Appendix 3

Preservation Recommendations for Historic Photographic Jackets

Sara Schechner
Harvard University, USA

David Sliski
University of Pennsylvania, USA

Historic photographic plates are commonly stored in paper sleeves or jackets. These enclosures serve two purposes: to protect the photographic plate from damage caused by dirt and scratches, and to record data associated with that particular image. A common issue facing astronomical glass plate collections is the deterioration of the jackets that house the plates. This deterioration threatens the integrity of the emulsion and annotations on the glass plates, as well as the loss of data from the sleeves themselves.

There are several reasons why deterioration can occur. Most jackets made before 1980 consist of wood pulp paper, which has shorter fibers than cotton and linen rag paper and so is more brittle. The production process often leaves lignin in the pulp and adds sizing for a better writing surface; both make the paper acidic and breaks down the fibers over time. The inherent acidity of wood paper is compounded by the conditions in which it is stored. Environmental pollutants such as sulfur and nitrogen oxides in the air, or acids from wood shelves and crates, are readily absorbed by paper, especially in the presence of moisture. Considering that most observatory photographic plates have been stored in wood-paper sleeves in wooden crates in non-controlled environments, serious concern is warranted. A recent study at the Harvard College Observatory, for example, found that a plate jacket, which showed visible signs of deterioration, had a pH of 3.6. This is similar to the acidity of orange juice, not something one would want protecting unique astronomical data or historically important annotations.

Although funding for the conservation of photographic plates is limited, the authors think it is imperative that collections of astronomical photographic plates consider rehousing the plates that are in jeopardy. According to the International Standards Organization, the paper enclosure should be acid-free, lignin-free, buffered material of a neutral pH between 7.0 to 9.5 ±0.2.[1] The jacket material should also pass the Photographic Activity Test. Developed by the Image Permanence Institute of the United States, this test looks at the chemical interactions that can occur between photographic images and their storage containers. If any component of an enclosure (such as inks, labels, adhesives, tapes, or paper) causes discoloration of photographic material, that product should not be placed near archival photographs.

When rehousing the photographic plates in new sleeves, care must be taken not to lose the information inscribed on the old ones. Not only is the content of these manuscripts worth preserving, but also the handwriting. The old jacket should be scanned or photographed, and its image should be printed on the new archival sleeve. We recommend that a multifunction laser printer with direct-feed capability be used to scan the old jacket and print directly to the new one. One should ensure that the toner in the printer passes the Photographic Activity Test.[2]

Notes on Contributors

Sara J. Schechner is the David P. Wheatland Curator of the Collection of Historical Scientific Instruments, Harvard University. She is a founding member of the American Astronomical Society's Working Group for the Preservation of Astronomical Heritage and is active in similar groups worldwide. Her latest book is *Tangible Things: Making History through Objects* (OUP, 2015).

David Sliski is a graduate student in the Department of Physics and Astronomy at the University of Pennsylvania. From 2011 to 2014, he was part of the DASCH (Digital Access to a Sky Century @ Harvard) team.

Notes

1. ISO 18902:2007, 18905:2007, and 18916:2007.

2. David Sliski, "Proper Jackets Preserve Plates!" *Scan-It: The Newsletter of the International Astronomical Union Working Group for the Preservation and Digitization of Photographic Plates*, no. 6 (April 2013), 17-19. Online at http://atlas.obs-hp.fr/pdpp/scan-it/SCAN-IT-6.pdf.