion in the history of photography.

All View-Master reels, be they production or Personal, present a challenge for collecting and exhibiting: the images are small and therefore require a stereo viewer or projector in order to be seen. A quotation from 3-D photography authority Herbert C. McKay at a View-Master sales conference goes directly to the heart of the matter:

When you look at a stereo picture, you are not looking at anything at all. You are looking through two guide images which should merge out in space somewhere and give you the appearance of a solid object.¹²¹

Indeed, despite the shift in collecting vernacular imagery, it has been a challenge to locate institutional collections containing View-Master Personal Reels. Today they are still not considered

¹¹⁹ Mia Fineman, "Kodak and the Rise of Amateur Photography," accessed June 01, 2016, http://www.metmuseum.org/toah/hd/kodk/hd_kodk.htm.

¹²⁰ "What is Vernacular Photography?" *Swann Auction Galleries*, accessed October 01, 2015, <http://www.swanngalleries.com/vernacular-photography>.

¹²¹ "Herb McKay Speaks Up on Stereo," *View-Master Dealerscope*, (January-February 1954), 3.

collectible objects, in part, I suspect, due to insufficient knowledge of their existence. Presently, the only Personal Reels I have found in U.S. institutional collections are at the George Eastman Museum and the Smithsonian National Museum of American History, each possessing only two Personal Reels.

Not only are the Personal Reels not to be found in institutions, they are also not exhibited. As noted above, exhibiting these objects is not simple, given the need for additional tools in order to view them. How can curators translate the singular viewing experience in to a shared one? It is an issue that some may well wish to avoid altogether. There is one exception, however, that might hold out hope for the future. The F.R. Lamb View-Master Photographs collection, acquired in 2009 by the Museum of New Zealand Te Papa Tongarewa, is a significant holding of two hundred and thirty-seven reels, primarily containing images from Christchurch and South Island taken in the 1950s through the 1960s. An exhibition, *New Zealand Photography Collected*, was curated by Athol McCredie and featured photographs chosen from the museum's collection, which spanned 1850s to the present. The photographs in the exhibition all either depicted or were related to New Zealand, and were taken by both known and unknown photographers. Four individual View-Master Personal Reel images, selected from multiple reels by McCredie, were scanned from the reels, printed, and displayed on the walls. Additionally, two facsimile reels, containing stereo pairs chosen from multiple reels by McCredie, were commissioned by the U.S. company, Image 3D. These reels, along with two View-Master viewers (also purchased from Image 3D), were included in the exhibition so that visitors could experience how the objects were meant to be viewed (fig. 7.5). Eight individual images were included in the accompanying book by McCredie, *New Zealand Photography*



Fig. 7.5 *New Zealand Photography Collected* exhibition. Images from F.R. Lamb Personal Reels on wall to left, viewers with facsimile reels on table to left
Photo by Museum of New Zealand Te Papa Tongarewa

Collected.¹²² The caption of the first image contains a brief description of the camera and View-Master history. The other image captions simply relate to the subject matter.

Curator Athol McCredie was familiar with View-Master production reels, but like so many curators, was unaware of the Personal Reels. He was “...excited to see informal photos from the period in colour and 3D,” especially that of local New Zealand scenes and family life, and he saw this acquisition as an asset to the museum’s collection of personal photography. McCredie states that he would be keen to acquire additional Personal Reels made in New Zealand, and he hopes that their inclusion in the exhibition and his accompanying book will draw more out of the woodwork.¹²³

Each reel has been classified as an album, with some of the individual stereo pairs from the reels catalogued as child records. McCredie did not make this decision, but states: “I can see the logic in that they are analogous to albums, as they collect a number of photos into one object.”¹²⁴

¹²² Athol McCredie, *New Zealand Photography Collected* (Wellington: Te Papa Press, 2015).

¹²³ Athol McCredie, email message to author, April 12, 2016.

¹²⁴ Athol McCredie, email message to author, June 01, 2016.

