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Photograph Preservation: Basic Methods of Safeguarding Your Collections

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The series editor welcomes proposals for future publications and comments from readers.

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PHOTOGRAPH PRESERVATION: BASIC METHODS OF SAFEGUARDING YOUR COLLECTIONS

by
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of
The Better Image
Conservation of Photographs

INTRODUCTION

The preservation of photograph collections is an important element in the overall administration of any archival repository. More sensitive than most paper-based records, photographs have a complex chemistry that must be taken into consideration if they are to be preserved into the future. Although the range of photographic processes varies widely, certain general principles can be applied to all photographs to ensure their safe keeping. What follows are some basic methods of safeguarding photograph collections, starting with a general introduction to their structure and composition. The emphasis throughout this leaflet will be on general principles rather than the specifics. A bibliography will provide sources for additional information.

THE STRUCTURE OF PHOTOGRAPHS

What exactly is a photograph? To answer this seemingly simple question you must first ask what type of photograph do you mean? Many different types of photographic processes have been introduced, have flourished and have then passed on in the short

150 year history of this image-making technology. Most types of photographs, though of course exceptions can always be found, consist of a laminate or layered structure. This structure can be divided into three components. These are:

1) a primary support layer,
2) a binder layer and
3) the final image material.

The final image material is generally embedded within the binder layer which rests upon the primary support.

A wide variety of **Primary Support Materials** have been used historically for photographs. These include: **Metal** (silver coated copper plates for Daguerreotypes, and japanned iron sheets for Tintypes); **Glass** (for ambrotypes, glass plate negatives, lantern slide positives); **Paper** (positive prints of all types and some early nineteenth century negatives); and **Plastics** (film negatives [acetate, nitrate, polyester etc.]. Increasingly today **Resin Coated** or **RC Papers** are in widespread use and entering archival collections. These RC papers are coated with plastic on either side to facilitate processing and reduce curl.

Binder Layers are the next component part in many photographic images. These layers actually hold within them the material that makes up the visual image. Throughout photographic history, the most common binders have consisted of **albumen, collodion or gelatin.** The stability of these protective binders is essential to ensuring a long lasting, unaltered image. For photographs on paper, albumen was the predominant binder in use during most of the nineteenth century while gelatin has predominated for the past century for both positives and negative materials. Many early

photographs (eg. salted paper prints) and later "art" photographs such as platinum prints do not have a true binder layer. In these photographs the image material is embedded directly into the primary support paper fibers without the use of a binder or "carrier."

The part of the photograph that translates into the visible image is made up of either finely divided metallic particles or, in the case of color photographs, dyes or pigments. Image materials can consist of metallic silver, platinum, iron, and a wide variety of color dyes and pigments. In many cases a combination of two or more metals is found such as in gold toned silver albumen prints. The preservation of photographs involves the preservation of these delicate image particles, the binder layer, and the support or base material.

The many combinations and variations in photographic processes one is likely to encounter in a real life situation are not easily summarized in a brief overview and can be very complex indeed. However, some of the basic considerations to keep in mind are that whatever the process, a "photograph" is likely to be a composite of materials, usually in a laminate or layered configuration, with all the attendant chemical and physical liabilities this entails.

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PRINCIPAL FACTORS CONTRIBUTING TO THE DETERIORATION OF PHOTOGRAPHS

Improper Storage Environments, Poor Quality Housing Materials, and **Inappropriate Handling Practices** are among the major factors that contribute to the deterioration of photographs. These factors can be countered in several ways. Some are more easily accomplished while others require greater outlays of time, money, and energy. Whatever the level of staff expertise and commitment available, efforts can always be made to improve upon Storage Environments, Housing Materials and Handling Practices within any institution. Other factors contributing to photograph deterioration such as **Biological Attack, Processing Faults** and **Inherent Vice** and **Exposure** will also be touched upon.

When we speak of the **Storage Environment** we must keep in mind a number of different considerations. The first and foremost is the issue of **Relative Humidity** (RH). However, relative humidity cannot be considered without its constant and integral companion, **Temperature.** These two must be dealt with together for the very definition of RH revolves around temperature: Relative Humidity is the amount of moisture within a given volume of air expressed as a percentage of the amount of moisture that air can hold at a given temperature.

