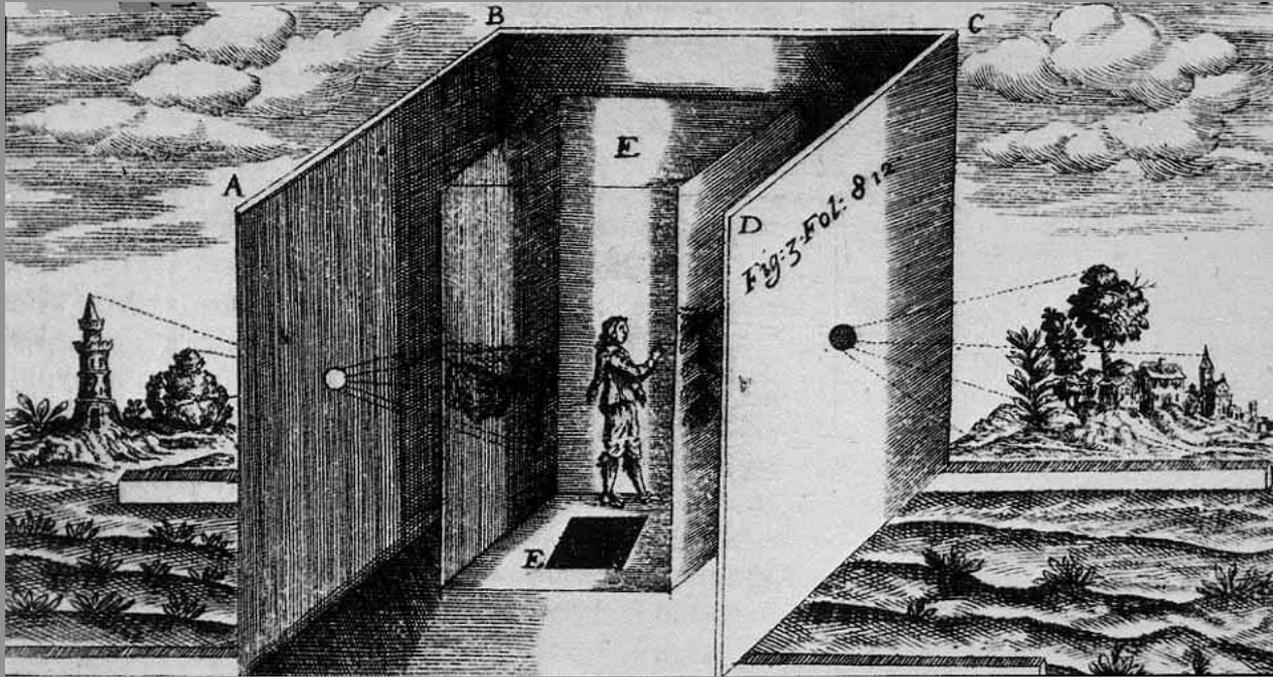


Skills and Strategies for Working with Photograph Collections

Sandra A. Varry, MFA, MLIS, CA, DAS
University Archivist, Florida State University



Athanasius Kirchner, 1646

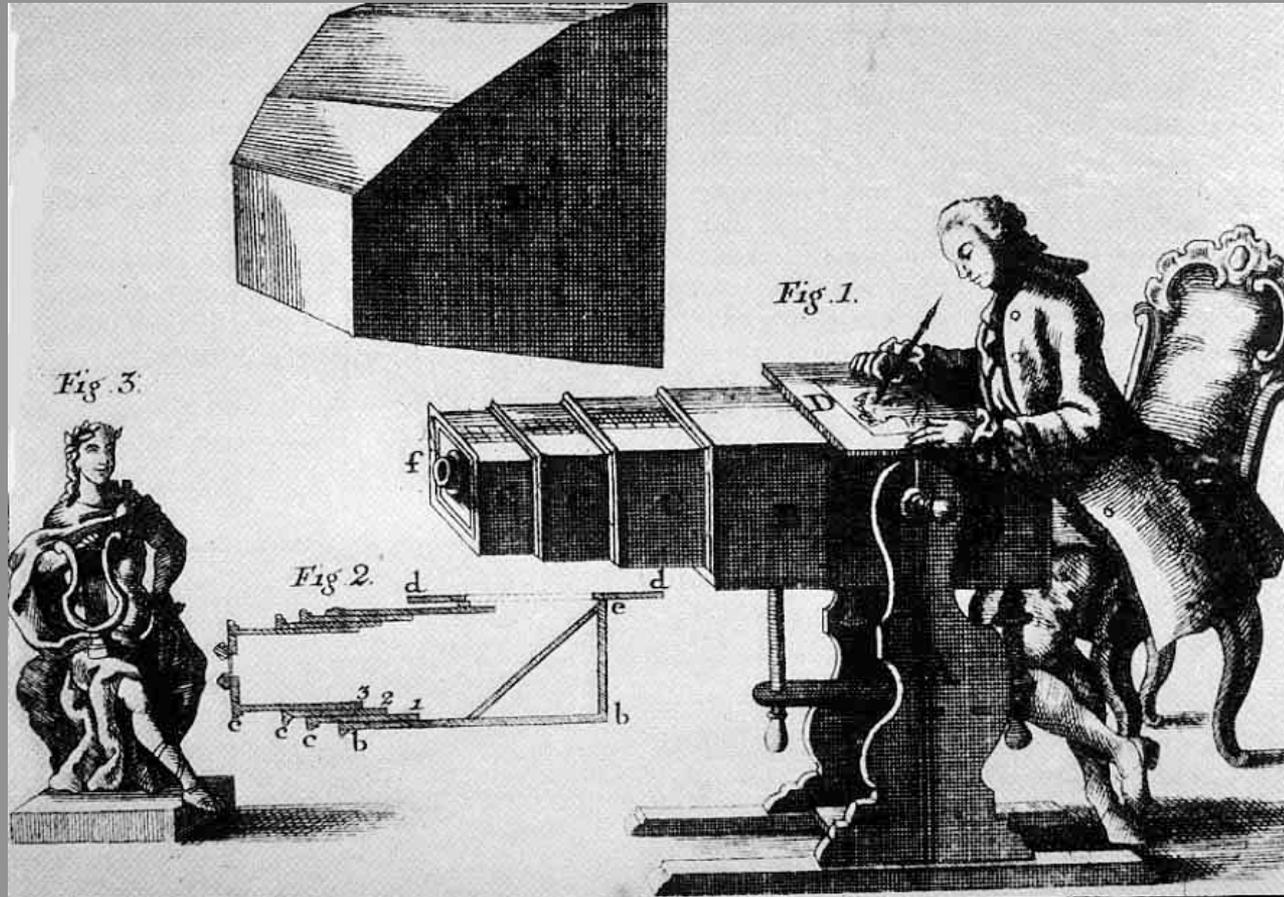


Table Camera Obscura, 1769



Niecephore Niepce
View from his window at La Gras, c. 1827
Heliograph



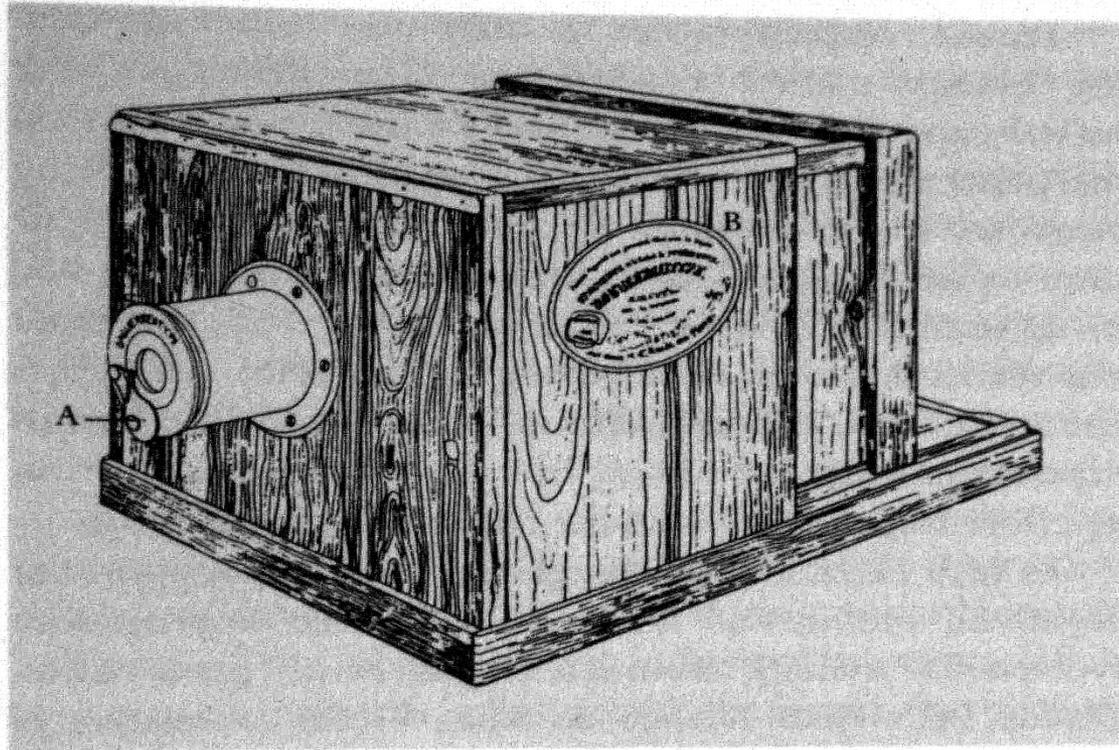
27. LOUIS JACQUES MANDÉ DAGUERRE. *Still Life*, 1837. Daguerreotype.
Société Française de Photographie, Paris.



Louis Jacques Mande Daguerre
Boulevard du Temple, Paris, c. 1838



William Henry Fox Talbot
The Open Door, 1843
Salted Paper



219. *Daguerre-Giroux Camera*. Giroux's camera of 1839, based on Daguerre's patent, was the first camera to be sold in any numbers to the public. The lens was fitted with a pivoted cover plate (A), which acted as a shutter. A plaque (B) bore Daguerre's signature and Giroux's seal.



Sixth plate daguerrotype, ca. 1852



32. UNKNOWN PHOTOGRAPHER. *Jabez Hogg Making a Portrait in Richard Beard's Studio*, 1843. Daguerreotype. Collection Bokelberg, Hamburg.



Carte de visite camera



Disderi
Carte-de-visite 8 frame
1860-65

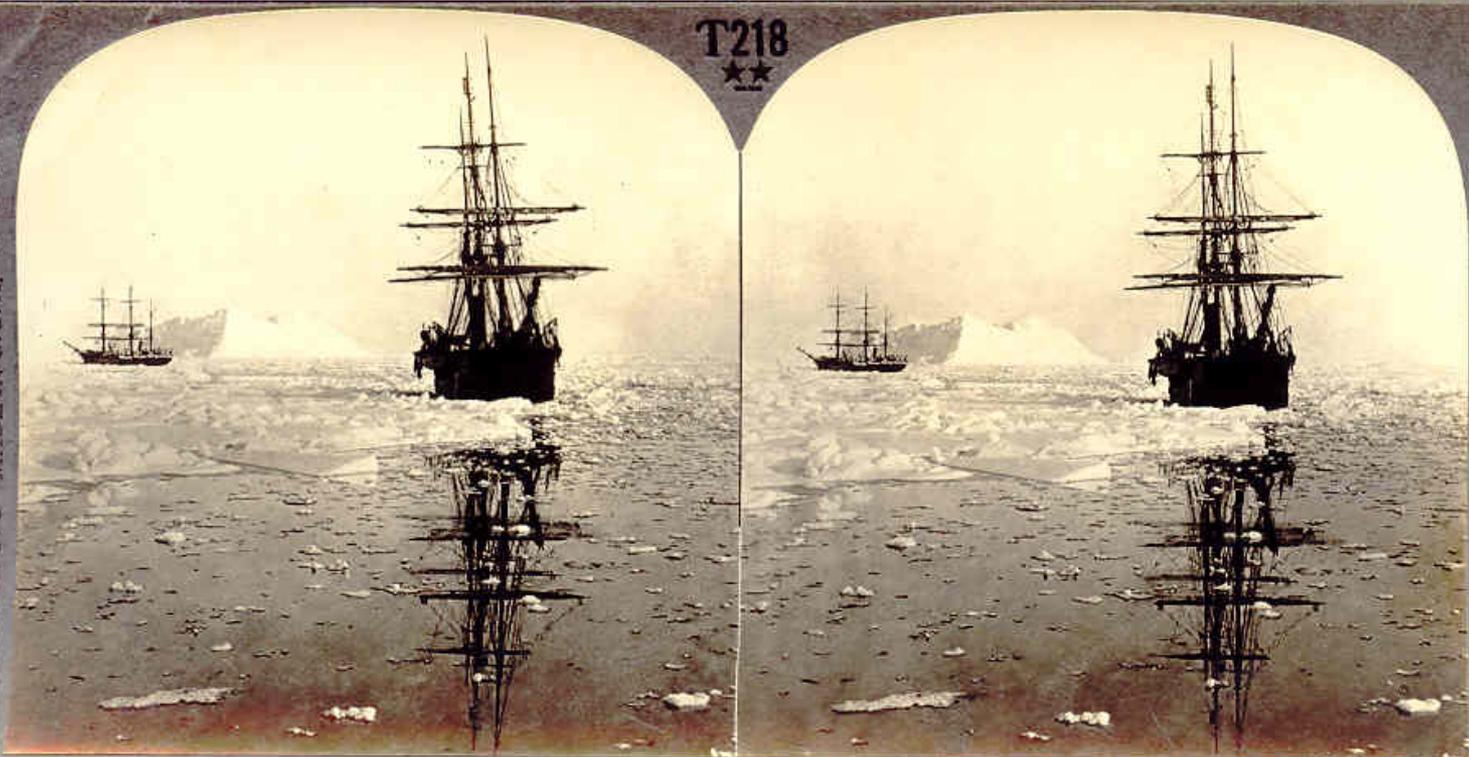


KILBURN'S STEREOSCOPE.
REGD 1825 JANY 1839.
BREVETÉ À PARIS.



