

# Best Practices for Digitizing Family Papers and Photographs

Sally Benny, Curator of Digital Collections



## American Ancestors

*by* NEW ENGLAND HISTORIC GENEALOGICAL SOCIETY



*Voice of*  
Sally Benny  
Curator of Digital Collections

# Planning

# 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. Plan for metadata
5. Preserve your digital files

# Review Your Photographs



- 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?

# 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



# Choosing Scanners and Cameras

- Scanners
  - 600 dpi optical resolution or higher
  - 2000-3000 dpi optical resolution for film
- Cameras
  - At least 10 megapixels (3872 x 2592 px)
  - need to be able to control image settings, like ISO, white balance, and shutter speed

# Other Accessories

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

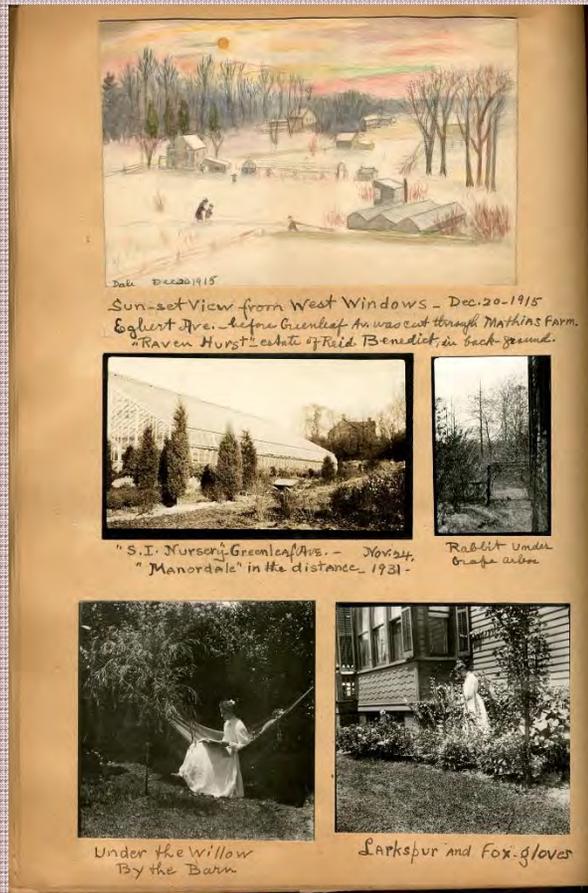


# Digitizing Photographic Prints

- 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.



# Digitizing Photo Albums



- If the album opens flat, it can be digitized on a flatbed scanner.
- Albums with tight bindings should be digitized with a camera.

# Negatives and Transparencies

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



# Negatives and Transparencies

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



# 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



An Indian amah with  
on of the Atkinson babes.

# File Formats and Imaging Settings

- Save original images in a file format that uses little or no compression.
  - TIFF preferred
- If scanning:
  - 300 ppi or higher, in color
- If using a camera, select the highest image quality

# File Naming

- Should be relatively short
- Use alphanumeric characters, hyphens, and underscores
- Use meaningful names
- Write dates in `yyyymmdd`, so the filenames sort chronologically
- End with a 3-letter file extension (`.tif`, `.jpg`)

Example: **Brown\_Mary\_189407.tif**

# File Organization

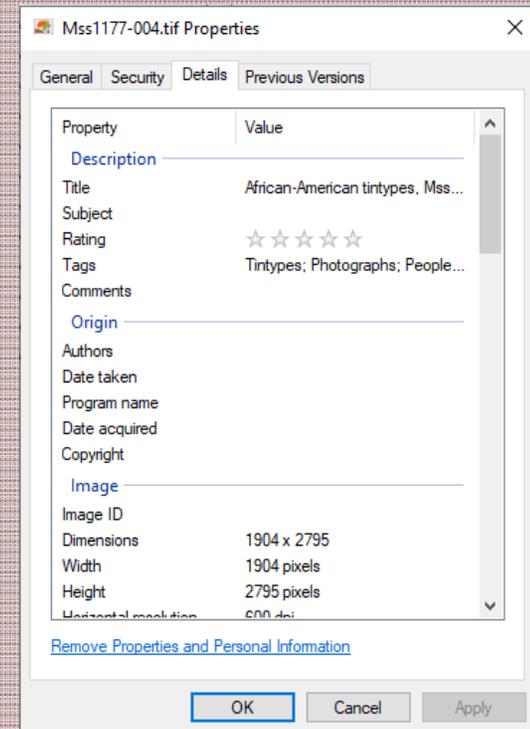
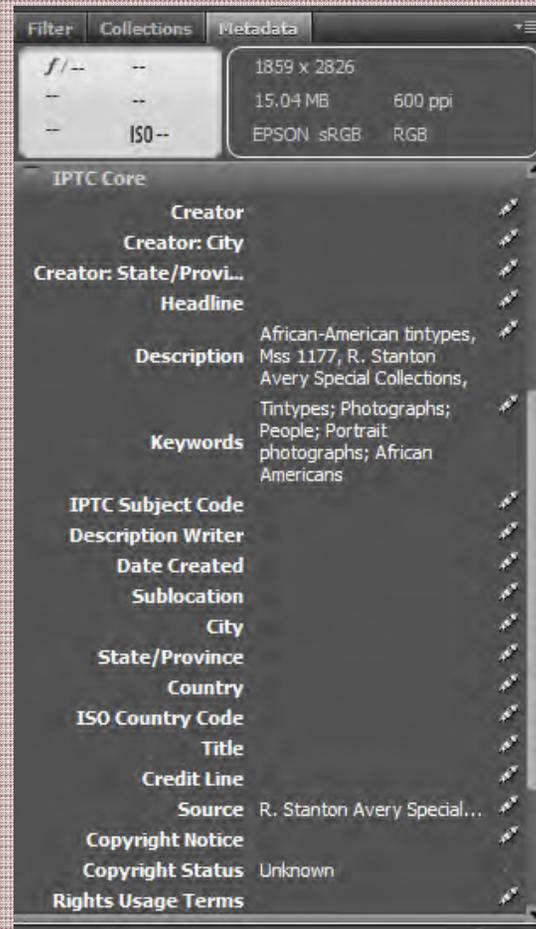
- Keep original images in a master folder
- Put another copy in a working folder
  - Only edit the images in the working folder
- Photographs
  - Brown\_family
    - master-images
    - working-copies
  - Gibson\_family

# Metadata

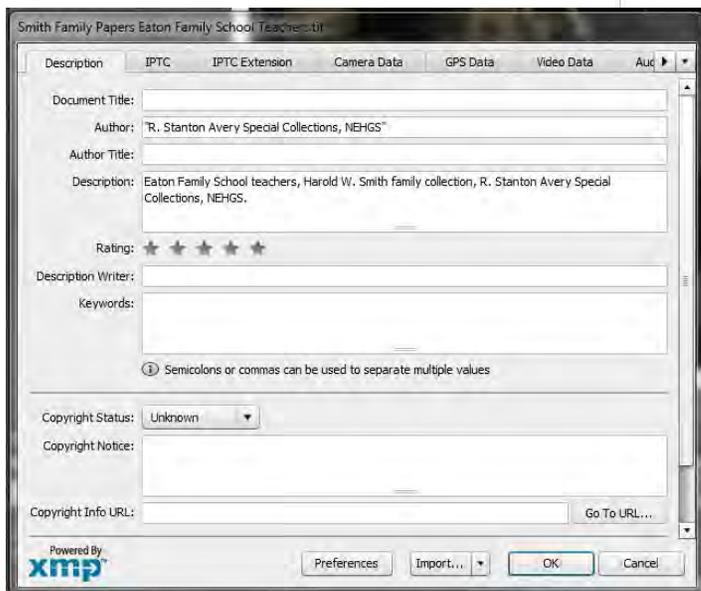
- Metadata, or “data about data,” describes your documents, making them easier to find.
- Options:
  - Embedded metadata
  - Separate files, like a spreadsheet or text file
  - Software, like an image browser or digital asset manager

