Best Practices for Digitizing Family Papers and Photographs

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Voice of
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Planning

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Planning Your Digitization Project

1. Review your collection
2. Choose hardware: Scanners, cameras, and other accessories
3. Become familiar with file formats and image properties
4. Develop a file organizing strategy and plan for metadata
5. Preserve your digital files

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Why Digitize?

Before | After

https://www.oldtowneditions.com/digital-restoration-vs-conservation/

- Preservation
- Access
- Restoration

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Review Your Materials

- What do you want to digitize and why?
- What do you plan to do with the images?
- How many documents do you have?
- What condition are they in?

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Selecting Hardware

- Choose equipment that won't damage your documents

- The best options for home collections:
  - Flatbed scanner
  - Camera with a tripod or copy stand

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Choosing Scanners and Cameras

- Scanners
  - 600 dpi optical resolution or higher
  - 2000-3000 dpi optical resolution for film

- DSLR Cameras
  - At least 15 megapixels sensor
  - need to be able to control image settings, like ISO, white balance, and shutter speed

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Other Accessories
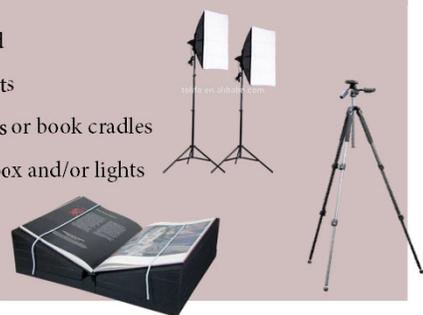
- Tripod
- Weights
- Pillows or book cradles
- Lightbox and/or lights

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Digitizing Photographic Prints

- A flatbed scanner is a good choice, depending on the size and condition of original document or photograph.

- A camera with a tripod or copy stand is another option, especially for large items.

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Digitizing Scrapbooks & Albums

- If the album opens flat, it can be digitized on a flatbed scanner.

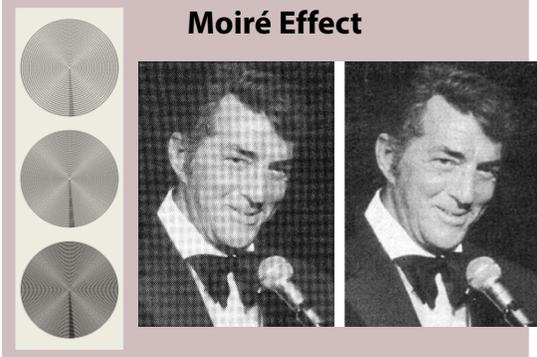- Albums with tight bindings should be digitized with a camera.

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Moiré Effect

Images from https://the-print-guide.blogspot.com/2009/12/moire.html

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Negatives and Transparencies

Some flatbed scanners have transparency adapters for 35 mm film and slides, medium format, and 4 x 5 film.

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Negatives and Transparencies

- Cameras can also photograph film.
  - Use a lightbox to illuminate negatives and transparencies
- Specialized slide and negative scanners are also available.

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Cased and Framed Photographs

- Generally, camera is best
  - Experiment with lighting and angles
- If a fairly flat object, you can use a flatbed scanner
  - Experiment with background

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File Formats and Imaging Settings

- Save original images in a file format that is open source and uses little or no compression.
  – TIFF preferred

- If scanning:
  – 300 ppi or higher, in color
  – See handout for full details and recommendations

- If using a DSLR camera, select the highest image quality – raw if available.

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File Naming

- Should be relatively short

- Use alphanumeric characters, hyphens, and underscores
  – Write in "SnakeCase" (ex: BrownMary_Harvard)

- Use meaningful names

- Write dates in yyyy-mm-dd, so the filenames sort chronologically

- End with a 3-letter file extension (.tif, .jpg)

Example: **BrownMary_1894-07.tif**

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File Organization

- Keep original images in a master folder

- Put another copy in a working folder
  – Only edit the images in the working folder

- Photographs
  – Brown_family
    • master-images
    • working-copies
  – Gibson_family

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Metadata

- Metadata, or "data about data," describes your documents, making them easier to find.
- Options:
  - Embedded metadata
  - Separate files, like a spreadsheet or text file
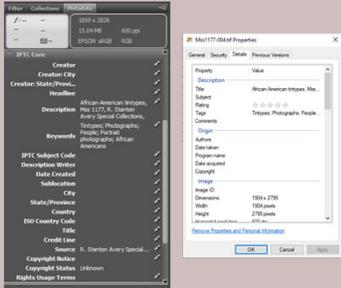 - Software, like an image browser or digital asset manager

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Embedded Metadata

- Embedded metadata stays with the file.
- Compatible with many different programs.

