

Acume Forensics

Crime Scene Reconstruction
& Presentation

Examination and Improvement Emery Walker Negatives (1910)

21st July 2012

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Instruction

I was instructed by Johnnie Nettlefold to examine a digital scan of a photographic plate produced by Emma Cavalier of the National Portrait Gallery, London. A copy of this scan has been subject to certain documented improvements conducted by an amateur which allegedly revealed a signature attributed to Ozias Humphry. I was asked to conduct both an assessment of the work previously conducted and also to conduct my own independent examination and improvement of the scanned image.

Review Procedure

The image under review is in its original form a glass negative which is documented as being produced by Emery Walker (photographer) in 1910, and held at the National Portrait Gallery in London. (NPG).

In order to conduct a forensic examination of this scanned image its provenance must first be established, to facilitate this first stage an original uncompressed scan was requested from NPG, the supplied scan was verified as original and unaltered using the files digital metadata, this is data generated when any digital image is produced.

In this instance I was able to confirm the supplied image **Z1170_EW1009-3_A1_size.tif** was produced on the 5th May 2012 at 17:37hrs using an Epson Perfection V700 scanner. The negative was scanned at a resolution of 11906 pixels by 7835 pixels at 360 pixels per inch and saved as a lossless .tif file. The date and time are recorded from the computer attached to the scanner/camera and as such cannot be relied upon in isolation. However in this case the time of production is immaterial.

The recording resolution used for this scan is much higher than the resolving capabilities of the original negative, this high resolution capture ensures no recorded information is lost and is regarded as good practice for this type of photographic imaging.

Overview

The scan reveals the limitation of the original camera used in 1910, with the image being both unevenly exposed showing a lack of detail in the highlights and shadows due to over exposure or over development. The image is also slightly out of focus with no point of sharp focus across the whole image. (*figure 1*)

However on review the image does show some clear and legible written characters visible prior to any improvement. (*figure 2*)

Improvement

The area of the image allegedly containing the disputed signature had previously been identified, this area alone was subject to visual improvement. A blanket adjustment was used to ensure that no pixels were over treated, over treatment can result in pixels being adjusted to artificially to either contain no information (256) or be completely black (0). In this case this could inadvertently introduce extensions to characters not actually present on the original image.

A custom adjustment curve was applied to the key area both as a negative and positive image, an unsharp mask was also applied at a very low level to improve edge definition (contrast). (*figures 3,4 & 5*)

Comparison

After improvement the signature(s) are clearly visible, a simple visual comparison chart was produced using a high provenance image of Ozias Humphry's signature in ink from 1786. (*figure 6*)

Conclusion

There are signatures recorded on the Emery Walker negatives.

Which I read as - **Ozia RA_ _ _ _ Humphry**

Jane Austen _7

Ozia Humphry RA178_

Dashes show an illegible character.

Addendum September 30th 2012

After further review I have produced a further set of improved images using a high pass filter, this has further improved contrast between the signatures and the background. (*figure 7*).

