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Article: Will the Circle Be Unbroken?: A Case Study in Addressing Acceptable Loss, Historic Conservation Techniques, and Project Burnout on a 1732–1796 South Carolinian Church Register

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Will the Circle Be Unbroken?: A Case Study in Addressing Acceptable Loss, Historic Conservation Techniques, and Project Burnout on a 1732–1796 South Carolinian Church Register

INTRODUCTION

On occasion, there are challenging conservation projects in which treatment seems inadvisable despite the potential reward of improving the objects in a substantial way. In cases such as these, the line between safe, ethical treatment and potential, unmitigated disaster is not an easy one to walk and requires a clear definition of what is considered acceptable loss for the object. In undertaking the treatment of an 18th century church register, the conservators at Northeast Document Conservation Center (NEDCC) were faced with such a challenge.

The register details the early days of the Circular Congregational Church, the earliest congregation of English Dissenters (Protestants) in South Carolina. It was founded in 1681 and was attended by both African American and White members until 1867, when the African American members left to form the Plymouth Congregational Church in Charleston, South Carolina. While some documents from the early days of the church do still exist, many were lost to various disasters including hurricanes, earthquakes, fires, war, and vandalism (Circular Church 2024). The register, with records from 1732 to 1796, is one of the earliest remaining pieces of church history, as the previous volume, according to a memorandum in the register, was lost in the Great Hurricane of 1713. Beyond notes on church matters, the volume also contains vital records from 1732 to 1738, including baptisms, deaths, burials, and marriages for both African American and White members. This makes the volume especially important because, at this time, these types of records were held only by houses of worship. This book therefore has information about the congregants that is not otherwise recorded and is of particular interest given the mixed nature of the congregation.

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The volume was not an unusual object considering its structure, materials, and historical significance; it was, however, so brittle and extensively damaged as to be inaccessible in any tangible manner, despite previous conservation efforts (fig. 1). During the initial examination of the object, it was clear that the conservation treatment would be both challenging and time consuming, and that some loss of the text was likely to occur during treatment. Before moving forward with developing a treatment plan, further discussion with the client was required. This allowed a full understanding of the client's goals, how they planned to use the manuscript, and its future storage conditions. The potential risks and benefits of treatment were also clearly communicated to the client at this time. Following this conversation, more detailed examination and testing of the object was conducted to develop the best possible treatment plan. Once a treatment plan was established and approved, conservators worked together to establish treatment parameters for the object and divide the work into manageable sections. This would allow treatment to proceed in a manner that was of the most benefit to the object, while also ensuring the physical, mental, and emotional health of the treating conservators throughout this daunting and occasionally disheartening project.

THE CIRCULAR CHURCH REGISTER, 1732–1796

Condition and Concerns

The text block consisted of 252 leaves of laid paper with entries written in iron gall ink on both sides. The paper was extremely discolored and brittle, and the iron gall ink was severely degraded with extensive fracturing and drop-out on many leaves. The opening of the volume was restricted by the heavy application of adhesive on the spine and the extreme brittleness of the paper, so access to the leaves in the various text block sections ranged from the manageable to the almost impossible (fig. 2). The challenge of handling and accessing the volume had clearly been a known concern by

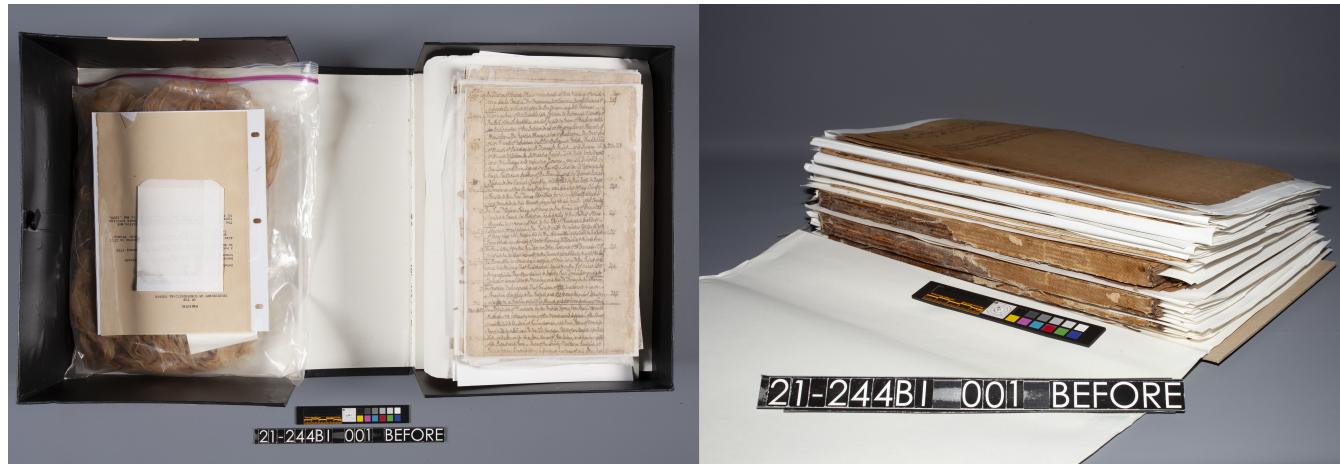


Fig. 1. The Circular Church Register before treatment.

the institution. A note placed near the front of the volume by a previous archivist read, “These pages [are in] extremely bad condition. Handle with great care.” In this condition, safe handling of the volume was not possible. Simply trying to turn the pages would cause leaves to snap out and loose fragments to dislodge.

One of the client’s main goals was to fully digitize the volume to enable greater access to the object and reduce the need to handle the original. However, it was understood that conservation was required to facilitate safe handling during digital imaging. With the improved stability, conservation would enable physical access and exhibition of the

volume—neither of which were possible in its pretreatment state. While improving access and facilitating long-term preservation are generally considered a standard function of conservation treatment, the best approach to achieve this goal was debated in the initial stages of examination.