Holmes Bates Stereoscope, c. 1870

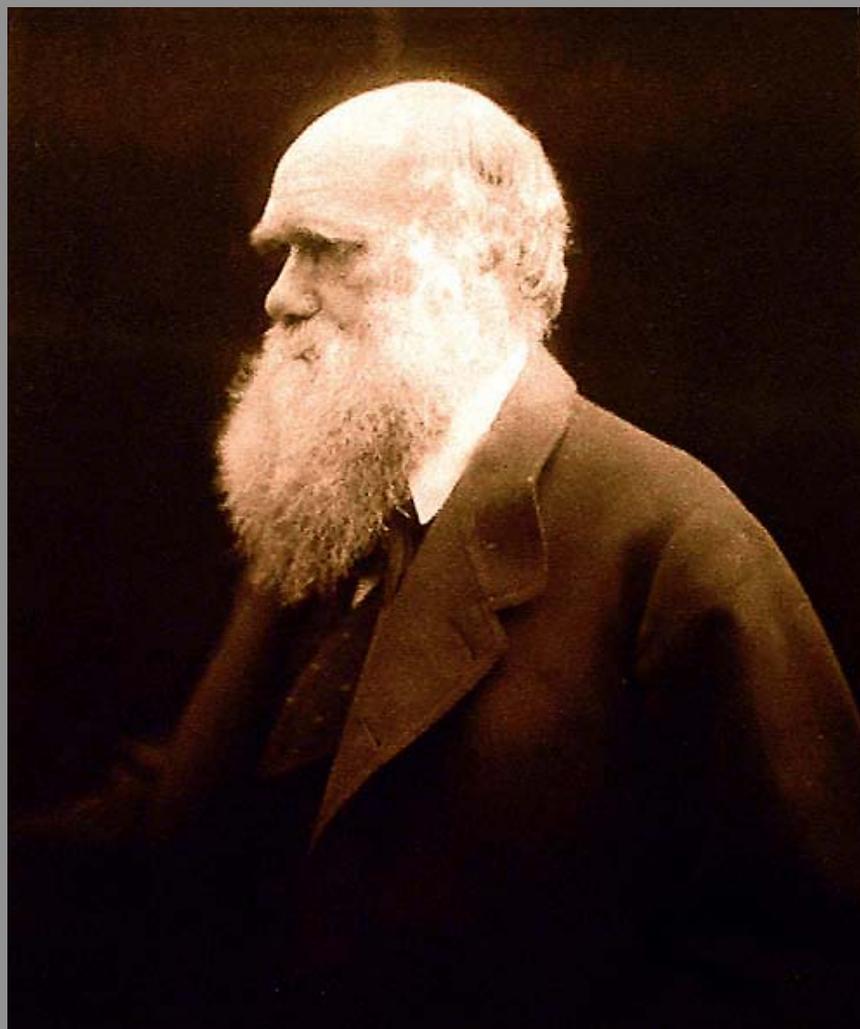
Keystone View Company
Copyrighted, Underwood & Underwood, Inc.
Manufacturers MADE IN U. S. A. **Publishers**



T218
☆☆

*Meadville, Pa., New York, N. Y.,
Chicago, Ill., London, England.*

V27198 T Whalers Cruising in the Arctic.—Dexterity Harbor and Baffin Land.



Julia Margaret Cameron, 1868
Portrait of Darwin



Disderi Cabinet Card, c 1870



MR. FRANK MAYO, AS "DAVY CROCKETT."

SARONY,

680 BROADWAY, N. Y.

Napoleon Sarony, 1880 - 1900



Debenham

RVDE



W. S. MOIR

PORTOBELLO

N. B.



W. S. MOIR

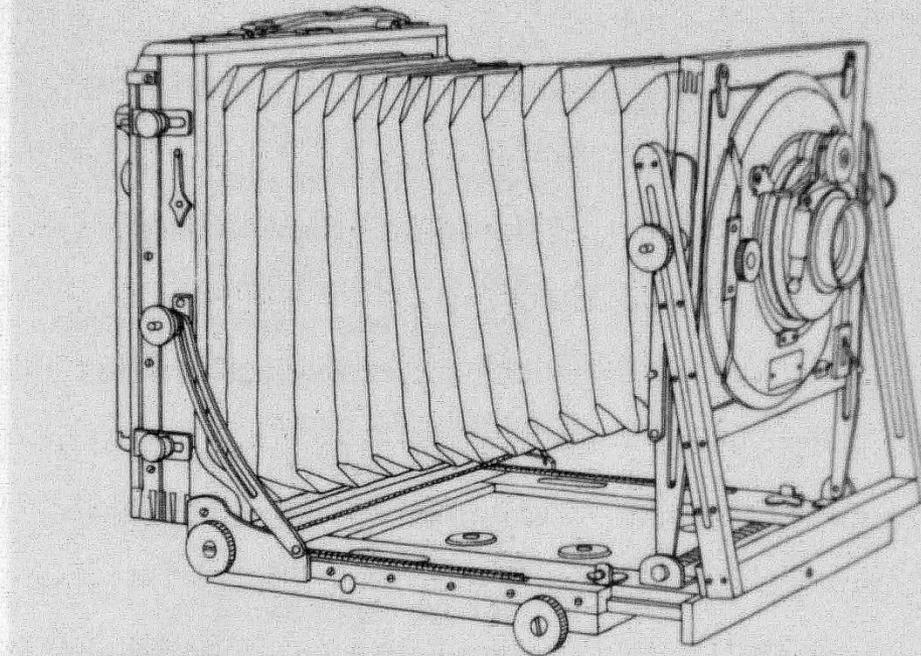
PORTOBELLO







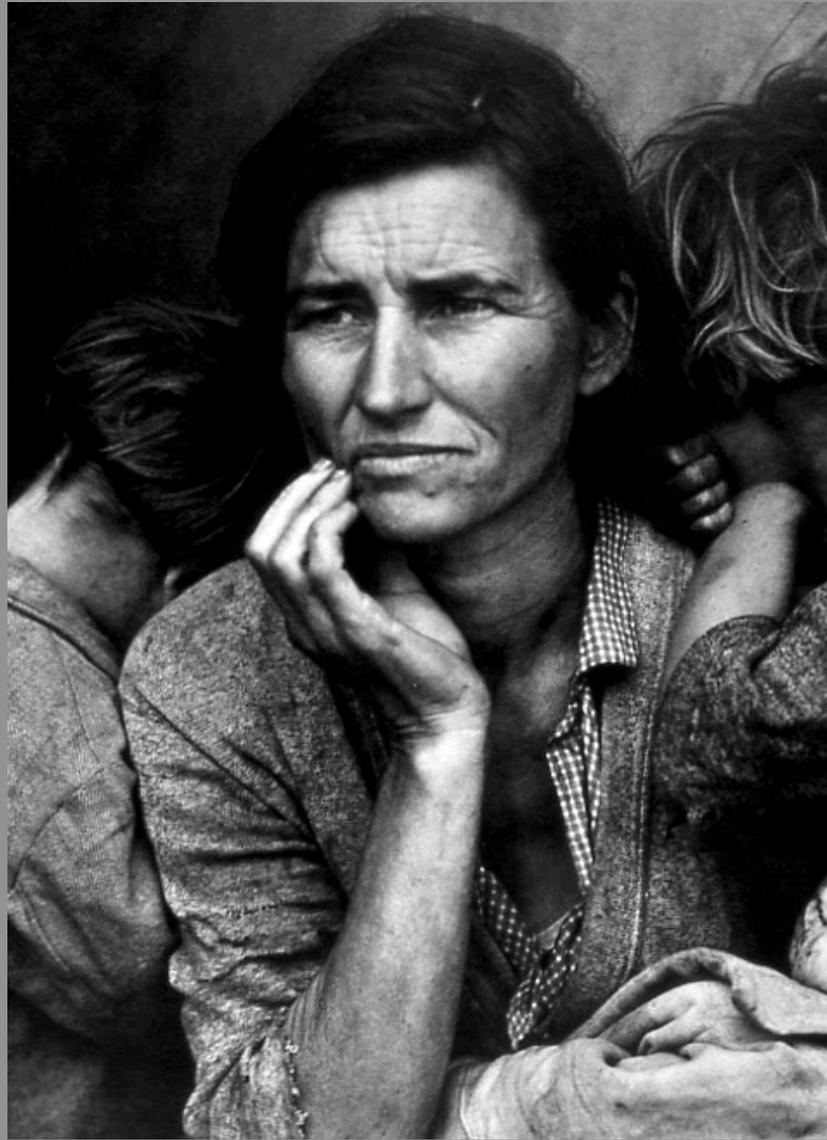
The Terminal, 1893
Alfred Stieglitz
Photogravure



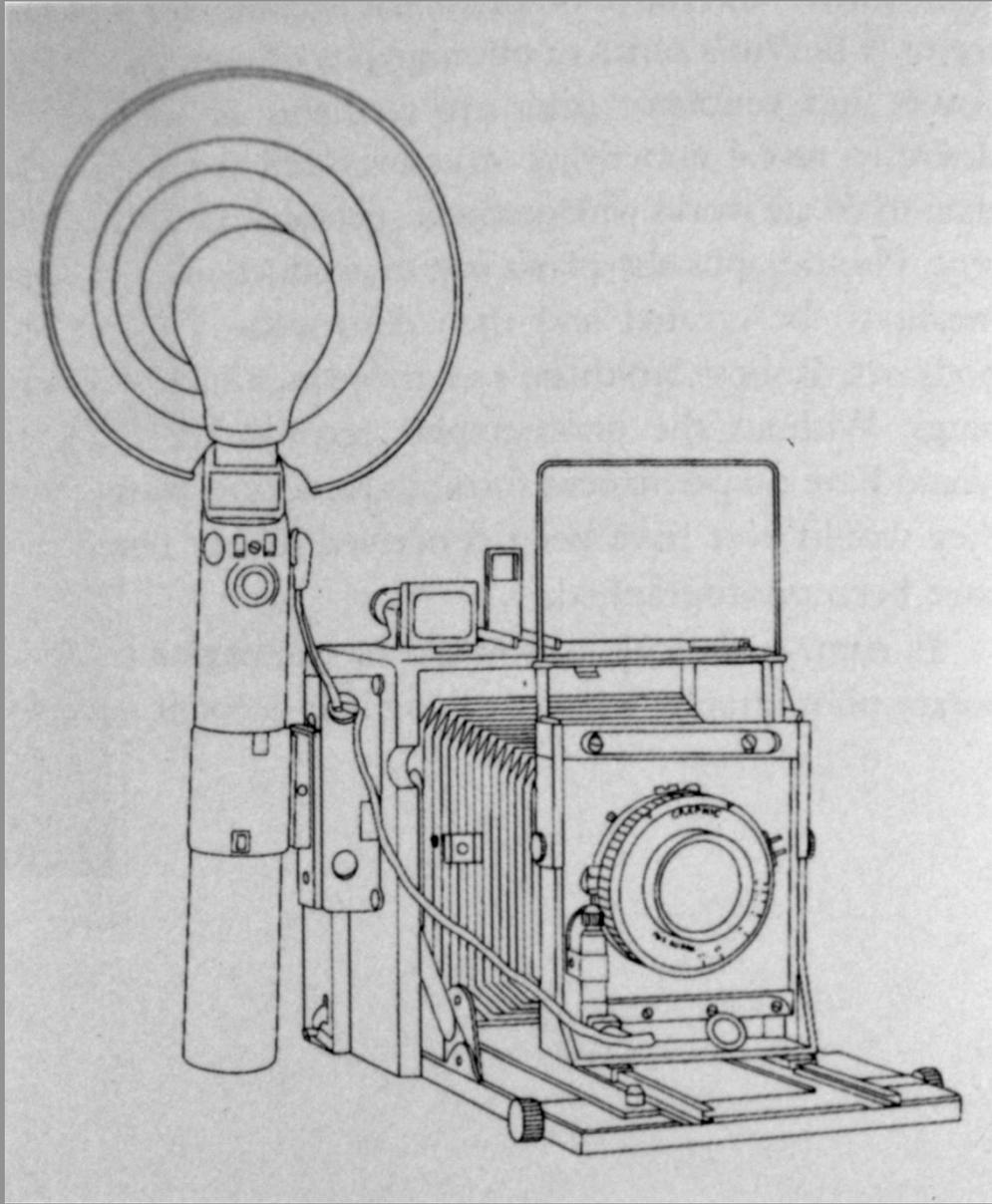
563. *Sanderson Camera*. Frederick Sanderson used two slotted stays on either side of the lens panel in his 1895 camera. This allowed a considerable degree of vertical, horizontal, and swing movement to be applied to the lens panel.

