

# Digitising Glass Plate Negatives (GPN)



Digitising Glass Plate Negatives (GPN) is sometimes seen as difficult. In reality, it is simple and cheap, and results in large, usable images of superb quality. You will be amazed at the results.

As every negative is unique, these negatives may well contain scenes and people revealed for the first time, often in glorious fine detail. Who knows what hidden treasures you may have in your collection?

**Philip Moorhouse**

## Introduction

What equipment will you need, and how can you digitise your negatives? This article covers:

1. Cleaning and handling of GPN
2. Lightbox selection and usage
3. Step-by-step procedure for taking photographs of the GPN
4. Photo-editing software to convert your negatives into useable positives

## 1. Care and Handling of GPN

This is an article about digitising your Glass Plate Negatives (GPN), **NOT** an article about care, conservation, storage or restoration of GPN. If you need information on these matters, seek specialist advice. There are also MANY resources available on the internet.

Be careful when handling GPN. It is not good to carefully place a stack of GPN down on the workbench, and hear a soft “crack”, because you just put the stack on top of a pencil. This may or may not have happened to someone I know.

In broad terms:

- **Workflow** - take your time, with planned movements and a careful workflow when handling them.
- **Sharp edges** – careful! The edges were just scored and snapped, so they are sharp, and rough.
- **Gloves** - will protect your fingers as well as the GPN. They need to be tight – latex works well. Cotton is not recommended as it is slippery, and fibres snag on the rough edges of the glass.
- **Storage** - is beyond the scope of this article. But briefly, they should be stored in individual 4-fold open envelopes, upright on their long edge. Do not stack flat, as it puts lower ones under a lot of pressure. They are heavy - do not place more than one layer on your shelving, even if there is room.
- **Handling** - never hold a GPN by its corner. That puts a lot of pressure in one place, and you may be left holding the corner while the rest of the GPN breaks off. Best is two hands, on opposite edges of the GPN.

