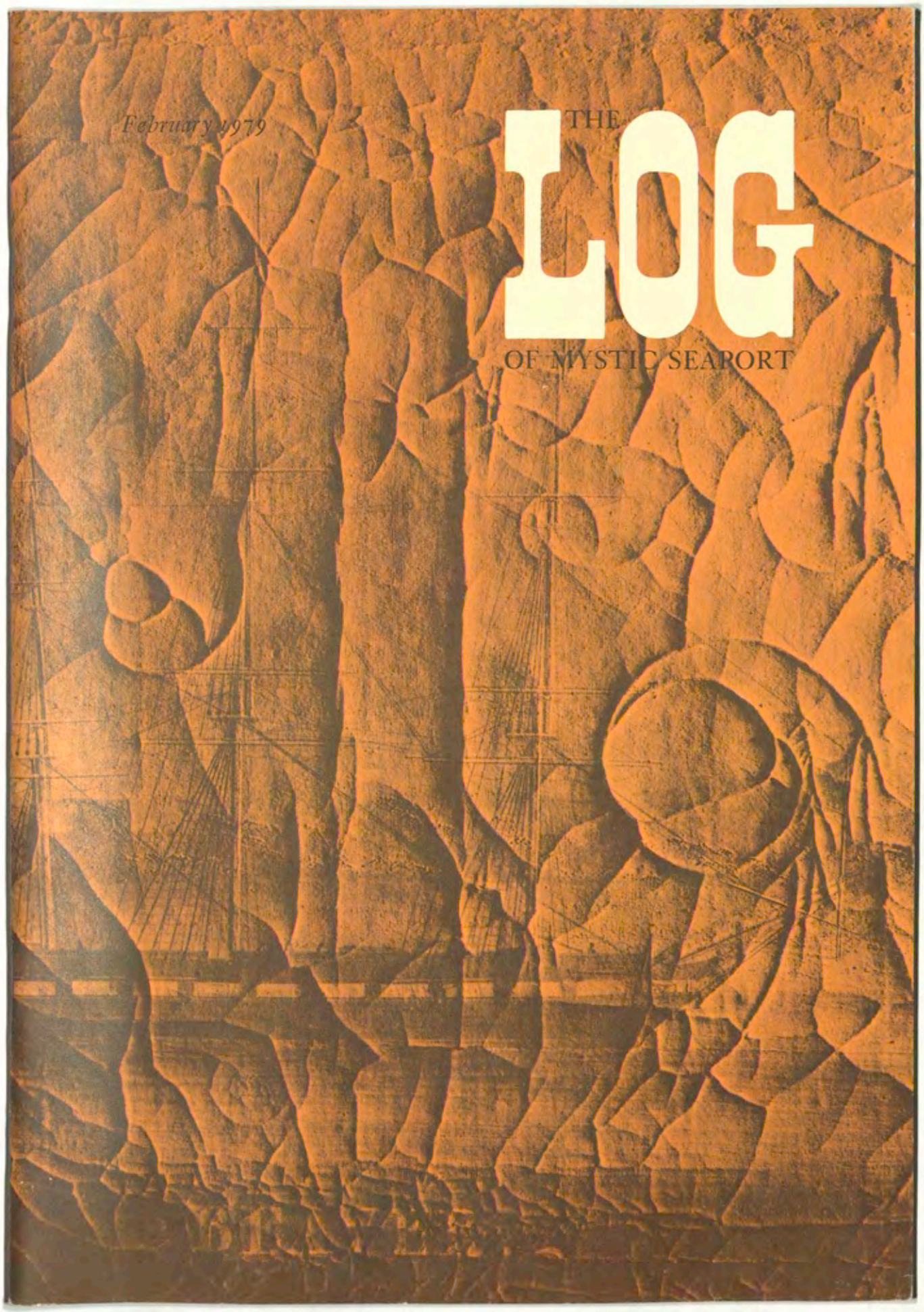


February 1979

THE LOG

OF MYSTIC SEAPORT

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FRONT COVER: *Detail of an oil painting shown on page 110 photographed under raking light to show condition of the pigment and canvas. (48.1126)*

FACING PAGE: *Pen and ink drawing of an unidentified schooner, by John F. Leavitt. (76.1.6)*

BACK COVER: *The Civil War years returned to Mystic Seaport this fall during the filming of* "Mourning Becomes Electra" *by Public Broadcasting Service. Photograph by Claire White Peterson.*

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THE LOG
OF MYSTIC SEAPORT

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SIGHTINGS



In this issue of the *Log* we depart from our normal procedure of including a number of articles on maritime topics in order to focus on the subject of museum conservation. Without our collections the museum ceases to exist; therefore conservation must be considered as one of our most basic functions. We hope to make you, the members of Mystic Seaport, aware of both the need for proper conservation at the Seaport and the difficulties in coping with this task in a museum as complex as ours. Conservation is also basic to any collector of maritime materials so we want to make you aware of the need for conservation within your own collections. We are assuming, of course, that most people who are interested in the sea and who are members of Mystic Seaport will have acquired some martime items along the way, and that some among you will have developed extensive collections. We hope that the material in this issue of the *Log* will give you a better understanding of the sensitivity and vulnerability of the objects you have in your care and will stimulate your thinking as to how you can reduce the destructive conditions which may exist around your collections.

For the structure of this *Log* we have taken the term "Conservation," and explored each of its three basic elements. The first is *examination*, which is the process used to determine the original structure and materials found in an object and to determine any modifications from its original condition. The next element, *preservation*, is action that can be taken to minimize the deteriorating effects of the environment or to stabilize an artifact so that it will be subject to minimal change. *Restoration* is the final element in conservation and is the action taken by a trained professional to bring a deteriorated object back, as nearly as possible, to its original condition. In addition to these three topics, we have included special sections on the two types of objects we felt most likely to be found in personal collections. Nearly all of us have photographic materials: some of significant age, others quite new, but all having some importance to future historical research. Also in our homes, most of us have library materials, in the form of books and manuscripts, that deserve proper care.

When all of the deteriorating factors are considered, an awesome spectre emerges, making it easy to become discouraged. However, I urge you not to give up in frustration. Begin eliminating harmful elements one by one and you will gradually improve the environment of your collections. We have drawn attention to a wide range of concerns, but actually have only been able to scratch the surface in this report, so we have included bibliographies in a number of areas of interest.

We hope that those of you with martime objects will consider keeping this issue of the *Log* as a reference as you maintain the long-term strength and value of your collections. We hope that all of you, with or without collections, will gain from this issue a greater appreciation of the task which faces all museums, and a better understanding of the operations which will keep the collections of Mystic Seaport sound for the years to come.

J. Revell Carr

Museum Conservation: Examination

By J. REVELL CARR *Director*

As any collection is being developed, it is essential that the pieces to be included receive careful examination so that they are fully understood. This certainly applies to museums which are building their collections with a responsibility to the institution and to the generations of people who will be supporting that institution. But careful examination should also be a regular part of any individual's personal collection, no matter how valuable it may be. In this section we will discuss the initial examination of a number of types of marine collectibles, giving an idea of what to look for and how to find it. Obviously we cannot cover each maritime object in detail in an article of this length. Therefore, we will direct our attention to the most sensitive objects which are most frequently collected. These include paintings, prints, scrimshaw, and ship models. However, the principles of examination apply to almost any object so that this basic approach can be adopted for most other forms of collectible items.

Examination is used to determine the original composition and materials of an artifact, and its condition at the time of examination. A systematic inspection procedure can also be applied during the act of collecting to help assess quality and value before an item is purchased. The information which emerges during an examination should help to determine whether the object is in fact what it is supposed to be. This may seem simplistic, and yet there are many possibilities for confusion, such as in the case of an original watercolor painting versus a lithograph that has been colored with watercolors. We also need to know what the composition of the piece is, from both the conservation standpoint and the expectations of the collector. Knowledge of condition is critical so that the collector is aware of what must be done to care for the piece and how much of the original work can be preserved. We should be able to detect alterations to the original and determine their impact on the piece. For instance, were these alterations a result of an earlier restoration in which there was a high regard for the integrity of the original object or of a crude attempt to "make it look good" in order to bring a better price? Finally, an examination should reveal any hidden element, such as decoration that has been covered by a coat of paint. Each of these areas of examination will be considered as we turn to the objects themselves.

Oil Paintings

This is one art form that should be fairly easy to recognize; however, there are a number of modern reproduction methods capable of creating images in paint on canvas, so an unsuspecting collector can be mistaken assuming that a painting on canvas must be an original.

The materials used should be well understood when considering an oil painting. In most instances the painting is executed on canvas, which is supported around the edges by a wooden structure known as the stretcher. The canvas is kept taut by small wedges driven into the corners. While most marine paintings are on canvas, some from the seventeenth and early eighteenth century are painted directly on wooden panels, single pieces in some instances and, in other cases,

made up of several boards. Robert Salmon and J. E. Buttersworth, both of whom worked in this country during the nineteenth century, used panels for many of their small works. In the latter part of the nineteenth century, artist board was developed as a stable surface for oil paintings, followed by the use of masonite. Therefore, you may find oils on a variety of surfaces, and the serious collector will want to learn more about these and their use by their favorite artists.

With oil paintings, the conditions to be considered range from the overall cleanness of the work to major damage. One difficulty can develop when dirt and small objects fall behind a painting and become lodged between the stretcher and the canvas. It is not unusual to find one of the adjusting wedges, called keys, forcing the canvas out and damaging the surface. Various kinds of cracking can appear on the surface, resulting from many causes, such as a poorly prepared surface, or repeated impact that eventually creates radiating cracks like ripples on a pond. A more serious problem is the actual loss of small chips of paint from the surface, indicating that the supporting canvas or panel has moved, causing the paint to lose its bond. This problem is urgent, and should be professionally treated as soon as possible to stabilize the painting. A canvas that has been punctured or torn, though serious, can, in most instances, be repaired during restoration without greatly reducing the painting's value. Possibly more significant than a tear in the canvas, is the loss of painted detail because of abrasion or overcleaning. This is often seen in ship portraits where delicate rigging has been lightly applied. In judging the condition of a ship portrait, it is important to note where the damage is located, since damage in the sky or sea is less serious than damage to the image of the ship.



"A canvas that has been punctured or torn, though serious, can, in most instances, be repaired during restoration. . ." (65.975)

The question of alterations to the original is an important part of the examination. In some instances, the changes will be obvious, such as thick, disproportionate rigging that does not match the quality of the other work, indicating that the rigging was accidentally cleaned off and poorly replaced. New paint is not always easy to see, but there are several ways to make it show. By moving your



"... raking light will pick up highlights of the surface and will reveal damaged areas."

position in relation to the light source and the painted surface, you may see that a certain area has a different gloss to the surface, possibly indicating new paint and the need for further inspection. If possible, place a light in a position so that it cannot overheat the surface but will shine across the painting on almost the same plane. This raking light will pick up highlights of the surface and will reveal damaged areas. The use of ultraviolet light requires some special equipment and some experience, but it should be considered by any serious collector. In a darkened room, ultraviolet light makes new paint show up with a darker tone than the original paint.

With these techniques, most alterations of the surface will be seen, but examination should continue to note other changes, such as cropping, or cutting down the original size of the painting. This might be done for many reasons. For instance, when the original edge of a canvas is weakened or has deteriorated, it is sometimes cut away and the painting is restretched using a painted portion of the work as the edge. This unfortunate practice alters the proportions of the basic work and sometimes obscures details of the painting or the artist's signature. This kind of alteration can usually be detected by noting whether the paint comes to the very edge of the canvas that wraps around the stretcher.