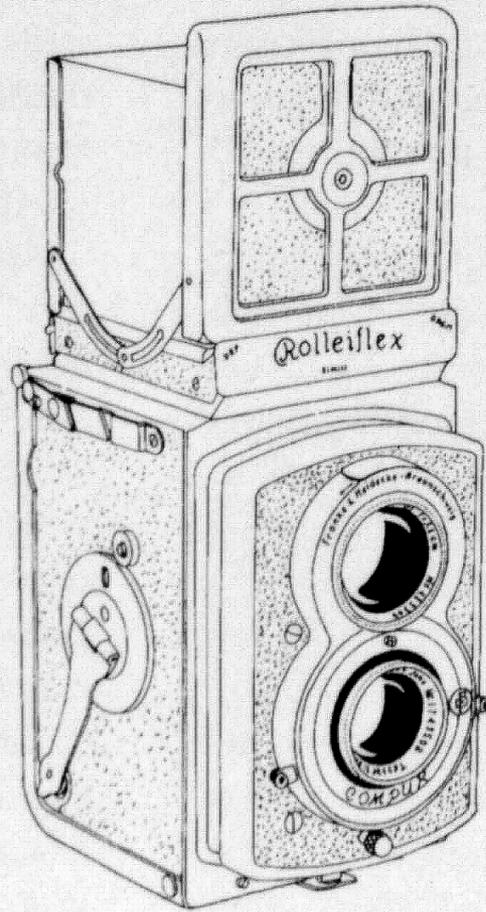
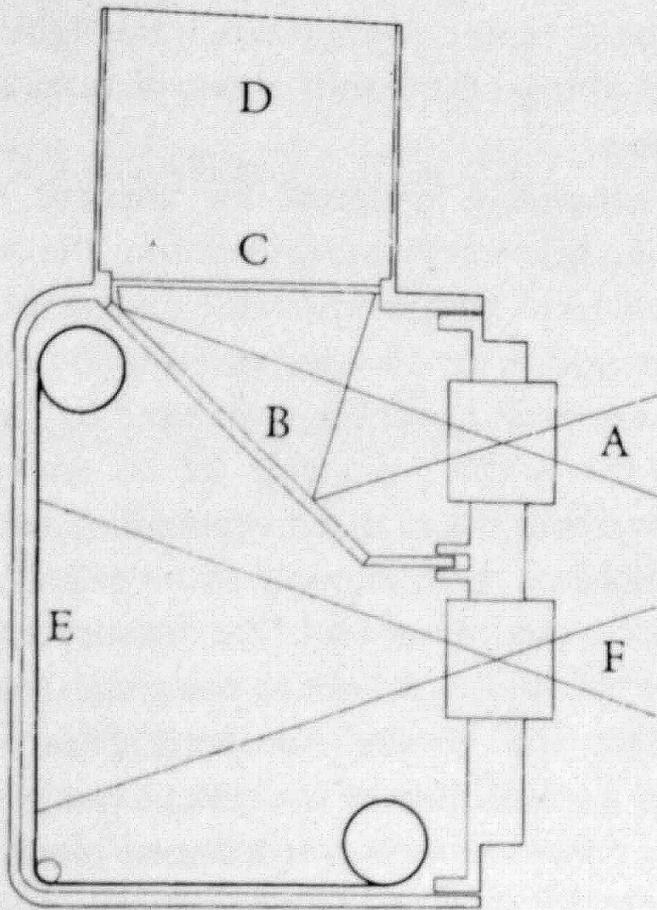


Dorthea Lang

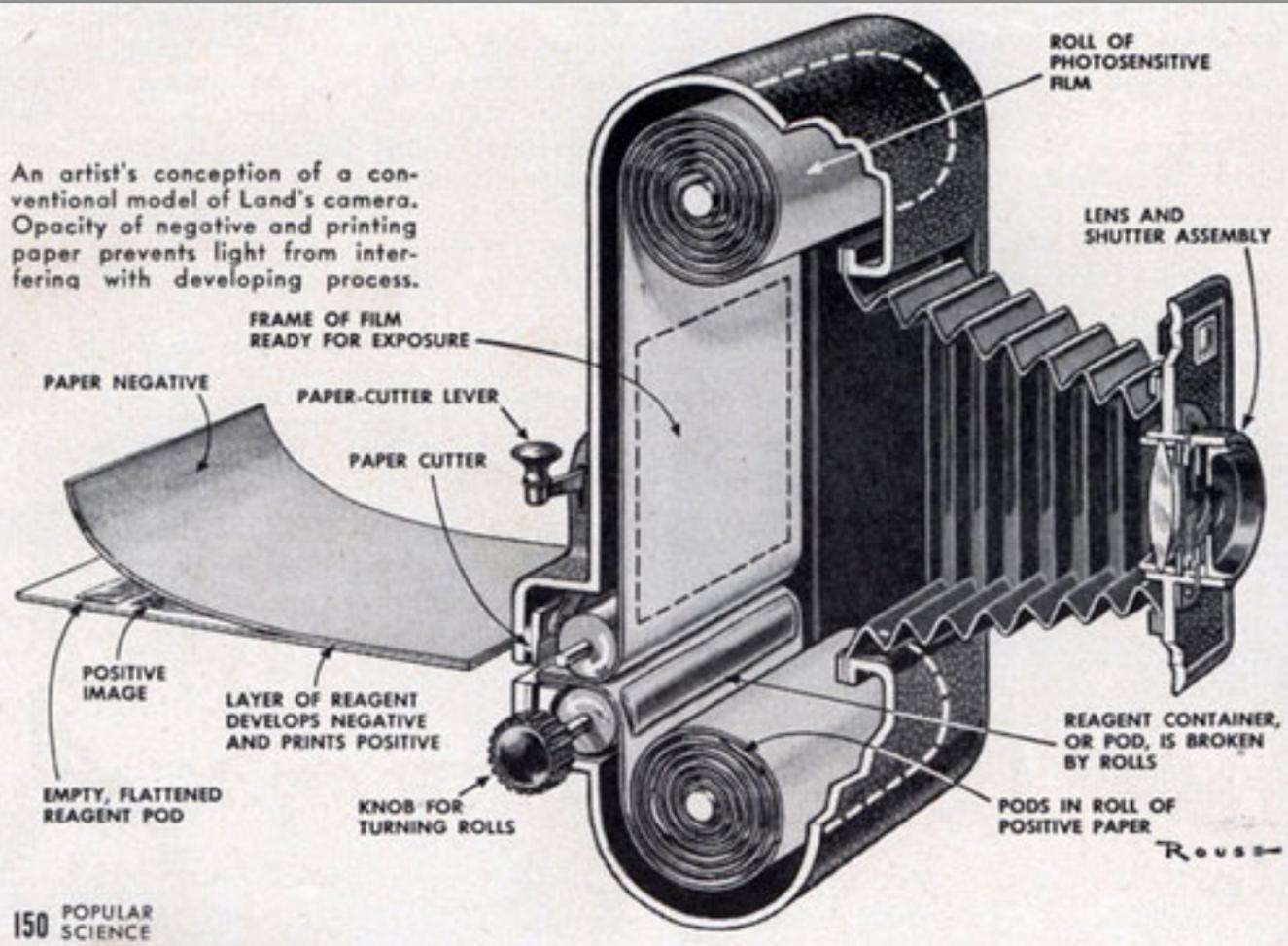


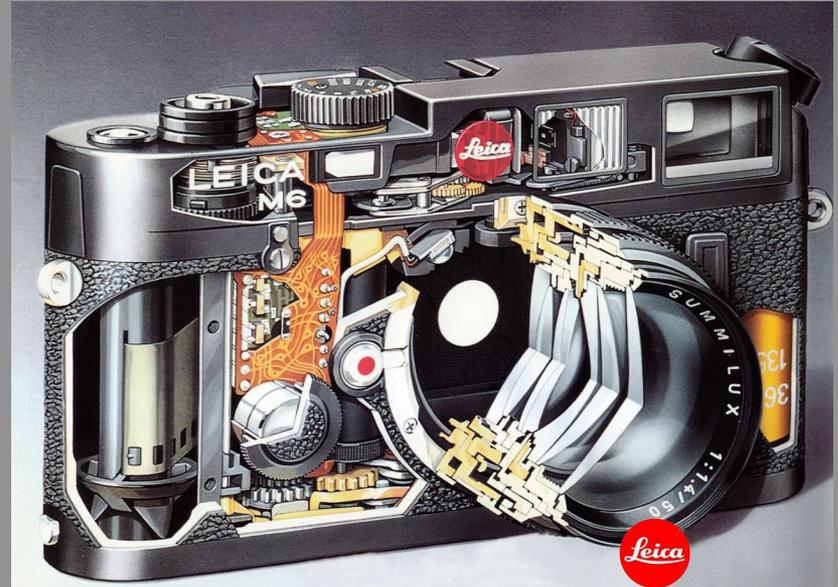
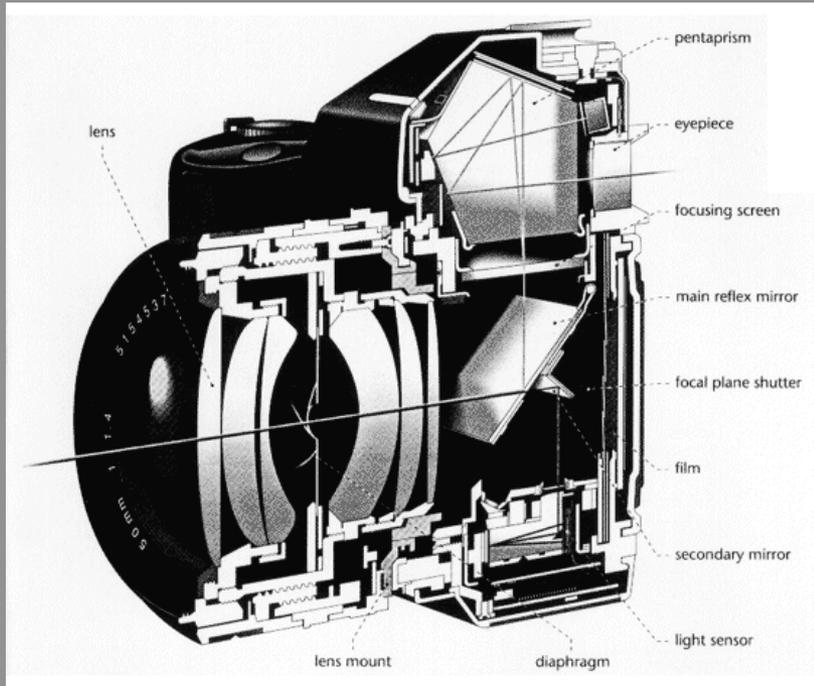
Migrant Mother, 1936





An artist's conception of a conventional model of Land's camera. Opacity of negative and printing paper prevents light from interfering with developing process.





Color



William Eggleston, ca. 1970

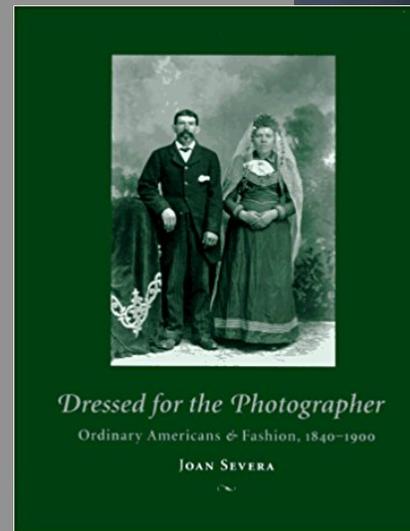
Preparation

- Original order
- Respect des fonds
- Do no harm
- Process
- Investigation
- Experimentation