# Embedded Metadata

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



Bentley Historical Library Donor-Digitized Metadata Spreadsheet										
Collection Title: William Lowe Papers										
Date range of original materials: 1918-1919										
Collection description: Photographs, papers and a diary from Captain William Lowe, 339th Infantry, who served in France and Russia during World War I.										
Note: * denotes a highly recommended field										
Digitizing process:										
*Make/Model of Scanner: Epson Scan 10000XL										
*Scanning software used: Epson Scan Professional										
*File format Used: TIFF, compression unknown										
*Date of Digitization: 2011-05										
Digitized Material:										
*Folder	*File name	*Title	*Creator	Location	Description/subject	Date of creation (original)	Physical format (original)	Contributor	Copyright	
France_October_1919	photo1.tif	Captain William Lowe in camp, Brest, France, June 4, 1919	unknown	Brest, France	View of William Lowe in uniform, outside of camp barracks, with other 339th Division officers present.	1919/06/04	Photograph		unknown	
Archangel_1918	letter1_page1.tif	Letter from William Lowe to his sister, dated November 15, 1918	Lowe, William	Archangel, Russia		1918/11/15	Letter			



```

Collection: William Lowe Papers
Make/Model of scanner: Epson Scan 10000XL
Scanning software used: Epson Scan Professional
File format used/compression level: TIFF, compression unknown
Date of digitization: 2011-05

Folder: Lowe\Photographs\France_October_1919
photo1.tif Captain William Lowe, June 4, 1919 in camp at Brest, France written on back.
photo2.tif William Lowe in uniform at barracks, 1919, identified by son Amos Lowe.

Folder: Lowe\Papers\1918\Russia_Archangel_1918
letter1_envelope_front.tif Letter from William Lowe to his wife, Mary, dated May 5, 1918
letter1_page1.tif first page of letter to his wife
letter2_envelope_front.tif Letter from William Lowe to his mother, Clara, dated June 3, 1918
letter_2.tif 1 page letter to his mother, front only

Folder: Lowe\Papers\Diary
cover.tif Cover of Lowe's war diary
inside_cover.tif Inside cover of diary, with Lowe's name and signature
scan1.tif Diary pages 1 and 2 scanned together
    
```

# Metadata Examples

# Digital Preservation

- Follow the 3-2-1 rule:
  - 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

# Key Terms

# 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.

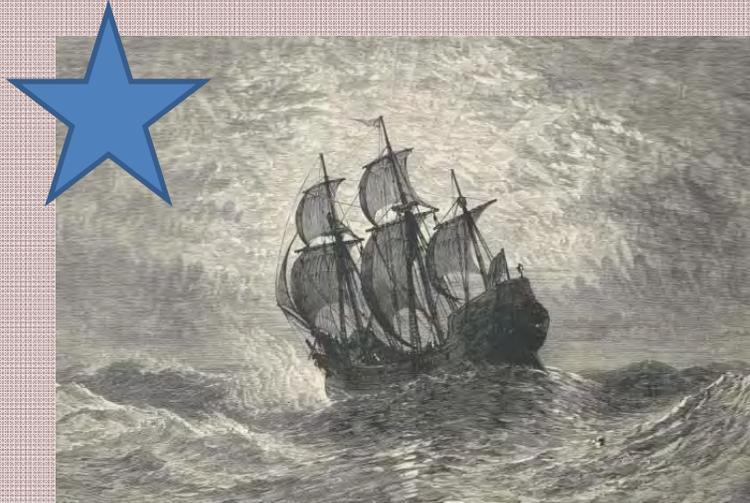


400 ppi  
vs.  
2400 ppi



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

# Definitions: Pixel Dimensions



$1116 \times 746$  pixels

---

300 pixels

3.72 in. x 2.49 in.  
maximum printable size



$400 \times 278$  pixels

---

300 pixels

1.33 in. x 0.93 in.  
maximum printable size

# Definitions: DPI and PPI

- ppi (pixels per inch)
- dpi (dots per inch)

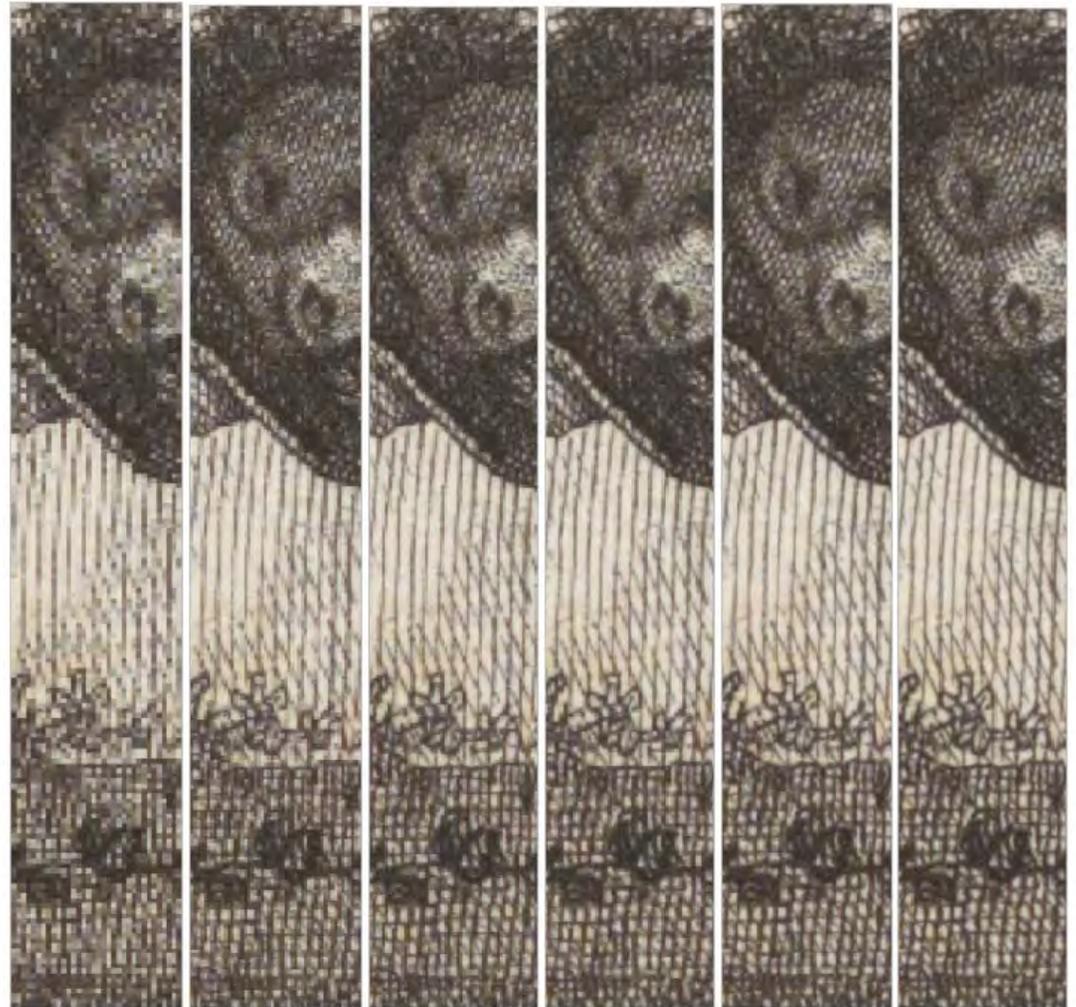


Image Source:  
<http://www.ala.org/alcts/resources/preserv/minimum-digitization-capture-recommendations>



