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# An Analysis Of The Seminar, Preservation Of Photographs, In The Years 1991-2007

Amanda, Maloney  
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AN ANALYSIS OF THE SEMINAR, *PRESERVATION OF PHOTOGRAPHS*,  
IN THE YEARS 1991-2007

by

Amanda Maloney  
Bachelor of Arts, New York University, NY, USA 2001

A thesis

presented to Ryerson University and George Eastman House

in partial fulfillment of the  
requirements for the degree of

Master of Arts

in the Program of

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## Abstract

This paper is an examination of the *Preservation of Photographs* seminars held yearly since 1991 by the Image Permanence Institute at Rochester Institute of Technology and George Eastman House. The world of photography was affected by a variety of changes during this time, which were manifested in the subject matter covered at the Seminar. The purpose of this examination is to make a detailed review of this Seminar, see what changes have been made, and assess how and why these changes took place to better be aware of our priorities today. It was not the intent of this paper to be critical of past practices, but rather to attempt to chronicle and understand how these practices have evolved over time.



## Table of Contents

Introduction	1
Overview of the Seminar	4
History and Technology	16
Glass and Film Negatives	22
Deterioration and How to Control It	26
Conclusion	32
Appendix A: Presentations and Workshops	35
Bibliography	43

## Introduction

This paper is an examination of the *Preservation of Photographs* seminars held yearly since 1991 by the Image Permanence Institute at Rochester Institute of Technology and George Eastman House. The world of photography was affected by a variety of changes during this time, which were manifested in the subject matter covered at the seminars. Many of these new developments have been due to the rapid transition from chemically based photographic processes to digital media. In 1995 the seminar's name was changed to *Preserving Photographs in a Digital World*, which reflects the importance of these developments.

The prominence of digital photographic technologies is now firmly established, but such was not the case when the Photographic Preservation Seminar initially incorporated digital media. These new technologies have been utilized to provide access to digital copies of photographic materials to researchers on databases or through digital reproductions for exhibitions; thus, limiting the strain of handling on the original objects. Many collections have increasingly acquired digital files and hardcopy outputs, such as, inkjet, dye sublimation, laser, and other prints from digital devices. However, establishing policies that will protect the traditional (i.e., chemical-based) processes in these collections still remains a major concern.

There are a great many reasons why a photograph is made, kept, and valued, from the aesthetic, to historical, and personal. Prices attained for photographic prints at auction have been rapidly increasing in recent years, as can be seen in *The Photographic Art Market*, a yearly publication. As the status and monetary value of photography continues to ascend, many repositories of photographic materials are

struggling to make corresponding accommodations for the changing status, contents, and condition of their collections. The purpose of the annual Photographic Preservation Seminar is, and has been, to provide the attendees with advice and training from experts on current best practices for maintaining these collections.

The attendees of the Seminar have come from many types of institutions and departments involved with the care and access of collections of photographs. A key component to safeguarding these works is communication between these individuals. It is important to foster an understanding of the specific needs and the available resources of a collection, and to support the necessary collaboration between the various individuals and departments responsible to that collection. At the root of all the developments and shifts in the technical information provided at the Seminar, lies the goal of being able to better realize practical solutions to the challenges of preserving photographic materials, and by appealing to a wide audience the Seminar is better able to accomplish this goal.

## **Method**

The analysis of these seminars begins with a review of the information in the annual Seminar binders in the Conservation Library at George Eastman House. The binders run from 1991 to 2007 with the exception of 1993 and 2000. (The binders for 1993 and 2000 were not kept because there were no changes to the Seminar in these years, and they are the same as 1992 and 1999 respectively.) The documents in these binders include: a schedule of events, list of speakers, printouts of the PowerPoint presentations, copies of relevant articles, and bibliographies.

An Excel spreadsheet of the topics was made to organize this information and is included in Appendix A of this paper. Each topic was assigned to a one of the following categories:

- |                               |                             |
|-------------------------------|-----------------------------|
| 1. Collections Management     | 7. Grants and Funding       |
| 2. Color Processes            | 8. History                  |
| 3. Conservation               | 9. Negatives                |
| 4. Curatorial and Exhibitions | 10. Prints                  |
| 5. Digital                    | 11. Storage and Environment |
| 6. Duplication                |                             |

These categories provide, in effect, an overview of the Seminar from 1991 to 2007. Some of the topics could have fit easily into multiple categories, and it was necessary to assign them to the most logical category. This information was organized first by category then chronologically in order to identify trends in the overall frequency of a given subject.

Conclusions on the progressive changes in the conference are based on the analysis of the information in the spreadsheet. Also presented in this paper are more detailed analyses of the three presentations that were given most frequently: *History and Technology of Photographic Materials*, *Glass and Film Negatives: History and Deterioration*, and *Deterioration and How to Control It*.

## **Overview of the Seminar 1991-2007**

Appendix A provides a spreadsheet listing the individual presentations and workshops discussed below.

### **1. Collections Management**

From 1991 to 1994 traditional collections management topics were well represented in four to five presentations each year. After 1995, with the introduction of the topic of digitizing collections, traditional collections management issues were reduced to at most three presentations per Seminar. A primary motivation for institutions to digitize their collection has been to protect the objects from overuse while still providing access through digital reproductions. In this instance, the activities of collections management and digitization are closely linked; and this philosophy is reflected in the Seminar by supplanting traditional collections management presentations for those that address specific digitization technologies.

Topics such as collection organization for access would be covered in presentations about digitizing collections. Additionally, these issues of access and organization – typically allotted to collections management presentations, pre-1995 – would also be addressed in presentations about cold storage options after 1995. There is a close link between the motivation to utilize cold storage and the ability to digitize collections; by increasing access to electronic copies, the effective use of cold storage for the originals became more viable.

## 2. Color Processes

Color processes, as a topic, have been presented each year of the Preservation Seminar. However the way that the materials and processes are organized and presented has changed. In 1991 and 1992 the topic was called *Color and Photomechanical Processes*. The focus here was on the identification of color print processes and drawing a distinction between photomechanical processes and photographic processes. In 1994, this presentation was called *Color Identification & Deterioration Workshop: Print Materials, Transparencies, Color Negatives, and Polaroids*, which introduced materials on flexible film bases and Polaroid; and also included information on deterioration, while eliminating the discussion of photomechanical materials. The inclusion of negatives, transparencies, and Polaroids in the presentation shows that these processes were increasingly being recognized as important and unique, while photomechanical processes were outside the scope of the discussion of photographic color materials due to their distinctly different physical and chemical properties. A significant addition to this topical change was discussion of the deterioration mechanisms of color photographs. This workshop and presentation stressed the fundamental requirement of being able to assess the condition of the photograph, and to identify and prioritize different types of deterioration.

