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Digitizing and Enhancing Dry Plate Glass Negatives: A Guide for Under-Resourced Archives

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Abstract
This case study breaks down the process of digitizing dry plate glass negatives with detailed steps that were developed via careful practice and observation. Archivists in small, under-resourced institutions may find this process particularly useful, as it requires only a few tools and offers instructions for preserving a photographic format that is commonly found in archives but can be intimidating to approach. The article discusses techniques for capturing high-quality digital photographs of the negatives, as well as methods through which the images can be significantly enhanced, namely, a combination of camera RAW settings and Adobe Photoshop. In this collection, each photograph of the glass plate negatives had a total of five adjustments, resulting in a polished product that is ready to be uploaded to a digital repository and otherwise shared with the public. The two camera RAW filters, Shadows and Clarity, restored a sizable amount of detail in each of the photographs; the remaining three adjustment layers, Invert, Black/White filter, and Levels, worked in cohesion to reverse the negative state of the images and increase overall clarity. Through these processes, this small Archive has supplemented original, delicate glass plates that cannot be exposed to light for extended periods and are largely undiscoverable to research communities into polished digital files.

Keywords
digitization, dry plate glass negatives, digitization on a budget, Abode Photoshop, digital photography

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Introduction

Dry plate glass negatives are a surprisingly common item to find in small archival collections. This photographic format was in use from 1880 until around 1930, and its durability, transportability, and brief exposure time as compared to other contemporary photographic methods all combined to make it an attractive tool for both professional and amateur photographers[1, 2]. Although it may appear unusual to the modern eye, the glass used in dry plates could be manufactured by machine, making this method of photography more affordable than its predecessors and allowing for the production of an unprecedented number of plates[1, 2]. The sheer number of dry plate negatives produced means that surviving plates are relatively commonplace, but the modern archivist may nevertheless find them intimidating to work with, particularly if the archivist serves a small institution, community archive, or are otherwise not specifically trained in photographic methods. Few academic sources (particularly those in English) are available to guide such archivists in digitizing this type of record; hence the case study being offered here.

In the summer of 2023, as part of an internal push to digitize historical documents, a set of 193 dry plate glass negatives within the Special Collections and Archives of a small liberal arts college (~1000 students) were identified as a high priority for digitization and upload to a college-specific institutional repository, due to their fragile condition and the accompanying risks of further damage and degradation. The digitization team, consisting of one full-time Special Collections Librarian and one undergraduate student intern, hoped that digitization would not only help to preserve the images contained within the dry plates, but also make the photographs and their accompanying context discoverable to researchers and historians both within and external to the college community. With these intentions in mind and following what industry recommendations were available, the following process was developed for the digitization of the delicate glass plates and preparation of the subsequent images for upload to the institutional repository[3, 4].

The plates

In any digitization or preservation project, it is vital to understand the nature of the materials being processed. The photosensitive element in a dry plate is silver or a silver blend combined with gelatin for stability and binding[3]. This mix, known as an emulsion, is coated onto one side of a thin sheet of manufactured glass, creating an emulsified side which, when exposed to light, will capture the image, and an inert side of glass. Although different methods were employed by different manufacturers, the plates in this collection were sold to the consumer pre-cut (measuring 4" x 5") and pre-emulsified, further reducing barriers to use (see Fig. 1).

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[1] "Photographic Processes: 1839 – 1889." Dawn's Early Light: The First 50 Years of American Photography. https://rmc.library.cornell.edu/DawnsEarlyLight/exhibition/processes/dry_plate_neg.html.

[2] "Early Photographic Formats and Processes in the Special Collections and Archives Research Center: Glass Plate Negatives (1850s to 1920s)." LibGuides, Oregon State University, January 11, 2024. https://guides.library.oregonstate.edu/earlyphotoformats/glassplatenegatives.

[3] Steven Puglia, Jeffrey Reed, and Erin Rhodes. "Technical Guidelines for Digitizing Archival Materials for Electronic Access: Creation of Production Master Files-- Raster Images." Digital Imaging Lab, Special Media Preservation Laboratory, Preservation Programs, June 2004. https://www.archives.gov/files/preservation/technical/guidelines.pdf.

[4] Anna Bülow and Jess Ahmon, *Preparing collections for digitization* (London: Facet Pub., 2011).

Figure 1: One of the original boxes in which the glass plates were stored and sold.

