

MEMO

TO: John Jeanes, Montpelier Director of Architectural Restoration
John Mesick, Principal, Mesick, Cohen, Wilson and Baker Architects
Jeff Baker, Principal, Mesick, Cohen, Wilson and Baker Architects
Mark R. Wenger, Architectural Historian, Mesick, Cohen, Wilson and
Baker Architects
Gardiner Hallock, Montpelier Associate Director of Architectural
Research

FROM: Susan L. Buck, Ph.D.
Conservator and Paint Analyst

RE: Somerset Red Wash

DATE: March 30, 2006

I was recently asked by John Jeanes and Mark R. Wenger to examine the degraded exterior wash evidence on the brick walls protected by the portico at Somerset, just down the road from Montpelier. The walls now appears dark grayish, with irregular accumulations of paint, but in the areas where some of the later paints have flaked off it appears by eye that there is a chalky dark red wash directly on top of the brick and mortar surfaces. One sample was taken adjacent to a large hole in the brick, behind the shutter to the left of the front door.





Sample taken at edge of existing hole where brick was protected by the open shutter

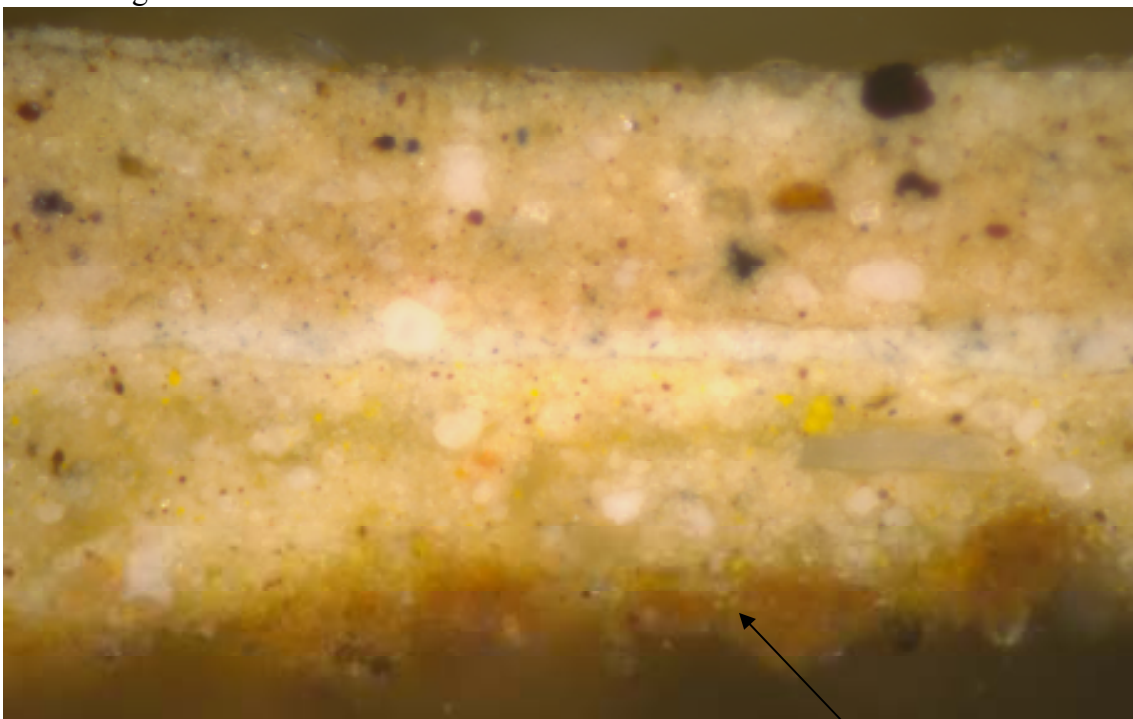
The layers are so chalky that it was not possible to retrieve a sample with the brick substrate still attached: the cleavage is taking place at the degraded orange-red wash layer directly on top of the brick. The evidence in sample 1 shows that there are four generations of chalky, slightly translucent washes remaining. The first layer is an eroded orange-red wash layer which is followed by a thick dark tan layer, then a thin grayish-white. The fourth generation paint is a more opaque grayish-brown coating. Staining with biological fluorochrome stains shows that the first orange-red layer does not contain protein or carbohydrate components, but the uppermost coating does have a weak protein component.

