CONSERVATION CENTER

for Art & Historic Artifacts

Handling Photographs for Digitization

Ivey Barker
Associate Photograph Conservator

Kaitlyn Pettengill
Digital Archives Specialist

Conservation Center for Art & Historic Artifacts

In a typical year:

- Preservation Services specialists complete over 50 survey projects.
- Approximately 60 CCAHA-sponsored workshops, conferences, webinars, and training sessions are presented.
- The Digital Imaging Services staff digitizes thousands of pages of fragile archival documents, books, and photographs.
- Conservators assess and treat more than 6,000 individual artifacts, from over 400 clients.
- Housing & Framing Services house approx. 75% of the artifacts treated (folder, sleeve, box, mat and frame, or sealed package).

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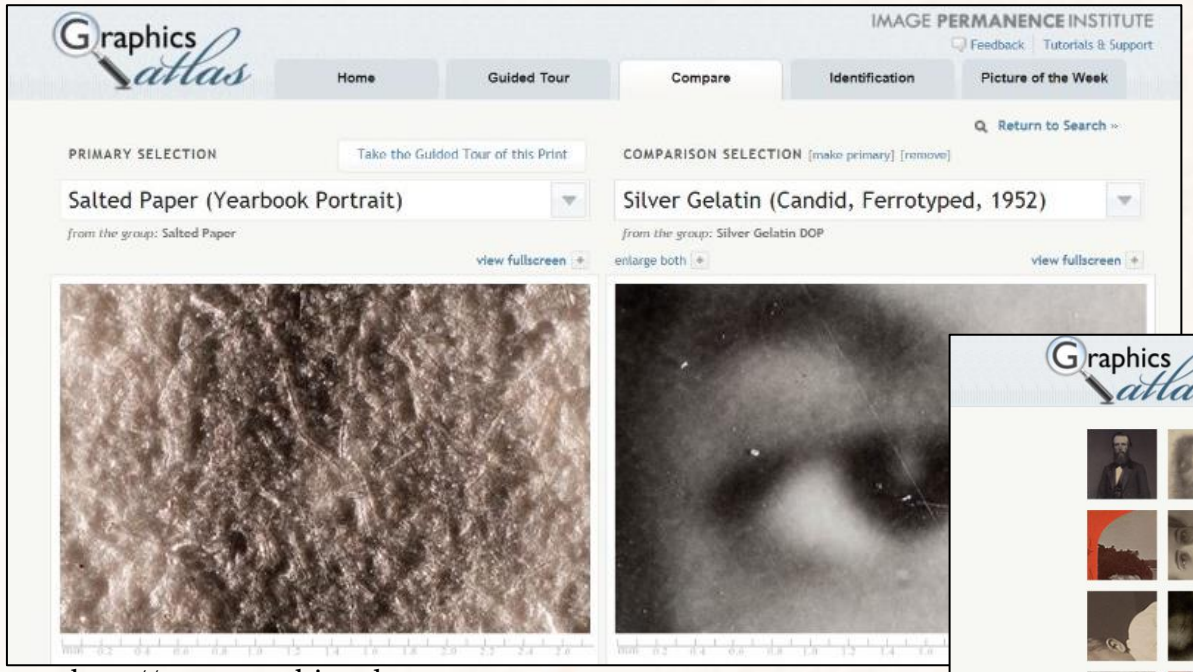
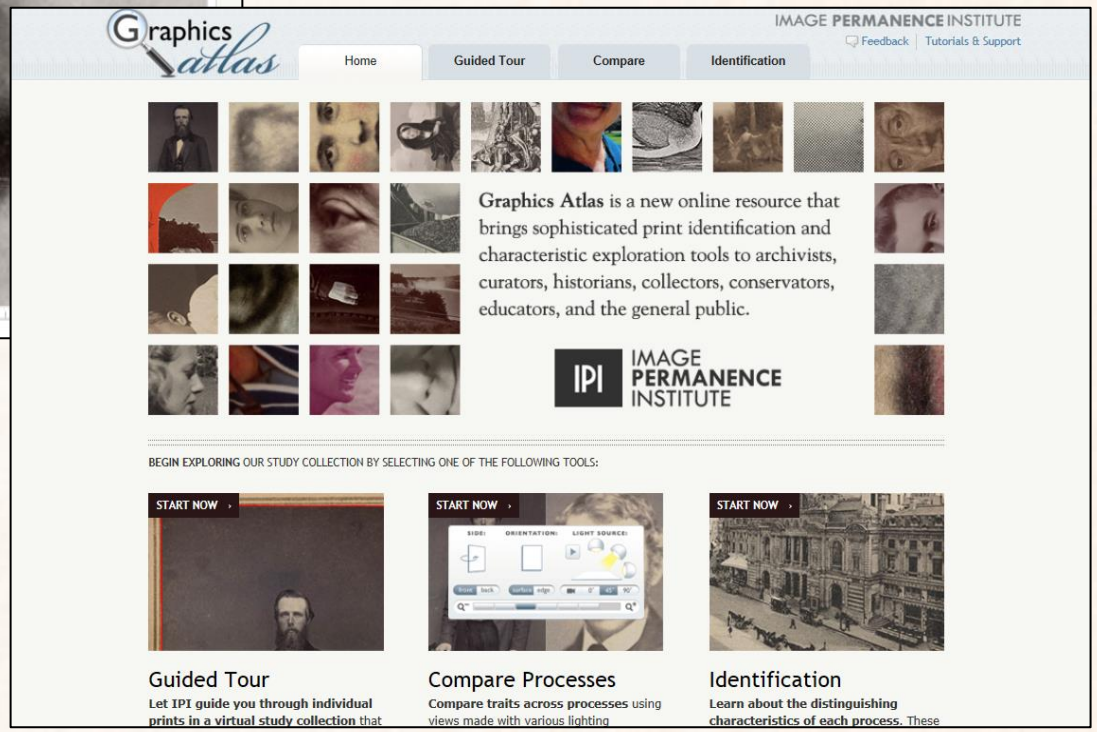
Framing the Problem