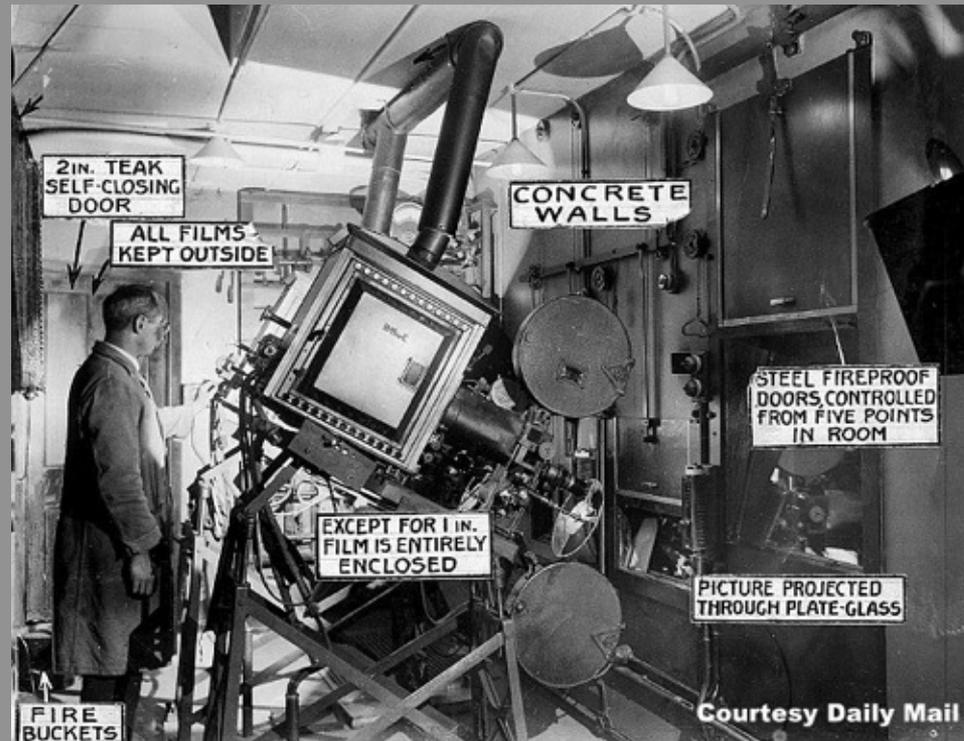


Preparation

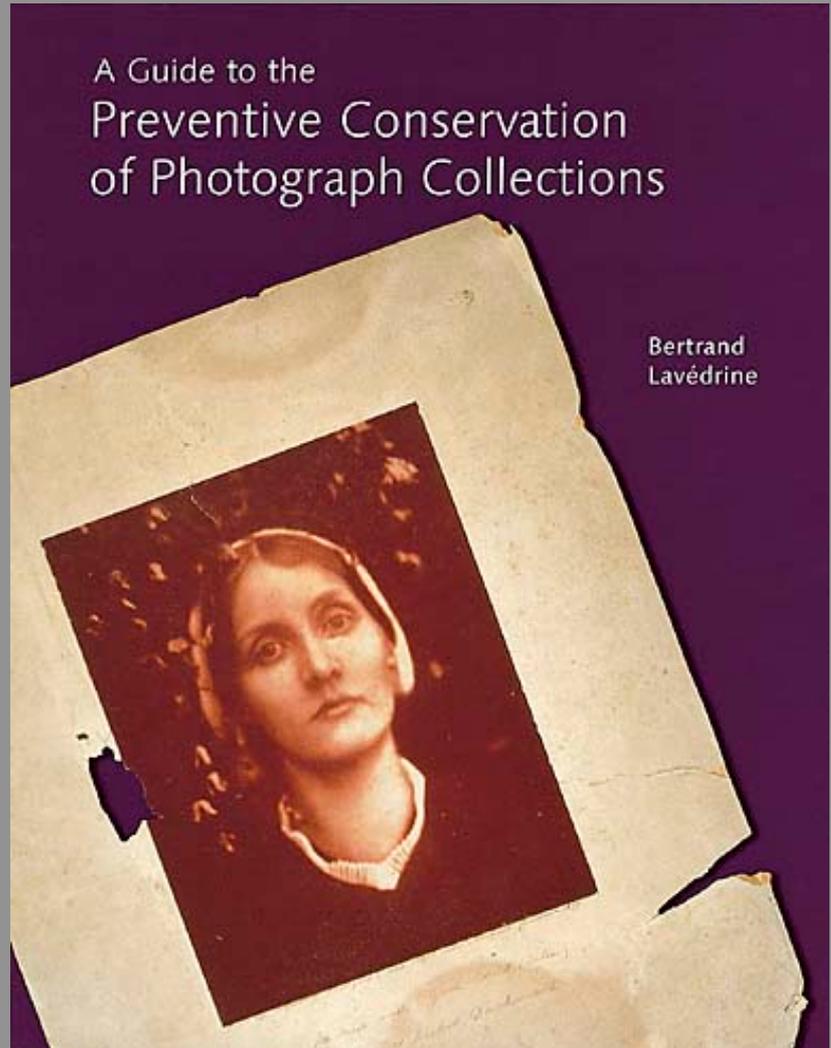
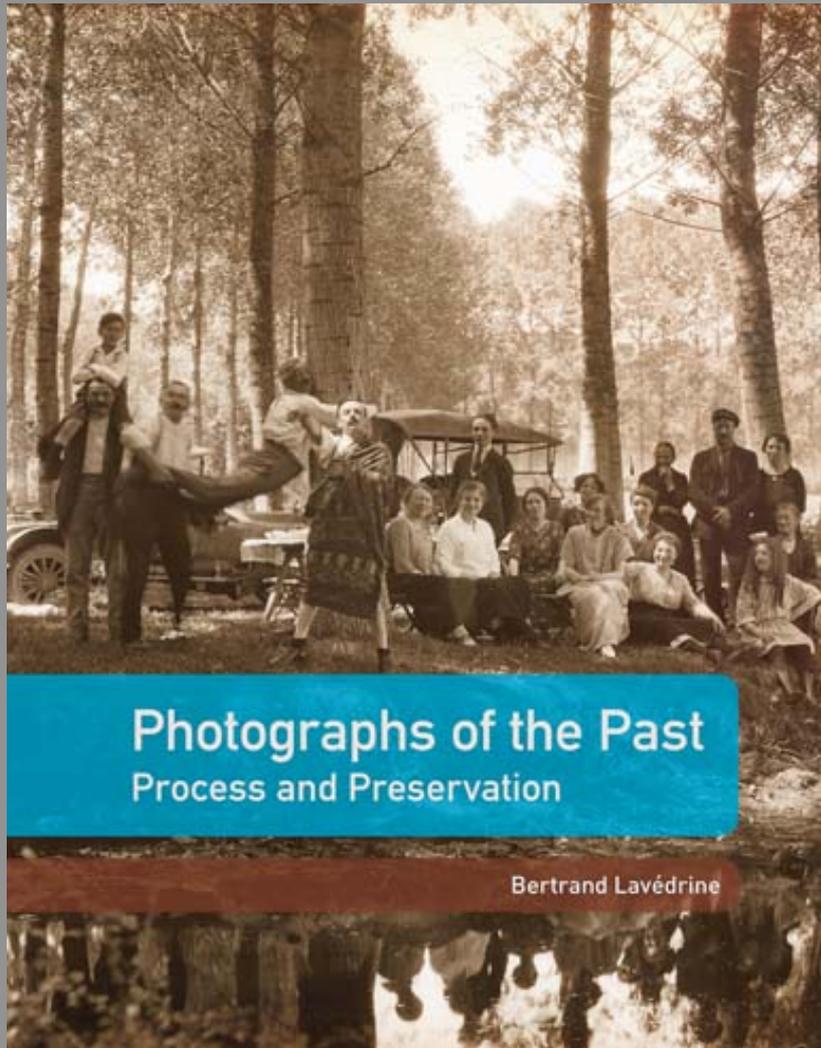
- Workspace
- Preservation
- Safety
- Handling
- Research
- Background



Safety



<https://www.youtube.com/watch?v=pQiWYnv19Q0>

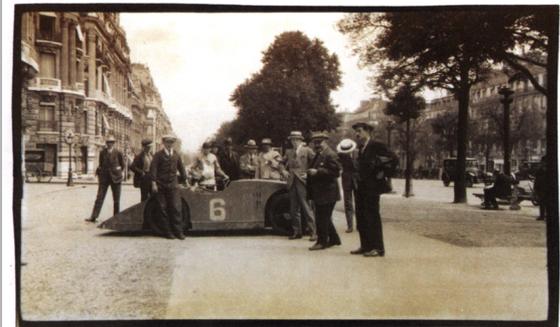


Identification

- Negative or positive image?
- Metal, paper, glass, or plastic?
- black and white?
- other monochrome?
- color image?
- process?



a



b

Important photographic processes of the nineteenth and twentieth centuries with their approximate periods of use

1839



1850



1860



1880



1890



1920



1970 to present



2000

Positives

Monochrome on metal	Heliograph (Nicéphore Niépce) Daguerreotype Tintype
Color on metal	Direct heliochrome Hillotype
Monochrome on glass	Ambrotype Monochrome transparency
Color on glass	Lippmann photograph Three-color Lumière transparency Autochrome
Monochrome on plastic	Monochrome transparency
Color on plastic	Color transparency
Monochrome on fabric	Pannotype
Monochrome on paper	Photogenic drawing Salted paper print Albumen print Printing-out paper (POP) print Gelatin silver developing-out paper print Cyanotype Platinum or palladium print Carbon print Gum bichromate print Woodburytype Collotype
Color on paper	Color pigment print Dye transfer print Ilfochrome Classic (Cibachrome) print Chromogenic process print

Negatives

Monochrome on paper	Paper negative
Monochrome on glass	Albumen negative Collodion negative Gelatin silver bromide negative
Monochrome on plastic	Gelatin silver bromide negative
Color on plastic	Chromogenic process negative



a



b



c

Figure 6
(a) A glass plate negative, (b) a print made around the time of the negative, and (c) a modern print from the negative.

The photograph

In the nineteenth and twentieth centuries, a photograph was understood to be a visible and permanent image on some type of support that had been produced by the action of visible or invisible radiation on a photosensitive surface.

Today the emergence of digital imaging has caused some confusion in terminology since the digital output prints from a printer attached to a computer are often called photographs. While these may well be comparable to true photographs in terms of resolution and rendition, they are the prod-

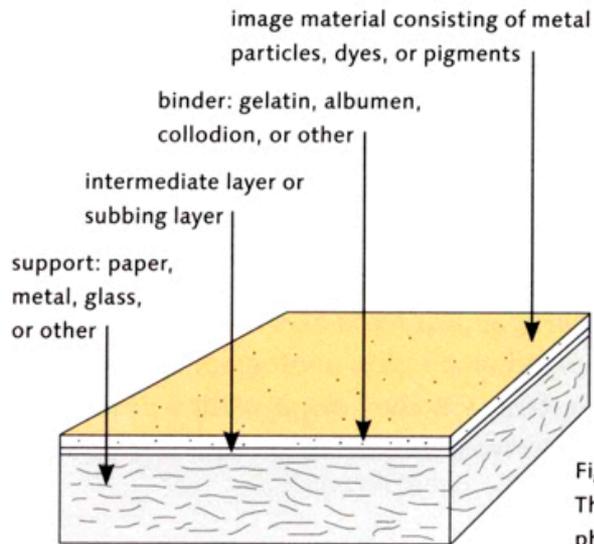


Figure 3
The structure of a photograph.

uct of a fundamentally different technology. The term "digital photograph" is both vague and incorrect. It should be avoided since it could mean any number of very different things: a digital image file, a gelatin silver print derived from a digital image file, an ink-jet print, a laser print, and so on.

A photograph has a laminar structure. The underlying support is the thickest layer; it may be made of metal, paper, glass, synthetic polymer (plastic), fabric, and so on. The support is covered with a transparent layer—a binder of gelatin, albumen, or collodion—which holds the image-forming materials, such as metallic particles, pigments, dyes, and so on. In this book we will use the terms "image material," "binder," and "support" in the strict sense of the words: "image material" for the substance that absorbs or scatters incident light; "binder" for the substance that holds the image material on the support; and "support" for the material that underlies and carries the binder and image material.

Figure 4
Gum bichromate print, Robert Demachy, *Primavera*, ca. 1900.



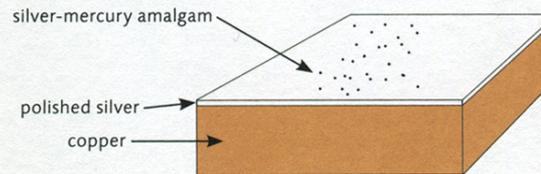
The daguerreotype 1839–1860

Occurrence in collections | very rare | rare | common | very common |

Common sizes and formats

	American standard plate sizes (in.)		European standard plate sizes (cm)	
Full plate	6½ × 8½		Full plate	16.2 × 21.6
Half plate	4¼ × 5½		Half plate	10.8 × 16.2
Quarter plate	3¼ × 4¼		Third plate	7.2 × 16.2
Sixth plate	2¾ × 3¼		Quarter plate	8.1 × 10.8
Ninth plate	2 × 2½		Sixth plate	7.2 × 8.1
Sixteenth plate	1¾ × 1⅝		Eighth plate	5.4 × 8.1
Gem type	1 × 1		Ninth plate	5.4 × 7.2
			Sixteenth plate	4.0 × 5.4
			Stereograph	8.5 × 17.0

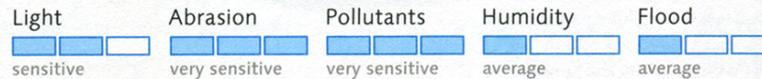
Structure



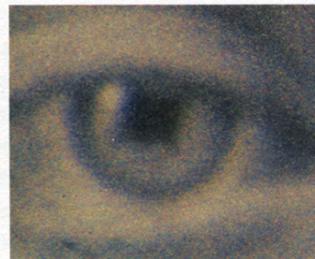
Recommendations for conservation of daguerreotypes

- Never touch the plate surface
- The plate should always be sealed in a package, under glass, to protect it from abrasion and from exposure to air and pollutants

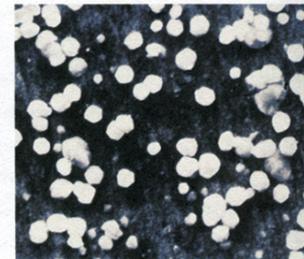
Sensitivity



Overall view



Magnified view



Scanning electron microscope view

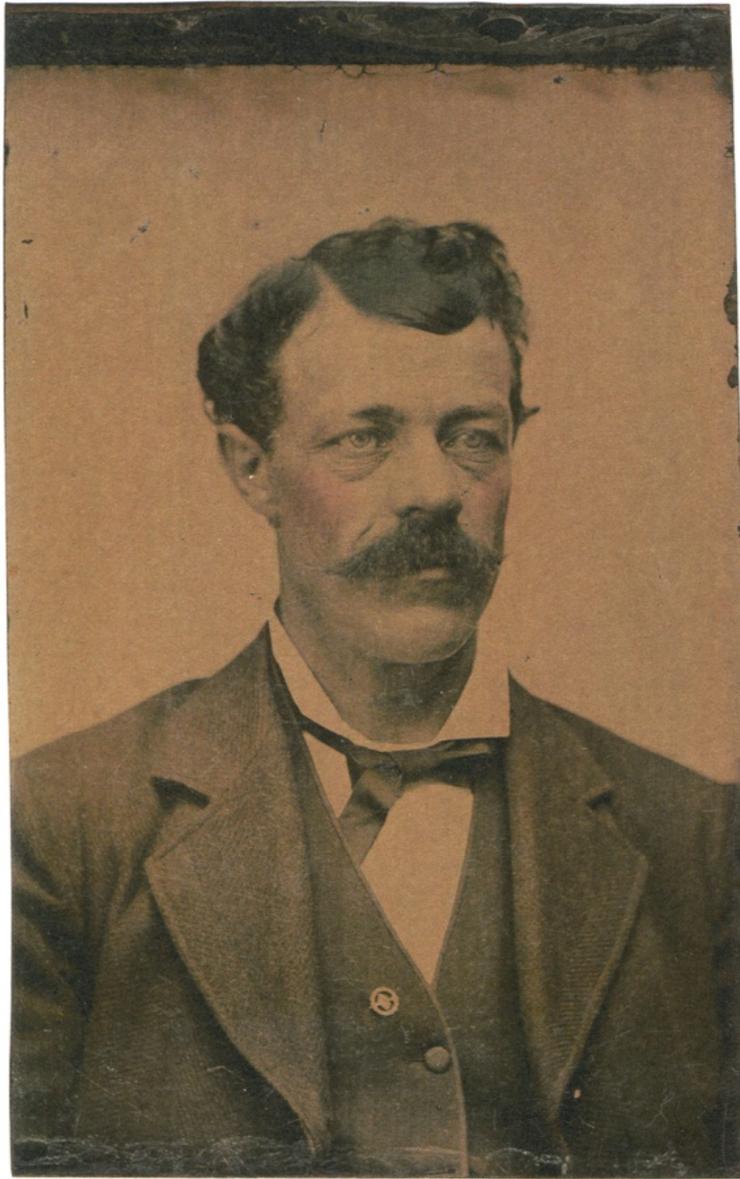


Figure 30
Tintype, photographer unknown,
Portrait of a Man, ca. 1900.

