

# **Photographic Arts Stabilization and Restoration Procedures in the Event of a Catastrophic Water Loss**

## **Abstract**

A water loss that damages a large photograph collection can make an ordinary restoration project extremely complex. The restoration of photos, particularly antique photos, is beyond the capability of most restorers, but they can play a valuable role in reducing the amount of damage sustained by a collection. Restorers need to be aware of the basic photograph types, the histories involved, and the stabilization procedures for each so that they can act competently when the need arises. This paper discusses a brief history of photography and photographic mediums, and the procedures involved in stabilizing different media so that a conservator can restore them. Also discussed is the qualifications and selection of a competent conservator to complete the restoration of a body of photographs.

**Photographic Arts Stabilization and Restoration  
Procedures in the Event of a Catastrophic Water Loss**

By  
Chris Cole, CR, WLS  
Sentry Construction Company, Inc.  
3042 Somerset Dr.  
Macon, GA 31206  
(478)784-7080

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## Introduction

What is “fine art”? One definition says it is

- a. Art produced or intended primarily for beauty rather than utility.
- b. Any of the art forms, such as sculpture, painting, or music, used to create such art. Often used in the plural.
- c. Something requiring highly developed techniques and skills: *the fine art of teaching*.

Ever since the time of early man, art in various forms has existed. Cave paintings dating back to the Old Stone Age, which ended more than 10,000 years ago, have been found in Cro-Magnon caves in Dordogne, France, discovered in 1837.<sup>1</sup> Some of these sculptures date back more than 30,000 years! Other examples of “early man” art include stone fertility figurines and carvings of animals. It is doubtful that any museums existed at that time, but it is not unreasonable to expect that certain individuals of that time would appreciate these figures more than others, and collect them. The collection of art objects could go back tens of thousands of years! This practice of creating and collecting art objects in various forms continued through the ages. Some objects, at the time of their creation, were not intended as art at all. Many highly valuable pieces today began as lowly cookware and storage containers, and were probably not looked on as “art” by the creator or user. The ones that have survived, however, reveal that many of these objects were decorated by their maker, and give us valuable insight into the thinking of the time. Other objects were created solely for the purpose of aesthetic beauty, revealing that man has always had an eye for objects that would beautify his surroundings.

Not all art is old, however. Highly valuable pieces of all types are created every day. Artists constantly seek to find new mediums and techniques. In the past several years one artist has made international headlines by draping various buildings and even hillsides with cloth, creating an art form that did not exist previously. Photographers capture amazing images daily. Once printed, matted, and framed, these photographs can be very valuable.

It is important to remember that beauty is in the eye of the beholder. Many highly valuable pieces today are collected because of their historical significance, and not for their beauty. It would be a mistake to assume that because something does not fit your definition of “art” that it does not have real value, a mistake that could cost you more than you ever imagined. It is wise to learn your limitations in the area of fine art. Many take a lifetime to master just one segment of this field. It would be foolish for a restorer to assume that he can know enough about everything he might encounter to properly restore any of these items. There are literally thousands of art forms, each with its own following, each with its own mediums, techniques, masters, and individual nuances. The wise restorer will familiarize himself with the major art forms he may encounter so that he can talk intelligently with the owner, the Insurer,

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<sup>1</sup> Artlex.com Art Dictionary

and the conservator who will ultimately restore the item. He will also be familiar with the proper techniques to stabilize various art mediums so that damage will not continue to occur, lessening the chances for a successful restoration.

## **Scope of Discussion**

The purpose of this paper is to introduce the restorer to the photographic art form, from an introduction of the basics of different mediums and the histories of each to the stabilization procedures recommended for each medium. This paper will make no distinction between photographs of monetary value and those of purely emotional value. In reality, emotional value photographs would be handled and restored in much the same manner as a highly valuable photo. All art requires a creative perception by both the artist and the audience. Just because something was created by an “artist” does not mean that any value will be attached to it, and conversely, just because something was not created by an “artist” does not mean that great value will not be attached to it. Beauty is in the eye of the beholder, and it is usually wise to keep judgments of value and quality to yourself unless you are specifically asked!

It is important to remember that once damaged, most photographs cannot be “restored” in the restorer’s cleaning plant or on the loss site. They are stabilized at the loss site or plant, and then forwarded to a qualified conservator for restoration. It is also important to know that like antique furniture pieces, the original finishes, regardless of condition, can be a major source of the value of an antique piece. Be wary of taking any action that “changes” the piece in any way. You may return a beautiful piece to the owner that has only a fraction of the value that it had in its damaged condition!