- Photographs can be **complex** to digitize, especially those with reflective surfaces or housed in cases
- The **risk of loss** is not always obvious; it depends on materials, emulsions, and color stability, not just age
- Capturing **an accurate image** can also be difficult
- Digitization **can increase risk** if materials are not handled correctly
- The goal is to **expand access** while minimizing handling of originals

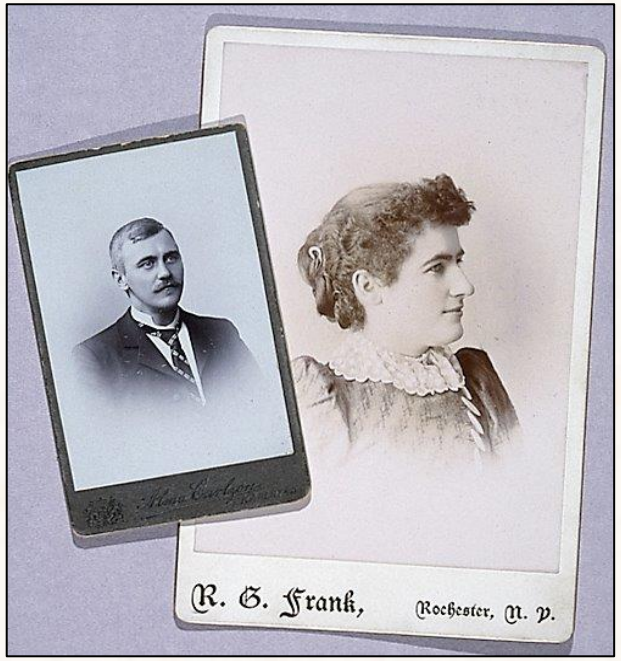
Photograph Identification Online





http://www.graphicsatlas.org

Photographs – 19th c. to Present



Includes:

- Cased Photographs
- Prints / Albums
- Photographic negatives

Common Photographic Supports:

