



Scientific Examination of
*The Ashbourne Portrait of
Shakespeare/Sir Hugh
Hamersley*

for

the Folger Shakespeare Library
Washington D.C., USA

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Introduction

The Ashbourne Portrait of Shakespeare/Sir Hugh Hamersley from the collection of the Folger Shakespeare Library was examined. This portrait was believed to be of Shakespeare until the late 1930s, when Barrell's examination using x-radiography and infrared photography showed that the portrait was of another sitter that was modified to make him look like Shakespeare.¹ The three most notable changes were that a coat of arms belonging to the first sitter was completely painted over, the date "1612" was changed to "1611" so that the age "47" in the inscription on the painting could correspond to Shakespeare's age, and the hair line of the sitter was raised to imitate Shakespeare's baldness. In 1979, a conservation treatment was undertaken at the Folger Shakespeare Library and the coat of arms was uncovered and found to correspond to that of Sir Hugh Hamersley. The coat of arms was left exposed. However the sitter's forehead was not restored to its original state.²

The goal of the scientific examination was to document the changes made to the portrait using photographic and radiographic methods, and to try to establish if the inscription and other yellow-painted areas were contemporaneous with the painting or were added later, as suggested by Barrell.¹

Methods of Analysis

The painting was documented using ultraviolet-induced colour fluorescence photography, infrared photography, infrared reflectography, and x-radiography.

Microscopic paint samples were taken from several locations listed in Table 1. The samples were analysed using one or several of the following techniques: scanning electron microscopy/x-ray energy spectrometry (SEM/XES), x-ray diffraction (XRD), and polarized light microscopy (PLM). One sample was prepared as a cross-sections by embedding it in polyester resin and preparing it using standard grinding and polishing techniques. The cross-section was then examined by light and fluorescence microscopy.

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Results and Discussion

Changes in composition

Barrell's findings can be summarized and addressed one by one as follows:

- The coat of arms mentioned in the introduction was visible on Barrell's x-radiograph. This feature of the painting is now exposed. However, Barrell also mentioned a monogram "CK" below the coat of arms. No such monogram was observed on the CCI x-radiograph.
- Barrell noted the change of the forehead and hair on his infrared photograph. This modification can, in fact, be observed on both the CCI infrared photograph and x-radiograph.
- Barrell stated, based on his infrared photograph, that the ruff was originally twice as large as the one now depicted. This was not observed on the CCI infrared photograph or x-radiograph.
- About the inscription in the top left corner of the painting, Barrell wrote: ". . . [T]he original inscription was something far different from the one which appears on the surface today. And although this pristine lettering was long ago scraped out—so vigorously that perforations were made in the canvas—it is still possible to distinguish the ghostly remnants of both alphabetic characters and numerals."¹ No "ghostly remnants" were observed on the CCI x-radiograph. Furthermore, the canvas is in perfect condition and does not show any perforation. The only scraping that seems to have been done is that of the number "2" which was scraped off (unskilfully, as the shape of the number is still visible and paint remains in a few areas); in this area the x-radiograph shows that the paint and probably the ground layer(s) have been scraped off, but again, without damaging the canvas.
- Based on the appearance and colour of the paint, Barrell concluded that the mask of comedy and crossed spears appearing in the centre of the cover of the book that the sitter holds in his proper right hand (which, incidently, looks also like a skull), and the entire inscription in the upper left corner were later additions to the original composition, and that the thumb ring was painted over. Consequently, the layering and chemical composition of the paint in these areas were investigated, as discussed in the next section.

Layering and composition of selected yellow-painted areas

Microscopical examination of yellow-painted areas showed that the inscription, thumb ring, embroidery on the gauntlet, and most of the design on the book cover were painted using a golden yellow paint. However, the number "1" painted over the scraped-off number "2" of the date and the mask on the book cover were painted using a different, pale yellow paint.