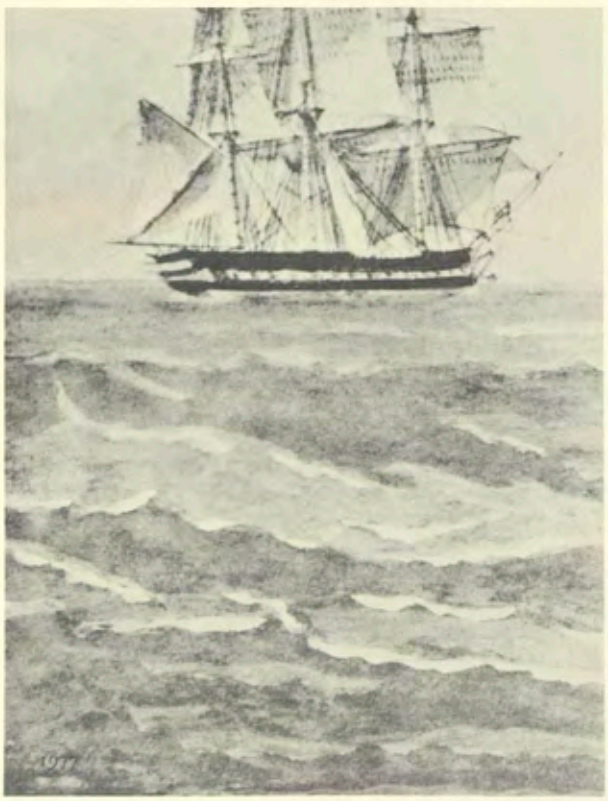
Finally, a painting should be examined for

"... ultraviolet light makes new paint show up with a darker tone than the original paint." (68.29)





"The two museums that are providing fine handcolored lithographic reproductions print the date of the reproduction within the picture itself so that it cannot be cut off without defacing the picture . . ." Here is the Brig *American* by Antoine Roux, as reproduced by Mystic Seaport. Note printed date in left-hand corner of detailed illustration.



any additional useful bits of evidence or information. This might include a signature on the back of the canvas or information written or printed on the stretcher or the frame.

Watercolors

A collector must be particularly alert when considering a watercolor, since a lithograph printed with watercolors looks very much like an original watercolor. Close examination will show the edge of the lithographed surface if it is an old print, and examination under magnification will also reveal the printed surface under the watercolor paint. The two museums that are producing fine handcolored lithographic reproductions print the date of the reproduction within the information in the picture so that it cannot

be cut off without defacing the picture, and this should be looked for if there is any question. These prints are sold by the Peabody Museum in Salem, Massachusetts, and Mystic Seaport. The best protection against being misled is a thorough knowledge of the field of collecting and familiarity with the material available in print form. Since the watercolor medium adapts well to modern reproduction techniques, a person should be alert to this as well.

A watercolor is generally executed on paper, without the complicated system of support required by oil paintings on canvas. In the initial phase of examination you should be conscious of the quality of the paper used, since a paper that contains wood pulp will have a natural acidity and will "self destruct." Some superb artists sacrificed the acid-free quality of all-rag paper for some other tactile or color characteristic they wanted, so that it can never be assumed that the paper used is of quality equal to the artist.

Watercolor on paper is a fragile and vulnerable work of art so its condition should be carefully studied prior to acquisition. Paper is easily stained by a variety of substances, including molds, so watercolors that have not been matted or framed may be stained. Watercolors that have not been matted may also be torn or mutilated. However, among the most damaging threats to watercolors is the process of framing itself. If the painting has been framed without a mat, it may have been damaged by condensation on the glass. If a mat was used, it may well have been acidic and the acidity will attack the painting. Backings used in framing are often of the lowest quality with the result that the acid in them may completely deteriorate the painting. These backings are usually acidic cardboard or newsprint, but in some instances are made of thin pieces of wood which are even more destructive. Too frequently pressure-sensitive tape has been used and has stained the work. We have seen numerous instances of the most respected galleries selling items that have been framed in the worst manner, so, in all cases, framing should be inspected when a piece is acquired.

Previous restoration work is generally more easily detected in watercolors than in oils and such efforts should be clear. Like oil paintings, watercolors are sometimes cut down if some misguided person thinks the edges are ragged and should be trimmed. Mystic Seaport has a fine painting by Jurgen F. Huge of the steamboat *Connecticut*, which undoubtedly has had a full inscription under it cut off at some time.

Every aspect of the painting and its framing should be examined for additional information concerning the origins and history of the piece.

Prints

Most of the information concerning the examination of watercolors on paper applies to the study of prints on paper. In addition, it is important for the collector to know the differences in appearance between etchings, engravings, woodcuts, and lithographs, and be able to recognize modern reproductions of older prints. It would be far too complicated to try to explain and illustrate the differences in this paper, so the book, *How Prints Look*, by William M. Ivins, Jr. is recommended for descriptions of the differences. Your local libraries may also have useful books on the print form.

Each of these print forms is easily reproduced, so knowledge of the field is important. A curious problem to be alert to is the print that is framed with the picture appearing in a large "window" of the mat with the legend for the print visible in a smaller "window" of the mat. In one case at Mystic Seaport, when the backing was removed it was found that sections from two separate prints were framed together to give the impression of one complete and more valuable print.

Carvings

In this category we will consider bow decorations, such as figureheads and billet-

heads; stern carvings; cathead decorations; gun ports; and decorations of the steamship era such as pilot house eagles and other figures, and paddle box decorations. As a collector, you will want to recognize the distinct characteristics of the particular type of piece that you are acquiring and see that it meets those requirements. In the case of bow decorations you should understand the style and posture of figureheads used in various time periods, and the configuration of other decorations such as billetheads or eagles when they are used on the bow of a ship.

The quality of carving is a key to identification here because the carvings for a vessel of any size would be done by professional carvers and would not have a crude appearance. Also, if the object is a piece that was used on a ship you should be able to identify the evidence of it being attached to the ship with spikes or brackets. You should also determine that the material is actually wood. There have been reproductions made for various reasons over many years and you might find that the piece you are examining is, in fact, plaster of Paris or, more recently, plastic. At Mystic Seaport, we have a plastic reproduction of a Bellamy eagle that has been used in training sessions with college students. Those who have not been allowed to pick up the piece, but who have made otherwise detailed examinations, including touching, have not been able to determine that it is plastic. Not one of over 100 students who have examined it has been able to detect that it is not wood. The quality of reproduction today is very high indeed and the collector must be very knowledgeable and cautious.

In determining the composition of a carving it is not adequate simply to determine that it is made of wood, as a greater understanding of its physical composition is required for its long-term preservation. The piece should be examined carefully for large metal pins or fastenings which may have corroded, perhaps creating a major conservation problem. It should also be noted whether the piece is carved from a single piece of wood or laminated. If it is in several pieces, the method of joining those pieces should be understood. In addition, the collector should observe the coatings used to protect the surface of the carving, since they should be considered part of the original and will affect future decisions on possible restoration. These coatings may be paint or gold leaf and the collector should try to determine if the current surface coating represents the original or one of many later protective coatings.

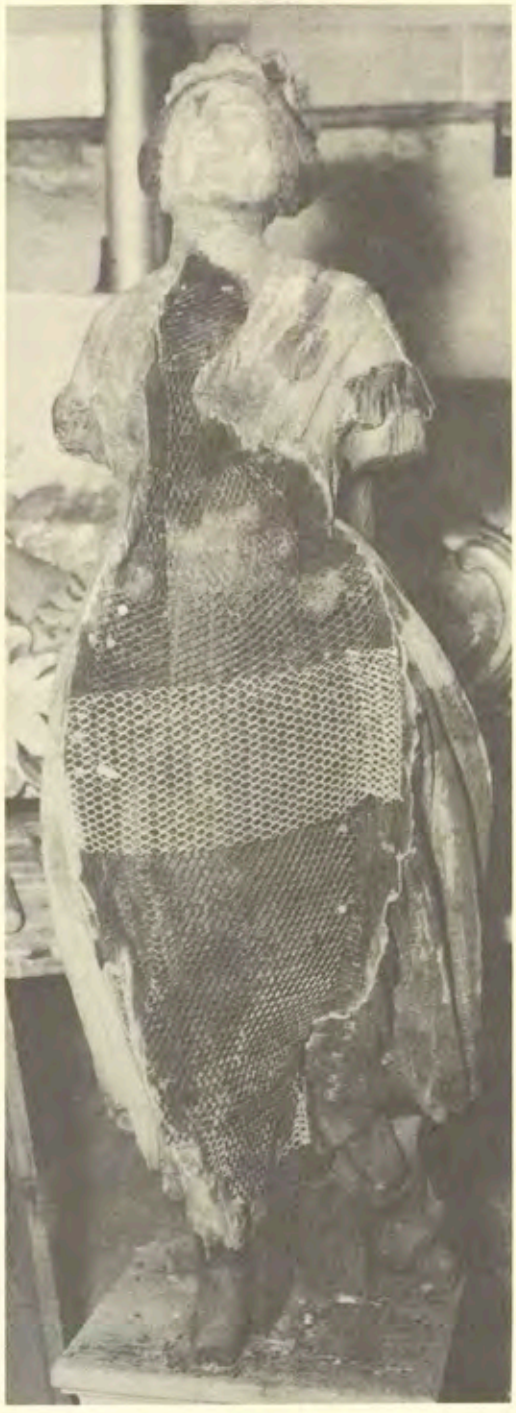
The condition of a piece should be carefully noted, since most ship decorations were exposed to the weather and often bear the scars of their hard life. If cracks or checks have appeared in a carving, or if it is composed of several pieces of wood, it is very likely that water has been able to seep down into the carving, and rot has begun. An attempt should be made to determine the extent of such deterioration by careful visual examination and by probing in any suspicious areas. In a figurehead, deteriorated sections can sometimes be found by knocking on the surface and listening for a hollow sound (compared to the solid sound of good wood) which indicates deterioration of the wood. Carvings also attract insect infestation and pieces should be examined for evidence of this. It may be necessary to have a piece fumigated if you suspect that there are active insects in it. Because of the long hard service most of these carvings gave, they have often had some crude maintenance work performed on them. Perhaps filler pieces have been inserted in cracks and painted over or metal plates have been tacked over deteriorated spots and repainted. All of these should be observed as clues to actual condition during the examination.

Because of the rigors of their use aboard ship, we frequently find that the carvings had been damaged or deteriorated to the point where restoration was attempted. It seems that many owners would not consider leaving a figurehead with an arm broken away, nor could they resist the temptation to paint over

the patina that had developed during years of use. In carvings, the collector must be very careful to observe any changes resulting from restoration. In the case of figureheads, arms, legs, and sometimes even heads have been completely replaced. Usually, careful observation will reveal differences in the quality of carving on the replacement part. If there is the possibility of past deterioration, the piece should be examined for past attempts at solidification. These may include some irreversible remedies, such as epoxy compounds which cannot be removed without destroying the work, but which also react to the environment differently from the carving, and therefore, may cause more problems; or a more appropriate remedy may have been used such as the use of micro-crystalline wax. Wax may either have been applied locally with heat in small areas to solidify local problems, or the entire object may have been immersed in a vat of molten wax to fill large areas of deterioration.

The paint or gold leaf on many of these carvings may disguise past restoration, so very careful examination is required. In a recent example, a photograph of what appeared to be a fine large carved eagle was shown to the museum, and no alteration was visible in the photograph. Careful examination of the original eagle, however, revealed that the tops of both wings had been replaced, with a very slight difference in carver's ability, and the entire eagle had been gold leafed to conceal this change. Collectors should be alert to all past restorations since they affect both the quality of the carving and restrict future restoration possibilities.

The final aspect of examination of a carving, as for other pieces, is to determine if any additional clues may be garnered in obscure areas of the carving that would help in identifying either the piece or the carver. Most marine carvings are anonymous since they were produced in shops employing a number of individuals. However, some are known to have the ship's name carved on them or other evidence which may indicate a carver.



"In the case of figureheads . . . if there is the possibility of past deterioration, the piece should be examined for past attempts at solidification." (50.140)

From the standpoint of the collector, the examination of scrimshaw is extremely complicated since it is so easy for individuals working today to approximate items produced by whalers. The elements to look for in judging quality and authenticity are numerous and would require a separate article in themselves. However, examination from the standpoint of basic identification and preservation is not as complicated. The first thing to determine, if possible, is whether you have a piece of scrimshaw. Scrimshaw objects include a great variety of materials, drawing on whatever exotic items were available to the mariner for incorporation in his scrimshaw work. Of course, you find whale ivory from the teeth of the sperm whale. Baleen from the mouth of the nontoothed whales, a dark flexible material, is frequently found as scrimshaw. The actual bone from the jaw of the whale or other sections is also employed in scrimshaw work and has a very grainy quality. Beyond these parts of the whale, you can expect to find various other woods, bones, shells, metals, and fabrics used. They are combined in endless varieties and careful observation should be made by the collector in the examination of a piece being acquired. You will often find scrimshaw work mixed in a collection with Chinese and Japanese ivory carving, primarily on elephant ivory, and also with Eskimo work which utilizes bone as well as walrus and whale ivory. A serious collector should study these other types of ivory work in order to learn to recognize differences.

