

RAISED GILDING UNDER THE MICROSCOPE

BY JERRY TRESSER

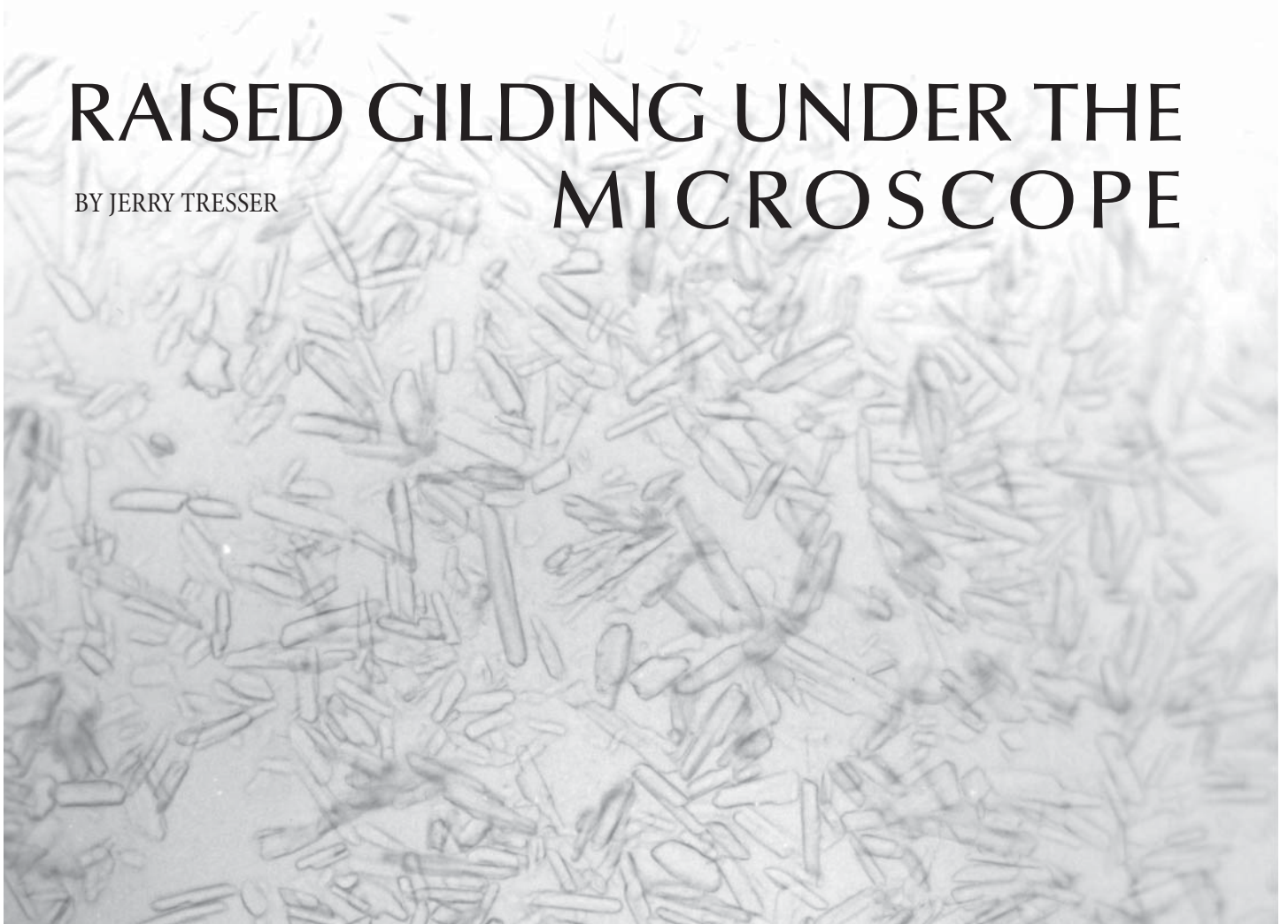


Figure 1. Provides a clear picture of slaked plaster of Paris/hide glue combined and examined microscopically. The needle-like formations are very characteristic of slaked plaster of Paris. In Figure 1, the slaked plaster and the hide glue have been mixed as part one of a two-step process. The glue binds the plaster, forming an exceptionally tight bond.