- Metal
- Glass
- Paper
- Plastics

Timeline: Early / Cased Photographic Processes

daguerreotype
1840-55

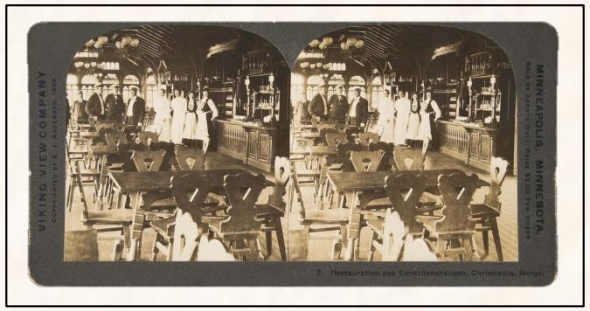
tintype
1855-1930's

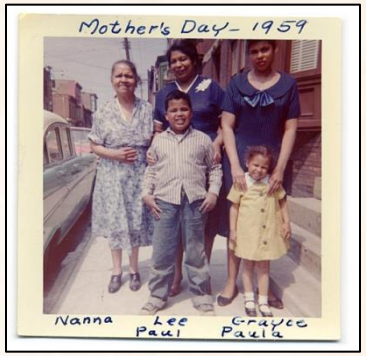
1840 1860 1880 1900 1920 1940

ambrotype
1850-80's

Courtesy of Graphics Atlas

Timeline: Prints on Paper





salted paper
1840-55

albumen
1855-95

gelatin & collodion print-out papers
1895-1905

"black & white" develop-out papers
1905-60

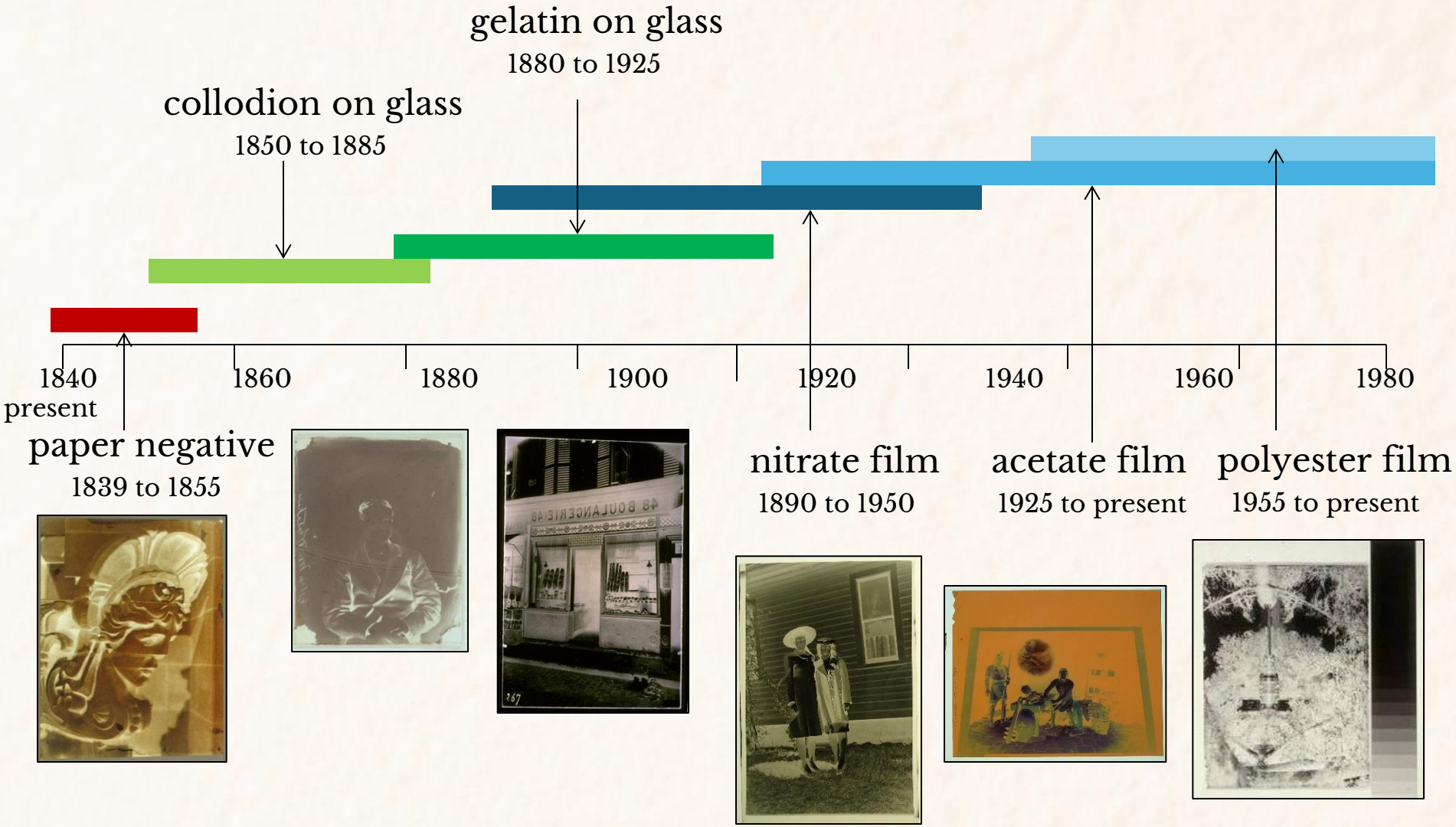
chromogenic color paper
1960-2000ish

digital
1990ish-present

1840 1860 1880 1900 1920 1940 1960 1980 PRESENT

Courtesy of Debbie Norris

Timeline: Negative Supports



Common Vulnerabilities

Surface Sensitivity

Emulsions, coatings

Courtesy of Smithsonian Institution Archives

Structural Fragility

Glass, layered objects

Chemical Instability

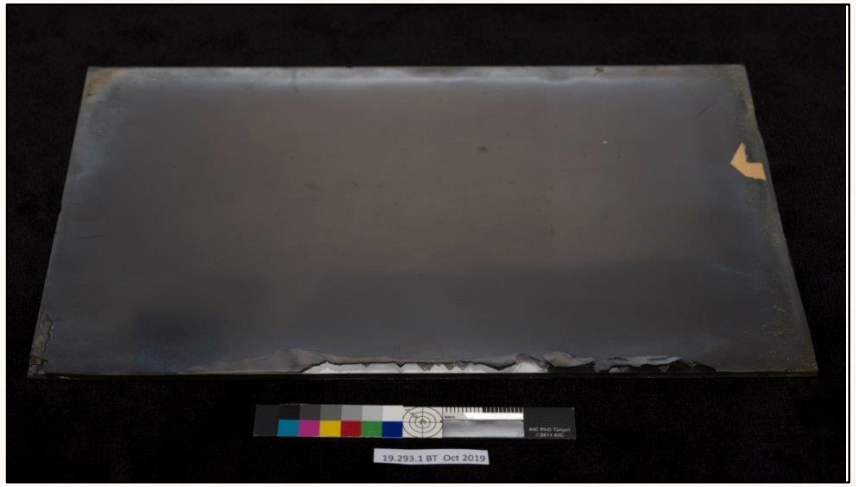
Color fading, silvering

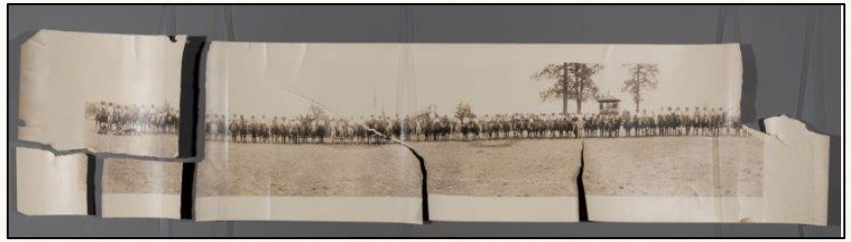
Common Risks and Red Flags

Types:

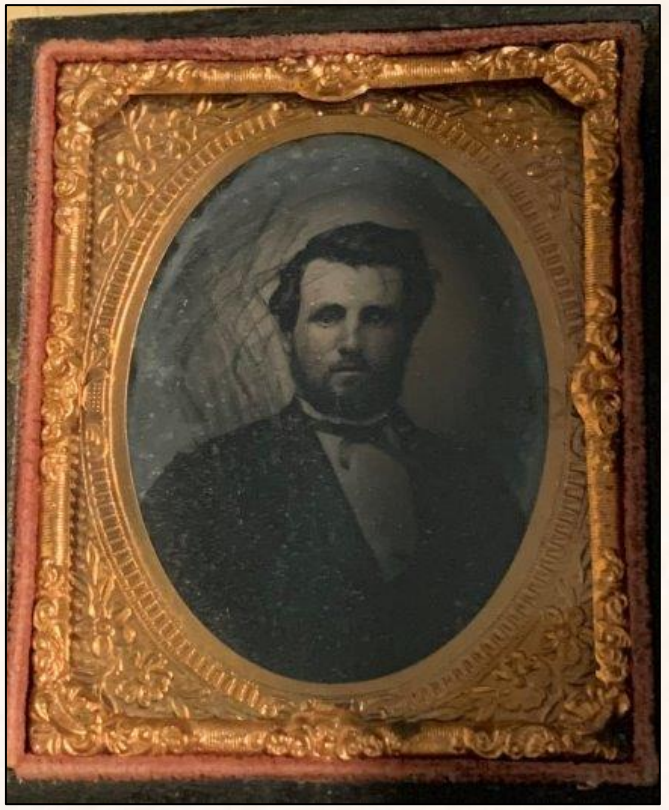
- Physical
- Chemical
- Biological

Common Deterioration - Physical



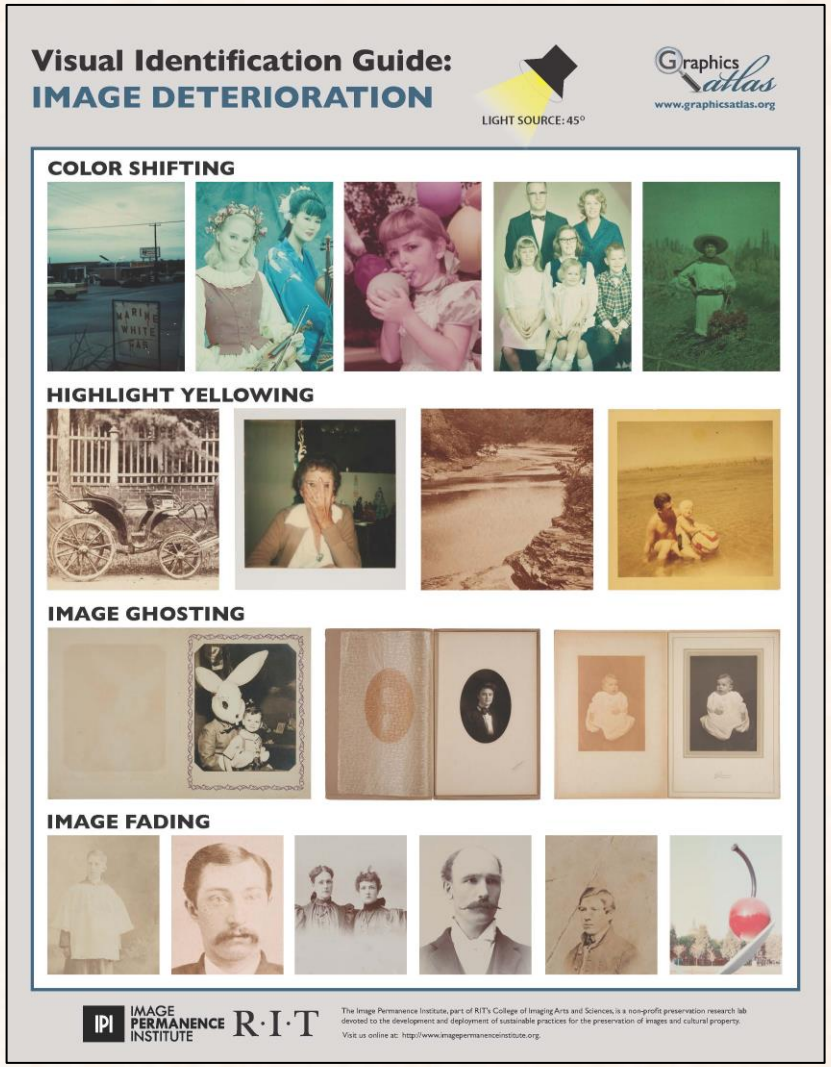


- Emulsion & Coatings: Flaking or Lifting
- Paper & Supports: Distortion, Tears
- Surface: Adhesive / Tape, Abrasion, Staining
- Cases & Hinges: Broken / Missing Components