Currently, only thirty-six of the two hundred and thirty-seven reels are available for viewing in the museum’s online collections. A curious detail is present in approximately 20 of the digitized reels. Specific words of the text denying Sawyer’s View-Master authorship have been crossed out in ink so that it now reads: “Stereo pictures in this mount were ~~not~~ taken by Sawyer’s ~~Inc.;~~” followed by “F.R. Lamb” inscribed in ink (fig. 7.6). The photographer even included his mailing address and/or telephone number, which suggests that he was very concerned that the authorship of the reels be clear.



Fig. 7.6 Reel from the F.R. Lamb Collection
Photo by Museum of New Zealand Te Papa Tongarewa

A Fall 2015 donation of three-dimensional objects to the Smithsonian National Museum of American History appeared to contain View-Master production reels. After a close inspection, a



Fig. 7.7 Box containing 130 production reels and two Personal Reels Photographic History Collection, Smithsonian’s National Museum of American History

volunteer, who is a stereo photography enthusiast and View-Master Personal Stereo Camera photographer, discovered two Personal Reels mixed into a box of approximately one hundred and thirty production reels (fig. 7.7). Were it not for his prior knowledge and experience, they might have remained hidden away.

The rarity of these objects within institutional collections and lack of common knowledge about them further endangers them.

The two Smithsonian reels contain no dates or notation of the film brand used. The lack of clearly defined etching on the film emulsions suggests that they are not Kodachrome. The back of each reel contains a brief inscription in black ink: “Greek Church” and the initials “L.W.” (figs. 7.8-9). The photographer is unknown, and the donor was unable to provide any further information.



Fig. 7.8 Personal Reels, Greek Church, verso
Photographic History Collection, Smithsonian's National Museum of American History

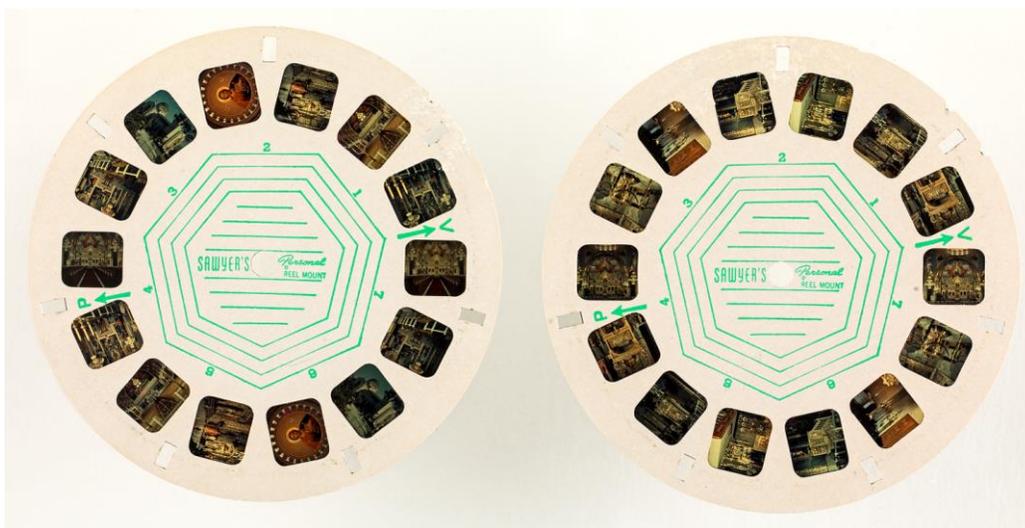


Fig. 7.9 Personal Reels, Greek Church, recto
Photographic History Collection, Smithsonian's National Museum of American History

The openings of the film insertion pockets are a simple curve, indicating that these reel mounts were manufactured prior to 1962. The fact that the black tab areas of the film chips can be seen protruding beyond the opening of the insertion pockets suggests that these images were taken with the original View-Master Personal Stereo Camera.

However, these facts do not indicate the date the images were taken. The imagery does not contain any clues, such as clothing or automobiles, which could be used to estimate the date.