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Metadata Examples
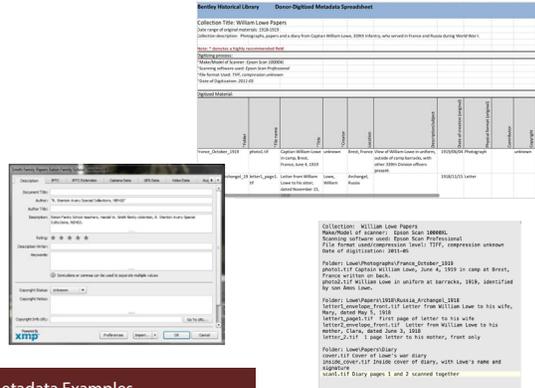
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Digital Preservation

- Follow the 3-2-1 rule (LOCKSS):
    - **3** copies
    - on at least **2** types of media
    - **1** copy stored in a different location
- Check your images at least once a year
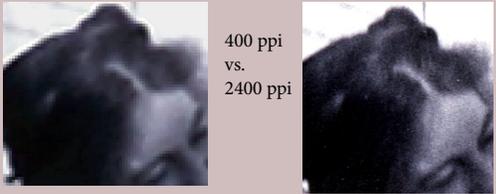- Copy your files to new media every 5 years

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Key Terms

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Definitions: Resolution

- A relative value, usually expressed as the density of elements, such as **pixels**, within a specific distance, most commonly an inch. Affects the amount of detail you can see in a digital image.

400 ppi
vs.
2400 ppi

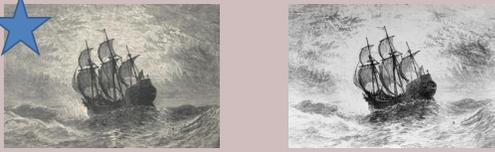Source: https://blogs.loc.gov/thesignal/2013/03/what-resolution-should-i-use-part-3/

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Definitions: Pixel Dimensions

$$\frac{1116 \times 746 \text{ pixels}}{300 \text{ pixels}}$$

3.72 in. x 2.49 in.
maximum printable size

$$\frac{400 \times 278 \text{ pixels}}{300 \text{ pixels}}$$

1.33 in. x 0.93 in.
maximum printable size

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Definitions: DPI and PPI

- ppi (pixels per inch)
- dpi (dots per inch)
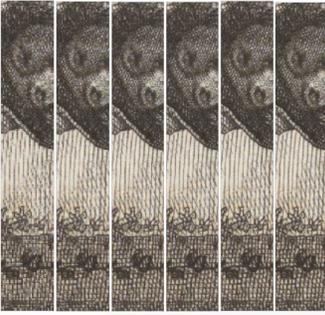
Image Source:
http://www.ala.org/alcts/resource
s/preserv/minimum-digitization-
capture-recommendations

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Top: Red boxes indicate edge features used to calculate maximum image information content.

Bottom: Enlarged detail version extracted from the circled area in the top image showing no difference in image information at 3000 ppi, 1500 ppi, and 1500 ppi interpolated up to 3000 ppi. From an 8x10-inch glass plate dating from 1906, in the collections of the Bancroft Library, University of California, Berkeley.

Source: Information or Artifact: Digitizing Photographic Negatives and Transparencies, Part 2, https://blogs.loc.gov/thesignal/2011/10/information-or-artifact-digitizing-photographic-negatives-and-transparencies-part-2/

Resolution Example

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Definitions: Optical Resolution

- The resolution at which a capture device, such as a scanner or digital camera, is capable of capturing pixel values based on actual samples taken from an original to construct an image.