The year 1994 was the first time there was a process guide accompanying each of the identification sections of the Seminar. The *Color Print Expert Box* guide provides information on the dates of use and characteristics of the following:

In 2007 the identification section was renamed to *Color Identification & Deterioration Workshop: Conventional Color Photographs and Digital*. This inclusive topical change indicates that digital output processes now occupied a place in collections requiring similar stewardship standards as traditional photograph collections. Therefore, we find the Seminar challenged by addressing an emerging need at the same time the manufacturing technology is rapidly advancing. Continual developments in printers, inks, and papers – especially in proprietary conditions – are difficult to keep up with, but nonetheless this information is critical to understand how to identify, handle, store, and preserve the new media images being acquired by collections, and demonstrates the evolving relevancy of the annual Preservation Seminar.

### 3. Conservation

The most consistently delivered talk concerning conservation issues was *Deterioration and How to Control It*, to which I have devoted a chapter of this paper. This lecture was called *Chemistry of Deterioration* from 1991 to 1995, then *Deterioration and How to Control It* from 1996 to 2006 and finally *Deterioration and Preservation* in 2007. One can assess from the name change alone a shift from analytic/scientific concerns in the years 1991 to 1995, towards broader concerns focused on establishing a broad base of knowledge from which practical decisions could be derived. From 1994 to 1999, this was the only presentation at the Seminar directly related to conservation issues.

In 1991 there was an additional presentation dealing with conservation called *Overview of Conservation Treatment Strategies*. Three additional presentations dealing with conservation issues were added in 1992: one was a group discussion on *Preservation and Treatment*, another was a lecture titled *Chemistry of the Photographic Process: An Overview*, and the last was a lecture titled *Conservation Treatment Issues*. This year had the greatest concentration of presentations related to conservation.

A presentation titled *Overview of the Current Development of the Field of Photograph Conservation* was added from 1999 to 2004. There is no PowerPoint included for this lecture, but an article by Grant Romer of this same title is included in the binders for these years. This article gives a brief summary of the recent history of the conservation of photographic materials, defines the specialties that have developed in the field, lists the areas of expertise that are desirable and the challenges such conservators face.

In 2004 and 2005 a presentation on *Treatment Challenges in Photograph Conservation* was included in the Seminar. This presentation highlighted the challenges faced by the photograph conservator regarding the broad range of materials that need to be taken into consideration when dealing with photographic materials, the attention to detail necessary to preserve the integrity of the original materials and the kinds of stresses that exhibition and access put on photographic objects.

In 2006 a presentation on *Handling Housing and Exhibiting Photographic Materials from a Photograph Conservator's View* was included in the Seminar. The purpose of the presentations dealing with conservation was to provide those from outside the profession with knowledge regarding what a conservator does and how a



conservator understands photographic materials. Such a topic is important to the Seminar because it serves to introduce those unfamiliar with conservation to the field, and helps to define the role of conservation and the conservator in a collection.

#### 4. Curatorial and Exhibitions

This area of the conference is one that has received little specific attention and has been left out entirely over several years. Some of the issues, such as safe handling and housing of photographs for exhibition are addressed elsewhere. The overall lack of attention devoted to this subject is a reflection of the nature of the institutions participating in the conference, which, generally speaking, are not exhibition driven. The year 1991 was the only year that dealt specifically with curatorial issues in a presentation titled, *Curatorial Reflections on Preservation*.

The years 1992, 1994 and 2001 to 2006 have no presentations dealing specifically with exhibitions. In 1991 there was one presentation titled *Exhibition Issues, Photo Collections*, and the years 1995 to 1999 offered a presentation titled *Housing and Display*. In 2007 *Handling, Housing, and Exhibiting Photographic Materials in a Digital World* was presented. The lack of attention paid to this area is also linked to the Seminar's focus on digitizing collections for access, which decreases the need to handle and exhibit photographic objects.

#### 5. Digital

For the purposes of this paper, the topics categorized as digital are those that deal with digital files or outputs. The lectures dealing with the digitization of a

collection are included in the Duplication section, since digital files now serve many of the same roles – on a greatly expanded level – which duplicate copies once did. The topic of digital photography was one of the more popular following its introduction in 1995 with the first *Digital Roundtable*, one of which has been held every year since. The *Digital Workshops* have also been held regularly from 1996 to 2006 with a name change in 2001 from *Digital Workshops: Digital Camera, Digital Darkroom, and Internet* to *Digital Workshops: Digital Photography in Practice*; this topic is not included with the other topics related to digitization because it deals primarily with born digital images rather than digital duplicates.

Six of the other presentations in this category discuss how to manage digital archives. The one that appeared most consistently, from 1998 to 2007, was called *Behind the Seen – Images & Artifacts in the Digital Archives*. Four of the others discuss specific topics related to preserving digital images such as metadata, repositories, media, and money. There is one final topic in this category that was included for the first time in 2007: *Digital Print Processes*. This topic had not been previously addressed directly due to the developing nature of the field and also because most of the institutions acquiring digital printouts were fine art institutions, from which only a minority of the attendees originated. Much of the information about digital prints is still proprietary and rapidly evolving, but it is already apparent that whatever can be known is crucial to the preservation of these images.

## 6. Duplication

In 1991 the topic of duplication was covered in three presentations: *Copying & Duplication as a Preservation Tool*, *Processing Black & White and Color for Permanence*, and a demo of the International Museum of Photography/George Eastman House (IMP/GEH) Video Disc. In 1992 the two presentations dealing with duplication were *Preservation Cataloging and Electronic Access* and another video disc demo, this time accompanied by a photo CD demo as well. The last presentation on traditional photographic duplication was *Negative Duplication* offered in 1994. The link between providing access to a copy and preservation of the original object was already well established, and the benefits of time and space that a digital copy could provide were becoming clear, even though the video disc and CD technologies were soon to be surpassed. Nevertheless, duplication would follow the road paved by these dated advancements.

In 1995, when the Seminar officially became *Preserving Photographs in a Digital World*, there were six presentations dealing with digital imaging. Of these, *Introduction to Digital Imaging* and *Scanning Photographs* were the only ones that would be held every year for the next twelve years. These two presentations covered the basics of how to digitize images and how to store those files digitally. It took some time for the presentations to refine the wealth of information in the rapidly developing field of digital imaging.