Common Deterioration - Chemical

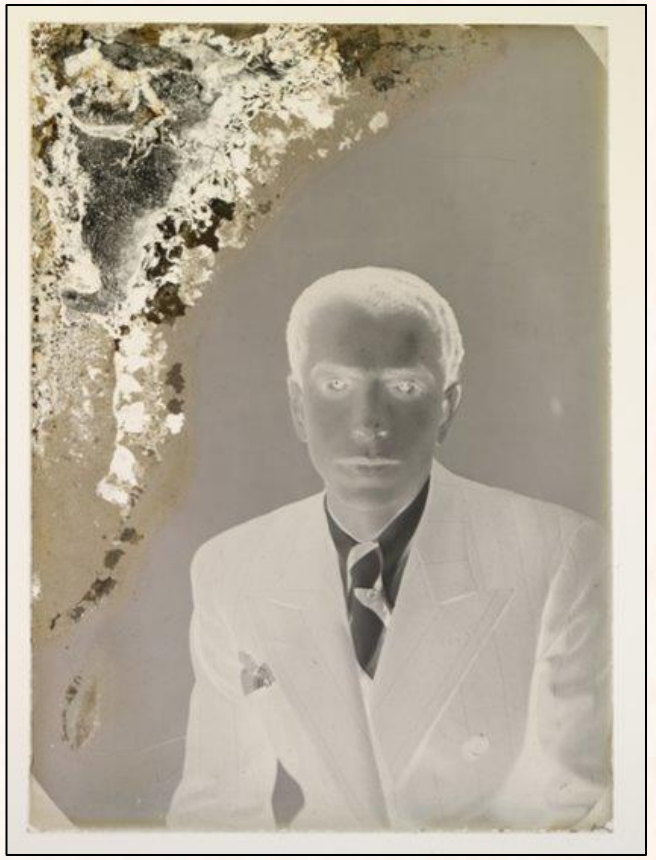
- Emulsion: Silver Mirroring
- Paper & Supports: Staining
- Color: Fading, Yellowing, Color Shifts
- Cases & Hinges: Metal / Glass Corrosion



Common Deterioration - Biological

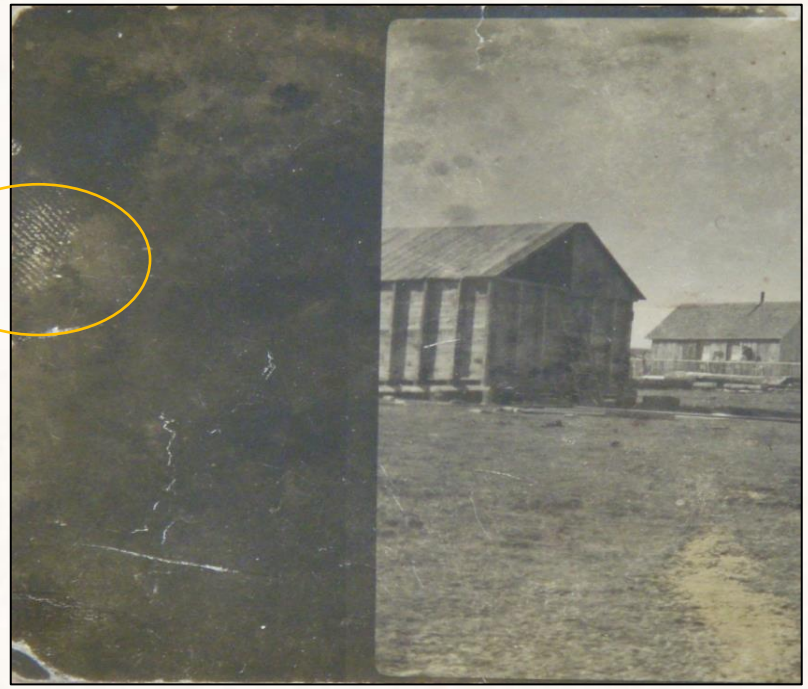
Emulsion & Paper:

- Mold
- Image Loss
- Discoloration
- Insect Evidence



Above: Courtesy of Mogens Koch
Left: Courtesy of the Winterthur/ University of Delaware Program in Art Conservation, Class of 2018

Handling Techniques



Salt and oils from hands cause immediate damage

Disposable Nitrile is *BEST*

Working with Photos

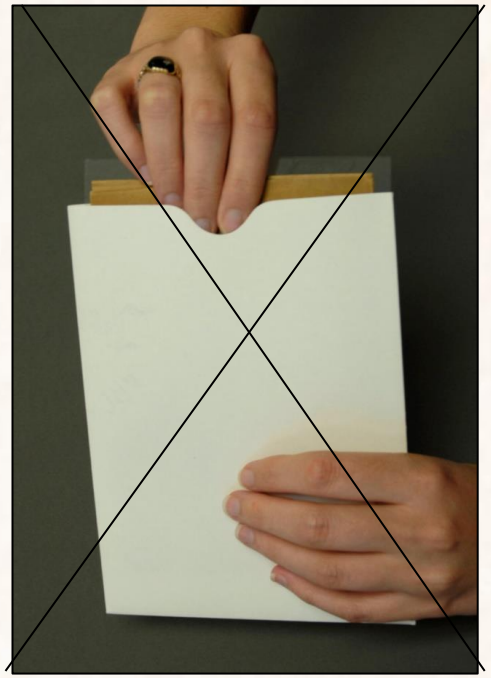
- Carry with two hands
- Work over a table
- Avoid flexing and turn carefully
- Do not stack or flatten distorted photos
- Keep objects covered and labeled when not in use