Stephen Cole
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21st July 2012



Figure 1

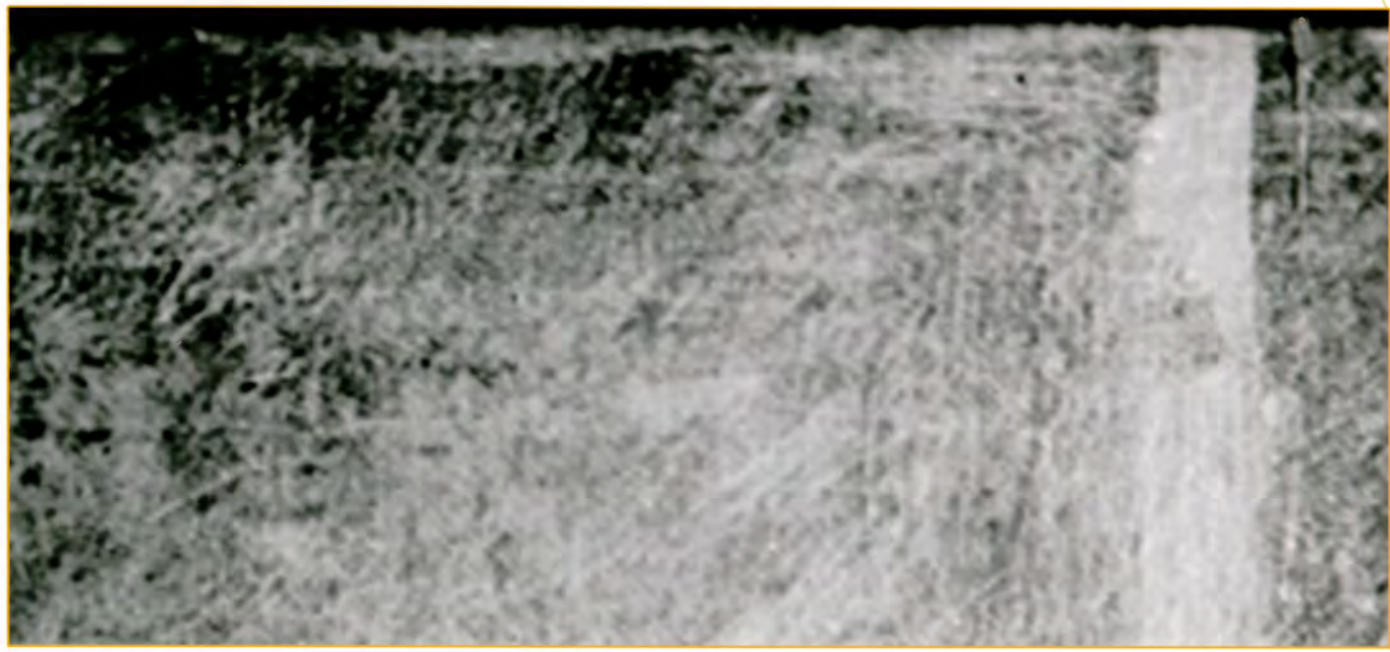
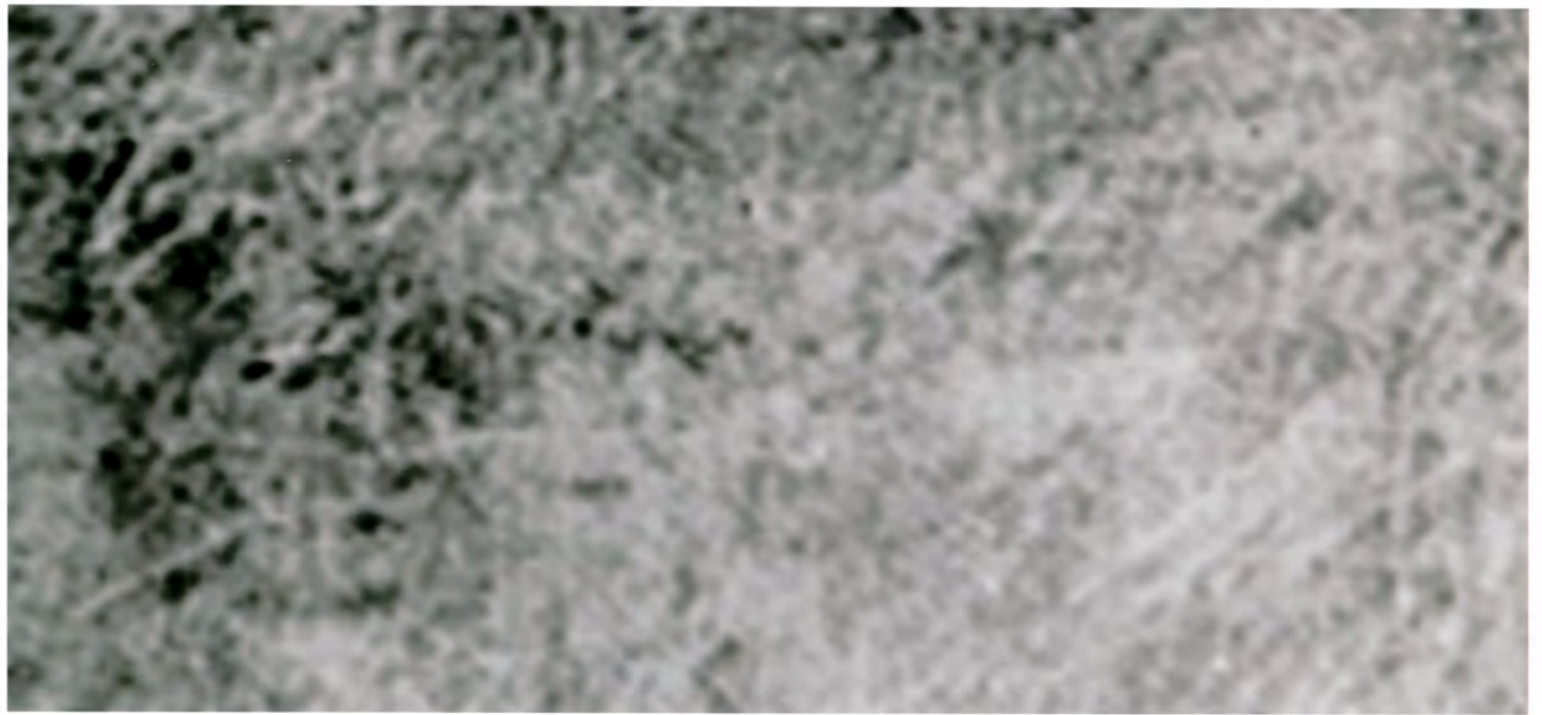


