

# DIGIT

THE MAGAZINE OF THE ROYAL PHOTOGRAPHIC SOCIETY DIGITAL IMAGING GROUP  
Number 90 2021 Issue 3





# Upcoming DIG events

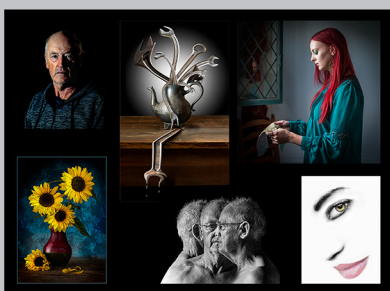
Details of all DIG events are available on the Group's website at

[tinyurl.com/sxzl487](http://tinyurl.com/sxzl487)



## Digital Imaging: Yorks & NE

Saturday 2 October 2021  
York YO23 1BW



### Brian McCarthy FRPS

#### Images from a Small Shed

[www.rps.org/events/groups/digital-imaging/2021/october/talk-by-brian-mccarthy/](http://www.rps.org/events/groups/digital-imaging/2021/october/talk-by-brian-mccarthy/)

## Digital Imaging: Online

Saturday 9 October 2021  
Online



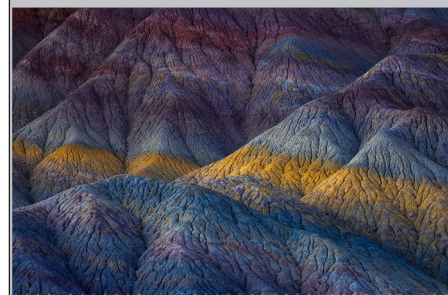
### Polina Plotnikova

Small World

[www.rps.org/DIGONLINE25](http://www.rps.org/DIGONLINE25)

## Digital Imaging: Online

Saturday 6 November 2021  
Online



### Sean Bagshaw

Elevate Your Photoshop Workflow with  
Smart Objects

[www.rps.org/DIGONLINE26](http://www.rps.org/DIGONLINE26)

## Digital Imaging: Online

Saturday 4 December 2021  
Online



### Jonathan Vaines

Life in the Blender:  
A Creative Twist

[www.rps.org/DIGONLINE27](http://www.rps.org/DIGONLINE27)

## Digital Imaging: Online

Saturday 8 January 2022  
Online



### Julianne Kost

Creating Personal Projects that  
Reignite the Creative Spark

[www.rps.org/DIGONLINE28](http://www.rps.org/DIGONLINE28)

## Digital Imaging: Online

Saturday 5 February 2022  
Online



### Paul Gallagher

Working in  
Another Light

[www.rps.org/DIGONLINE29](http://www.rps.org/DIGONLINE29)

## Digital Imaging: Online

Saturday 12 March 2022  
Online



### Gary Friedman

Computational Photography:  
Why Your Smartphone Takes  
Better Pictures than Your Big Camera

[www.rps.org/DIGONLINE30](http://www.rps.org/DIGONLINE30)

**Event programmes continue to be disrupted as a result of the COVID pandemic, please check on the RPS website or with the Centre Organiser for the latest status of any event.**



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## From the chair

### **Rex Waygood and Deborah Loth**

Despite COVID, so much of what has actually happened in the last year and a half, and especially in recent months, is often prefaced by 'despite COVID'. Despite COVID, or perhaps courtesy of COVID, RPS Digital Imaging has been able to extend the reach of its events offer beyond the limits of those areas within striking distance of one of our Centres.

Now we find ourselves in an unsettling limbo, where the eerie emptiness of lockdown is breaking up, but where nothing is as it was before. Many photography workshops have resumed, major institutions are mounting photography exhibitions, it's possible to get out again with a camera. But for small or local photography groups, meeting or exhibiting is still problematic on account of venue regulations put in place in response to COVID, not to mention the reasonable reluctance of many of the usual participants to venture forth to such venues. And this includes our Centres.

On the one hand, volunteers who would normally have been seeing their friends and family, or travelling with their cameras, or visiting exhibitions, had much more time to contribute to making arrangements or provide RPS Digital Imaging services. On the other hand, volunteers who organised face-to-face events found themselves hugely frustrated, with much of their time wasted, as live events were on-again and off-again time after time.

