

Daguerreobase

Collective cataloging tool for daguerreotypes
and daguerreotype literature



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1. INTRODUCTION

Part of the information provided in the Daguerreobase is a visual representation (an image) of the daguerreotype itself. The general public is more than ever visually minded and also the researcher is helped by clear and good quality reproductions of the object. It is the aim of the Daguerreobase not to be limited to professional or institutional content providers, on the contrary we believe that private collections and collectors are a great added value to the Daguerreobase. While it is often the case that larger institutes have access to high quality digitisation technology and equipment or simply make use of external digitisation services, the private collectors and smaller institutes have to look for less expensive and easily accessible methods. Some of the current consortium partners will add content from other content providers and have to work on location, for example in the private collector's home. This document is primarily aimed at supporting the private collectors and smaller institutes with information for basic, easily transportable equipment and a simple procedure or method to create good quality digital images for use in the Daguerreobase.

This community guideline provides a method for contributors to be able to present a good quality image in the Daguerreobase. The more professional and institutional users will probably have the technical ability and knowhow to use more elaborate instructions like the one developed by the American Institute of Conservation of Art (AIC)² or the Smithsonian Museum Conservation Institute Imaging Studio methods for the digitization of daguerreotypes².

What level of skill and technology is required?

The inherent characteristics of a daguerreotype make it a difficult object to photograph. Flatbed scanners are not equipped for dealing with 3D objects. The housing or frame is an essential part of a daguerreotype and makes it a 3D object. A flatbed scanner has a limited depth of field and is therefore not able to capture the sharpness of the entire object. In addition, some folding daguerreotype cases will be damaged by being opened out flat on a scanner. These guidelines will therefore describe the use of a digital camera which has more possibilities to deal with the variety in objects. When using a digital camera, capturing a daguerreotype is not a simple question of point and shoot but with the right guidance it should be feasible for everybody to make a good quality image. This is exactly what this guideline is trying to achieve, to allow anybody to digitise daguerreotypes without investing in very expensive equipment. However to make a good reproduction of a daguerreotype some preparations are necessary.

² <http://cool.conservation-us.org/photo-ru/daguerreotype-documentation-workshop-the-state-hermitage-museum-october-18-25-2011/> ²
<http://www.si.edu/MCIImagingStudio/Projecthighlights>

2. PREPARATION

Daguerreotype characteristics

Compared to other photographic materials, daguerreotypes have characteristics that will disturb the taking of a straight camera reproduction or a scan (flatbed). Some of these typical components of a daguerreotype that can cause problems are:

- The polished silver layer on the plate acting like a mirror and giving unwanted reflections ;
- The direction of the polishing lines can affect the visual appearance;
- The covering glass can give reflections and can contain deposits on the inside;
- Applied gold coloured paint on the mat or a polished metal mat will give more reflections.

The characteristics of a daguerreotype are such that simply taking a quick picture is not enough. Fortunately, even for people without a sophisticated photographic studio with a little bit of preparation it is possible to make decent images of daguerreotypes. With the recommended equipment list the quality of the images will improve, not only for the Daguerreobase itself but also for use in other publications. As well as using the preferred equipment you will also need some skills in post processing the files and knowledge of how to use the appropriate software.

Equipment (hardware), minimal and preferable requirements

As a minimum you will need:

- Digital Camera

Although the images in the Daguerreobase will be 500x500 pixels, using a camera with 10 Megapixels or more will provide a master image with enough resolution to use in printed publications as well. A 10 Megapixel camera will provide an A4 size image at 300ppi;

- A non shiney black or grey background (for example velvet or cardboard).

A black or grey background will prevent glaring caused by a white background. The reflection of a white background tends to influence the appearance of the original;

- A black photo cube, tent or cardboard box³ (60x60x60cm). This is necessary to counter the reflective characteristic of the daguerreotype ;
- Two light sources (flashlight or lamp with daylight quality);
- Rule (inches and cm) to directly record the actual size of the object;
- Grey Card for adjusting the white balance of the camera;
- A colour chart:
 - X-Rite ColorChecker[®] 4, AIC Photo Documentation Targets (AIC PhD Targets)⁵ or QPcard⁶
- Tripod for the camera;
- Spirit level to set up the camera appropriately to prevent skewing of the images.