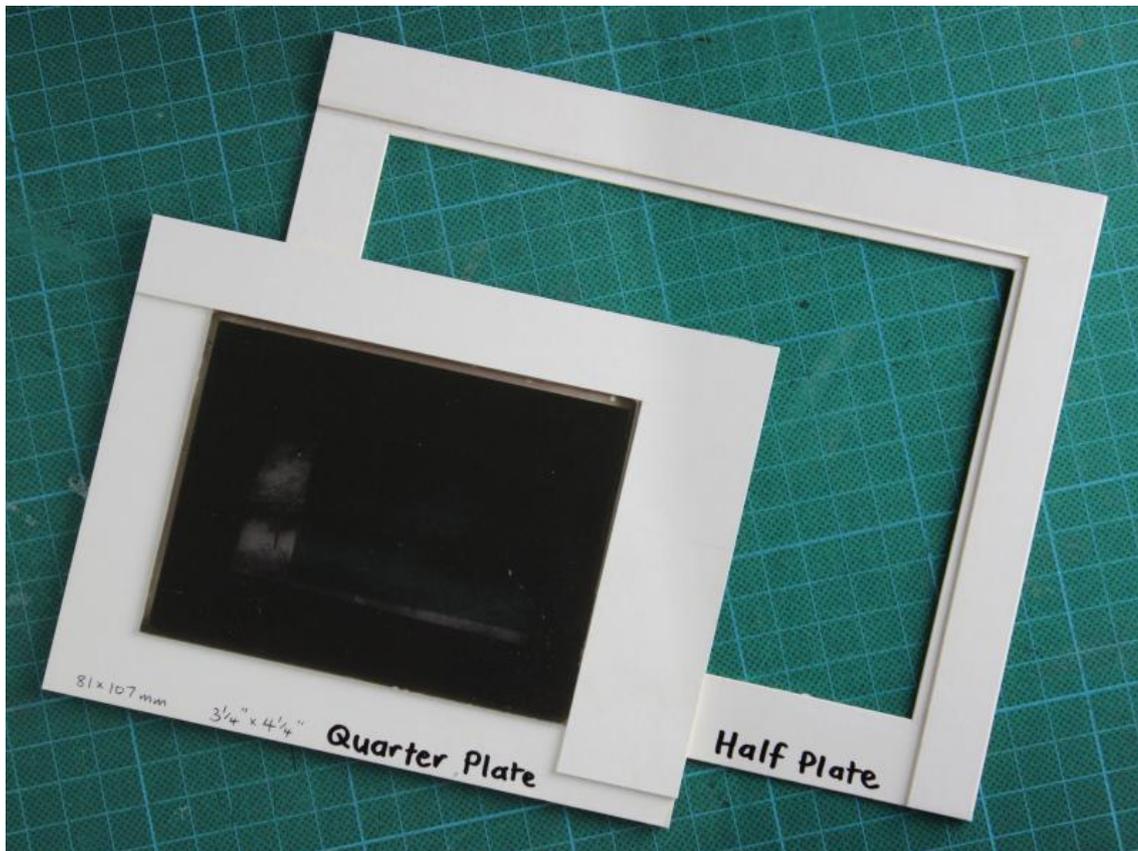
### Types of Glass Plate Negatives

- **Types** - there are two types of GPN: a) Collodion Wet Plate process – (1850s – 1880s), and b) Silver Gelatin Dry Plate – (1880s onwards). You should determine before you begin which type of GPN you are handling.
- **Sizes** – there are many sizes, although Half Plate and Quarter Plate are fairly common.

## 3. Cleaning Your GPN

There are two sides – the dull emulsion side containing the negative image, which can easily be scratched and damaged. The other side is plain glass, and should be smooth and shiny.

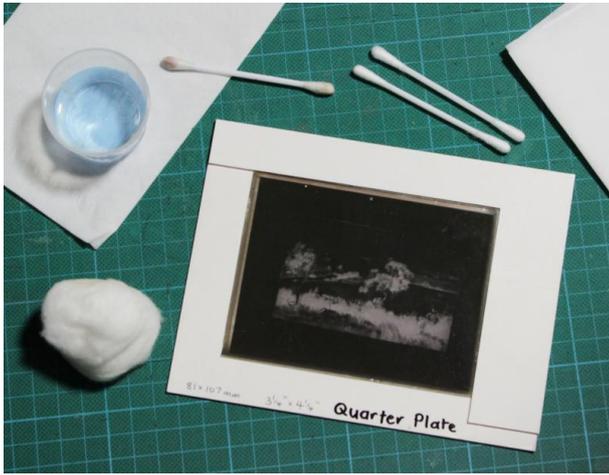
Cleanliness is very important. The GPN are likely to be dirty, and secondly, the storage box may have grit in the bottom. It is easy to accidentally put a GPN, emulsion side down, on a dirty surface, then create a scratch. Or a tiny shard of broken glass or grit may get sandwiched between two GPN and scratch them every time they move.



One method of cleaning is a cleaning frame:

### Cleaning Frame Instructions

- Cut a piece of 2mm card into a rectangle:
  - the outer dimensions should be 30mm wider than the GPN on each of the four sides
  - the inner window should be 2mm smaller than the GPN on each of the four sides
  - example - if the glass plates are 100mm x 125mm, then the rectangle of card should be 160 x 185mm, and the cutout 96 x 121mm
- Cut an "L" shaped piece to fit along two sides.
- Glue the "L" down with a setback of the 2mm allowance, creating a tiny ledge and step. If your GPN are irregular in size, you may need to allow a larger allowance (eg 3-4 mm), and a smaller window.
- Place the GPN on the cleaning frame, glass side up, and emulsion side down. Carefully check that it sits with a 2mm support on all 4 sides, with the emulsion side lifted 2mm off the work surface.
- Wedge it tightly against the "L" with your thumb in the opposite bottom corner as you clean, so it cannot move.



### **Cleaning the glass (non-image) side;**

- position an angled light overhead (eg a portable desk lamp) so in the reflection you can see all smudges, fingerprints and so on.
- any smear-free glass cleaner will work (eg Windex, iso-propyl alcohol, slightly diluted methylated spirits etc)
- do **NOT** spray or apply the cleaner directly onto the glass. It may run over the edge, and capillary action will draw it onto the emulsion side.
- Some people use a cotton ball, but I prefer a cotton bud, as it is easy to dip the tip in the cleaner, then gently rub the cotton bud on the glass. The overhead light will easily show where you are applying it. You can control the pressure precisely, and you can see when the tip gets dirty.
- Then gently wipe with a lint free cloth or kitchen paper towel. The cardboard "L" is approximately the same height as the GPN, so it is easy to wipe up to and over the edge in smooth strokes.
- You may need several applications, and perhaps a scalpel to remove any hardened, stubborn residue.