Complicating the condition issues, the register had undergone at least three treatments in the past. The oldest extant repairs, which happened prior to 1936, consisted of strips and patches of translucent paper adhered with water-soluble adhesive over major fractures (fig. 3). It was unclear if the repairs had degraded extensively or not, but upon assessment of volume, the paper patches were dark, brittle, and barely translucent.



Fig. 2. Examples showcasing range of damage in the volume.

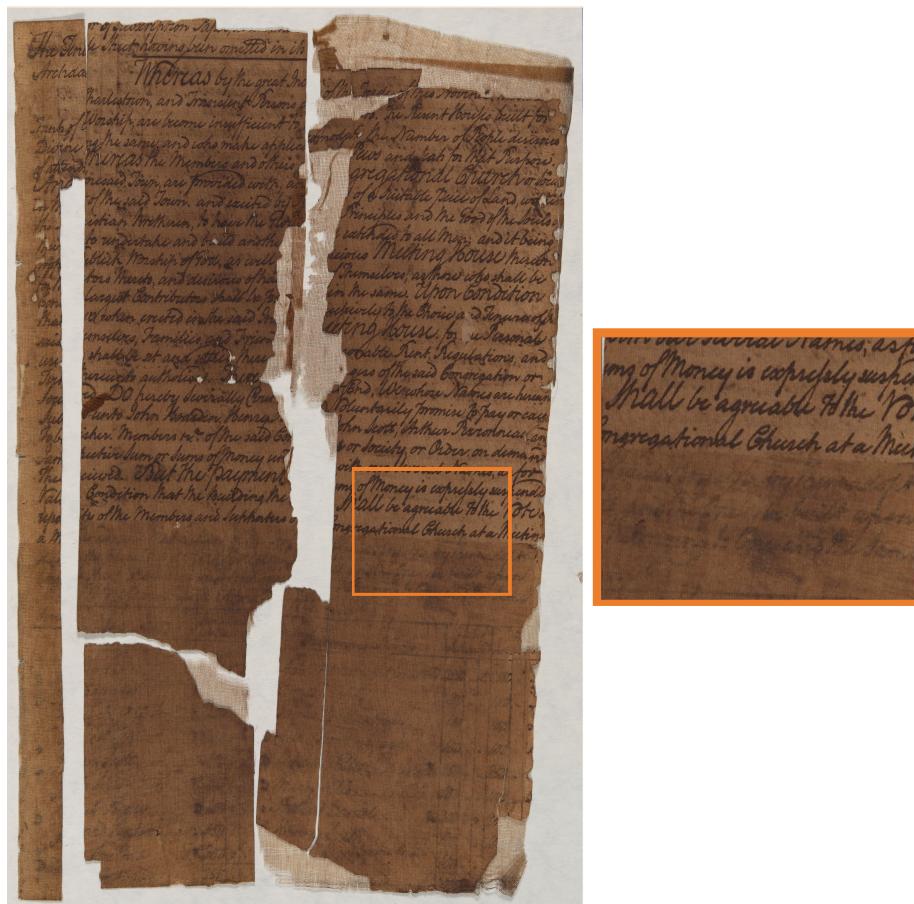


Fig. 3. Example of a large paper patch obstructing text with detail inset.

The second and most comprehensive treatment happened in 1936 when, according to a note included with the volume, the register was treated by the Works Progress Administration (WPA), likely as a part of the Historical Records Survey. As part of this work, three typed copies of the volume were created but have since been lost. During this treatment, the volume was disbound into single sheets and each leaf was lined on recto and verso with silk “chiffon” using a water-soluble adhesive. Silk lining (“silking”) was a common manuscript conservation technique at the time and utilized as part of the Library of Congress workflow on fragile documents as early as 1899 (Smith 2016, 253). Its long use at the federal level likely influenced the WPA’s choice and methodology for the treatment of this volume. Additionally, the silk chiffon (“crepline”) was noted by many in the archives community to hold iron gall ink and small tears in place more firmly than other linings while being “easily executed by every binder with a little intelligence and skill” [Vatican Prefect Franz Ehrle] (Smith 2016, 254–56).

Areas of iron gall ink fracturing and voids where there was silk lining but no paper suggested that the leaves were already in dire condition when the silking was undertaken.

This type of damage was likely what made the register a good candidate for this treatment approach by the WPA. In the subsequent years, the silk had discolored and become brittle and powdery—deterioration commonly seen on silk lined objects—and many of the lined leaves had shattered further, leaving numerous lined fragments loose within the volume and box.

This combination of darkened paper repairs and degraded silk lining rendered some areas of the text completely illegible. Furthermore, given the methods used for silking and the current improved understanding of the physical chemistry of iron gall ink, it is possible that the silking process exacerbated the damage to the media, increasing the overall fragility and brittleness of the object.