The negatives in this collection were produced by a semi-amateur photographer in outdoor conditions and are not always of the best quality. Several of the images are blurry, while others are simply too dark to photograph — a makeshift white lightbox (discussed in further detail later) placed underneath these plates could not sufficiently illuminate the details. In these instances, digital photography and Photoshop-based enhancement could reproduce a small amount of detail but could not create acceptable digital facsimiles; these plates were marked for future reevaluation.

Also found in this collection were twelve glass plates in broken fragments; several made up of ten or more small glass shards. These plates were likely broken due to careless handling or improper storage throughout their one hundred and fifty years in various storage climates. Before capturing a photograph, these plates were carefully reconstructed on a makeshift lightbox (discussed in the "Initial Challenges" section of this case study) (see Fig. 2). For purposes of digitization, the fragments of the plates were gently laid next to each other but not permanently reconstructed, as the use of any binding substances could damage the original plates further[5]. A discussion of the unique challenges of photographing the broken plates is offered in the "Initial Challenges" section.

Figure 2: Broken glass plates being reassembled before photographing.

Precautions used throughout the project

Fortunately, information on how to handle and store dry plate negatives is plentiful and closely resembles the standard best practices of handling any photographic medium. Even without training around this specific photographic method, the average archivist will find these precautions intuitive. The practices found by this digitization team to be the most helpful were:

- When handling the fragile plates, nitrile gloves should be used to prevent smudges and oils from damaging the plates[6]. Cotton gloves are not recommended as they reduce dexterity and can deposit fibers onto the glass[5].

- The glass plates should be separated from one another with soft pH-neutral buffer paper, placed on either side of each plate, to prevent scratches and potential damage from UV exposure. For long-term storage the plates should be placed upright, rather than stacked, in a close-fitting archival-

[5] "Preservation Services." Preservation Recommendations for Historic Glass Astronomical Plates, Harvard Library. https://preservation.library.harvard.edu/historic-glass-astronomical-plates.

[6] Wagner, Sarah S., and Miranda Martin. "How Do I House Glass Plate Negatives?" National Archives and Records Administration, June 18, 2001. https://www.archives.gov/preservation/storage/glass-plate-negatives.html.

Figure 3: Custom sink mat boxes during construction.

grade plastic bag, and those bags placed in a Hollinger box. These precautions aim to prevent any movement or pressure that could cause chipping, flaking, scraping, or shattering of either the emulsion or glass[5, 6].

- The plates should be stored in a dark place in a temperature and humidity-controlled room. The Special Collections and Archives of the institution in this case study are kept at a temperature between 60- and 65-degrees Fahrenheit, with a relative humidity of 40%.

- After being photographed, the twelve broken plates were stored in custom-made sink mat boxes (see Fig. 3) to prevent further breakage or chipping caused by fragments knocking against one another[7]. The shards of each plate were placed in sink mats alongside the other pieces of that same plate and kept separate from fragments belonging to separate plates.

Tools available

Initially, the tools available for this project were a 1GB SD card, an EOS Canon Rebel T5 Digital Camera, a thick sheet of glass that could be used as a display surface, a small Harbor Freight flashlight, and a Microsoft Surface tablet. These tools allowed for initial experimentation with a low level of efficiency. The project's efficiency rose when a 128GB SD card, a Heavy-Duty Amazon Basics Tripod, and an SD card reader/flash drive were purchased.

Although the institution does have flatbed scanners at its disposal, use of a scanner to digitize glass plates requires additional tools—specifically, plastic scan holders[8]. When two glass surfaces touch (such as the plate being digitized and the glass of the scanner), the light refracting through the glass at different rates can create visual distortions known as "Newton's rings"[7, 9]. Newton's rings make for poor scan quality and can make it difficult to distinguish detail within the final image. Furthermore, the contact between the two pieces of glass can cause chipping, scratching, and other forms of damage to both the negatives and the scanner bed. Plastic scan holders can prevent both Newton's rings and physical damage to the glass by holding the plates slightly above the scanner bed, preventing the two instances of glass from directly touching one another, but were not available for this project. Even if scan holders are available for other institutions, an archivist may find that the non-standard sizes and thicknesses of vintage glass plates are too variable to make the use of standardized scan holders practical[7].