It is also important to note that scrimshaw reproductions are being made. Mystic Seaport and several other museums have reproduced good quality copies of fine scrimshaw pieces in their collection, and have made every effort to clearly and distinctly mark these pieces as reproductions in a way that cannot be obliterated. The firm that is most active in this field is Artek, and their pieces are so marked on the surface. In addition, a collector should always look up inside a scrimshaw tooth to see if it is original. The reproductions have been specially molded so as not to simulate the original in these obscure areas, and have the word "reproduction" molded deeply into them. There is an active interest in reproductions, particularly since originals are so scarce and fine examples are nearly unobtainable. As many people want to have reproductions, it is logical that more examples will appear on the market. It is incumbent on the collector to be as aware as possible of the various scrimshaw reproductions and to be able to recognize these when they see them for sale. In most instances, dealers are very honest and mark the

"Mystic Seaport and several other museums have reproduced good quality copies of fine scrimshaw pieces in their collection, and have made every effort to clearly and distinctly mark these pieces as reproductions in a way that cannot be obliterated." (Original, page 102, reproduction, page 103)



pieces as reproductions, but there have been instances when these have been sold as originals.

Examining the condition of scrimshaw pieces is often less complicated than examining the condition of other objects. Severe cracks or serious staining of the surface of scrimshaw teeth are of primary concern and can detract from the value by obscuring the etching work. These two problems have almost no remedy. It is virtually impossible to bring the cracks back together, since they result from shrinkage and stress within the tooth itself. Discoloration can seldom be removed without serious damage to the etching and coloring on the surface, and most likely should not be attempted. On some pieces, repair can be considered. For instance, inlaid boxes can sometimes be repaired if the inlay is loose. Likewise, the condition of hinges, wire, or ribbon used to hold pieces together should be examined. If it is a complicated piece such as a yarn-winding swift, serious damage could occur if the ribbons holding the pieces of whalebone together have deteriorated and lost their strength.

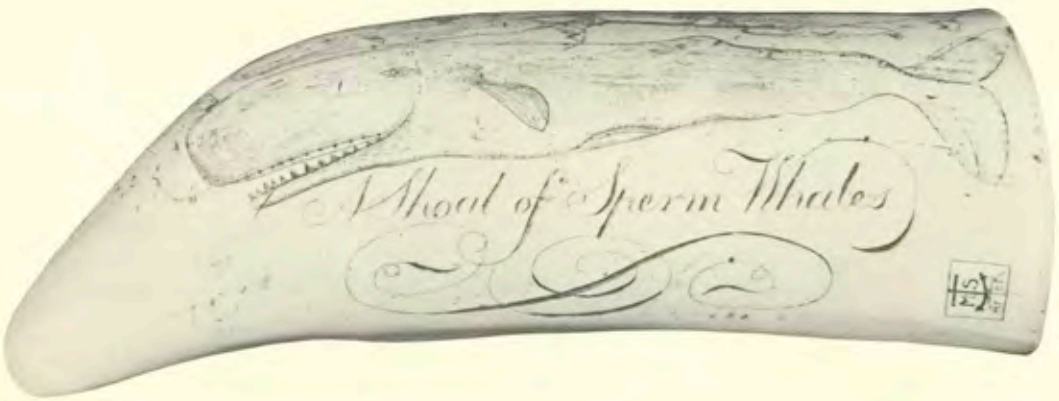
Past restoration of scrimshaw pieces is generally fairly easy to detect, but in some instances it can be obscured when two damaged pieces are combined to "restore" one of them. Examples include a scrimshaw cane with a broken handle, restored with the handle from another piece, and a jagging wheel with the handle combined with the wheel from another.

The search for other identifying clues in scrimshaw is often frustrating because of the anonymity of the creators of these pieces. Occasionally, however, there are clues to the scrimshander's identity that can be detected with careful examination. One example is the work done by a Mr. Perry in the twentieth century, in which his initials WP are incorporated into the design in various places, usually in the sky surrounding a whaling scene. In some pieces the background, if it contains buildings, will help identify the origin of the piece. With scrimshaw, any clues to the background of the piece should be carefully observed and analyzed.

Models

One of the most popular items among collectors is the ship model. The best preparation for model collecting is a study of models in museums. There is a wide range of types of models and levels of quality which should be thoroughly understood by the collector. There are full models of wood, half models of wood, and full models made of bone or sometimes other materials. We will touch on each of these types to attempt to help in identification.

The first category is the sailor-made model. These are models in which the basic elements are all present and correct, but, since they were often done by sailors on board their vessels or after they went ashore, the quality of workmanship is seldom very good and the scale is often distorted. As the sailors worked from memory without the benefit of precise plans, the models often became caricatures of the original vessels. There is, of course, a



value in such a model, particularly when the vessel is known and the maker is known, since it does record the basic configuration of the vessel.

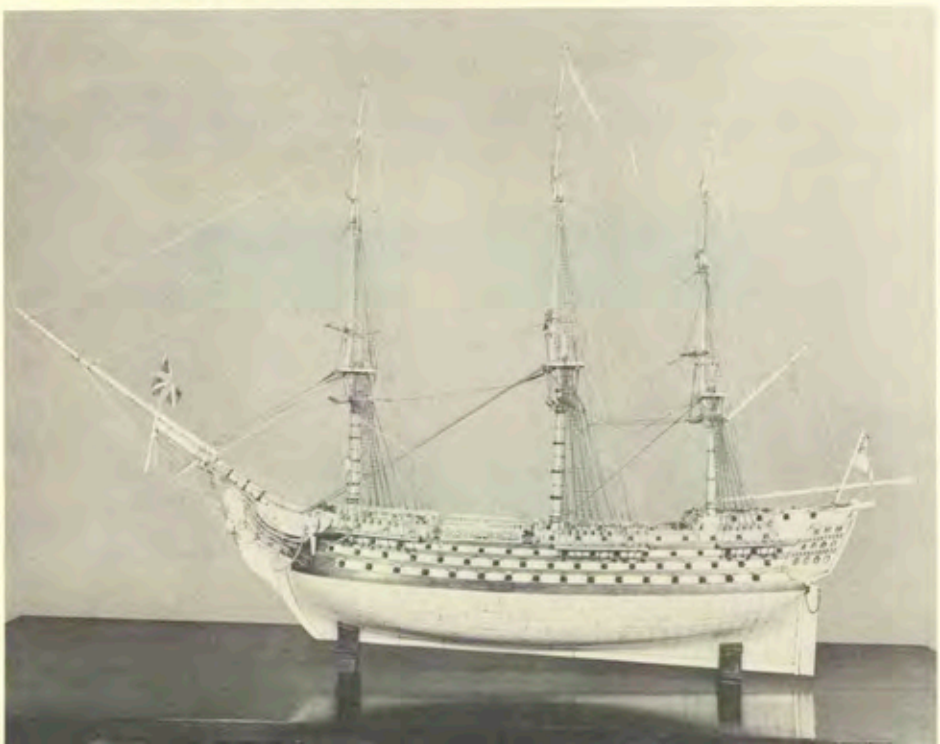
Another category of full wooden models is the sailing model category, ranging from the primitive character of the sailor-made model to the precision of scale models. The telltale indication of a sailing model is a keel of exaggerated length or depth, and a disproportionate amount of weight in the keel. This is needed, of course, to counteract the pressures of the wind on the rig in a small model.

The scale model is often the most sought after since it most frequently represents a known vessel and is most often created with the use of detailed plans. In some instances, these plans are the original builder's plans; in others, they are ones that have been developed specifically for model builders. The model should look precisely as the original vessel appeared. Any variation in appearance is a function of both the quality of the plans used and the skill of the model builder. An experienced collector should be able to differentiate between a scale model built from scratch, with all its elements being custom-made by the model builder, and a kit in which mass-produced items are applied throughout the model. The highest level of scale model development is usually reflected in the British Admiralty models, built by teams of very skilled craftsmen to show the Admiralty boards precisely how a finished vessel would appear.

Three types of bone or ivory models are of interest to collectors. The first category, and the one which has been very popular with collectors over many years, is the prisoner of war model. These models are of bone and ivory and, while not displaying the precision of scale models, they are generally quite well-detailed and proportioned. They show delicately carved work throughout the model and often have metal fittings of gold. Such models were produced by skilled workers who were captured during the Napoleonic wars and incarcerated in English prisons. Obviously these model builders had lavish amounts of time and could afford to do very intricate work.

Fine ivory carving is also exhibited in the

"... prisoner of war models ... are of bone and ivory and, while not displaying the precision of scale models, they are generally quite well-detailed and proportioned." Ship of the line *Queen Charlotte*. (52.472)



models of Chinese pleasure boats which were often brought back from the Orient by mariners involved in the China trade. These are easily recognized. Finally, in the bone model area, there are examples of scrimshaw ship models which are usually quite simple in their construction, havng been made by sailors at sea to pass their idle time on board a whaleship. The ships in which these men sailed were much simpler than the warships of the Napoleonic era and the models reflect that simplicity.

The half model has been of interest to the collector for many years and there are several types of these. The half model was generally used in ship construction before the time of drawn ship plans, and information for the construction was taken directly from the model. Pencil marks on the back of half models may indicate this use. The most common type of builder's model was the lift model, a block built up of horizontal layers running fore and aft, with all the contours of half the hull carved to a precise scale. Another type of builder's half model used in the era of iron and steel ship construction was the plating model, which illustrated half of the hull with the dimensions and locations of the metal hull plates. This created on the surface of the model a series of rectangles with notations, making these models easily recognizable. An early type of builder's half model was the hawk's nest model, in which the frames are shown with only a few planks in place, giving a skeletal appearance. Collectors have also been interested in the decorative half model, which was not used for construction, but was later created to represent the hull for display. The collector should be aware of the variance in quality of these models which can only be developed through study.

When considering the acquisition of any model, the collector should very carefully examine the object to verify its identity and to seek evidence of past restoration or extensive rebuilding. For instance, have damaged parts simply been removed? In the case of rigged models, it should be determined whether the rigging is original or restored. The condition and strength of original rigging should be noted. Finally, the model should be examined for active deterioration in the form of fungus infestation or oxidation of metal parts. It should be remembered that models are often composed of a variety of materials and, therefore, the collector should be alert to a rather large range of potential restoration problems.



"In the case of rigged models, it should be determined whether the rigging is original or restored." This is all original—the *H.M.S. Burford.* (73.547)

In this section on examination we have focused on the major categories for the marine collector and some of the points which should be considered prior to the acquisition of these marine items. The information gained during these examinations should be used to guide the collector in the next aspect, which covers preservation during the exhibition or storage of items within the home.

Museum Conservation: Preservation

By JOHN L. SHOLL *Conservation Specialist*

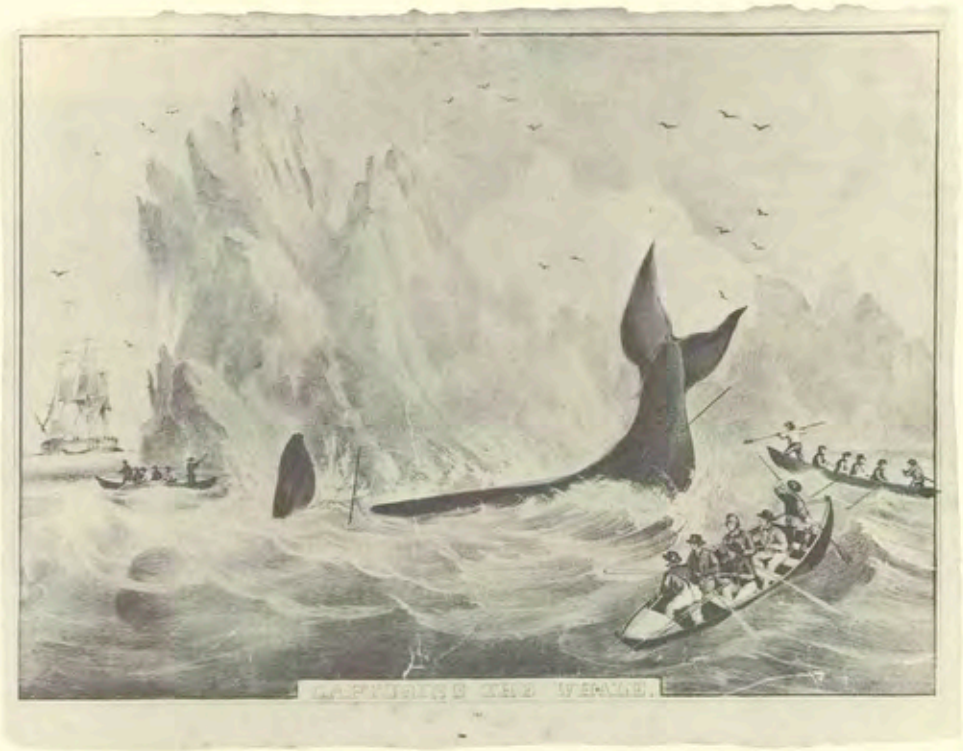
Here we shall consider those elements which affect the preservation of your collections, and simple methods for retarding their deterioration. Artifacts change in appearance and structure as they age. Deterioration can be a slow process, requiring years before visual evidence of damage appears. The condition of any object is determined by the material used in the artifact and especially by the environment in which it has been kept.