## **History of Photographs**

The name photography was first used publicly in 1839 by Sir John Herschel. The word “photography” is derived from the Greek words for “light” and “writing”.<sup>2</sup> It is interesting to note that, in the middle 1700’s, a writer named Tiphaigne de la Roche composed a fictional piece entitled “Giphantie” (an anagram of his name). In this work, de la Roche describes a canvas that when coated with a sticky substance and exposed to scenes from nature, would capture mirror images that would be permanent. He could not have known that his story would prove prophetic soon after his death.<sup>3</sup>

Photography is made possible by two distinct scientific processes. As both of these processes were known for several hundred years prior to them being combined, it is surprising that photography did not come about earlier.

The first advancement to be discussed was an optical process. The Camera Obscura (Latin for “dark room”) was a dark box (room) with a hole in one end. If the hole was small enough, light passing through the hole would reveal an inverted image at the far end. The use of the Camera Obscura can be dated as far back as the 10<sup>th</sup> century,

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<sup>2</sup> A History of Photography – Its Beginnings till the 1920’s, Robert Leggat.

<sup>3</sup> Ibid.

when the Arabian scholar Hassan ibn Hassan described it in his writings.<sup>4</sup> There is a record of the use of the Camera Obscura in the writings of Leonardo da Vinci, and at about the same time a Venetian named Daniel Barbaro recommended the use of the Camera Obscura as an aid to drawing and perspective. He wrote:

“Close all shutters and doors until no light enters the camera except through the lens, and opposite hold a piece of paper, which you move forward and backward until the scene appears in the sharpest detail. There on the paper you will see the whole view as it really is, with its distances, its colours and shadows and motion, the clouds, the water twinkling, the birds flying. By holding the paper steady you can trace the whole perspective with a pen, shade it and delicately colour it from nature.”<sup>5</sup>

The use of the Camera Obscura greatly enhanced the capability of drawing intricate details of scenes captured by it. Like many new advancements of that time, the camera was not embraced by everyone. Many saw it as the work of the devil, and even though many artists used it, few would admit it.

The second advancement made was a chemical process. For hundreds of years, people had been aware that certain materials changed color in the sun. No distinction was made, however, between heat, air, and light, so no definitive conclusion was reached regarding this phenomenon at that time. As time went on, however, enough understanding grew to allow Thomas Wedgwood, in the beginning of the 19<sup>th</sup> century, to capture silhouettes as images. He did this by exposing silver nitrate to paintings on glass. What he lacked, however, was a way to fix the image. If viewed by any light stronger than a candle the image became overexposed and lost.<sup>6</sup>

The first known photograph was created by Joseph Nicéphore Niépce in 1827. He used a material called Bitumen of Judea (found in Syria), a type of asphalt that hardened on exposure to light. The unexposed areas were then washed off using oil of lavender and petroleum. A black and white image was thus created, with dark areas shown by the hardened bitumen, and light areas by bare metal. It took eight hours to make the exposure.<sup>7</sup> He named his images “Heliographs”. As a historic advancement the process was priceless, but the image was hardly recognizable and took much too long to create. Can you imagine sitting your children down for eight hours to have their picture taken? In 1829 Niépce went into partnership with a man named Louis Daguerre. Niépce died four years later, but Daguerre continued to experiment with the process. He created a way to develop photographic plates, reducing the exposure time to half an hour. He also discovered that the image could be fixed by immersing it in salt. In 1839 the process was made public. These images became known as “Dagurreotypes”.<sup>8</sup> It is important to understand how revolutionary this process, and the subsequent ability to capture accurate images, was at that time. The public was enormously excited and interested. An account of the public announcement, made by the Royal Society (the UK’s academy of science,

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<sup>4</sup> Ibid.