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[7] "Protecting Paper: An Illustrated Guide to Sink Mats." Articles, The Conservation Center, October 21, 2015. http://www.theconservationcenter.com/articles/2015/10/19/sink-matting.

[8] "Scanning Glass Plate Negatives and Diapositives." Stereoscopy History, February 22, 2024. https://stereoscopyhistory.net/scanning-glass-plate-negatives-and-diapositives/.

[9] G.B. Airy, "On the Phenomena of Newton's Rings When Formed between Two Transparent Substances of Different Refractive Powers", *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science* 2, no. 7 (January 1833): 20–30. doi:10.1080/14786443308647959.

To capture the photos, a high-resolution camera must be used. Archivists may consider borrowing such a camera from their institution's art or photography departments, preventing additional institutional costs.

For post-photography enhancements, a fast desktop computer should be used. Laptops are prone to overheating when using Adobe Photoshop and, therefore, should be avoided. The operating system can be Windows or Mac, depending on the archivist's preference.

Initial challenges

As is often the case in digitization projects, and especially those with limited resources, the beginning of this project revealed several previously unanticipated difficulties. There was little to no documentation of how an under-resourced archive could digitize dry glass plates; the only guidance on offer were best-practice recommendations that assumed a level of equipment access and technical knowledge that simply wasn't present in this instance. As such, the digitization team used the handling recommendations that were available, such as those from the National Archives and Records Administration, and tested several different methods based on the resources that were present. The difficulties encountered in the process of trial-and-error informed the final digitization procedure and provide context to those recreating this process for why certain methods are preferable to others.

- The lack of a proper lightbox was the most significant challenge throughout this project. A lightbox would have improved both the efficiency of taking the digital photos and the level of detail contained within them. A professional-grade lightbox would have evenly illuminated the details within the glass plate, allowing the camera to capture a higher-quality image, and is recommended for any archivist undertaking a similar project. Other illumination methods tested by this team include:
    - Holding the plate up to bright overhead lights. This method caused uneven lighting throughout the image and posed an unacceptable level of risk of damage to the plate. To reduce this risk, a version of this method was also tested; the digitization team elevated a clear display surface above the floor, rather than above a table, and photographed the glass plate from below, using the overhead light as a makeshift lightbox. Although this was a creative reimagining of the lightbox technique, in this position the camera frequently failed to take the photograph. On the occasions that the photograph could be taken, finding the correct lens focus was both difficult and uncomfortable, and the camera was likely to over-emphasize unwanted elements of the image, such as dust particles on the clear display surface or the grooves of the ceiling in which the overhead light was embedded (see Fig. 4).

Figure 4: Decorative grooves in the ceiling cause uneven lighting in digital photographs.

  - Using a cell phone flashlight as a lightbox. The flashlight was inefficient due to the small size and high concentration of light. The phone's flashlight caused extreme overexposure and, in some cases, blown-out highlights in the images. The concentrated light did not increase capturable detail and, in fact, caused detail to be lost.

  - A Harbor Freight handheld light. This light source caused uneven lighting and severe light spots on the digital images even when buffer paper was used to disperse the light more evenly onto the plate.

  - Using a tablet as a backlight. This method can create good-quality images. For the tablet to work, a static white background should fill the tablet screen. Ideally, any part of the tablet not being used as the light source should be covered to prevent potential glare.

- Another early failure was trying to capture the pictures without the use of a tripod. Small body movements prevented both manual and autofocus, thus preventing image clarity. Additionally, this method introduced motion blur that prevented the use of bracketing in Photoshop during the enhancement phase.

- Running out of SD card memory during photo-taking was a recurring issue at the beginning of our experimentation, primarily due to the size of RAW data files.

- Lighting was also an obstacle with regards to the twelve broken plates, albeit in a different sense than with the whole plates. In a reconstructed plate, a low light source that was sufficient for a whole plate would glare through the small cracks and make finding the correct light balance more challenging. Some portions of the glass would appear brighter than others and reduce the overall quality of the digital image, as well as obscuring details in other parts of the plate. The only way to prevent this issue was to lower the overall lighting in the room and ensure that the fragments of the plate were placed as closely together as possible while still avoiding overlapping, which could chip the glass. Lowering the lighting in the room, however, required a slower shutter speed and a higher ISO (discussed in more detail in the "Camera Settings" section), creating a grainy and washed-out appearance in the digital facsimiles that required additional editing in Photoshop to correct.

