

Photographing Gauge 3 Railway Models

by Ted Sadler ©2010

Please allow me to begin with a preamble, which I hope will clarify some of the techniques I use in producing still photographs of railway models.

Background

My interest in photography began in the 1950's as a result of my father's own pursuit of the hobby. He gradually moved from a simple box camera to a twin-lens reflex, which produced 2¼ inch square negatives on roll film, ultimately to a Pentax single-lens reflex (SLR) camera using 35mm film. However it was his purchase of film developing and printing apparatus and especially, a photographic enlarger, which revealed the techniques that made the difference between ordinary snapshots and eye-catching views: image area selection ("cropping") and manipulation. More on this later.

In the 1960's I worked in a camera shop that also specialised in wedding and portrait photography. Saturdays were the peak times, when several cameramen, all of whom still used twin-lens Rolleiflex cameras in preference to SLR's, would drop off their completed rolls of film at the shop before rushing off to the next wedding – some of them completing four or five on the day. I separated and marked up the colour films for dispatch to the nearest Kodak laboratory for processing, as the shop, like most at that time, could only process black and white films, and passed the rest to Percy. He was the maestro in the dark room, who even then was some 15 years past normal retiring age but whose passion for the job and vast experience kept him well occupied. He rapidly developed the film negatives and produced 'proofs' – simple 3 x 5 inch prints that were sent back to the wedding combatants* as quickly as possible for selection and ordering of full-size pictures. I learned a lot from him.

* I say combatants, because those few marriages that did not survive the honeymoon period did not order photographs! One marriage did not survive the reception, but the proofs were a treasure.

During the next forty years I took many pictures on 35mm film with SLR cameras. Colour slides and negatives had largely supplanted black and white by the 1980's, and I always sent my films away for processing and printing. (Cue song: "Some Day My Prints Will Come").

The Digital Age

I got my first digital camera in 2001 and soon realised that processing these electronic images using home computer software could lead me back to the position of fifty years before – home-developed, eye-catching views! It took me two or three years to really understand how to get the best out of the computer software, which has itself been improving over recent years. By 'improving', I mean that several steps requiring manual adjustment of colour, lighting, contrast etc have been replaced by a single click on a button on screen that says "Automatic adjustment" or some such phrase. The software is now good enough to make a better job of it more often than a mere human in a fraction of the time.

Inspection of my 50-year collection of negatives, slides and prints has revealed another significant fact: some of them have not aged well despite being kept in good storage conditions. A percentage has discoloured as a result of prolonged contact with the residues of chemicals used in their processing, and some colour prints have faded with time to the point that they look like old sepia-toned photos. However, use of a good scanner and computer photo processing software has largely restored or even improved most of these.

I have reservations about the future long-term colour stability of modern prints produced by ink-jet and colour laser printers. I prefer to view my collection on-screen, and keep the images stored on discs with several back-ups!

Summary of Lessons Learned

1. Using a good-quality camera is an advantage but not a necessity.
2. Basic skills at composing a camera shot are always a dividend.
3. Take lots of pictures whenever possible, but don't keep bad shots (e.g. out-of-focus, blurred, unflattering etc). Always offer to share the pictures with the people you are photographing.
4. Image processing can, and usually does transform a good shot into a better one.

Camera Quality

Professional film-camera photographers and even the Apollo astronauts kept on using large format roll film instead of the smaller 35mm for many years because they could enlarge the details to a higher degree before image sharpness was lost. Today, an electronic screen called a 'Charge-Coupled Device' (CCD) in a digital camera has replaced the traditional film.

Digital cameras are measured by the number of pixels per inch that they produce. Each pixel is the individual dot on the electronic screen that contains information about the colour and intensity of a piece of the camera image. The greater the number of pixels advertised, the more that the image can be magnified before the sharpness begins to deteriorate. My first digital camera had 3 megapixels (3000 pixels), which is now typical of many cameras in mobile phones, and the pictures were fine. My current cameras have 8 and 10 megapixels respectively and new ones on the market are advertised at 12-14 megapixels.

All of the above can produce very good shots in the right circumstances: what you spend depends on how far you want to go with image processing. If you don't alter the images on a home computer but merely have the pictures transferred to disc to view the snapshots taken, then the simplest and cheapest of cameras will suffice, in my opinion. Some newer cameras offer 'anti-shake' facilities that can compensate for hand movement: I suspect that this will become of more interest to me as time marches on.

Make sure that the chip in your camera as well as your computer memory and disc drives are large enough to store the images, especially if you have lots of them. Each full 3 megapixel colour image occupies about 800 kilobytes, 10 megapixels takes 2 megabytes and 14 megapixels a lot more than this.