After 2001, there were typically only three rather than five or six presentations on digitizing images. Since 2004 there has been a third lecture, *Overview of Digitization Projects*, which presents an outline of a recommended workflow for digitization

projects. There were also some presentations about specific digitization projects at the George Eastman House (1995), the Library of Congress (1997), the National Archives (1997-2003), and Corbis-Bettmann (1999). In such a new field there is much to be learned from the example of other's successes and struggles.

An important component addressed in many of these lectures is that of Internet access. As the Internet increasingly became a part of daily life, the desirability of making collections available on-line grew. The accessibility of a collection is greatly increased by offering digital images on-line; the collection can be accessed by a much larger audience and with much greater ease than before.

## **7. Grants and Funding**

The topic of grants and funding has received the least attention over the course of the Seminar. From 1991 to 1994 the presentation *Grant Funding of Preservation Efforts* was included in the Seminar, then from 1995 to 2001 there was no presentation that dealt directly with this topic. This topic was reintroduced in 2002 with the presentation *Getting an NEH Grant*, and was continued in 2003 and 2004 with an open discussion of *Getting Grants*. This topic was once again absent from the Seminar for 2005 and 2006, then resurfaced in 2007 as *Help! Fund Raising for Collections Care: Strategies for Success*.

This last lecture is actually a reworked version of the previous years' *Preservation Planning for Photographic Collections*, which primarily addressed how to identify and prioritize needs in collections and offered suggestions on how to deal with these needs. The next logical step is to offer advice on how to fund these solutions,

and this ended up as the focus of the 2007 lecture. Whether the action required is a new cold storage facility, treatment of an object, rehousing, or something else, it all requires money to accomplish, and many of the institutions responsible for implementing these actions are under-funded. Even though this topic has not been addressed in detail at the Seminar, it is closely linked to many of the other topics and is one of the most important as far as the possibility of implementing the Seminar's teachings is concerned.

## 8. History

The most consistently held presentation is the *History and Technology of Photographic Material*, to which a chapter of this paper is devoted. The other history related lectures take a specific topic dealing with photography and explore it in more depth. They include demonstrations of the wet collodion process, discussions of forgeries, explorations of visual culture, and other areas concerning the way we use and understand photographs. History is an important area to cover in this seminar because it addresses the issues of why photography is compelling and worthy of preservation.

## 9. Negatives

From 1994 through 2007 the section of the Seminar dealing with negatives consisted of a presentation about the history and deterioration of negatives and a workshop on identifying different types of negatives and the characteristics of their deterioration. As with the other identification sections of the Seminar, 1994 was the

first time a process guide was included. The *Expert Box* guide for film based processes provides information on the dates of use and characteristics of nitrate acetate and polyester film. In 1994 the *History and Deterioration* lecture concerned itself mainly with film based materials and, from 1995 on, additionally contained a section about glass negatives. The properties of glass are quite distinct from those of film and even though glass negatives are not as plentiful, it is still important that photograph collections know how to handle and store them.

In 1998 a preservation management section was added to the negative identification workshop and in 2007 digital files were also included as a topic. The inclusion of digital files in the section on negatives is a bit of a precarious classification. It is true that both technologies can be produced *in camera* and thus have an aura of originality surrounding them, but there is little else that they share.

## 10. Prints

Both the section on color processes and the section on negatives had PowerPoint presentations to supplement their identification workshops, but this was only true for photographic prints in 1991 and 1992. Photographic print materials are fairly well known to those working with photographs and there are many good publications dealing with print processes in detail, so making an in depth analysis was less necessary. The identification workshops themselves went through a couple of different ways of categorizing the materials.

Similarly to the color processes *Expert Box* guides and negatives *Expert Box* guides, the same examples were used each year. The processes included in the print guide were:

- Salted paper prints
- Cyanotypes
- Platinotypes
- Daguerreotypes
- Ambrotypes
- Tintypes
- Albumen prints
- Gelatin and collodion printing-out papers
- Matte collodion
- Carbon prints
- Woodburytypes
- Gelatin developing-out prints

The real change from year to year is how this information was categorized.

Initially, in 1991 and 1992, the distinction was between nineteenth and twentieth century materials. Then in 1994 the categories were further divided into cased objects, albumen, 1-layer photographs, photomechanical, matte collodion, POP (printing-out-paper) and DOP (developing-out-paper). From 1995 to 2007 the four categories of POP, DOP, nonsilver and photomechanical were used as a way to group the processes. The main changes here are between being specific or general in the distinctions between processes.

## 11. Storage and Environment

In 1991 there was one lecture that addressed storage environment and three that dealt with housing designs and materials. In 1992 and 1994 the focus was also on enclosures. In 1995 there was a definitive shift which granted precedence to

environment and cold storage over housing. From 1995 to 2007, environmental issues were covered over the course of nine lectures, each varying slightly in focus. Nevertheless, each addressed how to assess, control and understand the effect of temperature and humidity on photographic collections. From 1999 on, the presentations also covered how to organize and prioritize materials for cold storage, thus bringing in some collections management issues. The ability to rely on cold storage as a practical solution to many photographic preservation problems was made possible by the use of digital copies, thus making it appropriate and safe for the original materials to remain in cold storage for greatly extended periods of time, while access was provided to the digital copies.

## **History and Technology of Photographic Materials**

The topic of the *History and Technology of Photographic Materials* is the most frequently occurring topic throughout the Seminar, and it is a central topic to understanding photographic materials and the kinds of deterioration they are susceptible to. This presentation discusses when, why, and how specific photographic processes were used. Since this topic plays such a significant role, this lecture has served as the opening lecture from 1991 through 2007. Much of the information covered in this lecture has been established as fact – dates of invention and use; physical structure and properties; common uses – because of this its thrust has changed little over the past sixteen years. The organization of the lecture moves logically from the basic physical structure of photographic materials to a more detailed discussion of processes and commonly used formats.



In the first years of the lecture, from 1992 to 1996, some organizational changes took place. In 1994, eight slides concerning film-based negatives were removed. This was also the year that the *Negative Identification & Deterioration Workshop* was introduced to the Seminar. This points to the sometimes ambiguous role of negatives in photographic collections. For many years, their importance as original-originals has been noted and praised; predominantly as this status pertains to the documentary function of photography. It is only in recent years that the unique aesthetic of negatives has become better appreciated; and accompanying this is an increased interest in understanding how to preserve these objects. Negatives have distinctly different material properties from prints and as such their storage and handling demands special attention.