Maximum optical resolution (300 ppi)   Interpolated resolution (600 ppi)

Source: https://www.scantips.com/interpol.html

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Definitions: Bit Depth

- the number of bits used to describe each pixel in an image.

1-bit = 2 shades   8-bit = 256 shades

Source: https://archivesoutside.records.nsw.gov.au/digitising-your-collection-part-3-technical-specifications/

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Definitions: RAW files

- The unprocessed file that is produced by a digital camera.

- The highest quality image that a camera can produce, with the greatest amount of data.

- Requires additional editing before it can be used.

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Scanning and Photography
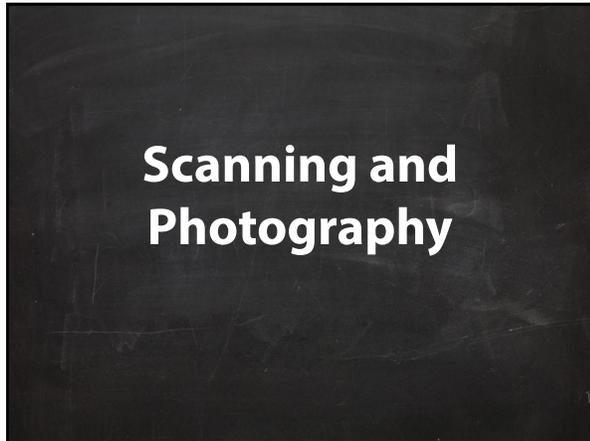
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How to select resolution?

- Quality vs. Size

- Intended use

- Original Format requirements (size and media)

- Rarity of object

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Professional Guidance

- What are the professional standards ?

- FADGI compliance

- Federal Agencies Digital Guidance Initiative

- Star System grading of images

- Varies based on Media type and desired use

3.1 Bound Volumes: Rare and Special Materials

Performance Level:	1-Star	2-Star	3-Star	4-Star
Master File Format		TIFF, JPEG 2000, PDF/A	TIFF, JPEG 2000, PDF/A	TIFF, JPEG 2000, PDF/A
Access File Formats		All	All	All
Resolution (Sampling Frequency) (Units are Pixels Per Inch/ppi minus Reproduction Scale Accuracy)		≥ 242.5ppi (250 ppi – 3%)	≥ 294ppi (300 ppi – 2%)	≥ 396 ppi (400 ppi – 1%)
Bit Depth		8	8 or 16	16
Color Space		Adobe RGB (1998), ProPhoto, ECIRGB_v2	Adobe RGB (1998), ProPhoto, ECIRGB_v2	Adobe RGB (1998), ProPhoto, ECIRGB_v2
Color Mode		Color	Color	Color

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File Types

File Type	Use	Supported	Compression
TIFF	Preservation, Print	Yes	No
JPEG	Access, Web	Yes	Yes, Lossy
JPEG 2000	Access, Web, Print	No	Yes – lossy and lossless options
PNG	Access, Web	Yes	Yes, Lossless
RAW	Preservation	Yes	Yes, Lossless
PDF	Access	Yes	Yes, Lossless*
PDF/A	Access, Preservation (documents only)	No	Yes, Lossless

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Recommended Scanning Settings

Document type	Minimum Resolution	Minimum Bit Depth	Color Space
Text Documents (unbound)	300 ppi	8 or 16 bit	Adobe RGB Color or Gray Gamma 2.2
Bound Text Documents	300 ppi	8 or 16 bit	Adobe RGB Color or Gray Gamma 2.2
Newspapers	300 ppi	8 bit	Adobe RGB Color or Gray Gamma 2.2
Maps and Oversize Materials	300	16 bit	Adobe RGB Color or Gray Gamma 2.2
Photographs (< 8" x 10")	400 ppi	16 bit	Adobe RGB Color
Photographs (> 11" x 14")	600 ppi	24 bit	Adobe RGB Color

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Scanning Settings, continued

Document type	Minimum Resolution	Minimum Bit Depth	Color Space
Photo albums	600 ppi	16 bit	Adobe RGB Color
Photographic film, (negatives and slides < 4" x 5")	3000 ppi	16 (grayscale) or 24 bit	Adobe RGB Color or Gray Gamma 2.2
Photographic film (< 8" x 10")	1500 ppi	16 (grayscale) or 24 bit	Adobe RGB Color or Gray Gamma 2.2
Photographic film (> 8" x 10")	800 ppi	16 (grayscale) or 24 bit	Adobe RGB Color or Gray Gamma 2.2
Microfilm	4000 ppi	8 bit	Gray Gamma 2.2
Paintings and Artwork	450 ppi	16 bit	Adobe RGB Color