Fortunately about 25% of our members have taken the trouble to complete the membership survey, and we look forward to analysing the results for insight as to what works best for you. The important point to remember, though, is that to work for its membership, the Digital Imaging Committee needs volunteers, now more than ever before. As we lose key volunteers for a variety of reasons – ill health, family emergency, death or just a wish to retire and engage with photography – we need others to step up and take their place. We particularly need a new Chair, along with one or two editors able to prepare publications for print (DIGIT and catalogues), and Centre Organisers for the Eastern and North West Centres. Throughout the group there's always a need for 'geeks' and administrative help.

Volunteering can be rewarding and even fun, a good way to get to know people. So please step up and give us a hand. Just drop a line to [digsecretary@rps.org](mailto:digsecretary@rps.org).

## Editorial

### **Gary Beaton**

In this issue we are looking back into the history of photography, with articles about how some of the earliest photographic techniques can be enjoyed whilst using contemporary digital imaging equipment for some parts of the process. Brian K Edwards explains how he creates beautiful four-colour, gum bichromate prints using negatives generated digitally, offering far greater versatility than the printers who developed the technique had available. Brian's work melds both old and new approaches to image-making and results in prints, each of which is a unique work of art. It may also be surprising to know that there is an active community of photographers taking pinhole photographs today, something that for many people is little more than a historical curiosity. Some of these photographers take their digital cameras and replace the lens with a pinhole aperture with creative results. So active is this community of lenless photographers that once a year they celebrate their art globally through Worldwide Pinhole Photography Day, and we have a small selection of images captured for this year's celebration.

Also amongst the pages we can read about Glenys Garnett who has revisited her birth city of Leeds and has taken a new look at some of the landmarks and architecture to be found there, and Julia Wainwright tells us of an unexpected invitation which led to her appearance on BBC TV.

We round off the issue with Challenge articles from Roger Hinton and Samantha Ruth, who explain just what went into the creation of their successful images.

I wish you good reading.





# Alchemy - merging the old and the new



**BRIAN K EDWARDS** starts with a digital image and then creates beautiful prints using some of the earliest photographic process. He describes the process of producing four-colour gum bichromate prints from digital negatives.

This article presents one way to make multi-colour gum bichromate prints. Gum bichromate printing involves combining watercolour pigments with gum arabic and either potassium dichromate or ammonium dichromate into a solution that is spread on fine art paper.

Exposing this paper to a suitable light source using a suitable negative (or negatives) results in an interesting colour print. A gum print can be made with just one colour, or it can be made with two, three, or even four colours. I am going to discuss four-colour gum bichromate printing, which can produce something

similar to a 'conventional' full-colour image.

## Gum printing

A four-colour gum print combines four separate colour layers into one final gum print using a four-colour CMYK (Cyan, Magenta, Yellow, Black) model, similar to many printers that we may have at home. It is possible to use other processes for certain layers of the image. Each layer is produced by exposing a sensitised layer, through a digital negative, using ultraviolet (UV) light. Personally,



# ALCHEMY - MERGING THE OLD AND THE NEW

I use a palladium print as a substitute for the black gum layer. Some gum printers substitute a cyanotype for the cyan gum layer. There are no hard and fast rules. Be open to experimenting, have fun, and make beautiful prints!

## Image preparation

First, use Adobe Photoshop to edit your image to your liking. Ensure that it is in 16-bit mode and converted to Adobe 1998 profile. Flatten and then save the image.

## Digital negative creation

Then create the colour separation negatives which will be used to print each layer. To do this, convert the image from RGB mode to CMYK mode. Next, invert the image (use the simple Command-I shortcut), flatten the image, and save. Go to the drop-down menu on the *Channels* tab and select *Split Channels*. This will create four greyscale images (one for each CMYK channel). Convert each of these back to RGB mode, making sure each image is converted to Adobe 1998 profile, and then save each as a separate file. Photoshop will automatically label each image with the appropriate channel name (e.g., the yellow negative image will have ‘\_Yellow’ appended to the filename).

Finally, add an appropriate curves adjustment layer, save, and print one digital negative for each colour layer. There are many gum curves available in cyberspace. I use Christina Anderson’s gum curve from her book *Gum Printing* (2017, pp. 34-35), but you will almost certainly eventually want to derive your own based on your experience with the materials that you are using and the results that you are getting. At the end of this article there are details of a few sources that cover digital negatives, curve creation, gum printing, and other alternative/historic processes.