*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/>*

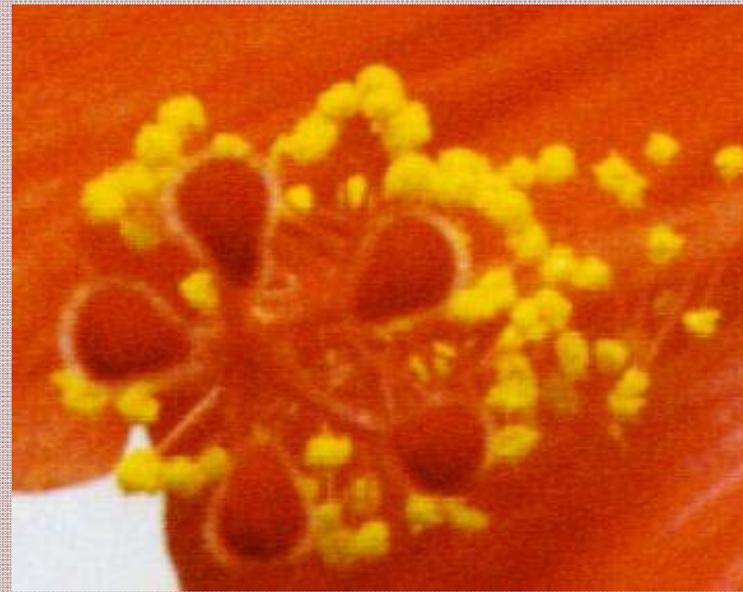
## Resolution Example

# 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)

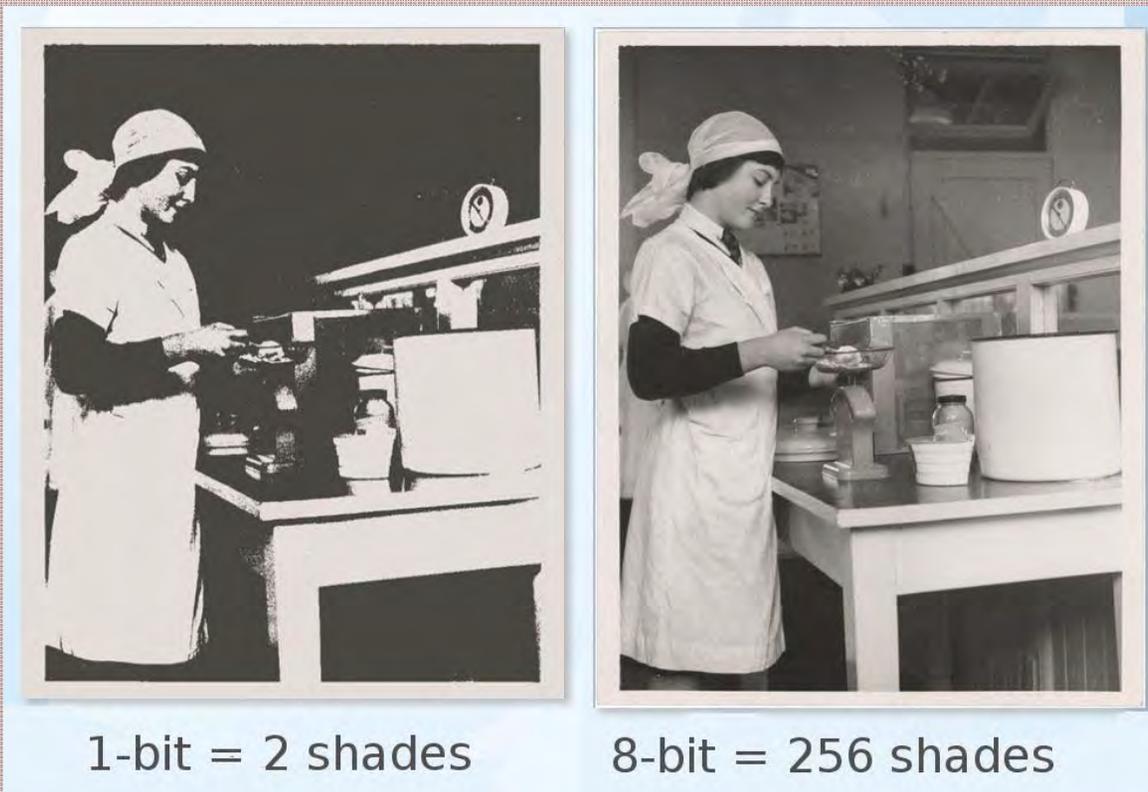


Interpolated resolution (600 ppi)

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

# Definitions: Bit Depth

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



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

# 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.

# Scanning and Photography

# Recommended Scanning Settings

Document type	Minimum Resolution	Color Mode	Notes
Photographs (8 x 10 inches or less)	400 ppi	grayscale (8 bit) or color (24 bit)	Image should be 4000 pixels on long edge; adjust resolution accordingly.
Photographs (8 x 10 to 11 x 14 inches)	400-600 ppi	grayscale (8 bit) or color (24 bit)	Image should be 6000 pixels on long edge.
Photographs (over 11 x 14 inches)	600 ppi	grayscale (8 bit) or color (24 bit)	Image should be 8000 pixels on long edge.
Photo albums	400 ppi	color (24 bit)	Scan at higher resolution if editing or printing individual images on the albums's page.