The relative humidity levels within a storage environment are important because moisture is necessary for most of the chemical reactions that cause photographs to deteriorate. High levels of RH will promote detrimental chemical reactions in general and

certainly within photographic materials. At levels above 60% there is also the increased likelihood of mold spores germinating.

Inappropriate Relative Humidity levels also have a devastating effect on the photograph as a physical object. Elevated RH levels will cause some binders to swell and soften. Gelatin photographs are particularly susceptible to swelling and, in their softened state, they may adhere to any surface with which they are in contact. Once photographs are stuck to paper fibers, plastic enclosures, covering glasses or other photograph emulsions, the risk of physical damage rises. Often this type of damage is irreversible. Very low levels of RH, while theoretically slowing down chemical reactions, should be avoided due to the potential for physical deformation of the photograph. When RH levels are too low (below 30%), binder and support layers can dessicate, causing cracking, splitting or overall embrittlement.

Whereas there are upper and lower limits to the RH levels recommended, temperatures can be lowered almost indefinitely to slow many chemical reactions with no adverse effects as long as the RH is also closely monitored. Although quite "high tech" and often beyond most institutional budgets, cool/cold storage facilities can be used effectively to preserve valuable photographic materials. More and more of these cool/cold facilities are being installed, and it is well worth the effort to research the possibility of sharing facilities between interested institutions as a means of providing such storage for particularly vulnerable photographs.[1] Within an institution on a modest budget, cold storage can be provided for a limited number of photographs with a self-contained, humidity controlled refrigerator. It should be noted that all of these systems

may require monitoring and maintenance and that special precautions may be necessary when removing photographs from cool/cold storage to avoid the formation of condensation.

Precise recommendations on optimal conditions for specific processes may vary slightly depending upon the printed source. It may also be impractical to provide optimal conditions for a collection of mixed photographic materials. However, considerable efforts should be made to keep temperature levels within a moderate framework, (68°F +/- 3°F) and relative humidity levels between 35 - 45% +/- 5%. There is consensus in the field of photograph conservation that the strict control of relative humidity levels is the most effective method of slowing the deterioration of photographs. To be avoided at all costs are the cycling of relative humidity and temperatures on a daily, weekly or monthly basis.

The best way to begin evaluating your storage environment is to know what conditions currently prevail. This can be done by properly monitoring those conditions using a recording hygrothermograph or taking regular readings with a dry bulb thermometer and a sling psychrometer. Data collected with these instruments over a period of time will form the basis for determining the best existing storage space and for formulating preventative steps to control the environment.

Not to be overlooked in the factors that can damage photographs is the broad category of **Biological Attack**. The range of biological agents that damage photographs runs from simple molds through insects to rodents. The organic nature of binder materials and paper supports provides sufficient nutrients to allow living organisms to

thrive given the right conditions. These conditions include a source of moisture (RH levels above 60% can be enough to germinate dormant mold spores), stagnant air, and warmth. Accumulations of dust and particulates also tend to attract insects and other small pests.

The type of damage to photographs that can occur if suitable conditions are present include staining and deterioration from mold growth and actual loss as insects and especially rodents gnaw away at photographic supports, taking with them valuable image material. Staining may also be caused by the defecation of digested matter that insects often leave behind as they work their way through a collection.

These and related problems may be avoided by carefully examining new materials accessioned into a collection item by item. Any evidence of mold or insect infestation, past or present, should be noted, and those items suspected should be moved to drier conditions and isolated immediately within sealed polyethylene bags until they can be looked at by a conservator or someone with appropriate knowledge of these matters. The use of an ultraviolet lamp can aid in determining whether or not mold colonies are active or dormant.[2]

The following protective steps can be taken to lessen the risk of biological activity within a collection:

A) Initial review of collections entering a repository;

B) Strict adherence to keeping storage and work areas free of all food and drink including wrappers and empty beverage cans;

C) Periodic review of storage conditions;
D) Good housekeeping practices; and
E) Scheduled and supervised extermination if it is determined to be necessary.

Remember that damage from biological activity is usually irreversible. Staying alert to the possibility of problems within your collection is a responsibility that must be faced.

Another preservation consideration to be aware of is **Air Quality.** Photographs are particularly susceptible to a number of airborne chemical compounds commonly found in urban environments. The burning of fossil fuels, oil and coal primarily, account for much of their presence. These airborne compounds include oxidant gases such as nitrogen and sulfur dioxides, ozone and peroxides. Many of these chemicals combine with atmospheric moisture to generate compounds that can deteriorate photographic materials.