I print each negative on *Pictorico Ultra Premium OHP Transparency Film*. I have a custom preset

for my Epson printer called ‘Pictorico Letter’ (for printing on an 8.5 X 11 sheet). My Media Type is *Premium Photo Paper Glossy*, I select 16-bit output, and my Output Resolution is set to *SuperPhoto-2880 dpi*. To achieve the highest quality, High Speed printing is turned *off* and Finest Detail is turned *on*. I print using the *Premium Glossy* printer profile with Photoshop managing colours, Rendering Intent is set to *Perceptual*, and Black Point Compensation is *off*. The image size shown in this article is 6x9 inches. Finally, I select Corner Crop Marks and print Emulsion Down. The corner crop marks will facilitate aligning (registering) the layers on the paper.

## Paper shrinkage

Since we are going to be coating, exposing, and clearing (effectively, developing the print by washing away the unwanted parts of the layer) the same sheet of paper multiple times, the paper is subject to shrinking. This will make it more difficult to keep the layers aligned. If you have ever washed new cotton or denim clothing, you already know what is needed, namely, to pre-shrink the paper. To do this, place sheets of paper in a print washer or clean developing tray and run hot water for about 30 minutes; remove and dry the paper.

## Registration

To combine multiple prints (remember, each colour layer is a separate print) on the same paper, you need to ensure that the negatives are properly aligned, otherwise, the print will look out of focus. The process of keeping the layers aligned is referred to as registration.

One method is to use the corner crop marks to line up the digital negatives and to use push pins to create holes in each negative and the paper. This will ensure that each layer will be aligned with each other if the pins are placed through the holes for printing each layer.

## Caution!

*Gum arabic is relatively safe, as are the watercolor pigments you will use to make these prints. Potassium and ammonium bichromate, however, are hazardous (i.e., toxic and carcinogenic) so you must take the necessary precautions for handling, use, and disposal. Always wear gloves and safety glasses, maintain proper ventilation in your work area, and do not eat or drink when using this material. If you are exposed, wash exposed skin thoroughly and wash contaminated clothing before reuse. Find and read the Safety Data Sheets for potassium and ammonium dichromate and fully understand the risks of using these chemicals, and the necessary precautions for safe handling before, during, and after use. Also, understand any country- or region-specific regulations on use and disposal of these chemicals.*



Another method is to align the negative with the paper when you can see something akin to a *bas relief* when looking at the negative.

Still another method is to use a punch registration press. This uses a punch, rather like the punch used to make holes to file papers in a ring-binder, to make holes which will align the paper with the negatives when placed on pre-set registration pins. Figure 1 shows the paper and digital negative placed on a registration pin frame.



Figure 1 Paper, registration pins, and digital negative

## The black (palladium) layer

My workflow substitutes palladium for the black gum layer. To create a palladium layer I first coat the paper with palladium solution. For a 6x9 inch print, I combine two drops of Tween (a wetting agent which helps to create an even layer), one drop of Na<sub>2</sub> (Sodium Platinum solution), 10 drops of Ferric Oxalate, and 10 drops of Palladium and spread this over the image area.

Once the solution is dry, I pin register the paper and black negative and expose the print. The registration pins preclude the use of a standard contact printing frame, so you can replace the glass of the contact printing frame with a sheet of tempered glass (taking care to ensure any sharp edges are covered or ground smooth by the supplier).

I use the back of the contact printing frame, lay the paper and digital negative sandwich on the back of the frame, and then place the glass over this sandwich. This is held together with large clips as shown in figure 2.

All of this is placed under a UV light source and exposed for 15 minutes. Once the exposure is completed, the print is processed with potassium oxalate developer and cleared in baths consisting of

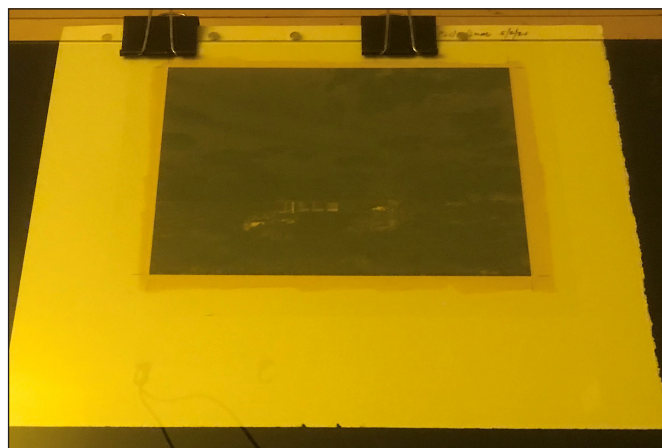


Figure 2 Palladium print ready for exposure citric acid, EDTA, and PermaWash. Once the print is clear, it is washed for 30 minutes and allowed to dry. Figure 2 shows the palladium coated paper, digital negative, registration pins, two of the clips, and glass under yellow safelight ready for exposure.

