

# News

## The History, Care and Handling of Photographic Materials

—by *Tanya Zanish-Belcher*

*T*he impact of the invention of photography on American history and culture cannot be overestimated. Today the majority of Americans use a camera with ease, taking hundreds of snapshots in a year. Prior to the development of Kodak, however, photographs were reserved for special one-of-a-kind situations and produced rare and unique images.

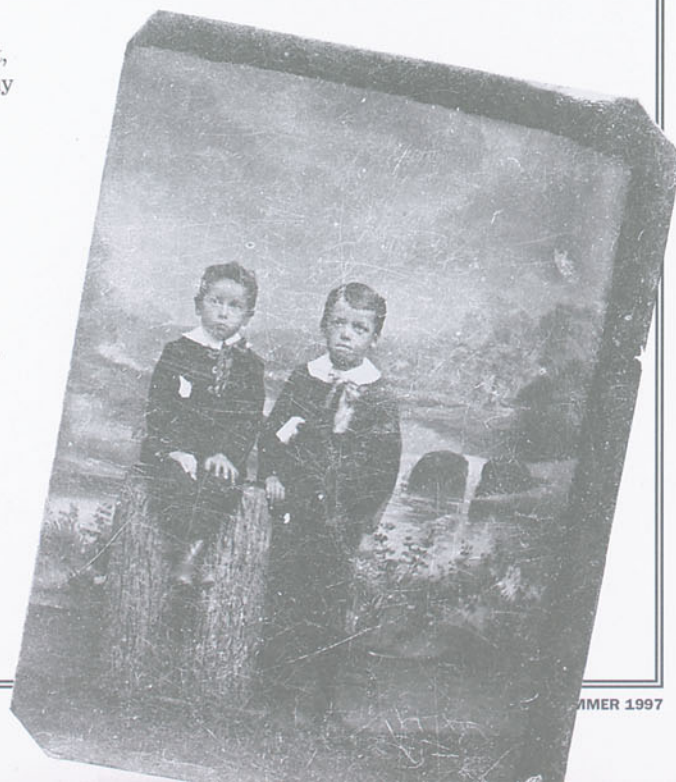
The first photographs were developed when experimenters noticed the sensitivity of silver compounds to light. Basically, all black and white photographs consist of the reactions of silver to light, and in modern photography to chemicals. Photography today (although this is being altered by digitization) relies on a negative from which paper prints can be made. The first photographs had no negatives and thus could not be easily reproduced – the negatives were part of the actual image.

The first practical photographic process<sup>1</sup> was invented by Frenchman Louis Daguerre in 1839 and resulted in the daguerreotype. His invention was based on the work of Joseph Nicéphore Niepce who, interested in recreating lithographs, used a camera obscura to fix an image on stone (1824).<sup>2</sup>

A daguerreotype (1840-1855)<sup>3</sup> consisted of a unique image on a thin layer of polished silver plated onto a copper plate. After being sensitized by chemicals, the plate was exposed, the image developed by mercury vapor and fixed permanently by other chemicals.<sup>4</sup> The extremely delicate image, which resembles a mirror and can appear as a

negative or positive, was placed in a hinged case and covered with a brass mat and sheet of glass.

**Ambrotypes (1855-1860s)** were the next development in the photographic process. The ambrotype image is a silver image in a collodion binder on glass. Collodion is a form of cellulose nitrate dissolved in ether and alcohol. The negative image produced is viewed as a positive image when





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the glass is backed by a dark material such as paper, paint or cloth. The ambrotype is usually placed in cases similar to the daguerreotype, but the image will appear as brown and milky white and will sometimes exhibit hand tinted highlights and flesh tones.<sup>5</sup>

Ambrotypes and daguerreotypes should never be touched directly, as the image could be damaged. They should be stored flat, in a protected acid and lignin free container and should be physically supported in storage and while being viewed.<sup>6</sup> It is suggested that you not attempt to clean or remove them from their container without a conservator's help.

**The Tintype or Ferrotypes (1856-1920s)** was also based on the collodion process, but the image was placed on a sheet of lacquered iron. The metal was painted dark brown or black, exposed, developed, fixed, and then varnished. The tintype was much cheaper and more durable than the earlier photographic processes and was very popular.<sup>7</sup> The image, similar in tone to an ambrotype, was

occasionally hand tinted and often encased in a paper holder or album.