Other sources of detrimental chemical compounds can be found in oil based paints, wood products and their finishes, office furniture, carpet glues, various cleaning solvents, and even electrostatic copiers. The latter are known to produce quantities of ozone that can be damaging to photographs. Perhaps the most insidious source of gaseous pollutants comes from decomposing nitrate and acetate film bases within collections. These standard negative materials, produced from the turn of the century into the 1960s and 1970s, are now often found in an advanced state of deterioration. In this state they can release large and quite noticeable quantities of acetic and nitric acids respectively. The typical vinegar smell of the former is a commonplace in many institutional collections, and the problems with nitrate negatives are well documented.[3]

In addition to chemical compounds, **Particulates** are another form of airborne contaminant that cause deterioration. Common dust or soot can abrade soft binder layers and bring unsightly dirt into the visual area. Such particulates also attract chemical compounds to themselves as they pass through the air and can bring these contaminants into direct contact with a photograph. Once settled upon a photograph's surface they may then act as sites for future chemical interactions.

Properly designed and maintained air filtering screens on a building's air intake and distribution system will go far toward reducing the amounts of particulates within a storage environment. Proper positioning of air intake ducts and the use of air "scrubbers" within the ventilation system can make inroads toward the control of atmospheric contaminants. Recently smaller room-sized air purifiers have been developed and marketed. These reasonably priced units can be useful in controlling air quality within enclosed storage spaces for institutions without the means or prospects for a full heating, ventilating and air conditioning (H.V.A.C.) system. Unfortunately the control of gaseous pollutants is quite difficult, and the means to monitor their presence is often beyond the reach of many repositories. By simply and inexpensively providing layers of good quality protective housings, much can be done to guard against poor air quality.

It may seem ironic that the one element essential in the creation of a photograph can also act as its worst enemy. Exposure to **Light** can contribute significantly to the fading and deterioration of many types of photographs. Some photographic processes are much more susceptible to damage from exposure than are others, depending

upon their component parts. Well-processed silver images do not fade in light as such, while color dyes used in other processes are susceptible to fading both in the light and in the dark. Among the most sensitive binder layers are albumen, followed by gelatin. These both have a tendency to discolor with prolonged exposure. Paper supports will also undergo deterioration with exposure to light. The majority of twentieth century processes utilize a baryta coated paper base, which serves as a protection against radiation. Early resin coated papers have a tendency to crack on exposure. Later resin coated papers reportedly have stabilizers added that reduce this tendency.

Certainly the problems of some color processes are well documented.[4] Most of us probably have personal family photographs that have faded quite noticeably within our own lifetimes. Color materials, with a few exceptions, are generally among the most light sensitive photographs in our collections. Hand coloration, often applied to monochromatic images in the past, is often quite fugitive when exposed even for brief periods. For their long term preservation these materials need special precautions for their storage and/or their exhibition.

What we commonly refer to as light is actually only the visible portion of the electromagnetic spectrum. This spectrum ranges well beyond the visible portion, extending into ever longer wavelengths, towards infrared, and towards the shorter, higher frequency, more damaging wavelengths towards the ultraviolet (UV) region.

Although **exposure to all radiation is harmful** to photographs, the shorter wavelengths found in the UV portion are more damaging.

Daylight is a rich source of ultraviolet radiation, hence the commonsensical recommendation to keep valued photographs from exposure to direct sunlight. However, fluorescent lights are also a source of UV radiation. Windows, skylights, even open doors, can all be sources of exposure to UV radiation. It is important to remember that although protection from UV radiation in the form of tungsten lights, UV shields on light sources, and UV filtering glazing is always recommended, this will not remove other harmful rays from the remainder of the spectrum.

The most important consideration to keep in mind when thinking of potential exposure problems is expressed as the following equation:

EXPOSURE = DURATION x INTENSITY.

In our efforts to limit total exposure, we can either shorten the duration of exposure, lower the intensity of the illumination, or ideally do both at the same time. The methods of doing this range from administrative decisions on whether or not to exhibit original photographs and if so, for how long, to providing plastic UV filtering sleeves over fluorescent bulbs in areas where original photographs are hung. Certainly institutions are more than ever aware that permanent exhibition of original materials is no longer appropriate. Increasingly the use of facsimiles or high quality reproductions are seen as an effective method of displaying photographic images without exposing originals to possible damage.