The two reels are in relatively good shape. The film appears to have remained stable; there is no fading or colour shifting. However, the cardstock front of each reel contains mild bubbling. There is no record of how these objects had been stored prior to acquisition.

Preservation

The absence of discussion in photographic histories and presence in institutional collections perpetuates the public's continued lack of awareness of the Personal Reels. However, it is possible that the iconic role of View-Master as a toy could be used to gain recognition. Nostalgia is powerful, retro apparatus is popular, and the unusual is trendy. Institutions such as the Smithsonian National Museum of American History understand the appeal of these factors and incorporate them into their blog posts in order to engage with and increase the public's involvement.

Yet the interest of institutions, such as Te Papa Tongarewa, The George Eastman Museum, and the Smithsonian, in View-Master Personal Reels also prompts the necessity to understand and implement their preservation. Because View-Master Personal Reels are vernacular images, it is likely that, like other such objects, they have not been stored in ideal conditions or handled properly.

The most prevalent damage encountered with Personal Reels is a bubbling of the material on the surface of the reel mounts. Exposure to dampness causes the layers of the reel mount to swell.¹²⁵ Minor bubbling is merely cosmetic; however, extensive bubbling indicates significant swelling, which

¹²⁵ Clatworthy, *The Collectable Stereo Viewers Guide*, 53.

may ultimately result in an overall separation of the reel layers and the film chips falling out of the mount and being lost.

It is also quite common to encounter reels with a dull, dark grey ring around the outer circumference. This wear, called a “viewing ring,” occurs after a reel has been used many times in an early model viewer. The internal metal reel advance mechanism rubs against the reel, depositing a mark.¹²⁶ This wear is merely a cosmetic issue and does not affect the operation of the reel.

Careless use, handling, and storage can result in the warping of the reel material, which in turn can deform the film chips. This makes it difficult to insert the reels into viewers or projectors, and also increases the risk of the reel snagging on interior components and tearing. Warpage of the reel material can also weaken the film pockets, increasing the possibility of film chips falling out.

The adhesive that holds the layers of the reel mounts together can age and fail, causing the film chips to fall out. Realignment of the layers and reinsertion of the film chips is a formidable task.

Improper storage can also cause the colour reversal film to fade or shift colour, especially if a less stable film has been used. Reels mounted with Kodachrome film may have a better chance of resisting this due to the film’s stability. However, other slide films such as Agfachrome, Polachrome, and even Ektachrome are susceptible.¹²⁷

The reels should be housed following best practices. They should be enclosed in archival products such as buffered or unbuffered paper CD envelopes, polypropylene CD envelopes, or buffered or unbuffered four-flap folders. The decision between buffered vs. unbuffered can depend upon supplies or budget. Clear enclosures may be considered if the reels are labelled. Otherwise,

¹²⁶ Ibid.

¹²⁷ Henry Wilhelm and Carol Brower. “Handling and Preservation of Color Slide Collections,” in *The Permanence and Care of Color Photographs*, eds. Henry Wilhelm and Carol Bower (Grinnell: Preservation Pub. Co., 1993), 630.

opaque materials are recommended for additional protection from light. The film chips are so small that the scenes would be difficult to determine at a glance without magnification, counteracting the advantage of clear enclosures. The enclosed reels should be stored vertically in archival storage containers, such as CD boxes, and placed on metal shelves or within metal units.

Dark cold storage is recommended for the reels, as they contain colour reversal film. Ideal temperatures range from 35°F or below freezing point, with a relative humidity between 40-50%, preferably on the lower end of that range.

Because the images are cut out of the filmstrip, the identifying edge markings or notch codes are lost. Unless the photographer has noted otherwise, the film base and brand cannot be easily determined. Both cellulose acetate and polyester film bases were readily in use from the time the View-Master Personal Stereo Camera was released in 1952. Besides Kodak's Kodachrome and Ektachrome, other colour reversal film options were offered by Ansco, Agfa, Fuji, Polaroid, Rollei, and 3M. One could assume that a reel contains Kodachrome if the characteristic, clearly defined etching on the emulsion is present and the colours have remained stable, although assumptions involve risk.