**Albumen Prints (1850-1895)** are common in family collections. These prints consists of light sensitive silver salts in egg white on high quality papers. The photograph will have a purplish-brown hue and glossy surface, but for the most part, the egg white will have deteriorated giving the image an overall yellow tinge. Albumen prints can include:

**Carte-de-visites (1860s):** These small portrait cards were about the size of a calling card or present day business card. The sitter is often seated or standing, but shown full length. "CDVs" were extremely popular and cheap and thousands were printed daily. The photographer is often listed on the backside.

**Carte-de-visites (1870s):** "CDVs" from the 1870s have thicker mounts and more elaborate ornamentation. The sitter is usually shown much closer.

**Cabinet Cards (1870s-1890s):** Cabinet cards were larger with thicker mounts and rounded corners. These cards were also usually marked with the name and address of the photographer. (Also see printing out papers)

**Stereograph Cards (1851-1935):** Stereographs or stereo cards are a pair of photographs placed side by side on cards. View through a hand-held stereoscope, the single picture looks three dimensional.

### Negatives

**Collodion "wet plate" negatives (1851-1880):** The collodion emulsion used in the creation of the ambrotype and tintype was also used to make glass plate negatives from which prints could be made. The exposure had to be completed while the collodion was still wet, hence the name "wet plate." The negative image will appear as a milky brown and there may be evidence in the corner that a clamp was used during the spreading of the collodion on the plate. Sometimes the glass will appear hand cut.

**Gelatin "dry plate" negative (1880-1920):** The more convenient method of "dry plates" replaced the wet plate negative. Gelatin, which could be exposed when dry, replaced collodion in the emulsion. The gelatin plate looks uniform and the glass machine cut.

**Film based negatives (1889-present):** Photographers eventually began coating gelatin emulsions on plastics such as nitro-cellulose (nitrate), cellulose acetate (safety), and polyester. In addition to

Prior to the development of Kodak, photographs were reserved for special one-of-a-kind situations and produced rare and unique images.



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## Preservation Awareness

# Saving the Serials: Preserving Mass Culture at the Utah State University Libraries

—by Noel A. Carmack

The preservation of Utah State University Libraries' extensive collection of books, periodicals, and electronic resources is a vital component of a commitment to providing and maintaining information in support of instruction, research and extension. With holdings of over 1.3 million volumes, USU libraries boast significant collections of materials on the sciences, technology, agriculture, humanities, and regional interests. These collections have helped support one of the most respected science, agriculture, history, and American studies programs in the United States. For students researching mass culture and history, the university's collection of magazines, journals, newspapers and catalogs have been immeasurably helpful. As a consequence, in over 180 years of day-to-day library acquisitions, the USU libraries have accumulated serial items that have major value today.

In 1994, when USU's acquisitions librarian was visiting England, he observed that in the antique stalls in London and Oxford some of the most noticeable items for sale were color plates removed from 18th and 19th century scientific journals and monographs. After his return to the United States, he was alarmed when told that actual contracts were being offered by "book scouts" to potential dealers for obtaining such illustrative plates from serials. When he checked USU's volumes of a valuable 19th century British zoological journal, indeed, all of the plates of mammals had been excised by razor blade. The possibility that other serial runs might suffer from similar damage required immediate action.

Mutilation and theft of serials is not uncommon. It has plagued public and academic serials for decades. Unfortunately, only now are special collections librarians recognizing the extent of serials depredation

throughout the country. Serials that have long been shelved in the open stacks are being transferred to special collections.

Deterioration of serials collections has also been a major impetus for several nation-wide initiatives for the preservation of journals, periodicals and newspapers. Poor paper quality, large formats, fragile covers and, except for some deluxe sets, lack of binding have been common characteristics of serials. In response to the growing need to preserve and document our cultural heritage, national and international projects are under way to preserve serial publications. Nationally, the U.S. Newspaper Program and the RLG Art Serials Preservation Program are two NEH funded projects which were instituted within the last decade for the preservation of valuable serials. According to the 1993 ACRL/RBMS guidelines for selecting materials for transfer to special collections "older reference works and early periodicals still needed for general use frequently become valuable and may require careful consideration for transfer." At the time of serials mutilation discovery at USU, construction of a state-of-the-art sci-tech library was well under way. Space and reconfiguration concerns were already being considered, since all pertinent volumes would be transferred from the existing library to the new sci-tech library. The concern for preserving the serials, raised at a time of change within the existing library, was serendipitous. The move would allow for the in-house shelving of serials which had been in reserve storage and provide an opportunity to make important transferral decisions with regard to embrittled or valuable serials. During deliberations on space utilization, the Library Move Committee decided that special consideration be given to serials in need of physical preservation. This not only included runs that were in a deteriorated state, but others that were of high intrinsic and intellectual value.