Preferable in addition:

- A DSLR, Full Frame camera with at least 10 Megapixels equipped with a macro lens. DSLR cameras have a bigger sensor size. This provides a higher quality image;

³ Some black tents or photo cubes are commercially available, example: A very simple method is to make a black box starting from an existing cardboard box. The inside of the box is covered with black velvet or black matt paper or even matt black paint that will prevent reflections in the daguerreotype and allow more controlled lighting. An example including an image is showed at the end of the chapter.

⁵The AIC Photo Documentation Targets were designed by photograph conservators Dan Kushel, Juan-Juan Chen and Louisa Cassella, and are produced by Robin Myers Imaging. The targets and instructions for use are available at: http://www.rmimaging.com/aic_phd.html

⁶ <http://www.qpcard.com/>

- A laptop or computer with Adobe Photoshop or similar software installed to assess the images during capture;
- A copy stand with two light sources or two separate light sources (flashlight or lamp with daylight quality);
- Cable release or remote control;
- A non-shiney grey background (velvet or cardboard); A black photo cube, tent or cardboard box (circa 60x60x60cm). This is necessary to help counter the reflective characteristic of the daguerreotype;
- Ruler (inches and cm) to directly record the actual size of the object;
- Grey Card;
- A colour chart:
 - X-Rite ColorChecker[®] ⁷, AIC Photo Documentation Targets (AIC PhD Targets) ⁸ or QPcard⁹

Basic steps

In order to create an acceptable quality image of a daguerreotype you will need to invest a little bit of time and expense to create a suitable environment to deal with all the characteristics that make it difficult to capture a daguerreotype. The following steps are the preparation to create a digitisation workflow:

- First you will have to make sure you have all the minimum or preferred equipment together.
- If you are missing anything you will have to decide how to acquire it (either make it or buy it).
- Do a test in your own home. Set up everything and get comfortable with all the steps and setting up of the equipment.
- Adjust the lighting to reach the goal as described in 5.1.4 *Saving and adjusting Digital Images*.

⁷ http://xritephoto.com/ph_product_overview.aspx?catid=28 X-Rite ColorChecker[®] Series Targets are the professional photographer's reference to ensure predictable standards under every lighting condition. Capture accurate colors from the beginning to minimize tedious trial and error color adjustments and achieve true-to-life color.

⁸The AIC Photo Documentation Targets were designed by photograph conservators Dan Kushel, Juan-Juan Chen and Louisa Cassella, and are produced by Robin Myers Imaging. The targets and instructions for use are available at: <http://www.conservation-us.org/index.cfm?fuseaction=Page.ViewPage&PageID=1520>

⁹ <http://www.qpcard.com/>

3. Positioning of the camera, light source(s) and daguerreotype

The daguerreotype plate is essentially a mirror, so it will reflect lights and the camera and these will distract from the image on the plate. This is the reason why you will need to use a shield or enclosure around the daguerreotype. A few basic examples will be given but the important thing to note is the fact that it is not practical to use daylight for illumination. By removing the possible sources of reflection you are also removing the chance to use available light (like sunlight from a window, or ceiling lights). In order to have enough light to make a good image you will need to provide sources of artificial light. To create a good and effective lighting situation you have to employ two light sources with identical output (preferably daylight equivalent light sources). These two light sources are set up at the same distance from the object, with an incidental lighting angle of approximately 35° to 45° from the horizontal.

This first step is to remove reflections from the surroundings and to avoid reflections of the camera in the daguerreotype. To do this you have to install a piece of matt black board or cloth with a circle cut out from the centre to accommodate the diameter of the camera lens in front of the camera. The circular opening should be just a little larger than the lens. If the edges of the opening show as white board this should be coloured black using a black marker pen. Any lettering on the front of the lens that could give a reflection should be coloured black with a felt tip pen or taped over with black masking tape.