Why Is Raised Gilding with Traditional Materials So Problematic?

I will answer that question later in the article, but first I want to assure you that raised gilding does not have to be fraught with uneven results and frustration. The key is in the gesso. You need to have the correct ingredients in your gesso, keep to the proper proportions, and mix the ingredients in the proper order. If you are consistent in your gesso preparation, you can expect consistent results. Gesso is made to a formula. You do not need years of practice in the craft of gilding to know how to adjust the recipe. You should not have to account for

certain variables. It is simple – you just don't adjust the recipe. You are not a master violist interpreting a musical score; you are in the lab, making another batch.

I may have gotten ahead of myself, however. I can often charge ahead because I am very passionate about this subject.

Modern day calligraphers have taken to replicating the illuminations from Medieval and Renaissance manuscripts and duplicating the raised gold decoration. The illuminators of those manuscripts adhered gold leaf to a very smooth raised surface to form a halo around the head of Christ, bright gold letters, a background of a vignette in an illuminated letter, dots of

brilliant gold in a border, and the like. Some have said that the light reflected from this mirror-finished gold is the reason we called the illustrations, illuminations, and the manuscripts, illuminated manuscripts.

In the twentieth and twenty first centuries, Donald Jackson, and other scribal artists, has continued the tradition of using raised (and flat) gold in manuscripts. The style of the paintings may have changed, but for consistent results the recipe for gesso has not.

The formula I use today comes from Cennino d'Andrea Cennini in his fourteenth century treatise titled *Il Libro Dell'Arte*, as translated by Christiana J. Jerringham in 1899,

The Book of the Art of Cennino Cennini, and again by Daniel V. Thompson in 1933.

From Jerringham's translation, "Then you must have a paint that is a sort of gesso called *asiso* (gesso for gilding), and it is made in this manner: namely a little *gesso sottile* (slaked plaster of Paris) and a little *biacca* (white lead), never more of this than equals a third part of the gesso; then take a little candy (rock candy) less than then *biacca*: grind these ingredients very finely with clean water, collect them together, and let them dry without sun." (The words in parenthesis are mine.)

The formula was 8, 3, 1, 1, 4: eight parts of slaked plaster of Paris, three parts white lead (lead carbonate,

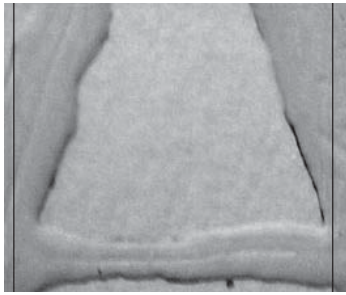


Figure 2. Concavity in the letter A.

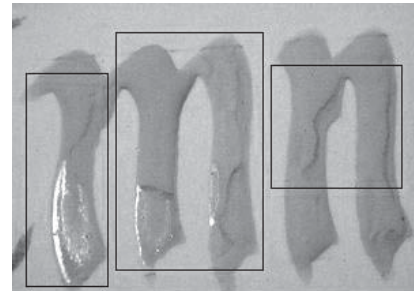


Figure 3. Gesso cracking.

which is poisonous), one part sugar, one part hide glue, four parts water, and a pinch of Armenian bole for color. The proportions are by volume (teaspoons, tablespoons, etc.), not by weight. Every ingredient (chemical) in the recipe (formula) would have a particular function (chemical obligation). Cennini gives us info on how to mix the gesso:

“Almost invariably size (glue) was mixed with the *gesso grosso*, with the *gesso sottile* always” (*The Book of the Art of Cennino Cennini*). *Gesso sottile* – slaked plaster of Paris – was mixed with hide glue as an independent part of the total formula. Once dried, the plaster/hide glue was put into brick form and sold through apothecaries to gilders and painters. When used for gesso preparation, the plaster/size bricks became part one of a two-step process.

