



Article: The Last Full Measure: An Exhibition of American Civil War Photographs from the Liljenquist Family Collection at the Library of Congress

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Topics in Photographic Preservation, Volume 15.

Pages: 270-282

Compiler: Jessica Keister

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**The Last Full Measure:
An Exhibition of American Civil War Photographs from the Liljenquist
Family Collection at the Library of Congress**

Alisha Chipman and Dana C. Hemmenway

*Presented at the 2013 AIC & ICOM-CC Photographs Conservation
Joint Meeting in Wellington, New Zealand*

Abstract

From April 12, 2011 through August 13, 2011 the Library of Congress presented a major exhibition highlighting items from the Liljenquist Family Collection of Civil War Photographs. The exhibition, titled *The Last Full Measure*, consisted of 379 cased and framed ambrotype and tintype portraits and was meant to serve as a memorial to all the soldiers who lost their lives while fighting in the American Civil War (1861-1865). The photographs were arranged in a patchwork quilt-like manner and displayed in six floor-standing cases. The display platforms were set at a pitch of 65 degrees to allow for greater visibility. This exhibition design, while unique and visibly pleasing, posed a great challenge to the Conservation Division. A stable mounting solution had to be found in order to secure approximately 63 objects laid out in nine to ten horizontal rows per display case. In addition to consulting on the mounting design, representatives from the Conservation Division examined, stabilized, treated, mounted, and installed the objects in a timely manner in order for the exhibition to open on its symbolically important opening date; the 150th anniversary of the beginning of the Civil War. This paper provides an overview of the exhibition and the many challenges while highlighting innovative approaches to conservation treatment and exhibition display.

Introduction

In 2010, the Prints & Photographs Division (P&P) of the Library of Congress (LC) acquired the Liljenquist Family Collection of Civil War Photographs. The collection consisted of over 700 ambrotype and tintype portraits depicting Union and Confederate soldiers and their families. Unknown local or itinerant photographers took most of the images just before the soldiers were sent to the front or while they were stationed at regimental encampments. Tom Liljenquist, a jeweler and resident of McLean, VA, and his three sons had been actively collecting Civil War-era photographs for over 15 years. The items in their collection were purchased from a variety of sources including antiques shops, eBay, estate sales, fellow collectors, and civil war shows. The donation of the Liljenquist Family Collection to the Library of Congress arrived on the eve of the Civil War's sesquicentennial. Fittingly, the library, in close collaboration with the Liljenquist family, planned a major exhibition highlighting items from the collection to open on April 12, 2011, the 150th anniversary of the beginning of the Civil War.

The exhibition, titled *The Last Full Measure: Civil War Photographs from the Liljenquist Family Collection*, consisted of 379 cased and framed ambrotype and tintype portraits and was meant to serve as a memorial to all the soldiers who lost their lives while fighting in the Civil War. More than 620,000 soldiers perished during this four year long battle. Accordingly, the

exhibition contained images of 360 Union soldiers – one image for every 1,000 that died - and 52 images of Confederate soldiers – one for every 5,000 casualties. The photographs were displayed in six cases: five containing images of Union soldiers and one of Confederates. Liljenquist's sons, Jason and Brandon, were the initial creators of the exhibition's design for the presentation of the objects in a patchwork quilt-like manner. Their intention for this design was to “evoke memories of the past, family ties, and unity” (Library of Congress 2011, 4). Prior to the donation of the collection, the boys worked out their preliminary designs for the exhibition by laying items out on the kitchen table and striving for an aesthetically appealing image of unity, form, and color. This design became an essential component of the exhibition. In order to accommodate for the Liljenquists' design and to allow exhibition visitors to be able to adequately see all of the images, the library planned to use cases with a base platform set at a 65-degree angle.

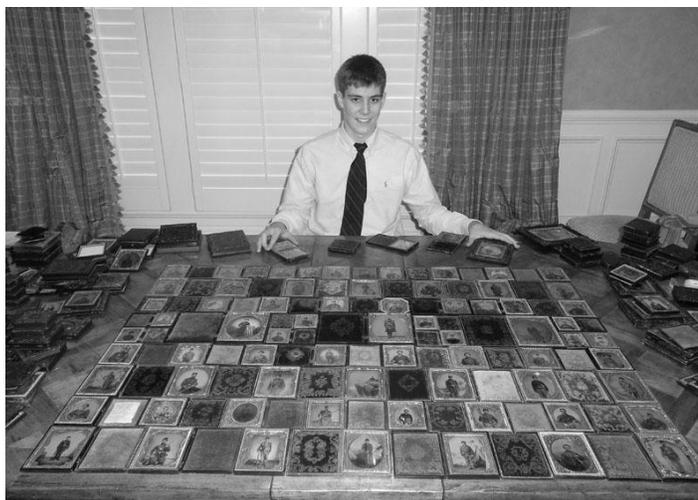


Fig. 1 Brandon Liljenquist with items from the Liljenquist Family Collection.