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

founded in 1660), was made by Marc Gaudin in a book written in 1844. This account conveys the excitement that greeted the announcement of the Daguerreotype:

"The Palace...was stormed by a swarm of the curious at the memorable sitting on 19 August, 1839, where the process was at long last divulged. Although I came two hours beforehand, like many others I was barred from the hall (and) was...with the crowd for everything that happened outside. At one moment an excited man comes out; he is surrounded, he is questioned, and he answers with a know-it-all air, that bitumen of Judea and lavender oil is the secret. Questions are multiplied but as he knows nothing more, we are reduced to talking about bitumen of Judea and lavender oil. Soon a crowd surrounds a newcomer, more startled than the last. He tells us with no further comment that it is iodine and mercury... Finally, the sitting is over, the secret divulged... A few days later, opticians' shops were crowded with amateurs panting for daguerreotype apparatus, and everywhere cameras were trained on buildings. Everyone wanted to record the view from his window, and he was lucky who at first trial formed a silhouette of roof tops against the sky. He went into ecstasies over chimneys, counted over and over roof tiles and chimney bricks - in a word, the technique was so new that even the poorest plate gave him unspeakable joy....."<sup>9</sup>

Another opinion, expressed by a newspaper report in the Leipzig City Advertiser, was not as exuberant:

"The wish to capture evanescent reflections is not only impossible... but the mere desire alone, the will to do so, is blasphemy. God created man in His own image, and no man-made machine may fix the image of God. Is it possible that God should have abandoned His eternal principles, and allowed a Frenchman... to give to the world an invention of the Devil?"<sup>10</sup>

The invention of the Daguerreotype changed history. Images could now be captured accurately and relatively quickly, and by anyone with the equipment and knowledge. Thus the art and science of photography was born, and all other advancements since are improvements on these optical and chemical processes.

Now that the early history of photography is clear, let's look at the subsequent advances.

### **Solid "Types"**

Following the announcement of the Daguerreotype, several other solid medium image processes were developed. This became known as solid-type photography, or photographic images on solid plates. These "types" include the Daguerreotype, the Ambrotype, and the tintype. Solid-type images differ completely from paper images. Solid-type images are negative images made on a solid plate, either glass or metal. A

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<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

dark backing is applied, and the negative image appears to be a positive, although it is still reversed left to right. An important feature to know about solid-type images is that they are unique. If a Daguerreotype or an Ambrotype is destroyed, it cannot be replaced by any means. Be certain that it is not your mistake that causes it to be lost! Solid-type images are not mounted on cardboard or other mounts. They are often held in special cases, which will be discussed later.

Solid-type images were available in several sizes. Full metal and glass plates were sold to photographers, who then could either use the entire plate for a photograph or cut the plate into smaller pieces for smaller photographs. The size of the image is described as the fraction of the original plate that it comprises. The largest was the "full plate", then the "half plate", followed by 1/4, 1/6<sup>th</sup>, 1/9<sup>th</sup> and 1/16<sup>th</sup> plates respectively. As you would imagine, the larger images required more plate to make and were more expensive to own. As a result, the larger sizes are rarer. If you encounter a full or half plate image, for example, it might be quite valuable. The approximate sizes of the various plates generally used are as follows, though some variation is to be expected.

Full Plate: 6-1/2" X 8-1/2"

Half Plate: 4-1/2" X 5-1/2"

1/4 Plate: 3-1/2" X 4-1/8"

1/6 Plate: 2-5/8" X 3-1/4"

1/9 Plate: 2" X 2-1/2"

1/16 Plate: 1-3/8" X 1-5/8"

Gem tintypes: 1" X 1" or smaller

Daguerreotypes are produced on silver coated copper plates, and are the easiest to identify of the solid-type images. They were produced from about 1839 to 1860, and have a mirror like finish. The image can only be seen at certain angles. The image produced is far superior to other solid-type images, with virtually no grain, rich blacks and bright whites. The Daguerreotype is the most desirable of the solid-type photographs, due to its superior image quality and its historical significance as the first practical photograph. On full plates, the manufacturer's symbol is visible. Smaller plates, however, since they were cut from full plates, may not bear a stamp.

Ambrotypes are produced on a glass plate with a black backing. Early Ambrotypes used a black velvet backing, while later ones used a black varnish applied to the glass. Ambrotypes are distinguishable in that they lack the crisp image found in Daguerreotypes, and they often have a 3-D effect. This is due to the fact that the image is on one side of the glass, and the shadows and highlights appear through the glass due to the black backing. The Ambrotype, though inferior in quality to the Daguerreotype, was cheaper and easier to produce, and soon became the image of choice after it was introduced. The Ambrotype glass plate did not bear dating stamps or marks as did the Daguerreotype plates. Early Ambrotypes were overlaid with another piece of glass to seal the image. This overlay was discontinued in the 1850's. In the late 1850's a darker colored glass was used. These later Ambrotypes closely resemble Tintypes (see below). A variant of the Ambrotype came in the late 1800's, called the Orotone or Goldtone. These solid-type images used a glass plate but were backed with real gold. These images have a distinct gold colored background and are easy to distinguish.