The importance of **Enclosure Materials** cannot be overemphasized. Whether negative or positive, most photographs spend the vast

majority of their lives in direct contact with either the paper or plastics used in storage envelopes, sleeves, folders, matboard, or other manufactured enclosures. For preservation purposes, at the very least those materials in direct contact with photographs must be of very high quality if damage over time is to be avoided. Poor quality and/or poorly designed storage enclosures can lead to severe damage, whereas a well designed, properly manufactured, and carefully chosen enclosure can add years of life to a photograph collection as it protects from fingerprints, creases, abrasions, and other problems.

The terms "acid free" and "archival," used liberally by vendors, can be quite misleading. Contrary to popular belief, the designation of "acid free" is not all that need be specified in securing proper storage materials for photographs. Acidic paper stock can be damaging, but photographs are also susceptible to deterioration from peroxides, lignin, colorants, additives, and other impurities often found in manufactured products. As a general rule, the products used in direct contact with any photographic material should have passed the Photographic Activity Test (P.A.T.).[5] This designation will usually be cited by any vendor who has had their materials so tested and approved. Be aware of such technical factors as fiber content, and search out high rag or alpha cellulose papers. Take note of whether the paper is buffered or unbuffered. With plastics, ask whether they are coated or uncoated and specify the latter. If any vendor does not readily come up with specific answers, it might be wise to search out another vendor.

One major decision when it comes to **Enclosures** is whether to employ **Plastic or Paper** as housing materials. Both materials have

advantages and disadvantages that must be carefully weighed before undertaking a large scale rehousing project.

Plastics offer a translucent sleeve that can minimize wear and tear caused by pulling a photograph out of an opaque housing to identify it. The image is readily visible without handling it directly. To their disadvantage, they are generally more expensive, heavier and can create a static charge that might attract dirt and particulates. In addition, plastic cannot be labeled with pencil. Generally recommended plastics are polyester (trade names are Mylar and Melinex), polypropylene and polyethylene. These are all clear, dimensionally stable, inert, and readily available in a wide variety of formats from archival suppliers.

Good quality paper sleeves, folders, envelopes, and interleaving can be found made of either buffered or non-buffered paper. Various designs and a variety of formats are readily available; they can all be labeled easily with pencil; and their cost is relatively small, especially when purchased in large quantities. To their disadvantage, paper sleeves are opaque, requiring that the enclosed photograph be removed for viewing, thus adding to potential handling problems.

Many conservators are recommending that certain processes be stored only in neutral pH or non-buffered papers versus buffered papers. The difference between these two types of paper is that the buffered material has a compound, usually a calcium or magnesium carbonate, added during manufacture to counter acidic degradation of the paper fibers. Non-buffered papers do not have these additives and typically have a pH of approximately 7.0 or roughly

neutral, whereas the former buffered papers measure from 7.5 to approximately 8.5 on the pH scale.

Among the processes requiring non-buffered enclosures are cyanotypes ("blue prints") and dye transfer color prints.[6] Other photographic materials that are actively giving off acidic gases such as deteriorating acetate or nitrate negatives, or materials that are mounted onto very acidic secondary support boards, or items that may be stored in less than appropriate environments, may be better housed in buffered enclosures. Some conservators and custodians of collections uniformly use buffered papers, whereas others quite responsibly prefer a combination of paper enclosures, depending upon the process to be sleeved. For archival collections where resleeving projects may take place at best every fifty years, and where there are concerns about the environment, buffered enclosures may prove to be the best general option.

Design of the enclosure is also an important consideration. Numerous examples exist where the adhesive seam of paper envelopes, often running down the center of storage envelopes, has caused deterioration to the silver image and binder layer directly beneath the adhesive line. Likewise, typical thumb cut openings on protective sleeves invite the user to grasp the contents between thumb and forefinger thereby raising the likelihood of leaving greasy fingerprints on the photograph stored within. Properly designed enclosures will remove the possibility of damage and provide overall protection.

Projected usage, labeling requirements, and budget considerations will ultimately determine an individual institution's decision on

whether to use plastic enclosures or paper enclosures or a combination of the two. Whatever selection of enclosure materials is finally made, a carefully considered program of rehousing photographs is an excellent means of improving their preservation.