http://www.loc.gov/rr/print/coll/633_lilj_measure.html

The exhibition design, while unique and visibly pleasing, posed a great challenge for the Conservation Division (CD). A stable mounting solution had to be found in order to secure approximately 63 objects laid out in nine to ten horizontal rows per case. In addition to consulting on mount design, representatives from CD had to examine, stabilize, mount, and install 379 objects in a timely manner in order for the exhibition to open on its scheduled and symbolically important date.

Dana Hemmenway, Senior Photograph Conservator, was the primary conservator and point of contact for this project. Alisha Chipman, Photograph Conservation Intern, assisted Dana in all aspects of the project and took responsibility for researching and carrying out the majority of the treatments. Kaare Chaffee, Lisa Moberg, Lynn Kidder, Jamie Schmeits, Tiffany Welch, Julie McInnis, Jaime Roberts, and Simonette della Torre assisted with the mount making and installation of the objects.

Conservation Review

Dana Hemmenway and Alisha Chipman examined every object in the exhibition prior to its approval for inclusion in the exhibition. The conservation review consisted of several meetings held over a period of several days. The review meetings were attended by Dana Hemmenway, Alisha Chipman, Carol Johnson, P&P curator in charge of the exhibition, and Cheryl Regan, Chris O'Conner, and Debra Derbeck of the Interpretive Programs Office (IPO), the office responsible for planning exhibitions at the Library of Congress. During the meetings, the conservators evaluated each object's stability. Those that were in stable condition were

approved. The curator and the conservator made a note of which objects were in need of treatment prior to exhibition and it was arranged for these objects to be transferred to the conservation lab. One object, an ambrotype with a broken base glass, was not approved and a replacement object was identified. On the other hand, a cased object with a cracked cover glass was approved with hesitation because it was considered by the donor to be an essential and symbolic part of the exhibition. Special handling and transportation instructions were given and attached to this object's storage container.

All of the ambrotypes and tintypes reviewed were either in thermoplastic frames or cases made of paper, leather, or thermoplastic materials. Many of the plates were selectively hand-colored. The donor had altered several of the cased objects by placing the plate package on the left and the velvet pinch pad on the right. These alterations were carried out in order to make the patchwork quilt presentation design for the exhibition more appealing. After the exhibition, these cased objects were returned to their typical American layout with the plate appearing on the right side of the case.

Approximately 80 objects were identified as in need of conservation treatment during the conservation review process. The majority of the objects sent to conservation for stabilization treatment prior to exhibition had partially broken hinges, torn or flaking leather coverings, loose pinch pads, broken wooden cases, or cracked thermoplastic frames.

Creation of an Examination and Treatment Report Form

In preparation for treatment of a large number of objects, Alisha Chipman created a one-page (double-sided) combined treatment proposal and report form to be used for this project. The form contains checklist-style formatting for the examination, treatment proposal, and report sections as well as an area for annotating pre-drawn condition diagrams. This form allowed for quick and efficient treatment documentation. (See the appendix for a copy of the form.)

Research and Preparation for Treatments

In preparation for stabilization treatments of the Liljenquist objects, Alisha Chipman conducted research and testing on ethanol-reactivated tissues for hinge repair of cased objects, adhesives for consolidation of leather, and cleaning techniques for thermoplastic frames. A large number of the cased objects had partially broken hinges in need of repair, so a streamlined quick and efficient approach to hinge repair was sought. The use of pre-coated adhesive tissues was investigated. Since water could cause swelling, deformation, darkening and embrittlement of leather, especially in deteriorated leather, an ethanol re-activated tissue became the focus of testing.