To prevent geometrical distortion of the image you have to position your camera in parallel with the surface of the daguerreotype. Use a spirit level to align the camera and the imaging surface. If your camera has the ability to display grid lines you may find it helpful to use them. Ensure that at least one border (left) of the daguerreotype aligns parallel with the gridlines or the edge of your display. If there is a distortion in your image it is also possible to correct this afterwards using image enhancement software such as Adobe Photoshop or GIMP.

In the next two steps we will describe how to set up your equipment at the minimal level and at the preferable level.

Setting 1. Using a tripod

You need a tripod or similar stand to photograph daguerreotypes. Even if you remove all the possible sources of reflection and use artificial light to capture the daguerreotype image you will not get a consistent or good quality result if you shoot hand held. When using a tripod it is important to get the legs of the tripod out of the way. This can be achieved by installing the tripod in an angle with two legs made shorter and one leg longer. Make sure you secure the long leg of the tripod to prevent it from tipping over. Make sure the camera is parallel to the board. Use your spirit level to adjust the camera.

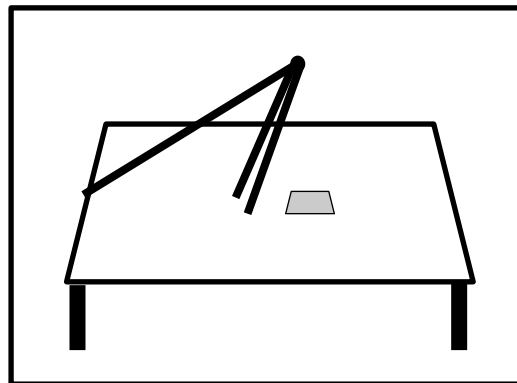


Image 3.1, Setting for a use with a tripod

Setting 2. Copy stand

This setting shows a classic copy stand with two adjustable lamps.



Image 3.2, copy stand with adjustable camera and lamp positions

Camera and lamps

When using a copy stand, the camera will be mounted on the stand. Make sure the camera is parallel to the board. Use your spirit level to adjust the camera. Adjusting the lamps to the right position will avoid reflections of the lamps being seen in the final image. With the setup shown the camera and lens will be reflected in the daguerreotype. To avoid this reflection the sheet of black card mentioned on the previous page has to be positioned around the camera lens. Another option is to cover the camera with a tent or cube made of black textile, with an opening for the lens, see images 3.4 and 3.5.

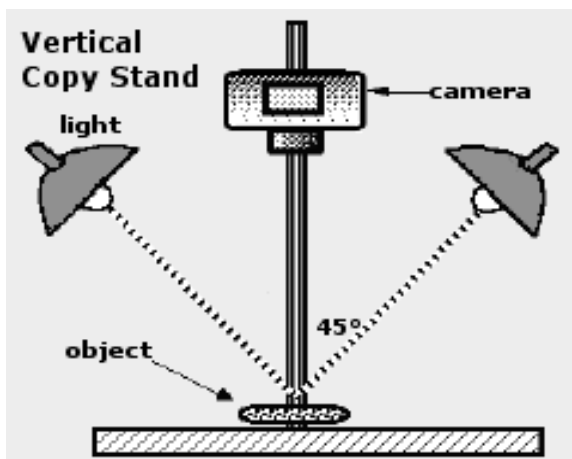


Image 3.3 Position of lamps and camera ¹⁰

Setting 3. Black photo cube / photo tent

¹⁰ www.gaksin.com

iF64
iF64 STUDIO



Image 3.4 and 3.5, photo cube and photo tent.

The images above show two types of pliable lightweight tents or cubes. You can make a tent by yourself using black cloth or even better, black velvet. Leave opens for your camera (top or front) and light sources (side left and right). Use a grey coloured background instead of a white one. The camera should be mounted on a tripod for stability and exact positioning. The use of a remote control or cable release will prevent unwanted vibration of the object and camera during the capturing process. You will probably need a support for the daguerreotype on the back of the cube or tent.