The third and most recent round of treatment was attempted by a conservator in private practice in 2009. This involved partially disbinding the volume, washing, removing the silk lining, and relining the leaves with a wet strength tissue (noted as “spider tissue” in the treatment report) and wheat starch paste (fig. 4). Many fragments of text had separated during washing and were either misaligned or adhered to an extended margin. Forty-nine leaves, including all of the

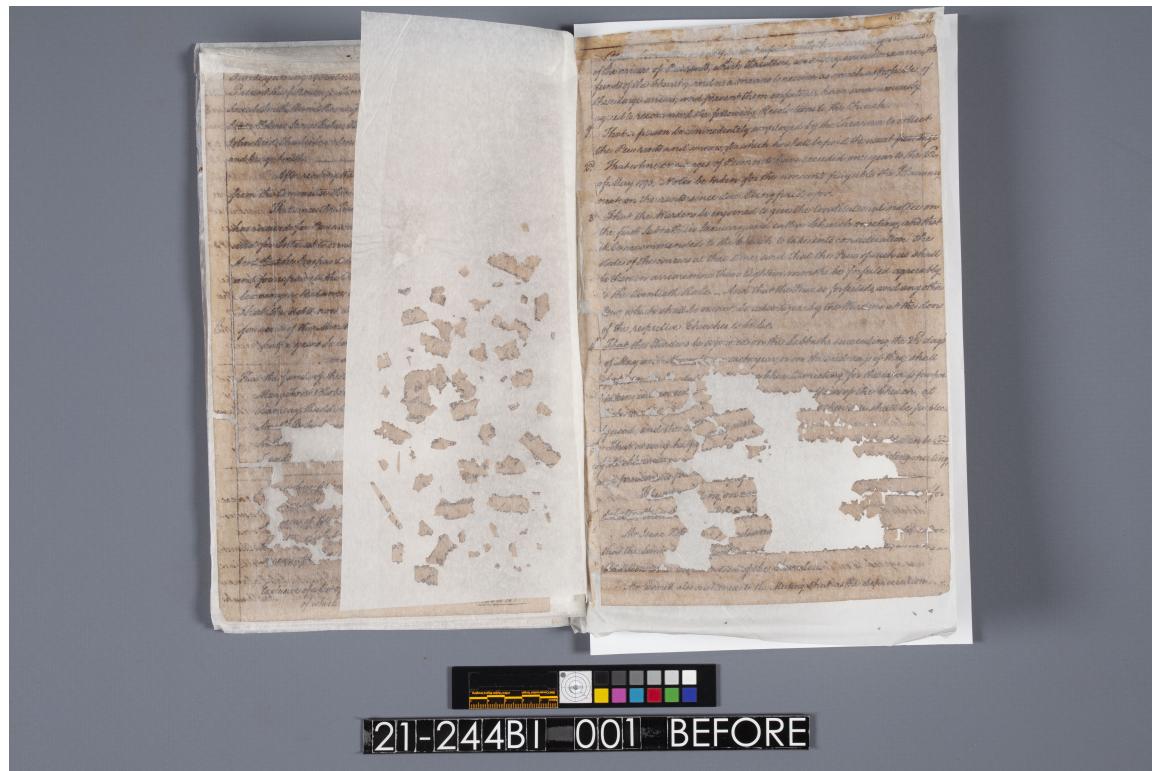


Fig. 4. Example of a tissue-lined bifolio.

vital records pages, were treated this way before the treatment was halted. According to the conservator's treatment report, there was "no way for me to remove the silk chiffon and apply another support without what I consider to be more loss than benefit" (note 1).

This partial treatment had significant consequences for the potential new treatment of the volume. First, it stood as a warning about what damage could occur during treatment and the level of loss that might be expected. Second, the unbound leaves were no longer in the correct order. As some leaves were missing page numbers—and some page numbers occurred twice in the volume—collation would be a critical step in organizing and tracking the treatment. Third, and most importantly, it meant that two different treatment approaches would be required—one for each type of lining. Consideration had to be given as to the best way to remove the wet strength tissue and unevenly applied wheat starch paste which, when combined, were far stronger than the underlying object.

Treatment Parameters and Establishing Acceptable Loss

Given the challenges presented by the condition of the item, how and why would one take on a project that was virtually certain to have a less than perfect outcome? Will pursuing treatment cause more damage to the object? Or will the object's condition continue to dramatically worsen over time?

Whether conservators want to admit it or not, treatment of objects, especially interventive treatment, always results in a change to the piece. Ideally, as much of the original object as possible should be preserved during treatment. However, a treatment that incurs no loss is not possible. Therefore, the goal is to better understand the potential for loss and weigh that against the potential for future damage of the piece if it does *not* undergo treatment.

Ultimately, although some loss was likely to occur during treatment of the Circular Church Register, treatment would provide enhanced access and improved long-term stability, and was therefore considered beneficial. After discussion, the client agreed to having the volume fully digitized twice—once before washing and removal of the silk, and again after washing and mending were complete. Digitization of the object prior to conservation not only protected against the loss of information but also created an important visual reference. Conservators were able to consult the "before" images to help them place loose fragments, and the two sets of images together captured the maximum amount of information.

When preparing for this intensive treatment, NEDCC's book and paper conservators collaborated to create a plan to complete the work. The ratio of projected loss for each leaf was determined using the 20-60-20 rule. This ratio can be helpful in cases where conducting item-by-item estimates is impractical or especially challenging, but still requires some