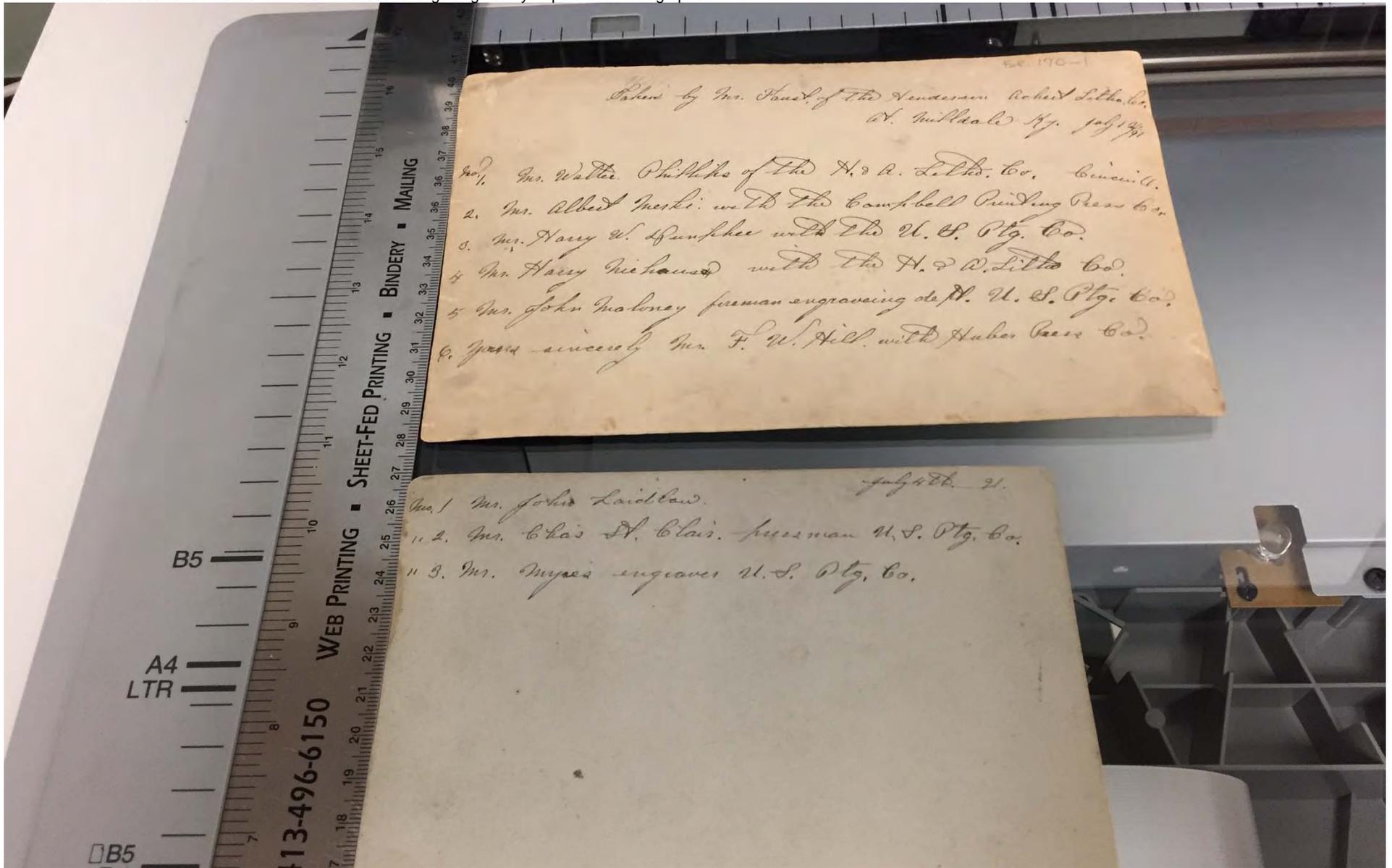
# Scanning Settings, continued

Document type	Minimum Resolution	Color Mode	Notes
Photographic film, including negatives and slides (4 x 5 inches or less)	800-2800 ppi	grayscale (8 bit) or color (24 bit)	Image should be 4000 pixels on long edge.
Photographic film (4 x 5 to 8 x 10 inches)	800-1200 ppi	grayscale (8 bit) or color (24 bit)	Image should be 6000 pixels on long edge.
Photographic film (over 8 x 10 inches)	800 ppi	grayscale (8 bit) or color (24 bit)	Image should be 6000 pixels on long edge.

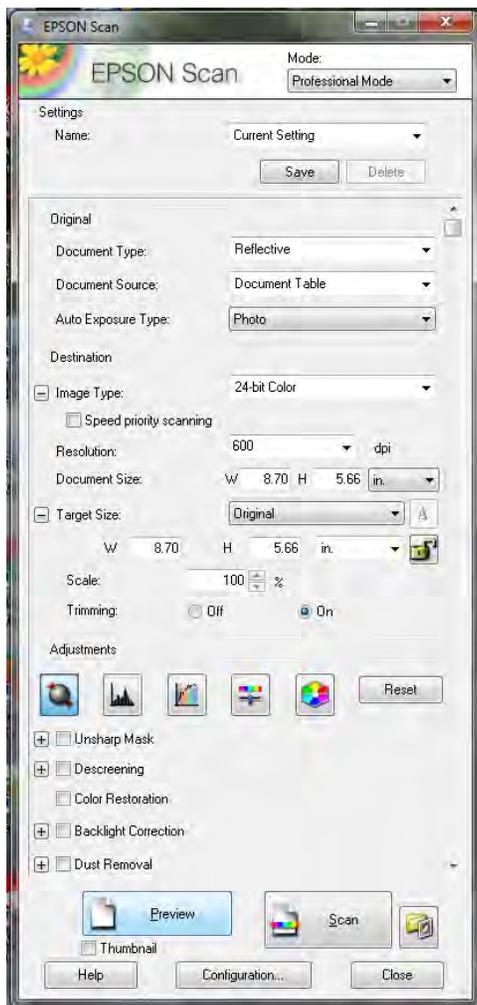
*Based on:* ALCTS Minimum Digitization Capture Recommendations, June 2013, <http://www.ala.org/alcts/resources/preserv/minimum-digitization-capture-recommendations>

# 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.



## Preparation and positioning documents



## Preview and image settings

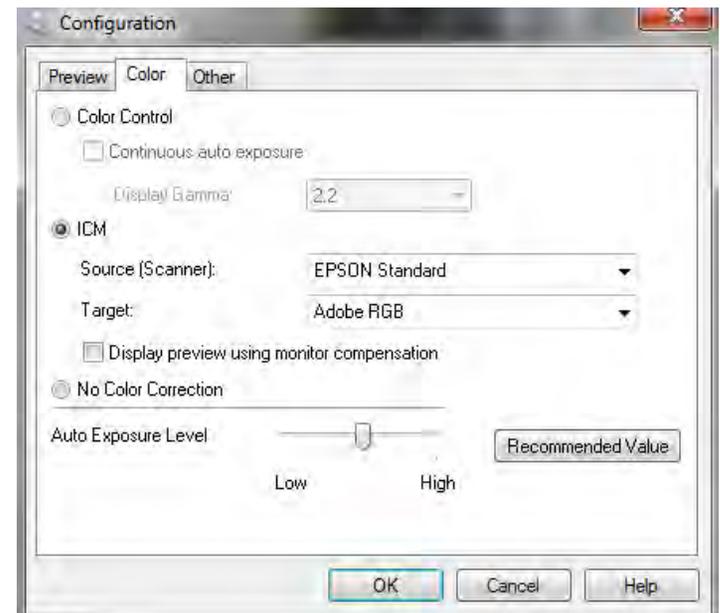
Auto Exposure  
**Off**



Auto Exposure  
**On**



Auto Exposure



## Color Settings

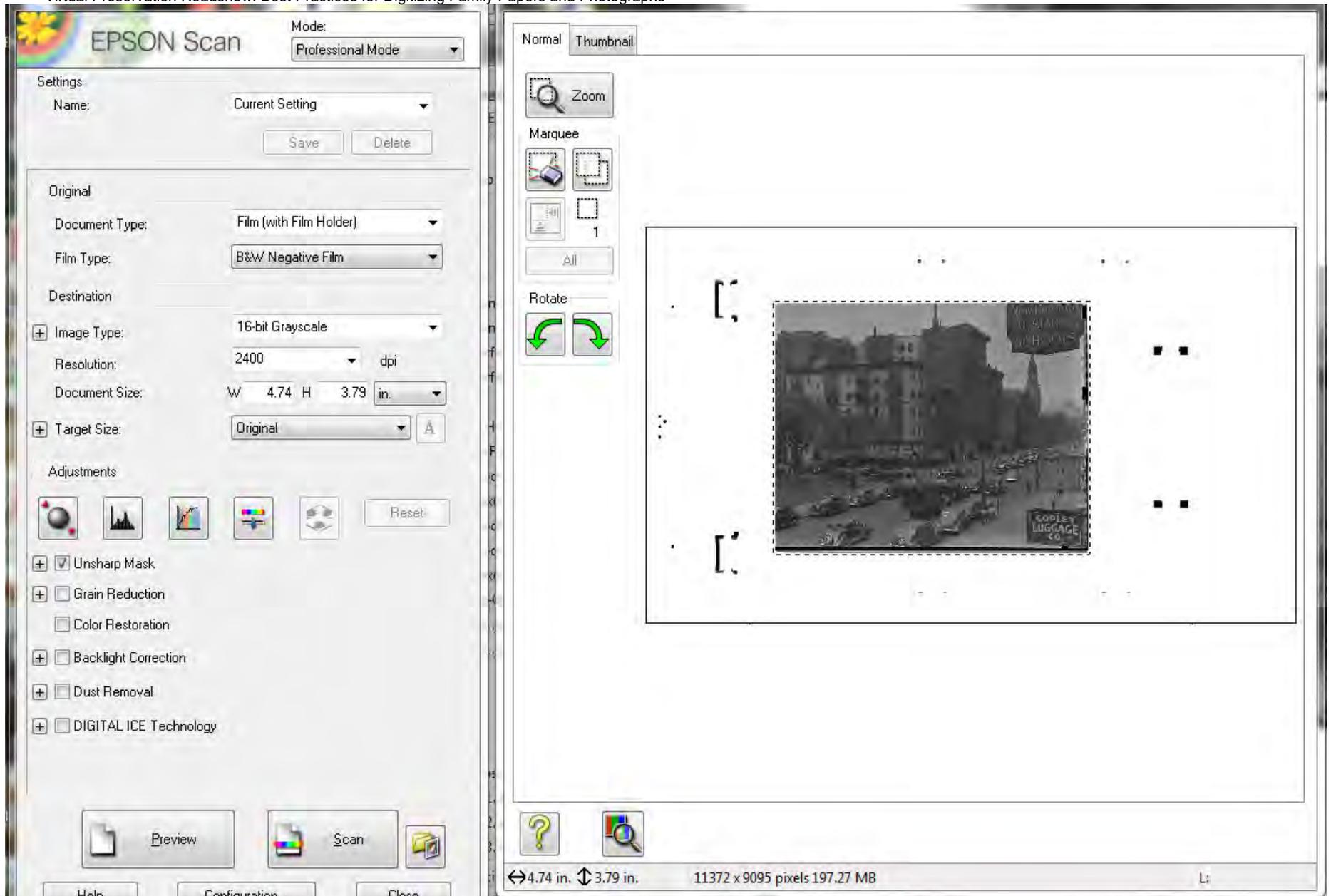
# Scanning Negatives and Film

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).