### **Remove dust from the emulsion side**

- in general, do NOT clean the emulsion side, other than a soft photographic brush to wipe loose dirt and dust.
- some liquid solutions available in photographic stores claim to be safe for cleaning emulsion sides. Speak to a conservation specialist before trying to clean an emulsion side.

Clean **all** the GPN in batches, rather than one at a time as you photograph them. Often a discoloured or damaged GPN will still provide excellent images.

## 4. Using a Lightbox



### Purchasing a lightbox

Tablet lightboxes are readily available - they are used for tracing sewing patterns by crafters, and drawings by artists. Check eBay for a huge range, or craft and art shops. There are many sizes, prices and qualities.

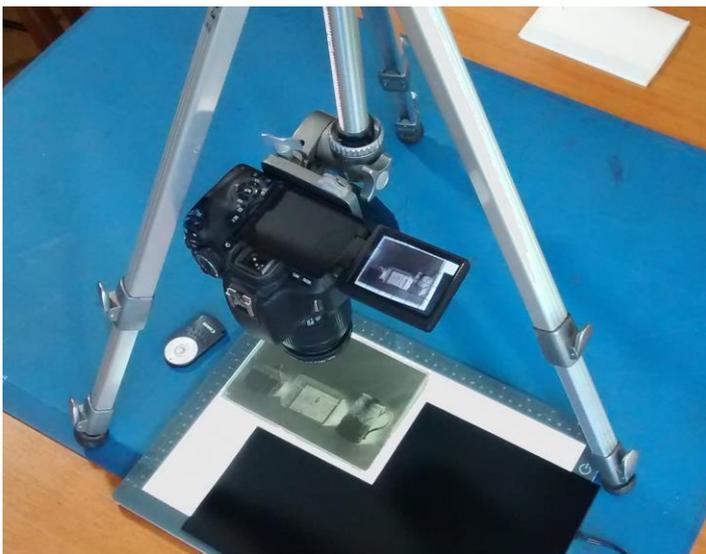
- **Size** - A4 size will be more than sufficient for almost any size GPN.
- **Lighting** – LED lighting is highly recommended. Try and find one with daylight or cool white lighting, so it is as colour neutral as possible.
- **Quality** – with cheaper models the illumination may not be entirely even, or there may be a slight flicker. However, there is **NO NEED** for the highest quality specialist photographic lightbox; these are designed with very accurate colour calibration for colour transparencies and negatives. You do not need this because you are only working in black and white.
- **Price** - as a price guide, I paid A\$120 for my A4 lightbox. They range from about \$40 to \$400.

## 5. Using a camera stand or tripod

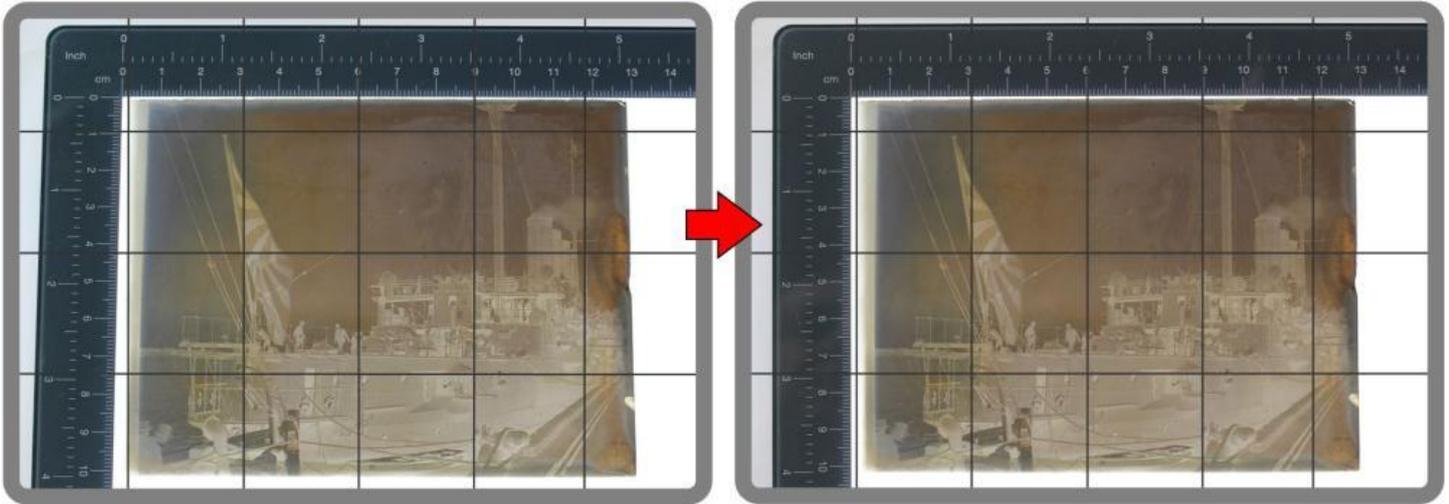
You will need a stand or tripod to mount your camera on – essential to avoid camera shake, ensure it remains accurately focussed, exactly parallel to the GPN, and identically positioned so you can do a complete batch of negatives. There are several options:

- Tripod with horizontal arm (or boom pole). This is the method illustrated in this article
- Tripod with reversible centre post, so you can set up the camera under the three legs of the tripod.
- Copy stand
- Some other form of mount attachment

## 6. Setting up the shot



- Place the camera on the tripod (or stand) in the approximate correct position.
- Place the lightbox in the approximate correct position and turn it on, at full illumination.
- Place the GPN, emulsion side UP (so the image is back to front) either in one corner of the screen, or use some form of jig (eg a cardboard "L" taped to the middle of the lightbox), so that every GPN in the batch will be in an identical position.
- Turn off all other lights, to avoid unwanted glare and reflections.
- Cut a piece of black card to mask off excess light from the rest of the lightbox.



## Keystoning

It is critical that the camera is exactly parallel with the GPN. If it is not exactly square on, you will get keystoning, where the GPN has a slight tilt. Take your time. Steps are:



1. Place a bullseye level on the back of the camera to get it pointing straight down. (A\$5 on eBay)
2. Then zoom in, or set the camera height, so that the GPN almost fills the frame.
3. Turn on your DSLR viewfinder grid overlay, so you can check for squareness.

## 7. Photographing the GPN

You may need to tether your camera to your computer, so you can see what your images look like, rather than trying to look through the viewfinder. Or many cameras have a hinged LED screen on the back (like in the illustration), so you can rotate it to comfortably see exactly what the camera is seeing.

## Shutter release



A cable release or wireless remote shutter release is best, to eliminate any camera shake. (A\$6 on eBay)

If you must do a manual shutter release, then set it on 10 second delay.

### **Auto Exposure Bracketing (AEB)**

Looking at a GPN, it is hard to tell if it is correct, under, or overexposed. So bracket your photos so at least one will be optimally exposed. With many DSLR, you can set up Auto Exposure Bracketing (AEB) so you only release the shutter once, and it automatically takes three exposures (eg normal exposure, half stop over, half stop under).

### **Include Image filename in the photo.**

Each image should have a unique ID number in your cataloguing database.

Write that ID number on a thin card strip (or use a whiteboard texta and a plastic strip, and wipe it clean between each shot), and put it alongside the GPN so it is included in the photograph. Note it will be reversed when you invert the image, so put it face down, and the light shining through will still illuminate it.

Now you can take all your photos in a continuous batch.

### **Scanning your GPN – an alternative to photography?**

An alternative method for digitising your GPN (not covered here) is a specialised scanning machine.

Many people report excellent results, but it can cause problems:

- **Focus** - If it is a fixed focus scanner, the scanner will focus on the side laid flat on the scanner bed. If this is the emulsion side, you can easily damage or scratch it. But if this is the shiny glass side, it may not focus correctly. So neither side is optimal.
- **Damage** - There is the possibility of damage as the GPN can be cracked when you place the cover down during the scanning process, or if the cover is quickly lifted after a scan, the slight vacuum sucks the GPN up with the cover, and then drops it.
- **Bracketing** - You are not able to bracket exposures.
- **Control** – using a DSLR on a tripod you have fine control over every stage of the photography

Most digitising labs prefer photography, but if you have access to a high quality scanner, it may be worth trying.