Tintypes are a negative image produced on an iron plate. They are sometimes known as ferrotypes. They are viewed as a positive image due to a coating of black varnish prior to exposure. They were produced from about 1860 to 1890, and are very similar in appearance to an Ambrotype. The simplest way to distinguish them is that the Tintype is attracted to a magnet. The Tintype also lacks the 3-D appearance of the Ambrotype. It is the most plentiful of the solid-type images, and was very popular in the U.S. Tintypes originally were rarely placed in cases, though they are often displayed in cases today. The early Tintype plates were thick and heavy, and were imprinted with the stamp of the manufacturer, either *MELAINOTYPE PLATE FOR NEFF'S PROCESS Pat19Feb56* or *GRISWOLD'S PATENTED OCT.26.1856*.<sup>11</sup> Tintypes may be large or small. In 1863 Gem Tintypes were produced and sold in bunches. These tiny Tintypes were usually displayed in cards or albums. Later Tintypes were coated with varnish to protect the image and were sold without any case at all.

Cased photographs are solid-type images that are displayed in cases to beautify and protect them. They can be any of the solid-type images, though most cased photographs were Daguerreotypes or Ambrotypes. They were widely used between about 1840 and 1870. There are several parts to the cased photograph: the image itself, a brass mat, a pane of glass, a preserver or frame, and the case. The glass protects the image from the elements, while the brass mat protects the image from the glass, as well as frames the image inside the case. These parts are held together with paper or tape, and are essentially the same parts that are used today to frame pictures.<sup>12</sup> The case itself was made of paper mache, leather covered wood, or molded, embossed thermoplastic. Thermoplastic cases are called "Union Cases".<sup>13</sup> These parts were assembled and then sealed. If a cased photograph has an intact seal, then it has all original parts. Many cased photographs, however, have parts and images from other photographs. This was done to make the image look nicer, or in some cases to make a newer image look older.<sup>14</sup> Beware of breaking an intact seal on a cased photograph, as this may significantly affect its value.

## Prints

The first photo image made on paper was the Calotype, a positive image created from an exposed negative. This advancement was discovered by Fox Talbot in 1839. His process originated by brushing a piece of paper with a weak salt solution, then brushing it with a weak silver nitrate solution. The result was silver chloride in the paper, which made it sensitive to light. Exposures required about 30 minutes, severely limiting the commercial application of this process. Eventually, Talbot discovered that the addition of Gallic acid (a crystalline acid obtained from tannin) made the paper more sensitive to light. Since it was no longer necessary to expose the paper until the image was visible, there were real commercial possibilities, and Talbot began marketing his photo process in 1844. The Calotype was not as popular as the Daguerreotype for two main reasons: one, the imperfections of the paper greatly reduced the quality of the print,

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<sup>11</sup> David Rudd, *Cycleback Print and Photograph Study*.

<sup>12</sup> *Ibid.*

<sup>13</sup> *Ibid.*

<sup>14</sup> *Ibid.*

and the prints tended to fade over time. There were some real advantages, however. The biggest one was that an unlimited number of prints could be made from a single negative. Another was that retouching could be done for the first time on either the negative or the print. The basic problem with paper prints was that the paper was not smooth enough to provide a quality image.<sup>15</sup> That changed in 1848 when a cousin of Nicéphore Niépce, Abel Niépce de Saint-Victor, developed the Albumen process. This process involved coating a piece of paper with egg white and potassium iodide and washed with a silver nitrate solution. This created a very smooth, photo-sensitive coating on the paper rather than in it. This process allowed for very fine detail, but exposure times were very slow. This was followed in 1850 with the development of albumin printing paper, which allowed the image to be printed commercially on glossy paper. This process became very popular despite its limitations.<sup>16</sup>

In 1851 Frederick Scott Archer discovered collodion. This process was the first to combine the ability to reproduce fine detail and the ability to make multiple prints. Collodion is a liquid – guncotton dissolved in ether and alcohol. Guncotton, or nitrocellulose, is a highly flammable compound formed by nitrating cellulose through exposure to nitric acid. It was first used as a film to dress wounds during the Civil War, has been used as a propellant in firearms, and is used today in Compound W.<sup>17</sup> Collodion provided the surface needed for glossy, high quality images on paper. The advantages were dramatic. First, the collodion process was much more light sensitive than the Calotype process. Exposure times were 2-3 seconds, allowing for the first time high quality portrait images on paper. Second, and more important commercially, the price of a paper print was about 1/10<sup>th</sup> that of a Daguerreotype.<sup>18</sup> The only disadvantage was that the process was difficult and technical, and required specialized equipment. The collodion process was also very flammable and even explosive. For this reason, most collodion photos were taken at studios. Many professional photographers took collodion images at home and Calotype images when they traveled.