Why a two-step process? The hide glue and the slaked plaster need to react together without the interference of the other ingredients. (See *Figure 1*.) The two-step process requires part one of the gesso to dry before adding part two. The glue binds the plaster, forming an exceptionally tight bond, and the materials of part two, once added, complete the process.

This gesso works well when it is prepared correctly. It provides consistency when broken up into a powder or better yet, ground into coarser granules, and measured with a spoon or weighed with a gram scale. The number of water drops or glair can be noted with

each preparation. This will ensure that the gesso when reconstituted can be duplicated whenever needed. The hallmark of any formula is its ability to duplicate results.

Why is Raised Gilding with Traditional Materials So Problematic?

It’s Graily Hewitt’s fault. Graily Hewitt, a student of Edward Johnston, provided his explanation of Cennino d’Andrea Cennini’s formula in the last few chapters of his book *Lettering for Students and Craftsmen* (1930). His book was the basis for study of manuscript gilding for decades and his recipe, with some variations, was printed in subsequent books, including *The Calligrapher’s Handbook* and *Secreta*. Unfortunately, he got Cennini’s formula wrong. Generations of gilders have been affected. Hewitt’s errors: He used fish glue instead of hide glue, and he mixed all the ingredients together at one time instead of the critical two-step process.

Here are some of the common problems that have been encountered by those following Hewitt’s formula:

- The gold won’t adhere to the gesso.
- The gesso cracks.
- The gesso has a concave surface.
- One cannot burnish the gold to a mirror finish.

Hewitt realized very early that his formula was constantly in flux. “The

asiso (gesso) will be a flat dry cake at the bottom of the tin box; and since the glue will have tended to dry to the sides and the lead probably to sink to the bottom one needs to take care to cut the piece from top to bottom that one may rely on having the due proportions of the ingredients” (*Lettering*).

The chemicals continued to move each time the gesso was reconstituted. When the gesso was used, the foundation was constantly being compromised. Once the water began to evaporate, the glue moved. The result was cracking and breakdown of the gesso. (See *Figure 1* and *Figure 2*.) The fish glue would move to the sides of the gesso, making it almost impossible for the gold to adhere to the face of the gesso. The movement of the white lead in Hewitt’s one-step method would cause continuous concavities in the center of the gesso, and in turn it would weaken the structural foundation, cause cracking, and, unless so overloaded with sugar or glue to accept any gold, make burnishing impossible. *Figure 2* shows a concavity on the cross bar of the letter A. The deep concavity on the left side is similar to an implosion. The gesso begins to cave in as the mix begins to separate. This is directly attributable to the water/fish glue moving to the sides of the gesso. The center of the gesso collapses. This is consistent with a major structural problem that cannot be fixed by scraping. The foundation has been corrupted.

With Hewitt’s recipe the author

of *Secreta* provided the following information to the gilder:

“When attempting to work at a time of low humidity and waiting for more favorable conditions is impossible, it helps to put the work in the refrigerator.”

“Adjustments may have to be made in the glue and sugar proportions to compensate for local climatic conditions.”

“1) The gesso itself was improperly ground. 2) During the application, the gesso was not stirred often enough. 3) As the base sits, the ingredients settle, with the heavier elements sinking to the bottom. 4) If not stirred frequently the gesso will be unbalanced. 5) The weather was to dry. 6) Press down on the gold with as much pressure as possible. (Sometimes standing helps to give more leverage.) The gold should adhere” (*Secreta*).

Hewitt’s unsatisfactory formula produces many discussions about when things go wrong than when things go right. We’re faced with overcompensation of materials in order to get the gesso to accept the gold, and a constant altering of the formula to satisfy weather conditions and to increase the glue content to ensure the adhesion of the gold. We’ve created East Coast formulas (for humid conditions) and West Coast formulas (for dry conditions).

Nothing in this article diminishes the exceptional gilding achievements over the past decades. These achievements, however, have been in spite of Hewitt’s formula. 🙏