The collector who stores and displays historic and artistic works in the home must be aware of the problem of environment and deterioration. Although a comprehensive program for preservation is beyond the scope and means of many collectors, begin where you can to control the home environment and safeguard against damage and do not be discouraged if your progress is slow.

Now let us look at some of the major causes of deterioration: humidity, light, pollution, dust, and effects of insects, animals, and man. Perhaps the most universal problem is moisture in the air, or humidity. There are very few materials that are not reactive with moisture. In most areas of this country, temperature and humidity are in constant flux. Many materials continually absorb and release moisture while attempting to maintain equilibrium. It should be no surprise that many antiquities and works of art suffer acutely with these changes. A wooden half model, with directional properties (the grain of the wood), may warp and split, perhaps becoming permanently distorted because of humidity fluctuations. The canvas of a painting will expand and contract with changing humidity while the paint remains rigid and gradually separates from the moving canvas. Also, the combination of humidity and heat can greatly increase the likelihood of mold or fungus growth on materials such as leather and paper.

Many papers made after 1850 are especially sensitive to excess humidity and temperature. They are manufactured from wood and cellulose, with alum and rosin sizing. Because of the materials used, these papers are vulnerable to complex chemical reactions causing acidity and resulting in the paper becoming discolored and brittle. By controlling your home environment you can lessen such deterioration. Research has established optimum temperature and relative humidity ranges for most materials. You can monitor these at home with simple thermostats and humidistats. It is recommended that a relative humidity between 45% and 60% and a temperature between 65°F and 72°F be maintained in storage and exhibit environments. This can be done at home by keeping an eye on your heating and cooling systems and by using easily obtainable, portable dehumidifiers and humidifiers. Do not place your valuable objects over radiators, fireplaces, stoves or other sources of intense heat.

High light levels, from sunlight as well as from fluorescent and incandescent lamps, are dangerous agents of deterioration, but can easily be controlled in your home. The radiant energy of light by itself, or in the presence of moisture in oxygen, can contribute to a series of harmful reactions in many materials. Ultraviolet light (part of the spectrum of sunlight, but also found in high levels in fluorescent lamplight) is particularly damaging to organic materials, causing them to fade and become brittle.

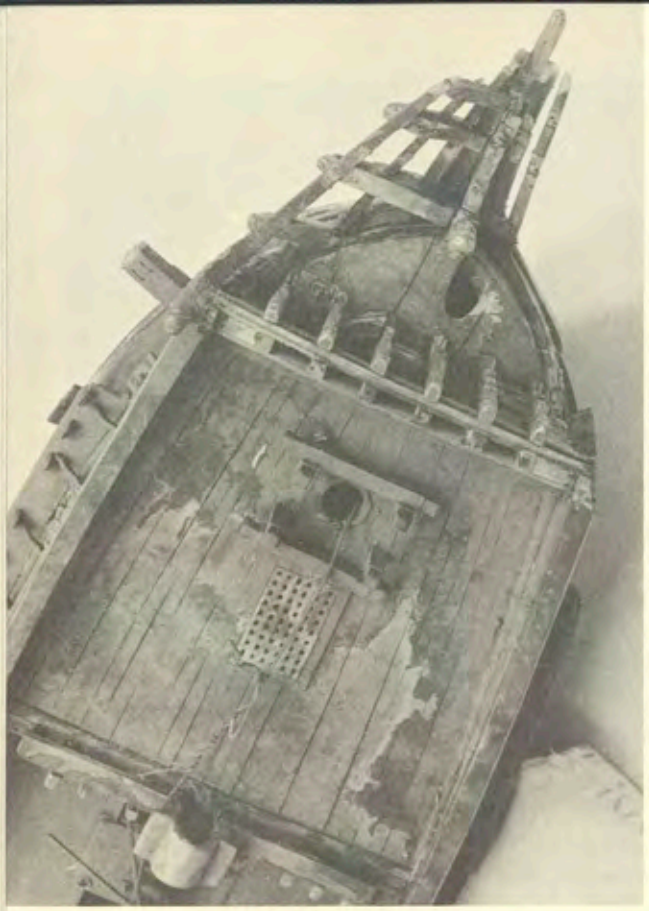


"... the combination of humidity and heat can greatly increase the likelihood of mold or fungus growth on ... paper." Notice the spotting along the top and bottom margins. (39.1602)

Many artifacts in your home are vulnerable, especially watercolor and oil paintings, textiles, rugs, paper artifacts, and painted carvings or furniture. In most instances, this damage is cumulative, which means that by lowering light levels and eliminating as much ultraviolet light as possible, deterioration can be controlled. First, move your collections out of direct sunlight or prolonged exposure to fluorescence. Then, if you can, use window shades, and install ultraviolet filters on windows, picture frame glazing, fluorescent light fixtures, and display cases to further reduce light levels. Finally, beware of radiant heat from artificial light sources. It is literally possible to bake a painting or other artifact under spotlights or photographic flood lamps.

Air pollution is another constant threat to collections. Most pollutant gases—hydrogen sulfide, nitrogen dioxide, sulfur dioxide, even ozone—can stain and deteriorate paper, corrode bronze, silver, copper, or iron, and weaken textiles. While the government has attempted to set clean air standards, there is little any of us can do to protect our own collections from external pollution. Within your homes, see that your collections are placed as far as possible from the smoke and soot of fireplaces and woodstoves.

Dirt and dust are also hazards. Because they are composed of both organic and inorganic matter, dust and dirt can react directly with the materials with which they come into contact. They tend to be hydroscopic, absorbing moisture in a humid environment; therefore, a dirty artifact will more readily suffer from excessive moisture. However, the removal of dust and dirt from fragile or delicate objects in your collection should normally be left to the expert, the conservator. This cleaning can be a complicated affair, and it is not recommended for the nonspecialist. Nevertheless, good housekeeping is in order in all areas where your collections are displayed and



"... accumulations of dust and dirt tend to attract insects and microorganisms."

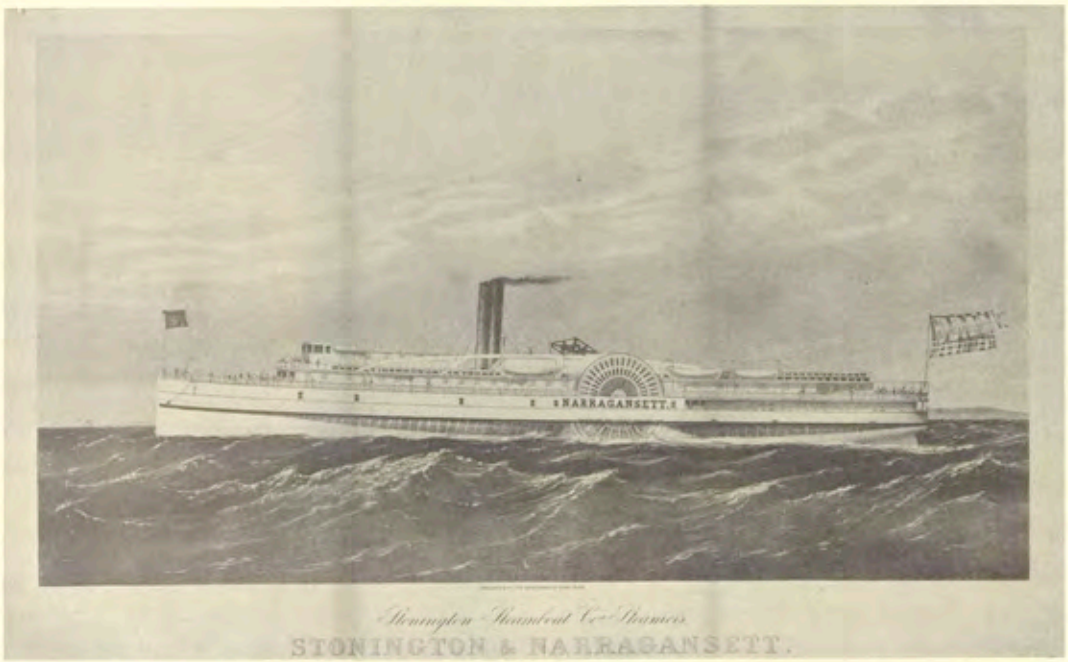
stored, as accumulations of dust and dirt tend to attract insects and microorganisms.

Insects, animals, and microorganisms can be very destructive if no attempts are made to control infestations. Many of us routinely (and quite correctly) keep our woolens in an atmosphere containing napthalene (mothballs), in an effort to control the moth population in the home. It must be remembered that many other pests find our artifacts particularly nutritious. Damage by cockroaches, silverfish, termites, booklice, bookworms, rats, mice, and a host of others, is evidence of a very serious problem requiring control by professional exterminators. Fungi, mold, and mildew can be eliminated entirely if good air circulation and humidity below 60% is maintained. Household pets, such as cats and dogs, can cause damage, not only by knocking items over, but also by acting as a vehicle to transport insects from outside the home to the artifacts within. Open, unscreened windows may allow the entry of damaging insects.

People can also become agents of deterioration, not only by inadvertently mishandling objects, but also by working with historic or artistic objects without a full consciousness of the damage they might inflict. It is as critical in preservation to know what not to do as what to do. Something as simple as the routine handling of objects can be disastrous. For example, consider the damage resulting from the improper handling of a Liverpool jug in Mystic Seaport's study collection. A person's instinct is to use the jug handle to lift and move it, yet a more thoughtful

"Something as simple as the routine handling of objects can be disastrous." Examples of wear and tear from daily handling in the H. R. & W. Bringhurst Drug Store.





"All paper is susceptible to contamination from adjacent materials . . . cardboard, pulp mat boards, and wooden backings." The dark stripes are acid stains caused by long-term contact with wooden backing boards. (33.84)

approach would be to cradle it in your hands, anticipating the fragile nature of pottery and the mechanical stresses created in the design. How many people have found themselves with handle in hand and jug on the floor?

There are other seemingly mundane but important considerations as well. When moving an artifact, plan to have a safe place to put it down. Think of the effect that dirt, acids, and oils from your hands might have on the object. In transporting your collection, consider the temperature inside your automobile, as well as protection against sudden stops and excessive vibration during transportation.

Some portions of your collection will require special treatment. Preservation of ship models for example can be especially difficult. Models are delicate and rigging is particularly vulnerable. Ship models should be encased for protection from dirt as well as damage. Many models have fittings made from "white" metal, a lead-zinc combination. This material is subject to oxidation and corrodes into a powdery residue. Camphor cakes in a model's case can help prevent this. Even in a case, a model's rigging is vulnerable to vibrations caused by moving or by street or mechanical vibrations. Find locations for your models that are free from vibration, away from direct sunlight and sources of heat, and avoid moving your models thereafter.

Works of art on paper also demand special attention. Not only are some papers acidic in nature, hence becoming brittle and yellow over time, but also, all paper is susceptible to contamination from adjacent materials. It is critical that paper artifacts do not come into direct contact with such unstable materials as cardboard, pulp mat boards, and wooden backings. Only mat board made of 100% rag should be used to mount paper artifacts, though this is not regularly done by many



Detail of an oil painting showing serious cracking of the paint surface. (48.1126)

commercial picture framers. Of the thousands of framed paper items received at the Seaport in the past seven years, perhaps as few as a dozen were properly framed. For the collector then, it would seem worthwhile to have paper works of art unframed if the composition of framing materials is unknown. When reframing or replacing a mat, it seems a small additional expense to demand 100% rag board when the urge to economize has the predictable result of accelerating deterioration. Reputable picture framers know of sources for acid-free materials and will use them on request.

An equally serious problem exists when pressure-sensitive cellophane or masking tape is used in the framing process to secure the work of art to the mat board. Over a period of time, tape can cause irreversible damage which, if severe, will require the services of a trained paper conservator. When matting a work of art on paper, request oriental paper hinges and starch paper pastes.