It was difficult to discretely separate the first orange-red layer for pigment analysis using polarized light microscopy because it is so fissured and degraded. However, in cross-section this layer appears to be a relatively even mix of red ochre and calcium carbonate. SEM-EDS analysis with elemental mapping, like the analysis conducted for a number of the Montpelier red wash samples and one sample red wash from UVA Pavilion VIII, would show the specific distribution of elements in each layer. This preliminary cross-section analysis suggests the first red wash layer is consistent with a very weathered red-pigmented limewash, followed by three more pigmented limewash coatings of varying colors.

Sample 1. Somerset, on protected brick behind shutter. Visible Light 200X

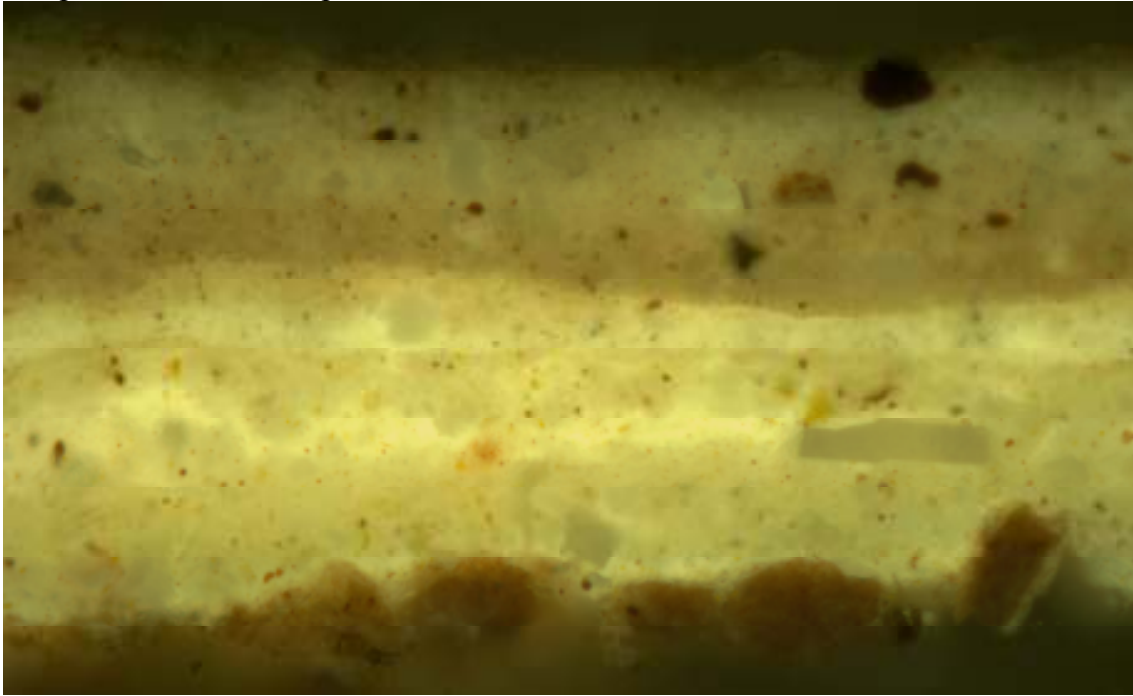


Visible Light 400X

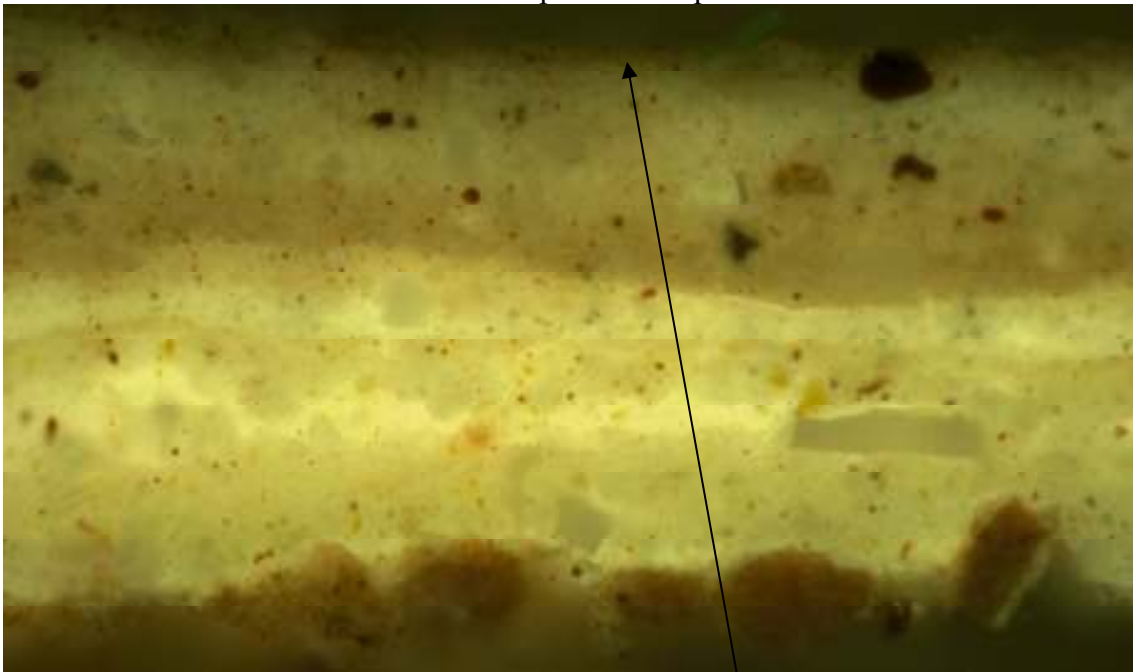


Eroded reddish wash

Sample 1. Somerset, on protected brick behind shutter. BV-2A filter 400X



BV-2A filter and Alexa Fluor 488 for the presence of proteins 400X



Weak positive reaction for the presence of proteins in the uppermost layer

Mark R. Wenger also asked me to comment about Jeff Baker's recent observation of white penciling below a layer of red limewash at Birdwood. He wondered how that relates to my findings of one fairly coherent layer of red limewash on protected areas of brick that were formerly behind shutters. This relatively intact red layer was compared to the irregular, weathered coating of red limewash on the more exposed areas of brick. (see my memo dated October 27, 2005). Our goal in this limited investigation at Birdwood was to see how the areas that are still clearly covered with a matte reddish coating in the most protected areas compare to the more exposed brick where a red coating is almost not discernible to the naked eye.

When Mark and I removed samples at Birdwood we were specifically sampling areas of brick so as not to have the added variable of the lime component in the mortar to complicate the interpretation of the coating composition. It is not surprising that two generations of limewash survive on the mortar, not the brick. If the red wash/penciling was applied while the mortar was still curing it would have become bound into the surface of the mortar, in the same manner as true fresco where pigments are applied to moist lime plaster. However, the first coating on the brick would not have the same chemical binding phenomena, rather it would simply be a mechanical adhesion to and penetration of the brick surface. So, the first generation could completely weather away on the brick and still be left as evidence on the mortar joints. This may be what happened at Birdwood.

We did look thoroughly for evidence of penciling on the brick at Montpelier and found absolutely none, even in the areas hidden behind the later repairs to the west pilaster of the West Portico.