Article: Fototeca Pedro Guerra: Conservation of the Photographic Archives
Author(s): Cinthya Cruz
Topics in Photographic Preservation, Volume 16.
Pages: 2-7
Compiler: Jessica Keister

Topics in Photographic Preservation is published biannually by the Photographic Materials Group (PMG) of the American Institute for Conservation (AIC). A membership benefit of the Photographic Materials Group, *Topics in Photographic Preservation* is primarily comprised of papers presented at PMG meetings and is intended to inform and educate conservation-related disciplines.

Fototeca Pedro Guerra: Conservation of the Photographic Archives

Cinthya Cruz

Presented at the PMG session of the 2014 AIC Annual Meeting in San Francisco, California.

Fototeca Pedro Guerra is part of the School of Anthropological Sciences of the Universidad Autónoma de Yucatán, in Mérida, México. The majority of its photographic holdings are negatives, wet collodion glass plates to color film based images. There are also a few prints, ranging from albumen prints to more recent chromogenic prints.

One of the great challenges has been the preservation of negatives in a tropical climate. The city of Mérida, Yucatán, is located South of the Tropic of Cáncer, and has a hot and humid climate. The average temperature is around 86 °F with relative humidity (RH) of 70% to 90% during the rainy season. The hottest months are April and May, when temperature may reach up to 104° F.

Fig. 1. Yucatán landmarks (*left and bottom right*); Yucatán's location in México (*top right*).

These climatic conditions are a great challenge to the preservation of photographic negatives and consume a large amount of the institution's financial resources. For this reason, in 1985 a special archive storage area was built in order to improve the environmental conditions for the collection. The archive has two air conditioning units and one dehumidification extractor to keep the environmental conditions of the archive storage area at approximately 64° F and 30-40% RH all year long.

The storage area has a double door entry to prevent hot and humid air from entering the archive storage spaces. The interior of the facility has four rooms: two of them for the storage of glass plate negatives, another third for film based negatives, and the fourth contains a freezer and workspace for other activities.

Fig. 2. Double door entry into the climate-controlled storage *(left)*; negative storage *(right)*.

The Preservation Department created a list of the possible condition issues that the negative collections may exhibit and devised a letter-based system of abbreviations for those issues in order to track the condition of each negative on an item level basis (Table 1). This information will eventually be incorporated into a searchable database that will allow interested parties to track the condition/deterioration of each item. Before receiving a condition assessment, each item is cleaned to remove dust and dirt. Following the assessment the negatives are ready to be scanned. If necessary, a negative may be physically stabilized so it can be scanned without losing information.

Table 1. Condition Issue Key

Letter	Damage
A	Fungus
B	Scratches
C	Scrapes
D	Broken glass
E	Bending
F	Mutilation
G	Spots
H	Retouching
I	Adhesive (non-removable)
J	Fingerprints
K	Dust in emulsion
L	Emulsion cracking
M	Partial emulsion loss
N	Detachment of emulsion
O	Silver sulfide
P	Colloidal silver surface
Q	Partial loss of density
R	General loss of density
S	Deplastification of the support
T1	Film fading
T2	Emulsion viscosit /crisp support
U	Emulsion viscosity/hydrolysis

Gelatin Dry Plate Negatives

The collection of gelatin dry plate negatives are of a number of different topics, and include images of various customs, cities and architecture, archeology, haciendas henequeneras, political movements, and portraits. Because of the importance of these older images, they are a priority for assessment, stabilization and digitization. Some of the physical damages present within this collection are broken and cracked glass, scratches and scrapes, fingerprints, fungus evidence, and cracking or viscous emulsions.