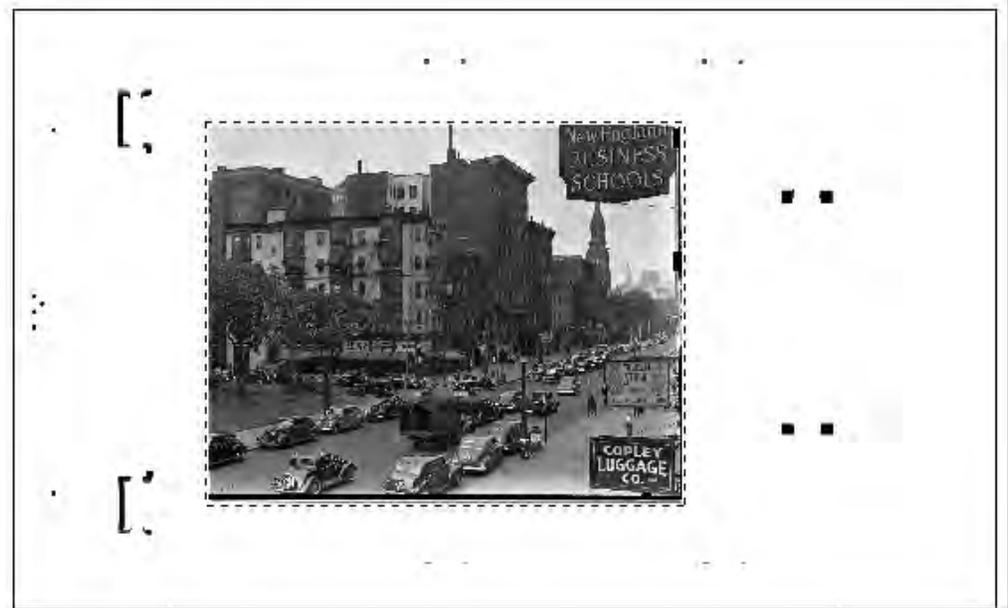
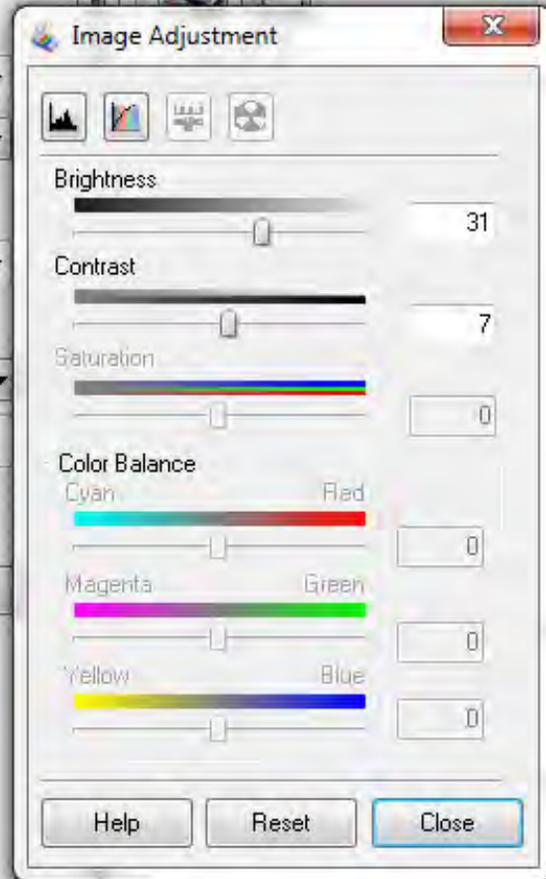
# Preparing the Scanner and Film

- 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.