Setting 4. Morten's 'black box'

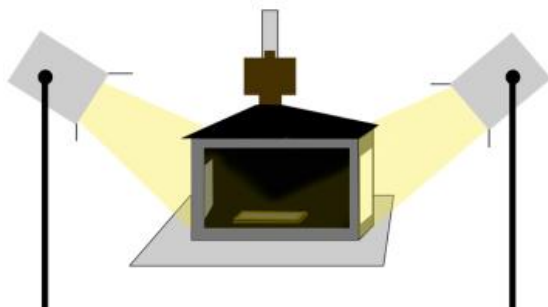
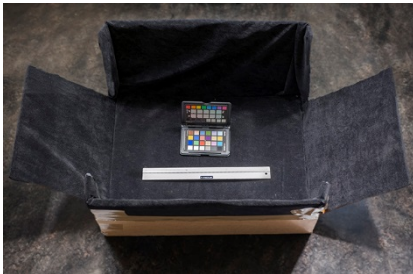


Image 3.6, 3.7, 3.8 and 3.9, photograph and sketch of Morten's black cardboard box ¹¹

Daguerreotypes

¹¹ Image supplied by Morten Heiselberg (UiB, Norway)

Daguerreotype plates almost always have polishing lines that run parallel to one of the plate edges, so before you take the picture, try rotating the daguerreotype by 90° to determine the polishing direction. If the lamps are aligned with the polishing lines, the image will appear crisp and clean, but if the polishing lines are perpendicular to the lamps, the image will be matt and hazy.



Images 3.8 and 3.9, the effect of direction of the polishing lines. Left image: lighting perpendicular with the polishing lines. Right image: light aligned with the polishing lines (ME_63, portrait of Frank Jacob Diederik Anne Kuil van Trojen, Museum Enschedé)

Reference materials

Include a colour target and a ruler in the image. The ruler should include inches and centimetres and will be positioned next to the daguerreotype object. Always keep a small gap between the object and the ruler and the colour target to avoid creating a shadow. The colour target allows you to carry out accurate post processing (controlling RGB values of the digital image) in order to create more consistent quality images. We will provide a PDF document¹² containing a ruler for you to print on paper.

When photographing larger numbers of objects and objects from different owners or collections, it is advisable to include identification labels that contain the owner's or collection name and a registration/reference number (if present).

¹² [Link to ruler](#)

4. Capturing the image

Camera settings

- Set your camera to the highest quality possible (preferable RAW or Fine quality Jpeg);
- Turn off the camera's internal flashlight;
- Turn off the digital zoom because this will decrease the quality of the image;
- Select a low ISO setting (usually ISO 50, 100, 200)
- Use Auto White balance, White balance for flashlight or Custom White balance using the grey card as reference if your camera allows it.
- Do not use the AUTO or P mode on your camera. Use A, Av/Tv or M instead and choose a small aperture. For very small images, such as daguerreotype jewellery, you may need to use the macro setting.

Arrange the rule, colour chart, reference number and daguerreotype in close proximity to one another so as to fill the camera frame. Ideally the colour chart should be positioned so that it can be cropped off at a later stage. With folding daguerreotype cases that do not easily open out flat you will need to use a small support to hold the cover in position. This will prevent the hinge becoming strained and allow the daguerreotype to lay flat. The support can usually be hidden beneath the cover so that it does not show in the image. Centre the arrangement in the viewfinder or display and adjust the distance from the camera in order to fill the frame. Focus the camera until the daguerreotype image becomes sharp. Reflections of the glass, particularly if there are glass deposits on the inside can disturb the image sharpness by interfering with the camera's autofocus. If you are shooting a series of daguerreotypes which have the same dimensions you should turn off the autofocus if your camera allows it (since your camera is mounted on a tripod or copy stand the focusing distance will always be the same and there is no need for refocusing until you change to another size of daguerreotype) and focus by hand. If you are shooting in RAW mode you will need to process your images in a program like Adobe Photoshop.

Required Images

All daguerreotypes should be photographed in their housing from the front and back side (recto and verso) with their housing being included in the image. Consequentially, there will always be at least two images available for each record. If needed, more images may be added to show the sides or particular details of the object.

Some types of housing, such as hinged cases, do not open fully and will need more than two images. As a minimum photograph the case recto, case verso, inside lid (left) and inside tray (right), making a total of four images. An oblique shot showing the relative depth of the two halves of the case and any decoration on the sides would also be helpful.