Courtesy of Debbie Hess Norris

Working with Photos

Minimize abrasion

- Do not reach into the envelope…
- …pour items from the envelope into your gloved hand
- Remove cover sheet in a mat by lifting, not sliding



Images courtesy of Jae Gutierrez

Working with Albums & Scrapbooks

- Do not open or force flat
- Support with cradle or wedge
- Turn pages carefully
- Safeguard interleaving and loose contents

Courtesy of Fayetteville State University

Image courtesy of EmilyHughesDominick.com

How do you handle photographs attached in scrapbooks? Remove them if you are able ? Put non-glare glass sheet on top of photo? Weight page in open position under a stand with non-glare glass?

Preparing the Original Objects

Images courtesy of Jae Gutierrez

- Organize and Identify Collection
- Assessment Condition
- Determine Objective and Priorities for Digitization

Can I remove slides from their original carousels to free up storage space? How do I ensure the original order if I remove them?

When to Unframe?

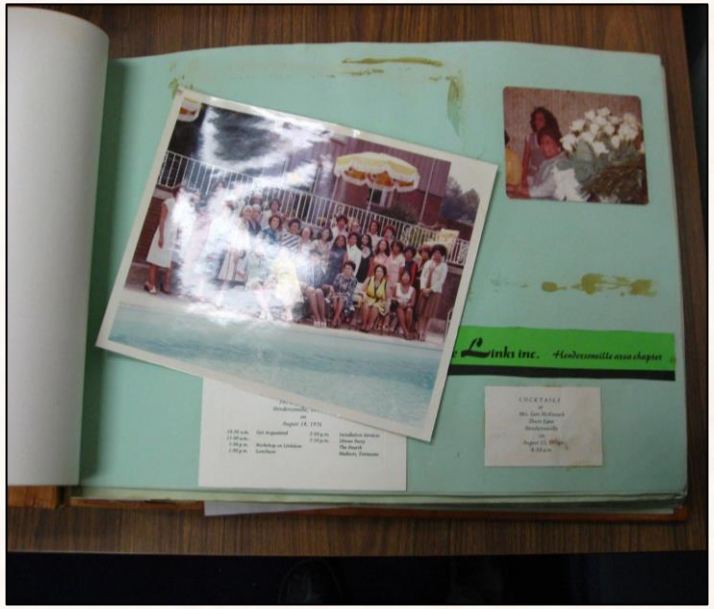
Courtesy of Kentucky State University

Courtesy of Kentucky State University

Photograph is endangered, needs treatment, or will be replaced by a facsimile print for display

When to Disbind?

- Collaborative decision
- Albums are unique
- Whole is a single object



Possible reasons to alter format:

Contents Unsafe - Can't be rebound - Treatment - Digitization

Setting Up the Work Area

Workspace Essentials

- Smooth, neutral, non-abrasive surface
- Ample space! FADGI suggests ≈ 6× object size
- Clear “In / Imaging / Out” areas
- No food, drink, or unnecessary materials

Environment

- Stable temperature and relative humidity
- Even, controlled lighting (avoid direct sunlight)
- Low dust
- Avoid direct airflow (fans, vents) that can disturb materials

Digital Setups by Format

Camera & Copy Stand

Flatbed Scanner

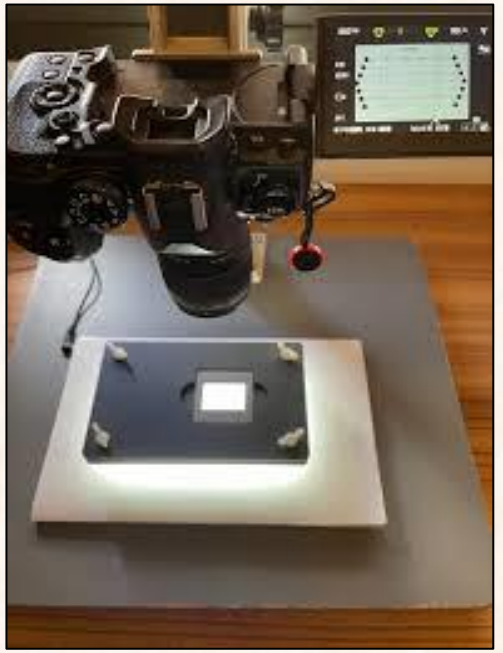
Specialized Equipment

Camera & Copy Stand

Best for fragile, oversized, or layered materials

- Use for cased photographs, glass plate negatives, and mounted prints
- Allows for minimal handling, no pressure on the object
- Flexible setup for a range of formats!

Copy stand vs. scanner (best options)? How do you adapt them for different formats (i.e., slides, transparencies...)?