While the golden yellow paint shows numerous signs of age (for example abrasion, cracks, and remnants of dark, discoloured varnish), the pale yellow paint looks newer in comparison. A distinctive feature of the golden yellow paint is the occurrence of round, transparent inclusions distributed throughout the paint surface. These likely correspond to lead soap inclusions, which are frequently observed in paint films pigmented with lead-based pigments such as lead white and lead-tin yellow.³ This phenomenon is not observed in the pale yellow paint.

Samples of paint were taken from a golden yellow area (a letter in the inscription) and from two pale yellow areas (the added number “1” and the mask). Chemical analysis of the two types of yellow paint showed that they were different in composition (Table 2). The golden yellow paint was made of lead tin yellow type I. Lead-tin yellow was most frequently used in the fifteenth, sixteenth, and seventeenth centuries, and has never been found in a painting done after 1750.⁴ The pale yellow paint was found to be a mixture of cerussite and probably massicot. The definitive identification of massicot proved difficult, as its x-ray pattern coincides with that of cerussite. Identification of the yellow pigment as probably massicot was based on the SEM/XES results and examination by polarised light microscopy. Massicot is a traditional pigment, the presence of which does not help in determining when the pale yellow paint was applied. However, the presence of cerussite is unusual: while cerussite (lead carbonate) is often found associated with lead white (lead carbonate hydroxide, a traditional white pigment) as an impurity, it has rarely been observed by itself.⁵

There is no indication that the golden yellow paint of the inscription is a later addition. As can be seen in the cross-section (Figure 1), the yellow paint was directly applied on the brown paint of the background; no varnish or dirt layer was observed between the brown paint and the yellow paint which would indicate a later addition.

The cross-section also shows waxy areas in the yellow paint layer that have a strong blue fluorescence under UV illumination. These likely correspond to lead soap inclusions, as mentioned above.