Let's take a walk through your living room asking the basic questions raised by this paper. Notice the oil painting over the fireplace. Is it vulnerable to serious smoke and heat damage? Notice that part of last year's Christmas decoration, a pine bough, is still resting on the frame. Have other remnants fallen down in back of the painting between the stretcher and the canvas and been left to deteriorate and damage the painting? Is your southern exposure allowing direct sunlight to fall over your cherished Oriental rug? Is the unscreened window allowing entry of pests which can do direct damage to any number of objects? What about that incandescent lamp illuminating your fine collection of scrimshaw? Is the heat from that lamp going to cause your scrimshaw to crack? What about encasing your ship model to prevent further years of accumulating grime and to protect its rigging from the cat? Is your fine watercolor ship portrait still framed with its original wooden backing? What about those cracks in your prized pilot house eagle, are they the result of wide fluctuations of humidity and temperature?

The on-going responsibility for your collection's preservation rests squarely on your shoulders. Yet there is ample information and guidance available to you. We have included a short bibliography in this issue for your convenience. Such knowledge gives you the ability to recognize and control agents of deterioration, allowing you to preserve important material for generations to come.

Museum Conservation: Restoration

By DAVID F. MATHIESON *Supervisor of Conservation*

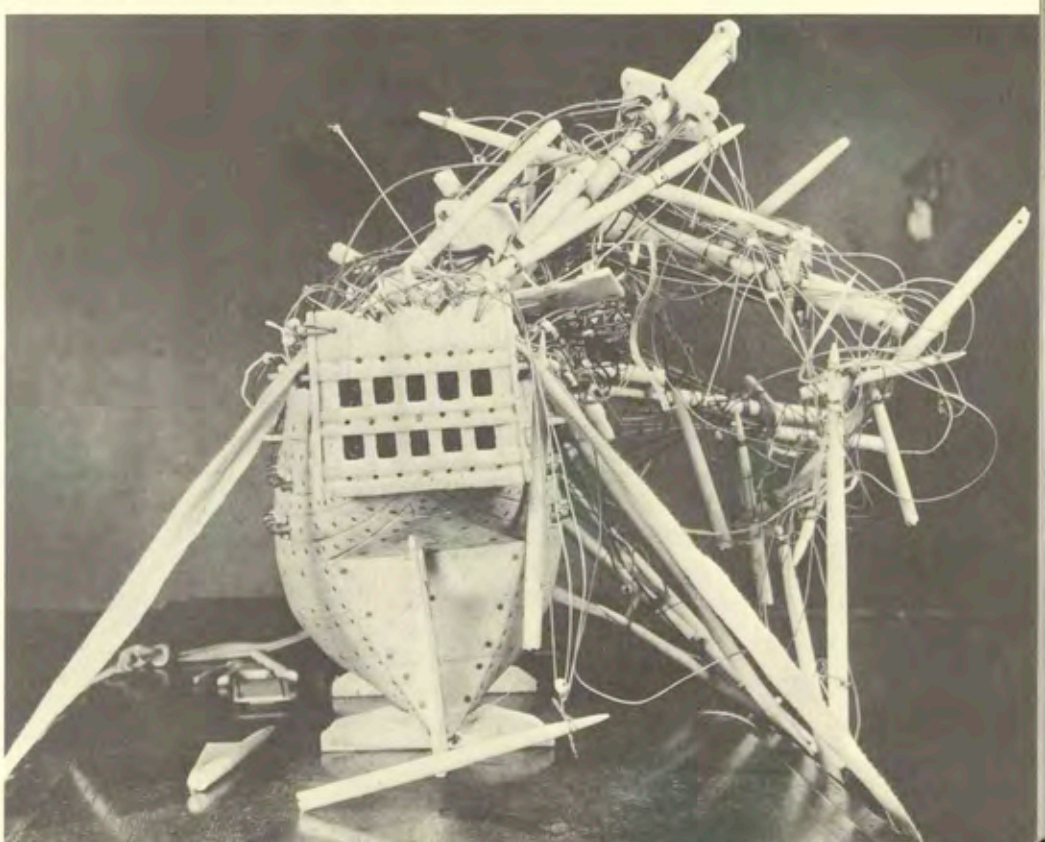
The final element in conservation is restoration. In this highly complex field, the collector can only participate by making sure that his artifacts get the best possible care. One seeks out a conservator with the same care with which one selects a physician.

Unlike preservation, whereby the environment surrounding an object can be modified or manipulated, restoration involves the physical treatment of the artifact itself with the aim of restoring it to its original condition, as nearly as possible. Since it involves an intrusion upon the very fabric of the object, restoration can be hazardous.

At present, there is no authority or law which prevents any person from adopting the title conservator and taking in work as such. There are, however, organizations which establish standards of acceptable practice for conservators and others seriously interested in professional goals. The International Institute for Conservation of Historic and Artistic Works established in 1950, and its offspring, the American Institute for Conservation of Historic and Artistic Works are the most notable.

Three years of closely supervised education above the bachelor degree level is usually required to provide proper training for conservators. At present, there are only five graduate level programs in North America offering conservator training. These

A bone ship model in desperate need of restoration.



five programs produce approximately thirty graduates each year. With so few accredited conservators, there are many opportunities for the unreliable non-professional.

As the techniques of conservation and restoration progress, a background in chemistry as well as the arts becomes crucial. The conservator must be familiar with the chemical nature of metal corrosion, fungus growth, oil paints, varnish, and a host of agents, all reacting differently to attempts at restoration. Specialized knowledge becomes critical in many maritime objects the collector might have in his possession. Ship models present an enormous challenge because of the variety of materials involved. But in additon, a considerable technical knowledge of ship construction and rigging is essential when rebuilding a model. Thus the restoration of a ship model requires the collaboration of an experienced modelmaker and an objects conservator.

Where does one find such uncommon expertise? Although one can find lists of reputable conservators printed in various handbooks on care and preservation of art objects, rarely do they reflect the current scene. Your best bet is to visit the curatorial department of a museum in your locality which has under its care large collections of artifacts similar to your own. These men and women can frequently determine for you whether you have an object which warrants the considerable cost of restoration, and alert you to the best conservators in your immediate area.

When one confronts the high cost of professional restoration the temptation is great for the owner to be satisfied with a job which will return the object to an acceptable cosmetic appearance, but our obligation in collecting is not to change objects to suit our preferences but to preserve their integrity as historical artifacts.

Even at a museum the size of Mystic Seaport the high cost of restoration forces us to postpone obvious needs. Most of our restoration work is now sent out to a variety of specialists. At the present time the ability to assemble a group of conservators large enough to minister to our widely varied needs, to say nothing of building facilities for such an operation, is restricted by our financial capability. Meanwhile, our own professional staff is constantly monitoring the status of artifacts and environment, improving our storage areas, stabilizing the conditions of our healthier collections, and recommending further courses of treatment for those that require restoration.

Caring for Historic Photographs

By WILLIAM N. PETERSON *Village Exhibits Specialist*

Of all the varieties of historical objects covered in these articles the one most likely to be in everyone's home is the photograph. Photographs are so common and familiar that they are liable to be ignored as something durable that will remain unchanged forever. However, in actuality photographs are not durable and are quite sensitive to many things. They are so sensitive to light, for example, that they will begin to fade in a matter of hours if left in a sunny window or even a brightly lighted room, especially a room illuminated with fluorescent lamps. In addition, high temperatures, high or low humidity, and air pollution all combine to act on photographs and limit their useful life.

As a general guide we would encourage all who have photographs to keep them in a cool (below 75°F.) and dry (relative humidity of 45%) environment. Because they are so sensitive to light, photographs should be kept or displayed in a darkened room. A totally dark place is best for storage since even reflected light that bounces off walls and mirrors will eventually fade photographs. Attics, where old family photographs tend to be stored, are often dark enough but are generally too warm and dry for sensitive photographic emulsions and paper supports to survive more than three generations. The best way to help preserve your photographic prints is to place each in an individual triacetate sleeve or nonacidic paper envelope. The triacetate sleeve allows the print to be viewed without being removed from its protection. In addition, the photographs should be placed horizontally, according to size, in nonacidic storage boxes such as those of the Hollinger Corporation. Cased photographs can be stored in similar acid-free boxes.

Before going into a description of the kinds of photographs that are likely to be found in many American homes, two more warnings should be issued. First, never put your fingers on the surface of any photograph. The water and salt in your hands, no matter how dry they feel, will transfer to the photograph and eventually cause fingerprints and stains to show up on the image. Fingerprints hardly ever show up immediately. It usually takes a few years before the salts have worked into the emulsion enough to be noticeable. As a rule, always handle photographs and negatives by the edges or, even better, use light cotton gloves. Secondly, never write on the back of a photograph, especially with ink! The reason for this is simple; if the photograph becomes wet or damp, the ink will "bleed" through and stain the image. If you must write on the back, do so lightly with a soft (No. 2) pencil. Our recommendation would be to put the information on a separate piece of paper. However, do not clip or staple the two together. Both of these metal fastenings rust! When recording information, include the people and places pictured and especially remember to date the photograph and note the photographer's name.

Many people own "old" photographs but do not consider them important or particularly worthy of saving. It is probably true that those most closely connected to family photographs are the worst judges of their worth. As a rule, old pictures, even snapshots, should never be thrown away. Aside from being collectible in today's antique market they are, more importantly, valuable historical and social documents that can be of great



"Daguerreotypes . . . are most commonly found under glass in small thermoplastic, pressed paper, or leather cases." (77.268.375)

interest to historians who wish to study bygone eras. Don't forget that the photograph does not have to be 100 years old. The early 1970s are also part of a bygone era.

Early Photographic Processes

The *daguerreotype* process first appeared in 1839 and was commonly used until 1860. A daguerreotype can usually be identified quickly because it reflects light and often can only be viewed when turned at certain angles away from the strongest light source. Daguerreotypes are direct positive images that have been exposed on silver-sensitized copper plates. They are most commonly found under glass in small thermoplastic, pressed paper, or leather cases. Under no circumstances should the glass be removed since it is the only protection that the extremely sensitive image has from scratches and finger prints. Even if the image is badly tarnished, as is the case with many, a daguerreotype can be cleaned, but only by a professional. It should not be discarded.

Ambrotypes, popular between 1854 and 1867, are slightly less common than daguerreotypes, even though they were made by a later process. They are negatives on glass. The image appears to be positive because a dark background is placed behind it. Usually this is a black sheet of paper or felt, though, in the most common variety, the back of the glass itself has been painted with a dark varnish. Often, after many years, this varnish layer will have flaked off, making the image look hopelessly lost. Again, an ambrotype should not be discarded since a simple replacement of the dark background will usually restore the image. Ambrotypes, like daguerrotypes, are protected by a piece of glass and are placed in small leather or pressed paper cases.

Tintypes, also called ferrotypes, are another direct positive photograph, but are exposed on a thin piece of sheet iron. They are not really made of tin. The most common size tintype was 2½" x 3½". It was small so as to be carried easily in a pocket or sent through the mail. Their versatility made them



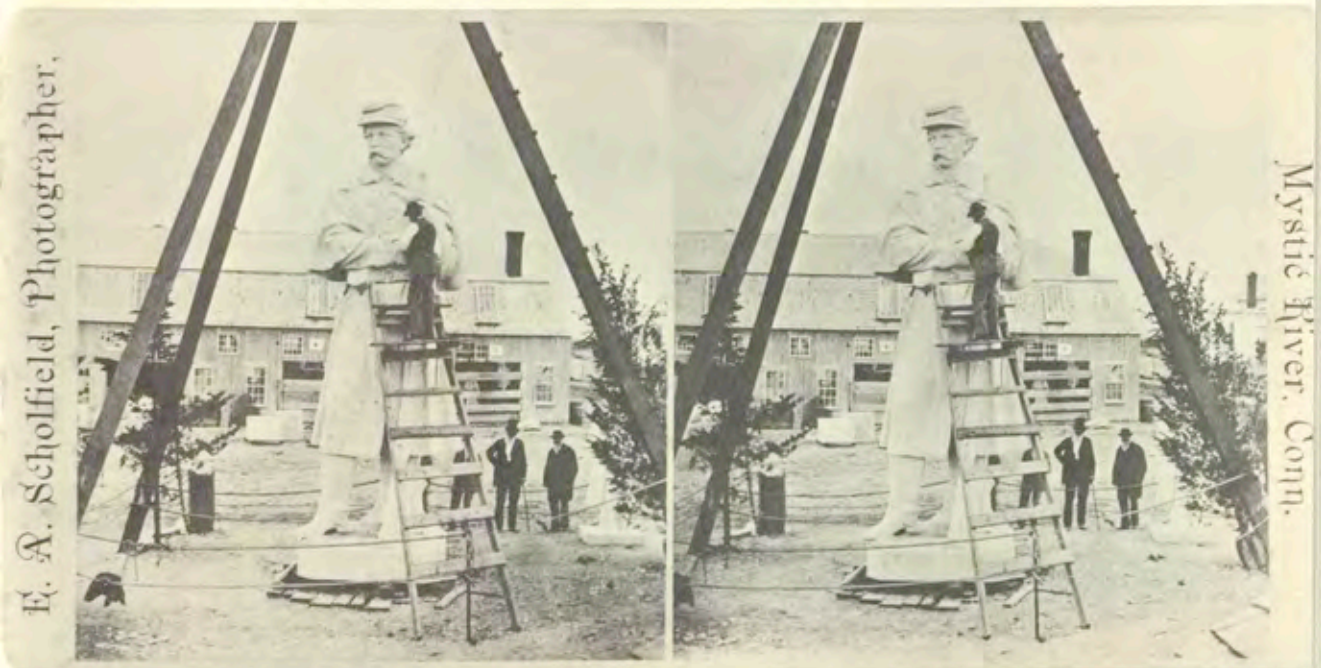
"Tintypes, also called ferrotypes . . . are exposed on a thin piece of sheet iron." This tintype, ca. 1895, is a typical studio photograph.

popular with soldiers and soldiers' families during the Civil War. Tintype images commonly date between 1858 and 1930.