FADGI guidelines – Edition 3, 2023:
https://www.digitizationguidelines.gov/guidelines/digitize-technical.html

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Using a Flatbed Scanner

1. Clean scanner glass with a lint-free cloth, dampened with water.

2. Wipe photos with a dry, anti-static cloth.

3. Position photograph(s).
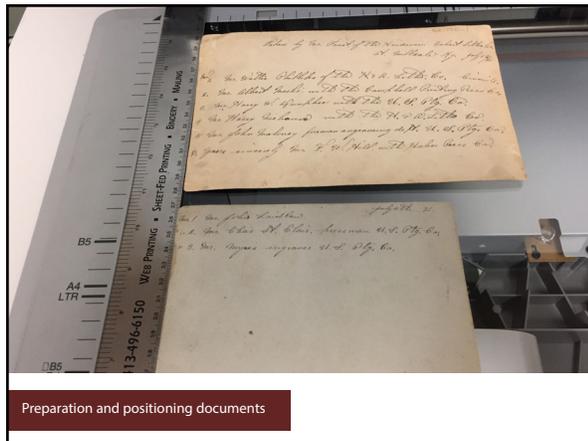
4. Select image settings.

5. Preview and scan.

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Preparation and positioning documents

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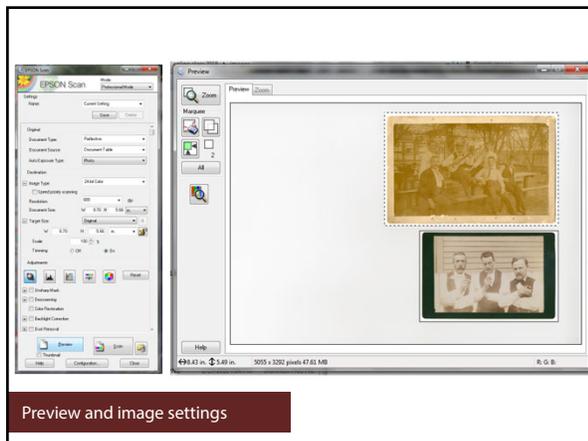
Preview and image settings

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Auto Exposure
Off

Auto Exposure
On

Auto Exposure

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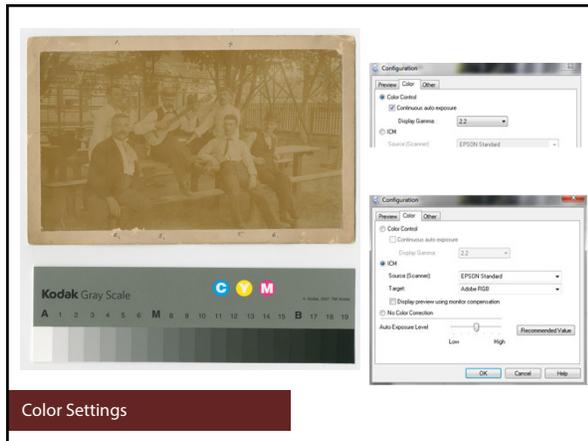
Color Settings

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Scanning Negatives and Film

1. Clean scanner and film.

2. Place film or slides in film holders and put on scanner.

3. Select image settings.

4. Preview.

5. Select each frame and adjust for color and exposure as necessary.

6. Scan final image(s).

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Preparing the Scanner and Film

- Wipe both top and bottom glass to remove dust and fingerprints.
- Handle film with gloves and hold by the edges.
- Use a brush or air blower to clean film before scanning.
- Follow scanner directions when placing film.