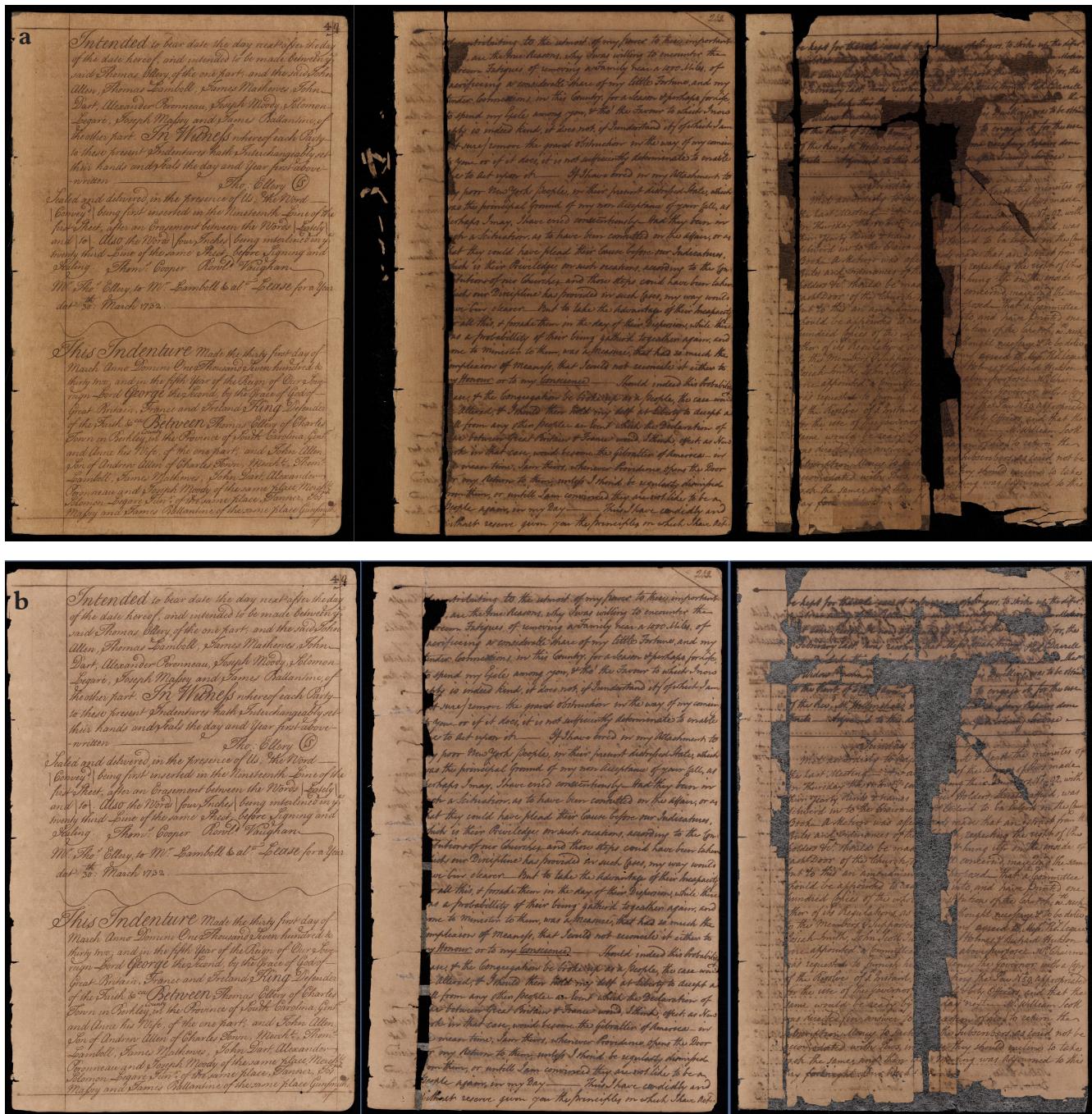


Fig. 5. Example of a Farmer (left), a Sheep (center), and a Goat (right) before treatment (a) and after treatment (b).

overarching understanding to determine treatment pathways and their associated times and costs. Using this ratio, it was assumed that 20% of the volume was in *good* condition, 60% of the volume was *fair*, and 20% of the volume was in *poor* condition, with the understanding that even the leaves in good condition were challenging to handle and easily damaged (note 2). Differing perspectives in thinking about each leaf at an individual level and holistically as a bound volume helped

further define best- and worst-case scenarios for loss. In pieces such as these, collaboration within laboratories and leaning on skills and knowledge from other conservators can be critical in creating projected percentage losses for each object (fig. 5).

To determine the overall percentages of potential loss, loss and gain were both defined as the amount of text area in the piece that would be either destroyed or reconstructed by treatment. A gain was further defined as improved handling

and legibility. Counter to this, a loss was further defined as the likelihood for disintegration or irreparable fracturing of the paper during treatment.

The condition of the leaves was assessed through transmissive light. For the leaves in good condition, it was believed that there would be no loss, as these leaves had minimal or no tears and media fracturing. The leaves in fair condition were thought to potentially have between 5% and 10% loss, with most being 5% or less loss overall. These leaves included many of the leaves lined in 2009, as well as silked leaves that had moderate to severe fracturing but no major paper losses. Within this group, it was projected that the tissue-lined leaves had the potential for a greater amount of loss. The remaining leaves in poor condition were projected to have between 20% and 30% loss throughout the course of treatment. These were the leaves that were the most damaged and already had 30% to 40% loss to their text or substrate. As a single object, such a level of loss would be considered a catastrophic failure and indicate that treatment was inadvisable.

However, collectively, these potential percentages were projected to equate to somewhere around 5% total object loss, with a maximum of 10% object loss expected in a worst-case scenario. Counter to this, the gain in accessibility was projected to be between 90% and 100% when factoring in the potential to place loose fragments, remove obscuring linings and mends, increase paper and media stability, and improve physical and intellectual control by rebinding the volume. Using these projections, acceptable loss was then informally defined as overall 5% or less loss to the individual leaves, with a grace window of 10% or less for the bottom 20% of materials. As part of the decision to move forward with treatment, the client was informed that if loss went outside these percentages, treatment would be stopped and either modified or reduced depending on what was observed.

The greatest risk of meaningful change would occur during the aqueous treatment step. It was within this treatment step that further guardrails were established to try to maintain the level of acceptable loss. First, the leaves were divided into groups using the somewhat comical but useful shorthand of Farmers, Sheep, and Goats. Originating from an off-hand comment about having to “separate the sheep from the goats,” these terms forced a break in each conservator’s personal bias for what it meant for a piece to be in fair, average, or poor condition. Beyond this, it also provided a bit of levity during an otherwise serious and occasionally overwhelming project. Each leaf was assessed before and after aqueous treatment based on this ranking by both senior conservators simultaneously. Farmers (52 leaves = ~20%) were deemed to be able to take care of themselves—that is, they were in good enough condition to be washed in groups with little damage occurring or much mending needed after aqueous treatment. Sheep (156 leaves = ~62%) needed more attention but in most cases were within the bounds of

what was considered standard damage for this volume. This was the broadest category in terms of condition issues. After aqueous treatment, some leaves were marked as “Sheepish Goats” because it was apparent that these leaves would need more extensive mending than initially predicted. The Goats (44 leaves = ~18%) were expected to be nothing but trouble; would require individual, undivided attention during aqueous treatment; and would likely need to be lined rather than mended afterward.

