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Essay #14 of a series written by Alabama preservationists to supplement the *Handbook for Owners of Alabama's Historic Houses*, Alabama Historical Commission, 2001

PAINT – SURFACE TREATMENT AND CLEANING

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Paint serves both as a decorative feature and as the first sacrificial layer of protection against weather and deterioration. Numerous variables in painting make careful examination of the existing conditions an absolute must prior to forming any plan of action. The existing condition may vary as to cause and state of deterioration, type of material to which the paint is applied, decorative nature of present or past applications and historic value of the previous layers. Each of these elements or combinations of them has an important impact on what is the proper solution to the painting problems you face today.

Sources abound on the subject of paint and its replacement or cleaning on older buildings. *The Technology of Historic American Buildings*, H. Ward Jandl, editor, has an article called "Economical Painting: The Tools and Techniques Used in Exterior Painting in the 19th Century", by Pamela W. Hawkes which is an excellent historical overview on painting techniques in the 19th century. Another extremely important resource is Preservation Brief #10, *Exterior Paint Problems on Historic Woodwork*, by Kay D. Weeks and David W. Look, AIA. This publication is extremely important because it divides paint conditions into a number of classes and then gives a direction of action for each class. These two publications deal with exterior painting as well. The latter is reproduced here because of the effectiveness of its overview.

Two other articles which provide information important when preparing to repaint an older building are "Avoid Mistakes in Exterior Painting", *The Old House Journal*, Vol. IV #6, June 1976, and "Selecting the Best Exterior Paint," *The Old House Journal*, Vol. IV #7 July 1976. The first of these articles provide basic information about painting and paint failure due to moisture, check lists on caulking, tips on surface preparation, etc. The second article gives basic information about various types of paint and the advantages and disadvantages of each.

One more aspect of painting must be dealt with prior to getting into some of the more technical aspects. This is the necessity of being familiar with the Department of Interior's Standards for Rehabilitation. Use of improper methods in cleaning the various materials of a historic building can jeopardize that building's eligibility for the tax credits. Harsh methods of cleaning can destroy the fabric of the historic building and the purpose of these regulations is to prevent this. Perhaps the best example of this is cleaning masonry or wood by sandblasting. This destroys the exterior surface of the brick and will eat away soft wood, raising the grain in wood.

When preparing to repaint there are many observations to be made prior to deciding on a plan of action. Paint was applied to many different surfaces, each of which requires a different type of preparation prior to repainting. The basic materials are plaster, brick, woodwork (siding or trim, interior or exterior), and metals. Another feature to be investigated prior to repainting is the original finish. This is particularly true in interior finishes. Some of the interior finishes which may have been covered over in previous repaintings may be: graining or marbleizing, clear stains, shellac or varnishes, stenciling or other types of decorate treatment.

Historical Paint

Whether you go to the expense to hire a professional to research the original colors, attempt to do it yourself or prefer to paint the structure in a color scheme acceptable to you and perhaps typical of the period, there is much to know about historic colors and their placement.

One of the important reasons for not removing all the previous layers of paint is that this removal eliminates the history of the painting of the building. It is similar to destroying a historic document. Often, when complete removal is recommended, it is good to leave a certain area unstripped in an unobtrusive place so that if future research is desired there is some place that these colors can be researched.

Research into original colors has led to some interesting observations. Many of the original color schemes (particularly those of the late 19th Century) were much more elaborate and stronger than our present tastes allow. Much research has occurred in the last 15 years as to how our ancestors painted their structures. The original colors and their placement on a structure varied considerably as the styles changed. Style itself can provide one of the best starting places for selecting historic colors for your house.

Among the publications which provide information on original colors are:

Old House Journal Volume IX No. 4, April 1981. This entire issue is on exterior painting and includes articles on selecting colors, historic paint research and information on repainting older structures.

Century of Color; Exterior Decoration for American Buildings 1820-1920, by Roger W. Moss can be obtained through *The Old House Journal*.

Heritage Colors by Sherwin Williams Paints is available in any Sherwin Williams paint store.