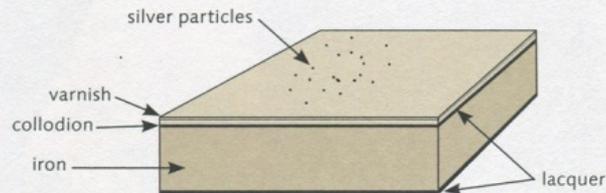
The tintype 1853–1930

Synonyms: ferrotype, melainotype, melanograph

Occurrence in collections | very rare | rare | common | very common |

Common sizes and formats (American) ¹⁶	8 × 10 in.
	5 × 7 in.
	2½ × 4 in. ("bon ton": eight on an 8 × 10 plate)
	2½ × 3½ in. ("bon ton" or carte-de-visite: four on a 5 × 7 plate)
	2 × 2½ in. (sixteen on an 8 × 10 plate)
	1¾ × 2½ in. (eight on a 5 × 7 plate)
	1⅜ × 1⅓ in. and various smaller formats, often called "gems"

Structure



Recommendations for conservation of tintypes

- Keep in storage envelopes, protected from humidity and light
- Add a piece of cardboard inside the storage envelope to prevent deformation

Sensitivity



Overall view



Magnified view

Figure 27
Tintype, photographer
unknown, ca. 1880, recto.



Fabrication and use¹⁵

A thin sheet of iron (about 0.15 mm thick) is coated with a dark brown or black lacquer, which can be shellac or linseed oil mixed with a pigment. The lacquered plate is usually purchased by the photographer as a manufactured product. The photographer coats the plate with collodion containing bromide and/or iodide and immerses it in a silver nitrate sensitizer bath before the collodion solvents evaporate. The plate is then immediately exposed in the camera; it is developed with a solution of ferrous sulfate and nitric acid and then fixed in a sodium thiosulfate or potassium cyanide bath. After washing and drying, the image is usually given a coat of protective varnish. In the twentieth century, gelatin bromide emulsions were introduced for making tintypes; these required that the image be whitened using mercuric chloride. Black cardboard may have been used instead of the lacquered iron plate. Variants of the process continued to be used into the 1930s.

Figure 28
Tintype, photographer
unknown, ca. 1880, verso.





Figure 39
Ambrotype,
photographer
unknown, ca.
1860. Half of the
ambrotype plate is
placed on a black
background and
appears as a positive;
the other half is seen
by transmitted light
and appears as a
negative.

The ambrotype 1852–1870

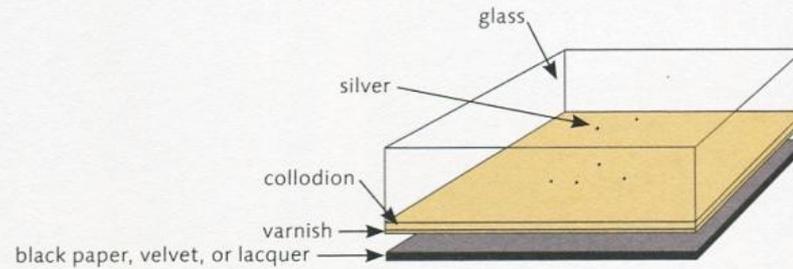
Synonym: collodion positive

Occurrence in collections | very rare | rare | common | very common |

Common sizes and formats

- Variable; similar to daguerreotype plate sizes to fit cases designed for daguerreotypes

Structure

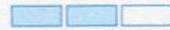


Recommendations for conservation of ambrotypes

- Enclosure in a sealed package

Sensitivity

Light



sensitive

Abrasion



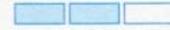
sensitive

Pollutants



sensitive

Humidity



sensitive

Flood



very sensitive



Overall view



Magnified view

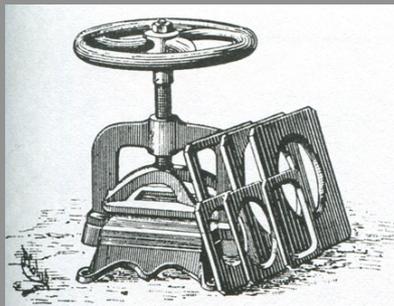


Figure 94
Press and molds for producing a convex surface on a mounted print, engraving, ca. 1900.

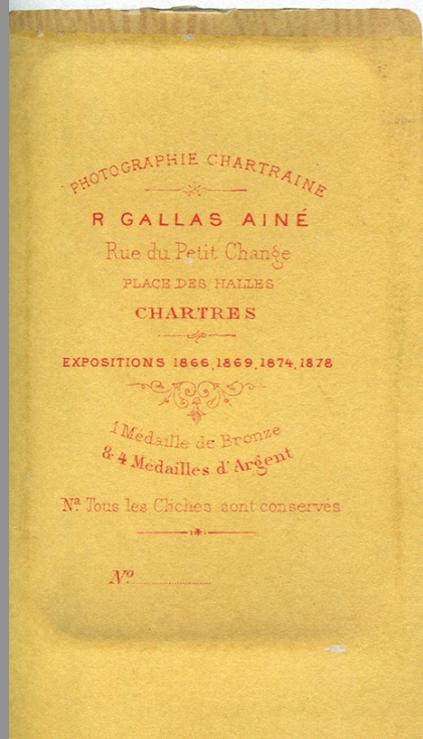


Figure 95
Carte-de-visite-format albumen print with a convex surface, R. Gallas, *Portrait of a Man in Military Uniform*, ca. 1880. Verso and recto.



Figure 97
Carte-de-visite photograph
albums, ca. 1860.

Table 1 – Typical mount formats for albumen prints

Table 1a – Mount formats available in the United States around 1860⁶

Mount Name	Mount Size (inches)
Carte-de-visite	4¼ x 2½
Victoria	5 x 3¼
Cabinet	6½ x 4½
Promenade	7 x 4
Panel	8¼ x 4
Boudoir	8½ x 5¼
Imperial	9⅞ x 6⅞
Stereo	3 x 7

Table 1b – European mount formats available at the beginning of the twentieth century, taken from the catalogue of the Loebenstein Company (Vienna), 1910⁷

Mount Name	Image Size (mm)	Mount Size (mm)
Mignon*	53 x 37	67 x 45
Kolibri	61 x 33	80 x 40
Frida	63 x 40	80 x 51
Visit	89 x 58	110 x 69
Sezession	98 x 46	115 x 55
Elisabeth	100 x 70	125 x 82
Melanie	97 x 79	120 x 90
Malvern	138 x 70	165 x 82
Chique	131 x 45	150 x 55
Alfons	146 x 46	165 x 55
Kabinett	140 x 100	165 x 110
Helene	150 x 117	180 x 130
Promenade	177 x 98	205 x 110
Boudoir	186 x 119	205 x 132
Salon	214 x 157	250 x 175
Valerie	240 x 194	280 x 210
Isabella	290 x 230	330 x 250
Imperial	294 x 173	330 x 190
Adele	87 x 57	100 x 70
Admiral	117 x 87	130 x 100
Album	150 x 110	165 x 125
Rudolf	177 x 127	190 x 140
Franz	235 x 175	250 x 190
Madrid	58 x 58	70 x 70
London	87 x 87	100 x 100
Wien	94 x 94	108 x 108

* Mount names and sizes vary from one supplier to another; bold indicates the most common formats.

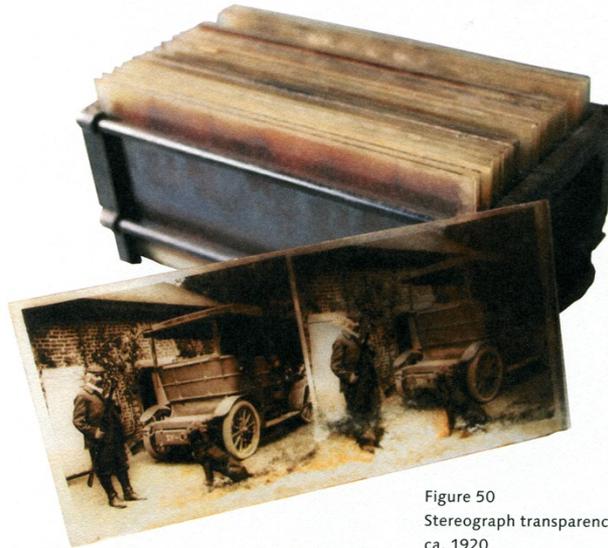


Figure 50
Stereograph transparencies,
ca. 1920.



Figure 51
Lantern slides, ca. 1920.

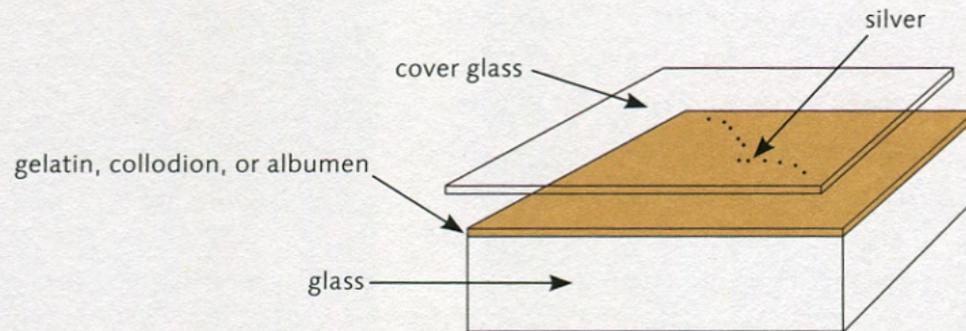
Monochrome transparencies on glass: lantern slides and stereograph slides 1850–1950

Occurrence in collections | very rare | rare | common | very common |

Common sizes and formats

- lantern slide
cm: 8.5 × 8.5; 8.5 × 10
in.: 3¼ × 3¼; 3½ × 3½; 3¼ × 4
- stereograph slide
cm: 4.5 × 10.7; 6 × 13; 7 × 13; 7 × 15; 8.5 × 17
in.: 3½ × 7

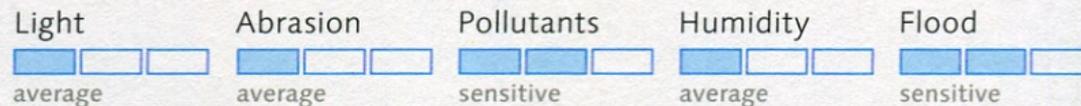
Structure



Recommendations for conservation of monochrome transparencies on glass

- Avoid extremes of humidity in the storage environment

Sensitivity





EPREUVE HELIOTYPIQUE D'APRES UN CICHE AU GELATINO BROMURE D ARGENT
PAR
OBERNETTER. MUNICH.

Figure 150
Collotype, photographer
unknown, *Musicians*, print by
Obernetter, ca. 1890.

The collotype 1868–1940

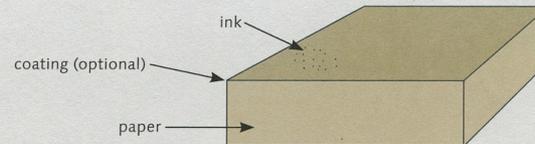
Synonyms: albertype, collograph, heliotype, photo-collograph, phototype, *Lichtdruck*, *phototypie*

Occurrence in collections | very rare | rare | **common** | very common |

Common sizes and formats

- Variable, from postcards to large-format prints

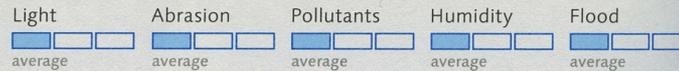
Structure



Recommendations for conservation of collotypes

- The support paper may be sensitive to extended display under intense light sources

Sensitivity



Overall view



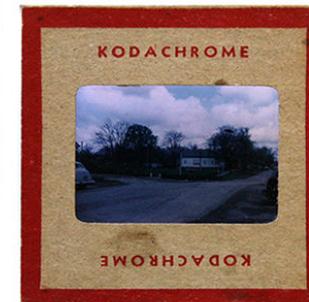
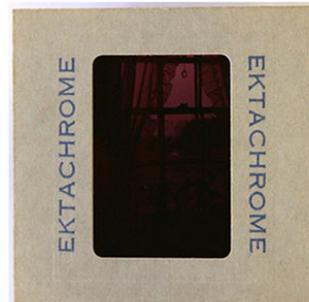
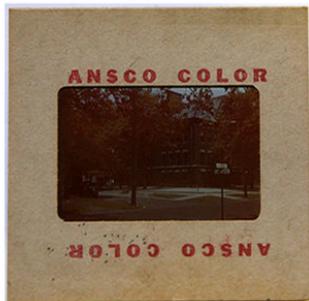
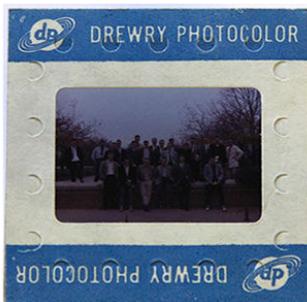
Magnified view

What is a chromogenic process transparency?

A chromogenic process transparency is a positive photographic image on a film support that is composed of three superimposed layers of gelatin, each containing a dye image, either yellow, magenta, or cyan. The photosensitive material is a silver halide (chloride, bromide, or iodide) included in the gelatin layers, and the dyes are formed (hence, the term "chromogenic") only at the time of the development of the silver image. The support is either cellulose acetate or polyester. Color transparency film is available in rolls, with image sizes ranging from 24 × 36 mm to 6 × 7 cm, and is intended for projection or as sheet film.



Figure 70
Faded chromogenic process
transparencies, photographers
unknown, *Beach and Gardens*,
ca. 1950.



