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# Conservation: Hearings, Reports (1966-1973): Article 06

Robert L. Feller

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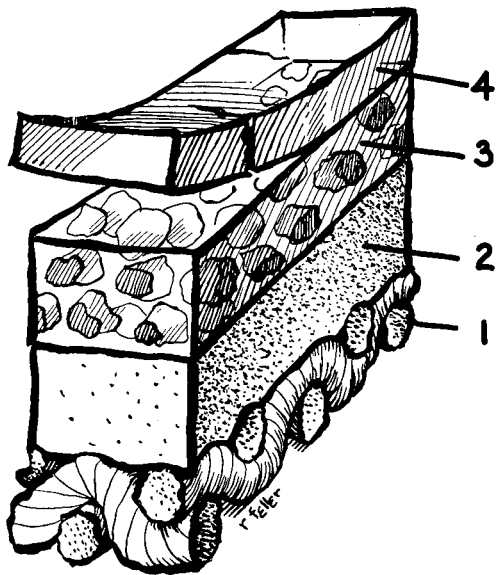
# The Conservation Of Paintings

An expert in physical-organic chemistry, Dr. Feller offers a highly informative analysis of problems concerning the "conservation" of paintings. Every dealer will want to read it.

By **ROBERT L. FELLER**

(Reprinted by permission from the *Carnegie Magazine*)

*Ed. Note: Selling the artist requires some knowledge of the final result. Here's information which every dealer can use to good advantage when talking and selling to the artist.*



Simplified cross section of a painting: (1) support; (2) ground; (3) paint; (4) protective coating.

ON A RECENT VISIT behind the scenes in a museum, I paused to admire a small painting that was propped up along the wall of the studio workshop. This 400 year-old portrait, painted on a panel of wood, sparkled like new. The curator, who was my guide, noticed my attention immediately. "How do you like what we did to that one?" he said. "Would you believe it—when we received that painting, it could not have been stood up on end for fear the paint would have fallen off. The paint was peeling away in great flakes!" So far as one could tell now, the picture was in perfect condition. This incredible transformation of a fragile museum relic back once again to a stunning picture suitable for exhibition is popularly known as "restoring."

It is probable that "restoring" will always be used to refer to such a practice. However, it really is not possible to "restore" any work of art, in the strict sense of the word. Leading authorities throughout the world have begun to use in its place the term and the concept of "conservation." This concept has encountered certain difficulty in gaining wide acceptance. The purpose of this article is to explain more fully the fact that works of art have the need to be conserved.

The word "restore" means to reproduce as originally existing. This obviously cannot be done with museum objects. There is no argument that truly amazing work can be accomplished with deteriorated paintings; this is simply a case of not being the best word which might have been chosen. Every treatment

of a picture damages it, however slight; bits of paint that are lost or abraded away represent an irreversible departure from the artist's original handiwork. Multiple treatments, therefore, gradually build up the total harm done. To question the act, however, is similar to asking if the removal of a diseased limb



**Dr. Robert L. Feller, fellow of the Mellon Institute of Industrial Research; he's working on "conservation" and permanence.**

will harm a shade tree that we wish to save. A crumbling picture simply must be treated if it is to be saved.

Repainting, or "inpainting," where losses of paint have occurred, does not represent a perfect solution. These areas are truthfully not the work of the original artist. The public, and often the museum staff, is occasionally surprised at the extent of the retouching in pictures. But there is, at present, a controversy among conservators concerning to what extent losses should be replaced. The author does not wish

to express strong views on this point, but merely to point out that lost areas are irreplaceable deviations from the original.

In newspaper accounts on the conservation of our natural resources we are generally informed that these are disappearing, that we cannot go on blissfully thinking they will last forever. Works of art do not last forever, either. In fact, what material object does? The ravages of nature and of man's inhumanity eventually take these lovely creations from our possession. The list of the one-time Seven Wonders of the World now reads "destroyed," "cut up for junk," "leveled by earthquake," until all that remains are the great masses of the pyramids and those fragments of the Tomb of Mausolus which are in the British Museum. The first man apparently lived five hundred thousand years ago. The Stone Age took place ten thousand years ago. The pyramids were built four to five thousand years in the past. Ten thousand years from this date day what trace will there be of Van Eyck?