The Move Committee then proposed a task force consisting of the acquisitions librarian, the preservation librarian, and curator to complete the selection survey. At the library administration's approval, we began the process of identifying and selecting serial items for transfer to special collections. Every serial title was surveyed by carefully reading the shelves. One to three volumes from each serial set were carefully examined. Many of the serials chosen showed visible signs of deterioration or were at high risk of mutilation and/or theft.





## *Saving the Serials*

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To document the selection survey, selected runs were listed by title, volume numbers, and beginning and ending years. Field notes were also taken, listing a brief description of each selected run, the nature of the serial and a note stating the reason for selection. Because it was observed that the nature of serial runs changed over time, we decided not to devise a standard ending date. Ending dates for selected items were set at a decade when it appeared that their physical condition was at an acceptable level of stability or when their collectibility or potential for theft was diminished. Generally the ending dates for runs and series ended at 1900 or 1910. In several cases, popular wartime and post-war magazines were selected to 1960.

Although we did not hold ourselves to strict categories, selection criteria included items of

- monetary value
- intellectual value
- aesthetic value
- potential use
- value as documentary evidence of culture

Over one hundred serial titles were chosen as a result of the survey. During the selection process, we were surprised by what was found languishing in unmonitored conditions. The serials represented illuminating sources on American and European literature, popular art, and mass culture. Nineteenth-century scientific journals often contained colored plates or maps that warranted preservation. The majority of those selected contained unique art and advertisements that risked being mishandled or mutilated. Many contained illustrations by such artists as Charles Dana Gibson, Howard Pyle, James Montgomery Flagg, Howard Chandler Christy, Norman Rockwell, and Dean Cornwell. Others were selected for containing first or early writings by such writers as Jack London, Rudyard Kipling, and Edith Wharton.

After the serials selection and transfer process were completed and approved, the library holdings records were promptly changed to inform researchers

of the new location. Labels were also changed to read: "Sp. Coll. Journal". Shelving was modified when necessary to accommodate oversized formats, while adequate spacing was provided for the addition of other titles.

Under supervised handling, these valuable serials are now held in a more desirable environment, while providing access to researchers. When an item is requested, a special collections staff member retrieves the item from the storage area and carefully monitors its use in the reading room. To reduce damage to the original, photocopy requests are done by staff members on a special book copier, only when the condition of the item will afford such handling. When the condition of an item requires treatment, it is noted and brought to the attention of the preservation librarian.

In a time when serials are regarded as an important part of our cultural record, it is incumbent upon us to preserve them more earnestly. Valuable and rare serials should be carefully considered in the establishment of institutional transfer and preservation policies. USU's effort in preserving serials is just one small step toward meeting this responsibility.

\*"selection of General Collection Materials for Transfer to Special Collections: 2nd ed: A Draft," *College & Research Libraries News* 54 (December 1993): 647.

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### **Preservation Awareness**

## **Preservation Leaflet in Spanish Available from NEDCC**

The Northeast Document Conservation Center [NEDCC] announces the availability of a free technical leaflet in Spanish on care of photographs. NEDCC seeks to make the leaflet available to libraries, archives, and museums to copy and distribute to Hispanic audiences including individuals and community organizations.

To obtain a free copy of the leaflet send a \$.55 self-addressed stamped envelope to Gay Tracy, Northeast Document Conservation Center, 100 Brickstone Square, Andover, MA 01810-1494.

Other technical leaflets are available on NEDCC's web site at <http://www.nedcc.org>



## Photographic Materials — continued from page 2

photographic negatives, these materials were also used in the motion picture industry.

**Nitrate negatives (1889-1939 and later)** are extremely flammable and should be reproduced as soon as possible with the original being discarded.

**Acetate negatives (1939-present)**, also known as safety film, frequently deteriorate by the emulsion pulling away from the base and produce a vinegar smell.

**Printing out papers (1890-1920):** Gelatin and collodion printing out papers replaced albumen paper as the dominant print material in the 1890s. The paper was exposed in contact with a negative to either sunlight or artificial light. The images have an additional support layer and are a very glossy purple-brown color. The most commonly encountered format are the studio portrait cabinet cards from the 1880s-1890s.