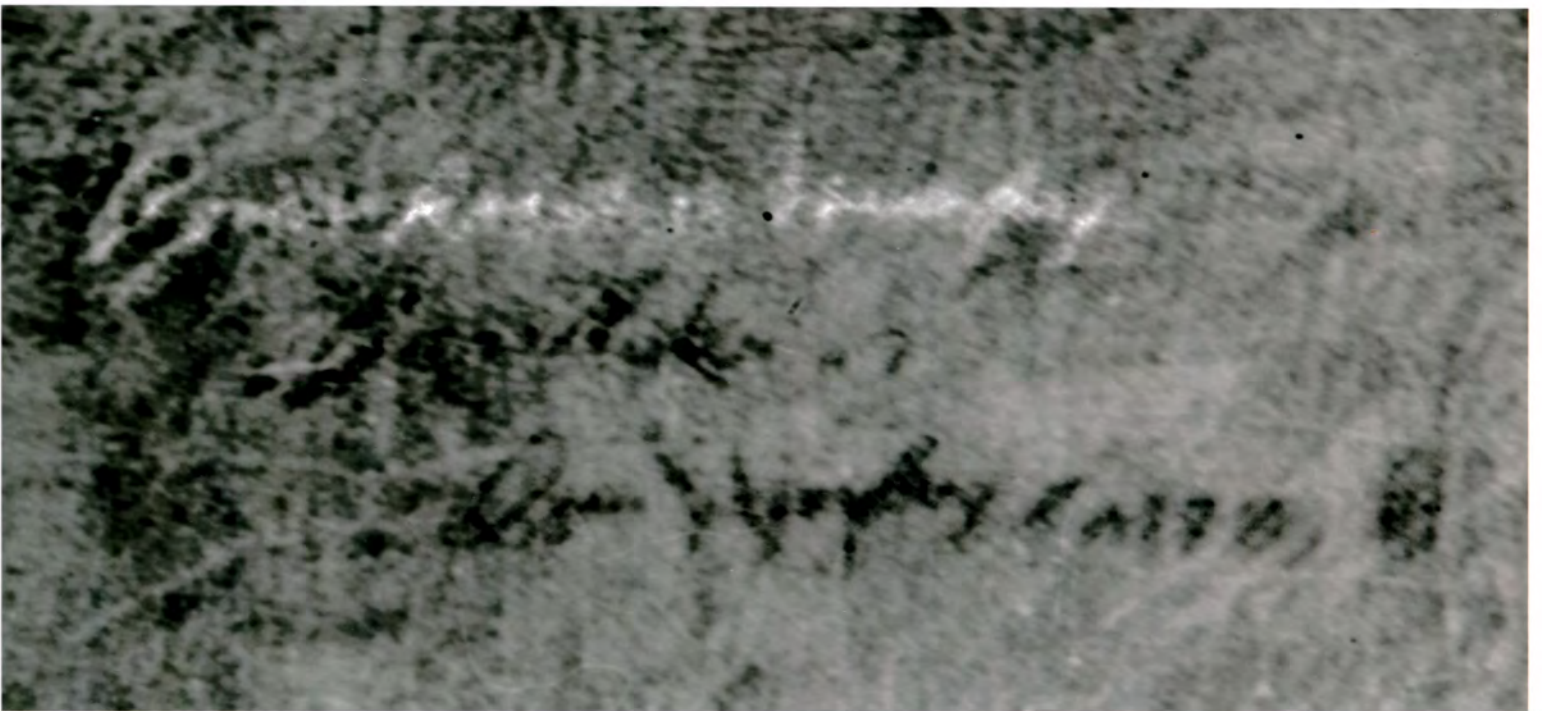
Figure 2



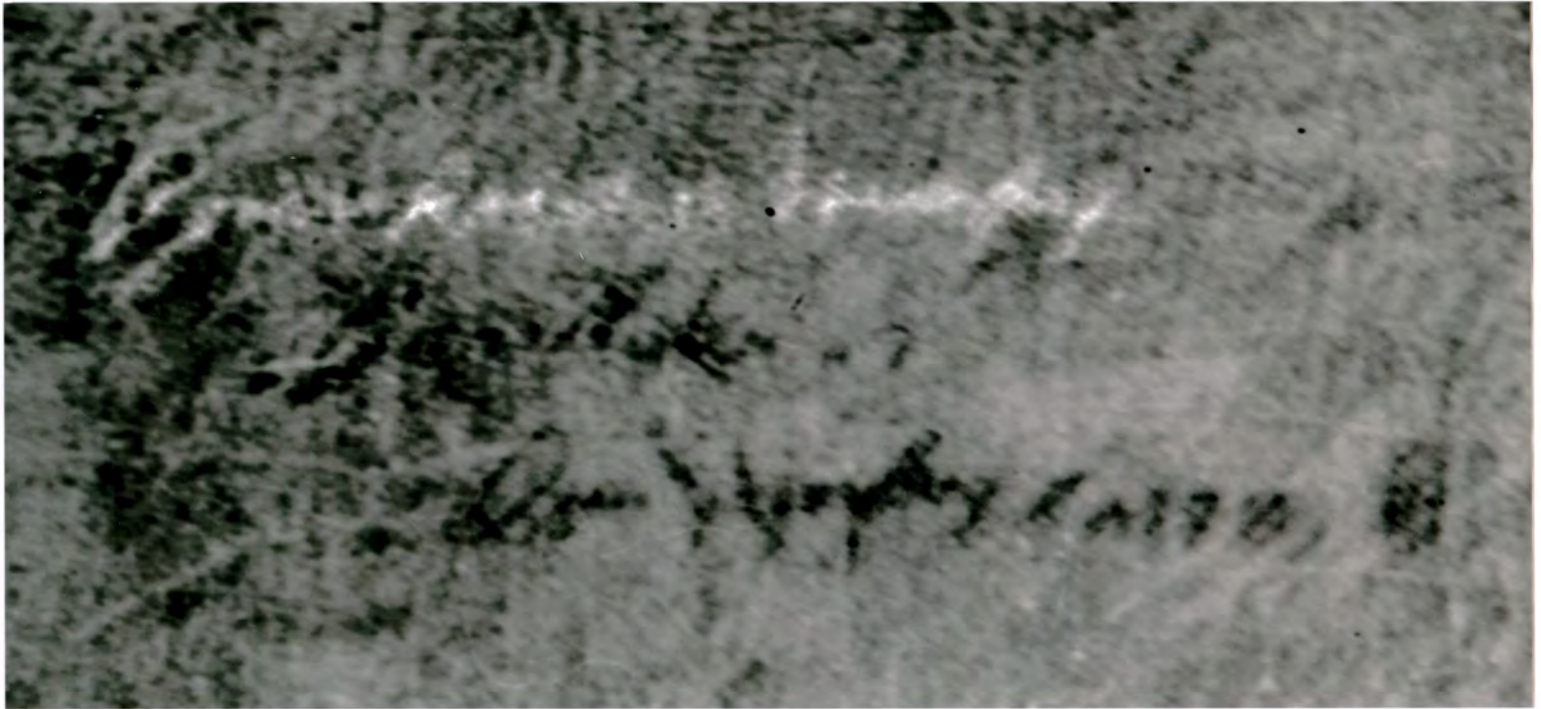
Figure 3