Once divided into groups, the following treatment guidelines were established:

1. Each stage of treatment would be fully completed before the next stage was begun to assess the change evenly and equally across the entire project.
2. The leaves were to be treated so that within each step, the Farmers were treated first, then the Sheep, and then the Goats to refine the treatment process and minimize the potential loss.
3. The aqueous treatment would be completed by two senior conservators working simultaneously in the laboratory’s two fume hoods. This would allow the conservators to share their expertise and experience and compare notes as they went along.
4. To prevent burnout, aqueous treatment was never to be done more than two days in a row and never more than three days in a week.
5. Leaves were lined by the same conservator who washed that leaf, as they tended to have a better memory of how it broke and where fragments needed to be placed. Due to a scheduling conflict, this was later revised so that most of the lining was completed by the senior paper conservator and then most of the loose fragment placement was done by the senior book conservator.
6. Mending would be completed with the help of a third conservator.

These parameters not only allowed for tight monitoring of change to the leaves, including any loss or fragmentation that might occur, but also encouraged staff to pace themselves and consult with each other if something was especially challenging, weird, or just overwhelming. This collaborative approach facilitated sharing of differing techniques on the same treatment, led to a deeper appreciation for the work being conducted, helped minimize project burnout, and provided a space in which to reevaluate treatment biases that may be present.

TREATMENT OF THE REGISTER

After photo-documentation, disbinding and collation were done simultaneously. The leaves had been paginated, but the volume was written from both directions—meaning it had

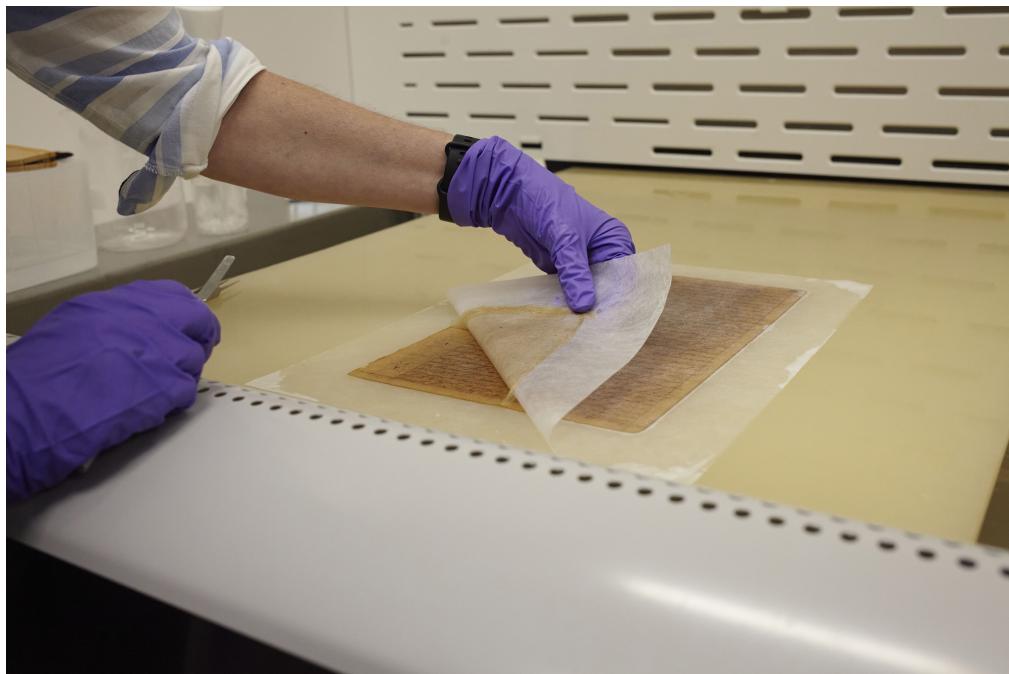


Fig. 6. Removing the silk lining from a leaf.

two front covers and no back cover. Furthermore, it was out of order when it arrived due to the 2009 treatment. Many leaves were snapped off near the gutter margin, leaving only the stubs still bound due to the ruling line. During collation, the stubs were separated and matched with leaves, fragments were matched with corresponding leaves as possible, and each leaf was placed in a numbered folder. During this process, the first word or phrase on recto and verso of each leaf was recorded in a spreadsheet so that the leaf could be recognized even if the page numbers were missing. This spreadsheet was critical throughout the treatment to ensure that nothing was misplaced or lost while moving through the steps.

Each leaf and all fragments, whether associated with a leaf or not, were then photographed both recto and verso, cross-referencing the spreadsheet that was created during collation. The high-resolution digitization was done using a Phase One 100 megapixel back camera to capture the leaves at 600 ppi and a minimum of FADGI 3 Star quality across all relevant metrics. By doing so, the images allowed true capture of the maximum amount of information remaining in the volume.

After dividing the leaves into their respective categories, aqueous treatment began. Each day's work followed a set of internal protocols that used as a foundation the methods, steps, and solutions detailed by Birgit Reissland, Karin Schepers, and Sabine Fleischer on the Iron Gall Ink website (Reissland, Schepers, and Fleischer 2007). These protocols included rough time slots in which steps needed to be completed and were established to ensure that treatment of iron

gall ink material was complete within the 8-hour workday. This led to the conservators working on a strict schedule on the days that aqueous treatment was conducted and was one factor in limiting the number of days in a row that this part of the treatment was undertaken. The only modification to the usual washing and phytate protocol was that removal of the linings was factored into the schedule.