Image 4.1, Captured image from the recto, including rule and colour checker (HM02, portrait of Eduard Fxx)



Image 4.2, Captured image from the verso, including rule and colour checker (HM02)

5. Saving and Adjusting Digital Images

The table shows a comparison of current digital file formats and their preferred use for each stage of the digital imaging workflow.¹³ This table lists the best options, even for use at the minimal level.

To follow these recommendations, no special or professional equipment is required, just a willingness to read the recommendations and choose a good option.

<i>Format / Use</i>	<i>Capture</i>	<i>Working</i>	<i>Delivery</i>	<i>Archiving</i>
JPEG	Yes	No	Yes	Maybe
TIFF	Maybe	Yes	Yes	Yes
PSD / PSB	N/A	Yes	No	No
Proprietary Raw	Yes	Yes	Not Best Practice	Not Best Practice
DNG	Yes	Yes	Maybe	Yes

© dpBestflow

Steps to follow:

- Download images from the camera to the computer;
- Rename image files;
- Always keep the original digital file (preferably the RAW or DNG file, or the high res jpeg/tiff) and make a duplicate copy in a separate folder to adjust to the required quality for the upload;
- Apply colour management to the copy file;
- Crop the copy image file to remove the colour target;
- Resize the digital image to 500x500 pixels for the upload in the Daguerreobase;
- Name and save the copy file.

We strongly advise using the DNG¹⁴ digital format to store raw file data.

Why convert to DNG?

- DNG is a standard, openly documented format;
- DNG is suitable for archiving image data since it is an open source format;
- DNG contains information about the camera that made the file and how the file needs to be processed (interpreted).

This means that if you use a newly released camera with newly released proprietary RAW format files that are converted to DNG, these DNG's can be processed in any older software that supports DNG processing.

¹³ Table downloaded from <http://www.dpbestflow.org/file-format/file-format-overview>

¹⁴ DNG Digital Negative (DNG) is the most important file format for image storage. The DNG format preserves the original raw sensor data just the same as the proprietary raw files.

File naming

Naming digital image files is a key organizational task in digital image workflow because it is the most basic element of your file system structure. Digital cameras do not currently have very sophisticated naming options and the default names are confusing and lack one of the most important criteria for digital image file naming; each file name must be unique. If your organization has a preferred system, you can ignore the following proposal for file naming.

- Letters should only be the letters of the Latin alphabet, with a preference for capital letters (A-Z);
- Avoid the use of any spaces in the file name;
- The only non-alphabetic characters used should be hyphens and underscoring;
- Avoid any other punctuation marks, accented letters, non-Latin letters, and other non-standard characters such as forward and back slashes, colon, semi-colon, asterisks, angle brackets or brackets;
- File names should end in a three-letter file extension preceded by a period, such as .JPG, .TIF, .DNG, etc.

It is advisable to use the name or initials of the organisation or collector at the beginning of the file name. If the objects that were photographed have identification numbers, consider incorporating these numbers or the main characteristics in the file name, but keep in mind that you are limited to 31 characters. Short names will work best. Each digital image file should have a unique file name, if you duplicate a file name the existing image will be overwritten, unless your computer prompts you to confirm the overwrite.

We propose the following template for naming the files: XXX_YYYY-ZZZZ.JPG

- XXX = the owner or collections abbreviation, for example Nederlands Fotomuseum will become NFM.
- YYYY = sub-collection, identification number, material or technique, year of acquisition, date of capturing ...
- ZZZ = a sequence number, normally you will know the number of objects that you will photograph. This number can begin at 01, 001, 0001 depending on the expected quantity;
- Ending with the file format extension.

Some examples:

NFM_20130401_0021.DNG; FMA_P_1973-235.TIFF, PKL_G-60204.JPG

Colour accuracy

Creating an image which is colour accurate begins with the right white balance. This means there are no colourcasts or hues in the image. The colours should appear neutral. This can be achieved by incorporating a neutral grey card in the image and using the Custom White balance in the camera to adjust it accordingly or to shoot in RAW mode and adjust the image in Photoshop.