Approximately 20 different adhesive-coated tissues were made for testing using a variety of support materials, adhesive combinations, and application techniques. Two medium-weight Japanese papers (Paper Nao), a Korean paper (Fides International), and an unspun polyester sheet were coated with Lascaux 498 HV, mixtures of Lascaux 498 HV and Lascaux 360 HV, and mixtures of Rhoplex™ AC-73 and Rhoplex™ AC-234. The adhesives were used undiluted and diluted with de-ionized water. A variety of application techniques were also tested to coat the

tissues including; brushing the adhesive directly onto the paper, spreading the adhesive over polyester film before applying the paper, spreading the adhesive through a screen, and piping and spreading the adhesive between silicon release polyester film before placing the paper over the adhesive. Once the repair papers were made, those that had the most even, smooth, and consistent application of adhesive were chosen for further testing. Their strength, workability, and ease of reactivation with ethanol were tested by adhering samples directly to scrap pieces of leather. The repair papers were wet up with ethanol and quickly applied to the leather. Then they were burnished and weighted until dry. The following repair papers produced a strong and flexible bond with the leather: 3:1 Lascaux 498 HV:360 HV on RK17 Japanese paper, 1:1 Rhoplex™ AC-73:AC-234 on RK 17 Japanese paper, and 1:1:3 Rhoplex™ AC-73:AC-234:de-ionized water on RK 17 Japanese paper. The use of a 1:5 Lascaux 498 HV:ethanol mixture applied directly to the Japanese paper was also tested and produced an equally strong and flexible bond.



Fig. 2 Alisha Chipman testing ethanol re-activated repair tissues on leather.

After testing it was decided that either the pre-coated 3:1 Lascaux 498 HV:360 HV on RK17 Japanese paper or the in situ application of 1:5 Lascaux 498 HV:ethanol mixture to Japanese paper would be used for the hinge repair treatments. The decision to use two repair techniques allowed flexibility in the treatment approach depending on the condition of the objects' interior and exterior hinges. Both the interior and exterior hinges were never repaired on the same object as this would likely prevent the case from opening to the full, nearly 180 degree, angle which the exhibition design required.

Many of the thermoplastic frames were extremely dirty and in need of cleaning prior to exhibition. The design of the frames was intricate with many interstices where dirt had collected and accumulated. Prior to treatment several possible cleaning methods were tested on thermoplastic cases in Dana Hemmenway's study collection. The use of a soft brush, an air bulb, polyurethane cosmetic sponges, and cotton swabs, both dry and moistened with de-ionized water and saliva, were tested. The cleaning tests were performed under magnification and any abrasions or other damage made to the surface of the object was noted. All of the techniques tested proved safe. However, the most effective and time efficient method was the combination of a polyurethane cosmetic sponges to clean the frame overall followed with a brush to clean the difficult to reach interstices and an air bulb to clear loosened dirt and debris.

Stabilization Treatments

Approximately 80 objects were identified as needing conservation treatment during the conservation review process. The majority of these objects had partially broken hinges, torn/lifting/flaking leather, loose pinch pads, broken wooden cases, or cracked thermoplastic frames. Due to time restraints and the large number of objects in the exhibition, the objects were prioritized for treatment. Cased objects with completely broken but stable hinges were approved for exhibition without immediate repair. However, these objects were noted for future conservation treatment. It was felt that the cases with partly detached hinges were at greater risk for damage during the various stages of exhibition preparation, installation, and de-installation. Therefore, they received treatment priority.

Approximately half of the treatments identified were completed within the three-month time span allotted for this work. Many objects with mild tearing or lifting of the leather covering or mild cracking in the thermoplastic case or frame were exhibited without receiving treatment. These objects' boxes were marked with special warnings calling for extreme care in handling during installation, and they were scheduled for treatment after the exhibition.

Thermoplastic frames were cleaned with polyurethane cosmetic sponges, a soft brush, and an air bulb. The exteriors of cover glasses were cleaned with an air bulb and/or cotton swabs moistened with a 50:50 solution of ethanol and water. Pinch pads were cleaned with an air bulb and/or a kneaded eraser. Leather cases were consolidated and repaired using a polyvinyl acetate (PVA) adhesive, 2% methyl cellulose (MC), or 1:5 Lascaux 498 HV in ethanol. PVA was used for repairs in areas of the case that would likely not need to be reversed in the future. 2% MC or 1:5 Lascaux 498 HV in ethanol was used on areas that may need to be reversed in the future, for instance areas near hinges. Broken wooden cases were repaired with PVA.