## **8. Photo editing using Post processing software**

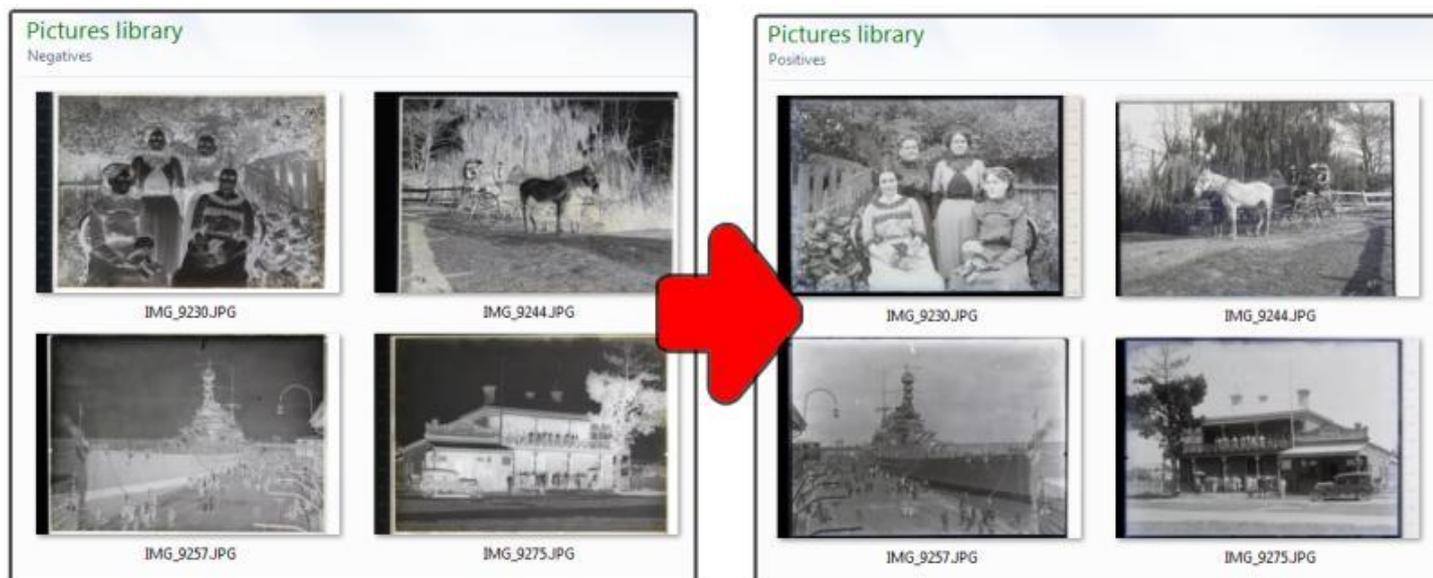
Before you do any post processing, create a backup of all images exactly as they were taken, and file it securely as your master backup. The following instructions are for your working copies, NOT the master backup.

Your images will all be back to front, and in negative format.

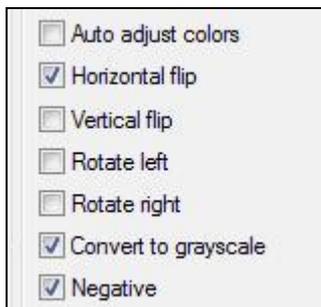
Using photo editing software, you can now edit them:

- Step 1 - Flip image horizontally
- Step 2 - Invert image using “Invert” or “Negative” command
- Step 3 - Convert to grayscale (see comment below).

Any basic or free photo processing software will have these commands. On Windows 7: Paint: Home > Select All > Invert Colour, and Home > Rotate > Flip horizontal. On a Mac, use the Photos app.



But all these steps are very repetitive and tedious, so it is worthwhile setting it up as a batch process. The very simplest photo editing apps may not be able to do this, but other popular and free software can. Eg using Irfan View: go to File > Batch Conversion > Advanced [and tick three boxes] **Negative**, **Horizontal flip** and **Convert to grayscale**, like this:



### Adjusting the image using software?

Should you alter the image using software in any way? That depends:

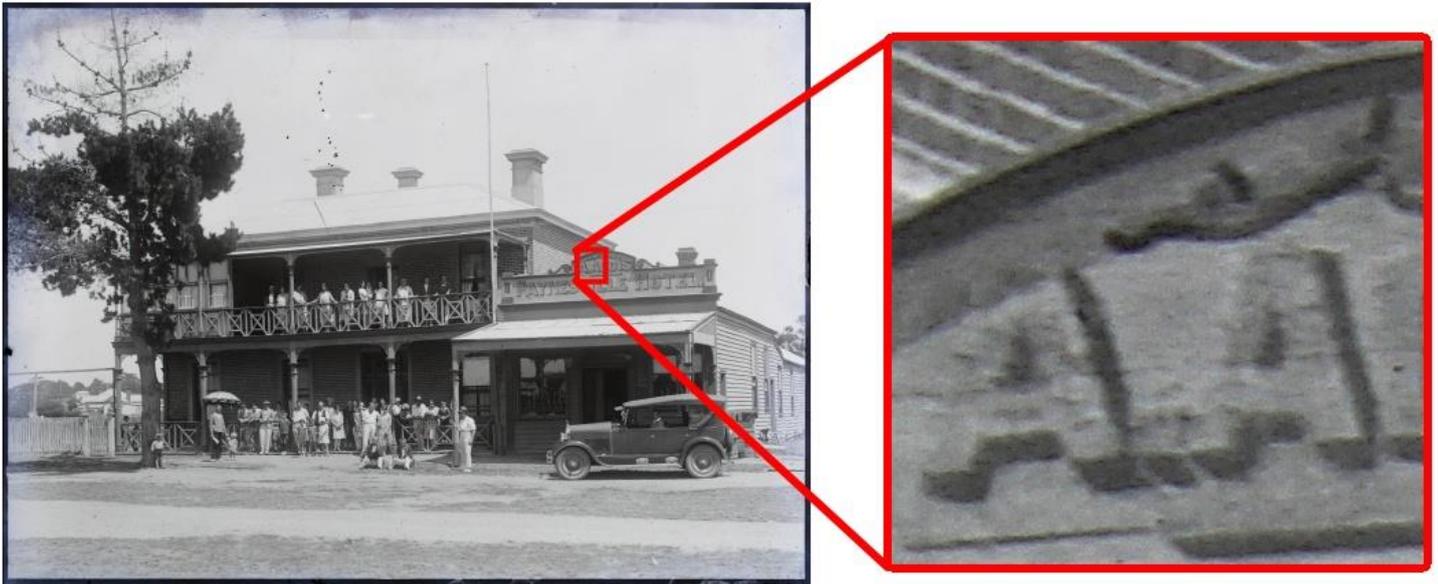
If the purpose is to create a record of the artefact (a GPN) – then leave it as is. But remember, you are **already** altering the artefact by using software to convert the image to a positive.

More likely, the purpose is to reproduce an image as the original photographer intended. In that case, it is acceptable to:

- Convert the colour image to a grayscale (black & white) image. This will remove yellowing (which when you invert the image will appear as blue, anyway). If you made a traditional print on photographic paper, it would be in black & white only.
- Improve contrast – digital photography tends to flatten contrast, so it needs to be restored

Other enhancements, such as sharpening and straightening are a judgement call. There is no absolute right or wrong principle here. It is a bit like the judgement a conservator makes when they restore a painting.

However, cropping is altering what the photographer recorded, so not generally advised.



### Image resolution and maximum detail

The level of detail is often amazing. Because the GPN image is so large, it will often have a higher resolution than your camera. This means there will be more detail in the GPN than your camera can capture. In many cases, this does not matter, but if:

- it is a significant historical photograph, or
- you will never have access to the GPN again

then you may want to seek specialist advice about larger scale photography. Be aware this will create very large files requiring large storage!

If there is a small detail in one GPN where it is critical to get the finest detail possible - eg a person's face in the distance – then you can simply take a **close up** of that specific area of the GPN.

*Philip Moorhouse is founder of The Collecting Bug, a specialist website for small museums.*

***www.thecollectingbug.com***, or contact Philip on 0417 544 588 or [philip@thecollectingbug.com](mailto:philip@thecollectingbug.com)

## Appendix 1

### Photographing Magic Lantern slides

These square glass slides were the forerunner to the slide show. The principles all remain the same, except:

- As they are a positive image, you do not need to invert them
- You will generally want to photograph the whole slide, which may have annotations on it. In that case, you will also need an overhead light, and you may need to experiment to get the right balance between the back light and the top light.

## Appendix 2

### The 5 minute “just to see what it is” method

If you have a single GPN and want to quickly identify it, you can;

- Using an iPad or tablet, type “pure white background” in Google Image Search and click on the search results image, so it fills the screen. Set screen to maximum brightness. This is your temporary backlight.
- Place the tablet or iPad flat on a table. Lay the GPN (emulsion side up) on top of the “pure white background” image.
- With your smartphone, take a photograph.
- If you have a photo processing app on your smartphone, open the image, and invert the negative to a positive. Done!
- If you do not have a relevant app on your phone, email it to yourself or sync images, and open the image on your tablet (or PC), and use Paint (on a PC) or Photos app (on a Mac) to invert the image. Done!

Finished! **Time:** 5 minutes. **Cost** \$0. **Equipment:** smartphone and tablet **Quality:** enough to see what it is