Camera settings

Having limited equipment available increases the importance of well-optimized and carefully selected camera settings. The initial camera settings were chosen based on recommendations from a historical glass plate negatives digitalization project at the Harvard College Observatory[10]. The recommended settings were as follows:

[10] Samantha van Gerbig and David Sliski, Appendix 2 "Photography Recommendations for Historical Glass Plate Negatives" to "The Scientific and Historical Value of Annotations on Astronomical Photographic Plates", ed. Sara J. Schechner and David Sliski, *Journal for the History of Astronomy* 47, no. 1 (2016): 3-29. https://aas.org/files/journal_for_the_history_of_astronomy-2016-schechner-appendix_2-plate_photography.pdf.

1. An ISO of lower than 140. (The ISO is the camera's sensitivity to light[11]. A higher ISO increases the amount of light that the camera receives.)

2. A f-stop of 2.8 if using a macro lens, or one of 8 if a macro lens will not be used. (The aperture decides how much light will be allowed into the image. A higher f-stop number signifies a smaller aperture and a larger depth of field[12].)

3. Format the camera to save images as camera Raw.

Most of the camera settings will remain constant regardless of the darkness of the glass plate negative. A low ISO of 100 was used throughout the project to maintain the highest clarity and reduce photo grain. Increasing the ISO may be required in low-light settings, however, doing so will likely decrease image quality.

The next setting to adjust was the aperture in the form of f/stop. The f-stop on the DSLR camera was set to either f/16 or f/20. A f-stop of f/12 was too low, and a f-stop of f/16 and f/20 resulted in the clearest results. Initially, a f-stop of f/8 was used, but the photographs taken with this aperture had uneven clarity throughout — the room's overhead lighting did not generate ample wattage to use a f-stop of f/8. Going up in f-stop resolved that issue but required a considerably slower shutter speed, reinforcing the need for a tripod to ensure that the camera remained still while the shutter was open.

The borders of the glass plates were still blurry when a f-stop of f/12 was used. A f-stop of f/16 provided a balance between detail and a slightly faster shutter speed compared to a f-stop of f/20; the entire plate, including the borders, was crystal clear when using f/16. In some cases, smudges and imperfections on the plates became more obvious with a f-stop of f/20, obscuring details of the actual subject of the photograph.

The shutter speed needed to be adjusted for each image independently. For the final version of the camera settings, it was determined that the images should show minimal imperfections while maintaining the highest clarity, and the image on the glass and the outer ridge should both be in focus, thus producing the most accurate reflection of the glass plate image. To achieve this and allow for the greatest control, the camera was set to manual shot and manual focus. At times, the initial focus was done using autofocus and subsequently fine-tuned with manual focus if needed.

RAW files are preferred at this stage because this file format allows for greater precision of any edits applied to the image in the enhancement phase. As will be discussed later in this paper, Photoshop tools can be used to improve the quality of any digital rendering of a glass plate negative and can even provide a facsimile of the developed image. The more digital data available, the more delicate and true-to-life these enhancements can be; the camera RAW format provides that level of data. Later, the edited RAW files can be converted into TIFF format for preservation purposes[3].

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[11] Qingxu Fu, Xiaoguang Di, and Yu Zhang, "Learning an Adaptive Model for Extreme Low-light Raw Image Processing", *IET Image Processing* 14, no. 14 (October 22, 2020): 3433–43. https://doi.org/10.1049/iet-ipr.2020.0100.

[12] S. W. Hasinoff and K. N. Kutulakos, "Light-Efficient Photography", *IEEE Transactions on Pattern Analysis and Machine Intelligence* 33, no. 11 (April 5, 2011): 2203–14. https://doi.org/10.1109/tpami.2011.62.

Executing the process

After several rounds of trial and error, the digitization team concluded that the following process is ideal for consistently and effectively digitizing the glass plate negatives even under limited resource conditions:

- When choosing a shooting location, it is important to ensure the room has natural white light bulbs and a smooth, flat ceiling.

- After the camera settings are set and the location has been chosen, set up the tripod where the camera can be above and slightly off centered from the plate. Having the camera overlook the plate from directly above will result in poor lighting and reflections of the camera itself. The tripod will reduce or eliminate camera shake, thus enabling the use of slower shutter speeds without the introduction of motion blur[13].