These considerations alone delineate the long-term prospective in conservation. However, there is another basic factor. Varnishes, oils, wood, and canvas are organic materials, substances containing carbon. Such materials slowly burn, or oxidize, decomposing into carbon dioxide and water. The rusting of iron is a similar slow-burning process. By their chemical nature, then, these materials are fundamentally unstable in the presence of the very oxygen we breathe. The only way

(Continued on page 30)

# how to make the most of Convention Tactics and Displays

An invaluable and detailed account of the problems and activities encountered by the manufacturer who attends conventions. Pictures opposite show typical displays.

By BERT CHOLET

(Assistant Vice President, Higgins Ink Co., Inc., Brooklyn, N. Y.)

CONVENTIONEERING IN THE U. S. is a two billion dollar industry; however, there are comparatively few conventions that relate to our business. But, the opportunity to get your story around fast through educational and trade shows is great. One representative can meet more people in three days at a bang-up convention, and secure more leads with present and future results, than in three months' traveling. That is, with one important proviso: that you know how to plan for a convention, and that your representatives know how to work one.

Meetings, exhibits, and conventions should be budgeted and planned on a yearly basis—as a segment of sales promotion. Top management should discuss convention plans with both advertising and sales management. Don't forget that when you embark on a convention program you have the expense of space and shipping charges for exhibits, the cost of samples, the association dues, the transportation of men, their hotel bills, allowance for entertainment; and the fact that while these men are at the convention they are otherwise not gainfully employed. Nevertheless, many manufacturers would relish the opportunity to keep men attending conventions all year long, if such gatherings could be found.

You must plan in advance for success. Space is comparatively the cheapest thing you buy at an exhibit. You should get proper location and the proper amount—well in advance. You should understand the *function* of your exhibit; this varies with the association. At an exhibition for an educational association, *conventionites* are not making a profit out of the material which you have to sell. Conversely, at a dealers' convention, they are not interested in the tricks your gadgets will perform—unless *their* customers will buy the gadgets.

You must accordingly have a sufficiently flexible background so that your appeal may be varied for dealer or for consumer, and the attendants in your booth must be acquainted—in plenty of time—with the type of association and individuals who will be the conventionites.

When you have decided on the functions and details of what you are to exhibit, it is time to give your ideas to a designer or professional exhibit fabricator. Among the factors to be considered: (1) How many times do you expect to use the exhibit; can certain sections of it be re-used for other purposes? (2) The average width of exhibit spaces is ten feet; a ready-made exhibit, not calculated to expand and contract should, therefore, be designed for nine feet six in width; seven feet nine in height should not be exceeded. Exhibits which can expand from seven feet nine to twelve feet in width are most useful. (3) Shipping cases are as important as the exhibit. These must be well-made to stand severe handling, with reinforced corners, hardwood battens and heavy hardware. The exhibit must be broken down into a sufficient number of pieces so that each case will be light enough to be comfortably handled by two of your men. That is, they should be able to push each case along the floor without other aid and open it and up-end it, if required.

There are several concerns from which you may rent displays, and also at least one concern making displays from corrugated board, which are excellent for brief use. In addition, there are now several concerns which specialize in a package exhibit. This is one in which the cover and sides of a single packing case are hinged, and when folded back reveal the inside of the packing case as the background

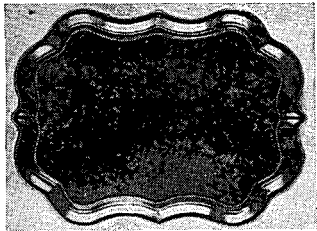
of the exhibit. These are very useful for small booths and crowded hotels. Everything is contained in one crate, which is quickly assembled, and you need not have your cases taken away and stored, and then wait until they are brought back, before folding up your exhibit at the end of the convention.