The next advancement came 20 years later, in 1871, when Dr. Richard Maddox developed a way to use gelatin as a basis for photographic plates. This led to the first dry plate process, and allowed photographers an easier way to carry and store photo plates. This soon led to the development of factory made image plates that needed no preparation by the photographer. Soon, celluloid, which had been invented 10 years previous, was coated with the gelatin process, and the first flexible film was available, developed by George Eastman in 1884.<sup>19</sup> Four years later he invented the box camera, and the world of photography changed forever. In 1888 the first film as we know it was introduced by John Corbutt, and in 1894 Eastman introduced roll film, designed for his new camera called the Kodak. Later that year he improved his roll film to where it could be loaded into the camera in the light.<sup>20</sup> An interesting sidebar is the story of the Reverend Hannibal Goodwin, a clergyman who was an avid photographer as well as an inventor. In 1887, 7 years before Eastman introduced his roll film, Goodwin applied for

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<sup>15</sup> A History of Photography – Its Beginnings till the 1920's, Robert Leggat.

<sup>16</sup> Ibid.

<sup>17</sup> Word IQ.com.

<sup>18</sup> A History of Photography – Its Beginnings till the 1920's, Robert Leggat.

<sup>19</sup> Ibid.

<sup>20</sup> Ibid.

a patent for roll film using strips of light sensitive celluloid. Goodwin and Eastman began a bitter legal battle, and in the midst of it Eastman secured a patent for roll film under the name H.M. Reichenbach. Later, Goodwin was killed in an accident, but his estate was able to secure millions of dollars in damages from Eastman for patent infringement. By that time, though, Eastman was the primary producer of roll film and still cameras.<sup>21</sup>

Early film photography grew into cinema, or moving films, in the early 1900's. While not a part of this discussion, they were also nitrocellulose films, and were also very flammable. Here is a warning to cinema operators in 1926:

"Choose a room with more than one exit door if possible, and make sure that the windows can be easily opened in the event of the film charring and beginning to emit smoke, as this smoke is poisonous... Keep a bucket of damp sand close by the projector, and at the first sign of a flare-up throw the machine on the bare floor and tip the sand all over it. If this is done smartly without fuss, and if the people are at once got out of the room and the windows opened, no great harm will accrue beyond the destruction of the film..."

Collections of early photos made from nitrocellulose can be very flammable, even explosive. The nitrocellulose, or nitrate film, deteriorates over time, becoming unstable and very flammable. This process increases rapidly when the film gets wet and is then dried. Often, nitrate fires completely destroy the buildings that house the collections due to the intensity of the fire. It takes more than 35 pounds of film to pose the risk of a major nitrate fire, however.<sup>22</sup>

In the 1930's, Eastman Kodak introduced safety film, made from cellulose acetate. This is an unstable film base that causes as many problems as nitrate film, without risk of fire. As it deteriorates, cellulose acetate film releases acetic acid, which gradually deteriorates the film base and allows the emulsion to buckle. In 1960 polyester film was developed, which is much more stable. It is very difficult to splice, however, so the film industry still uses more stable variants of cellulose acetate.<sup>23</sup>

This is by no means an exhaustive list of the photographic mediums that were used in the development of modern photography. Many others, such as gelatin plate negatives and lantern slides were used. Photomechanical processes were developed, including Woodburytypes and carbon prints. Many of these mediums, while not explained above, are listed in the stabilization procedures below.

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<sup>21</sup> Ibid.