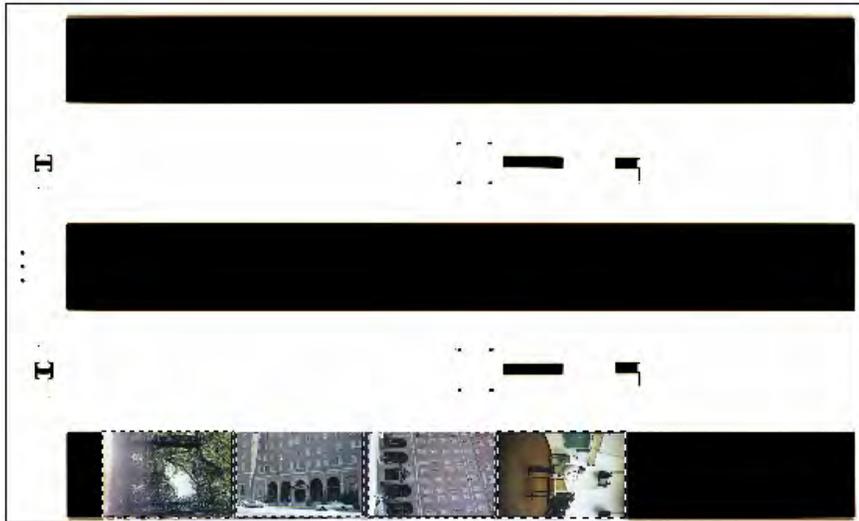




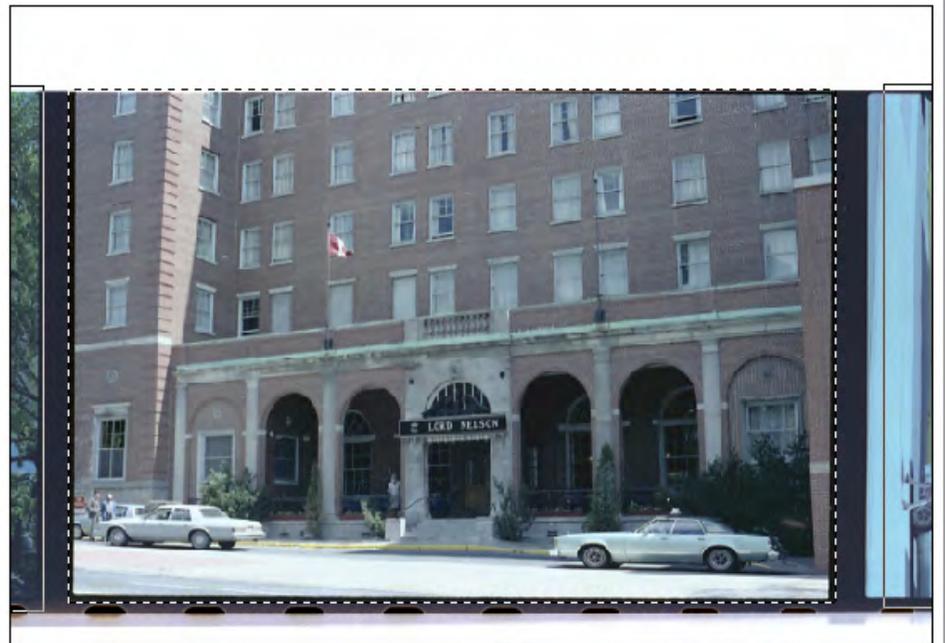
## Image Settings and Preview



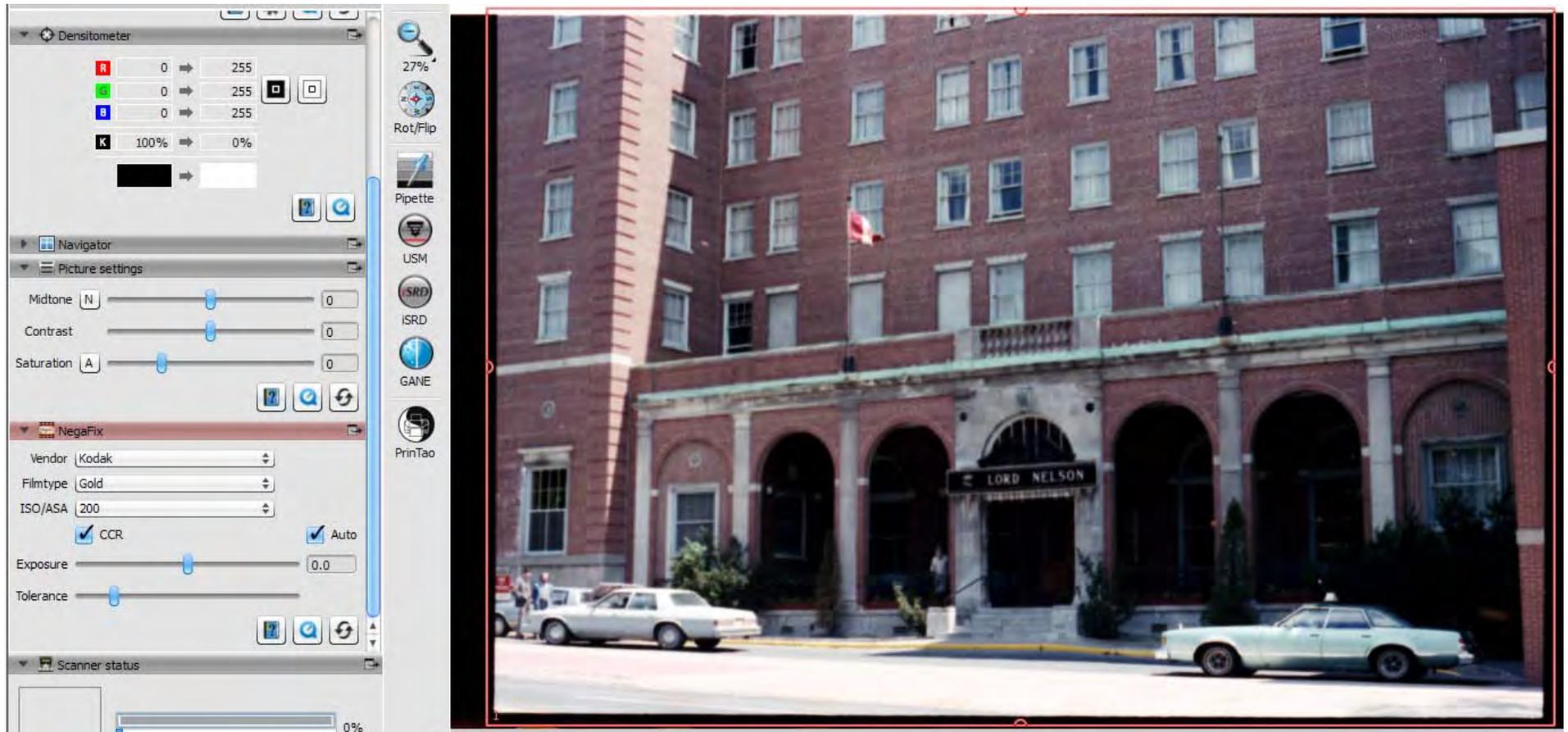
# Adjusting for exposure and color



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



## Adjusting color negatives



## Scanning color negatives in Silverfast

# 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.

# 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)

# Camera Basics



- Flash/no flash



- Exposure value (EV)



- Timer



- Camera scene modes



## 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

# 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

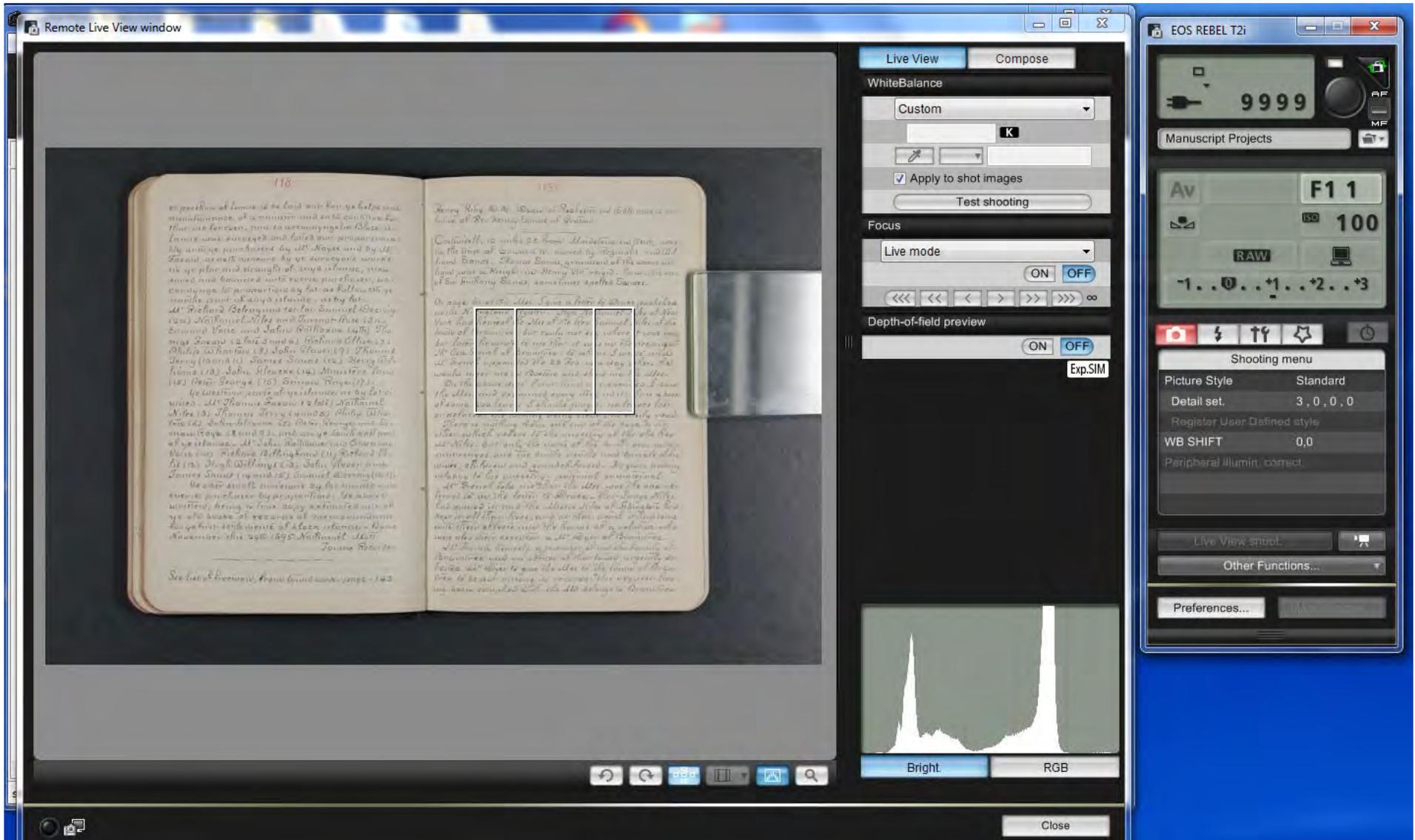
Source:

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

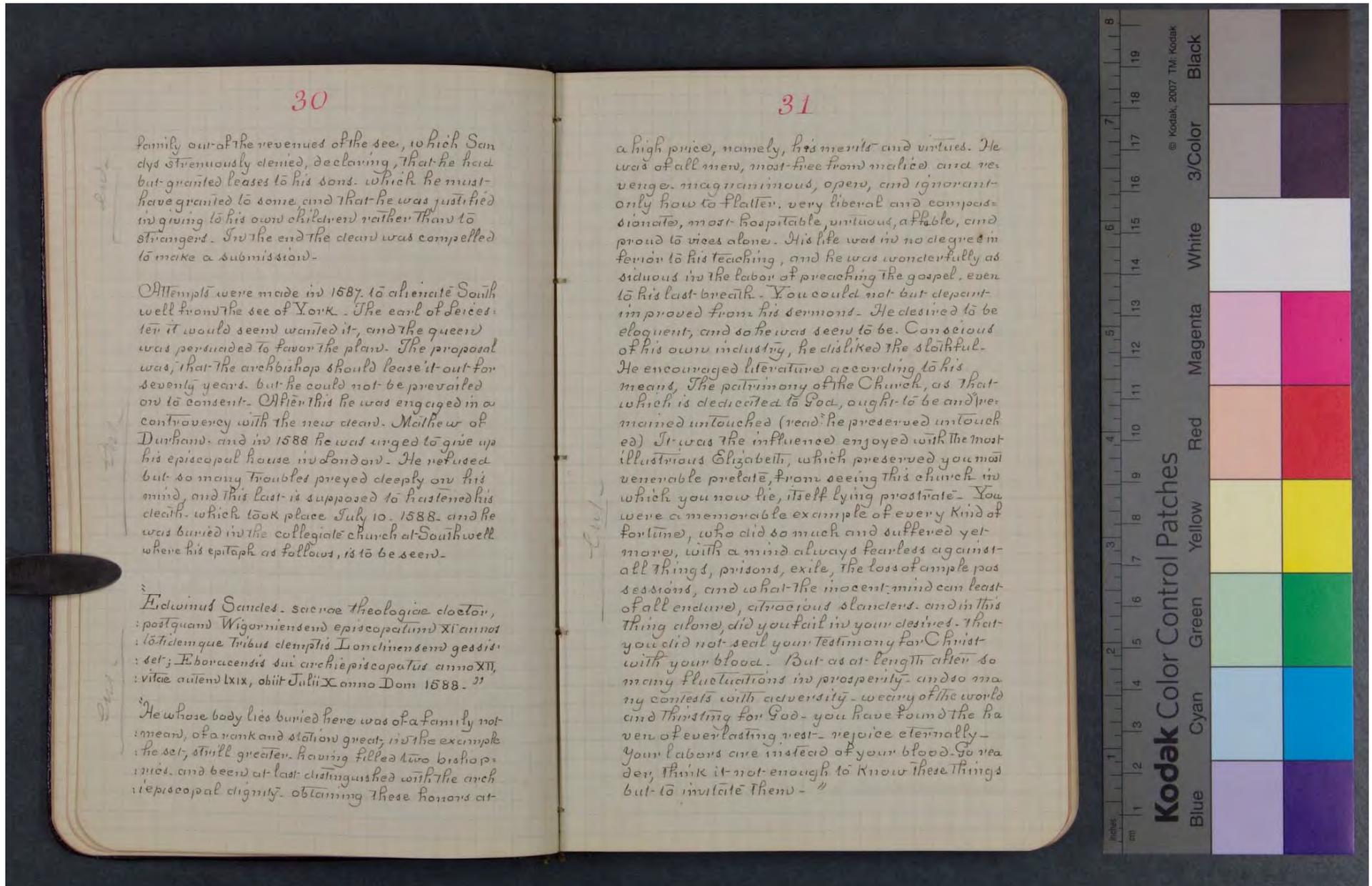




## Setting up document and camera



## Test exposure and focus



Sample image

# Imaging Cased and Framed Photographs

- Lighting and camera set-up depend on the size and shape of the objects.
- Experiment for the best results.



# Editing images

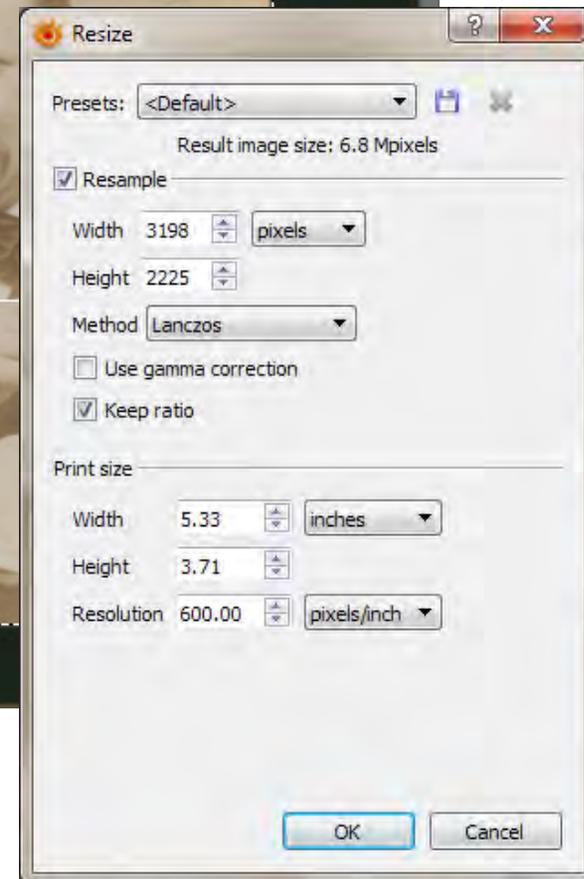
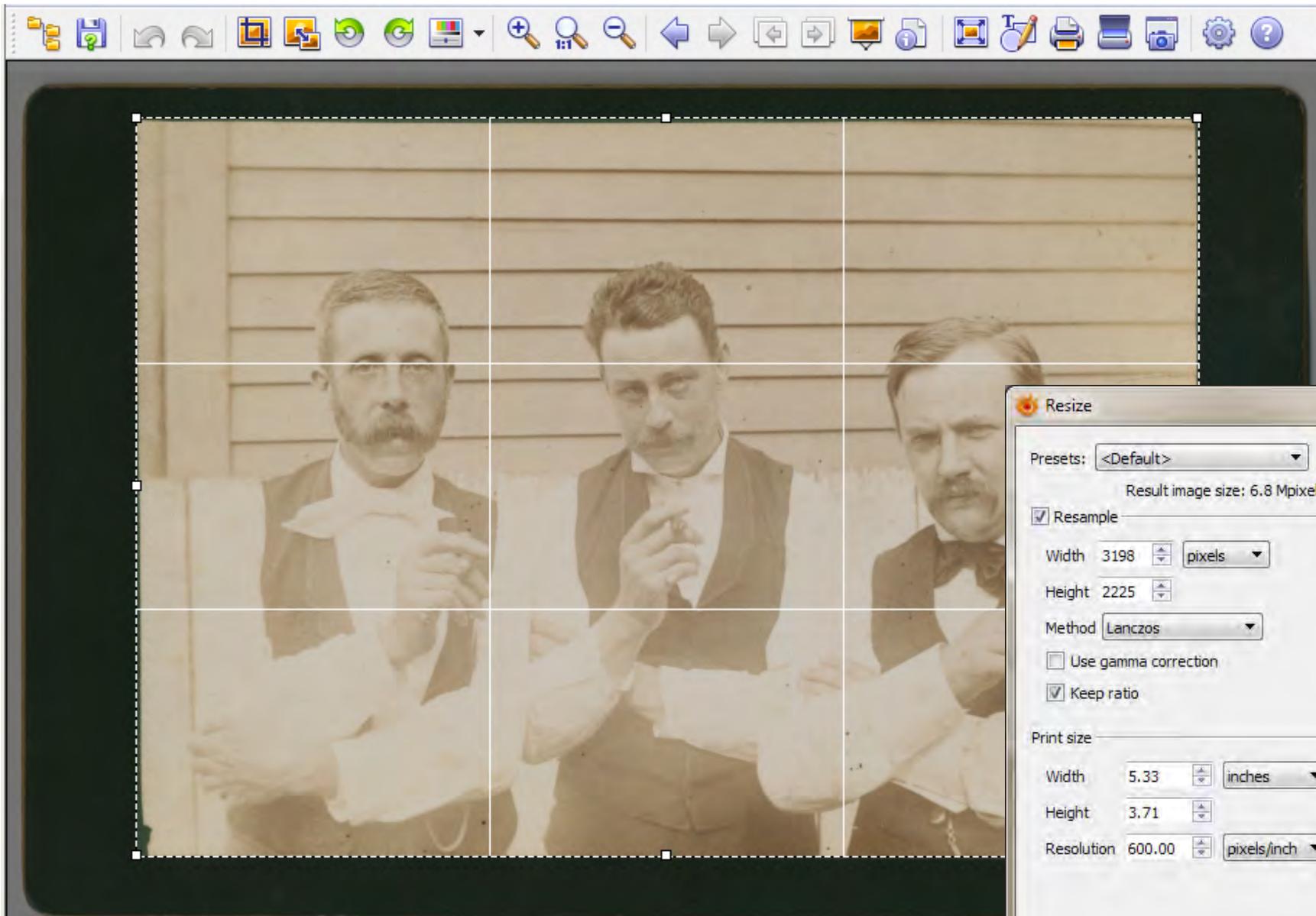
# Considerations