While it will not indicate the specific film brand, it is possible that a non-destructive Polyester Test can be performed to determine whether the film base is acetate cellulose or polyester, which would assist in storage decisions. When placed and rotated between polarized filters polyester film will exhibit an iridescent effect of red and green interference.¹²⁸

¹²⁸ Bennett, Karen L., and Jessica S. Johnson, "Identification of Film-Base Photographic Materials," *Conserve O Gram* 14, no. 9 (National Park Service, 1999), 2. Accessed March 15, 2016, <https://www.nps.gov/museum/coldstorage/pdf/2.3.1b.pdf>.

8. Conclusion

In the View-Master Personal Reels, stereoscopic and amateur photography merge to create unique vernacular objects. These reels serve as a bridge, joining two-dimensional vernacular imagery with the three-dimensional experience. As such the View-Master Personal Stereo system deserves to be better known. Yet the Personal Reels have been lost in the shadow of the View-Master's legacy as a cherished children's toy and have been underrepresented in photography collections as well as neglected by photo historians.

All amateur stereo systems of the 20th century were short-lived, thanks to the advent of television and affordable home movie cameras. View-Master was one company amongst many offering a similar product, but its format was proprietary, and the image sizes were small. The very rarity of the Personal Reels, indeed, presents a further argument for collecting them.

As institutions increase their collection of vernacular imagery, perhaps more of these Personal Reels will come to light. This raises a few questions. Can institutions look beyond View-Master's identity as an iconic toy and recognize that the Personal Reels deserve recognition? If so, how can these objects be assimilated into collections? Additionally, how will curators tackle the challenge of sharing and exhibiting the Personal Reels? Perhaps this thesis, along with future research of these objects, will support the argument for their inclusion. And perhaps future advancements in technology will provide new methods for sharing and exhibiting Personal Reels.

The desire for three-dimensional images has never fully died out. Since the inception of photography, and to this day, we still yearn for that experience. The popularity of View-Master bears proof of this desire. View-Master has been a beloved fixture in our culture for over 75 years, spanning several generations of people. Indeed, this love is what brought the Personal Stereo System and Personal Reels to my attention. Although the Personal Stereo system had a brief heyday, nevertheless, we can see by the onset of virtual reality mechanisms the contemporary avatar of such

systems. Just like our 19th-century ancestors, we crave the magical experience of being transported into any scene of our choosing. The new View-Master, released in 2015 by Mattel, promises a dynamic virtual reality experience incorporated through a smartphone and dedicated application, replacing the reels of static film images. We have not yet seen whether or not this new product will thrive, but we can see that our desire for 3-D images is eternal. The View-Master Personal Stereo system is an example of that desire, and as such it requires our attention.

Resources

Print Resources

- Clatworthy, Keith. *The Collectable Stereo Viewers Guide*. Self-published, 2006.
- Darrah, William C. *Stereo Views: A History of Stereographs in America and Their Collection*. Gettysburg, PA: Times and News Publishing Co., 1964.
- Darrah, William C. *The World of Stereographs*. Gettysburg, PA: W.C. Darrah, 1977.
- Gruber, Gretchen Jane. *View Master: The Biography of William B. Gruber*. Minneapolis: Mill City Press, Inc., March 1, 2015.
- Kaiser, Julius B. *Make Your Own Stereo Pictures*. New York: The Macmillan Company, 1955.
- McCredie, Athol. *New Zealand Photography Collected*. Wellington: Te Papa Press, 2015.
- Morgan, Hal, and Daniel L. Symmes. *Amazing 3-D*. Boston -Toronto: Little, Brown & Company (Canada) Limited, 1982.
- Sell, Mary Ann, and Wolfgang Sell. *View-Master Memories - History of View-Master 1939-2000*. Self-published, 2000.
- Sell, Mary Ann, and Wolfgang Sell. *View-Master Viewers, an Illustrated History*. Borger: 3-D Book Productions, 1994.
- Waldsmith, John. *Stereo Views: An Illustrated History and Price Guide*. Radnor: Wallace-Homestead Book Company, 1991.
- Wilhelm, Henry, and Carol Brower. "Handling and Preservation of Color Slide Collections." In *The Permanence and Care of Color Photographs*, edited by Henry Wilhelm and Carol Bower, 630. Grinnell: Preservation Pub. Co., 1993.
- Zone, Ray. *3-D Revolution: The History of Modern Stereoscopic Cinema*. Lexington, KY: The University Press of Kentucky, 2012.