You must take into consideration the fire laws which are very strict today in hotels and convention halls, so that your exhibit should employ only materials which will stand inspection. All electrical work should be union; in fact, it is best to assure that the entire exhibit is union-made and approved. Fast erection and dismantling are factors, and a plan showing how the parts go together should appear in the cover of the first case which is opened. Small bottles of paints and brushes for retouching the exhibit if it happens to be scratched should be placed in one of the cases. The hardware on the cases and exhibits should be standard, so it is easily replaceable. The cases should be painted, since sometimes they are left on a freight siding or in the alleyway of a hotel in the rain.

Your exhibit really is a three-dimensional animated and personalized advertisement for your name and products. Make yours stand out. Employ modern materials in its structure. Use plexiglass, aluminum, cork, dramatic colors, and other materials which because of their nature and texture will be in themselves attention-getting. But don't use color or anything else to the point where it drowns out your product. Make sure your exhibit contains the elements of light, movement, and color, and most of all, make sure that everyone who looks at your exhibit can at least see your name on a feature product and assimilate the message within two seconds.

(Continued on page 35)

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MERCHANDISING—Continued from page 36

It is this apparent similarity, unless offset, which convinces the customer that trading-down is good business for him. In trading up, the clerk should at all times emphasize the points of dissimilarity, not just quantity alone. It may be in shape, size, better, although unseen, construction or any one of a number of things. The trained clerk must not only know the stock, but must know each product; how it is to be used, its limitations and how to talk about it with authority.

Selling based on the strong approach builds good-will and permits the salesperson to trade-up and do switch selling. However, the sale should not end when the customer buys. There is yet another danger spot—the post-closing. This is the point where the clerk has a chance to make another sale, to supplement the one recently consummated. It is not that the clerk does not make the attempt, but tries to tie the new sale to the old one with the trite phrase: "anything else?" What the clerk fails to realize is that no two sales are ever part of the same transaction. Each one must be started anew, with a new approach and a new "pitch." The closest tie-in to the old sale is a suggestion, not by words, but by actually showing the customer a new product, or describing a new technique and showing new materials, or talking colors, brushes, accessories—but not by asking. Asking is a negative approach; selling must be, at all times, positive.

We have, in this discussion, examined the various aspects of merchandising without going into too great detail on many of the technical features. The subject is extremely broad and to be really mastered should be studied as intensively as time will permit. The best insurance any retailer can have against the threat of increased cost of doing business, is a sound knowledge of merchandising. The day of the general store is gone and, with it, its methods. The modern retailer has his own future in his hands, he will either move with the times or join the Dodo, the Auk, and the Mammoth. For the unprogressive retailer there is an epitaph waiting:

"Here lies an extinct type of fossil retailer. He failed to watch his merchandising."

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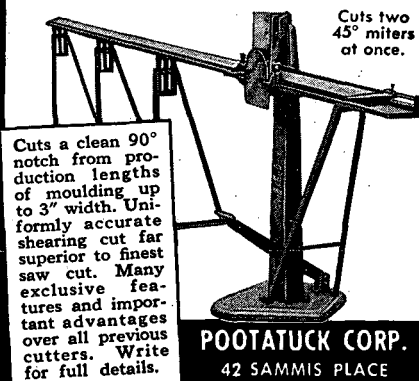
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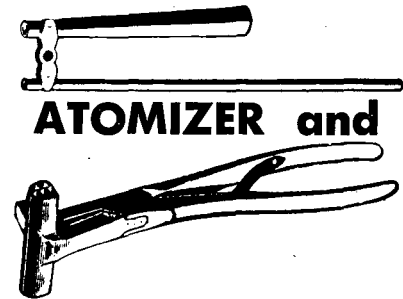
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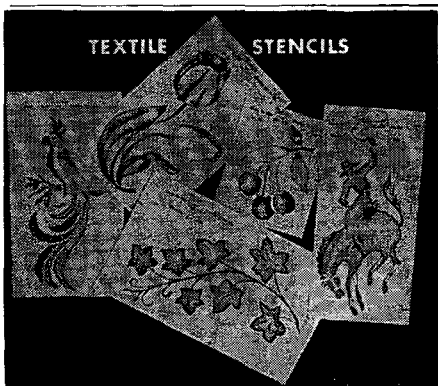
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**CONSERVATION—Continued from page 30**

principle in their care, the author's view is that the forces of time will assuredly carry them down an irreversible path: away from the artist's original handiwork. The trustees' task, therefore, is one of conservation, of retarding the inevitable occurrence and reducing the incidental fluctuations.