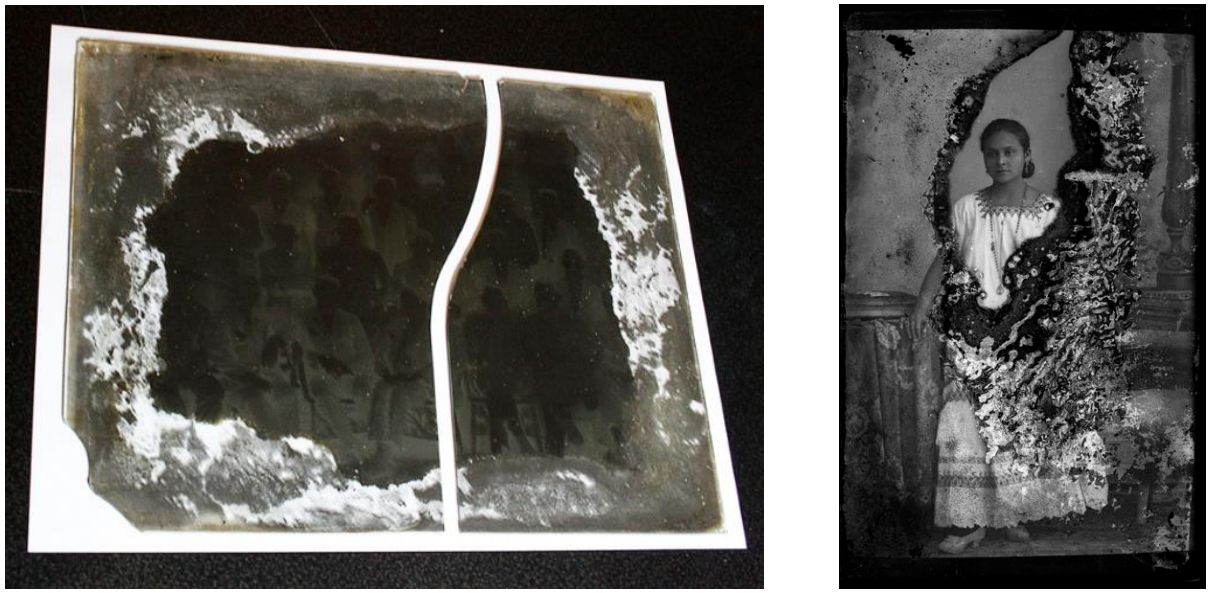

Fig. 3. Two examples of damaged gelatin glass plate negatives.

With a large collection, such as that at the Fototeca Pedro Guerra, priorities within the collection must often be identified. Priority for assessment, stabilization, and digitization is given to the images with the most important content, such as political figures and social movements. Items within these priority categories receive an acid-free cardboard custom housing. Negatives which are broken and missing fragments are housed custom-cut in sink mats with polyester film strips for easy access. The enclosure is secured with linen twill tapes attached with a neutral pH polyvinyl acetate adhesive (fig. 4).

Cracked plates are stabilized by sandwiching them between two pieces of glass, and securing the perimeter with an acid free adhesive tape. If fragments of the negative are missing, a replacement piece is custom made from acid-free cardboard.