Perhaps a word about the term "direct positive" would be in order before going into the later types of photographs. Essentially, the term means that a photograph is developed directly on a prepared surface without involving a negative. As a result, direct positive images are usually one of a kind photographs. This gives them something in common with paintings and drawings, hence their popularity with collectors. If you own a daguerreotype, ambrotype, or tintype, the chances are good that it is unique.

By the late 1850s glass plate (wet collodian) negatives, the forerunners of modern photography, began to be employed commercially. For many reasons a photograph produced from a negative was much more marketable. Chief among these reasons was the fact that more than one copy could be produced. Consequently, during the second half of the nineteenth century many styles and formats for photographs became popular. Perhaps the following three styles are most likely to be in your home. First, is the *stereograph*, which is a paired image of an identical scene that appears to be three-dimensional

"... the stereograph ... is a paired image of an identical scene that appears to be three-dimensional when viewed through a stereoscopic viewer." This view shows the Antietam monument being sculpted in Westerly, Rhode Island in 1874. (77.268.292)



when viewed through a stereoscopic viewer. These photographs were particularly popular in the United States between 1858 and 1920, and could be found in virtually every parlor in the nation. Probably the most popular images were views of majestic landscapes, foreign scenes, disasters, and spectacular man-made structures.

The *carte de visite*, or visiting card, was a small 2½" x 4" photograph. This measurement includes the card stock upon which the photograph is mounted. Cartes de visite were especially popular in the early and mid-1860s and were produced in great numbers from 1860 to 1890. Most of them are portraits of unidentified people. Frequently, however, portraits of famous people such as generals, politicians, and entertainers were produced in commercial quantities and are now avidly sought by collectors.

The *cabinet photograph* replaced the carte de visite in popularity and remained popular between 1866 and 1915. Cabinet photographs were generally 4¼" x 6½" in size, including the card stock on which they were mounted. Since they were larger than the carte de visite more effort was required of the photographer to get good facial expressions and proper lighting. Consequently many of these portraits tend to be more "artistically" posed than was previously necessary with the carte de visite.

All of the aforementioned types of photographs are commonly found in many homes. They are worth preserving even though the vast majority are unidentified portraits. Experts can determine much about clothing, occupations, and life styles from studying these images. In addition, a good deal can be learned from a technical study of the photograph itself. Subtle external differences in color, size, thickness, and shape can all help determine when the photorgaph was taken and perhaps by whom. In short, there is always the hope that the mystery of any photograph will someday be unraveled. Don't throw them away!





"The carte de visite, or visiting card, was a small 2½" x 4" photograph." Portraits such as the above are the most common, but scenic views, like this excursion boat, are frequently found.



"Cabinet photographs were generally 4¼" x 6½" in size . . .
many of these portraits tend to be more 'artistically' posed."

Special Problems

Nitrate roll film, which was developed in the late nineteenth century, revolutionized the photographic industry by making it possible for everyone to take pictures. Negatives no longer had to be bulky glass plates, so photography was no longer the domain of the professional. Between 1889 and 1940, mass-produced film was made of nitrocellulose. Unfortunately, nitrocellulose film is highly flammable and will burst into flame spontaneously with little provocation. In a compact form, such as movie reels, nitrate film can actually explode if it gets hot enough. This is especially true as the film gets older because eventually it will chemically break down even under the best of conditions. Check rolls of old movie-film for the term "safety film" printed along the edge. If it is not there, the film is probably nitrate, and should be handled with extreme care. Because of their unstable nature all nitrate negatives should be stored in a cool, well ventilated place. For the same reason, all nitrate negatives should be stored away from other photographic films and prints because when nitrocellulose begins to break down chemically it releases gases harmful to these and other materials.

Color photographs. Without going into a long technical discussion about color film it will suffice to say that all color photographs are made through some dye transfer process. Dyes, as most homemakers know, are sensitive to light and heat and will eventually fade, even with the best of care. Color photographs, therefore, are not considered archival by most museums. Most will not last more than one hundred years at best. If they are to be preserved for any length of time at all they must be kept in totally dark storage.

In this discussion, we have attempted to provide some useful background information for identifying early photographs which might be found in the home. We have also stated some of the very basic do's and don't's of photographic handling and storage. Obviously, the field is tremendously broad, and is expanding daily. The allied field of photographic equipment has not even been mentioned here, but is another area of expanding interest. Further information on both of these areas can be found in the works listed in the bibliography. With such information, you can help the images of the past and present survive into the future.

Basic Home Care for Old Family Papers

By DOUGLAS L. STEIN *Assistant to the Librarian*

Many Americans today are actively involved in tracing their family history. Motivated by our nation's bicentennial and encouraged by such television fare as "Roots," hours have been spent at local town halls gleaning genealogical information from old records and newspapers. Some people are fortunate enough to discover an "old bunch of papers" stored away in the family attic. Often these papers include old letters and diaries. Although not worth a lot of money, these items become treasured family possessions which deserve the best of care.

How can people care for such discoveries properly? While books and pamphlets on paper conservation are not featured items in most retail bookstores, much has been written about basic preservation procedures which can be accomplished at home. In fact, even a rudimentary knowledge of proper cleaning, flattening, and storage methods, will do much to help them protect valued old family papers.

Cleaning

Manuscripts like the ones we've just described are usually found folded, and often covered with dust, dirt, etc. An effective method for cleaning folded or bundled papers is to brush lightly with a soft unused hairbrush, similar to a large camel's hair or artist's brush. They should be brushed off before unfolding. Frequently no further brushing is necessary, as most of the dirt will be on the outside.

After the papers have been flattened, or otherwise exposed, they should be placed on a clean work surface (glass or *Plexiglas* is good) and brushed from the center toward the edges, using a "lift-off" rather than a "rub-in" motion. Pencil marks and dirt stains can probably be removed with a mild dry cleaner called *Opaline:* a bag containing absorbent powder and other ingredients. Preferably, shake some powder onto the paper and rub gently with two fingers in a circular motion from the center to the edges. It leaves crumbs which must be dusted from the paper. Repeat if necessary. Several kinds of erasers, like *Pink Pearl* or *Magic Rub*, will loosen stubborn, engrained dirt. Again, you should work from the center to the edge of the manscript.

Dirt and stains which cannot be removed by these methods are probably sub-surface and should be left for professional restoration. Avoid becoming involved with cleaning methods using water or other solvents. A thorough knowledge of paper, inks, and chemicals is needed here and is too risky to be considered by the amateur.

Finally, the cleaning process should include the removal of all clips, pins, staples, rubber bands, and other foreign matter. These items only contribute to the contamination of the paper. Plastic paper clips are available should the need become imperative to join two or three manuscripts.

Flattening

Creased, wrinkled, and folded papers are the rule rather than the exception; and they must be flattened before they can be completely cleaned, filed, or used with any facility. Before an attempt is made to remove folds and creases, the paper should be allowed to absorb some moisture from the air for a few days. Moisture will help to relax the paper so that it will not fracture when unfolded. A humidifier, placed in a small enclosed room or closet with the manuscripts resting on a glass or porcelain surface (preventing discoloration), will hasten the process.

Each item may then be carefully opened, and, providing it does not have water soluble ink, sandwiched between damp white blotter paper. Stack several of these "sandwiches" on top of each other with a board covering the entire top surface of the stack, and place weights on top of the board. Allow several days to dry.

Letters or documents with turned-down corners should be flattened out by gently reversing the fold. When the turned corner is flat, turn the manuscript over and rub the crease lines carefully but firmly with a bone folder or the convex side of a tablespoon. If the paper is not fragile or brittle, other folds can be removed in this manner. Many folds and creases will not require such attention, since they will be flattened by their own weight once they are stored.

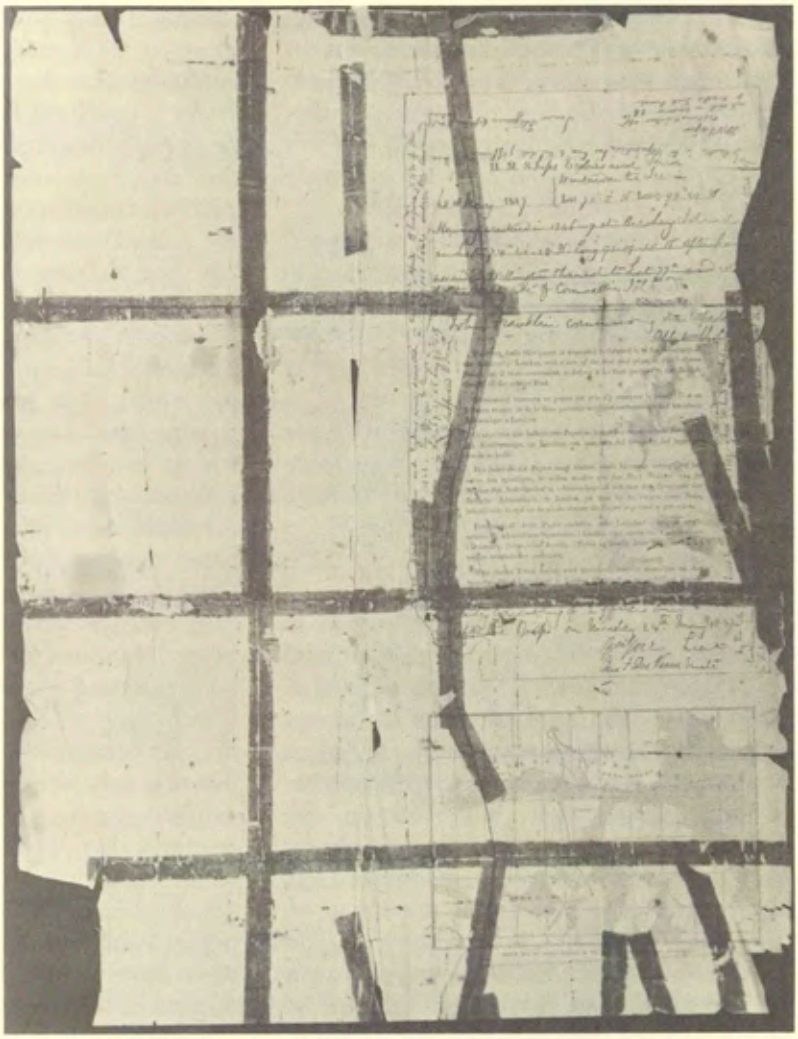
Mending

No doubt the most frustrating situation with which the home archivist must cope is a tear or fracture in a document. Naturally, these injuries frequently happen to the most interesting documents (maps, deeds, etc.) simply because they have been the most heavily used.

The usual expedient, and certainly the easiest remedy, is the bane of all professional archivists: pressure-sensitive tape. Its popularity with the public continues to cause untold damage to manuscripts. In the initial stages of deterioration, the adhesive oozes out at the edges of the tape, causing it to stick to other paper next to it. In cases where the tape has been in place for years, it will have dried and can be peeled off easily, but the penetrating, oily, dirty brown stain can never be removed. There are two restraints all home archivists should remember: (1) never use pressure-sensitive tape on any papers of more than ordinary value, or on papers you wish to preserve for an indefinite period of time; (2) never attempt to remove pressure-sensitive tape—it can occasionally be done with proper solvents—but leave that job to an experienced paper conservator.