It was believed that the silked Farmer leaves would be the easiest and most predictable leaves to begin the treatment. More intensive solubility testing was conducted to confirm that the observed preliminary media stability was accurate before overall aqueous work was done. Once confirmed, the leaves were sprayed out with ethanol to help with equal paper and media expansion before brushing a 50:50 ethanol and filtered water solution through a nonwoven polyester (Hollytex) support to fully saturate paper and silk and solubilize lining and mending adhesives. The silk lining and paper mends were removed from the leaves mechanically. The silk removal process primarily relied on water surface tension between the silk and Hollytex with brushes and tweezers only used for the most degraded sections (fig. 6). The WPA had applied the silk in a format that had not been seen before by the treating conservators. Rather than separate pieces of silk on each side of the document, the silk had been wrapped around the fore edge. This required flipping the piece mid-removal, as the silk could not be cut without pulling fractured media and paper away. With the silk removed, paper mends could then be removed by lifting fragments with a spatula.



Fig. 7. Tissue paper lined leaf (left) that had a section (right) that could not be fully removed from the wet strength tissue used in 2009.

For the 2009 tissue linings, a similar methodology was used with one small adjustment. When the pieces were treated in 2009, the wheat starch paste that was used to adhere the lining to the object was not well sieved, leading to an uneven application of the paste. It was determined that after brushing with a 50:50 ethanol and filtered water solution, the leaves needed to be placed in a 30:70 ethanol and warm filtered water bath for 5 to 15 minutes. The longer, warmer bath helped soften and dilute the adhesive so that mechanical removal of the tissue was possible. Overall, removal of these linings was both slower and more difficult, especially after one side had been fully removed. In a few cases, the paste had become bound with the iron gall ink, leaving a ghost image of the text on the tissue, although there was not a noticeable

decrease in legibility on the leaf. Excess chunks of paste had to be mechanically removed from the surface once the tissue had been released before treatment could continue.

It was toward the end of treatment of these leaves that a leaf fell outside of what both conservators considered an acceptable loss. There was an irregularly shaped 4 × 3 inch section where the lining could not be removed on one side despite all efforts (fig. 7). The paper appeared to have weakened internally from prior treatment and sheared laterally during the removal of the much stronger lining tissue and adhesive despite adjustments to the treatment process. In this case, it became clear that more time or alternative local removal methods were needed. As there was a clear area of breakage from prior damage, both conservators agreed that

separating as much as possible and then washing the tissue-lined piece along with the rest of the leaf was the safest option to salvage the section. While removal with local moisture and methylcellulose poultices was later attempted, the fragment could not be removed from the lining and was unable to be rejoined with the rest of its leaf. It was later encapsulated on a separate page in the correct location so that the text could be read. The damage to this leaf resulted in a temporary pause to the work while conservators assessed what had happened and what remained to be done. As this had been one of the very last lined leaves to be treated and no similar issues were expected to arise with the remaining leaves, aqueous treatment was continued.

After the linings were removed, the leaves were then transferred to the first of three wash baths, each decreasing the ethanol ratio from 30:70 to 10:90, until they were placed in pure filtered water. The leaves were stacked no more than five to a tray, and two trays were usually done simultaneously by each conservator. The number of leaves treated in a day eventually decreased to one leaf per tray and two trays per conservator once reaching the Goats. When washing was deemed complete, the leaves were transferred to the calcium phytate solution, evaluated with bathophenanthroline paper to confirm media stabilization, and moved to the calcium bicarbonate bath. Predrying and sizing with a 1% gelatin solution were then completed with conservators partially reconstructing the leaves by placing as many fragments in the correct location as possible.

Overall, after drying, there was significant improvement in color and legibility, the leaves were no longer shedding silk dust every time they were touched, and the degradation processes affecting the ink and paper had been slowed. In total, the aqueous treatment stage required 268 contact hours completed over a course of two and a half months.

The partial reconstruction of the leaves prior to sizing was helpful to check if there were any significant losses and render judgment about how the treatment was going overall. It also helped when it came to mending and lining the leaves, as fragments were usually already close to their final locations, speeding up the accuracy and mending process overall. For the leaves that were mended, a lightweight (7 gsm) machine-made Japanese tissue paper with a pale brown tone was used. The paper was prepared as a solvent set tissue using 5% Klucel G in ethanol and reactivated with the same solvent when they were applied. As the leaves would be encapsulated, strategic bridge mends were used to stabilize the breaks, tears, and losses rather than fully mending every break. Some of the trickiest mending was done in areas where previous repairs had been removed prior to lining with silk, likely by the WPA workers. The previous removal of old repairs had left networks of small fractures and losses surrounding some straight-line fractures (fig. 8). While the original straight-line fractures were easy to deal with, there were often new

small losses or minor enlargement of the existing losses once the silk was removed from these sections. Many fussy little bridge mends were required to stabilize these areas.

After several of the Sheep and Sheepish Goats were mended, all three conservators discussed the need to line the Goats. While originally it was hoped that this could be avoided or kept to a minimum, the extensive fracturing of the Goats made bridge mends impractical. Due to the beneficial properties of gelatin on iron gall ink corrosion (Gimat et al. 2021) and the observed effects of the previous paste linings, the choice was made to use gelatin as a lining adhesive rather than wheat starch paste. The leaves were lightly remoistened overall and placed on a lightbox for chain line alignment and to have the fragments placed, a process that could take several hours to complete. The high-resolution before-treatment images were referenced during this process to best reconstruct text and ensure that the correlating sides of the fragment and leaf were chosen, as there were some “islands” of fragments connected to the rest of the leaf by a small bridge of text that could easily go awry. The leaves were then lined on the versos only with a 5 gsm machine-made Japanese tissue paper that allowed for the text to still be legible. An unexpected downside of this lining and adhesive choice was not discovered until the final digitization of the volume. The specular reflectance from the gelatin resulted in more obstruction of text in the digital images than was observed in person or, when later rebound, through the polyester film of the postbinding encapsulations.