<sup>22</sup> NPS *Museum Handbook*, Part I (1999)

<sup>23</sup> State Library & Archives of Florida, Florida Memory Project,

## **Stabilization Procedures for Photographs**

In general, the proper restoration of most photographs is beyond the capability of most restorers. The window of opportunity for saving many photographic mediums is very short, and the emphasis for the restorer should be the stabilizing of the items so that window of opportunity is extended for as long a time as possible. As noted earlier, the purpose of this paper is to provide specific information about different mediums so the restorer can act properly when the need arises. There are some generalities that can be observed about almost all the photographic mediums, however. Almost all mediums, with the exception of the Calotype, use a glossy emulsion on metal, glass, or paper to hold the image. (The Calotype, remember, used a salt solution that actually impregnated the paper.) This emulsion becomes unstable when wet, and if it is lost, the image is lost. When the medium dries, the emulsion stabilizes and the image is preserved. If the emulsion is not carefully handled while wet then the image may become damaged and will be affected after the photo dries. This type of damage can often be restored by a conservator, but obviously we want to limit the amount of damage to what occurred due to water contact, and not further damage the image by mishandling while wet. Try to never touch the emulsion side of any photo while it is wet. Another generality is that the photographic medium is by nature fragile, and must be handled very carefully whether it is wet or dry. If you encounter a large quantity of photos then you must be very patient to properly stabilize them all so as many as possible can be salvaged. Finally, if any type of photograph is allowed to dry in contact with a surface (such as an album sleeve or glass in a photo frame) or another photograph, then it is likely that the emulsion will adhere to the other photo or the surface that it is touching. Severe image damage can result.

### **Stabilization Procedures**

In the event of a water loss, it is important to immediately begin to address any photos that may be involved. The restorer should ask specifically about photos. Are there boxes of photos? Are there any photo albums? Drawers of photos? Even a normal household can have literally hundreds of photos. You don't want to discover a wedding album at the bottom of box #28 on day three of the water loss! Remember that most photos you encounter will be paper, and mold growth is a primary concern.

Establish a place for the photos to be sorted and handled. This can require a large amount of space. You will need a source of clean water, especially if the water loss resulted from a flood, sewage backflow, or other category 2 or 3 source. Use rubber gloves to handle wet photos, being careful not to touch the emulsion side of the photo. Photos should be categorized by medium, and emphasis placed on the handling of mediums that are more susceptible to water damage. Photos should be handled in the following order:<sup>24</sup>

- Ambrotypes
- Tintypes

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<sup>24</sup> Northeast Document Conservation Center Technical Leaflet 8, Section 3.

- Collodion (Wet) Plate Negatives
- Gelatin Dry Plate Negatives
- Lantern Slides (glass slides popular in the early 1900's, black & white)
- Deteriorated nitrate or safety film
- Autochromes (glass slides popular in the early 1900's, actually the first color photos)
- Carbon Prints
- Woodburytypes
- Unhardened gelatin prints
- Color photos on paper
- Daguerreotypes
- Salted paper prints
- Albumin prints
- Dry collodion prints
- Platinum prints
- Cyanotypes

After the photos have been identified and categorized, they should be stabilized, packed, and shipped to a qualified conservator for restoration. Use the following information as a guide to handle, stabilize and pack photos.<sup>25</sup>

### **Black & White Prints**

- Albumin prints: Freeze or dry the photos within 48 hours. Do not touch the emulsion with bare hands. Pack photos with wax paper interleaves between groups.
- Collodion prints: Freeze or dry the photos within 48 hours. Do not touch the emulsion with bare hands. Do not let anything rub against the emulsion.
- Silver gelatin printing out and developing out papers: Freeze or dry within 48 hours. Do not touch the emulsion with bare hands. Keep prints wet and pack in plastic bags inside boxes.
- Carbon prints and Woodburytypes: Immediately freeze or dry. Handle very carefully due to swelling of the binder. Pack horizontally.
- Collotypes, photogravures, and cyanotypes: Freeze or dry within 48 hours. Do not separate sheets. Interleave with wax paper every 2" and pack in boxes or crates.
- Black and white standard glossy paper prints: Freeze or dry within 48 hours. Do not touch emulsion with bare hands. Keep prints wet and pack in plastic bags inside boxes.

### **Color Photographs**

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<sup>25</sup> Walsh, Betty, "Salvage at a Glance", British Columbia Information Management Services.

- Dye transfer prints: Immediately dry. Do not touch emulsion with bare hands. Transport horizontally. Recovery rate is very poor.
- Color photos and negatives: Freeze or dry within 48 hours. Do not touch emulsion with bare hands. Keep prints wet and pack in plastic bags inside boxes.