One must not be alarmed at the use of the word "inevitable." We are attempting to say something definite, something positive, in a field in which it is difficult to be positive. The suggested first principle is a definite statement similar to saying "the energy of the sun is gradually decreasing" or "the moon will eventually return and collide with the earth." Such remarks are taken in proper stride. Perhaps our thinking will be oriented if we regard a work of art as we would an irreplaceable set of dinnerware. The set may last a very long time, but, as each piece is broken, it becomes incomplete, no longer perfect. Moreover, one tragic accident will speed its deterioration.

The frequency with which pictures require attention may be reduced both through proper care and improved materials. Analysis of the structure of paintings has shown that maintaining constant conditions of temperature and humidity is a basic element in good care. In the course of the past twenty-five years, the techniques of conservation have become better understood. At present, great expectations are held for the newly-formed International Institute for the Conservation of Museum Objects. As for better materials, there is every reason to believe that modern chemistry will provide notable improvements. The first requirement will be to formulate the problem, to precisely state the needs.

The use of the word "conservation" reminds us to be careful and ever-watchful. It calls to our attention the truth that microscopic losses and changes add to the sum total of the degradation that will some day take these treasures from us. The word "conservation" emphasizes that these creations, which express the nobility and dignity of man, are merely held in our trust to be passed on.

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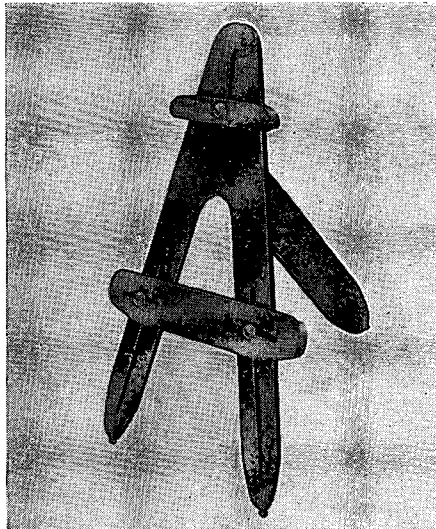
### PENCIL TRACING CLOTH

A new pencil tracing cloth is offered with, according to the manufacturer, qualities permitting the use of a liquid eradiator to remove large pencil areas cleanly, quickly and without disturbing the all important tooth of the original cloth.

The cloth is reportedly easy to work on and the surface produces sharp, jet black detail from a 2H pencil. Good prints are assured by the extreme translucency providing a maximum contrast between pencil and the white background. For a free demonstration kit, price and other data, write M2-289.

### VERSATILE TABLE EASEL

A table easel, developed by an Eastern art supply and equipment manufacturer, offers exceptional quality, it is claimed for a moderate price. Complete adjustability

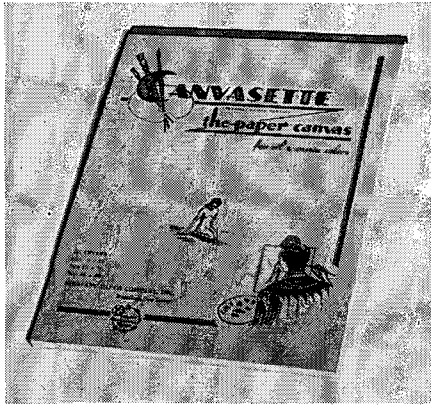


distinguishes the new easel. Sliding upper and lower holders accommodate a wide range of canvas sizes and the movable back leg permits any desired painting or sketching angle.