After the mending and lining were complete, a daunting number of fragments remained—including many bits that had been loose in the volume’s enclosure and could therefore have come from anywhere within the volume. The fragments were spread out in trays and were compared against all leaves that still had areas of loss. In most cases, this final matchup produced more complete leaves than were observed at the start, but for some of the Goats the gains of reconstructed text were offset by new losses (fig. 9). Any fragments that remained after this process, most which had little or no text on them, were grouped based on the believed approximate location, placed in polyethylene bags, and boxed in a 5-minute phase box made from gray archival corrugated board for return to the client.

After the second round of high-resolution digital capture, all that remained was to encapsulate, postbind, and box the volume. Due to the number of leaves and the added weight of polyester film, it was agreed that the register would be divided into two volumes. The division within the register was chosen to be between pages 200 and 201, as this is one of the few places where an entry ends on a verso and the next begins on a recto. While not the exact center, dividing the text at a round number made intuitive sense and avoided splitting an entry between the two volumes. A 4 mil Melinex 516 polyester film was used for the ultrasonic encapsulation, and the leaves were returned to their original order and orientation during the process.

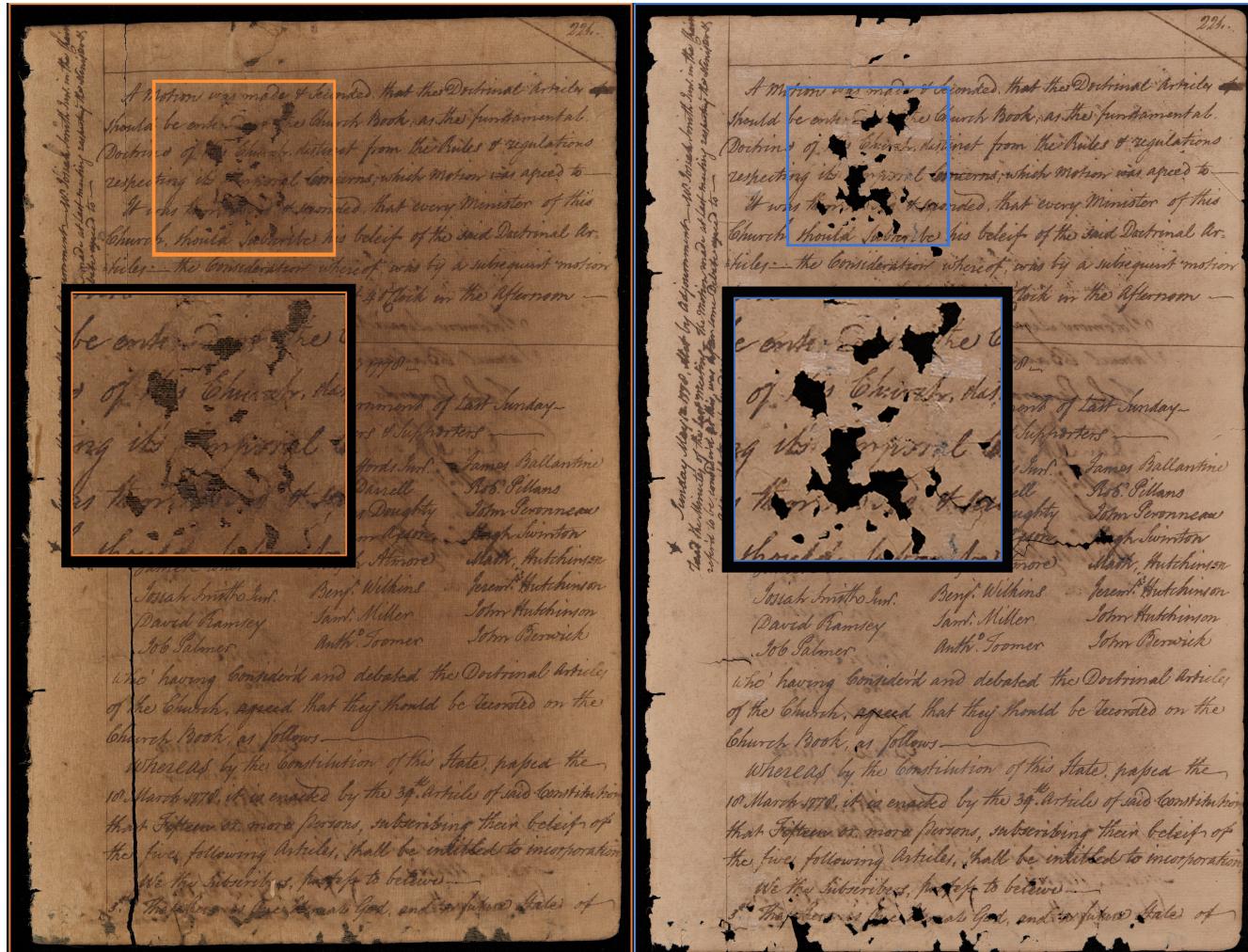


Fig. 8. Damage showing where a previously applied paper patch was removed by the WPA (left) and the complications it caused during the mending process (right) after aqueous treatment.

This meant that the vitals and tabbed index were encapsulated “upside down” as originally written. The volumes were then housed in two drop-spine boxes—one with a space for the corrugated box that contained the unplaced fragments and the other with space for the previous binding (fig. 10).