In 1996, the slide titled *Discovery of Elements Used in Photography*, which dealt briefly with the pre-history of photography, was deleted. This slide had served to introduce the lecture from 1992 to 1995 and its omission acknowledges the Seminar's leaning towards the practical concerns of dealing with the care, management, and use of photographic collections. Certainly the pre-history of photography is a fascinating subject, one that has deservedly received much scholarly attention; however, the care of photographic materials is the dominant concern of the Seminar.

An emphasis was also put on the physical structure of the photograph in the 1996 version of this lecture. A slide was added that had an illustration of a cross section of a photograph noting the support, the binder, and the final image material. Directly following this new slide were three more new slides that listed the different kinds of final image materials, binder materials, and supports that were most

frequently used in photographic materials. This organization helped to illustrate connections between different processes that use the same support, and different image material, or visa versa, and will better inform on how to treat and house these related materials.

The 1996 presentation also removed the two slides that had details about the support and image material of a daguerreotype and gelatin dry plate – much of this information could be easily annexed thanks to the appearance of the new slides that summarized the different types of image material and supports. Also deleted was a slide that described collodion as “cellulose nitrate in alcohol and ether” and explained that the collodion was “applied to glass, must do processing before solvents evaporate”, as well as a slide that dealt with toning of Printing-Out Processes. In efforts to condense the vast history of photographic materials and technologies it was necessary to eliminate anything extraneous and to focus on the knowledge necessary to care for a collection.

The slide about paper negatives was also deleted. The paper negatives that are found in North America are predominantly held by fine art institutions staffed by experts in the field who have the appropriate knowledge and training to care for them. The crayon enlargements slide was also deleted in 1996. Overall the deleted slides show how the lecture is being tailored to define the basic knowledge of photography that should be taken into account when managing a collection of photographs.

There were also some significant additions in 1996. A process timeline was inserted in multiple places to establish a context for the development of the different processes. A new slide showing a cross section of fiber-based photographic paper was

added to the area that discussed developing out processes, which is helpful in understanding the multi-layered aspect of these images. Four slides were added concerning chromogenic color processes on film and paper, which had previously been segregated to a separate lecture. The decision to include chromogenic and negative processes is a logical one because this lecture served as an introduction to all photographic processes. Most of the processes mentioned in this lecture have separate workshops dedicated to their identification, and to omit a topic from this introductory lecture would decrease its overall importance.

In 2006 the scope of the lecture changed significantly, but these changes were only temporary; the 2007 version of the lecture is identical to the 1996 version, which had been used for the prior nine years. The title in 2006 changed from *History and Technology of Photographic Materials* to *History, Technology and Identification of Photographic Materials*, and the lecture itself increased from fifty-two to seventy-five slides. Many of these new slides addressed issues related to connoisseurship by offering more details about close examination of photographic materials.

Two new slides in the 2006 version make distinctions between the North American and the European Cartes de Visite portrait format. This presentation introduces the classification system of one, two, and three-layered photos, which was used in the book by James Reilly, *Care and Identification of 19<sup>th</sup> Century Photographic Prints*. There is also a new slide making direct comparison between printing-out processes and developing-out processes illustrated by a comparison of two photos of the same scene in each of these processes, as well as magnified image particles from

these photographs, which illustrate the difference in shape and size of the particles that accounts for the difference in color and tone of the photographs.

The 2006 presentation also introduced the use of different angles of illumination as a way to help distinguish processes based on their surface reflectance. For the first time there were slides devoted to *Image Tone*, *Sheen*, and *Surface Texture*. There were also additional slides for albumen, gelatin POP, glossy collodion, cyanotype, and Platinotype that showed these images at 150x magnification. These changes push the presentation toward a focus on identification and connoisseurship that it lacked in prior years.

All processes on a paper support were moved to the end of the presentation, as opposed to the chronological order that had previously been used. Paper based photography is the most commonly encountered form and there is a great diversity of processes associated with this support, which could potentially be confused with one another, so direct comparison is helpful. Again, a new emphasis on establishing clear process identification is stressed.

An entirely new section devoted to photomechanical processes was added in 2006. This section also included magnified examples of these processes. The processes addressed were letterpress, photogravure, collotype, offset lithography, as well as ink jet and dye sublimation. The relation of digital output prints to conventional photographic processes can be difficult to negotiate, and as digital output prints are often composed of mechanically deposited ink or pigment on paper, they most reasonably fit with photomechanical processes. This is the first time digital output technologies are included in this presentation. Certainly, by 2006 most major

collections of photographs had acquired works of art that were printed from digital files. Digital media had been a focus of the Seminar for over ten years; however, this is the first time this presentation - the one that sets the tone of the Seminar - acknowledged digital photography as its own process and not just a means of duplication.

Most of the slides that were deleted were ones made redundant by the new material. The slide with a cross section graphic of the *Generic Components of a Photograph* was deleted, but the information addressed in this slide was still covered in detail in the slides dealing with *Final Image Materials*, *Binder Materials*, and *Support*. The cross section of fiber-based photographic paper was deleted, but since the graphics for one, two, and three layered photos are cross sections, the cross sections of the fiber-based paper is unnecessary.

All the changes made in 2006 were reversed back to the 1996 version in 2007. While the additional slides aiding in identification were useful, it is important to note that this presentation was intended as an overview and that the Seminar offered specific hands-on workshops to develop the skills for process identification. Regardless of how carefully this information was presented in the PowerPoint, there is no substitute for studying the actual objects. It does seem unfortunate, however, that the 2007 presentation did not add a section on digital photography, as this is a medium used exclusively by many of today's artists, photo journalists and amateur photographers.

## Glass and Film Negatives: History and Deterioration

The presentation titled *Glass and Film Negatives: History and Deterioration* was introduced in 1994. This lecture focused on negative supports and discussed the physical properties, types of deterioration, and what can be done to slow deterioration, as well as how to identify these supports. Specifically it addressed glass, cellulose acetate, cellulose nitrate, and polyester materials. It also discussed the formats of the film-based materials such as, motion picture film, roll film, microfilm, and cut sheet film.

From 1994 to 1995 there was only one addition of a slide on *Negative Support History*. This slide gave a brief timeline for the introduction of each type of support. This kind of didactic information is quite helpful for narrowing down potential identifications, and though it needs to be used with caution, this sort of summary slide is useful. The format of the presentation also changed slightly with the addition of the Image Permanence Institute (IPI) logo on to each slide, giving the content of the slides more authority, and giving the staff at IPI credit for preparing this information.

