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TITLE Examination of paint from the Queen's Chapel, St. James's Palace

Site No. 1361

AUTHOR B. Knight

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<u>ABSTRACTS</u> Paint from a stone fireplace was examined with inconclusive results. A dark red layer, possibly a priming coat, did not contain red lead or iron oxide (crystalline $\operatorname{Fe}_{20,j}$), but possibly contained red ochre (an amorphous ferric oxide).

<u>KEYWORDS</u> Pigment, analysis, X-ray diffraction, X-ray fluorescence, white lead (hydrocerussite), calcite

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Examination of paint from the Queen's Chapel, St. James's Palace

Introduction

Paint samples taken from a stone fireplace showed a dark red layer adjacent to the stone. It was suggested that this might be a priming coat applied before the top white coat, and analysis was sought which might confirm or refute this suggestion.

Sampling

A small amount of paint was scraped from the red side of one of the flakes. It was difficult to do this without removing some of the next layer because of the uneven surface of the flake, which was caused by the paint having been applied directly to the rough surface of the stone. The scrapings were examined by X-ray fluorescence and X-ray diffraction. <u>Results</u>

X-ray fluorescence gave strong signals for lead and calcium, medium for copper and zinc, and weak for iron. The only crystalline phases detected by X-ray diffraction were white lead (hydrocerussite) and calcite $(CaCO_3)$ — in other words red lead (Pb_3O_4) or red oxide (Fe_2O_3) were not detected. However, the presence of amorphous phases such as red ochre (an amorphous ferric oxide) is not precluded, but there is no certain identification of the material responsible for the red colour.

B. Knight 25/2/81