CONCLUSIONS

Overall, most of the leaves, as well as the volume as a whole, stayed within or under the acceptable loss parameters established at the beginning of the project. For the intact and mostly intact leaves, the gains in legibility and stability were obvious. For many of the severely fractured leaves or fragmentary leaves, the gains were also obvious. Piles of fragments were now organized into leaves, and paper patches were no longer obscuring text; however, in a few cases, these gains were offset by new losses. Despite these losses, the result was

one that met the goals of capturing the information in the register, allowing for safe use of the original, and safeguarding the volume for the future.

The success of this challenging project can be attributed to the systematic, coordinated efforts by the conservation and digitization teams. While organizing and planning treatment is second nature to many conservators, it is easy to become entrenched in treatment biases when working solo. By approaching the methodology in a way that establishes clear treatment protocols, pathways of communication are open that allow for honesty in the work, both from a treatment and mental health standpoint. Conservators were able to communicate observations or concerns in an honest manner throughout the project and check in with each other to figure out if the issue was with the piece, with the approach, or with the conservator that day. This way of working, along with the ability to consult the original high-resolution captures as a

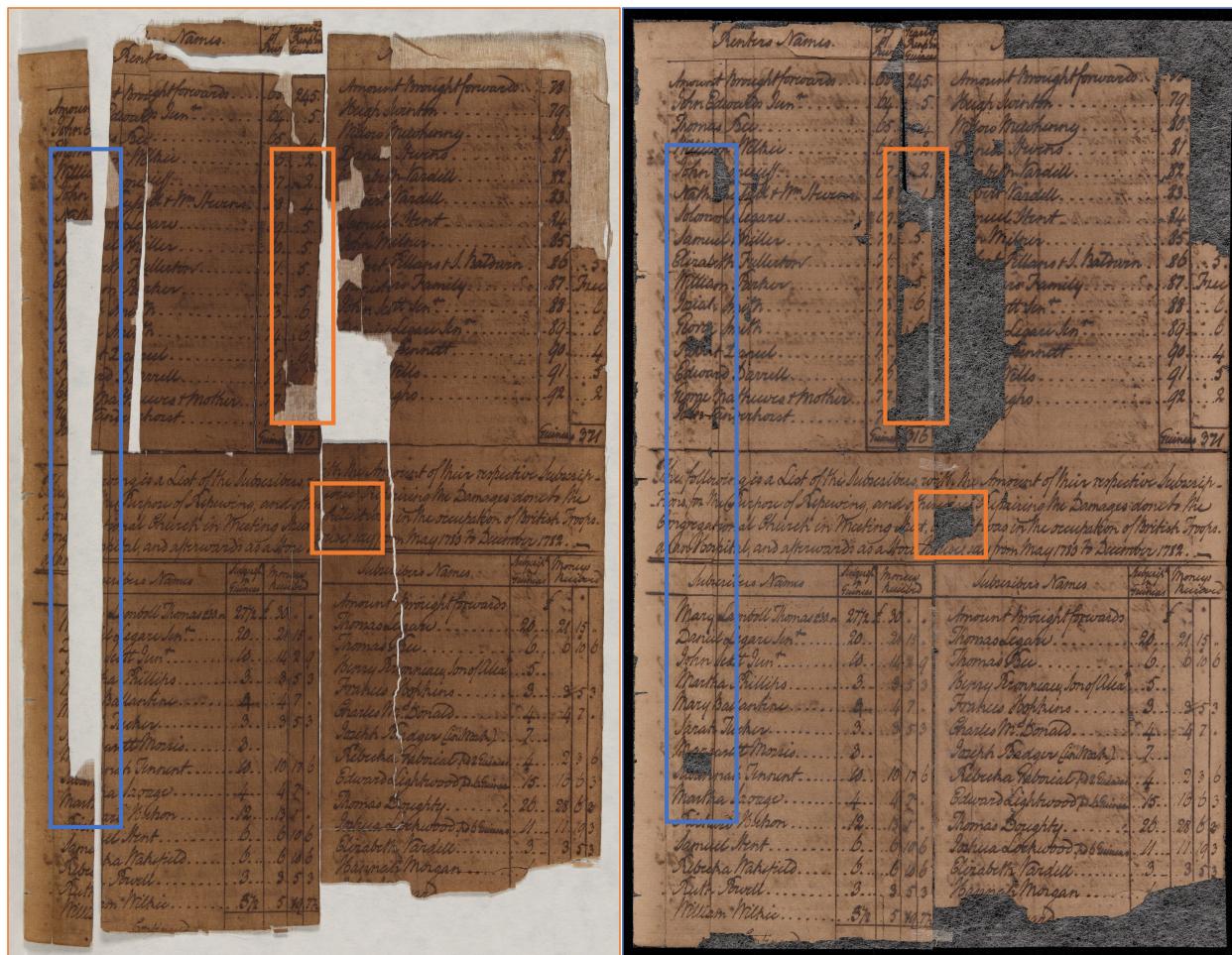


Fig. 9. Examples of gain (circled in blue) and loss (circled in orange) on a Goat.



Fig. 10. Part of the Circular Church Register after treatment.

point of reference, led to careful consideration at all stages, allowed for realistic assessment of the inevitable changes to the object, and ensured that treatment remained as safe and ethical as possible for this complex project.

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NOTES

1. The authors acknowledge that this cannot have been an easy decision to make or an easy treatment report to write, and commend the conservator for being honest about the state of the project and realizing that they could not continue with the treatment. In doing so, they offered valuable insight into the process when making decisions about the levels of acceptable loss.
2. The 20-60-20 rule ended up being close to accurate. The 52 Farmers (good) made up 20.6% of the volume, the 156 Sheep (average) made up 61.9%, and the 44 Goats (poor) made up 17.5%.

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