### **Cased Photographs**

- Ambrotypes and Pannotypes: Immediately dry. Never freeze! Handle very carefully as the support and cover is glass and the emulsion is very fragile. Transport photos horizontally in a padded container.
- Daguerreotypes: Immediately dry. Handle very carefully as the image is fragile and the cover is glass. Transport photos horizontally in a padded container.
- Tintypes: Immediately dry. Handle with care as the image is fragile. If it is in a case then be careful not to break glass cover. Transport horizontally.

### **Negatives**

- Wet collodion glass plates: Immediately dry. Handle very carefully as the support is glass and the emulsion is very fragile. Transport horizontally in a padded container. Recovery rate is very low.
- Gelatin dry plate glass negatives: Freeze or dry within 48 hours. Handle very carefully as the support is glass and the emulsion is very fragile. Keep wet, pack in plastic bags horizontally in a padded container.
- Deteriorated nitrates: Immediately freeze or dry. Do not blot. Transport horizontally. Recovery rate is low.
- Deteriorated acetates: Immediately freeze or dry. Handle carefully due to swelling of the emulsion when wet. Transport horizontally.
- Polyester film, nitrates and acetates in good condition: Freeze or dry within 48 hours. Do not touch emulsion with bare hands. Keep wet and pack in small plastic bags inside boxes.

### **Transparencies**

- Lantern Slides and silver gelatin out papers: freeze or dry within 48 hours. Handle with care due to glass supports and loose emulsions. Transport horizontally in a padded container.
- Additive color transparencies (autochromes, Agfacolor, Duyfacolor): Immediately dry. Handle with care due to glass supports and loose emulsions. Transport horizontally in a padded container.
- Chromogenic color transparencies, mounted color slides, and sheet films: Freeze or dry within 48 hours. Handle carefully by mounts or edges. Keep wet and pack in plastic bags inside boxes.

## **Museums and Other Large Collections**

The purpose of this section is to familiarize the restorer with a few of the pitfalls that may be encountered when responding to a loss at a museum or otherwise large collection of photos.

The first thing to consider is the ownership of the pieces. Many of the pieces displayed by a museum, university, or traveling collection are on loan from the actual owner, and the same is true of photos. Be aware of whom your customer actually is, and in particular, how it is insured. Do not assume that all the photos are owned by one person or entity; in fact, they probably are not. Be wary of museum personnel who make promises of payment and coverage that they may not be able to stand behind. Often, they are not aware of coverage nuances that may exclude items from coverage by the museum policy. Also, if you are authorized by museum personnel to handle pieces that are owned by others, it would be wise to try to get written authorization from the actual owner before proceeding. In the absence of that, document the authorization carefully, and know that the owner may not recognize that authorization and proceed against the restorer if disagreements arise. Consider inserting an indemnification clause in the contract or work authorization with the museum.

Many museums and collectors may already have an agreement with a conservator to respond in the case of an emergency. Ask about this, and if they do, notify them immediately. They probably will want to supervise the handling of the collection, and will take a large amount of liability from the restorer if they do.

Be aware that most museums display only a small portion of their collections at a time, and have many highly valuable pieces stored in other areas, away from view. In the confusion following a loss museum personnel may forget these items. Look around carefully and ask about items that may be stored. The late addition of a storage room full of photos may lay your carefully made plans to waste!

Many restorers find it to be good business to establish pre-sold emergency response agreements with a variety of businesses. This should be a win-win for both sides, but may backfire if the restorer is not careful. Large collections of photos and other art may require much more manpower and other resources than anticipated to handle properly. If there is a widespread catastrophe such as a hurricane or severe freeze the restorer may find they are unable to meet all those pre-sold obligations.

## **Conservators**

A conservator is a professional who is concerned with many factors in preserving an object. These factors include structural stability, chemical and physical deterioration, restoration, and maintaining the object over a long period of time. Conservators tend to specialize in one type of object, such as paintings, sculpture, pottery, or photos. They work in private practice or are employed by a museum, library, or other institution. This paper will deal with one specific area of conservation: the reconstruction and restoration of the original appearance of the object.

The choice of the conservator must be made carefully. The conservator profession is not regulated by law, and bona fides should be carefully established prior to selection. The American Institute for Conservation (AIC) is a national organization of

conservators, and is a good place to find and research qualified conservators. They provide, free of charge, a nationwide guide system to identify and locate conservators.