From 1996 to 1997 there were no changes. In 1998 the “Recommended Storage Conditions” changed from “10°C-18°C (50°F-64°F)” to “Maximum 64°F”. The slides that warned about the potential damage to glass plates if frozen were kept, but by changing the recommended temperature to a maximum, it opens up the potential for freezing the other formats. This is indicative of the trend toward colder storage, which has proven to be the best preventative measure for a variety of materials – and is especially useful for film based materials.

The 1999 version was the same as the 1998 version. Then in 2001 some significant changes were made. Two new slides were added that contained illustrated diagrams of how humidity could accelerate glass decomposition and dissolution. The slide *Negative Support History* that had been added in 1995 was deleted; as were the twenty-two slides on film formats. Possibly, this was done to prevent people from relying too closely on this information, which doesn't directly account for the confusion that can be caused by copy negatives, or by photographers who use film well beyond its manufacture date. Also much of the useful dating material was already included in the slides about the specific supports and there was a workshop offered in the Seminar that dealt specifically with identification.

The slide *Acetate Film Catastrophic Losses to Date*, which listed sheet film at 5% and cinema and microfilm at 1%, was deleted. This information was less relevant without the component discussing the different formats; and to even estimate the actual percent of film that has deteriorated is too difficult a task and highly speculative. Also, *Deteriorating Film-Acetate or Nitrate*, which advised that humidity was bad and that deterioration was rapid, was deleted. This information had become redundant after several slides dealing with hydrolysis and the overall tone of the presentation, which advised for frequent monitoring of collections.

There were several modifications that made the presentation more concise and clear. The information that had previously spread over two slides for *Cellulose Acetate* was condensed to one. The section on A-D strips - which are used to detect deterioration of acetate film due to vinegar syndrome - was condensed from fourteen slides to ten, without omitting any of the previously included information. The

graphics for the slides that showed the deterioration mechanisms of cellulose chains were updated and designed more boldly even though the information remained the same. There were other redundancies like the two slides on antihalation dyes in the section on *Disaster Recovery*, which were also deleted.

The last section on housing and storage placed a much greater emphasis on the importance of environment than had previously been the case. Details about the materials to be used for housing were deleted in favor of one bullet indicating that they should pass the Photographic Activity Test (PAT), followed by a bullet stating enclosures had only a minor impact on overall preservation. A new slide was added saying “Ultimately, good environment is the key”. Also the bullet “cold storage beneficial” was changed to “colder storage beneficial” further emphasizing this valuable point. To help apply this information, another new slide was added with a table that broke up materials by base and emulsion with maximum temperature values and the appropriate relative humidity for each, to use as a guide when prioritizing objects for cold storage.

The presentations for 2002, 2003, and 2004 were the same as 2001. In 2005, chemical structures were added for polyester and polyethylene naphthalate; in previous years only cellulose acetate and cellulose nitrate were illustrated with structures. There were also four new slides dealing with the deterioration of the plasticizer triphenyl phosphate. The first illustrating the chemical structure of triphenyl phosphate, the second, third, and final slide showing each step in the hydrolysis of triphenyl phosphate to phosphoric acid and phenol. This presentation was also the first to illustrate polyester hydrolysis through a diagram of the chain



scission and a slide with bullets detailing the effects of breaking the chain, and a third slide that reads, "Terephthalic and naphthalic acids not volatile", meaning that, although the hydrolysis of polyester is not a good thing, the products should not promote the deterioration of other materials. This use of scientific facts to help explain deterioration is useful in conveying the importance of proper environment to slow down these processes.

There were also six new slides dealing with fire suppressants for fires involving nitrate-based materials, which cannot be extinguished by water. These included carbon dioxide, carbon monoxide and nitrogen dioxide. The emphasis of these slides is on the health hazards that are caused by exposure to these gasses such as tachypnea, tachycardia, lacrimation, pneumonosis, pneumontis, cough, dyspnea, chest pain, pulmonary edema, cyanosis. The appeal of fire suppressants that will minimize damage to collection materials is obvious, but it is important to balance this with a consideration for the potential dangers to the humans involved as well.

The presentations given in 2006 and 2007 were the same as 2005. The most significant changes in this presentation have to do with an increased emphasis on environment and a decreased interest on precise identification and dating of material. This is a practical move as most collections that contain negatives have many more of these objects than could be realistically analyzed at an individual item level, so applying the effective preservation measure of cold storage is often the only viable solution for such collections.

## Deterioration and How to Control It

This presentation appeared as *Chemistry of Deterioration* from 1991 to 1995, then as *Deterioration and How to Control It* from 1996 to 2006, and was renamed again in 2007 as *Deterioration and Preservation*. There were no printouts of this presentation in the binders for 1991 or 1992, so this discussion of it will begin with the 1994 version, which was identical to the one used in 1995.

The presentation begins with information about the processing of conventional silver photographs, before providing information on the kinds of deterioration these photographs are subject to: color change, fading, silver mirror formation; and the causes of this deterioration: poor processing and airborne contaminants. The presentation then addresses the types of enclosures that are available and the pros and cons of different materials.

The 1996 presentation has several new slides dealing with external threats to silver based images. One is *Driving Forces for Silver Image Oxidation*, which lists some of the environmental causes of deterioration. Another has a graph illustrating the *Effect of RH on Discoloration of Microfilm in Hydrogen Peroxide Atmosphere, where RH Is relative humidity*. There are also two slides on the *Most Threatening Environmental Factors for Silver Images*. The previous presentation focused more on the causes of image deterioration that were inherent to the image and caused through improper processing. This presentation focuses more on the external causes for this deterioration. This is a practical change because environment is something that can be controlled in a collection, while the quality of image processing is only relevant to making duplicates.

In addition to focusing on environmental rather than inherent causes of deterioration, the importance of enclosures is deemphasized. To this end, seven of the slides dealing with how to choose proper enclosures were deleted. This left six slides that addressed types of suitable enclosures and stressed the importance of the Photographic Activity Test (PAT) for ensuring their safety. This change helped to accentuate the importance of environment over housing, in the hopes that institutions would begin to prioritize their concerns in that order.

There were also two new slides on resin-coated (RC) photographic paper. One gave a cross sectional view of an RC print and the other talked about the types of deterioration that typically effect RC prints: mosaic cracking, silver image fading, stabilizer yellowing. Black and white RC prints are relatively common and fairly unstable, at least in comparison to their fiber-based counterparts and are the only process given individual attention in this presentation.