Very little can be done about **Processing Faults** made during the initial production of photographs. Usually the effects of poor processing, caused by incomplete fixing and/or washing steps or the use of exhausted chemical baths, are evident as amorphous yellowish or brownish staining in the image. This damage, once done, is practicably irreversible. Although some in the field tend to "refix" photographs suspected of being poorly processed, this type of treatment is very radical, potentially dangerous and should not be undertaken unless it is determined to be absolutely necessary and then only by a professional conservator.[7] With modern photographs entering a collection or being produced as part of a duplication program, strict quality control should be required to ensure that all incoming photographs will have met or exceeded all relevant processing standards as published by the American National Standards Institute (A.N.S.I.).

Some photographs may be said to carry the seeds of their own destruction within them. By the very manner of their manufacture, some materials are destined to deteriorate unless extraordinary measures are taken. This problem that we call **Inherent Vice** is one that is very difficult to counter. Perhaps the most obvious example of inherent vice is the well known problem with nitrate negatives. As the first practical flexible plastic support for photographic images, nitrate negatives were in use from the 1880s through the 1920s. Nitrate as a primary support material continued

in the motion picture industry until the early 1950s. It was not long after its inception, however, before one singular problem became apparent: it is highly flammable. Given the high temperatures generated by early projection bulbs and the regrettable poor storage facilities films were often subjected to, there were many and significant losses of nitrate films due to fire. It should be noted that once ignited, nitrate film is almost impossible to extinguish as it generates its own oxygen, thereby fueling its own combustion. In a less dramatic manner, under less than ideal conditions, nitrate negatives undergo a slow and irreversible deterioration moving along graded stages to their ultimate destruction.

The photographic industry's answer to the nitrate problem was the introduction of acetate as the base material for its negative film products. Although thought to be an improvement over the potentially dangerous nitrate stock, acetate, or so called "safety film" materials have come to be seen as very problematic themselves. Numerous collections across the country have ample evidence of what has come to be known as the "Vinegar Syndrome," named for the acetic acid aroma (typical of vinegar) that surrounds the negatives as they deteriorate. As these acetate films age, they undergo both chemical deterioration and physical distortion. The various layers in these films expand and contract at differing rates as components in their manufacture are released. The damage done by this type of aging is often devastating and irreversible. These materials are inherently unstable and nothing short of long term cold, dry storage or a thorough duplication program can slow down the deterioration process or preserve these images before they are lost for practical purposes.[8] Stripping techniques, though expensive, can be undertaken to separate gelatin

binder layers from deteriorated supports. In this manner even very cockled and unprintable negatives can be printed. This is one reason why original negatives, however deteriorated, should not be discarded. These should be properly stored until the need arises and/or funds become available to treat selected images.

By far and away most damage inflicted upon photographs is done by **Humans**. Countless examples of damage from handling, carelessness, neglect, avoidable accident, uninformed or overly enthusiastic attempts at conservation, even willful damage can be found. To these examples can be added cases of over-exposure from indefinite exhibition, catastrophic losses from poor storage conditions, and disasters occurring without a sufficient emergency plan in place.

At the same time that humans are the major culprit in photograph deterioration, they also offer the sole hope for the preservation of photographs. With proper training, an awareness of the complexities and historical value of our photograph collections, and the proper respect these images should invoke, we have it within our capabilities to provide for the future preservation of these sometimes historic, sometimes prosaic, but always engaging photographic images.

OVERLEAF: *Mary Lynn Ritzenthaler, Gerald J. Munoff, and Margery S. Long.* *Archives and Manuscripts: Administration of Photographic Collections.* *Basic Manual Series. Chicago: Society of American Archivists, 1984. Reprinted with the permission of Society of American Archivists.*