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Image Settings and Preview

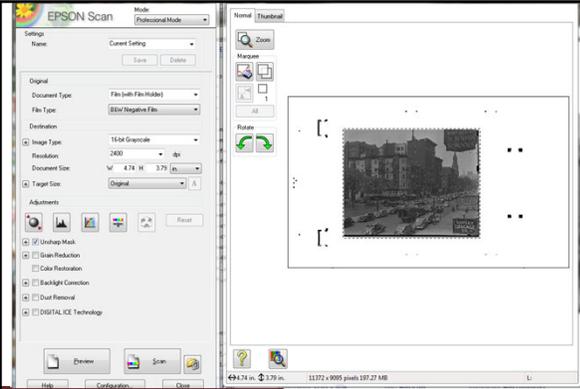44
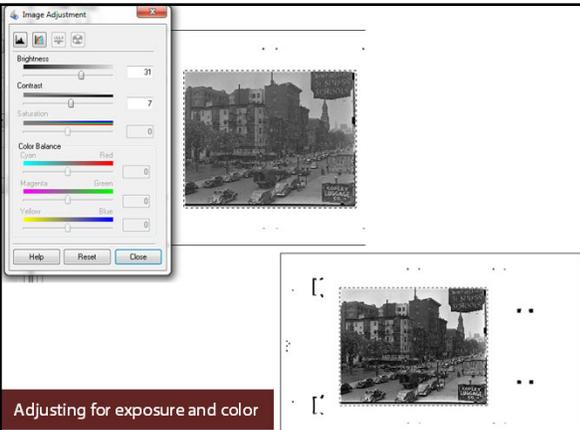
Adjusting for exposure and color

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For best results with color negatives, edit the preview before scanning, and do additional color correction in an image editor later.

Adjusting color negatives

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Scanning color negatives in Silverfast
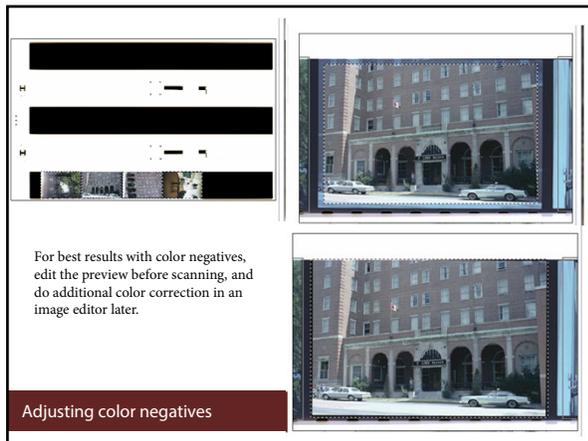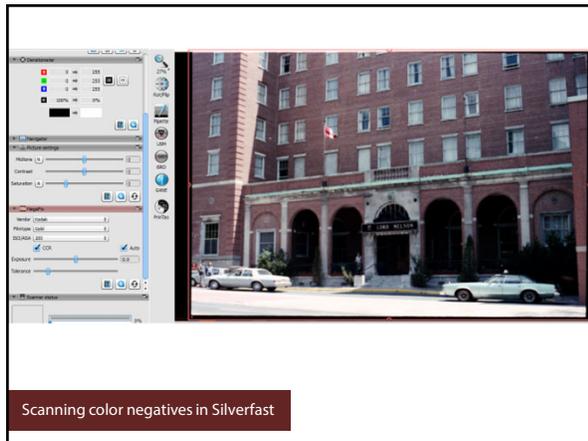
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Using a Camera

1. Set up background for photographs.

2. Set up and turn on lights.

3. Set up tripod or stand and attach camera.

4. Adjust camera and tripod so that the document will fill most of the camera viewfinder.

5. Set up document.

6. Test focus and exposure.

7. Take photographs.

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Using a Camera

- Background color should be neutral
- Consider your lighting
- Recommended camera settings:
  - ISO 100-200
  - Aperture priority mode
  - f8-11
  - Highest image quality
  - Autofocus
  - Adjust white balance (if necessary)

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Camera Basics

- Flash/no flash
- Exposure value (EV)
- Timer
- Camera scene modes

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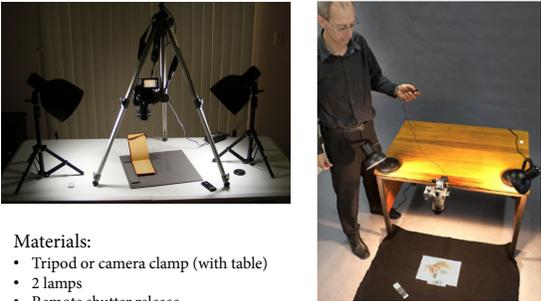
Materials:
- Tripod or camera clamp (with table)
- 2 lamps
- Remote shutter release
- Background material