In 1998 the presentation increased from nineteen to thirty-six slides. The 1998 version started off with a slide that classified different types of decay as *mechanical*, *chemical*, or *biological*. This is a slightly different approach than the previous presentations; the new focus is on the characteristics as well as the causes of deterioration. Four new slides follow that all deal with mechanical decay. These slides described mechanical decay as a change in size or shape that can be caused by high or low relative humidity (RH) or fluctuations in RH. Mechanical decay is said to be less important than chemical and biological decay, and the main types of deterioration caused by it are classified as, *ferrotyping*, *cracking*, and *tears*.

There was a new slide on *Chemical Decay in Photos* that addressed this decay in relation to either inorganic or organic materials. For inorganic materials, there was a new slide on glass deterioration and seven slides dealing with silver image deterioration. The silver image deterioration slides contained the information that had been in previous presentations, but went into more details about the different types of deterioration. For instance, in the 1996 presentation poor washing and exhausted fixer were said to result in color change; and in 1998 poor washing was characterized by "faded and brownish tone with yellow-brown staining," while exhausted fixer would result in an image that had "severe yellow-brown staining but was not faded." Also the slide that recommended a low RH gave the specific range of 20%-50% humidity, which it had not in prior years.

The new section on *Biological Decay* focused on mold, insects, and bacteria. To combat these forms of deterioration the presentation called for good environmental controls and integrated pest management. Over the years there has been a steady push to have more and more attention focused on ensuring the environment is as cool as possible and has the appropriate relative humidity.

The section on enclosures had a new slide stating *Enclosures Can Harm Silver Images*. In the past, the presentation had focused more on what enclosures to use rather than which to avoid, with the exception of one slide devoted to the harm caused by lignin in papers. This lecture also had a new slide on *Controlling Enclosure-Related Deterioration*, which stressed the importance of good environment and ensuring that all enclosure materials have passed the PAT. The slide that summarized the chemical decay section also had a new bullet listing temperature as the primary factor. There

were new slides on the sources of some atmospheric contaminants and ways to control them. The conclusions slide of the presentation stated, "environment is critical", to further emphasize this point.

There were a variety of new slides that touched on different subjects. One was a slide titled, *If You Make New Silver Images*, which advocated for toning with selenium, polysulfide, or gold. There was also a related slide that compared fiber-based to resin-coated papers and stressed the greater longevity of fiber-based papers. Another new slide had advice for displaying RC prints, which basically cautioned against it. One new slide titled *Spontaneous Chemical Decay* briefly touched on the severity of the deterioration that cellulose nitrate and cellulose acetate film were prone to; as well as the color dye fading that plagued many chromogenic processes.

From 1999 through 2006 the presentation remained the same. In 2007 the presentation was completely reorganized, expanded from thirty-six to fifty-eight slides, and given a new name, *Deterioration and Preservation*. Of these new slides, thirty are images of different kinds of photographic materials and conditions, and several show magnified views of the materials. These slides help to illustrate the main points of the presentation by bringing in real world examples. To accommodate these slides several slides were deleted or condensed from the old presentation. Thus only the main points of each topic were discussed, and the new presentation seems to offer a more holistic approach to controlling deterioration in a collection of photographic materials.

The 2007 presentation begins with a slide that lists *Preservation Fundamentals*, which are: *security, order, intellectual control, preparation for use, and emergency preparedness*. This new presentation puts much more emphasis on integrating

collections management concerns with preservation. The next slide is *Deterioration Fundamentals*, which list *materials, mechanisms, environment, and handling*. This area of the presentation covers some of the same ground as the earlier versions of the presentation. There are two new slides titled *Preservation and Deterioration*. These slides set a new tone for the presentation in that they acknowledge the importance of understanding the kinds of deterioration collection materials are prone to, and balancing this awareness with the needs of the collection to ensure a coherent preservation strategy unique to that collection.

The six slides on *Mechanical Decay* in the earlier presentation were condensed to two slides with bullet points and two slides with images. The image slides illustrated curled photos and a photo that had become adhered to its glassine sleeve. Most of the slides that were deleted had information that was repeated elsewhere in the presentation.

In the section about *Chemical Decay* the one slide that was deleted had to do with processing prints, which fewer and fewer institutions and individuals were using as a means of duplication. Due to this, the three slides from later on in the presentation that dealt with fiber versus RC and toning prints were also deleted. Some image slides were added to the *Chemical Decay* section dealing with inorganic materials, which showed weeping glass on a daguerreotype; a *Punch* cartoon from 1847 lamenting how quickly photographs fade away; a magnified view of silver image particles; a magnified view of a cross section of a photograph; and an image of silver oxidation on a daguerreotype. These provide valuable visual references to the problems discussed. This is also the first presentation to specifically mention

daguerreotypes. The section on organic materials had fourteen new slides with examples of the kinds of deterioration silver based photographs on paper are subject to. It also had two new slides illustrating the migration and redeposition of silver particles that cause silver mirroring.

The five slides about the effect of enclosures were reduced to two slides, one dealing with the purpose of enclosures and one stressing the importance of good environment over enclosures. Deleted from this section were the slides that dealt with the PAT and with poor quality enclosure materials. Three image slides were added to this section. One showed a print that was matted framed and hung in an exhibition; one showed a vault with storage boxes, and the last showed a pile of prints with severely soiled mounts. The section on Mold Growth had the addition of one image slide showing a magnified photo of mold. The three slides that dealt with atmospheric contaminants were condensed to one. This section tried to simplify the content presented and to also provide examples of both properly implemented housing and storage as well as the consequences of improper housing and storage.

The two concluding slides were new; one addressed light's effect on dyes and paper supports, and the other advised to limit the handling of photographs. This last slide on handling didn't offer any details on how to do this, but the presentation as a whole put a significant focus on aspects of collections management, thus emphasizing how to create and follow rules for organization, access, and handling of collection material.

This presentation moves from specific to holistic in a way that mirrors that of the Seminar as a whole. One of the most important aspects of the Seminar is bringing

together people from a variety of professional backgrounds to stimulate collaboration and integration of preservation techniques. To maximize expenditures of time and money, one must approach the collection as a whole and establish environmental controls and organization that best serve the entire collection.

## **Conclusion**

The research that has been done at Image Permanence Institute and George Eastman House is among the most significant being done in the discipline of photographic preservation, and as such the Preservation Seminar held by these institutions serves as a good indicator for what the major concerns and practices are for the field as a whole. The purpose of this examination of the Photographic Preservation Seminar was to make a detailed review of this Seminar, see what changes have been made, and assess how and why these changes took place to better be aware of our priorities today. It was not the intent of this paper to be critical of past practices, but rather to attempt to chronicle and understand how these practices have evolved over time.