Basic Camera Skills

In the digital age, even with automatic cameras that have lots of 'bells and whistles' inbuilt, the basic advice for photographers is unchanged from the days of film and even plate cameras. It isn't my intention here to write a comprehensive guide, as many good books or web sites can provide that. However there are a few items on the check list that can make a significant difference for model railway subjects.

1. Keep the lens clean with a soft, dry cloth. It's surprising how often hair, dust and fingerprints appear in pictures.
2. The brighter the light, the better the picture is likely to turn out, for a number of reasons:
 - a. Automatic cameras will reduce the size of the lens aperture in bright light. This results in greater 'depth of field' in the picture. In other words, everything will be in sharp focus from around 12 inches to infinity. In dull light, make sure that the object you are concentrating on is in sharp focus: the foreground and background will come out fuzzy.
 - b. Automatic cameras will use a faster shutter speed in bright light, leading to reduced incidence of blurring by a shaking hand.
 - c. Bright light causes colours to be shown in their full brilliance.
3. Keep the sun behind you whenever possible. The best situation is when it is over your left or right shoulder, rather than completely behind you. This keeps your own shadow off the subject. If you have to photograph something against the sunlight, use the camera flash to fill in the shadow. Sunlight falling at a narrow angle, e.g. 10-20 degrees from the plane of the surface of a model, will usually enhance details such as rivets and panels.
4. Wherever possible, photograph a train when it is stationary rather than moving. With a moving subject, you need to pan the camera with the centre of focus kept as steadily as possible on one small area of it. Take several shots: just one of them may be acceptable for sharpness, but even then, the rest of the train at the edges of the shot may be blurred, as well as the background. Taking the shot just wide of head-on or tail-on, instead of sideways-on, reduces motion blur.

5. Take a moment to look at the whole picture in your camera viewer as you prepare to shoot, especially the periphery. Would moving the camera or yourself by a small amount eliminate unwanted objects in the picture? Is there anything in the middle of the picture that will detract from the view? Live steam operators are notorious for planting watering cans, coal stocks and lunch boxes on the lineside! All right, so electric operators leave radio control units and photographers, cups of tea....
6. If you are looking for realism in the final photo, what kind of background is the model standing against? Superb locomotive and rolling stock models look best when photographed within a context that looks natural, rather than against the garden shed or barbecue. Search for the best camera angles as you move around a garden layout. Be prepared for muddy, wet knees as quite often, the best shooting angles are near the ground. One of the things I am trying to achieve with my own garden line is the creation of several 'photogenic' locations for visitors. (e.g. should I disguise the tea urn as a gasometer?)
7. Indoor photography normally causes automatic camera flash guns to be activated. In practice, the flash rarely illuminates objects more than 10 feet from the camera: anything beyond this that you may want to appear in the picture will be very dark, if visible at all. Modern digital cameras work much better than old film cameras in dark places, within limits. Where you can, use the flash for closer objects but de-activate it and set the camera in a very steady place such as a solid surface for longer-distance shots. This is because the shutter speed will be very slow (avoid shaking) and lens aperture will be at maximum (low depth of field). Colours may appear a little washy in the final image: at worst, you get yellow and purple 'snow' in very dark circumstances, and artificial light may give the picture a yellow colour cast. These faults can be corrected to some extent by image processing. Professional photographers use white screens to shine reflected light from lamps or flashguns onto the subject. The result is much softer illumination: a flashgun or lamp aimed directly at a nearby subject is harsh by comparison.
8. Many modern cameras have a 'Macro' button, enabling you to place the camera only a few inches from the subject. Often the central area of the image is recorded in exquisite detail, but the periphery is distorted. This is inherent in the lens configuration used for Macro images. If you want the wider picture in detail, try using a telephoto setting on a zoom lens from a greater distance than normal – in good lighting conditions, of course, and compare the results.

Digital Image Processing

Modern photo software on computers has replaced the old film darkroom practices. The secret technologies originally developed for intelligence agencies and space programmes have become available for widespread use. Today, an enthusiastic amateur photographer can produce results that were out of reach even 20 years ago. I believe that, averaged out over a large number of photographs, image processing work accounts for 60-70% of achieving success, the other 30-40% being the quality of the original image.

You need to be reasonably computer-literate to make the most of photo processing, especially when your image collection starts to grow. Whether you use free internet programs such as paint.net® or GIMP®, or buy a professional software suite like Adobe Photoshop® for around £600, you must stay completely in control of filing, labelling and back-ups. My computer has a second internal hard disc and a plug-in external hard drive just for back-ups. I can also write photos to DVD and Blu-Ray discs, which I do at regular intervals: so far I have over 50,000 electronic images in my collection, yet still have thousands of slides, negatives and prints to process. Windows 7® has a superb indexing system that will find files or folders in seconds.