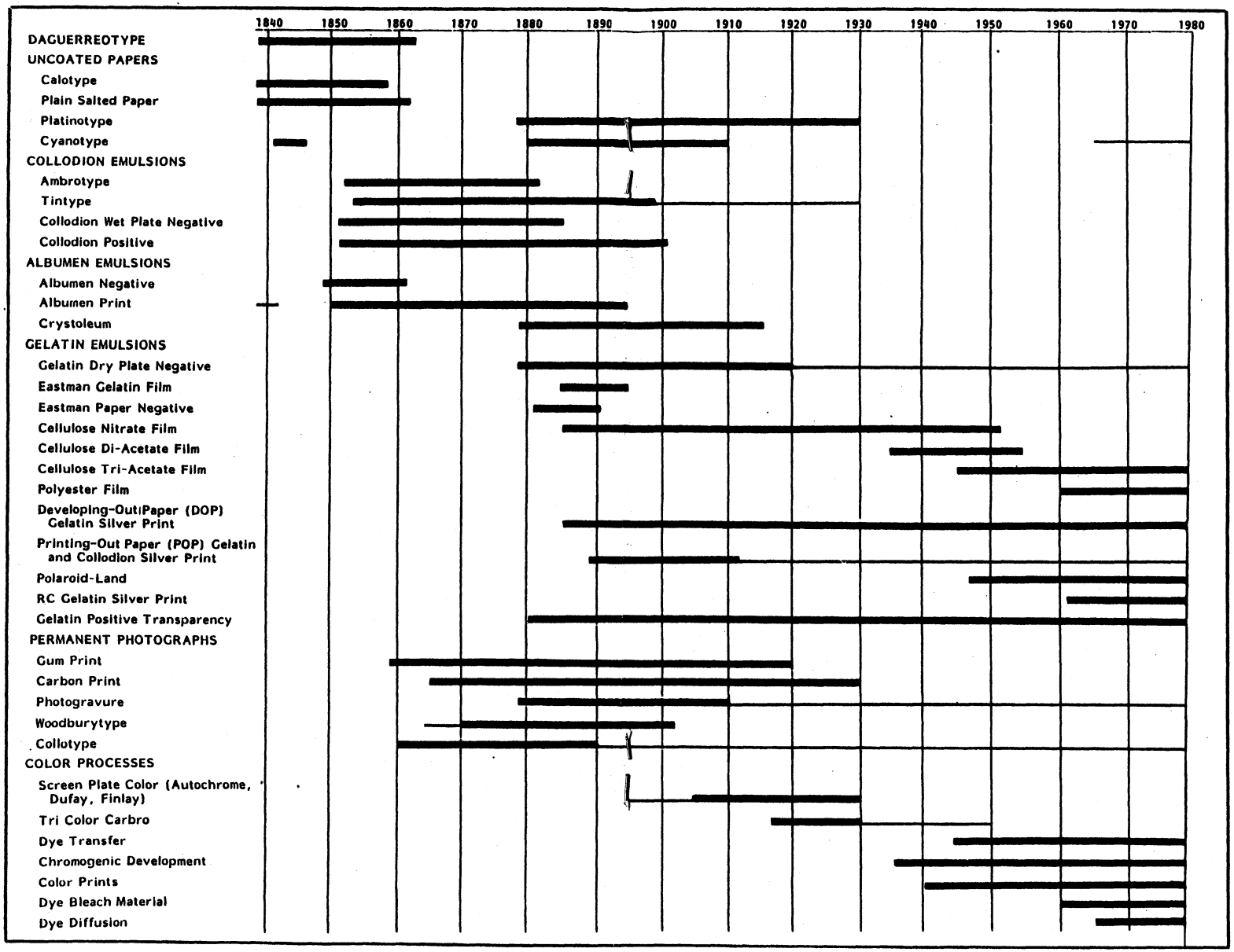

Figure 1. Chronology of use of photographic processes. The dates represent approximate dates of use in the United States rather than invention or discovery. Dates are approximate and will vary by geographical area and photographer. The thickness of line indicates relative use. Processes listed are those most commonly found in repositories, with the exception of calotypes, crystoleums, and some of the color processes.

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SOME ESSENTIAL ELEMENTS OF A PHOTOGRAPH PRESERVATION PROGRAM

1. **Collection Survey:** Conducted by a qualified preservation administrator or photograph conservator, a collection survey should form the basis for all future conservation/preservation action. Included among the topics covered in a survey should be the following:

A) Evaluation of Storage Environment: Monitoring instruments will be essential to properly assess current conditions. Evaluation of results and recommendations for improving conditions, as necessary, should be provided.

B) Inspection of All Film Base Negatives to Identify Deteriorated Nitrate and Acetate Negatives Requiring Duplication or Cold Storage.

C) Recommendations for the Storage and Housing of Photographic Prints, Negatives, Albums, Scrapbooks, and Cased Objects

D) Identification of Specific Photographs Requiring Conservation Treatment: A list of priorities for treatment should be generated in the course of an overall survey or in the course of exhibition or researcher requests. Any at risk photographs should be removed from circulation and placed in a safe location for future attention.