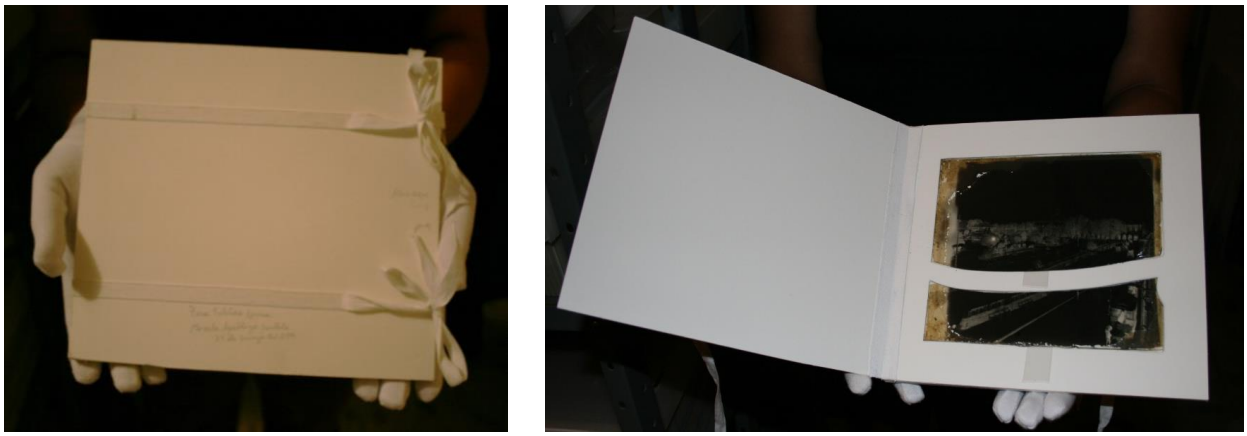

Fig. 4. Custom sink mat for a broken glass plate negative, closed *(left)* and open *(right)*.

Wet Collodion Glass Plate Negatives

There are a small number of wet collodion glass plate negatives within the collection, which are just beginning to be processed. As seen in Figure 5, plates found within this collection have a variety of condition issues, including scratches, mutilation, broken glass, stains, and varnish viscosity due to hydrolysis.

Fig. 5. Wet collodion glass plate negative.

Appropriate housings have not yet been developed for these negatives, though pH-neutral cardboard boxes are being considered. Investigations into how other institutions have stored their collodion negatives are on-going.

Nitrate Film Negatives

Nitrate film negatives are cleaned, digitized and placed into a freezer. These negatives are often found mixed into groups of mostly acetate film. The instability and hazards, especially of large quantities of cellulose nitrate, are well known. For these reasons, once identified they are immediately processed and placed into the freezer.

Acetate Film Negatives

More than 50% of the archive's holdings are acetate film negatives. Cleaning, sorting, assigning inventory numbers, and digitizing is an on-going project. The most common condition issues observed are discoloration of the film, viscous emulsions, embrittlement, and gentle overall planar deformations. The negatives also have the infamous "vinegar syndrome".

To slow the deterioration process of these negatives, they are being frozen, using the same protocol as for the nitrate negatives. At present only the Pedro Guerra collection has been assessed, housed, and placed into the freezer. Ready to be processed are 400 negative from another archival collection, of Raúl Cámara Zavala materials. However, the size of the Pedro Guerra collection alone is such that two more freezer will need to be purchased in order to accommodate the anticipated quantity of acetate and nitrate negatives

Fig. 6. Acetate film negatives.

Freezing Protocol

After cleaning and high resolution scanning, negatives are grouped into units of 50 and interleaved with acid free paper. A code is assigned to each negative and written in graphite at the top right corner of the interleaving paper. The first part of the code identified the photographic process and the second the collection. The size and archive registration number is also noted. The photographer's inventory number is written at the top left corner. The group is them sandwiched between two pieces of heavy weight pH-neutral cardboard, with labels noting the beginning and ending registration numbers of the group. The sandwiched negatives are then placed into a foil bag with has the same identification numbers written along the edge. As much air as possible is removed from the packages before they are sealed, using two rows of double sided adhesive tape which are placed at least two to three centimeters apart. The package is then ready to be placed into the freezer.

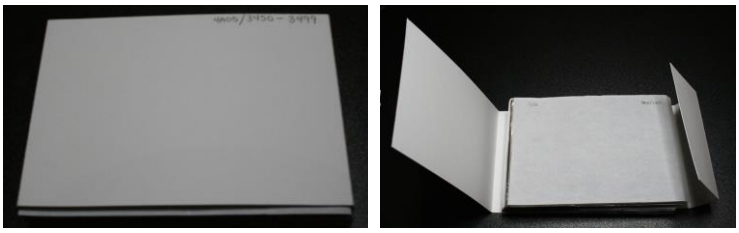

Fig. 7. The interleaved negatives *(left)* and the pH-neutral cardboard buffer material *(right)*.

Fig. 8. The labeled foil bag *(left)* and packaged negative inside the freezer *(right)*.