## Sizing

The palladium layer is printed onto unsized paper, but you might want to size the paper prior to adding the gum layers. Sizing is done to keep the gum pigment from being absorbed into the paper resulting in muted colours. There are many ways to size paper. I use a solution of PVA (polyvinyl acetate) glue and water in a two parts water and one part PVA ratio, and use a brush to spread the working solution onto the paper and then let it dry. The Hahnemühle Platinum Rag paper I use is internally sized, so may not need sizing, but I find that clearing gum solution from the paper is a little easier when the paper is sized.

## Gum preparation

Gum printers typically mix a watercolour pigment with gum arabic in specific proportions to make a stock solution. This stock solution is then mixed with either potassium dichromate (ammonium dichromate can be used as an alternative), the light sensitive component, to create the working solution that is spread on the paper for printing. Personally, I mix a 15 ml tube of Quinacridone Gold with 235 ml of gum arabic to create a 6 percent yellow stock solution. Similarly, I mix a 15 ml tube of Quinacridone Rose with 235 ml of gum arabic to create a 6 percent magenta stock solution. Finally, I mix 7.5 ml of Pthalo Blue with 242.5 ml of gum arabic to get my 3 percent cyan solution. It is important to experiment to determine which stock solutions work best for you.

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### Gum bichromate layers

For each gum layer on the palladium (or black gum) print, the steps are the same:

- 1) mix working gum solution;
- 2) spread onto paper and smooth;
- 3) allow to dry;
- 4) pin register negative and paper;
- 5) expose and process; and
- 6) dry.

For each print, mix 1 teaspoon (5 ml) of your stock gum/pigment solution with 1 teaspoon of potassium dichromate to create your working solution. Spread it with a brush over the print area. Use a softer brush to smooth out any air bubbles or streaks. This second brushing is very light and fast; barely touch the paper with this brush. I use Hake brushes but you will have to determine which type of brushes work best for you. Once the paper is dry, the digital negative is placed over the print area and aligned (i.e., registered) with the palladium/black print. The image below shows how this will look. Rinse your brushes thoroughly with water. The first brush will accumulate a lot of pigment, so may need to soak in water for awhile. The brushes can then be hung to dry. Figure 3 shows a section of the magenta-coated paper.



Figure 3 Coated magenta layer

When the gum solution is exposed to light, the areas of the print exposed to more light will harden more than those areas of the print exposed to less light. Therefore, I use two room-temperature water baths for clearing the print and for estimating the exposure time for each layer.

The first bath is to clear the potassium dichromate. I place the print into the bath face-up and let it sit in the water for three minutes. A little bit of agitation to spread the water over the surface of the paper

is fine, but I generally leave the print alone. This time should be sufficient to remove most of the potassium dichromate from the print but not so long as to remove the gum layer. A little of the gum might leach out of the paper during this initial bath, but that is to be expected. However, if most of the gum comes off during this initial three-minute bath your exposure time was too short. A good rule of thumb is to start with a two- or three-minute exposure time and if all of the gum comes off during this initial bath, then double the exposure time. Figure 4 shows the cyan layer in the first water bath.

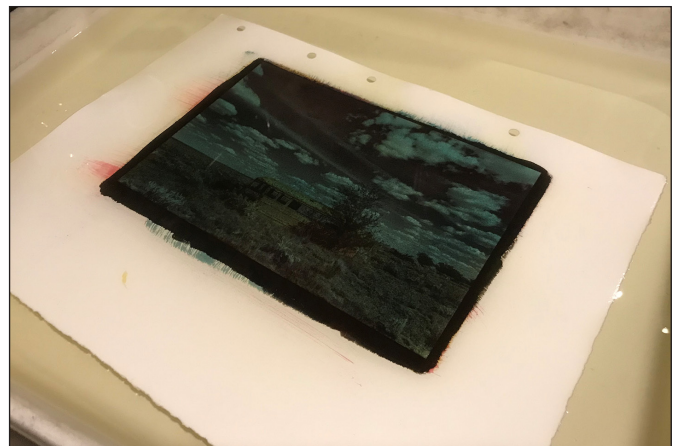


Figure 4 Cyan layer in the first water bath

The second bath is to remove the unexposed gum from the print. For this bath, remove the print from the first bath and place it face-down in the second bath. The print is delicate at this point, be careful not to allow any area with emulsion to touch any part of the bottom or sides of the tray. Let the print drop down on the surface water instead of pushing the print underneath the water surface. Rock the tray for a few seconds and then let the print sit for at least one hour. Be patient; go and do something else.

