## Mixed Media: Working with Audio and Visual Materials— Heather Fox, Assistant Editor, University of Louisville

Contact HeatherFox at heather.fox@louisville.edu if you would like to guest author a Mixed Media column or share a good idea.

### **One Hot Day in July: The True Story of an Archival Freezer Failure**

By Asia Harman, Indiana University Moving Image Library

On a sweltering day in late July 2013, an alarm went off at the Auxiliary Library Facility (ALF) at Indiana University–Bloomington, indicating that the temperature in the archival film freezer was climbing—quickly. The outdoor walk-in freezer is home to nearly 3,000 severely deteriorated films belonging to the Indiana University Libraries Moving Image Archive (IULMIA). It normally maintains a temperature of -2 degrees Fahrenheit but the freezer had stopped working. Inside, the walls and film cans were



thick with moisture, pools of murky water were collecting on the floor, the hottest part of the day had yet to arrive, and the temperature was already above freezing. After a quick bout of panic, a plan of action was put in place immediately. Thawing too quickly can cause condensation to form on the film inside the cans and must be avoided. With the help of the ALF staff, the IULMIA staff donned summer clothes, aprons, and gloves and moved the films over the course of

Relative humidity indicator strips are taped around film cans

the day into the two nearby on-site freezers owned by the Preservation Department.

By the end of the day, our freezer was close to 80 degrees. The other two freezers saved our films on that very hot day, but are used regularly by the paper conservation staff at ALF, and we knew they could only serve as a temporary solution. When comparing the healthy Preservation Department's freezers and the IULMIA freezer, the first thing we noted was that ours smelled akin to a jar of pickles. Not only did our olfactory senses alert us that something was wrong, but the pipes were visibly rusty and corroded. We were later informed that the motor had deteriorated. For



Upon completion of the project, each film was neatly organized and every shelf received an alphanumeric label.

reasons described below, between 2010 and 2013, films were kept in loosely tied, thin trash bags, which allowed the pernicious vapors to escape from the cans but still be trapped inside the freezer. Essentially, gaseous acetic acid emitted by the films had been working hard for many years to decay the inner workings of the freezer. Shortly after it broke, our freezer was repaired and the motor was replaced. The stinky films were ready to be returned from whence they came, but only after we dealt with them first.

In 2010, the newly created IULMIA took custody of nearly 50,000 films, the core of which were comprised primarily of 16mm educational films distributed and



These decayed films have vinegar syndrome.

produced by the defunct IU Audio-Visual Center from the 1930s to the 1990s. The collections had been stored in various locations around the IU campus in Bloomington, Indiana, for several years in less than ideal conditions. The IU Libraries decided these films should be preserved at the film-friendly vault at the ALF.

(Continued on page 28)

#### MIXED MEDIA: WORKING WITH AUDIO AND VISUAL MATERIALS—Continued Heather Fox, Assistant Editor

#### (Continued from page 27)

Using acid-detecting (A-D) strips made by the Image Permanence Institute (IPI), every film was tested for vinegar syndrome before entering the vault at ALF, which maintains a constant 50 degrees Fahrenheit and 30 percent relative humidity. Vinegar syndrome is a form of deterioration that affects acetate-based film and earns its name from the similarly strong odor of the common household item. The scale used for A-D strips ranges from 0 to 3, or good to critical, respectively.<sup>1</sup> Of all of the films, nearly 3,000 tested were in critical condition and were housed in the aforementioned freezer.

As the project manager, I worked with the director of the IULMIA, Rachael Stoeltje, and film archivist Andy Uhrich to create a workflow that best suited our budget and timeline. To save our freezer from future catastrophic failure, we followed the National Park Service's guidelines for cold storage of film-based materials, which is based on the Critical Moisture Indicator packaging method.<sup>2</sup> These recommendations involve double-bagging films to protect them from unwelcome fluctuating changes in relative humidity.<sup>3</sup> This procedure also creates a vapor barrier to prevent the release of acetic acid into the environment. The films needed to be slowly acclimated before being processed to avoid condensation from forming, a task that



involved pulling batches of about 100 films at a time from the freezer and allowing their temperature to rise over the course of 24 hours in the climatecontrolled vault before bringing them into the room-temperature working area.

Jacob Shelby vacuum packs the films in bags.

A large portion of this project was

dedicated to creating a precise list of every title and assigning each a unique alphanumeric location coordinate to establish physical control over the collection and to ensure easy retrieval of films from the freezer. Before this project, films in the freezer were not barcoded, and there



Before the project, films were stored in loosely sealed bags.

was no complete inventory of what was inside. When IULMIA initially received the film collection, Stoeltje was the archive's only full-time employee and due to the brief window of time available to transfer materials to the ALF, the collection had been neither double-bagged nor barcoded. As is the case with many archival projects, there is a delicate balance between following best practices and the reality of available resources.