Partially detached hinges were repaired with two different approaches. If the exterior hinge was completely broken and the interior hinge was partially broken, the leather was separated from the wooden case at the exterior,



Fig. 3 Before treatment.



Fig. 4 After treatment.

while the case was closed, using a 10A scalpel blade (HMD Healthcare (USA) Inc.). Then a medium-weight Japanese paper (RK 17) pre-coated with a 3:1 Lascaux 498 HV: 360 HV adhesive was cut to fit and placed beneath the lifted original leather hinge. Once in place, ethanol was brushed over the repair paper to re-activate the adhesive. The area was then burnished through an unspun polyester sheet to ensure good contact. The entire case was wrapped with an elastic bandage to apply gentle even pressure while the adhesive dried. In some instances, this method also attached the original leather hinge down onto the repair tissue. Where the original leather remained unattached to the repair tissue, 1:5 Lascaux 498 HV in ethanol was applied by brush to adhere the two layers together. The area was then burnished and wrapped to dry. Windsor & Newton™ watercolors were used to in-paint areas of exposed repair tissue.



Fig. 5 Separating original leather from wooden case.



Fig. 6 10A scalpel blade.

If the interior hinge was completely broken and the exterior hinge was partially broken, the leather was first separated from the wooden case at the interior, while the case was open, using a 10A scalpel blade. A medium weight Japanese paper (RK 17), that was pre-toned with Liquitex® acrylic paint, was cut and placed into one side of the hinge between the leather and the wooden case. If necessary, a bone folder was used to score the tissue and introduce a crease in the correct location for proper opening. Then 1:5 Lascaux 498 HV in ethanol was applied with a brush. The case was closed and the exterior of the hinge was burnished through an unspun polyester sheet and wrapped with an elastic bandage. Once dry, the case was opened and the technique was repeated for the other side of the hinge.

Environmental Conditions

The environmental conditions for the exhibition cases were set at 70 degrees Fahrenheit +/- 5 degrees and 45% RH +/- 5%. The cases were sealed and had conditioned silica gel packets as well as PEM2® dataloggers located inside. Each case was illuminated using a fiber optic lighting system. Light levels were set between three to five footcandles for the duration of the four-month exhibition. The choice of this illumination level was based on the potential light sensitivity of the hand-coloring media, dyed leather, and velvet pinch pads.

Mount Design

Charles Bessant, a Washington D.C. based independent mount maker, was hired by the Library to assist with the mount design, mount making, and installation of the exhibition. Charles worked closely with representatives from CD, P&P, and IPO in order to design a mount that met the aesthetic and preservation requirements of each stakeholder. After an initial meeting with Dana Hemmenway, Alisha Chipman, Kaare Chaffee, Carol Johnson, Cheryl Regan, Chris O'Conner, and Debra Derbeck a prototype mount design was created.

The final mount design consisted of a black 4-ply backing mat board with a polycarbonate (Lexan®) L-shaped lip attached at the bottom to support the weight of the object and two J-shaped polycarbonate tabs attached at the top to prevent forward tilting of the object. The polycarbonate pieces were adhered to the verso of the backing board with double-sided tape (3M® 415). Padding materials consisting of papers and boards of various thicknesses were adhered to the front of the mount, as needed, using double-sided tape in order to provide a level support for each object. For instance, if the pinch pad side of a case sat higher than the plate side then padding was placed under the pinch pad side so that it would rest evenly with the plate side. Once all of the individual mounts for a case were constructed, then padding materials were also adhered to the verso of each mount with double sided tape, as needed, in order to raise all of the objects up to the height of the tallest object in the case. This provided an overall leveling of all of the objects in the case to create a uniform visual presentation. All of the individual mounts were then attached using round Velcro coins to a large black mat board cut to the overall size of the display case. While all of the materials used for this exhibition were not tested with the Photographic Activity Test (PAT) at this time, similar materials have previously been tested by the LC Preservation Research & Testing Division (PRTD) and have passed the PAT.



Fig. 7 Charles Bessant, Debra Derbeck, and Dana Hemmenway discuss mount designs.

Mount-making

Approximately seven days were spent prepping materials and constructing the mounts for each object. Three to six CD staff members worked on this phase of the project each day. All of the backing boards and polycarbonate pieces were prepared by Charlie Bessant and were pre-cut to standard sizes corresponding to the standard cased object sizes: quarter plate, half plate etc. Appropriately sized padding materials (papers and boards of various thicknesses) were also cut

ahead of time. Mounts were constructed one object at a time and the cases were completed one at a time. Once finished, the case-sized overall mount (without objects attached) was sent to the IPO office where it was adhered to a thick Plexiglas backing using an acrylic film adhesive (FLEXmount®). The mount was then attached to the sealed and textile-covered wooden A-frame case structure using a cleat system. These A-frames were then placed into the display cases and installation of the objects began.