Articles

- Batchen, Geoffrey. "Snapshots: Art History and the Ethnographic Turn." *Photographies* 1, no. 2 (2008): 121-142. DOI: 10.1080/17540760802284398.
- Bennett, Karen L., and Jessica S. Johnson. "Identification of Film-Base Photographic Materials," *Conserve O Gram* 14, no. 9 (National Park Service, 1999): Accessed March 15, 2016, <https://www.nps.gov/museum/coldstorage/pdf/2.3.1b.pdf>.

- Dennis, John. "Seven Billion Windows on the World: View-Master Then and Now." *Stereo World* 11 (1984): 4-21.
- "Herb McKay Speaks Up on Stereo." *View-Master Dealerscope* (January-February, 1954):3.
- "New Equipment Gives Pictures Third Dimension." *Chicago Daily Tribune* (September 22, 1950). Retrieved from <http://search.proquest.com/docview/177945883?accountid=46638>.
- "New Personal Camera Flash Attachment Now on Market." *View-Master Dealerscope* (October 1952).
- "No Camera Experience Needed." *View-Master Dealerscope* (November 1955).
- Rothschild, Norman. "How Practical is the View-Master System?" *Modern Photography* (August 1955): 86-89; 103-104.
- Sandbye, Mette. "Looking at the Family Photo Album: A Resumed Theoretical Discussion of Why and How." *Journal of Aesthetics and Culture*, 6 (2014). <http://dx.doi.org/10.3402/jac.v6.25419>.
- "Stereo Close-Up Attachments Now Available for Camera." *View-Master Dealerscope* (January 1953).

Websites

- "Average time to mount VM Personal Reels?" *20th Century Stereo Viewers*. Online forum discussion. Accessed May 18, 2016. http://www.viewmaster.co.uk/forum/topic.as?TOPIC_ID=6572.
- "Barbara Levine Collection of Vernacular Photograph Albums Acquired by ICP." *Project B*. Accessed October 15, 2015. <http://www.projectb.com/pages/barbara-levine-collection-of-vernacular-photograph-albums-acquired-by-icp>.
- Bowers, Eddie. "Personal Reel Mounts." *View-Master Resource*. Accessed October 01, 2015. <http://www.vmresource.com/camera/pr.htm>.
- Bright Bytes Studio*. "Images with Stereo Viewers and Some of Our Viewers." Accessed May 20, 2016. <http://brightbytes.com/collection/stereoviewers.html>.
- The Brownie Camera Page*. "The List of Brownie Movie Cameras & Brownie Movie Projectors." Accessed June 17, 2016. <http://www.brownie-camera.com/moviecam.shtml>.
- The Brownie Camera Page*. "No. 2 Stereo Brownie." Accessed June 17, 2016. <http://www.brownie-camera.com/92.shtml>.
- Camera-wiki*. "Stereo Vivid." Accessed June 02, 2016. http://camera-wiki.org/wiki/Stereo_Vivid
- Clatworthy, Keith. "View-Master MK II Camera." *20th Century Stereo Viewers*. Accessed October 01, 2015. <http://www.viewmaster.co.uk/html/cameramkii.asp>.
- Dictionary.com Unabridged*. "-scopy." Random House, Inc. Accessed May 01, 2016. <http://www.dictionary.com/browse/-scopy>.

