

PHOTOGRAPHS

5.3 Care of Photographs

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*"Behold thy portrait! — day by day,
I've seen its features die;
First the moustachios go away,
Then off the whiskers fly.
That nose I loved to gaze upon,
That bold and manly brow,
Are vanish'd, fled, completely gone—
Alas! Where are they now?..."*

So lamented a poet in an 1847 issue of *Punch* less than ten years after the invention of photography. The same could be written about many of today's photographic images. People have been concerned about the permanence of photographs for over 150 years. Over that time period dozens of photographic processes have been used. Each has its own unique deterioration characteristics and, therefore, its own specific storage and exhibition needs. However, there are common factors affecting the permanence of all photographs. By controlling these factors, the deterioration of a photograph can be slowed, and its longevity greatly enhanced.

CONTROL TEMPERATURE AND RELATIVE HUMIDITY

Control of temperature and relative humidity (RH) is critical to the preservation of photograph collections. Heat accelerates deterioration: the rate of chemical deterioration of most photographic materials is approximately doubled with each 10°F increase in temperature. High relative humidity provides the moisture necessary for harmful chemical reactions leading to much of the fading, discoloration, and silver mirroring visible in photograph collections. High relative humidity in combination with high temperature encourages mold growth and insect activity. Extremely low relative humidity may lead to desiccation and embrittlement of certain photographic materials, as well as curling of photographs or flaking of glass plate emulsions.

Excessive fluctuations in temperature and relative humidity are also damaging. These may lead to structural damage within photographs, such as cracking of emulsions or warping of photographic supports.

Temperature should be maintained at a set point at 70°F or below. In general, the lower the temperature, the better. An often recommended compromise between storage needs and staff comfort is 65–70°F. Areas used exclusively for storage should be kept at a lower temperature. Relative humidity for a mixed collection of photographs should be maintained between 30% and 50% with fluctuations less than 10% a day.

Storage at the low end of the RH range rather than at the higher end can significantly improve the long-term stability of several photographic processes. Cold storage is often recommended for particularly vulnerable materials such as color photographs, nitrate film, or safety film. When materials are taken out of cold storage they should be placed in a plastic bag and allowed to acclimate to room conditions before use. This avoids potential condensation and water on the cold surfaces of the object.

Temperature and humidity can be controlled using various forms of climate control equipment. When such equipment is not available there are still simple measures that can be taken to moderate environmental conditions. Avoid using attics (too hot) or basements (too damp) for storage areas. Often an interior room or closet offers the best environment.

Collections should be kept off the floor where they are more likely to be damaged by insects or water. Don't hang or store photographs on exterior walls, in bathrooms, or over heat sources such as fireplaces, radiators, or heating vents. Keep heat low in the winter, and encourage the staff and visitors to wear warm clothing. Seal windows and doors to minimize exchange of outside air. Store photographs in folders, boxes, and cabinets. This moderates the effects of environmental fluctuations on the objects housed inside. The use of air conditioners, dehumidifiers, and humidifiers can also be helpful. However, make sure that such equipment is improving conditions and not causing them to worsen. For example, air

conditioning can actually raise relative humidity under certain circumstances.

CONTROL AIR POLLUTION AND DIRT

Pollutants and particulate matter can damage photographs, causing fading or abrasion. Air purity is especially a concern in an urban environment.

Controlling air quality is difficult. Ideally, air entering a storage or exhibition area should be filtered and purified. Dust should be kept to a minimum. Gaseous pollution can be removed by chemical filters or wet scrubbers. Particulates can be mechanically filtered. Good air circulation is also necessary. Make sure air intake vents are not located near loading docks where trucks idle. Keep exterior windows closed when possible. Also, minimize interior sources of harmful gases. These include photocopying machines, many construction materials, paint fumes, cardboard, carpets, and janitorial supplies. Metal cabinets, such as powder-coated steel cabinets, are preferred over wood as wood often generates harmful peroxides. Finally, keep photographs in archival-quality enclosures.

Enclosures keep dirt off objects and may help decrease the effects of pollutants. Enclosures containing activated charcoals and molecular traps have recently become available and appear to be effective in this regard.

CONTROL LIGHT LEVELS

Light causes embrittlement, yellowing, and fading in photographs. Light damage is cumulative and usually irreversible. Direct sunlight is the most harmful light source; incandescent (tungsten) lighting is generally preferred to fluorescent. However, all forms of light are damaging and should be moderated.

Do not place valuable photographs on permanent display. Use copies whenever possible (color laser copies are an inexpensive, readily accessible alternative) and keep light levels as low as possible. Avoid hanging photographs where they will be exposed to daylight, especially direct sunlight, or to unfiltered fluorescent lights. Both of these light sources generally give off high amounts of damaging ultraviolet light. UV-absorbing sleeves can be used to filter out damaging rays from fluorescent tubes and UV-absorbing sheets can be placed over windows or in frames. Also, low UV-emitting bulbs are now available. Be aware that certain types of photographs are much more susceptible to light damage than others. Most color photographs fade rather quickly on display, while contemporary fiber-base black and white prints are essentially stable to light. The exhibition of nineteenth century photographs should be limited and carefully controlled.