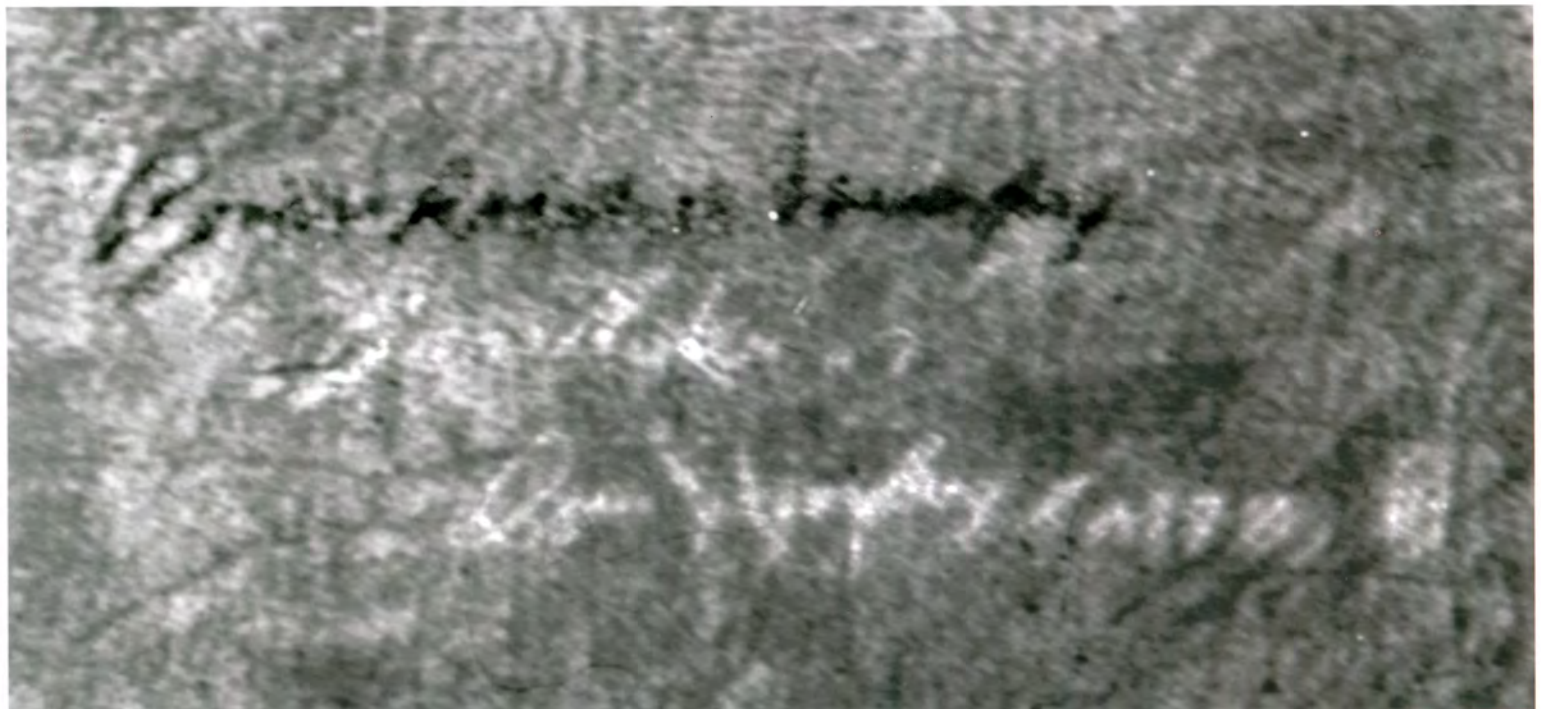
Original unadjusted



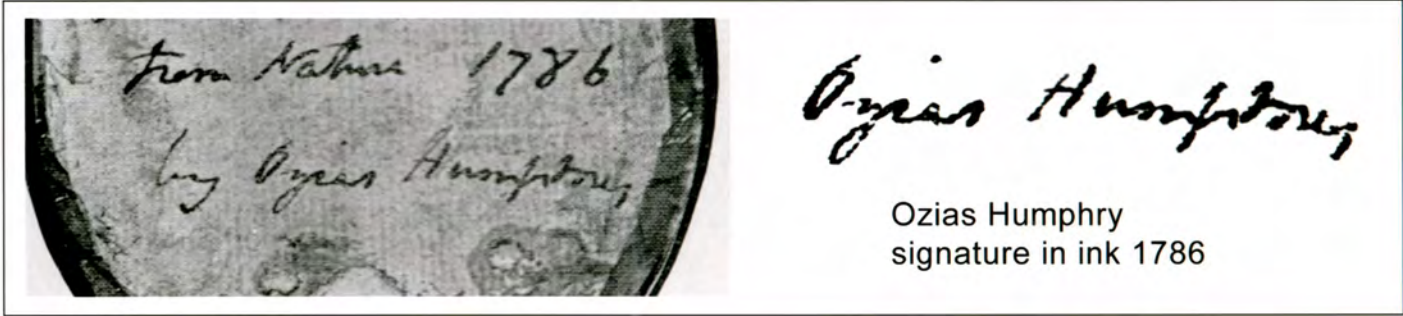
Adjusted curves & unsharp mask