- Before taking each photo, take a picture of a small note paper containing the plate number and any additional details, such as if the plate itself is blurry or especially dark. This allows an archivist to take photos of several plates consecutively while still maintaining organization, rather than the slower process of taking a single photo, uploading and labeling the file, and then taking the next photo. If, when the digital images are evaluated, the plates appear poorly exposed or blurry, the details on the note regarding the plate's condition can clarify whether those qualities were present in the plate itself or are artifacts of the digitization process.

- Place the glass plates on a lightbox or raised translucent display surface (see Fig. 5). The display surface should be approximately eight inches higher than the table being used. After carefully placing a plate on the display platform, position the light source directly beneath it. Cover the light source with a single piece of buffer paper to increase contrast and light exposure to the plate (see Fig. 6).

Figure 5: A member of the team photographs a broken plate on top of a clear glass display surface. Note that our display surface is made of a glass shelf from a display case balanced on top of two empty archival boxes, demonstrating that a lot can be accomplished with relatively little in the way of supplies!

Figure 6: A member of the team photographs a broken plate on top of a clear glass display surface. Note the light source beneath the plate, and the buffer paper to diffuse the light.

[13] Elizabeth Allen and Sophie Triantaphillidou, *The Manual of Photography* (Oxford: Elsevier/Focal Press, 2017).

- Ensure that the emulsion side of the plates is facing downward, allowing the camera to capture the detail of the "shiny" non-emulsion side. Examining the plate while carefully holding it up to a light source is useful for evaluating which side contains the emulsion; the emulsified side will have a matte, cloudy hue that extends to the outer edges of the plate and may appear slightly silver or purple in color[6].

- Switch the camera to autofocus to do an initial focus. Autofocus gives a starting point for the camera's focus but may require refining by the photographer. After using the autofocus function, switch the camera back to manual and use precise adjustments to further fine-tune the clarity.

- Proceed to photograph each plate several times, adjusting the focus until the desired level of clarity is reached. After taking photos of the desired number of plates, upload the images to a computer. Evaluate each photo and determine which provides the highest quality image of the given plate. The chosen photograph will be enhanced later in Adobe Photoshop.

    - Retakes in photography are bound to happen, and various image imperfections are only visible when seen on a larger screen. In this collection, plates often required five to ten digital photos before one was sufficiently accurate to the original to be enhanced in Photoshop. For the darkest plates, it was beneficial to take an underexposed image, a balanced exposure image, and an overexposed image, and then "bracket" them in Photoshop. This technique uses the highlighted parts of an overexposed image in tandem with the balanced exposure of another to create a more evenly lit overall image. For this technique to be possible, the camera and tripod must remain completely stationary during all three shots.

Enhancing

Before beginning the main Photoshop process, a few camera RAW photo enhancements should be applied to the images. The two main recommended options are Clarity and Shadows. Clarity adjusts the contrast on only the midtones of the image. A traditional contrast layer adjusts the darkest parts, the lightest parts, and the midtones evenly, making it more difficult to see. In these plates, Clarity was a universal filter that increased the detail in every image. The Shadows slider increases or decreases the brightness of shadows in the photo. Slight increases in the Shadow slider can illuminate greater detail in a plate. These initial adjustments will increase the effectiveness of the future adjustment layers.

Adobe Photoshop must have the correct version of camera RAW documentation to open and edit camera RAW files. Without the correct version, an error message will be displayed when an attempt is made to open a camera RAW file in Photoshop. There are two options if this obstacle occurs. The first option is to update the software to the latest version, and the second is to optimize the JPEG images instead of the camera RAW. The JPEG images will not be able to maintain the level of detail as a camera RAW file can, but it can bypass the need for administrator permissions required to update the software.

The camera RAW files were optimized using Adobe Photoshop CS6 version 13.0.6. The Cannon Rebel digital camera was set to save images as JPEGs and camera RAWs. The camera RAW is more

effective for Photoshop, and the JPEG is preferable for a fast file transfer. Camera RAW files are larger than JPEGS but contain uncompressed data that preserves every detail[5]. Editing camera RAW files is more computer RAM intensive but will allow the user to use camera RAW adjustments and enhance low-light images.

Initially, the plan was to only adjust the brightness and contrast to improve the clarity of detail in the photograph. However, these minimal edits did not improve the images enough to reflect the true quality of the plates. After hours of experimenting with various Photoshop tools, an efficient process was created:

1. Utilize camera Raw adjustments (Clarity, Shadows, and Exposure) if needed. The Clarity slider can be used in most of the images.

