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Common Bond

A newsletter on maintenance and preservation for owners of architecturally significant religious buildings

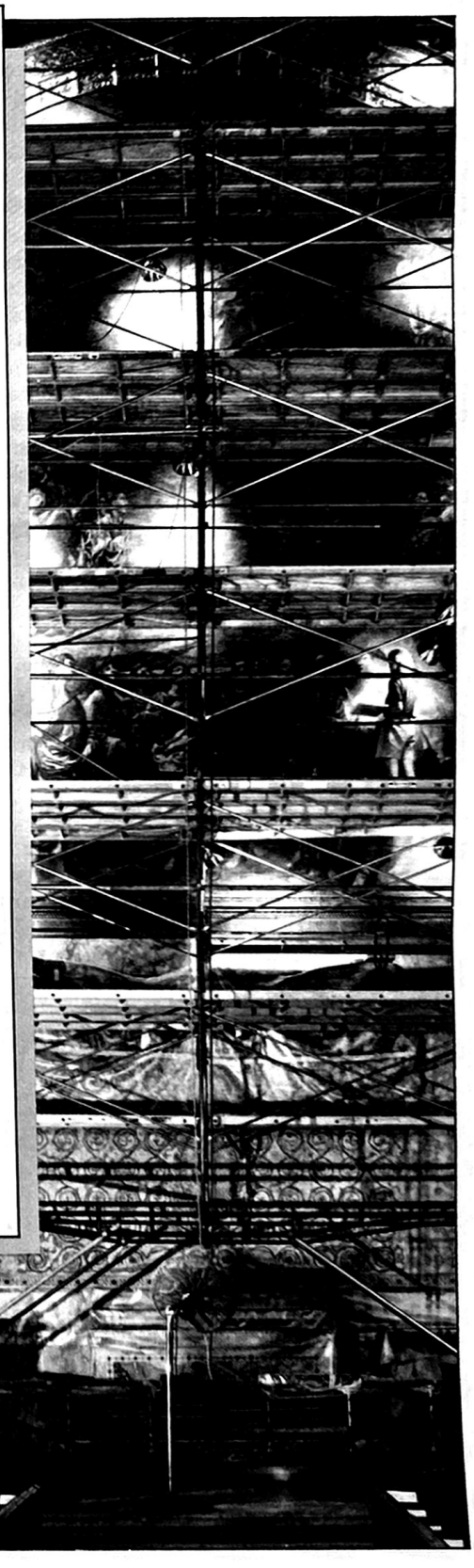
Dear Reader:

This issue's Preservation Profile highlights the trials and tribulations of a small, rural congregation that is slowly attaining the goal of restoring its 158-year-old clapboard church. The key to success has been a willingness to reach beyond the confines of membership for sound advice, technical support and financial assistance. The results have been a surprise to all concerned. The saga of Trinity Church, in Constantia, New York, is one that other congregations, particularly ones of similar size and circumstance, will find inspirational.

The growing number of conferences, exhibits, workshops and seminars devoted exclusively to the appreciation and preservation of architecturally significant religious properties is indicative of the widespread interest in this subject. These events are important vehicles for educating, exchanging information and forming support networks among those involved with such work. To publicize these endeavors, a new column - Conferences and Exhibitions - makes its debut in this issue of Common Bond.

Important works of art, including mural paintings, grace the sanctuaries of many churches and synagogues. Restoration of a mural is a project that many congregations may need to address, and this issue's technical feature provides some thoughts and guidance to those considering a mural restoration project. The "Ask the Technical Preservation Services Center" column addresses basic issues involving plaster repair.