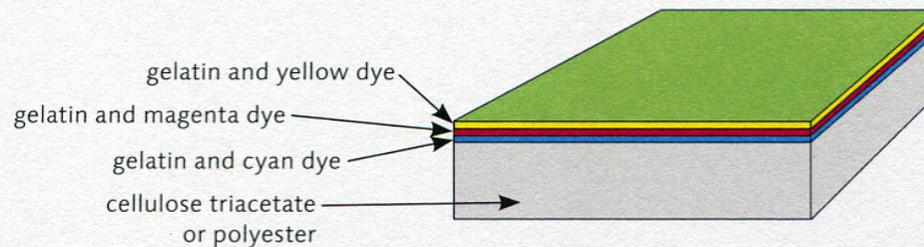
Chromogenic process transparencies 1935 to present

Occurrence in collections | very rare | rare | common | very common |

Common sizes and formats

- 135-format roll film (mm): image sizes 18 × 24; 24 × 36; 24 × 65
- 120-format roll film (cm): 4.5 × 6; 6 × 6; 6 × 7; 6 × 9
- 220-format roll film: same as 120-format, but in a longer strip, allowing twice as many images
- sheet film: cm: 6 × 9; 9 × 12; 12 × 18; 18 × 24
in.: 4 × 5; 8 × 10

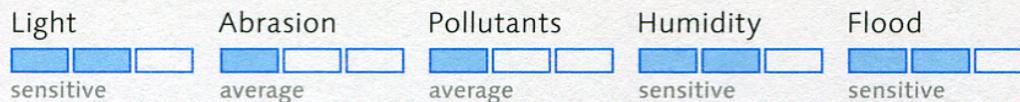
Structure



Recommendations for conservation of chromogenic process transparencies

- Protect from all light exposure
- Keep in a cool and dry environment
- Cold storage if possible

Sensitivity





Yosemite ca. 1899

Oliver Lippincott

The POP print 1860–1940

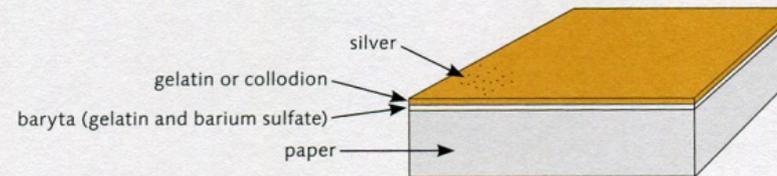
Synonyms: aristotype, collodion, citrate paper

Occurrence in collections | very rare | rare | common | very common |

Common sizes and formats

- Image sizes are similar to gelatin silver negative plate formats

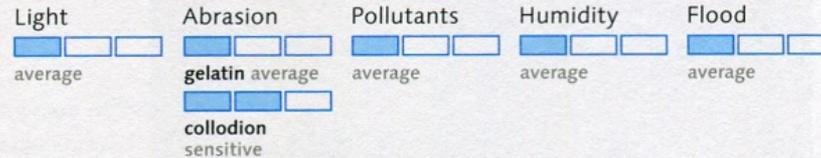
Structure



Recommendations for conservation of POP prints

- Collodion POP prints are vulnerable to mechanical damage (scratches and abrasions)
- Store in protective envelopes

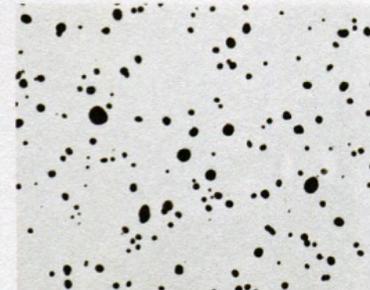
Sensitivity



Overall view



Magnified view



Transmission electron microscope view



Figure 121
Gelatin silver bromide print,
photographer unknown,
Soldier, ca. 1915.

The gelatin silver developing-out print 1880 to present

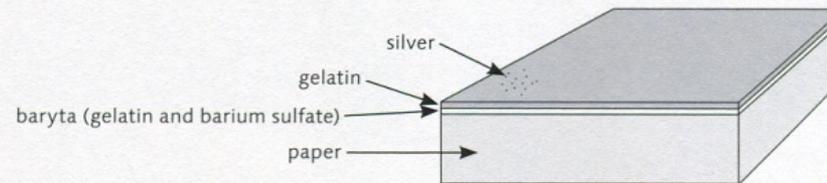
Synonyms: gelatin silver bromide print, DOP print

Occurrence in collections | very rare | rare | common | very common |

Common sizes and formats

- American (in.): 3½ × 5; 5 × 8; 8 × 10; 11 × 14; 16 × 20; 20 × 24; 24 × 30
- European (cm): 9 × 12; 13 × 18; 18 × 24; 24 × 39; 30 × 40; 40 × 50; 50 × 60

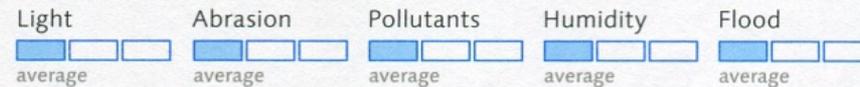
Structure



Recommendations for conservation of gelatin silver developing-out prints

- Avoid excessive heat and humidity
- Store in protective envelopes

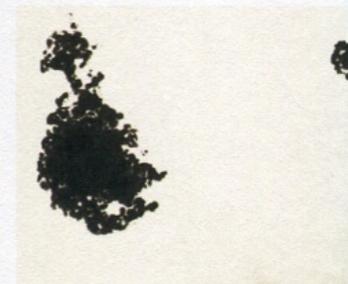
Sensitivity



Overall view



Magnified view



Transmission electron microscope view



Figure 124
Cyanotype, photographer
unknown, *Group Portrait at a
Bridge*, ca. 1890.

The cyanotype 1842 to mid-twentieth century

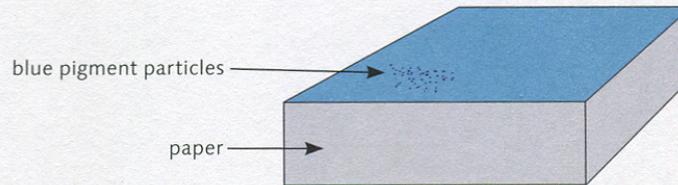
Synonyms: blueprint, ferro-prussiate print

Occurrence in collections | very rare | rare | common | very common |

Common sizes and formats

- Image sizes correspond to those of the negatives used to print them

Structure



Recommendations for conservation of cyanotypes

- Store in protective envelopes, preferably good-quality paper with no alkaline buffer
- Protect from prolonged exposure to intense light

Sensitivity

Light



sensitive

Abrasion



average

Pollutants



average

Humidity



average

Flood



average

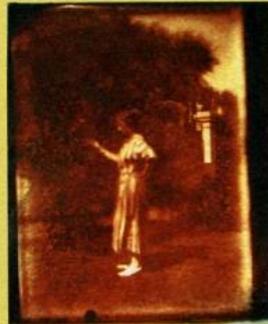


Overall view



Magnified view

Image tone and deterioration patterns can help distinguish the following three single-layer print processes:



Salted paper

- Image tone: brown to violet
- Appearance and texture: matte
- Deterioration: fading, yellowing



Cyanotype

- Image tone: blue
- Appearance and texture: matte
- Deterioration: generally good; possible paper support deterioration



Platinum or palladium print

- Image tone: neutral gray
- Appearance and texture: matte
- Deterioration: no fading; possible "ghost" image on adjacent sheets

Image tone and deterioration patterns can help distinguish the following three two-layer print processes:



Albumen print

- **Image tone:** brown to violet
- **Appearance and texture:** glazed
- **Deterioration:** fading; yellowing in highlights; minute cracks



Carbon print or woodburytype

- **Image tone:** chocolate brown
- **Appearance and texture:** glazed or high gloss
- **Deterioration:** no fading; no yellowing; generally good condition; pigment particle clusters visible under magnification

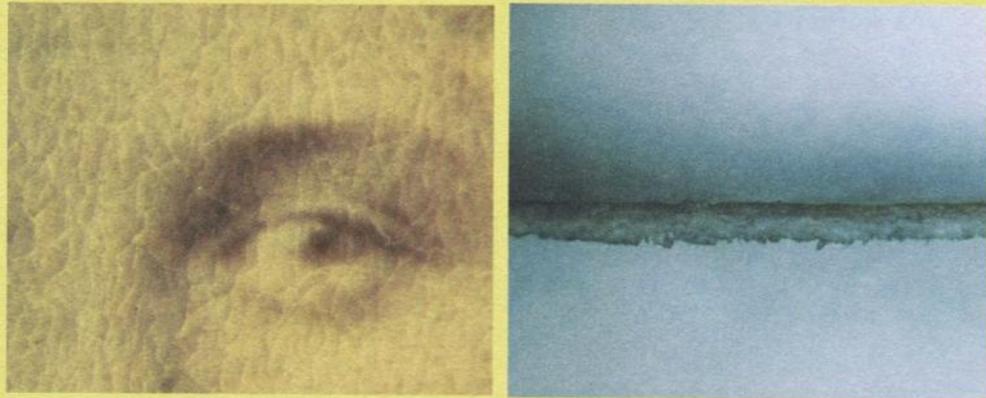


Gum bichromate print

- **Image tone:** variable
- **Appearance and texture:** matte
- **Deterioration:** no fading; no yellowing

Print processes with two layers

The photographic image is located in a binder layer that adheres to the surface of the paper support. Under magnification, the surface shows a transparent layer through which the fibers of the paper support can be seen.



Magnified view of surface (left) and section (right) of albumen print

Image tone and deterioration patterns can help distinguish printing-out process prints from developed-out prints:



Gelatin POP

- **Image tone:** purple to violet
- **Appearance and texture:** smooth surface; may be matte, glazed, or high gloss
- **Deterioration:** yellowing



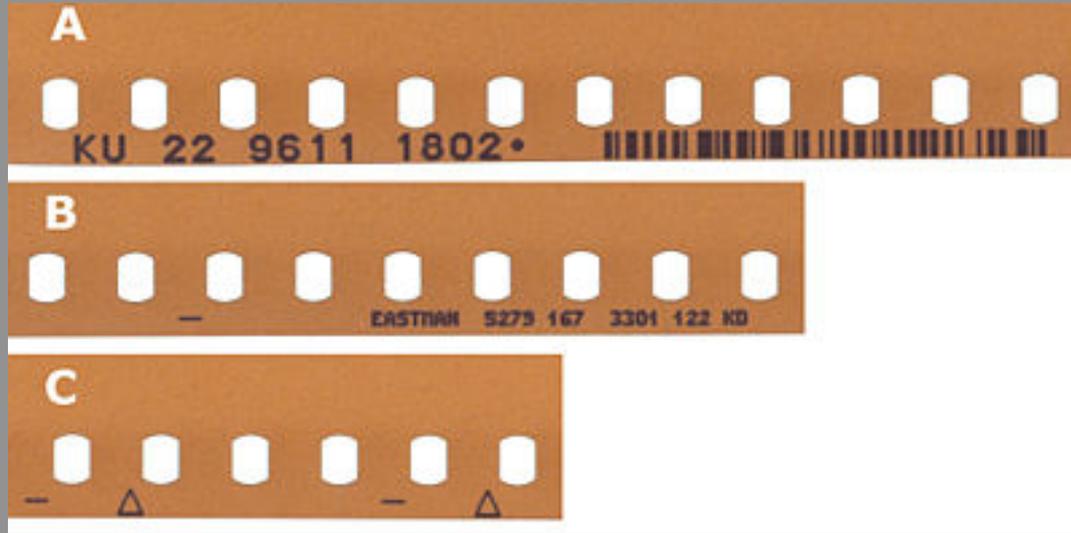
Collodion POP

- **Image tone:** warm tones or neutral gray (gold toned, platinum toned)
- **Appearance and texture:** smooth surface; may be matte, glazed, or high gloss
- **Deterioration:** may show minute cracks, scratches, and abrasions; silver image is often in better condition than gelatin POP



Developing-out paper print

- **Image tone:** neutral gray (may be toned to sepia, in which case no chemical deterioration is visible)
- **Appearance and texture:** smooth surface; may be matte, glazed, or high gloss
- **Deterioration:** silver mirroring



FORMAT	SIZE	SHOTS/ROLL	CAMERAS		
35MM	24 X 36MM	36, 24, 12	VARIOUS		
MEDIUM FORMAT (ALSO KNOWN AS 120 OR 220 FILM)					
645	56 X 42MM	16	PENTAX 45, MAMIYA 45, HASSELBLAD R1, ETC.		
6X6	56 X 56MM	12	HASSELBLAD 200/500, ROLLEI TLR, YASHICAMAT TLR, ETC.		
6X7	56 X 67MM	10	PENTAX 67, MAMIYA R67/R67T, ETC.		
LARGE FORMAT					
4X5	4" X 5"	SHEET FILM	VARIOUS		
5X7	5" X 7"	SHEET FILM	CANON, HOUBAHOUBI, ETC. VIEW CAMERAS		
8X10	8" X 10"	SHEET FILM	DEARDOFF, SMIK, CALINETY C-1, TOYO, ETC. VIEW CAMERAS		
FILM SIZE COMPARISON					
	35MM	645	616	6X7	8X10

CODE NOTCHES FOR SHEET FILMS		
IDENTIFICATION OF SHEET FILMS IN THE DARKROOM OR AFTER PROCESSING MAY BE MADE THROUGH THE CODE		NOTCHES IN THE CHART BELOW, FOR LOADING FILM IN HOLDERS, NOTCHED SHOULD BE IN UPPER RIGHT CORNER
ANSCO		
COMMERCIAL ORTHOCHROMATIC	ESOPAN	ANSCO COLOR DAYLIGHT
TRIPLE 5 ORTHO	SUPERPAN PRESS	ANSCO COLOR TUNGSTEN
SUPERPAN PORTRAIT	COMMERCIAL	
TRIPLE 5 PAN	PROCESS	
DU PONT		
HIGH SPEED PAN -TYPE 415	X-F ORTHO	PROCESS PAN
ARROW PAN	FINE GRAIN PAN	HIGH SPEED ORTHO
X-F PAN	COMMERCIAL	SUPERIOR PRESS
EASTMAN		
KODAK COMMERCIAL	KODAK EXTACHROME, TYPE B	KODAK FINE GRAIN POSITIVE
KODAK COMMERCIAL MATTE	KODAK EXTACOLOR, TYPE 0	KODAK OPALURE PRINT
KODAK COMMERCIAL ORTHO	KODAK SUPER PANCHO-PRESS TYPE B	KODAK PAN MASKING
KODAK CONTRAST PROCESS ORTHO	KODAK SUPER-XX PANCHROMATIC	KODAK HIGHLIGHT MASKING
KODAK SUPER SPEED ORTHO PORTRAIT	KODAK TRI-X PANCHROMATIC	KODAK MATRIX
KODAK SUPER ORTHO-PRESS	KODAK PORTRAIT PANCHROMATIC	KODAK FLEXICHROME STRIPPING
KODAK ORTHO-X	KODAK CONTRAST PROCESS PANCHROMATIC	KODAK PAN MATRIX
KODAK INFRARED	KODAK PANATOMIC-X	KODAK EXTACOLOR PRINT
KODAK EXTACHROME, DAYLIGHT TYPE	KODAK ROYAL PAN	
GEVAERT		
ORTHOCHROMATIC Superchrome, Geachrome 32	BLIND Control, Normal, Edge Control	PANCHROMATIC Process Panchrome, Normal Panchrome
PANCHROMATIC Gevachrome 32, Geachrome Geospeed 32	ORTHOCHROMATIC Normal Optics, Ultrafine Optics, Process Color Optics, Super Rapid	