The field of photographic preservation as a whole has also seen significant shifts in its priorities over the past 16 years. There has been a definite move towards a more holistic approach, which seeks to do the most good for the largest percent of the collection. This has been made a practical goal due to the parallel development of the technologies of cold storage, digitization, and internet access; which, when working together allow a large audience access to digital copies, while still protecting the original objects. New technologies have a major role in the kinds of developments that



were possible; and point to how important it is to utilize technologies not directly related to the field, such as the Internet. This sort of access is well suited to most public institutions that have a mandate to protect their collection, but must also serve the public.

Individuals comprising the disciplines involved in caring for photographic collections – curators, archivists, conservators, preparators, etc – all require specialized knowledge, but it is necessary to foster collaboration and understanding among them to continue to improve photographic preservation. The Photographic Preservation Seminar has sought to address all these disciplines, and has been successful in attracting a diverse audience of varying expertise. The Seminar has evolved by taking a more integrated approach in covering topics of current relevance to the field, and by offering practical solutions applicable to the increasingly diverse holdings in photographic collections.



## Appendix A: Presentations and Workshops by Topic and Year

The information here is organized by categories assigned by the author, then by title of the presentation or workshop. The black squares mark the years in which that particular presentation or workshop was given.

Categories	Topics	1991	1992	1994	1995	1996	1997	1998	1999	2001	2002	2003	2004	2005	2006	2007
Collections Management	Archival Management	x														
Collections Management	Cataloging Issues with Photo Collections	x														
Collections Management	Collection Survey Lecture and Workshop	x														
Collections Management	Problems of Initial Processing of Photo Collections, Receipt, Ordering, Stabilization and Conservation Planning	x														
Collections Management	Collection Management Workshop: Disaster		x													
Collections Management	Collection Management Workshop: Exhibition Gallery Talk		x													
Collections Management	Photographic Collections: Organization and Use		x													
Collections Management	Preservation Planning and Needs Assessment		x													
Collections Management	Survey and Housing Workshop: Collection Survey		x													
Collections Management	Collection Management			x												
Collections Management	Collection Management Exercise: Survey of Collection, Begin Preservation Plan			x												
Collections Management	Collection Management Exercise 2			x												
Collections Management	Organization of Photographic Collections			x	x	x	x									
Collections Management	Preservation Planning for Photographic Collections			x	x	x	x	x	x	x	x	x	x	x	x	
Collections Management	Experiences with the Albert Stone Collection							x								
Collections Management	Collection Management Action Plan									x	x	x				
Collections Management	Preservation Strategy and Tools									x	x	x	x			
Collections Management	Open House: Demonstration of The Museum System														x	x
Collections Management	Open House: Selection from the Collection														x	x
<b>Total for each year</b>		4	5	5	2	2	2	2	1	3	3	3	2	1	3	2

# Appendix A: Presentations and Workshops by Topic and Year

Categories	Topics	1991	1992	1994	1995	1996	1997	1998	1999	2001	2002	2003	2004	2005	2006	2007
Color processes	Color & Photomechanical Processes	x	x													
Color processes	Color Identification & Deterioration Workshop: Print Materials, Transparencies, Color Negs, & Polaroids			x												
Color processes	Color Process & Deterioration			x												
Color processes	Color Identification & Deterioration Workshop: Prints: Transparencies: Negs, Polaroids, & Digital				x	x	x	x	x	x	x	x	x	x	x	
Color processes	Color Photographs - History & Deterioration				x	x	x	x	x							
Color processes	Color Film - Technology & Preservation									x	x	x	x	x	x	x
Color processes	Color Identification & Deterioration Workshop: Conventional Color Photographs and Digital															x
Total for each year		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2

  

Categories	Topics	1991	1992	1994	1995	1996	1997	1998	1999	2001	2002	2003	2004	2005	2006	2007
Conservation	Overview of Conservation Treatment Strategies	x														
Conservation	Chemistry of Deterioration	x	x	x	x											
Conservation	Group Discussion on Preservation and Treatment		x													
Conservation	Chemistry of the Photographic Process: An Overview		x													
Conservation	Conservation Treatment Issues		x													
Conservation	Deterioration and How to Control it					x	x	x	x	x	x	x	x	x	x	
Conservation	Overview of the Current Development of the Field of Photograph Conservation									x	x	x	x			
Conservation	Open House: Advanced Residency Program in Photograph Conservation										x	x	x	x	x	x
Conservation	Treatment Challenges in Photograph Conservation												x	x		
Conservation	Handling, Housing, and Exhibiting Photographic Materials from a Photograph Conservator's View														x	
Conservation	Deterioration & Preservation															x
Total for each year		2	4	1	1	1	1	1	1	2	3	3	4	3	3	2

# Appendix A: Presentations and Workshops by Topic and Year

Categories	Topics	1991	1992	1994	1995	1996	1997	1998	1999	2001	2002	2003	2004	2005	2006	2007
Curatorial and Exhibitions	Curatorial Reflections on Preservation	x														
Curatorial and Exhibitions	Exhibition Issues, Photo Collections	x														
Curatorial and Exhibitions	Housing & Display				x	x	x	x	x							
Curatorial and Exhibitions	Handling, Housing, and Exhibiting Photographic Materials in a Digital World															x
Total for each year		2	0	0	1	1	1	1	1	0	0	0	0	0	0	1

Categories	Topics	1991	1992	1994	1995	1996	1997	1998	1999	2001	2002	2003	2004	2005	2006	2007
Digital	Digital Roundtable				x	x	x	x	x	x	x	x	x	x	x	x
Digital	Digital Workshop: Digital Camera, Digital Darkroom, Internet					x	x	x	x							
Digital	Digital Workshops: Digital Photography in Practice									x	x	x	x	x		
Digital	Digital Photography in Practice														x	
Digital	Solutions for Digital Archives						x									
Digital	Behind the Seen - Images & Artifacts in the Digital Archives							x	x	x	x	x	x	x	x	x
Digital	Preserving Digital Images: Metadata and Repository Issues									x						
Digital	Preserving Digital Images: Obligations, Repositories, Metadata										x	x	x			
Digital	Preserving Digital Images: Mandates, Media, Metadata and Money													x	x	
Digital	Preserving Digital Images: Techniques for Long-Term Stewardship															x
Digital	Digital Print Processes															x
Total for each year		0	0	0	1	2	3	3	3	4	4	4	4	4	4	4