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

	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

	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](http://cnet.com) or [PCMag.com](http://PCMag.com)**



# Cropping with XnView

The screenshot displays the XnView application window. The main area shows a grayscale photograph of two men in suits, one holding a document. The 'Enhance colors' dialog box is open on the right, showing a preview of the image with color adjustments. The dialog includes a 'Presets' dropdown, a 'Preview' checkbox, and various sliders for Brightness, Contrast, Gamma, Temperature, Red, Green, Blue, Hue, Lightness, and Saturation. The status bar at the bottom of the window shows the file name '11 Mss1109-box06-fol169-01-1\_edit.jpg', file size '2.41 MiB', resolution '3198x2225x24 (1.44)', dimensions '5.33x3.71 inches', and zoom level '26%'.

Enhance colors

Presets: [dropdown] [save] [reset]

Apply to image

Preview

Brightness: [slider] -18 [reset]

Contrast: [slider] 33 [reset]

Gamma: [slider] 1.00 [reset]

Temperature: [slider] 0 [reset]

Red: [slider] 0 [reset]

Green: [slider] 0 [reset]

Blue: [slider] 0 [reset]

Hue: [slider] 0 [reset]

Lightness: [slider] 0 [reset]

Saturation: [slider] -100 [reset]

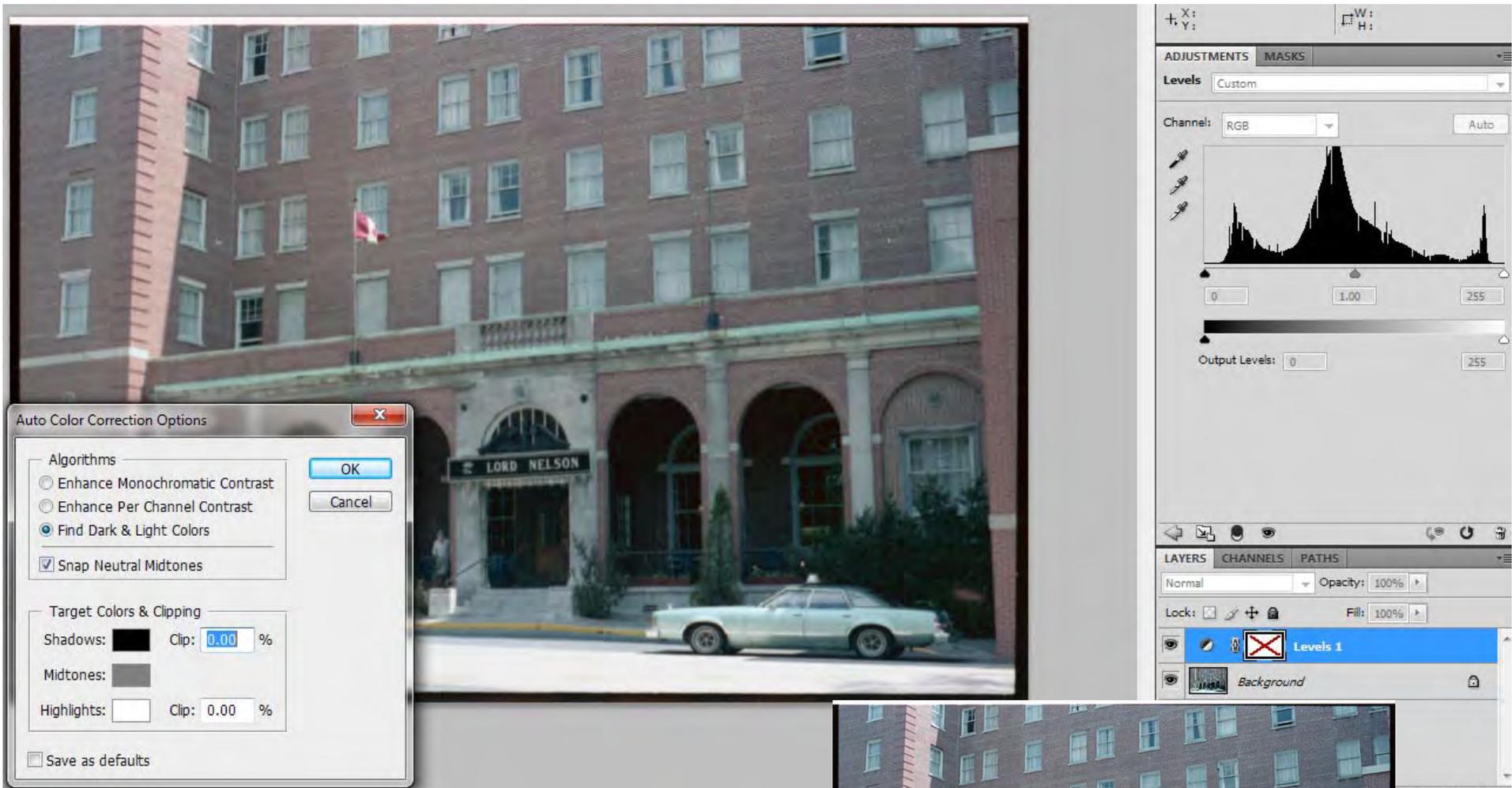
OK Cancel

11 Mss1109-box06-fol169-01-1\_edit.jpg 2.41 MiB 3198x2225x24 (1.44) 5.33x3.71 inches 26%

## Editing with XnView

# Tip

When adjusting an image, save it with a different filename.



## Color correction in Photoshop CS4

# Retouching and Repairs



Before



After

Tip

Ask for help if  
you need it.

# 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](http://www.nedcc.org)) also has conservators as well as imaging services.



# THANK YOU!

[AmericanAncestors.org/Education](https://AmericanAncestors.org/Education)