Sand Paint

An unusual paint finish used during the 18th and 19th centuries, sand paint was created by dusting sand onto the paint while it was still wet. By treating woodwork in this way it would resemble stone. It was thought that this treatment both extended the life of the paint job and was a form of fireproofing. It is almost impossible to remove. A good resource is "Sand Paint" by Carolyn Flaherty, *The Old House Journal*, Vol. VII, No. 9, September 1979.

Milk Paint

Another 19th century paint was milk paint. Milk is the basis of casein glue and casein paints used in the Middle Ages. Milk was easy to obtain on the farms, produced coatings much more durable than whitewash and was both less expensive and odorous than oil paints. These finishes are also extremely difficult to remove.

Calcimine Paint

Calcimine paint was a water based wash (usually white) which was used in America from the 18th century through the early part of the 20th. It consisted of whiting (chalk), glue size and water with whatever pigment that was desired. It was used because it was inexpensive and could be mixed on the job site.

Problems may develop during repainting in two ways. First the wall or ceiling could have the calcimine finish still exposed, or it may have been painted over with oil based paints. Calcimine paint can be tested for by scrubbing with hot water; if it is calcimine, it will wash off.

If you have calcimine paint you may either paint over it with oil based paints or strip the calcimine layer off prior to repainting. If the calcimine is adhering to your surface it can be painted over but if loose it should be washed off with water and a little trisodium phosphate. This is generally a hand operation requiring lots of elbow grease.

A more difficult problem is when calcimine paint has been painted over with oil based paint and the entire system has begun to fail. While the existing failures could be patched and repainted, this is a very temporary solution as more peeling will develop after repainting (often within 6 to 18 months).

Stripping layers of oil and calcimine paint is difficult. Water will no longer work because the water will not penetrate the oil based paint. Steam soaking is the recommended method of removal. Here the steam penetrates the oil based paints and loosens the calcimine.

Steam stripping requires proper care in using. Live steam must both be created and used with proper care. Because of the water created, the floors must be properly protected. One source of steam is a wallpaper steamer; however, this is a small source and takes longer than a job with a larger steam source. After steam cleaning has taken place, the calcimine residue must be washed off with water and brushes.

Paint Encrusted Plaster

Much has been written about removing paint from woodwork but little has been mentioned about the problems of dealing with paint buildup on plaster walls and details. Basic alternatives are as follows:

Heavily painted walls can be painted over as long as the existing paint film is not cracking. Lumpy painted surfaces can be sanded and repainted or covered with wallpaper.

If the paint on a flat plaster wall is cracking or alligatoring, a new surface can be created by applying canvas or a modern equivalent. The canvas can be applied to the wall like wallpaper. This was historically done by decorators to create a new surface which can receive either wallpaper or paint. While the canvas may slightly change the texture of the surface, it has the added advantage of covering minor plaster cracks which would show through a regular paint job.

The third alternative is to strip the walls or decorative mouldings. Paint on walls can be removed using an electric heat plate. Care must be taken not to gouge the plaster surface and this method should not be used if there is old wallpaper under the paint. (Fires can easily start.)

Often ceilings were painted with calcimine and they can be stripped with steam as described elsewhere.

Stripping the paint from plaster mouldings is by far the most difficult and time consuming. It is also where build-up becomes most noticeable as the detail begins to get lost. The best method for these elements is to use a thickened chemical stripper. Even the paste type strippers should be thickened so that the material will stay applied to the plaster surface long enough to soften the paint. After the stripper does its job, the labor intensive effort begins to scrape, pick/lift out the softened paint. Care must be taken not to damage the plaster details while working with the various tools one might use during this process.

