Help!
19th- and 20th Century Photographic Negative Materials

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Timeline of Popularity

PERIOD WHEN PROCESS PREDOMINATED

Photographic Print Materials:

Photographic Print Materials:

5/16/2013
Photographic Print Materials:

Anonymous
Silver Gelatin Developing-Out Photograph
Private Owner

Photograph Process Identification – Review

- Surface sheen
- Image tonality
- 30X magnification
- Mounting style
- Image fading
- Binder layer cracking
- Binder abrasion

Image from the Image Permanence Institute, Graphics Atlas:
www.graphicatlas.org
An Overview of Negative Materials

The Ideal Material:

- Transparent support
- Highly photosensitive
- Sensitive to all colors
- Ready-to-use photosensitive layer
- Lightweight and flexible
- Chemically and dimensionally stable

By María Fernanda Valverde
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Negatives need a transparent support

- Silver particles
- Gelatin binder
- Polyester film support
- Anti-curl layer (gelatin)

History of Negative Materials

- 1841 - 1865 Paper Negative
- 1851 - 1885 Collodion on Glass Negative
- 1878 - 1925 Gelatin Dry Plate Negative
History of Negative Materials

- 1841 - 1865  Paper Negative
- 1851 - 1885  Collodion on Glass Negative
- 1878 - 1925  Gelatin Dry Plate Negative
- 1889 - 1950  Cellulose Nitrate Film Negative
- 1925 - today  Cellulose Acetate Film Negative
- 1955 - today  Polyester Film Negative

Paper negatives: 1841-1855

- Paper support made transparent with wax
- Used with the salted paper process
- Relatively rare
- Silver image –may fade

The Use of Glass as a Support

Collodion on Glass: 1851-1885

Mathew B. Brady (American, 1823-1918). ANNIE LEWIS, ca. 1868. 20.3 x 25.4 cm (8 x 10 in.). George Eastman House Collection.

Collodion on Glass: 1851-1885
Collodion on Glass: 1851-1885

- Often printed with Albumen paper

Gelatin Dry Plate

- Smooth surface
- Machine cut
- Black and white
- May fade and discolor
- Gelatin deterioration
Lantern Slides

Cellulose Nitrate Film

Cellulose Nitrate Film Base

Cellulose Nitrate Film – 1889-1950

Cellulose Nitrate Film

Deterioration

- Base becomes brittle and discolors
- Gelatin becomes soft
- Silver image fades and discolors

Stages of Deterioration

Stage 1. No deterioration

Cellulose Nitrate Film

5/16/2013
Caring for Photographs
Webinar 3 Technological Development of Photography-Part 2

Instructor: Debra Hess Norris

Cellulose Nitrate Film
Stages of Deterioration

Stage 1. No deterioration
Stage 2. The negatives begin to mirror and yellow
Stage 3. The film becomes sticky and emits a strong order
Stage 4. The film is amber and image begins to fade
Stage 5. The film can degenerate into a brown powder

Cellulose Nitrate Film
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Nitrate Film is a hazardous material and flammable

- What you must do is dependent on local fire codes, institutional and insurance policies, and local officials
- Hire a consultant
- Determine the amount and condition of your nitrate film
- Become familiar with the National Fire Protection Association 40 Standard
- Make cold storage a priority

Cellulose Acetate Film Base

- Safety film introduced to replace nitrate
- Gradual transition
- Acetate is generic term for other similar plastics
- Variety of formats

Cellulose Acetate Film Base

- Gelatin emulsion
- Subbing layer
- Cellulose acetate
- Subbing layer
- Anti-curl/anti-halation layer

Cellulose Acetate Film

Deterioration

- Shrinkage
- Bubbles and crystals
- Vinegar smell
- Silver image does not fade
### Cellulose Acetate Film

**Deterioration**
- Shrinkage
- Bubbles and crystals
- Vinegar smell
- Silver image does not fade

provided by University of Cincinnati Libraries, Archives & Rare Book Library

<table>
<thead>
<tr>
<th>Time</th>
<th>A.D. Strip Level</th>
<th>Rate of Change</th>
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</thead>
<tbody>
<tr>
<td>Slow</td>
<td>1.5</td>
<td>Fast</td>
</tr>
<tr>
<td>Slow</td>
<td>1.0</td>
<td>Very Fast</td>
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</tbody>
</table>

### Polyester Film – 1951 to present

- Began to replace acetate in 1960s’s
- Very high physical and chemical stability
- Variety of formats

Polyester film negative, “The Blog”
George Eastman House

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**Cellulose Acetate Film**

**Deterioration**
- Shrinkage
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- Vinegar smell
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**Polyester Film**

- 1951-present

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IDENTIFICATION

http://www.brightlineinteractive.com/_projects/NPS-CS/flash/pdf/2.3.1c1.pdf

IDENTIFICATION

http://www.nedcc.org/resources/leaflets/5Photographs/01ShortGuide.php

IDENTIFICATION: DATING

Suffrage Parade, Washington, D.C., 1913 Library of Congress

IDENTIFICATION: EDGE PRINTING

Motion picture film notch codes, www.film-center.com

IDENTIFICATION: DETERIORATION

Deteriorated acetate negative, Cornell University Department of Preservation and Collection Maintenance

http://www.nps.gov/museum/coldstorage/html/intro1_1.html
Advocacy

- The negative is the link between the captured scene, the camera and the print
- The negative process selected reveals:
  - intention
  - preferences
  - choice of materials
  - processing techniques
  - printing techniques
- The image is the witness of time
- The negative is the testimony of the recording of the image

Auguste Rodin, Gertrude Käsebier, 1905, Glass Plate Negative
Library of Congress

https://www.imagepermanenceinstitute.org/imaging/film-poster

Homework

- Using the negative identification guidelines and additional resources presented, determine what type of negatives you have in your collection.
- What type of negative do you have most of?
- Briefly describe some negatives or groups of negatives in your collection that are of concern to you. Tell us specifically why they are of concern—Is it their condition? Or their significance or value? Or the number of them? Or your ability to care for them? Or a combination of these reasons?
- Briefly describe how the negatives you described above are housed. Describe the enclosures, storage furniture, and environmental conditions.