2. Use the Lens Correction tool to ensure the bottom of the plate is parallel with the horizontal axis of the image. (Steps 2-4 adjust the perspective, orientation, and size of the image. These steps will not directly affect the detail of the images but will improve the overall aesthetic of the plates.)

3. Use the Transform-Perspective tool to ensure the plate has parallel lines vertically. Ideally, the plate image should be a birds-eye view with straight lines on all four sides or a forward-facing perspective.

4. Crop the image to remove any foreign objects that distract the eye from the foreground of the plate.

5. Use the Selection tool to outline only the plate. Without this step, the background becomes a distraction after later enhancements. This selection will be used to create a layer mask for all adjustment layers.

Figure 7: Photograph of plate u34 after applying an "invert" adjustment layer.

6. Click on the "Invert" adjustment layer. This enhancement layer will invert the colors of the piece. The Invert layer will contain a mask created by the Selection tool in step 5. Since the plates are negatives, the inversion will reverse it to a "positive" image with life-like details. This step is transformational in the process. Details are clarified, and faces become easily recognizable. For this step to function correctly, the image must have even lighting. A bright light spot, which could be caused by a makeshift light box, prevents the invert tool from working as intended. After this step, the image will have a blue hue, and the details will appear washed out (see Fig. 7). Future adjustment layers will address these issues.

7. Click on the mask for the Invert layer and use the brush tool to smooth the edges. This step will ensure the entire plate is inverted correctly. To preserve the natural appearance of the glass plate, the edges of the plate should not be inverted.

8. Adjust the colors. Initially, the color balance tool was used to adjust the colors manually. However, the process yielded less time-efficient results. After more experimentation, the Black-and-White adjustment layer was found to be the most effective and efficient way to remove the blue hue after inverting the images. Copy the mask from step 4 onto this adjustment layer. After this step, the colors will be on a grayscale, with fewer discrepancies than before. At this point, the image may appear overexposed, which is expected.

9. The slight overexposure in step 6 was removed with the Levels adjustment layer. Click on the Levels adjustment layer and copy the previous layer's mask. Next, shift the mid-tone slider towards the right. Doing so will increase the darkness of the image's midtones, thus making the image appear less washed out.

10. If the images were cropped or altered using steps 2-4, increase the size of the photos by selecting the image > image size menu. Choose the desired number of pixels and dimensions. For dimensions, using the same width as the uncropped image resulted in the best results; the height will automatically adjust.

11. Save the final Photoshop images (see Fig. 8) as TIFF files for digital preservation[3].

Figure 8: Plate u34 before and after Photoshop enhancements.

Each image will likely need to be Photoshopped slightly differently than the others, but the basic process and the Photoshop tools used will remain constant. Minor light spots can be removed with the Spot Healing Tool.

Conclusion

Digitizing dry plate glass negatives from the nineteenth century requires organization, cautious handling, and a few Photoshop tools, but with these minor resources it is a project that can be taken on by any archivist. People doing this work in future are advised that digital photographs of the glass plate negatives require a higher f-stop, thus giving the images a high depth of field. With the technology currently available, glass plate negatives can be archived in their original form or in higher clarity positive images. The latter can be obtained by using five Photoshop tools: two camera RAW adjustments and three other adjustment layers. The camera RAW adjustments utilized were

the Shadows slider and the Clarity slider. The three remaining adjustment layers were the inversion layer, the black/white filter, and levels.

Future research should consider testing Adobe Photoshop AI features to remove large light spots in images without distorting or altering an image's details[14]. AI may be able to correct the uneven lighting caused by the light sources underneath the glass plates and allow for a simplified photography process. The version of Photoshop available at the time of this case study did not have this feature, and thus was not used. Finally, we highly recommend that any digitization team wishing to preserve their own glass plate negatives invest in a true lightbox. Resources at any small archive are always tight, and it may be difficult to find room in a budget to buy new equipment, but this single piece of technology can have a dramatic impact on the success of a digitization projects. Lightboxes allow photographers to work faster, under better conditions, producing more efficient results. Lightboxes also provide the evenness of illumination that is necessary to create a clear and detailed digital photograph of the glass plate negative. If archivists wish to digitally preserve these images with as much adherence to the original as possible, a lightbox will be required.

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