Interior Stripping

Interiors require special care and investigation prior to deciding how to proceed with repainting/refinishing. The article attached at the rear from *Old House Journal* presents much of the information needed to make a decision about how to approach your interior woodwork. Other *Old House Journal* articles which deal with stripping or restoring interior woodwork are as follows:

"Bare Facts About Dip Stripping," Vol. X #8, August 1982, pg. 157.
"Using Chemical Paint Removers," Vol. III #4, April 1975, pg. 6
"Restoring Clear Finishes," Vol. X #11, November 1982, pg. 221
"48 Paint Stripping Tips," Vol. XI #2, March 1983 and Vol. IV #1, January 1976

Galvanized Metals

Galvanized metal is iron or steel with a zinc coating applied. It is a common material used for roofs, flashings, and gutters. Of particular importance in the 19th century, decorative features such as cornices, window hoods, and pediments were galvanized. The zinc coating is applied to prevent rusting but must be kept painted. If not painted, the zinc will weather away and the metal rust.

The surface preparation for painting galvanized metals is critical. Most failures are due to improper preparation or use of the wrong type of paints.

Both old and new galvanized metal should be cleaned with a hot mixture of water and TSP (trisodium phosphate) (2 ½ oz. to 1 gallon of water). This should be followed by a thorough rinsing. This should remove the chemicals and oils that may remain on the material after milling. New galvanized metals may require some sanding to "moss" the surface to allow the primer to adhere.

On older galvanized metals the special problem of removing the paint must be contended with. The most important thing here is not to sandblast as this will remove both the paint, the zinc surface, and often go right through the metal. This leaves the various chemical and heating methods described elsewhere. Special care must be taken to wash or neutralize all chemicals that are used.

Priming of the metals is extremely critical. There are special zinc-dust or zinc rich paints that are most often recommended. These are specialty coatings but worth the effort to find them.

Metallic zinc-dust paint is considered the best primer for both rusted and non-rusted galvanized metals. (Federal Spec. TT-D-641, Type I on the label.) It can be painted over with one or two coats of oil based latex or machinery enamel.

Zinc rich paint is another zinc coating usually used for spot priming clean areas which have lost their galvanizing. These include rusted areas and soldered joints. Since these paints contain 90% zinc when dry, they are referred to as "cold galvanizing."

Other paints can be used in other situations. Acrylic latex paints can do fairly well over clean, rust-free galvanized metal. Some manufacturers make special rust inhibiting acrylic latex's that can go over cleaned but rusted galvanized surfaces.

Oil base and alkyd primers should not be used on galvanized metal surfaces because of a chemical reaction that can occur. They are useful on surfaces that have lost their galvanized layer.

For further information see "Painting Galvanized Metal" by Larry Jones, the *Old House Journal*, Vol. XIII #1, January-February 1984.

Paint Removal on Brick

There are important reasons for carefully considering the options prior to removing paint from brick. First, the painted brick was often the desired finish, and when the paint is removed the brick work exposed is one that was never meant to be seen. Also, because of the porous nature of older brick, they often received a coat of paint to decrease the permeability of the wall. After cleaning a coating of waterproofing might be required to protect the wall and interior surfaces.

If complete removal of the paint is deemed necessary, it must be done with great care. Within the last few years there have been a number of manufacturers producing materials specifically for this purpose. These materials are vastly improved over the old lye method. Distributors of the material will run a test area for you which can show the quality of the removal job that can be obtained. Among manufacturers are Pro So Co., Inc., manufacturers of Sure Clean and Sermac (a Jackson, Miss. Company which is both the contractor and developer of chemical processes).

After stripping, the problem of a clear waterproofing still remains because many of these materials, the silicones in particular, have a limited 3 to 5 year lifespan which means reapplication at least as frequently as the painting.

Again close examination of the existing brick and mortar joints as to their character, condition and age will give some indication if the surface was meant to be exposed or not. It will also give you a basis from which to observe whether the masonry will be shielded from moisture through repainting rather than stripping and contending with the problems of the clear waterproofings.

Lead Paint

Historically, most paints were based on white lead and linseed oil. Because lead can be dangerous, care in removing layers of paint must be taken. When using abrasive methods (sanding/scraping), the dust can poison both the person working and people living in the structure. The debris/dust which falls to the ground can poison pets and other animals. Therefore, precautions should be taken not to breathe the dust and cleanup should be adequate to remove the danger. Another danger comes in using burning methods where the flame actually vaporizes the lead, which can seriously damage lungs and eyes.