

Reflective Sheen in Mercury-Processed Platinum Prints

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The presence of a reflective sheen known as “silvering” or “silver mirroring” in photographs, particularly in the densest image areas around the perimeter of a print, is a feature that has long served to distinguish silver prints from other photographic processes. A similar characteristic, however, has been observed in some platinum prints and is associated with the presence of mercury. The use of mercury in the sensitizer and developer for the platinum process has long been documented in periodicals, manuals, and other publications, and its potential to cause fading in platinum prints was recognized early on. However, the authors have found no reference to the phenomenon of reflective mirroring in platinum prints.¹

Two platinum prints by Joseph T. Keiley (1869–1914) in the Library of Congress and six platinum prints by Edward Sheriff Curtis (1868–1952) in the New York Public Library that display the mirroring phenomenon were analyzed by x-ray fluorescence spectroscopy (XRF) (figs. 1, 2). XRF confirmed the absence of silver and the presence of platinum and mercury in all these prints, with a higher concentration of mercury in the mirrored regions. To ascertain if the sheen was indeed related to mercury on the surface of the print, minute samples were collected with microswabs from the surface of the Keiley print illustrated in figure 1.² Analysis indicates that the bulk of the sample contains a high ratio of mercury to platinum, a finding that implies an enrichment of mercury at the print surface.

Several other examples of “mirrored” platinum prints have been observed, including Edward Sheriff Curtis photographs in the Peabody Essex Museum in Salem, Massachusetts, and a platinum portrait of Leonard Ochtman in the National Gallery of Art (fig. 3). For this print, analysis with XRF again confirmed the lack of silver and a high concentration of mercury in the mirrored regions of the print.

Research into platinum-mercury mirroring continues with the aim of characterizing the mechanisms that cause this phenomenon in order to aid in preservation of platinum prints such as those illustrated here.



Figure 1. Joseph T. Keiley, *Mercedes de Cordoba*, c. 1899. Platinum print with mercury, 18.7 × 11.2 cm. Library of Congress, Prints and Photographs Division, PR 13 CN 1985:647.67-7.

Notes

1. For fuller discussions of the use of mercury in the platinum process and subsequent deterioration pathways, see Mike Ware, “The Technical History and Chemistry of Platinum and Palladium Printing”; Matthew L. Clarke, “Characterization, Degradation, and Analysis of Platinum and Palladium Prints”; and Sarah S. Wagner, “Manufactured Platinum and *Faux Platinum* Papers, 1880s–1920s,” in this volume.

2. The samples were taken from an approximately 1.5 mm area of a high-density area of the print’s surface using swabs that measured approximately 0.5 mm wide.



2a

Figure 2. Edward Sheriff Curtis, *Cañon de Chelly*, c. 1903. Platinum print with mercury, 43 × 52.5 cm. New York Public Library, Miriam and Ira D. Wallach Division of Art, Prints and Photographs, The New York Public Library, Astor, Lenox and Tilden Foundations, b14311856.

2a. Detail of mirrored region.

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Figure 3. Albany Art Union, *Leonard Ochtman*, c. 1908. Platinum print with mercury, 19.1 × 25.6 cm. National Gallery of Art Library, Leonard Ochtman Archive, Department of Image Collections, DLI 1402400001.

3a. Detail of mirrored region.



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