The Rev. Thomas F. Pike
Chair, Advisory Committee



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Although varnishing may protect a mural, the application of any surface coating will normally alter its visual appearance. At the Church of the Ascension, research demonstrated that LaFarge was attempting to achieve a delicate balance between matte and gloss effects. The surface of the mural had a subtle range of sheen, from semi-gloss to dead matte, and a shimmering surface quality which was the result of LaFarge's unorthodox painting formula and an important element in his decorative style. The application of any varnish would have altered the surface and would have been completely irreversible in the future. Therefore the painting was left unvarnished. Protection of the mural was addressed through improvements to, and monitoring of, the church's interior environment.

THE ARCHITECTURAL SURROUNDING

Most murals were commissioned for a specific location. The immediate architectural frame, setting and lighting were integral to the artist's original concept. The restored mural should be compatible with the surrounding elements. These elements should be restored at the same time as the mural.

The provision for appropriate lighting is crucial to a successful mural restoration. All murals were designed and executed with reference to a specific light orientation or source. Over time, light sources on which the artist relied may have been modified, covered up or even eliminated. For instance, the Ascension mural was originally lit by clerestory windows of clear glass. The windows were later filled with stained glass, completely altering the effect of the mural. In order to maintain or recreate the intent of the artist, new lighting should be provided to simulate the original light sources. The conservator should consult lighting designers early in the conservation process to ensure a successful result.

This article was written by Holly Hotchner who is Chief Conservator at The New-York Historical Society. Ms. Hotchner served as Project Director for the Conservation of the Ascension of Our Lord mural by John LaFarge at the Church of the Ascension in New York City.

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Ask the Technical Preservation Services Center

Question:

Our church has an elaborately molded plaster ceiling which is badly cracked and stained in places. A small piece fell not too long ago. What are the causes of these problems? What can we do to repair the ceiling?

Barbara Hastings, Member of the Edifice Committee
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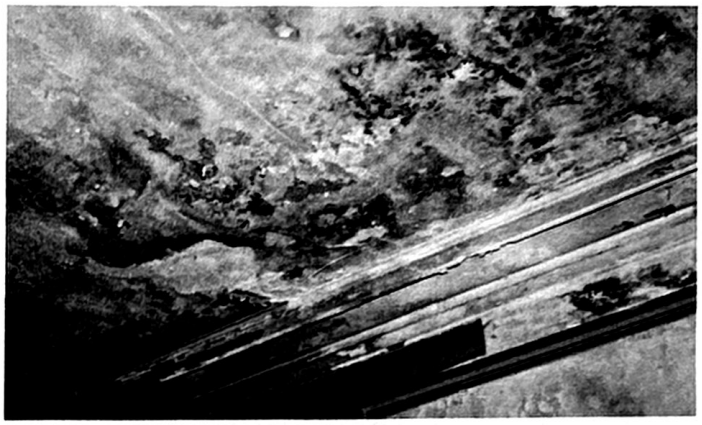

Answer:

Plaster has been used since ancient times to cover walls and ceilings because of its durability, its sound-proof qualities and the relative ease with which it can be molded into decorative shapes and ornaments. Ornamental plaster in historic structures, especially in religious buildings, is an architectural device used to enhance the beauty and inspirational quality of the space.

Plaster is a substance much like the mortar used for laying bricks. Recipes for plaster vary, but the most common ingredients are clay, lime or gypsum, sand and/or animal hair, and water. In American buildings, plaster is applied in two or three layers over wood strips called lath (Figure 1). The first coat, called the scratch coat, is laid directly over the lath and pressed through the gaps between the lathing strips. When cured, the scratch coat forms keys which wrap around the lath and bond the plaster to the lath. The second coat, commonly called the browncoat because of its color, is applied over the scratch coat. The browncoat constitutes the body of the plaster wall or ceiling. (Occasionally, the browncoat also functions as the scratch coat.) These first two coats usually contain a high proportion of clay and animal hair which serve as binders and help the

plaster adhere to the lathe. However, the clay and hair also give the plaster a rough, uneven surface. To mitigate this gritty texture, a thin finish coat, made up almost entirely of lime and water, is usually applied. This top coat gives the plaster a smooth, hard finish.