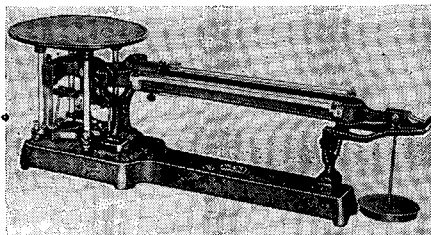
Precision constructed throughout with protective rubber-tipped legs, the easel is thoroughly safe, sturdy and durable. Made of quarter inch mahogany veneer plywood with a high lacquer finish, the easel looks like a piece of fine furniture. It's individually boxed in a two-color gift package and packed two dozen to a carton, knocked down. For details about the easel and information about free dealer helps, please write M2-292.

### "CANVASETTE" A PAPER CANVAS

Paper canvas has been introduced for use with oil and casein colors, and the product, called "Canvasette", is specified by the manufacturer as more closely akin to real canvas than it is to the ordinary types of canvas embossed papers on the market. "Canvasette" is very strong and has the feel and physical characteristics of canvas, yet it is paper.



Colors will not run, when used with the product, it is said. It's easy to mount on a board because it lies flat. However, the maker does not supply it mounted. "Canvasette" is available in fifty inch rolls, in sheets any size up to fifty inches and in three different sized pads, 9 by 12, 12 by 16 and 16 by 20 inches. The picture above shows a pad of the durable medium. For more information including prices, please write M2-291.



### FINE SENSITIVITY SCALES

Scales are in production that may prove especially useful to ceramists in weighing clays, slips, finishing or glaze components, or color pigments, etc. A unique system of hardened steel check levers on the scales permits a sensitivity of one gram under loads up to its capacity of 20 kilograms.

There are many other fine features of the balance, including precision hardened tool steel knife edges throughout and rigid cast-iron beam designed to carry heavy loads without deflection. The graduated beams are of relief etched stainless steel. For details, write M2-295.

### FLUORESCENT CHALK

Blacklight chalk is one of the most recent fluorescent products to be placed on the market. It's available in sets of six radiant fluorescent colors which glow with a neon-like brilliance when activated by blacklight. This chalk is carefully compounded, reportedly, to perfect writing consistency and is easily erased with an ordinary eraser. For details, write M2-296.



### 12 COLORS FOR THE AIR BRUSH

Liquid water colors have been prepared especially for air brush use. Packaged in an attractive counter display, the colors, it is said, allow transparent tints without a heavy effect and dry quickly without a gloss. They are reportedly constant in hue, already mixed for immediate use. Also, according to the manufacturer, they will never clog the air brush.

The colors come in 12 tints which may be easily mixed by simply pouring together. Water may be used to clean the air brush after usage. Bottled in two ounce, six ounce, pint, quart and gallon sizes. A dropper cap is available for the two ounce size. For details write M2-299.



### SPRAY-ON COLORED FLAKES

"Colored Flakes" is an improvement reputedly of the white snow spray introduced last year with a special formulation added to produce colors that retain their brilliancy for a long period of time. The product can be used for general sign or display flocking and will cling to most surfaces.

Direct sign painting is possible, we're told, using the spray container as an air brush gun. It can be easily wiped off with a damp rag and will not leave any stain. Excess flakes, reportedly, that might have fallen on the floor or rugs can be vacuumed or brushed up. The maker states that the product is not inflammable. The dispenser holds twelve ounces. Write M2-294.

to prevent this attack is to exclude the gas. The Constitution of the United States and the Declaration of Independence have recently been sealed in an atmosphere of inert gas, helium, precisely for this reason. The chemical degradation just described and physical damage, either accidental or purposeful, are collectively known as the "forces of time."

The danger of harming a painting is directly related to the number of times that it must undergo drastic treatment. To appreciate the problem we must understand the construction of a painting. The accompanying drawing shows an idealized cross section. A painting consists of a sandwich of layers. At the base is the support: paper, canvas, wood, fiberboard. Following this in many cases is the ground. This represents the preparation of a surface upon which to paint; it traditionally contains white pigment. In most paintings on paper this layer is absent, but canvas and wood must be especially prepared to receive the paint. The ground may be paint, but on wood this layer is most often a mixture consisting chiefly of glue, gypsum or chalk, and white pigment; this preparation is known as gesso. Upon the ground is placed the picture; a layer of pigment held together with a binder. In oil paint, the pigments are bound with linseed oil. In water color the binder is traditionally gum arabic; in egg tempera it is the yolk of hens' eggs. On the very top of the various layers may be placed a protective coating: varnish in oil paintings, fixative in pastels.