There are several questions to ask when interviewing potential conservators. Ask each potential conservator for the following information<sup>26</sup>:

- training
- length of professional experience
- scope of practice (whether conservation is primary activity)
- experience in working with the kind of object for which you seek help
- involvement in conservation organizations
- availability
- references and previous clients

A qualified conservator will want to examine the items before suggesting the restoration options available. Prior to beginning work, the conservator should provide a preliminary report describing the proposed treatment, what results can be expected, what risks are involved, and what the estimated cost will be. They should be willing to discuss how their fees are based, what their insurance coverage's are, and what the estimated time frame will be for completion. Keep in mind that conservators often have a backlog of work, and a premium may have to be paid to provide the immediate service necessary to salvage fragile photographic mediums. A qualified conservator will keep careful documentation of the treatment procedures used and will provide a final report at the end of the project.

Be wary of a conservator who promises quick and inexpensive results, or are reluctant to discuss in detail the treatment procedures and options available. If there are a large number of photos to restore, consider asking them to treat a small group prior to entering into a large contract. Always investigate references!<sup>27</sup>

An important point to consider is “who chooses the conservator?” If the restorer provides the conservator, then they are going to be responsible for the outcome of the process. If the conservator is selected by the customer, then the restorer has some protection from liability if things go wrong. The restorer should know his place in this process, and should make decisions based on how knowledgeable or experienced they are in dealing with conservators and collections.

## Summary

The photographic art form, since its early days of the Camera Obscura in the 10<sup>th</sup> century, has fascinated us. For millennia, man has strived to capture what the eye sees, and the development of photography allowed for that exact capture. Since its inception the art of photography has been followed by millions of people, and has evolved from simple black and white images to complex digital ones. The art and science of photography has become a major part of many other areas, such as medicine and science. As of this writing, two remote control rovers are on the surface of Mars, beaming back amazing photos to earth!

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<sup>26</sup> AIC “Guidelines for selecting a conservator”.

<sup>27</sup> Ibid.



The art of photography resulted from the collision of two sciences: chemistry and optics. Once the first discovery was made advancements came by leaps and bounds, some so fast that the discoveries they followed became outdated in a matter of a few years. Today, the collision of photography with computer science has led to another period of incredible advancement. Many discoveries and processes become outdated before they can be developed into products!

There are several basic types of photo mediums. Solid type photos such as the Daguerreotype led to the discovery of the salt print, which led to the glossy albumin emulsion print, which evolved into collodion and finally gelatin prints. It was the discovery that glossy emulsions on top of paper could hold images more accurately than the paper itself that led to the real advancements in film photography. Many of these antique photos are still in homes and collections today, and some of them are extremely valuable. The knowledgeable restorer will familiarize themselves with the basic history and identification of these early mediums, and the stabilization requirements for each. The restorer should also be familiar with the mediums most subject to water damage, and act quickly to get those items to a conservator immediately. Time is of the essence. Most emulsions become unstable when wet, and after 2-3 days the image they hold can be lost.

A major water loss can occur at a museum, university, or historical society and damage hundreds, even thousands of photos. Since many of these photos will be owned by individuals, estates, and trusts, insurance considerations may become extremely complex. Be aware of these potential complexities, and begin working immediately to secure permissions and insurance information from actual owners whenever possible. Not all items that are held by a museum or other collector are on display at any one time. Many items may be stored in other areas, and may be damaged. Ask museum or collection personnel about items not on display, and be sure they are immediately inspected so they can be included in the stabilizing process. Be careful when entering into pre-sold emergency and catastrophe agreements. The handling of photos and other works of art require a great deal of time and labor, and there may not be enough resources to meet all obligations in the event of a widespread catastrophe.

The actual restoration of a damaged photograph is beyond the skill and resources of most restorers, so a conservator is brought in to restore a collection if it becomes damaged. The practice of art conservation is not regulated by law, so care must be taken in selecting a conservator. The AIC, a national organization of conservators, is a good place to begin the search. There are many things to consider when hiring a conservator. Since conservators specialize usually in one type of item, the type of item that is damaged is the first to consider. Ask potential conservators about prior experience and training, and check all references without fail. A qualified conservator should provide a preliminary report that describes the proposed treatment, expected results and risks, and an estimate of costs. Be wary of conservators who promise quick and inexpensive results or are not willing to discuss treatments and options prior to proceeding. If a large number of items are involved, consider having just a few of them treated to assess results before entering into a large contract. Be wary of being responsible for the selection of the conservator, as this responsibility will bring added liability in the event of problems.

A wise restorer, armed with basic information about photos and the restoration process, can be a valuable asset to an Insured who has suffered a major water loss to a photo collection.