Adjusted curves & unsharp mask

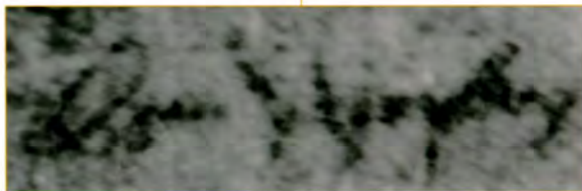
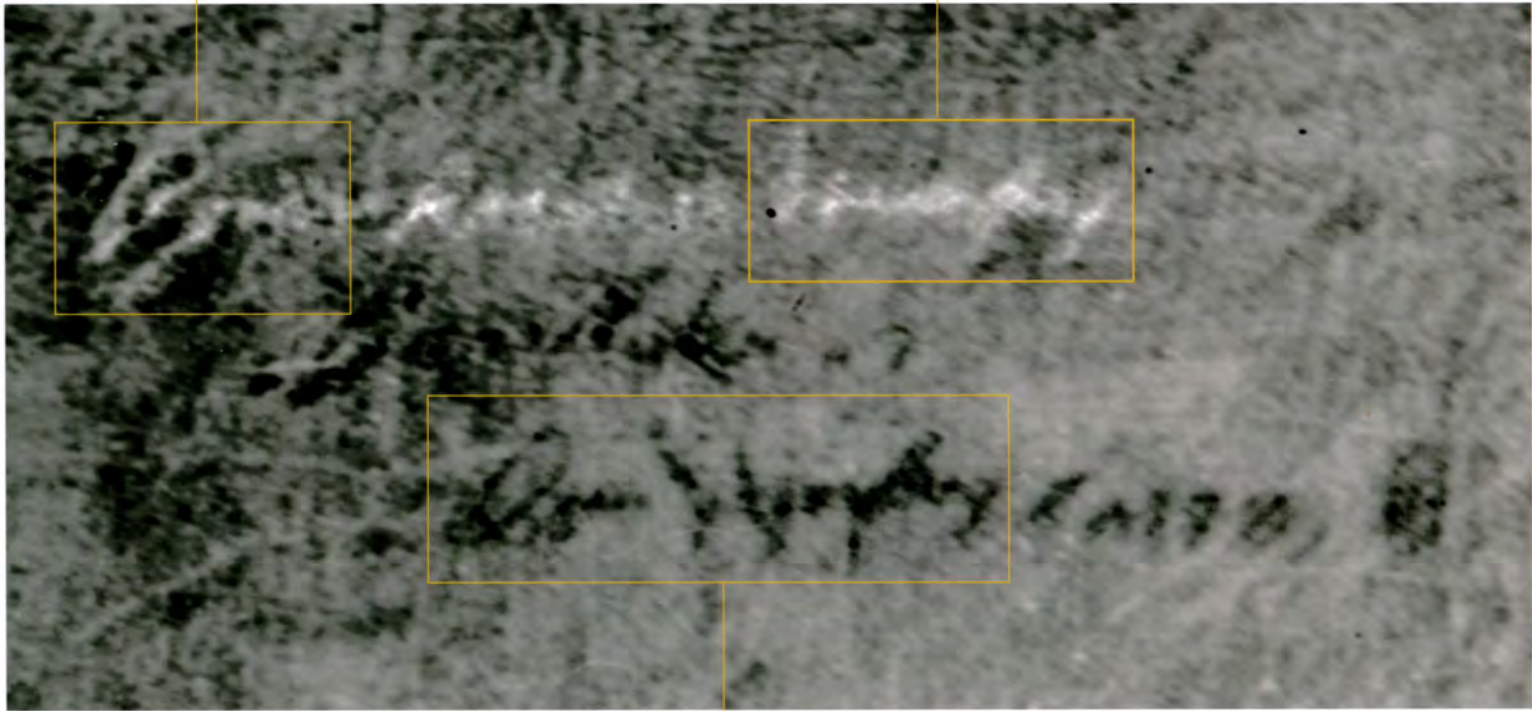
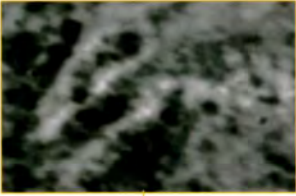


Adjusted curves & unsharp mask (Inverted)



Ozias

Humphry



Ozias Humphry