While it is best not to use any tape, *Dennison*'s (brand name) transparent mending tape may be used if absolutely necessary. It is not a pressure-sensitive, sticky tape, but rather a glassine paper, backed with a water soluble adhesive, which has been used by libraries for over fifty years.

It is not uncommon that the documents which their owners find most interesting are so highly acidic that they have discolored and fracture upon touch—this includes newspaper clippings. In some cases, a professional conservator will be able to render the document usable once more, either strengthening it by encapsulation or backing it with an inert (nonacidic) material. But what can be done until that nebulous day when the patient can be put into the hands of a reputable archivist or paper conservator? Cellulose acetate is the answer, and though dealers may not know it by that name, it is available in many products and reasonably easy to obtain in sheets from art dealers. It is commonly available made up as clear, transparent sleeves for photo-albums and stamp albums, usually in 8″ x 11″ sizes and larger. By providing a protective transparent shield for both sides of a document (or clipping) these sleeves offer an ideal solution. (Just be sure to remove the black sheet of paper inserted into most sleeves for mounting purposes, since it is probably acidic!)



"... the bane of all professional archivists: pressure-sensitive tape." (73.69)

Storage

It has been written that providing proper storage for manuscripts is the curator's first responsibility in conservation. This is true as well for all those who are responsible for the well-being of old family papers and documents.

After your letters and papers have been cleaned and flattened, purchase a liberal supply of high-grade file folders. *Oxford* brand folders are normally sufficiently acid-free to use with confidence. Since the folders are intended to prevent further crushing, abrasion, and mutilation, resist the temptation to stuff each folder with too many documents. Twenty documents per folder is plenty. Ideally, these folders should be placed in acid-free document boxes, which can be purchased in limited numbers from library supply houses.

However, unless you live near an archival library, such as that at Mystic Seaport, it will be pretty difficult for you to acquire the

ideal. The trick then is to find housing (either boxes or drawers) of such dimensions that the folders and their contents can lie horizontally, and will not be bent or warped. Papers should be stored relatively loosely and not packed tightly—in addition to darkness, they need a certain amount of air circulation.

At last resort, manuscripts can be wrapped in clean white tissue paper like that found in clothing boxes. Do not wrap manuscripts in newspaper! Newsprint is highly acidic. It turns yellow and brittle in a short time and transfers this condition to any paper it touches. Keep newspaper clippings together in a separate acid-free file folder; never leave them interfiled with other manuscripts. Also, avoid mounting clippings on cardboard or in scrapbooks. This will only accelerate the deterioration.

The ideal storage environment would be approximately 70°F. room temperature and 50% relative humidity. A rule of thumb indicates that the best conditions for manuscripts are the most comfortable conditions for humans. Avoid damp, musty basements or leaky garages where mold, vermin, and rodents could damage paper severely. Attics are generally just as bad, with dirt and excessive heat providing a constant threat to manuscript items. Papers could be stored on a closet shelf in a bedroom or somewhere in a well-ventilated utility room. Regardless of where they are, your papers should be examined periodically for signs of deterioration.

The most injurious thing people have done to their family papers (unwittingly, of course) is to have their most interesting documents framed. This innocent show of family pride consigns documents to sure destruction. Only when framed by a museum, or a very high quality art dealer, can one be confident that the cardboard backing in a frame is 100% rag board. Other cardboards, being pulp products, are highly acidic, and this fatal characteristic migrates right into the precious document housed in front, just as in the case of newsprint. The usual procedure has been to frame documents with the face squashed flat on the glass, without benefit of matting. Without breathing room, one humid summer is sufficient to "glue" the document to the glass. Most destructive, however, is the constant and unnatural exposure to sunlight, strong in ultraviolet rays, and (if direct) extreme heat. Libraries constantly receive casualties, with ink faded to a shadow or paper so insulted that it is as brittle as ashes. Since the fading process is imperceptible on a daily basis, documents are frequently ruined before the cause is detected. Most families with seafaring antecedents have documents which they would like to display because they are handsome or particularly interesting. There is only one sure answer to this dilemma: have the document reproduced. This can be done either photographically (expensive), or on a photocopy machine, such as *Xerox*, which does not require chemically treated paper. With such a machine, you can make a copy on good quality paper and store the original in safe, dark conditions.

If they have never been exposed to the extremes of fire, water, or vermin, most old family papers will not need extensive repair. In fact, should the basic steps of cleaning, flattening, mending, and proper storage be followed, your papers should be around for a long, long time.

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BOOK REVIEWS

Five Centuries of Famous Ships from the Santa Maria to the Glomar Explorer. By Robert G. Albion. (New York: McGraw-Hill Book Co., 1978. x + 435 pp. 101 illustrations, index. $19.95 cloth)

This book contains a collection of brief biographies of 168 ships ranging over the years from the late fifteenth century to the latter twentieth. The author points out that we know the names of no ships prior to those which carried explorers for Spain and Portugal so that a beginning with these is logical. There are five divisions within the volume: "The Dawn of the Modern Era (1492–1660)," "The Eighteenth Century (1728–1815)," "Steam Challenges Sail (1807–1860)," "The Triumph of Steam (1859–1898)," and "The Twentieth Century (1897–1977)." Each of these is headed by a brief introduction which sketches in a few paragraphs the major characteristics and trends of the period so far as maritime affairs were concerned. A classification of the ships described in the book breaks down something like this: thirty-six sailing warships, forty-six powered warships, thirty-five sailing merchantmen, forty-five powered merchantmen, and five yachts. The nationality of the ships in the book is as follows: eighty-one American (including four Confederate States of America), one Austrian, fifty-one British, two Dutch, eight French, eleven German, one Italian, one Japanese, one Liberian, two Norwegian, one Portuguese, four Russian, three Spanish, and one Swedish. Obviously this slights the maritime histories of non-English-speaking peoples, but Mr. Albion's selection is justifiable in view of the fact that the book is intended primarily for use in the United States and by persons who are interested in the Anglo-American maritime tradition. He has included some ships which are favorites of his, but it would be hard to argue for the omission of any of them.

The ship biographies vary in length from less than a page to half a dozen pages. They contain such major vital statistics of the vessel as are known and an outline of her career. Mr. Albion has fleshed many out beyond that, however, with well-recounted anecdotes from their careers and comments on their significance. The reader finds himself led from one biography to another either as he browses through the book or as he finds a reference in the account of one ship which suggests looking at another. Although hardly intended to be read from cover to cover, many users of the book will find themselves reading it all in short order. There is no formal bibliography but virtually every ship's biography is followed by the title of a book or article from which more information about her can be garnered.

The 101 illustrations are of ships' actions in which they were involved, or of events which took place on board. Obviously many of them reflect the imaginations or reconstructions of artists, but photographs have been used where they were available. Unfortunately the illustrations have frequently been so reduced in size for reproduction as to lose valuable detail, and the quality of reproduction in some of them leaves a good deal to be desired.

Robert G. Albion, the author, is clearly the most distinguished living American maritime historian. He had a full and rich teaching career at Princeton and Harvard, and for over twenty summers he was Director of the Munson Institute of American Maritime History at Mystic Seaport. The book reflects his command of both the factual content and the significance of maritime affairs as they relate to the broad sweep of history.

This book will appeal to many types of users. For the librarian, it will be a ready source of information to answer a host of questions about ships and the sea. Although other ships might have been added to those Mr. Albion selected, had he been granted the space, perhaps nine out of ten of the likely queries about individual vessels can be answered from these pages. Although it is not a work of pedantic scholarship, the serious maritime historian will find material here which is not only useful in dealing with specific questions which may arise in his work, but also suggests insights and approaches to important parts of the field. The reader generally interested in ships and the sea will find Mr. Albion's lively style and seemingly endless fund of anecdotes delightful, and he will return to the book again and again either for reference or for the pure joy of reading it.

John H. Kemble

Coasting Schooner. By Robert H. Burgess. (Newport News: Mariners Museum, 1977. xxii + 259 pp. Illustrations, appendixes. $17.50)

On 23 March 1942, the sister of Captain William M. Martino wrote the following letter to her brother, master of the four-masted schooner, *Albert F. Paul:*

> Dear Brother:
>
> I had a letter from Grace this morning. She was all worried over you, so I called up Mr. Paul and he told me that the *Herbert L. Rawding* arrived off North Point this morning and he was sure you would be getting in today or tomorrow in Norfolk. We have all been worried for there are so many things out in the water today . . . Grace says she wishes you would stop going on those trips. You have worked long enough. I am glad you left the *Heidritter* when you did as she was lost Off Hatteras . . .

Mr. Robert H. Burgess commences his biography of the schooner *Albert F. Paul* with this letter from which I have taken excerpts: a letter which was never delivered, for the *Albert F. Paul* was torpedoed by the German submarine *U322* on 15 March 1942, en route from Turks Island, Bahamas, with the loss of all hands.

What poignant memories this letter has stirred in me can be understood when I relate that I was bosun aboard the *Herbert L. Rawding.* We had sailed from Cap-Haitien with logwood for Baltimore about the same time the *Albert F. Paul* left Turks Island and the *Anna R. Heidritter* sailed from Port au Prince, similarly loaded with logwood. Of the trio, we were the sole survivors.

Despite the dramatic death of the *Albert F. Paul, Coasting Schooner* is not for those who seek thrilling tales of the sea. Rather, it is a straightforward recording of the birth and working life of a coasting vessel which sought to avoid those exciting events which make headlines. From 1917 to 1941, under the ownership and management of C. C. Paul and Co. of Baltimore, The *Albert F. Paul* carried her humdrum cargoes of lumber, coal, salt, and fertilizer between ports ranging from Sheet Harbor, Nova Scotia to Buenos Aires, Argentina. This is a story of successful, though increasingly obsolete, commerce, terminated, after the sale of the vessel, by the uncontrollable conditions of war.

Coasting Schooner is composed of several sections. First, Mr. Fred Kaiser greatly enhances this work with a ten-page foreword which relates the purposes of the big wooden schooners and gives some insight into the problems of ownership, management, and operation of such vessels.

Mr. Burgess contributes a short but interesting text and leaves the journal of the late Mr. James S. McCullough to tell of life in the schooner. Mr. McCullough kept a very matter-of-fact (almost loglike) journal, of two trips from New York to Georgetown, South Carolina in 1933, in which one can read between the lines to discover the constant work which faced the small crew of such a vessel. He also took an avid interest in his ship as he photographed and sketched the various parts of the vessel and recorded such activities as loading, washing decks, stowing sail, and swaying topsails. He recorded the menus of meals for a full week, sketched the layout of the forward house, drew a sail plan and a deck plan showing where lines led, and recorded the manner in which the sails were used.

Mr. Burgess rounds out the work with a list of all departures and arrivals during the entire life of the vessel. He adds an invaluable list of the vessel's receipts and expenditures, from cargoes carried and freights earned to crew wages, galley stores, pilot fees, and stevedore gratuities, including, the building costs of the vessel, dividends to shareholders, and final reckoning at the time of her sale to the Alpert Shipping Company in November 1941.

Mr. Burgess has contributed a valuable work for those who would study the last days of the wooden sailing vessel, from the boom days of World War I, through the ups and downs of the Great Depression, to rising freights of World War II and the final demise of commercial sailing vessels in ocean trade.

Francis E. Bowker

Black Men of the Sea. By Michael Cohn and Michael K. L. Platzer. (New York: Dodd, Mead & Company, 1978. xv + 158 pp. Illustrations, appendix, glossary, bibliography, index. $8.95)

The role of black men in nautical history, from earliest times to the present, is recorded throughout the chapters of this book. Careers as fishermen, traders, crews, pirates, privateers, and military men are traced by the authors.

This book is best suited as a lure to young

people, to give them a quick view of the breadth of the black experience at sea. There is little that is new here. The book is most notable for its appendages: a valuable essay, "Where to See the Black Maritime Heritage," and a comprehensive bibliography. Otherwise, the authors string together some experiences of a number of black men under different headings. They are at their best describing processes: fishing in Senegal, boatbuilding on Carriacou in the West Indies, or menhaden and mullet fishing in the Chesapeake.

