Special Characteristics of Daguerreotypes

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What is special about daguerreotypes?

- Metal
- One of the kind, taken individually, processed individually
- Image formation
  - Reflection
  - Scattering
- Negative and Positive
- Reflective surface
Material Characteristics

A silver/copper object with fine silver particles on the silver surface

- Inorganic

- Particular enclosed housing/environment
Deterioration Characteristics

Silver Tarnish/corrosion

– Yellow ochre/Brown/black
– Interference color
– Bluish/whitish
– Particular patterns
  • window mat opening
  • Circular
  • Tideline
  • cover glass break
Deterioration Characteristics

Copper corrosion

- Pits in the silver layer
- Green copper corrosion products
- Glass deterioration drops
Deterioration Characteristics

Cover glass

– Soiling/debris/accretion/adhesive...
– “Glass desease”/Weathering/corrosion
  • Weeping
  • Crizziling
Deterioration Characteristics

Physical damage

- Abrasion
- Scratch
- Fingerprint (also chemical damage)
- Dent
- Adhesive residue
- Accretion
- Blister/exfoliation
Material Characteristics
The plate itself

**Front**
- Plate hallmark
- Edges bent, curved, or crimpped
- Polish marks: circular, linear

**Back**
- Silver plated/copper back
- Wax residue/label, ...etc
Previous Treatment

• New or restored housing
• New binding tape
• Scratches on the surface
• No tarnish
• Blisters/exfoliation
• Copper back too clean
• No fluorescence under UVC
< That's me!

Disassemble Plate Package
Preparation

• Nitrile/latex gloves v.s. cotton gloves
• During treatment documentation: document the way the package was put together, particularly for stereo-daguerreotypes.
  – Method of binding
• Prepare temporary housing
  – For entire object
  – For image plate
Binding tapes/Adhesive tapes

• Old tape—prior to 1960 (?)
  – Water-based tape
  – Remove with water or methylcellulose

• Pressure sensitive tape
  – Such as Scotch tape, Filmoplast P90, Filmoplast P, J-Lar, and others
  – Cut open carefully
  – remove adhesive with heat, erasers, or organic solvents

• Check with UV to see if adhesive is completely removed
Photographing Daguerreotypes
Normal Illumination
Lights

• Choices
  – Strobe lights
  – tungston lights
  – high intensity discharge lights (HID)
  – “full spectrum” fluorescent lights

• Choose lights with g Color-Rendition Index (CRI) higher than 90
Camera

• Requirement
  – Full frame (see digital camera sensors sizes)
  – Live view
  – Computer control

• Choices
  – Nikon D700, 12 MP
  – Nikon D3, 12 MP
  – Nikon D3s, 12 MP
  – Canon 1Ds Mark III, 21MP
  – Cannon 5D Mark II, 21 MP
Digital Camera Sensors Sizes

Medium format (Kodak KAF 39000 sensor)

5 x 4 inches

35 mm "full frame" 36 x 24 mm

APS-H (Canon)

APS-C (Nikon DX, Pentax, Sony)

APS-C (Canon)

Foveon (Sigma)

Four Thirds System

1/1.6"

1/1.7"

1/1.8"

1/2.5"
Digital camera Sensors Sizes

Medium format (Kodak KAF 39000 sensor)
50.7 × 39 mm
1977 mm²

35 mm "full frame"
36 × 24 mm
864 mm²

APS-H (Canon)
28.7 × 19 mm
548 mm²

APS-C (Nikon DX, Pentax, Sony)
~23.6 × 15.7 mm
~370 mm²

APS-C (Canon)
22.2 × 14.8 mm
329 mm²

Foveon (Sigma)
20.7 × 13.8 mm
286 mm²

Four Thirds System
17.3 × 13 mm
225 mm²

1/1.7"
7.6 × 5.7 mm
43 mm²

1/1.8"
7.18 × 5.32 mm
38 mm²

1/2.5"
5.76 × 4.29 mm
25 mm²
Major Concerns

- Lighting direction
- Reflection absorbing board—deep, dead black
- Background color
Inverted Scanner

Image Credit: Ralph Wiegandt & Patrick Ravines
Inverted Scanner

Image Credit: Ralph Wiegandt & Patrick Ravines
Photographing Daguerreotypes

downlight
Using Neutral Density Filters

• Reduce the light intensity without changing the color rendition (color temperature)
• For photographs that are very sensitive to strong lights
Neutral Density Filters

• 0.3 = 1 stop
• 0.6 = 2 stop
• 0.9 = 3 stop

1 sheet of 0.3 + 1 sheet of 0.6 + 1 sheet of 0.9
= 6 stops less light ➔ 6 stops more exposure

time

Exposure time:

\[ \frac{1}{60} \text{ sec} \rightarrow \frac{1}{30} \text{ sec} \rightarrow \frac{1}{15} \text{ sec} \rightarrow \frac{1}{8} \text{ sec} \rightarrow \frac{1}{4} \text{ sec} \rightarrow \frac{1}{2} \text{ sec} \rightarrow 1 \text{ sec} \]
Photographing Daguerreotypes

specular illumination
To record

Negative view of the daguerreotypes

– Surface defect
  • Tarnish
  • Accretion
  • scratches
Methods

Axial specular

Oblique specular
Photographing Daguerreotypes

UV Photography
Equipments & Tools

• UV lamps: UVA and UVC
• Backgrounds
• UV Filters
• Others
  – Filters
  – Background
Photographing Daguerreotypes with microscope
Things To Consider

- Safety of the object
- Illumination/lighting setups
- Using support
- Using Lazy Susan
Reassemble the Plate Package
Things To Consider

• Methods of binding
  – Original method?

• Binding tape
  – Aqueous
  – Non-aqueous
  – Pressure sensitive
  – Coloring
Things To Consider

• **Cover glass**
  – Reuse the original glass
  – New glass
    • Borosilicate glass
    • Glass with good stability
  – Method of cleaning glass
Things To Consider

• Binding process
  – Prepare adhesive paper/tape
  – Clean cover glass
  – clean cover glass with forced air
  – Clean the daguerreotype surface with forced air
  – Temporary secure the package with clips or low-tack tape
  – Final binding
    • Corners reinforced