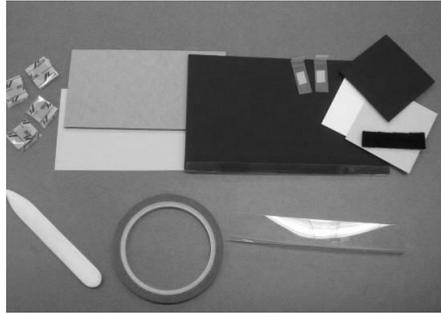


Fig. 8 All of the material used to make one of the mounts.

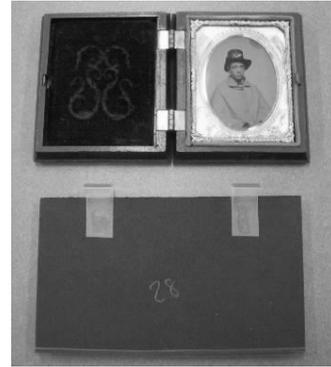


Fig. 9 An ambrotype and its mount.

Exhibition Installation

Five days were spent installing all 379 objects into their mounts in the exhibition space. Two to three CD staff members worked on this phase of the project each day. The exhibition was installed by focusing on one display case at a time. Prior to its placement in the case, each object's cover glass was cleaned using swabs moistened with a 50:50 ethanol and water mixture and/or a magnetic dusting fabric. The pinch pads were also cleaned, as needed, using kneaded erasers and soft brushes. Thermoplastic frames were cleaned, as needed, using polyurethane cosmetic sponges.

The final phase of installation was the lighting. A contracted lighting specialist installed fiber optic lights into each display case.



Fig. 10 Completed mounts for one exhibition case.



Fig. 11 A completed mount being installed.

Conclusions

In the end, the donor's vision was honored and the objects were safely displayed. The exhibition was well visited and widely appreciated by viewers. There was a beautiful and informative brochure that included information about the photographic processes and case design. An exhibition website was filled with similar information. A special treat for visitors to the exhibition were the interactive digital kiosks, which allowed visitors to see and zoom in on high resolutions images of each object in the exhibition. They could also leave comments of their choosing. The exhibition received a great deal of press. There were 200 million total media mentions including coverage on C-Span, BBC News, and NBC and in the Washington Post, The Boston Globe, and The Virginian Pilot among others. We were very proud of playing a part in making this exhibition a reality.



Fig. 12 Installing one of the objects in the display case.



Fig. 13 One of the completed exhibition cases.



Fig. 14. *The Last Full Measure*, Library of Congress, April 12, 2011 through August 13, 2011, Photo by Abby Brack.

Acknowledgments

We would like to thank the following LC employees for their hard work and collaboration on this project: Kaare Chaffee, Simonette della Torre, Debra Derbeck, Carol Johnson, Tandra Johnson, Lynn Kidder, Julie McInnis, Lisa Moberg, Chris O'Conner, Cheryl Regan, Andrew Robb, Jaime Roberts, Jamie Schmeits, and Tiffany Welch. Charles Bessant deserves our sincere gratitude for his expertise and assistance with the mount design. Alisha would also like to thank Bruno Pouliot, Lois Olcott Price, Barbara Lemmen, Jae Gutierrez, and Debra Hess-Norris of the Winterthur/University of Delaware Program in Art Conservation for their guidance and support during this project and her entire three years as a WUDPAC student. Alisha is indebted to all those that provided funding for her to travel to Wellington in order to present this project at the 2013 AIC & ICOM-CC Photographs Conservation Joint Meeting: National Gallery of Art, Andrew W. Mellon Foundation, the Indigo Arts Alliance Mary Anne Burke Grant, and PMG.