2. **Emergency Preparedness and Response Plan:** No institution large or small should be without a suitable, written emergency preparedness and response plan. Of course, not all incidents are immediate full-scale disasters and a well-written plan can keep those small emergencies from becoming bona fide disasters. They should also provide a logical, concrete plan to put into effect without hesitation or debate in the event of a problem. There is ample literature in the field to provide basic guidance to begin work on an institutional plan.[9] Tailoring an already preexisting plan to fit an individual institution's specific needs may save a lot of staff time and energy.

At the very least an up to date telephone tree (home and office numbers) of all staff from top to bottom, along with nearby sources of necessary materials, should be posted prominently and disseminated throughout the repository. Ideally a cabinet should be stocked with emergency materials in advance, ready for use in the case of an emergency. All staff should be familiar with the plan and its implementation.

3. **Duplication Program for Deteriorated Negatives:** With collections of photographic negatives, a properly planned duplication program is essential to both safeguard the negatives from overuse and to ensure that the images are made available to the public. Fragile glass plate negatives cannot be handled repeatedly without risk of damage, and deteriorating acetate and nitrate negatives may need to be duplicated before degradation progresses to the point where image material is lost or where printing becomes difficult or impossible.

A responsible Duplication Program begins with developing strict written specifications prior to issuing contract proposals, making provisions for quality control and for the proper cataloging, housing and storage of the original and duplicate images. In selecting a vendor of duplication services, attention should be given to securing evidence of competence from the vendor and/or from professional colleagues who have had experiences with similar types of projects. The choice of whether to use 35mm, 70mm, or 4x5" film for original image capture will be dependent upon the condition, number, and format of photographs to be duplicated and available resources. Whereas the larger format negatives will provide more detail and enhance the possibility of sharper enlargements, cost effectiveness usually must be factored in.

For very large collections or those in very poor condition the possibility of using continuous tone microfilm should be investigated.[10] Although this may be less than ideal in terms of being able to make enlargements of individual images, the advantages in terms of cost and visual accessibility are certainly worthy of discussion.

The ultimate benefits of any Duplication Program are found in the increased accessibility to the public and for research and publication of otherwise inaccessible images. The double benefit of a well-conducted duplication program is that this increased accessibility can come hand in hand with an improvement in the preservation of original photographic materials.

4. **Education of Staff and Patrons:** Written guidelines are essential to codify handling and usage practices and minimize

misunderstanding among staff and researchers. These guidelines should accompany all in-house staff and user training. Access to rare, valuable, or fragile original materials should be limited by providing facsimiles or photocopies for reference whenever possible. Access to original photographs should be carefully screened, and their use closely monitored. Cotton or surgical gloves should be provided for safe handling.

5. **Promotional Efforts:** With money in perpetually short supply, anyone responsible for the preservation of a photograph collection must naturally search for sources of funding. Fortunately photographs often elicit more excitement and interest from potential donors and granting organizations than many paper-based collections. Advantage should be taken of this point to promote the conservation and preservation of photograph collections. Often local sources can be approached to preserve fragile and otherwise inaccessible negative collections by generating duplicate negatives or producing printing masters. Other projects may include rehousing of images or funding individual conservation treatments of damaged photographs. Many local, state and federal sources are also available to help survey, duplicate, rehouse and/or make accessible photographic collections.[11]

Although the promotion of photograph collections is to be encouraged, it must be remembered that the originals should be kept sacrosanct and not abused in the process.

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ELECTRONIC IMAGING

Given the speed of developments in electronic imaging technology and the likely incorporation of that technology into the field of photograph preservation, some mention must be made of the basic issues involved.

Electronic imaging for preservation purposes involves the capture of conventional continuous-tone photographic images for storage or display as electronic or magnetic images. Once digitized, images can be manipulated, accessed, and printed out much more quickly and easily than is possible using traditional means such as microfilm. When you add the capacity to mix textual information of nearly any length with high quality audio and the visual presentation of both still and moving images such as CD-ROM systems provide, the advantages over conventional photographic technology become even greater.

The major drawback to these technologies is their rapid development. Frequent changes in hardware manufacture can make machine readable digital records inaccessible within a short span of time unless they are consistently transferred to ever more modern record materials to keep up with the technology and to avoid loss of information through deterioration.