Historically, the book is superficial (though, to be fair, the authors do attempt to provide some historical background) and occasionally misleading. As a minor example, the date of the whaleship *Wanderer*'s foundering is given as 1923 near Nantucket, not 1924 near New Bedford. The lack of footnotes is a real frustration when one wishes to find more information on a person or incident. Some people are not there at all. Where is Lewis Temple, black shipsmith of New Bedford? He is not included in the section on shipbuilding, nor the section on whaling, despite the influence of his toggle iron. There are some good photographs in the book, but one, while purporting to show black whalemen mincing blubber, seems to show natives of Japan and Guam, or the Philippines, who were equally common in the San Francisco whale fishery. With all of the existing opportunities for original scholarship, it is unfortunate that the authors chose to retell the old tales.

Andrew W. German

Photography in America: The Formative Years 1839–1900. By William Welling. (New York: Thomas Y. Crowell Company, 1978. xi + 431 pp. Illustrations, bibliography, tables, index. $29.95)

The nineteenth century is a historian's delight for many reasons. Not the least of these is the appearance of the world's first photographic processes. Beginning in 1839, with the announcement of the daguerreotype, William Welling carries his well researched documentary history to 1900 and the rise of interest in photography as an art.

On the surface, it would seem that a book on the history of photography would have only marginal interest to those involved with maritime subjects. But, the fact is, so little is really known about nineteenth century maritime photographs that it would benefit anyone with old photographs of this kind to read Welling's book and gather a general understanding of the various early photographic processes and photographers. Early photographs of maritime subjects are quite rare, and one reason for this is that those who own them do not recognize them as noteworthy. No one really knows what the earliest photograph of an American vessel is, or where it is. However, one thing is fairly certain: it is not a print on paper but a direct positive on copper in the form of a daguerreotype. Consulting Welling's book will help anyone determine how to recognize these differences.

An additional significance of this book is its timeliness. The last book to deal comprehensively with the subject of American photographic history was Robert Taft's monumental and groundbreaking study, *Photography and the American Scene*, published in 1938. Considering the wealth of material, both photographic and documentary, that has come to light in recent years, it was inevitable that someone would correlate this new information and incorporate it with the old. For example, a daguerreotype of Andrew Jackson taken shortly before his death could not positively be attributed to a particular daguerreotypist by Taft. Welling, however, armed with information recently uncovered, gives a strong case for its being taken by Edward Anthony, later a mogul in the photographic supply business.

The book is timely also because of the phenomenal rise of interest in old photographs. The number of dealers and collectors has probably more than quadrupled in the last six years. Likewise, books dealing with photographic subjects, or utilizing photographic images, have been flowing out of publishing houses in great numbers in the last four years. In addition, museums have begun to recognize photographs as legitimate artifacts, and have mounted a number of spectacular exhibits that celebrate their historic as well as artistic merits. It almost seems that interest in nineteenth-century photographs is as great now as it was one hundred years ago.

There are a few minor problems with the book. First of all, at $29.95, it is quite expensive. Secondly, the misspelling of the name of a Mystic photographer, George E. Tingley (Tinley

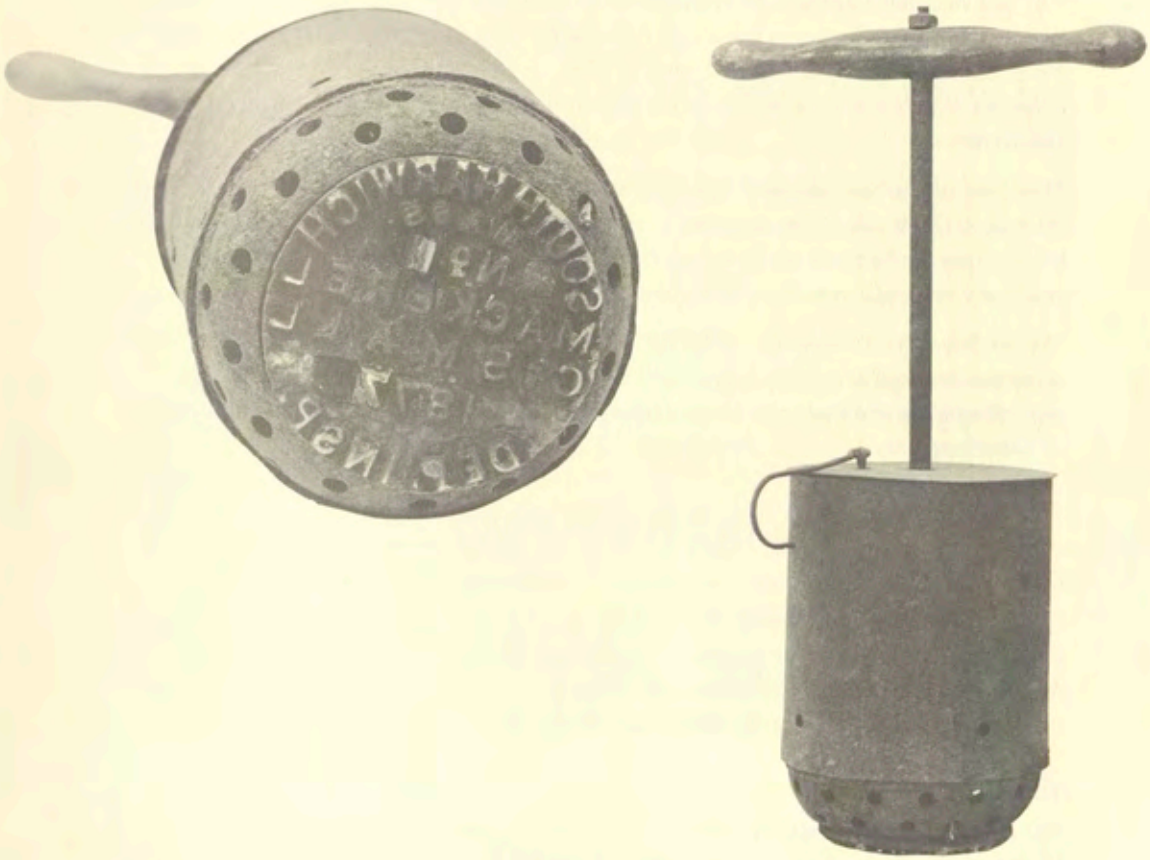
in the book), leads one to wonder how many other typographical errors might have been overlooked. Finally, the use of the word "frigates," to describe whaling ships and other non-naval vessels at San Francisco harbor in an 1852 daguerreotype, will cause a mumble or two from maritime purists.

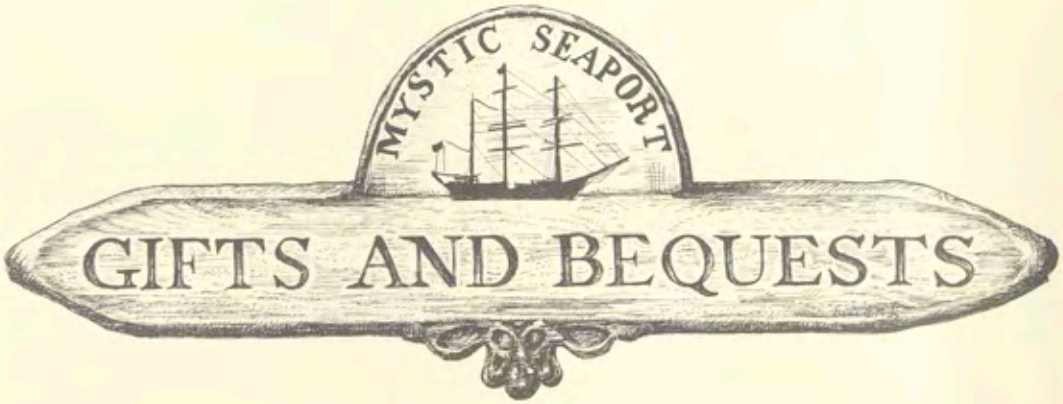
All in all, the book is quite well produced and very well documented. Additionally, many of the photographs contained in the book have never before been published. *Photography in America* will serve as an excellent reference source to stand with Taft's *Photography and the American Scene.*

William N. Peterson

ACQUISITION

Mrs. Marjorie B. Carlson has given the Seaport a most interesting and unusual item, a brand used to mark the tops of fish kegs. The device belonged to an ancestor of hers, Caleb Small of South Harwich, Massachusetts, who ran a fish market there in the late nineteenth century. The cylindrical drum would have been filled with burning coals, heating the bronze branding plate and marking the kegs "C. SMALL / MACKEREL / N° 1 / 1877 / MASS. / DEP. INSP. / SOUTH HARWICH." Dim: h.o.a. 27", drum h.o.a. 11½", bronze plate diam. 6½". [78.199]





GIFTS AND BEQUESTS

The physical development of the museum—the buildings, ships and wharves, the exhibits, books and manuscripts—give eloquent testimony to the generosity of members and friends of Mystic Seaport. There is a continuing need for gifts and bequests which will help assure its future strength and development through endowment.

Members of the Seaport who have not already done so are urged to perpetuate their interest in the work of the museum through a bequest. Some members will want to make a specific bequest while others may want to designate Mystic Seaport as a residuary or contingent beneficiary of all or a portion of their estate.

Mystic Seaport Museum is a publicly supported nonprofit institution and contributions are deductible within legal limits for Federal income tax purposes. Inquiries regarding gifts and bequests are encouraged and may be directed to the Director of Development.

SUGGESTED FORMS FOR BEQUESTS

General

I give and bequeath to Mystic Seaport Museum, Inc., a corporation existing under and by virtue of a charter granted by the State of Connecticut, and located in Mystic (Town of Stonington) in said State, $....., to be used (or the net income to be used) at the discretion of the Trustees of said Corporation.

Residuary

All the rest, residue, and remainder of my real and personal estate I devise and bequeath to Mystic Seaport Museum, Inc., a corporation existing under and by virtue of a charter granted by the State of Connecticut, and located in Mystic (Town of Stonington) in said State, said estate to be used (or the net income to be used) at the discretion of the Trustees of said Corporation.

AN INVITATION
TO JOIN MYSTIC SEAPORT MUSEUM

We should like to extend a cordial invitation to like-minded individuals to join with us in programs dedicated to the preservation of our national maritime heritage. Annual dues materially strengthen Mystic Seaport Museum. At the same time, a member receives tangible benefits and privileges:

Unlimited Free Admission to Mystic Seaport Museum during regular hours. (In all classifications above Individual, this applies to the immediate family: husband, wife and their children through the age of eighteen).

Receipt of THE LOG *of Mystic Seaport*, a quarterly magazine devoted to articles on maritime subjects.

Receipt of the WIND ROSE, the Seaport's newsletter, reporting on current museum activities and personnel.

A Ten Percent Discount on purchases at the Mystic Seaport Museum Stores, Inc.

Purchase of Guest Ticket Books at substantial savings.

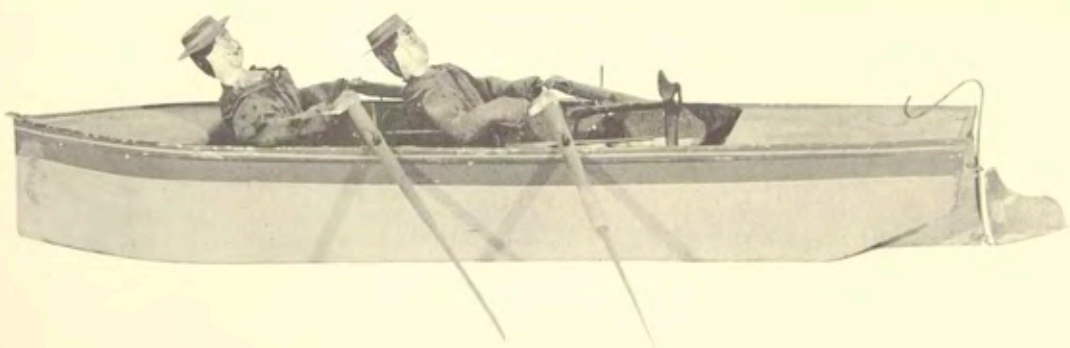
Eligibility for Subscriptions to the Adventure Series, illustrated lectures for armchair travelers.

Memberships are available in the following categories:

Individual	$15.00	Sustaining	$ 100.00
*Resident Family	20.00	Associate	250.00
Family	25.00	Life	1000.00
Participating	50.00	Benefactor	5000.00

Contributions to Mystic Seaport Museum are deductible within legal limits for U.S. income tax purposes. Please make your check payable to Mystic Seaport Museum, Inc. and send to: Membership Office, Mystic Seaport Museum, Mystic, Connecticut 06355

*Available to year-round residents of Groton, Ledyard, North Stonington and Stonington.





THE LOG OF MYSTIC SEAPORT

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