Code Notches for some KODAK Sheet Films

PORTRA 160NC



PORTRA 160VC



PORTRA 400NC



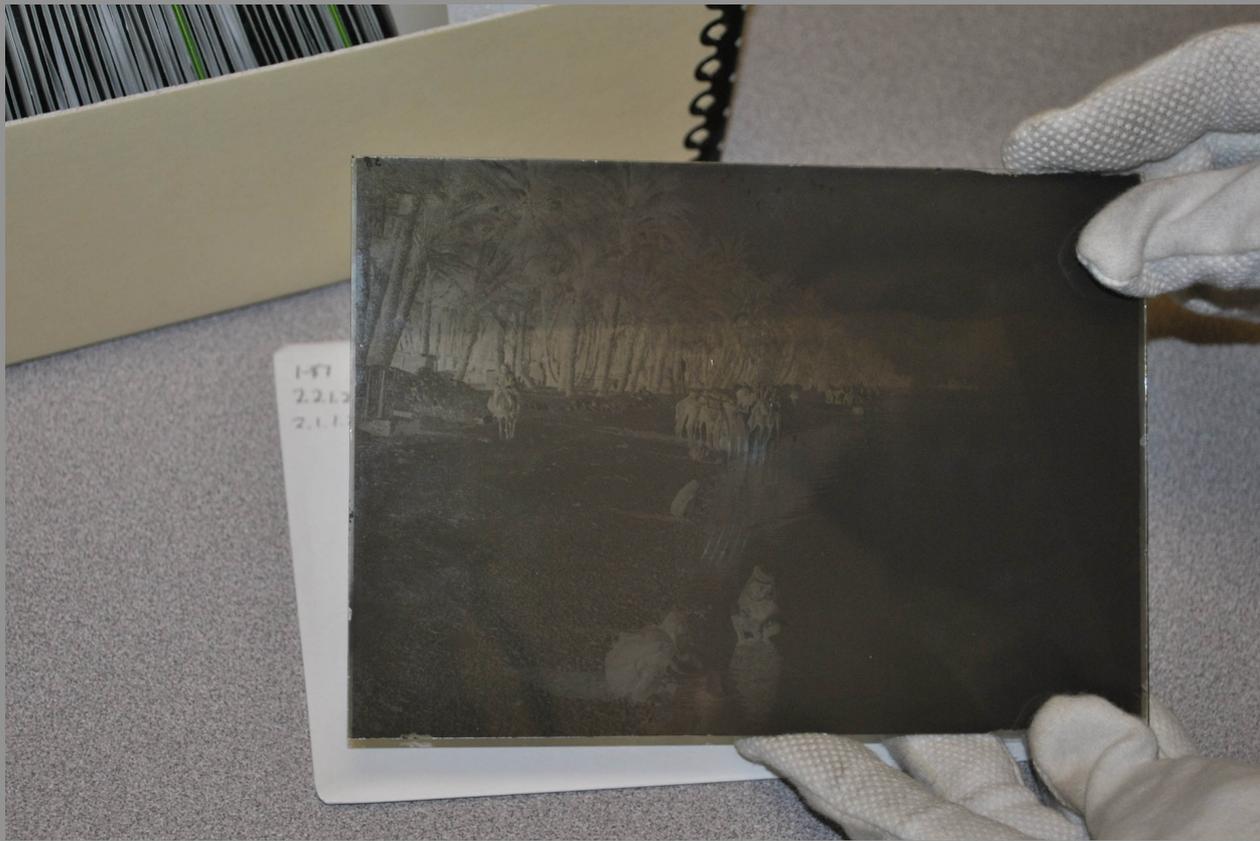
PORTRA 100T



EASTMAN—NITRATE—KODAK

33





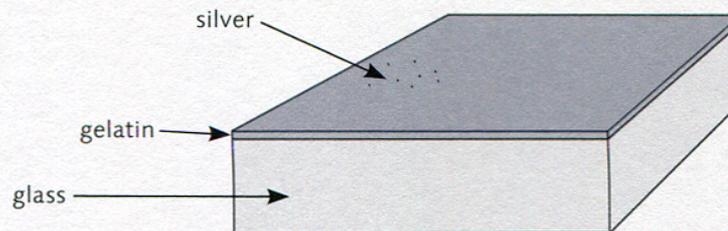
Gelatin silver negatives on glass 1878–1940

Occurrence in collections | very rare | rare | common | very common |

Common sizes and formats

- American (in.): $6\frac{1}{2} \times 2\frac{1}{2}$; $2\frac{1}{2} \times 4$; 4×5 ; 5×7 ; 8×10 ; 11×14 ; 14×17 ; 16×20 ; 18×22 ; 20×24
- European (cm): 4.5×6 (sixteenth plate); 6.5×9 (eighth plate); 9×12 (quarter plate); 13×18 (half plate); 18×24 (full plate); and other formats, such as 8×17 ; 21×27 ; 24×30 ; 30×40

Structure



Recommendations for conservation of gelatin glass plate negatives

- Store in protective envelopes placed in custom-size boxes
- Position vertically for storage or, if horizontally, in small stacks

Sensitivity

Light



average

Abrasion



average

Pollutants



average

Humidity



average

Flood



average

Figure 192
Unused roll of gelatin silver
bromide negative film, ca. 1950.



What is a gelatin silver negative on film?

A gelatin silver negative on film is a negative on a plastic film support—either cellulose nitrate, cellulose acetate, or polyester—with a layer of gelatin holding silver particles that form the image. The sensitized film is manufactured in standard camera formats, either as multiple-image rolls or as single-image sheets.



Figure 193
Processed gelatin silver film
negatives cut from a film roll,
photographer unknown, ca. 1950.

Table 3—Chronology of plastic film supports for roll and sheet film

Approximate Period of Use	Type
1888–1951	cellulose nitrate
late 1920s to present	cellulose acetates
1955 to present	polyester



Sandy Skogland, *Revenge of the Goldfish*, 1981

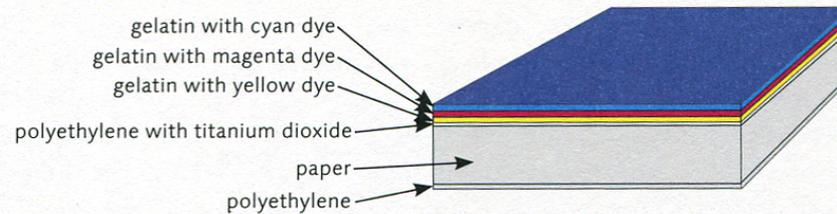
The chromogenic process print 1942 to present

Occurrence in collections | very rare | rare | common | very common |

Common sizes and formats

- American (in.): 3 1/2 x 5; 4 x 6; 5 x 7; 8 x 10; 11 x 14; 16 x 20; 20 x 24; 20 x 30; 24 x 30
- European (cm): 9 x 13; 10 x 15; 13 x 18; 18 x 24; 20 x 30; 30 x 45

Structure



Recommendations for conservation of chromogenic process prints

- Keep in a cool and dry environment
- Cold storage is recommended



Photomicrograph of a section

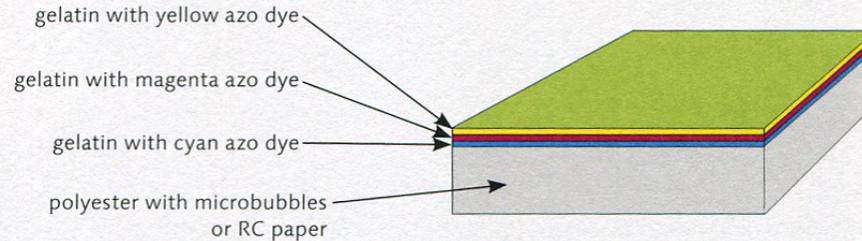
The Cibachrome or Ilfochrome Classic print 1963 to present

Occurrence in collections | very rare | rare | common | very common |

Common sizes and formats

- Variable, depending on the degree of enlargement

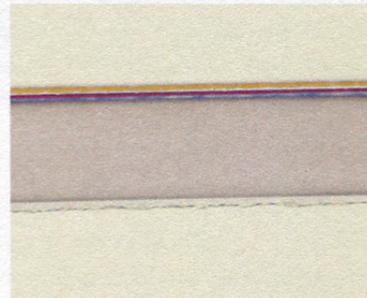
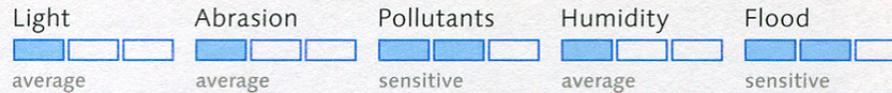
Structure



Recommendations for conservation of Cibachrome or Ilfochrome Classic prints

- Avoid wetting
- Avoid humid storage environments
- High-gloss prints on polyester support are vulnerable to scratching and abrasion

Sensitivity

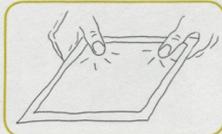


Photomicrograph of a section

Preservation

- Basic Handling
 - Gloves, transporting larger images, always using two hands,
- Storage options
 - Plastic vs. Paper
 - Types of enclosure and their best uses: sleeving, envelopes, archival board.
 - Making your own
 - Furniture and boxes
- Ideal vs. Budget and Space
- Physical organization of images within a collection.

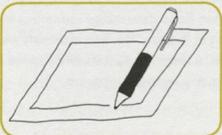
Ten Simple Dos and Don'ts



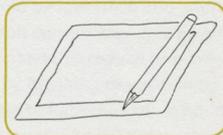
Don't touch or rub



Wear gloves to handle objects



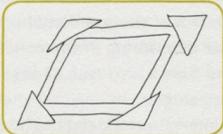
Don't write with a pen



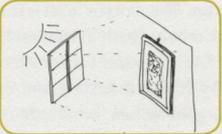
Use a graphite pencil to write



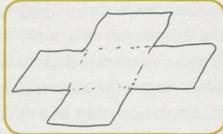
Don't glue



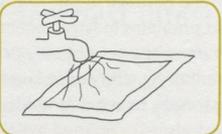
Use photo corners



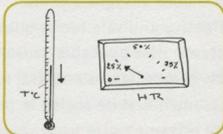
Don't expose to strong light



Store in appropriate envelopes and boxes



Don't wet



Keep in cool and dry conditions

Deterioration of plastic film supports

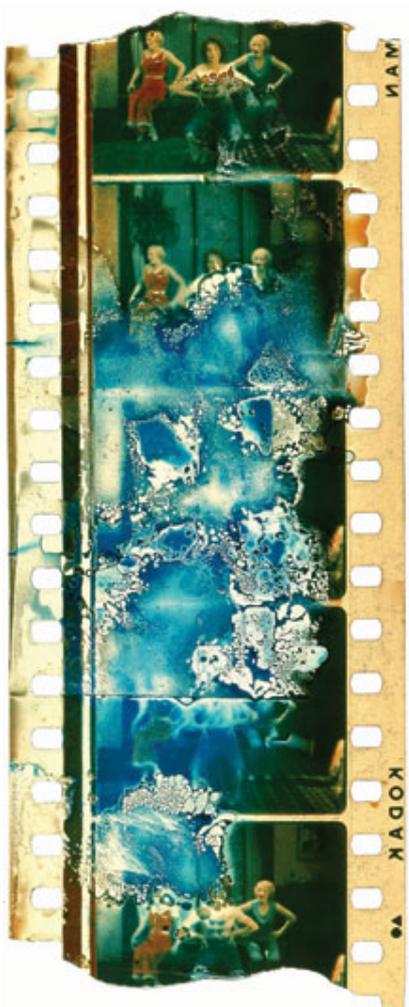
Toward the end of the nineteenth century, the heavy and fragile glass plates used for negatives were replaced with plastic film. Transparent materials produced by treating cellulose with acids—such as cellulose nitrate and cellulose acetate—are used as supports for photographic and motion picture film. Some films remain in good condition today, but many have shown signs of the inherent instability that produces deformation, creases, and breakage, as well as the release of sticky materials and acidic—even toxic—gases (see Gelatin silver negatives on film). These hydrolysis reactions, leading to the eventual loss of the photographic image, are accelerated by increasing temperature and humidity. All film collections—of both historical and contemporary images—are threatened, including those containing roll film, sheet film, negatives, or transparencies, as long as these are made with cellulose nitrate or cellulose acetate. Only cold storage can significantly slow down the deterioration of cellulose film base.



Figure 208
Cellulose nitrate sheet film
negative in a deteriorated state,
photographer unknown, ca. 1950

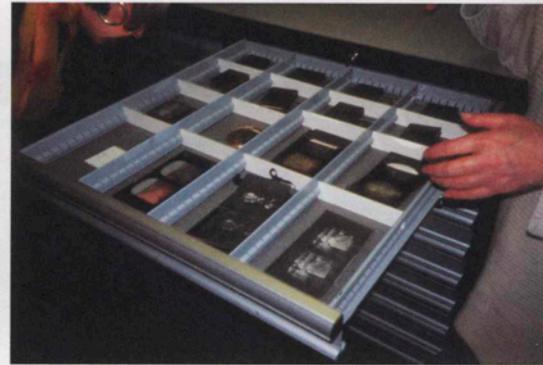
Table 5—Life expectancy of cellulose triacetate film base as a function of storage temperature¹

Temperature	Life Expectancy of Film at 50% RH
20°C	45 years
15°C	80 years
10°C	160 years
0°C	625 years
-10°C	2,740 years
-20°C	10,000 years





a



b

Figure 222
(a) Storage vault for graphic
and photographic collections;
(b) drawer fitted for storage of
daguerreotypes.