Cased Photographs

Key Techniques

- *Prevent Reflections:* Use a copy cube, or surround the object with black foam, paper, or cloth; allow only the camera lens through a small opening.
- *Lighting:* Place lights at 45° angles to reduce glare.
- *Focusing:* Use foam core supports to stabilize the plate; focus on the image surface, not the glass.
- *Post-Processing:* Enhance contrast; reduce glare; correct for tarnish.

https://library.brown.edu/dps/curio/digitizing-the-mirror-with-a-memory/

Glass Plate Negatives

Provided by North Carolina Museum of Natural Science

Key Techniques

- *Preparation:* Use a soft brush to remove dust; avoid cleaning the emulsion (matte) side.
- *Method 1:* Flatbed scanner with transparency capability. Place the plate emulsion side down. Resolution of 2400-3200ppi.
- *Method 2:* DSLR or mirrorless camera on a copy stand. Position the plate on a diffused LED light source. Set the camera to a 90° angle and shoot in RAW format at f/8.
- *Post-Processing:* Invert the image; adjust contrast and tonal range.

Lantern Slides

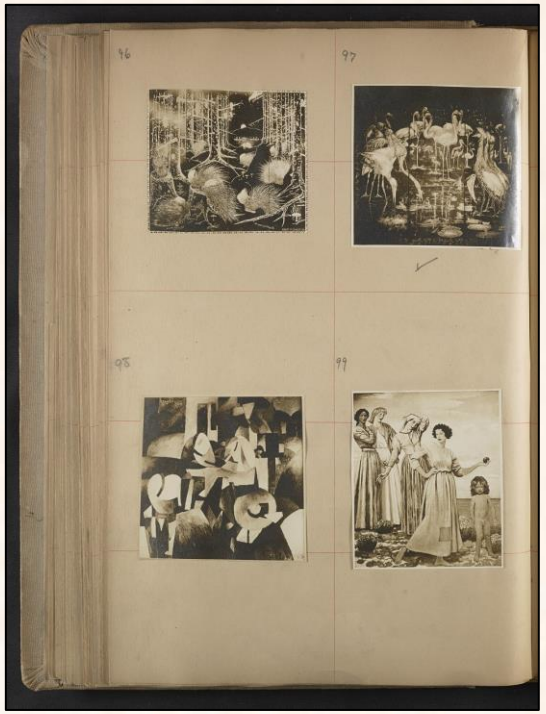
Key Techniques

- *Capture:* Same setup as glass plate negatives (flatbed or copy stand with backlighting).
- *Post-Processing:* Adjust contrast and color; correct orientation. Composite image may be needed to include labels or frames.

Photograph Albums

Key Techniques

- *Handling:* Support the album fully; avoid forcing pages to lie flat; turn pages carefully from the edges.
- *Capture:* Camera preferred for bound or fragile albums; use supports or cradles to hold pages at a safe angle; flatbed scanner can be used for loose photographs.
- *Post-Processing:* Maintain page sequence and context.



GLOSSY POP vs. MATTE COLLODION

Gelatin POP

high gloss

Collodion POP

gloss + irridescence

Matte Collodion POP

matte

Flatbed Scanner

Best for stable, flat materials

- Use for modern prints, slides (with transparency unit), some negatives
- Has consistent lighting and resolution
- Avoid for brittle, flaking, or uneven items

What is the best way to pick up the photographs from the flatbed without damaging them?

Stereograph Cards

Key Techniques

- *Handling:* support the card to avoid bending.
- *Capture:* Flatbed or copy stand; do not force curved cards flat under a scanner lid.
- *Post-Processing:* Left and right images may be separated for access copies.

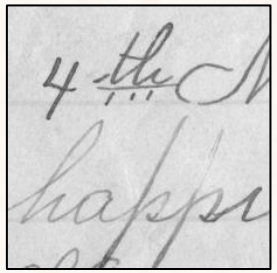
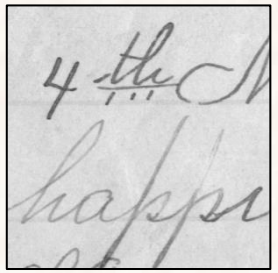
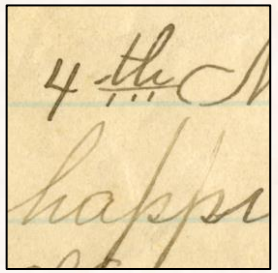
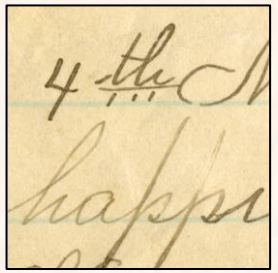
Specialized Equipment

Best for high-resolution capture of film-based materials

- Use for negatives, transparencies, and slides
- Provides greater detail, color accuracy, and consistency
- Less flexible; requires material to be in stable condition

When does outsourcing make economic sense—oversized, specialized objects, slides—and whom do you recommend?