Predetermining the location for each film was much more pleasant in our working area as opposed to the cold confines of the freezer. For this, we taped off an area of a table to the exact dimensions of the freezer shelves and mapped out the exact location of each title before it was processed. Our naming sequence for location was devised by shelf bay, location in the front or back of the shelf, numerical stack, and then order from the top down within each stack. Once we determined the location for a particular title, we entered this unique ID into our spreadsheet and later double-checked the information before returning it to the freezer. We then taped around the opening of each film can, which acted as the first of two vapor barrier layers. We taped a relative humidity indicator strip to the outside of every can so we could monitor the moisture level inside each bag and included a silica desiccant pack as an added barrier against humidity.

To ensure that we maximized the amount of space available in the freezer, films had to be stackable after being bagged. The film cans in the freezer range from a capacity to hold 400 feet of film (about 7 inches in diameter) to 2,000 feet of film (roughly 16 inches across), and because no plastic bag is one-size fits all, we used three variously sized bags. We discovered that leaving the excess part of the bag hanging loose took up too much space, and we needed to figure out a way to remedy this. Our solution was to vacuum seal the bags the good old-fashioned way—with a vacuum. After testing three kinds of vacuums, we settled on one with a quarter-inch hose attachment that allowed us to suck out the air quickly and leave a small hole that could be sealed without allowing air to get back in. Then we neatly folded the excess part of the bag and taped it down along the edge of the can so that the films could still be stacked.

Each film then received a sticker with the title and barcode printed on it so that it could be seen more easily on the outside of the bag. Each location was then handwritten on the label. After every film had been bagged, barcoded, and labeled, we returned them to their initial placement on our taped-off shelf layout. In groups of three or more, each stack was transferred, in order, to its corresponding place within the freezer.

Over the course of two months and with the help of eight library and information science graduate student workers, we successfully barcoded, double sealed, and mapped out the location of all 3,000 films. What started off as a potential disaster and loss of materials, actually turned into a solution for gathering information and gaining control of this collection. Several of the films we saved during this project have been digitized and are available online at collections.libraries.iub.edu/IULMIA/about, and some have been projected at our local bimonthly film screening. Today, films can be quickly and easily located and the freezer smells exactly how it should, just like a freezer and not a noxious mixture of vinegar and rust.

It has now been one year since we completed the freezer project, and we are still discussing the future of the 3,000 freezer films. Considering the time and resources that we put into saving the freezer films, it is crucial not to just shelve them out of sight and out of mind. Archivists must be conscious of why we delegate our resources to specific collections. This project forced us to take a hard, close look at this collection and assess the level of prioritization it needed. We were extremely fortunate to have the time and resources available to remedy the situation. In the end, the moral of the story is to monitor your freezers closely, because you never know if a vinegary film collection is just a ticking time bomb waiting to go off. Notes

- 1. James M. Reilly, "IPI Storage Guide for Acetate Film" (1996), accessed October 27, 2014, www .imagepermanenceinstitute.org/webfm\_send/299.
- 2. National Park Service, U.S. Department of the Interior, "Cold-Storage: A Long-Term Preservation Strategy for Film-Based Photographic Materials," accessed October 27, 2014, http://www.nps.gov/ museum/coldstorage/html/index.html.
- Mark H. McCormick-Goodhart, "On the Cold Storage of Photographic Materials in a Conventional Freezer Using the Critical Moisture Indicator (CMI) Packaging Method" (July 31, 2003), accessed October 30, 2014, www.wilhelm-research.com/subzero/ CMI\_Paper\_2003\_07\_31.pdf.

# VIDEO ORAL HISTORY INTERVIEWS PUT A FACE ON HISTORY!

- Augment your written records with video interviews of organization or company leaders, veterans, or important contributors. Video interviews can be used for websites, annual meetings, marketing, or exhibits.
- We offer complete services: Research, interviews, High Definition video production, editing, and transcription.
- · Clients include national associations and corporations.

Archivist/Oral Historian: Jane Kenamore, FSAA, CA Video Production: Frank Dina Multimedia, frank@frankdina.com Transcription Service: Jane "Jessie" Lehman, jwlehman2001@aol.com

Individual services are also available separately.

KENAMORE & KLINKOW, LLC www.archivesconsultants.com jane@archivesconsultants.com 847-275-0335