As an aside, it often comes as a shock to view self, friends and family from 40-50 year old photos. ("Who's that girl in the picture with you, dear?" There is no satisfactory answer to this question).

Whichever photo software you use, it will take some time to master all facets and get the best results in a short period of time. I have been using Paint Shop Pro® and its updates for over 4 years and still find new tools within it. Please note that I am not recommending one program over another: stick with the ones you like, whatever they are.

Here are the main lessons that I have learned, in order of frequency of use.

1. The lens of a camera conveys data to the film or CCD, where it is recorded *as is*. However, the human eye conveys optical information to your brain, where it is *interpreted*. We know that building walls are vertical in real life, and the sea horizon is horizontal, even when we view them at an angle. Photos usually look better to us when these rules are followed, but unless the camera has been used on a level surface, the raw images can show 'unnatural' angles. Select a known vertical surface in the centre of the image and use the 'Image Rotate' function until it is in alignment.
2. If the camera is tilted upwards or downwards even slightly, the vertical perspective in the image will be immediately apparent. A camera pointing upwards at a tall building will show the edges getting closer together towards the top, and likewise a downward angle will show the opposite. Check to see whether known vertical surfaces at the edge of your image are in alignment with the centre. If not, use the 'Perspective correction' tool to line them up. When photographing a locomotive, make sure that the front buffer beam and tender rear are in harmony. 19th century plate glass cameras were fitted with a flexible bellows mechanism that allowed the photographer to preview the image and adjust the angle of the glass plate or the lens to minimise perspective effects.
3. Use the 'Crop' tool ruthlessly to emphasise the subject of the photo by cutting out unwanted peripheral detail. Here is where 14 megapixel cameras score over lower-resolution types: you can retain a smaller area of the original image and not lose sharpness when it is viewed at full screen size.
4. Most modern cameras are fitted with zoom lenses. On the wide-angle setting, the edges of the image can become rounded and distorted: this is known as the 'fish-eye' effect. If you want to eliminate this from your image, use the 'Barrel Distortion' or 'Pin Cushion Distortion' tools to straighten up the lines as far as possible. Re-crop the image if necessary.
5. Use the contrast, brightness, colour correction and saturation tools until the image looks right to you. If you have the right program, there are on-screen buttons that perform these operations automatically when clicked. As previously stated, the computer gets it about right more often than not these days, in an instant. Beware that the colour balance and contrast of on-screen views can differ from printed photos: if you know that prints are required, carry out a test first and adjust as necessary.
6. Any small items that you want removed from the remaining image can sometimes be eliminated with 'Clone' or 'Eraser' tools.

Conclusions

Gauge 3 models, and the gardens they run in, are just the right size to be photogenic. Despite everything I have said, don't be put off! Just get out there, keep shooting and enjoy yourselves.

The following pages contain several of my own photographs to illustrate the techniques I have discussed here and will give an idea of the opportunities available when taking shots of large scale model trains in garden settings. If you join the Gauge 3 Society, you will have the opportunity to regularly attend the meetings at the lines illustrated here and many others owned by members of the Society.

Full details of the benefits of Gauge 3 Society membership are available at www.gauge3.org.uk

and you can join in discussions on the G3 Forum at www.G3Forum.org.uk

(You may join the G3 Forum without joining the Society).

Some Samples to Illustrate the Techniques Described.

Photos by Ted Sadler ©2010



Picture No 1 illustrates cropping, adjusted verticals, low sun angle highlighting details and contrast adjustment to illuminate the shadows. Locomotive and wagons by Shaun Underhill.



Photo 2 illustrates low camera position, good depth of field, attractive background. Locomotive & wagons by Mark Pretious, location is Roger Salisbury's line.



Photo 3 illustrates good depth of field & sharp focus resulting from bright lighting conditions. Superb subject: pity about the background, though. Locomotive by Ray Wallis, location is Alan Marsden's line.



Photo No 4 illustrates moving train taken from near head-on angle to minimise motion blur. Nice background. Locomotive by Tim Casserley, location is Roger Mills' line.



Photo No 5 illustrates low depth of field as a result of using Macro camera setting. Wagons by Adrian Booth on his own line.



Finally, a high-contrast interior shot of station buildings illuminated by a shaft of sunlight. Background deliberately left dark. Mark Pretious' *Blackgang* layout on show at Basingstoke.