CONTROL HANDLING

Fingerprints can cause chemical damage to photographs, resulting in bleaching or silver mirroring. Careless handling can cause physical damage such as abrasion, tears, or breakage. Use clean gloves or clean, dry hands whenever photographs are handled. Don't touch photographic emulsions. Handle photographs carefully. Proper enclosures (sleeves, albums) provide protection from fingerprints and physical support to protect against abrasion or breakage. Whenever possible, avoid handling altogether by providing users with photographic duplication or photocopies.

If photographs must be labeled, labeling should occur on the reverse along the edge. In most cases ordinary lead pencils are recommended. Where lead pencils do not work (such as with resin-coated [RC] prints) black India ink is recommended. Berol Prismacolor non-photo blue 919, Berol China Marker brite blue 167T, or PITT (Faber Castell) Graphite Pure 2900B will write on RC paper.

CONTROL STORAGE SYSTEMS

Proper storage materials are essential for the long-term stability of photographs and negatives. They provide much needed physical support and protection for fragile objects and at the same time act as a barrier between the photograph and a potentially unstable environment. It is of utmost importance that storage materials be unreactive to the photographic material. Much damage has been done in the past through the use of reactive materials such as acidic ground-wood paper sleeves, rubber bands, paper clips, pressure-sensitive tapes, and staining adhesives such as rubber cement or animal glue.

All enclosures used to house photographs should meet the specifications provided in the International Organization for Standardization (ISO) ISO Standard 18902:2001,¹ and should have passed the Photographic Activity Test (PAT) as specified in ISO 14523:1999.² The first standard provides specifications on enclosure formats, papers, plastics, adhesives, and printing inks. The PAT has two components: a test to detect image fading resulting from harmful chemicals in enclosures, and a test to detect staining reactions between enclosures and gelatin. Consumers should contact their suppliers to see if their products have passed the PAT.

When storing photographs it is best for each object to have its own enclosure. This reduces damage to the photograph by providing it with physical protection, support, and isolation from any damaging components of other photographs. Prints and negatives should not be in contact with each other in the same enclosure. Acceptable enclosures may be made of either paper or plastic.

Paper enclosures:

- are opaque. This protects objects from light, but may result in increased handling for viewing.
- are porous. This protects the object from the accumulation of moisture and detrimental gases.
- act as a buffer against changes in humidity.
- are available in buffered and non-buffered stock. Choosing between the two is not the crucial issue it was once thought to be. Most important is choosing a paper that has passed the Photographic Activity Test.
- may contain activated charcoal and zeolites. These papers, such as MicroChamber, appear to moderate the deteriorating effect of pollutant gases.
- should not be made of kraft or glassine paper.

Plastic enclosures:

- are transparent. Photographs can be viewed without removal from the enclosure, thus reducing handling.
- can trap moisture and cause ferrotyping (sticking, with a resultant glossy area).
- should be made of uncoated polyester, polypropylene, or polyethylene. Soft polypropylene and low density polyethylene (both used in ring-binder storage pages) have additives or coatings that cannot be properly evaluated.
- should not be made from polyvinylchloride (PVC).
- should not be used to store nitrate or older safety film negatives as this may hasten their deterioration.

Avoid using adhesives that may cause chemical damage. Adhesives that are particularly damaging include rubber cement and the self-stick “magnetic” pages of photograph albums. Also, avoid pressure-sensitive tapes and damaging fasteners such as paper clips or rubber bands. Because adhesives can be problematic, photographs that are stored in paper envelopes should be positioned with their emulsion away from the seam. Also seams should be on the sides of the enclosure, not through the center.

Once materials have been properly housed in window mats, folders, sleeves, or envelopes, they should be stored in cabinets or boxes of archival quality. Horizontal storage is preferable for many photographic prints and oversize photographs. It provides overall support to the images and prevents mechanical damage such as bending. Vertical storage is often preferred for negative collections, but it can also be very effective for certain photographic print collections. Vertical storage is often more efficient and may make access to a collection easier. Glass plate negatives require vertical storage in order to prevent breakage. However, very large plates may be supported horizontally. When using vertical storage, protect materials by placing them in acid-free folders. These folders should then be stored in either hanging files or document storage boxes. Boxes should be housed on metal shelves or in metal cabinets.

Where possible, materials of similar size should be stored together. Mixing of sizes can cause abrasion or breakage. Regardless of the size of the object, all enclosures within a box should be the same size, should be larger than the materials stored in them, and should fit the box or drawer. Boxes and files should not be overcrowded.

NOTES

1. International Organization for Standardization—Photographic Processed Films, Plates and Papers—Filing Enclosures and Storage Containers, ISO Standard 18902: 2001. (Geneva: ISO) 2001. 1, rue de Varembe, Casa Postale, LH-1221, Geneva, Switzerland. (<http://www.iso.org>)
2. International Organization for Standardization—Photographic Activity Test, ISO Standard 14523: 1999. (Geneva: ISO) 2001. 1, rue de Varembe, Casa Postale, LH-1221, Geneva, Switzerland. (<http://www.iso.org>)