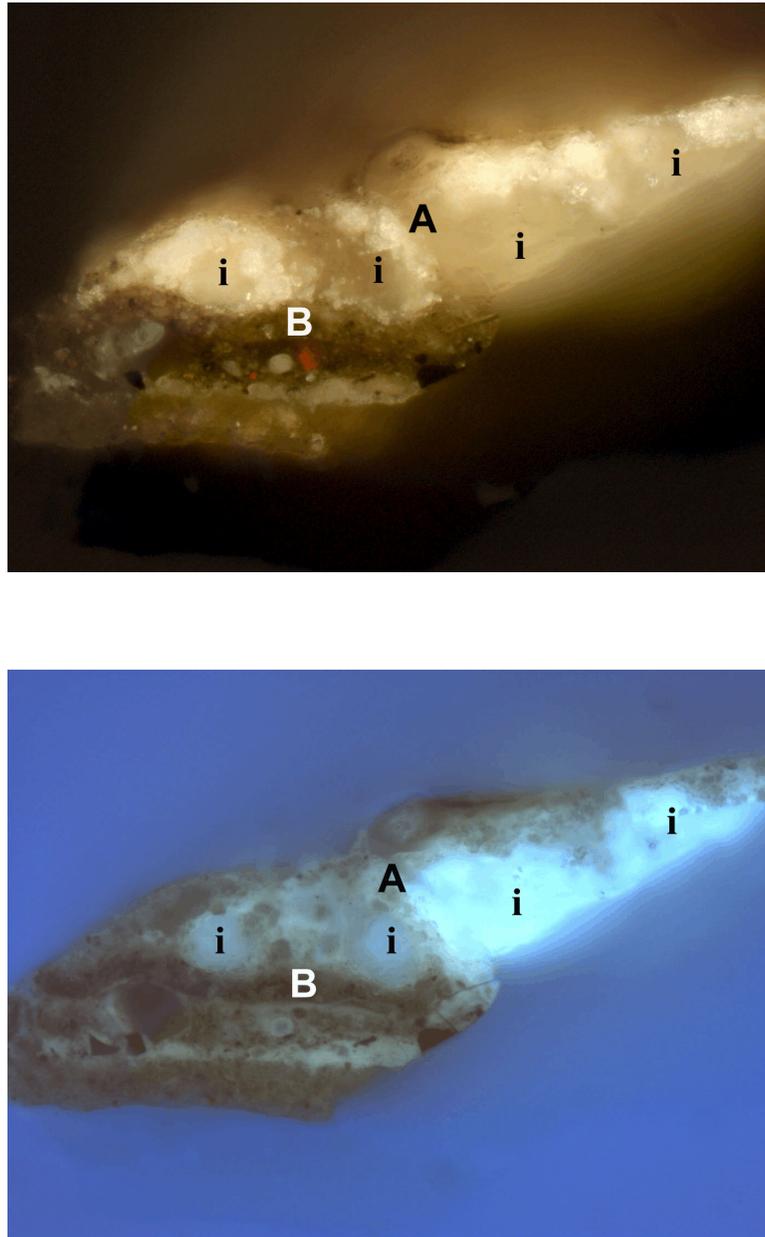


Figure 1: Cross-section prepared from sample no.1 taken from the inscription, viewed under incident light (top) and UV illumination (bottom), showing the yellow paint layer (A), lead soap inclusions (i), and brown paint layer (B). Image width: 255 μm



Conclusion

Several observations made by Barrell were not substantiated by this current photographic and radiographic examination. The only change in composition— currently hidden—is the raising of the sitter’s hair line.

The inscription, thumb ring, embroidery on the gauntlet, and most of the design on the book cover were painted using the same golden yellow paint, confirmed in the case of the inscription to contain lead-tin yellow. There are no indications that this paint is a later addition, especially considering that it was used in so many parts of the composition. This contradicts Barrell’s statements that the inscription was a later addition and that the thumb ring “has been treated to a daubing of the thick orange gold already mentioned.”¹

However, the number “1” painted over the partially-scraped off number “2” in the date and the mask on the book cover were painted using the same pale yellow paint, different in composition from the golden yellow paint used in the rest of the painting. It is likely that these elements were added when the portrait of the original sitter was transformed into a portrait of Shakespeare.



References

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- 3- Higgitt, Catherine, Spring, Marika, and Saunders, David, "Pigment-medium interactions in oil paint films containing red lead or lead-tin yellow," presented at the joint meeting of ICOM-CC Working Groups Paintings I and II and the Paintings Section of UKIC entitled *Deterioration of Artists' Paints: Effects and Analysis*, September 10-11, 2001, London. Extended abstracts of presentations, pp. 21-24.
- 4- Kühn, Hermann, "Lead-Tin Yellow," in: *Artists' Pigments: A Handbook of their History and Characteristics*, vol. 2, edited by Ashok Roy (Washington: National Gallery of Art, 1993), pp. 83-112.
- 5- Gettens, Rutherford J., Kühn, Hermann, and Chase, W.T., "Lead White," in: *Artists' Pigments: A Handbook of their History and Characteristics*, vol. 2, edited by Ashok Roy (Washington: National Gallery of Art, 1993), pp. 67-81.

**Table 1: Sample Descriptions and Locations**

Sample No.	Description	Location* (cm)
1	yellow from mask on book cover	37.6 L, 22.8 B
2	yellow from letter "S" in "SVAE"	19.7 L, 11.0 T
3	yellow from last "1" in "1611"	20.2 L, 15.8 T

*from left (L), bottom (B) or top (T) edge of the painting

**Table 2: Results of the Analysis**

Sample No.	Detected elements	Compounds identified
1- yellow from mask	Pb	cerussite (PbCO_3), probably massicot (PbO)
2- yellow from letter "S"	Pb, Sn	lead-tin yellow (type I, Pb_2SnO_4), possibly tin oxide (cassiterite, SnO_2)
3- yellow from "1"	Pb	cerussite (PbCO_3), probably massicot (PbO)

*Elements in bold are present in high amounts, those in normal typeface in medium amounts.



Appendix: Photographic Documentation

8"x10" overall photograph (colour transparency)

8"x10" fluorescence photograph (overall, colour print)

8"x10" infrared (reflected) photograph (overall, black and white print)

8"x10" infrared (reflected) photograph (detail of the face, black and white print)

8"x10" infrared (reflected) photograph (detail of the inscription and coat of arms, black and white print)

x-radiograph (9 sheets of film)