Storage furniture

Wood storage cabinets—whether they are made of solid wood, plywood, or an engineered wood product—should be avoided if possible. They all emit varying degrees of volatile organic compounds (VOCs) that may damage photographs. Metal shelving and cabinets are the preferred option. Plated steel, anodized aluminum, and steel coated with a heat-cured finish or with cured epoxy paint are all good materials for metal storage furniture. Cured epoxy fin-

ishes are particularly resistant and emit no solvents. Most metal office furniture currently available is finished with heat-cured finishes that meet the requirements for conservation of photographs.

If wood storage units are the only choice, photographs should be carefully enclosed in envelopes and boxes before being placed in drawers or on shelves and should never be in direct contact with a wood surface.

Table 8—Recommended temperature and relative humidity conditions for long-term preservation of photographs⁴

Type of Image	Support	Process	Maximum Temperature	Relative Humidity*
black-and-white	glass plate	<ul style="list-style-type: none"> • albumen • collodion • gelatin 	18°C	30–40%
	paper	<ul style="list-style-type: none"> • gelatin silver • pigment 	18°C	30–50%
	cellulose triacetate	gelatin silver	7°C	20–30%
			5°C	20–40%
			2°C	20–50%
polyester	gelatin silver	21°C	20–50%	
color	paper	<ul style="list-style-type: none"> • Cibachrome • dye transfer • Polaroid • pigment (Fresson, etc.) 	18°C	30–50%
	RC paper	chromogenic	2°C	30–40%
			–3°C	30–50%
	cellulose triacetate, polyester	chromogenic	2°C	20–30%
			–3°C	20–40%
			–10°C	20–50%

*The relative humidity must be at a stable set point between these values, not fluctuating within them.

Table 4—Identification of plastics used as supports for film negatives

	Identifying Characteristic	Type of Plastic
date of manufacture	before late 1920s	cellulose nitrate
	before 1952	cellulose nitrate or cellulose acetate
	1952–1955	cellulose acetate
	after 1955	cellulose acetate or polyester
type of deterioration	deformation, support yellowed, image severely oxidized	cellulose nitrate
	folds in the image layer, vinegar odor	cellulose acetate
markings	safety film	cellulose acetate
	nitrate	cellulose nitrate
notch codes	number, form, position of notches	according to manufacturer's code legend
chemical test	diphenylamine test: Using a micropipette, place a drop of 0.5% diphenylamine solution in concentrated sulfuric acid on a glass slide (caution: this material is dangerous and should be handled only by qualified technicians using appropriate equipment). Using a pair of tweezers, place a small piece of the film support—less than a square millimeter taken from the nonimage border—onto the drop. If cellulose nitrate is present, an intense blue color will appear in the liquid over the course of a few seconds.	positive test result indicates cellulose nitrate



a



b

Figure 204
Diphenylamine test. (a) The intense blue color indicates the presence of cellulose nitrate; (b) no color reaction indicates that the sample is not cellulose nitrate.

Table 10—Paper and polyester: advantages and disadvantages

Material	Advantages	Disadvantages
paper	<ul style="list-style-type: none"> • humidity-buffering effect • allows ventilation of any damaging gases generated by the object • neutralizes some pollutants 	<ul style="list-style-type: none"> • opaque • can tear • permeable to external pollutants
polyester (PET)	<ul style="list-style-type: none"> • transparent • strong, resists tearing • inert and stable • protects from external pollutants 	<ul style="list-style-type: none"> • electrostatic • may stick to gelatin if wetted • seals objects in along with any gases they generate

Table 11—Names and acronyms of plastics used in conservation

Acronyms	Name
ABS	acrylonitrile butadiene styrene
PE	polyethylene
PEN or PENP	polyethylene naphthalate
PET or PETP	polyethylene terephthalate (often called polyester)
PMMA	polymethylmethacrylate (acrylic glazing)
PP	polypropylene
PS	polystyrene
PTFE	polytetrafluoroethylene (Teflon®)

Table 8—Recommended temperature and relative humidity conditions for long-term preservation of photographs⁴

Type of Image	Support	Process	Maximum Temperature	Relative Humidity*
black-and-white	glass plate	<ul style="list-style-type: none"> • albumen • collodion • gelatin 	18°C	30–40%
	paper	<ul style="list-style-type: none"> • gelatin silver • pigment 	18°C	30–50%
	cellulose triacetate	gelatin silver	7°C	20–30%
			5°C	20–40%
			2°C	20–50%
polyester	gelatin silver	21°C	20–50%	
color	paper	<ul style="list-style-type: none"> • Cibachrome • dye transfer • Polaroid • pigment (Fresson, etc.) 	18°C	30–50%
	RC paper	chromogenic	2°C	30–40%
			–3°C	30–50%
	cellulose triacetate, polyester	chromogenic	2°C	20–30%
			–3°C	20–40%
–10°C			20–50%	

*The relative humidity must be at a stable set point between these values, not fluctuating within them.

Conservation

- Basic cleaning of prints and negatives.
 - Dusting, film and print cleaners, etc.
- Mold & Insects
 - Isolation, determination, treatment
- Scrapbooks & Albums
 - Preserving original order, interleaving, photo corners
- Adhesives
- Water damage
 - Tray washing, separation of silver versus color process materials, pigment based prints, archival digital prints.
- When it's time to see a conservator
 - Wet and then dried together, emulsions on glass, etc.

Arrangement

- Using original order or imposing order
 - pros and cons
 - weeding
- Unique identifying numbers
 - try not to have multiple numbers for the same item, either through digitization, software assignment, or other reference numbers.
 - develop your own code if necessary versus a system or device generated number. Especially helpful when there is a print and negative of the same image.
- Use the same arrangement for digital images
- Plan for expansion if necessary.

Description

- Description versus interpretation
 - Main subject(s) i.e. person, events, activities, and objects.
 - Geographical locations if known.
 - Date or span of dates, circa, etc.
- Keeping a consistent format for both physical and digital collections.
- Metadata - viewing it/creating it

Thesaurus for Graphic Materials

<http://www.loc.gov/pictures/collection/tgm/>

Exhibiting



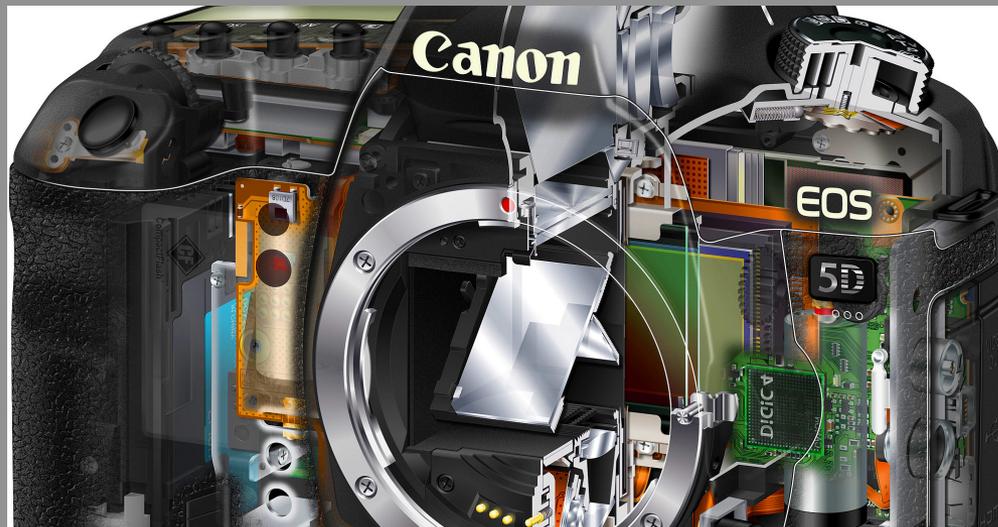
Alabama State Archive



Wright State

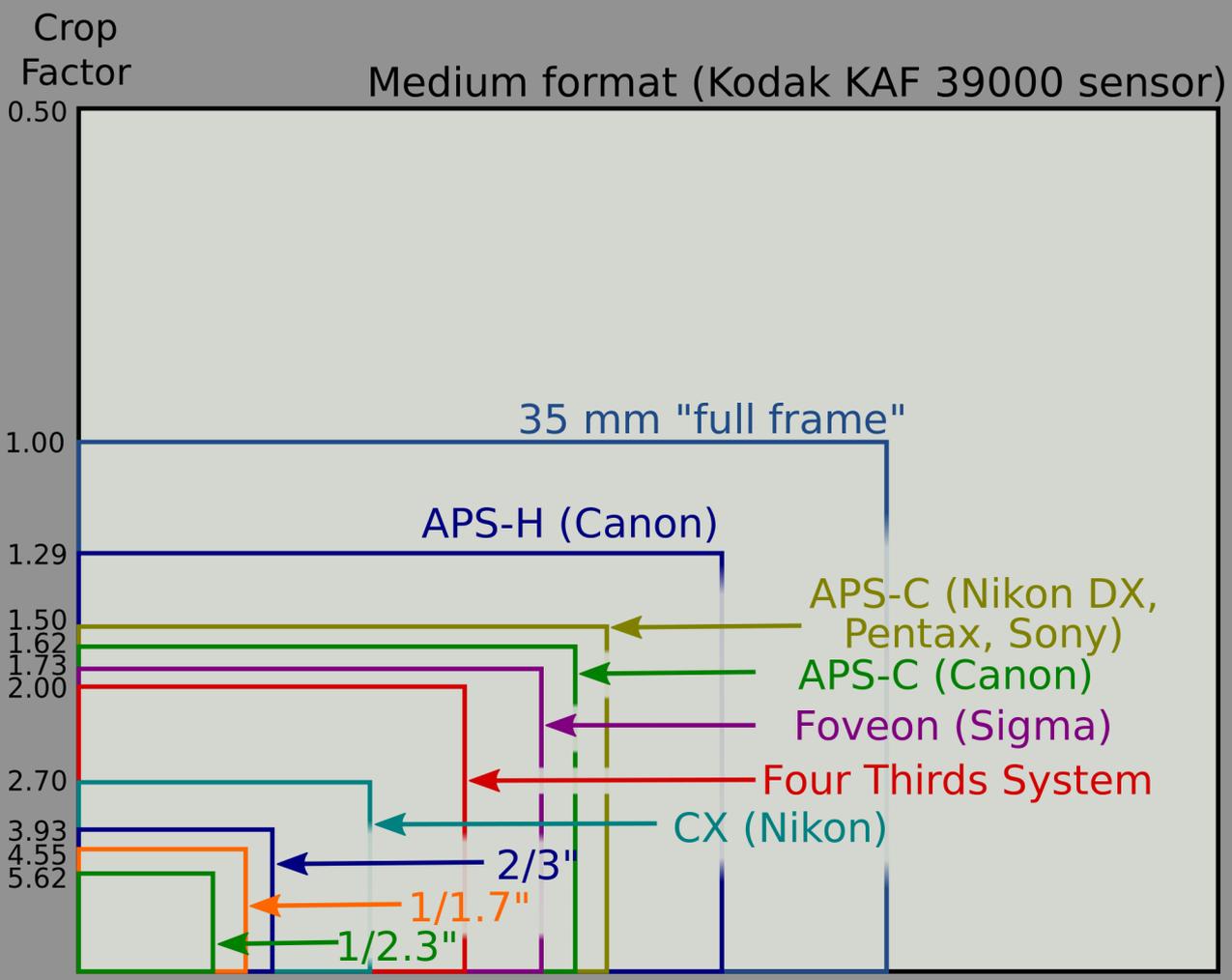
Digital “photography”

- Same process
- Different recording device



Devices





File Formats

File Name	Description
JPEG/JPG (Joint Photographers' Expert Group)	Most popular lossy image format. Allows users to specify what level of compression they desire.
PNG (Portable Network Graphics)	Best of lossless image formats. Widely supported across web. Allows you to include an alpha channel within file.
BMP (BitMaP)	Would avoid if possible. They offer little to no compression which results in unnecessarily large files.
TIFF/TIF (Tagged Image File Format)	Offers both compressed and uncompressed versions. Compressed are similar to PNG and uncompressed is similar to BMP.
PDF (Portable Document Format)	Most widely used document format. Great vector image format. Created by Adobe.
EPS (Encapsulated PostScript)	Most common vector image format. Standard format for print industry.
GIF (Graphics Interchange Format)	Lossless format that supports both animated and static images. Great for webpage banner ads.

Digital storage

- Online,
- external drives,
- CD/DVD,
- flash memory

DAM: digital asset management

- Workflow
- Labeling
- Metadata



Digital environments

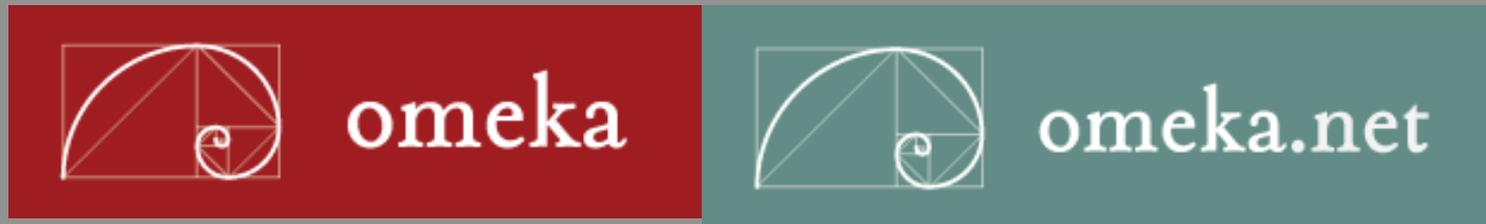


<http://www.adobe.com/products/bridge.html>

<https://www.gimp.org/>



Online exhibition



<http://guides.library.illinois.edu/c.php?g=347666&p=2344>

<https://www.floridamemory.com/photographiccollection/>

Helpful Websites:

Caring for Your Photographic Collections

<https://www.archives.gov/research/alic/reference/photography.html#care>

Northeast Document Conservation Center – Storage Enclosures for Photographic Materials

[http://www.nedcc.org/resources/leaflets/
4Storage_and_Handling/11StorageEnclosures.php](http://www.nedcc.org/resources/leaflets/4Storage_and_Handling/11StorageEnclosures.php)

Care, Handling, and Storage of Motion Picture Film

<http://www.loc.gov/preserv/care/film.html>

Personal Archiving

<http://www.digitalpreservation.gov/you/>