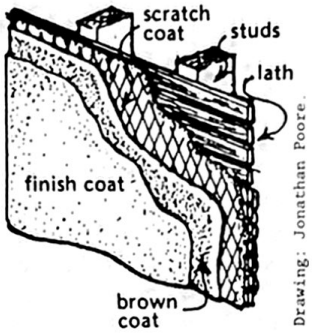

Figure 1: Cut-away drawing of a plaster surface.

There are three different types of plaster failure: 1) failure caused by water damage, 2) failure caused by structural movement and 3) failure in the plaster itself.

The most visible and common type of plaster failure is from water. Water damage leaves a characteristic brown stain on the plaster which may begin as a series of brown spots. It is caused either by leaks in the roof or walls or by defective plumbing. Before plaster repairs are undertaken, these leaks must be corrected. Water penetration causes plaster to lose its soundness, become brittle and crumble. The keys which bond the plaster to the lath backing lose their strength, and large sections of water-logged plaster may detach and fall.

Cracking, settling and other structural changes in a building will cause the plaster to crack and shift as well. This is not necessarily a dangerous situation for the plaster. However, the cracks, if they are recent, may be a sign of more serious structural problems and the building should be carefully inspected by an engineer.

A much more serious problem is the buckling or delamination of either the finish coat or the browncoat. This situation can result in portions of a ceiling or wall falling. Buckling and delamination (the separation of the layers of plaster) happen for a variety of reasons. Often the original materials were of an inferior quality, the plaster was improperly mixed, the plaster was applied under adverse weather conditions or some other factor interfered with the chemical reaction that causes plaster to cure. Sometimes plaster begins to delaminate simply because of age. The best way to detect this problem is to look for bulging areas and to tap plaster which is suspect to see if the top layer is loose.

PLASTER REPAIR

The repair and restoration of ornamental plaster is a highly specialized field requiring specific skills. Little beyond minor patching should be attempted by the layperson.

Repair of cracked plaster is a relatively simple operation. The plaster should be shored up for safety. A professional plasterer should then open up the cracks, remove the loose plaster and then patch with an appropriate patching plaster.

Water-damaged plaster and plaster which is buckling and delaminating will need to be replaced. All deteriorated, damp and spongy plaster must be cut back to an area where the plaster is dry, intact and secure. The plaster surrounding the hole should be firmly attached to the wall or ceiling structure using plaster washers (discs for re-securing weakly-keyed areas of otherwise sound plaster). The area should then be restored by a competent plasterer.

If water damage is minimal and the plaster in the area is still strong, the water-damaged plaster can be scraped and the area restored by hand. This can save money because the complex tools and forms needed to do major plaster restoration are not used.

If some of the damaged plaster is ornamental, it may be necessary to hire an ornamental specialist to duplicate original moldings and install them. This varies in cost anywhere from $25 per running foot for very simple plaster molding to over $100 per running foot for complex ornamental cast moldings. If you do have casts made, be sure to save them and store them in a safe place for future use.

Skill and performance vary greatly in the field of plaster repair and restoration. Many local historic preservation organizations have lists of qualified contractors. Make sure you check at least three references for quality and price. One of these should be over a year or two old so that you can inspect or inquire about past projects. Make sure that the contractor you hire is experienced in plasterwork of the style and period of your building. For example, a contractor with experience in delicate, Federal style plasterwork may not work well in the Gothic Revival or neo-Tudor styles. The restoration and repair of ornamental plaster is intricate and important work; the finished product, when completed appropriately, adds heart and soul to the experience of historic architecture.

The answer to this question was prepared with the assistance of Alan Barr, a restoration contractor working in ornamental plaster, cast stone and fiberglas. Figure 1 is reprinted, with permission, from the July-August, 1986 issue of The Old-House Journal magazine. Subscriptions are available for $21.00 per year from the Old-House Journal, 435 Ninth Street, Brooklyn, New York, 11215-4101.