Image Quality Considerations

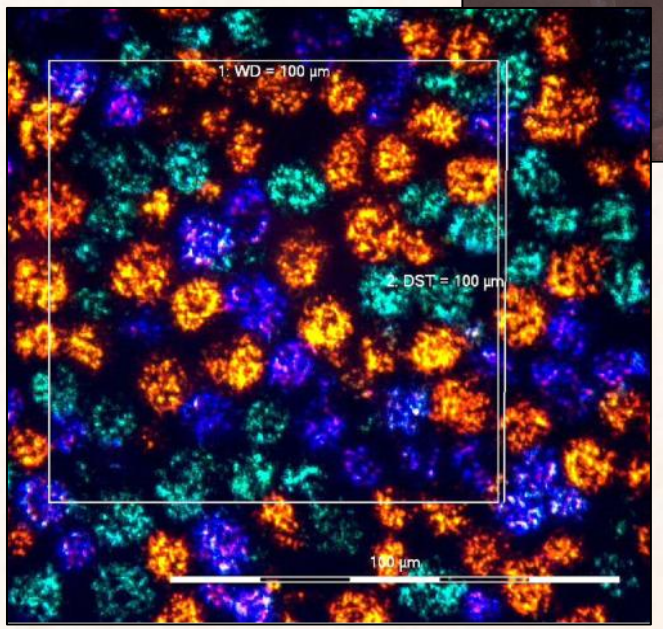
	200ppi B&W	300ppi 8-bit	400ppi 16-bit	600ppi 24-bit	1200ppi 48-bit
Text					
Image					

Technical Documentation

Photographs are physical objects, not just images.

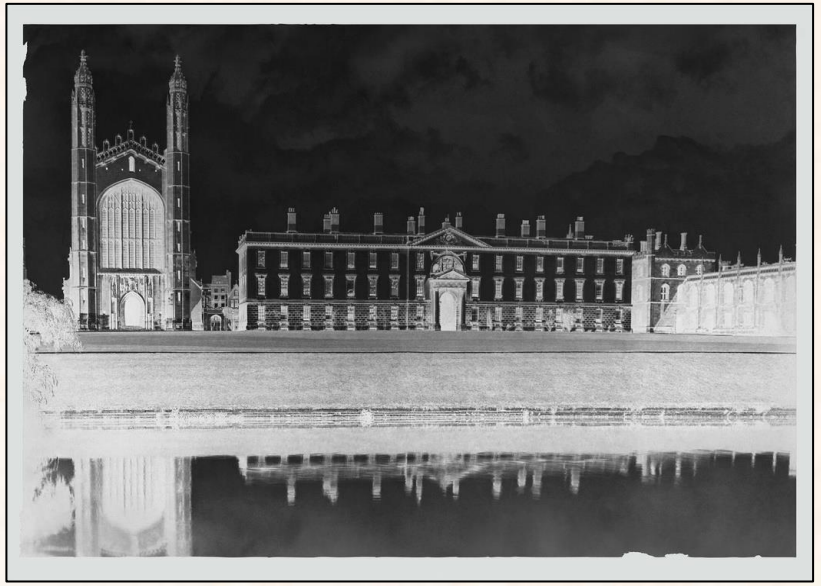
Detail images are helpful for:

- Identifying photographic processes
- Documenting deterioration or damage
- Recording maker's marks, labels, or inscriptions
- Capturing surface characteristics and image structure
- Supporting future research, conservation, or treatment decisions



Post-Processing

- Preservation copy should remain unedited.
- Access copy may be lightly edited for clarity.
    - o If scanning a negative, you may invert it to create a positive “print” version; be sure any edits are clearly documented in the metadata and description.



Top: *Unedited scan of original glass plate negative*

Bottom: *Inverted from negative to create positive; contrast adjusted*

What to Prioritize for Digitization

- At-risk materials
- Fragile formats
    - Polaroids and other instant photographs
    - Photographs with active damage like flaking or cracking
- High-use or high-demand materials
- Formats at risk of technological obsolescence

Sensitivities of Photographic Prints

Sensitivity Level	Processes	Max Light Dose Annually	Max Illumination
Category 1 Particularly sensitive	▪ 19th century photographs ▪ chromogenic color photographs ▪ instant photography	1115 fc-hrs (12,000 lux-hrs) approx. 1 month	4.6 fc (50 lux)
Category 2 Very sensitive	▪ RC black-and-white photographs ▪ dye-transfer photographs ▪ dye-bleach color photographs (Ilfochrome)	3903 fc-hrs (42,000 lux-hrs) approx. 3 months	7 fc (75 lux)
Category 3 Sensitive	▪ baryta paper black-and-white photographs ▪ monochrome or pigment color photographs	7807 fc-hrs (84,000 lux-hrs) approx. 3 months	14 fc (150 lux)
Not very sensitive			28 fc (300 lux)

From A Guide to the Preventive Conservation of Photographic Materials, Bertrand Lavédrine

Wrap-Up and Q&A

- Identify the format before handling
- Stabilize before digitizing
- Match the digitization setup to the format

Photographs are both information and artifacts. Successful digitization preserves access while minimizing risk to the original!

Further Resources

- Hammond, Ariel et al., “Please Don’t Break: Best Practices for Digitizing and Archiving Glass Plate Photographs” (2024), https://doi.org/10.59620/2154-7149.1173
- Image Permanence Institute, *Graphics Atlas*, http://graphicsatlas.org/
- Library of Congress, *Care, Handling, & Storage of Photographs*, https://www.loc.gov/preservation/care/photo.html
- Northeast Document Conservation Center, *Photograph Conservation and Preservation Resources*, https://www.nedcc.org/photograph-conservation-at-nedcc/resources
- Victoria & Albert Museum, *Photographic Processes*, https://www.vam.ac.uk/articles/photographic-processes

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