Selected List of Supplies

Japanese papers RK 15 & RK 17 (Paper Nao Japanese Papers)
Korean paper (Fides International)
Lascaux 498 HV and Lascaux 360 HV (Lascaux Colours & Restauro)
Rhoplex™ AC-73 and Rhoplex™ AC-234 (The Dow Chemical Company)
10A surgical blade (HMD Healthcare (USA) Inc.)
FLEXmount® (FLEXcon)
Lexan® polycarbonate sheets (SABIC Innovative Plastics)

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Appendix: Treatment Form

Loan # 4814. _____

Exhibition case # _____

Library of Congress
Conservation Division, Photograph Conservation
Examination & Treatment Report

In preparation for the April 2011 exhibition

The Last Full Measure: Civil War Photographs from the Liljenquist Family Collection

Master Control #: 2502

Examined by: Dana Hemmenway & Alisha Chipman

Division: Prints & Photographs

Collection: Liljenquist Family Collection

Curatorial Contact: Carol Johnson

P&P Object #: AMB/TIN no. _____

Date: _____

Object Date: 1860s (Civil War 1861-65)

Photographer/Studio: _____

Subject/Description: _____

Distinguishing Marks: _____

Process: ambrotype (glass support) tintype (lacquered iron support) hand-colored
Plate size: whole half quarter sixth ninth sixteenth other
Housing: leather case paper case thermoplastic case thermoplastic frame other
Case Hinge: leather textile paper other prior repair

Condition:

Silver Image Material

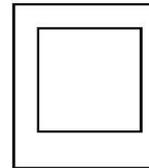
Loss Corrosion Other

Condition Diagram - Frame:

(see next page for case diagram)

Collodion Binder

Loss Flaking Cracking Abrasion Surface Dirt
Accretions Other



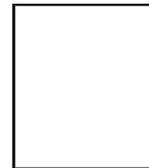
Front

Glass Primary Support - Ambrotype

Loss Fractured Glass deterioration Scratches Surface Dirt
Other

Lacquered Iron Primary Support - Tintype

Loss Corrosion Abrasion Flaking Deformation
Surface Dirt Other



Back

Varnish Coating

Loss Flaking Yellowing Other

- Cover Glass
 Loss Fractured Glass deterioration Scratches
 Surface Dirt/Fingerprints Other _____

- Mat
 Corrosion Abrasion Deformation Surface Dirt
 Other _____

- Preserver
 Corrosion Abrasion Deformation Surface Dirt
 Other _____

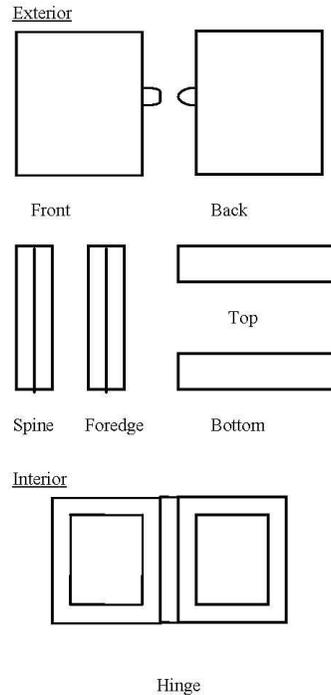
- Pinch Pad
 Loose Fading Surface Dirt Other _____

- Leather or Paper Case
 Hinge detached Exterior hinge partially broken
 Interior hinge partially broken Other _____

- Thermoplastic Case or Frame
 Loss Cracking Metal hinges damaged Abrasion
 Other _____

- Sealing Tape
 Type _____
 Loss Surface Dirt Other _____
 Package removed during examination

Condition Diagram – Case:



Treatment Goal: The purpose of this treatment is to stabilize the object for handling and exhibition.
Proposed Treatment: See associated ‘Conservation Office Exhibits Data Form’ for treatments proposed and approved at exhibition meetings.

Treatment Record:

- Proposed: _____ Completed: _____
- Repair damaged leather hinge using
 - Japanese tissue coated with 3:1 Lascaux 498:360 & reactivated with ethanol
 - 1:5 solution of Lascaux 498:ethanol and toned Japanese tissue
 - Consolidate flaking areas of leather using PVA 1:5 Lascaux 498:ethanol 2% MC
 - Secure loose pinch pad using _____
 - Secure loose plate package using _____
 - Stabilize cracking in thermoplastic frame/case using _____
 - Clean exterior of cover glass using air bulb 30:50 solution of ethanol and deionized H₂O
 - Clean pinch pad using kneaded eraser vacuum with screen air soft brush
 - Surface clean thermoplastic frame using air soft brush Polyurethane cosmetic sponge
 - _____

Date Treatment Completed: _____ **Conservator:** _____