Paintings occur in a variety of methods of execution. The system of four layers is a much-simplified way of designating their structure. Oil paintings generally possess an elaborate series of layers; pastel paintings usually are less complex. Additional layers, however, may be classified, for the purpose of study, as a part of the ground, a part of the picture layer, and so on.

As previously stated, an important objective in the conservation of paintings is to reduce the number of times they must be treated. This may be done in two ways: by providing (1) the best care, and (2) the

best materials or new and improved ones. There are certain basic factors in the care of our present collections, however, which require that they receive periodic attention. A hint to the length of this period may be obtained by considering that the life of linen canvas is about two hundred years and that of varnish perhaps five to fifty years. When a weakened canvas support endangers a picture it may be relined or backed-up with a new canvas. In particularly serious cases the old support of wood or canvas may even be entirely removed. Think of the time, expense, and ever-present danger that is involved! Old varnish may be removed by careful treatment with suitable solvents. In skillful hands this is a relatively easy task, but this too always involves considerable risk.

What hope is there for improved materials? Those now in use by artists and conservators are basically the very same which were used by the old masters. With the vast number of synthetic substances now available, there is an excellent possibility that scientists will be able to improve upon the traditional materials. Museums, artists, and manufacturers have been experimenting in recent years with synthetic waxes and plastics. Progress already has been made in many laboratories in formulating varnishes with synthetic resins. About a year ago the National Gallery of Art established a fellowship at Mellon Institute of Industrial Research especially to study the possibility of using these new materials in the fine arts. Perhaps the first major contribution of modern chemistry will be a new varnish which will be colorless and will last much longer than natural Damar or Mastic. New materials are also being used for supports. In addition, a standard of quality for artists' oil paints, Commercial Standard CS 98-42, was established in this country in 1942. Major manufacturers now equal or better this standard which they themselves, with the advice of leading authorities, established in cooperation with the National Bureau of Standards of the Department of Commerce.

What of improving the methods of care? Our understanding of these problems is advancing more rapidly than the introduction of new materials. An International Institute for

the Conservation of Museum Objects was established about a year ago under British law as an international non-profit organization. This institution will foster the exchange of knowledge toward better methods of conservation. An improvement in museum practice already affected is an increase in the number and quality of regular inspections of the pictures. In this manner their condition may be compared to previous records, and changes can be detected at quite an early stage.

Certain fundamental principles govern proper care. Conservators are interested in controlling change. By definition, a system which is relatively permanent is one which is "highly resistant to change." A physical object will adjust itself to a variation in temperature, pressure, and humidity; it tends to reach equilibrium. If the temperature, pressure, or humidity is altered, the object will readjust to the newly imposed conditions. Think of what can happen to the system of layers in a painting! Each layer will expand or contract. It is very unlikely, however, that they will do so equally. The behavior of varnish differs from that of paint; that of paint is different from gesso; gesso, different from canvas or wood. The separate movements are quite likely to cause the painting to crack because of the tensions which are set up internally. The stresses and strains caused by variable conditions constitute perhaps the major cause for the deterioration of oil paintings. For this reason paintings which are moved to different climates, or even to different parts of a room, are apt very suddenly to develop cracks and buckling. To guard against this danger more and more museums are air conditioning their galleries. Considering the very nature of the structure of a painting, the maintenance of constant conditions represents an axiom in good care.

To summarize, then, we have indicated that the use of the word "restore" is misleading. The skill and patience of experts can perform incredible feats in reclaiming pictures that have declined to disastrous states; one could spend hours describing the wonders accomplished in such rejuvenation. A picture, however, cannot be returned to its original condition. As a guiding first

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