- Dictionary.com Unabridged*. "stereo-." Random House, Inc. Accessed May 01, 2016.
<http://www.dictionary.com/browse/stereo->.
- Fineman, Mia. "Kodak and the Rise of Amateur Photography." *The Metropolitan Museum of Art: Heilbrunn Timeline of Art History*. Accessed June 01, 2016.
http://www.metmuseum.org/toah/hd/kodk/hd_kodk.htm.
- Kopal, Milan. A History and Reference Guide to Meopta Stereo Reels. Accessed October 15, 2015. http://www.stereokotoucky.cz/index_en.html.
- "Meopta personal reels?" *20th Century Stereo Viewers*. Online forum discussion. Accessed May 11, 2016. http://www.viewmaster.co.uk/forum/topic.asp?TOPIC_ID=6570.
- Sell, Mary Ann, and Wolfgang Sell. "A Perspective on History." *The View-Master Homepage*. Accessed October 01, 2015. <http://www.cinti.net/~vmmasell/>.
- Swann Auction Galleries*. "What is Vernacular Photography?" Accessed October 01, 2015.
<http://www.swannalleries.com/vernacular-photography>.
- 3D Stereo Inc.* "A Brief Look at View-Master History." Accessed October 01, 2015.
<http://www.3dstereo.com/vmhist.html>.
- 3D Stereo Inc.* "Spee-D Pocket Expanding Tool for Reel Mounts." Accessed June 13, 2016.
http://www.3dstereo.com/Merchant2/merchant.mvc?Screen=PROD&Product_Code=SDT-PET.
- 3D Stereo Inc.* "TDC Selectron Carriage w/Selectron Tray." Accessed June 13, 2016.
<http://www.3dstereo.com/viewmaster/pj-sctdc.html>.
- Wikipedia*. "Stereo Realist." Accessed October 01, 2015.
https://en.wikipedia.org/wiki/Stereo_Realist.
- The World of 3-D Imaging*. "View-Master Stereo Color Mark II Camera." Accessed October 01, 2016.
<https://www.stereoscopy.com/cameras/vm-color.html>.

Instructional Manuals

- Personal Reel Making with the View-Master Film Cutter. Portland: Sawyer's Inc., 1952.
- The Stereo Realist Camera. David White Company. (No date.)
- View-Master Stereo Color Camera*. Portland: Sawyer's Inc., 1962.
- View-Master Three Dimension Photography. Portland: Sawyer's Inc., 1952.

Patents

Gruber, Wilhelm B. Stereoscopic viewer. U.S. Patent 2511334 A filed April 28, 1947, and issued June 13, 1950.

Gruber, Wilhelm B. Stereoscopic viewing device. U.S. Patent 2189285 A filed January 20, 1939, and issued February 06, 1940.

Kurz, Karl F. Stereoscopic transparency holder. U.S. Patent 2571,584 A filed April 24, 1948, and issued October 16, 1951.

Paulsohn, Lester H. Holder for stereopaired transparencies. U.S. Patent 2783563 A filed December 08, 1951, and issued March 05, 1957.

Paulsohn, Lester H. Method of manufacturing holder for stereo-paired transparencies. U.S. Patent 2713015 A filed March 31, 1953 and issued July 12, 1955.

Smith, Gordon N. Film feeding mechanism for camera. U.S. Patent 2753775 A filed May 19, 1952, and issued July 10, 1956.

Smith, Gordon N. Stereoscopic camera. U.S. Patent 2680400 A filed July 03, 1950, and issued June 8, 1954.

Advertisements and Price Lists

Macy's Advertisement. *New York Times*, December 04, 1952.

Reel-O-Rama Advertisement. "Life-Like Natural Color Pin-Ups." (No date.)

View-Master Advertisement. "Takes Color Pictures in 3 Dimensions at Snapshot Cost." *Holiday*, October 1952.

View-Master. AD-LIT-C9. (No date.)

View-Master. *View-Master Product Price List*, April, 1967.

Interviews

Sell, Wolfgang. Interview by author. Maineville, March 05, 2016.