In response to ever-increasing requests from many public institutions for funds to make photographic images accessible to the public and researchers via interactive computers, major granting organizations, including the National Historic Publications and Records Commission, the National Endowment for the Humanities,

the National Science Foundation, and the U.S. Department of Education, issued a special report entitled "Guidance Issued for Grants to Convert Research Materials to Electronic Forms". (See bibliography) Given the state of flux in the field, this publication was "intended to embody a guiding, not prescriptive, approach. Instead of adopting and enforcing standards for technologies and practices that are in a rapid state of evolution, the objective was to support the creation and management of digital materials in a manner that anticipates the need for periodic technological refreshment and conversion." Any institution interested in exploring the possibility of digital conversion of photographic records would be wise to obtain a copy of this report to assist in developing their program.[12]

As professionals charged with preservation responsibilities, we must always remember that whatever the perceived immediate benefit of electronic imaging, the safety and long term preservation of the original photographs must be kept paramount. Without the long term preservation of original materials, there will be nothing to fall back upon should today's digital technology prove to have unforeseen drawbacks sometime in the future.

CONCLUSION

In this brief leaflet, there has not been space to delve deeply into the many complex issues that surro und the preservation of photograph collections. We encourage the use of the publications included in the attached bibliography and interaction with

specialists in the field of conservation and preservation as questions arise. It is our hope that the preceding will have had a stimulating effect on those who must advance the cause of photograph preservation.

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FUNDING SOURCES

Institute of Museum Services (IMS)
1100 Pennsylvania Avenue NW, Suite 510
Washington, DC 20506
202 - 606 - 8536

The Getty Grant Program
401 Wilshire Boulevard, Suite 1000
Santa Monica, California 90401 - 1455
301 - 393 - 4244

National Endowment for the Arts (NEA)
Museum Programs
1100 Pennsylvania Avenue NW, Suite 624
Washington, DC 20506
202 - 682 - 5442

National Endowment for the Humanities (NEH)
1100 Pennsylvania Avenue NW, Suite 503
Washington, DC 20506
202 - 606 - 8400

National Historic Publications and Records Commission (NHPRC)
National Archives
Washington, DC 20408
202 - 501 - 5610
Various state and local sources also are available.

SELECTED RESOURCES
GENERAL INFORMATION

American Institute for Conservation
1717 K Street NW, Suite 301
Washington, DC 20006
202 - 452 - 9545

Image Permanence Institute
Frank Gannett Memorial Building
P.O. Box 9887
Rochester, New York 14623 - 0887
716 - 475 - 5199

The International Museum of Photography at George Eastman House
Conservation Department
900 East Avenue
Rochester, New York 14607
716 - 271 - 3361

National Archives & Record Administration
Document Conservation Branch
Seventh and Pennsylvania Avenue
Washington, DC 20408
202 - 501 - 5360 &/or 301 - 713 - 6700

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DUPLICATION SERVICES

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413 - 274 - 6901

Museum Photographics
11 Centre Park
Rochester, New York 14620
716 - 232 - 3980

Photo Preservation Services
1001 Prince Street
Alexandria, Virginia 22314
703 - 739 - 6091

Preservation Resources, (formerly MAPS)
9 South Commerce Way
Bethlehem, Pennsylvania 18017
610 - 758 - 8700

CONSERVATION TREATMENT / SURVEYS

American Institute for Conservation
1717 K Street, NW Suite 301
Washington, DC 20006
202 - 452 - 9545
(Referral Service)

The Better Image
Post Office Box 164
Pittstown, New Jersey 08867
908 - 730 - 9105

Conservation Center for Art and Historic Artifacts
264 South 23rd Street
Philadelphia, Pennsylvania 19103
215 - 545 - 0613

Northeast Document Conservation Center
100 Brickstone Square
Andover, Massachusetts 01810 - 1494
508 - 470 - 1010

CONSERVATION SUPPLIERS

(Selected list, not intended as an endorsement of any of the following sources)

Archivart
A Division of Heller & Usdan, Inc.
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716 - 271 - 8960 or 800 - 828 - 9859
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Talas
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New York, New York 10012
212 - 219 - 0770
Fax: 212 - 219 - 0735
(General Supplies)

Taylor Made Company
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Fax: 215 - 459 - 3867
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University Products
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Holyoke, Massachusetts 01041 - 0101
800 - 762 - 1165
Fax: 413 - 532 - 9281
(General Supplies)