Preserving and Digitizing Andrew J. Russell's Collodion Glass Plate Negatives

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Andrew J. Russell photographed the construction of the transcontinental railroad, traveling by wagon in 1866 and 1869 to capture images with a portable darkroom in the field.

Goals for Digitization
1. Capture as much high-quality data as possible to limit the need for physical handling of the negatives in the future.
2. Create versatilie-digital assets readily to be used for online access, education, historical research, rights and reproductions, exhibition prints, and gallery graphics.

File Types
- Master file: TIF scanned in 48 bit color with embedded metadata.
- Processed file: TIF presented in black and white, cropped, and edited for clarity.
- Access files: JPEG resized and compressed for database and web use, derivative of processed file.

The Andrew J. Russell Collection Digitization, Cataloging, and Rehousing Project occupied the Oakland Museum of California from July 2012 to September 2015. The scope of the project covered all photographic material by Andrew J. Russell, the majority of which are collodion glass plate negatives.

Project goals:
1. Re-house the collection for long-term preservation.
2. Digitize the collection to produce versatile high-resolution images.
3. Review and clean-up cataloging information in the OMCA collection database.
4. Develop a curricular guide and provide public access to all digitized images online.

The information presented here focuses on re-housing and digitization of Andrew J. Russell's collodion glass plate negatives.

Glas plates are most stable when stored vertically on the longest edge. After an inventory of the filing cabinets, Registrators transferred negatives in stable condition to vertical storage in custom boxes lined with Ethylum.

Weight determined the number of negatives per box. For each handling and storage, imperial size boxes hold 10 negatives and stereo glass boxes hold 25 negatives. Within the boxes, negatives are distributed evenly and padded with pieces of 1/4" (6.35 cm) Ethylum. Pieces of archival board placed parallel to the negatives on the interior sides of the box increase stability, and when taken out, allow space to position handle for removing glass plates from the box.

During the original processing of this negative, the emulsion temporarily detached from the glass plate forming a network of small ripples. A fragile pattern emerged as the ripples are discerned. To minimize the damage, a protective glass barrier is placed between the plates.

It was important to digitize collodion glass plate negatives with both a transmissive and a reflective image. A transmissive image shows how the negative would look as a printed photograph. The reflective image captures a snapshot of the negative's condition as well as the photographer's chemical and physical process.

This cracked negative has an old repair where a second glass plate was added for support and secured with paper tape around the edges. This collection is only necessary to blue light, atmosphere and clouds as the tone is exposed to sunlight or warded. The old area is also covered with solution and a new agent to remove a characteristic grey stain.

The Russell collection contains 645 wet plate collodion negatives on glass supports:
- 198 glass plate negatives and a large format "imperial" size at 5 1/2" x 11 1/2" (25.4 cm x 34.92 cm)
- 447 stereograph glass plate negatives come in two sizes: 4" x 6" or 5" x 8" (10.2 cm x 20.3 cm or 12.7 cm x 20.3 cm)

At the start of the project, densely packed filing cabinets held glass plate negatives in hanging file folders. The location of accession numbers on storage envelopes and light packing made it difficult to find and remove a single negative without putting pressure on neighboring glass plates. The negatives were also subject to risk of damage from the back and forth movement of the drawer and fluctuations in environmental RH.

If we were re-located to an offsite AHC-controlled storage room set at 65% or 70% RH, many negatives were located for open RH fluctuations. In RH by half.

Registration plan each negative is a measurable bug, solution scale-up, and register in 8" x 10" square. For broken glass plates, individual pieces are placed on the flap or their original orientation and secured. The tiny files within a better designed on the negative is held in accordance with air pressure on the glass. Fellowes are placed in a solution for storage.

In glass plate negatives with condition issues such as cracked or broken glass and unstable emulsion require flat storage mounts. Flat storage mounts have been created for broken glass plate negatives years earlier, and for this project the design of the mounts improved in the following ways:

A reduction in the size and weight of mount materials and storage boxes to increase safety movement and handling
Development of a tray that allows the plates to be easily removed from the mount for examination
An increase in stability by using rigid board for supporting glass plates and broken pieces
Improvement upon the use of secure systems holding broken pieces in place

Custom scan mounts made with clear acrylic hold glass plates in a stable position at the corners and raise them 1/16" above the scanner plate for optimal focus. Twenty-six broken negatives could not be used with the scan mounts and were taken to a local photographer with a copy of their digitized back end equipment for imaging.

Registrars used an Epson Expression 10000XL flatbed scanner to image glass plate negatives. After researching equipment and methods of imaging, the project team chose the Epson scanner for its ability to produce high resolution images while being significantly less expensive than alternatives.

This presentation and additional project files are available at: http://tinyurl.com/gsdxj

Additional Resources:
- Review A. J. Russell's account of the Transcontinental Railroad Construction (1868-1869) via text and images. Andrew J. Russell Core Project Team:
  - Jon Barks, Director, Collections & Information Access Center
  - Duke Johnson, Associate Registrar & Project Manager
  - Janet Hermanson, Paper Conservation
  - Amy Morris, Photography Department
  - Dace Johnson, Coordinator of Photography & Visual Culture
  - Kevin Huggins, Conservation (In-kind support)
  - Gene Williamson, Historical Consultant

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