Freezer Specifications

Two frost-free freezers were purchased in 2004, specifically for the storage of nitrate and acetate film. The temperatures recorded inside the freezers ranges from -14 °F to -5.8 °F with relative humidifies between 30 and 40%. The model selected was a CV32 Torrey freezer, of Mexican manufacture, originally designed for the frozen food sales industry. The freezer has 32 cubic feet of storage space and self-closing torsion bar doors of triple pane glass. There is also a digital controller with an illuminated display. It uses a two-compressor forced air cascade system in order to provide an even temperature throughout the freezer space.

The Preservation Department was concerned about what would happen to the negatives if the freezer broke down or if there was a power outage. A datalogger was placed inside of an empty freezer for a week, during which the freezer was turned off and allowed to warm.

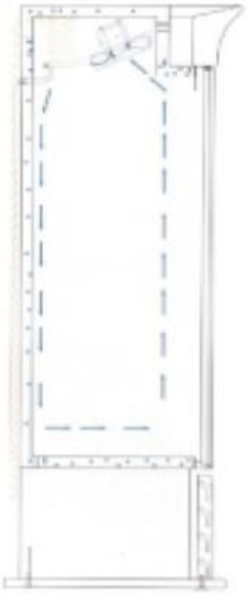

Fig. 9. Forced air cascade system.

As seen in Figure 10, the temperature in the freezer cycles daily, Once the freezer is powered down, it takes about 36 hours for the temperature to

increase from -5.8°F to 59°F. In another 36 hours the internal temperature of the freezer has reached 64°F, which is the temperature of the storage area in which the freezers are housed. Provided that staff is immediately alerted to the failure of a freezer, there warming is gradual enough to allow time for the purchase and installation of a replacement.

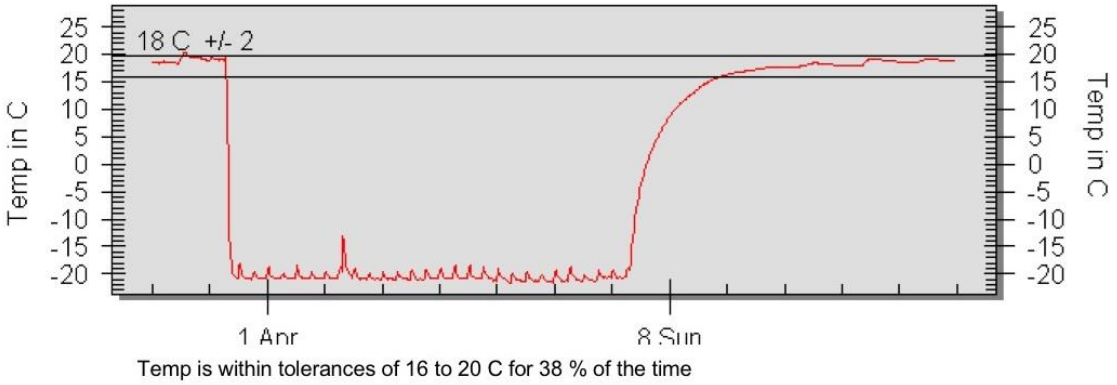

Fig. 10. Change in temperature over the course of a week, as the freezer warms.

Progress

The project is still in the early stages: 152 of 1,500 glass plate negatives have been rehoused and 19,829 of approximately 191,100 film based negatives have been rehoused and frozen.

Organization and tracking is an important component of a project such as this. A log is kept of the process, recording which negatives have been completed and which are undergoing stabilization treatments and/or scanning.

Yucatán is far from Mexico City, and personnel and financial resources are limited, and the challenges faced by the staff are similar to those at many other archives. However, with careful planning it is possible to adapt a major project to a more limited budget. Liliana Dávila and Fernanda Valverde at the Escuela Nacional de Conservación, Restauración y Museología also helped to develop the project. It is important to understand the equipment selected, be prepared for the unexpected, and ask advice when necessary, no matter an institution's circumstances.

Cinthya Cruz
Universidad Autónoma de Yucatán México