# Appendix A: Presentations and Workshops by Topic and Year

Categories	Topics	1991	1992	1994	1995	1996	1997	1998	1999	2001	2002	2003	2004	2005	2006	2007
Duplication	Copying & Duplication as a Preservation Tool	x														
Duplication	Processing Black and White and Color for Permanence	x														
Duplication	IMP/GEH Video Disc Demo	x														
Duplication	Electronic Access Workshops: Photo CD Demo, Video Disc Demo		x													
Duplication	Preservation Cataloging and Electronic Access		x													
Duplication	Negative Collections Workshop: Negative Duplication and Rehousing		x													
Duplication	Negative Duplication			x												
Duplication	Practical Realities of an imaging Project				x											
Duplication	Imaging Projects at GEH				x											
Duplication	Imaging in the Balance				x	x										
Duplication	Applications of Digital Imaging in Preservation				x	x	x	x	x							
Duplication	Scanning Photographs				x	x	x	x	x							
Duplication	Scanning Photographs - The Big Picture									x	x	x	x	x	x	x
Duplication	Introduction to Digital Imaging				x	x	x	x	x	x	x	x	x	x	x	x
Duplication	The National Digital Library Project of the Library of Congress					x										
Duplication	Pictures and Text: Digital Imaging Initiative in Cultural Institutions					x	x	x								
Duplication	Technical Overview of the National Archives Electronic Access Project						x	x	x	x	x	x				
Duplication	Corbis-Bettmann: Digital Archiving Practices & Workflow								x							
Duplication	Overview of Digitization Projects												x	x	x	
Duplication	Digitization Workflow, Infrastructure, and Specifications															x
Total for each year		3	3	1	6	6	5	5	5	3	3	3	3	3	3	3



# Appendix A: Presentations and Workshops by Topic and Year

Categories	Topics	1991	1992	1994	1995	1996	1997	1998	1999	2001	2002	2003	2004	2005	2006	2007
Grants and Funding	Grant Funding of Preservation Efforts	x	x	x												
Grants and Funding	Getting an NEH Grant										x					
Grants and Funding	Getting Grants (open discussion)											x	x			
Grants and Funding	Help! Fund Raising for Collections Care: Strategies for Success															x
Total for each year		1	1	1	0	0	0	0	0	0	1	1	1	0	0	1

Categories	Topics	1991	1992	1994	1995	1996	1997	1998	1999	2001	2002	2003	2004	2005	2006	2007
History	History and Technology of Photographic Material	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
History	You Won't Believe Your Eyes: Photography and Culture in the 19th Century		x													
History	History of the Permanence Issue		x													
History	Likeness & Dislikeness: The Hoffman Lincoln Daguerreotype			x	x	x	x	x	x	x	x	x				
History	Demonstration of the Wet-Plate Collodion Process									x	x	x	x	x	x	x
History	The Mirthful Mirror Expressions of Wit & Humor in the Daguerreotype												x	x		
History	I Killed Photography														x	
History	Fauxtography															x
Total for each year		1	3	2	2	2	2	2	2	3	3	3	3	3	3	3

# Appendix A: Presentations and Workshops by Topic and Year

Categories	Topics	1991	1992	1994	1995	1996	1997	1998	1999	2001	2002	2003	2004	2005	2006	2007
Negatives	Deterioration of Glass and Film Supports: Storage Strategy for Negatives	x														
Negatives	Issues in the Care of Negative Collections		x													
Negatives	Surveying a Large Negative Collection			x												
Negatives	Photographic Films: History & Deterioration			x												
Negatives	Glass & Film Negatives: History & Deterioration				x	x	x	x	x	x	x	x	x	x	x	x
Negatives	Negative Collections Workshop: Negative ID and Forms of Deterioration		x													
Negatives	Negative Identification & Deterioration Workshop: Polyester, Nitrate, Acetate			x												
Negatives	Negative Identification & Deterioration Workshop: ID, Polyester, Glass: Nitrate: Acetate				x	x	x									
Negatives	Negative Identification & Deterioration Workshop: ID, Polyester, Glass: Nitrate: Acetate, Preservation Management							x	x	x	x	x	x	x	x	
Negatives	Negative ID/Deterioration & Digital Files Workshop: Conventional Negatives, Preservation Management, Digital Files															x
Total for each year		1	3	3	2	2	2	2	2	2	2	2	2	2	2	2

Categories	Topics	1991	1992	1994	1995	1996	1997	1998	1999	2001	2002	2003	2004	2005	2006	2007
Prints	Process Identification Lecture	x	x													
Prints	Process ID Workshops (19 <sup>th</sup> Century and 20 <sup>th</sup> Century)	x	x													
Prints	Process ID Workshop: Cased Objects, Albumen, 1-Layer Photographs			x												
Prints	Process ID Workshop: Individual Exploration, Photomechanical			x												
Prints	Process ID Workshop: Matte Collodion, POP, DOP			x												
Prints	Print Identification Workshop: POP, DOP, Nonsilver, Photomechanical				x	x	x	x	x	x	x	x	x	x	x	x
Total for each year		2	2	3	1	1	1	1	1	1	1	1	1	1	1	1



# Appendix A: Presentations and Workshops by Topic and Year

Categories	Topics	1991	1992	1994	1995	1996	1997	1998	1999	2001	2002	2003	2004	2005	2006	2007
Storage and Environment	Collection Survey Workshop; Storage Environment Workshop	x														
Storage and Environment	Housing & Stabilization; Handling & Emergency Intervention	x														
Storage and Environment	Historical Survey of Storage Enclosure Designs	x														
Storage and Environment	Storage Enclosures Materials and Chemical Properties	x														
Storage and Environment	Survey and Housing Workshop: Housing & Stabilization		x													
Storage and Environment	Enclosures & Housings: Designs & Function			x												
Storage and Environment	Visit to Light Impressions			x	x	x										
Storage and Environment	Environmental Issues & Cold Storage				x	x	x	x	x							
Storage and Environment	Enclosures & Cold Storage Practices					x	x									
Storage and Environment	Microclimates & Cold Storage							x								
Storage and Environment	Automated Analysis of Environmental Data								x							
Storage and Environment	Surveying Large Collections & Setting Priorities and Microclimate & Cold Storage								x							
Storage and Environment	Our 10 Most Common Storage Problems: A Week in Review (2002 and 2003: Ten Common Preservation Problems: A Week in Review)									x	x	x				
Storage and Environment	Cold Storage Practices									x	x	x	x	x	x	x
Storage and Environment	Storage Planning for Mixed Media Collections												x	x	x	x
Storage and Environment	Assessing Storage Conditions													x	x	x
	<b>Total for each year</b>	4	1	2	2	3	2	2	3	2	2	2	2	3	3	3



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