**Developing out papers (1885-present):** One of the most important developments in the history of photography was the creation of a negative/print system where the print could be developed at a later time than the actual exposure of the negative. This is still the dominant method of photographic production today.

**Gelatin silver prints** appear glossy and neutral black in color. The works of Ansel Adams provide an excellent example.

**Lantern slides (1850-1930/1940s):** A glass positive

transparency sandwiched between two pieces of glass was used for viewing by projection, especially popular in the early 1900s.

**Color photographs<sup>\*</sup>:** Color photographs differ from silver prints in that the image consists of dyes (cyan, magenta, and yellow) residing in the gelatin coating on a photograph base. Unlike the stable silver images, these dyes are susceptible to different rates of deterioration either when exposed to light or stored in the dark.

**Color prints (1942-present):** The majority of color prints are chromogenic prints that have poor stability in light and dark storage. The color development of these images is "coupled" with the chemical reaction of a silver halide emulsion, which is later bleached out. After 1969 all chromogenic prints have included a polyethylene coated support that feels slippery. Examples from the 1970s may have yellow staining around the edges.

**Color negatives and transparencies (1905-present):** The dye stability of color negatives and slides has varied greatly with deterioration in storage in both light and dark. Careful handling and storage as well as the quality of the film will determine the longevity of the image. (See Wilhelm)

**Polaroids (1947-present):** These images started out as black and whites, but the color images became extremely popular in the 1960s and 1970s. Fairly poor dye stability and an early tendency to curl required cardboard support of these one-of-a-kind images.

### Care and Handling of Visual Images

The care and handling of photographic images is fairly simple and straightforward. When working with photographs, always keep your work area clean. Always pick up negatives and photographs by their edges or use cotton gloves — your hands have oils that will stain the image and speed its deterioration.

Photographs should not be placed in self-adhesive or magnetic photograph albums. They should be stored in acid-free albums, envelopes or acetate sleeves and placed in albums using acid-free photo corners. Scotch tape, glue, rubber bands, thumb tacks, or paper clips should not be used.

Do not display original photographs in direct sunlight (reproductions should be made and used for this purpose); color photographs are particularly susceptible to fading and discoloration. Do not place glass directly on a photograph — use an acid-free mat to separate the two, as well as an acid-free backing when framing your photographs. Be extremely careful when photocopying photographs. Do not let them

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# Photographic Materials

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run through a copier.

Do not write directly on photographs, especially with ink. Use a soft-leaded pencil and write on the reverse of the image, along the margins. Resin coated prints provide difficulty for storage but it is best to place them in sleeves with the identification on the storage container (just be sure the two are not separated). Identify who, where and when.

Store your photographs in a sturdy box in a safe, dark and dry place. Do not store photographs in the attic, garage or cellar, or any humid, damp location with potential pests.

### Endnotes

<sup>1</sup>Henry Fox Talbot in England was also developing a photographic process during this time period. Talbot invented a paper print system based on negatives but, due to restrictions on its use, photographers chose to utilize the daguerreotype.

<sup>2</sup>The camera obscura was a tool used by artists and others. Using a lens, it projected an image that could then be used as an aid in drawing.

<sup>3</sup>Americans excelled at daguerreotyping and developed many memorable portraits. See *The American Daguerreotype* by F. and M. Reinhart. Athens: University of Georgia, 1981. All dates are approximate. Many photographers continued working with obsolete processes on their own.

<sup>4</sup>American photographers also experimented a great deal with chemicals in order to improve their images. Since it is not always guaranteed that the chemicals used in a process were the ones listed, archivists, curators, and collectors must be extremely careful in attempting to clean or work with older images.

<sup>5</sup>You will also see daguerreotypes with tinting.

<sup>6</sup>One way to construct a physical support for viewing is to take a piece of form core and wrap it with numerous layers of acid-free tissue. This support can be used when handling all manner of glass negatives and prints.

<sup>7</sup>The tintype became especially popular during the Civil War for it could be carried in a pocket (unlike glass) without breaking.

<sup>8</sup>For additional information and suggested storage conditions for the preservation of color photographs, films, and slides, please see *The Permanence and Care of Color Photographs: Traditional and Digital Color Prints, Color Negatives, Slides, and Motion Pictures* by Henry Wilhelm. (Preservation Publishing Company, 1993)

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