To make sure all the information is retained in the image you have to make sure the image will not be overexposed nor underexposed. Most DSLR cameras have the ability to show a histogram during capture. This will show you the highlights (overexposure) and the shadows (underexposure). Adjust the power of your lighting to fit within the histogram. If you cannot adjust the power directly then moving the lights closer or further away will achieve the same result. If you have the option of using a computer during the digitisation of the daguerreotypes you can check the RGB values on your colour target in Adobe Photoshop. They should be between:

- white: no more than 242 in any of the RGB channels
- black: no less than 33 in any of the RGB channels

Color space for image editing

If your camera allows it, you should set the colour space to Adobe RGB. Photoshop gives you several choices to use as a working space. In general, you should be working in one of the wider gamut spaces, such as Adobe RGB (8 and 16-bit), eciRGBv2 or ProPhotoRGB (16-bit).

Cropping for Daguerreobase

After adjusting the colour, the image can be cropped by cutting away the rule and the colour chart. You should end with images similar to those shown below.



Images 5.1 and 5.2, Cropped images from the recto and verso (HM02, portrait of Eduard Fxx).

Overcoming limited depth of field

Although a digital (SLR) camera has advantages in controlling the depth of field there can be limitations due to the equipment you have at your disposal. These can be caused by the lens you are using and the distance to the object. Usually, using a small aperture and focussing on the nearest point will provide enough depth of field to avoid problems. However, if this is insufficient it is possible to make several images with different focal points and combine these using software such as Photoshop. This technique is called focus stacking. Make sure you are not moving the camera if you are going to use this technique. The technique works by overlaying images with different focal-points. By blending this stack of images together the software will create an image using all the focal-points and create an image which is sharp throughout. This technique needs some understanding of how to use proprietary software.

Resolution and Upload quality, File type and number of pixels

The demands for presenting images in the Daguerreobase is not very high. The images need to be converted/compressed to jpeg. Use JPEG (compression 10) as a delivery format for the Daguerreobase. Adjust the dimensions in centimeters of the digital file to match the dimensions of the original. The original size is then saved in the header of the file and can be read by different software. Adjust the pixel size relative to the size of the daguerreotype, to 500 x 500 pixels. As the images you will capture will not be square, adjust the longest side of the image to the required number of pixels. This should automatically adjust the shorter dimensions. You can adjust the resolution to 150ppi to make the file size smaller but make sure the

dimensions are not changing. The images will be mainly used for viewing on a computer (or phone, tablet, etc.) and with the currently available quality of the screens, the above mentioned resolution in number of pixels will create the best affordable image quality without being high enough for print publication. Larger files will need more storage capacity and will slow down viewing of the images.

If you want to use your images for printing as well (in books, articles, etc.) the widely accepted resolution is 300ppi. If you are going to use the full capacity of a 10MP camera (3.872 x 2.592 pixels) you can capture an original size of 32,7 x 21,9 cm at 300ppi. Smaller items will have a higher resolution and larger items will have a lower resolution. If you want to make sure your image is an exact representation of the size of the original you have to change the dimensions in your imaging software. You can change the resolution to make the file size smaller but this is not really necessary.

The following table shows the pixel size needed to reproduce a 1:1 (actual size) copy at different resolutions.

plate	plate size				digital image size					
					screen				printing	
	inch		cm		72 dpi		140 dpi		300 dpi	
16th	1,375	1,625	3,5	4	100	118	200	236	417	492
9th	2	2,5	5	6	145	182	290	364	606	758
6th	2,75	3,25	7	8	200	236	400	472	833	985
4th	3,25	4,25	8	11	236	309	472	618	985	1288
half	4,25	5,5	11	14	309	400	618	800	1288	1667
full	6,5	8,5	16,5	21,5	473	618	946	1236	1970	2576

6. More information

An optional, but very useful method of documenting the daguerreotype surface, tarnish and other damage, is to photograph a daguerreotype in specular light, i.e. the light bouncing off the surface of the plate. Below you can see an example of this. The image left is a standard frontal capture, the image on the right is the result of specular lighting (photographs supplied by Martin Jürgens, Rijksmuseum Amsterdam).



Image 6.1 and 5.2. Standard frontal illumination (45° from left and right) and specular illumination (using a sheet of glass at 45° between the camera and the object).