Source:
https://archivehistory.jeksite.org/chapters/appendixd.htm (left); *Digitisation of Heritage Materials*, p. 129, http://www.dohm.com.au/ (above)

Camera Set-up

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Setting Up Bound Albums

- Use a book pillow or book cradle to support albums that cannot open flat

- Use weights, spatulas, or pointers to hold pages down

Source:
https://archivesoutside.records.nsw.gov.au/digitising-your-collection-part-4-scanning-and-handling-tips/

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Setting up document and camera

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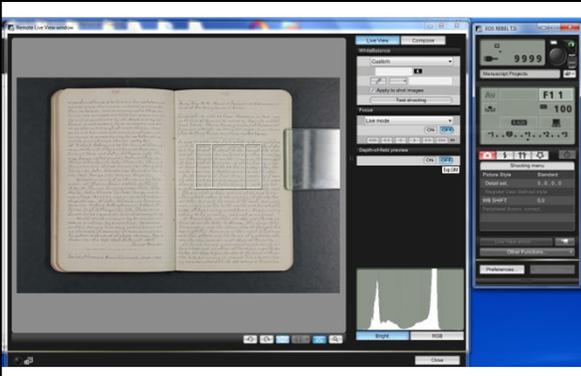
Test exposure and focus

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Sample image

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Imaging Cased and Framed Photographs

- Lighting and camera set-up depend on the size and shape of the objects.

- Experiment for the best results.

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Editing Images

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Considerations

- Size
- Resolution
- Cropping
- Straightening
- Contrast
- Tone, color
- Brightness
- Red eye
- Retouching/repairs
- Text and graphics
- Effects

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	Cost	Resizing	Resolution	Adjustments	Red Eye/Repairs	Text & Effects	Comments
Adobe Photoshop	$$$	✓	✓	✓	✓	✓	Best of the best; can be overwhelming
Adobe Photoshop Elements	$$	✓	✓	✓	✓	✓	Photoshop for nonprofessionals; bundled with some scanners
Corel PaintShop Pro	$$	✓	✓	✓	✓	✓	PC only; functionality of Photoshop at a lower price
ACDSee	$$	✓	✓	✓	✓	✓	Lower cost; not as robust as Photoshop or Elements
GIMP (GNU Image Manipulation Program)	free	✓	✓	✓	✓	✓	Open source (PC, Mac, and Linux); interface can be confusing
Paint.NET	free	✓	✓	✓	✓	✓	PC only; more robust than Microsoft Paint

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	Cost	Resizing	Resolution	Adjustments	Red Eye/Repairs	Text & Effects	Comments
Apple Photos	free	✓		✓	✓	✓	Mac only; limited options with built-in tools
PhotoScapeX	free	✓	✓	✓	✓	✓	Mac and Windows 10; More robust than Photos
Google Photos	free	✓		✓		✓	More of a photo organizer; limited editing capabilities
Affinity Photo	$$	✓	✓	✓	✓	✓	Mac and PC; functionality of Photoshop at a lower price
Skylum Luminar	$$	✓	✓	✓	✓		Mac and PC; functionality of Photoshop and Lightroom at a lower price
XnView MP	free	✓	✓	✓		✓	Mac and PC; image organizer with basic editing tools

For reviews, see cnet.com or PCMag.com

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TIP:
When editing photos, create a copy to work from with a version title.

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Color correction in Photoshop CS4

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Retouching and Repairs

Before   After

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Tip
Ask for help if you need it.

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Contacting a Conservator

- Contact a conservator before digitizing if:
  - Documents are extremely fragile
  - Documents can't be unfolded without cracking or tearing
  - Documents are tightly rolled
- Find a local conservator by searching http://www.conservation-us.org/membership/find-a-conservator
- NEDCC (www.nedcc.org) also has conservators as well as imaging services.

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QUESTIONS?

Schedule a consultation
consultations@nehgs.org

Hire Research Services
research@nehgs.org

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