If your exposure time is right, then most of the gum should be cleared from the print, but there might be some remaining bits of colour. It is best to leave the print in water for another hour. You can lightly splash the paper to see if additional gum comes off the paper. Another option is to take a very small and soft brush, wet it, and very gently brush those areas with yellow pigment to see whether the pigment will come off. For instance, prints that have clouds may appear to be slightly yellow but will become whiter as you remove the final bits of pigment from the yellow print. This is a judgment call on your part and you will learn when and where to be aggressive with removing excess pigment. Then, remove the print, hang it to dry. I often apply a very light water rinse to the front and back of the print to remove any



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remaining pigment. For subsequent layers you can continue to use the first bath, but you might want to use fresh water in the second bath for each layer.

I use a five-minute exposure for the yellow layer. I use a four-minute exposure for magenta and a three-minute exposure for cyan. Keep in mind that these exposure times are what I found work well for me. Your exposure times may vary. Your concentrations

of pigment to gum arabic will most likely change as you gain experience printing. Some gum printers will apply three gum layers. My own feeling is that it is better to work with thin gum layers and build up colour gradually than to try to remove gum that has been applied too heavily or exposed for too long. If you find that you need to intensify the colours of one or more of your layers, you can add another thin layer to gradually build up that colour.



The images above show the evolution of the print that I have used throughout this article. Clockwise from top left shows each layer after exposure clearing and drying starting with the initial palladium layer followed by the yellow, magenta, and final cyan layers.

### References

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James, Christopher, *The Book of Alternative Photographic Processes, Third Edition*, Cengage Learning, Boston, 2009.

Reeder, Ron, and Christina Z. Anderson, *Digital Negatives with QuadToneRIP*, Routledge, New York, 2021.

Santa Fe, New Mexico-based photographer Brian K. Edwards specializes in fine art and documentary photography. He has photographed extensively in the Southwest, across the United States, and internationally. He received an MFA in photography at the Academy of Art University in San Francisco. You can see more of this work at [briankedwards.com](http://briankedwards.com).

The author very much appreciates comments made by Rebecca Haffenden and Christina Z. Anderson during the preparation of this article but absolves both of any remaining errors and omissions.



*Leeds skyline*

# Leeds: A new eye



Following a chance visit earlier this year **GLENYS GARNETT** has been wandering her birth city and seeing it in a completely new light.

In July this year I started a project to photograph my birth city of Leeds. It is the largest city in West Yorkshire, has a rich industrial history and sits in the valley of the River Aire. It obtained city status in 1893. It's Latin name is Loidis and from this the word Loiner is derived for an inhabitant of the city. I no longer live in the city but just down the road in Wakefield, however I still claim the name of Loiner for myself if anyone asks. It's where most of my family lives and my heart is always there.

The project came about through serendipity, I'd dropped my sister off for an appointment at LGI (Leeds General Infirmary) and in order to waste some time I took the camera and decided to have a wander around Millennium

Square and the Town Hall.

I think we have all felt so restricted over the last 18 months, and even though the circumstances haven't stopped me from doing photography I really felt the need to get out and do something different.

It was one of those mornings with clear skies and beautiful contrasty light on the buildings, and after the lockdown and restrictions I felt a real energy and sense freedom just being in a different place and capturing images of the architecture around the area. I spent a couple of hours making multiple exposure images with nothing specific in mind but as soon as I got the images on the computer, I realised I had





The buildings around Millenium Square include the Civic Hall, Leeds Beckett University buildings, LGI something that I could develop into a project about Leeds City Centre.

Architecture and the urban landscape have always been a favourite subject of mine, but I've neglected it in favour of mostly landscape and nature photography. However, the style of my photography has changed over the last few years and has become very abstract in nature. I'm more interested in creating an impression or abstraction of the subject rather than what it looks like. I photograph things not for what they are, but for what I want them to be.

I tend to see subjects as shapes, structures, patterns, textures and colours. I get a lot of

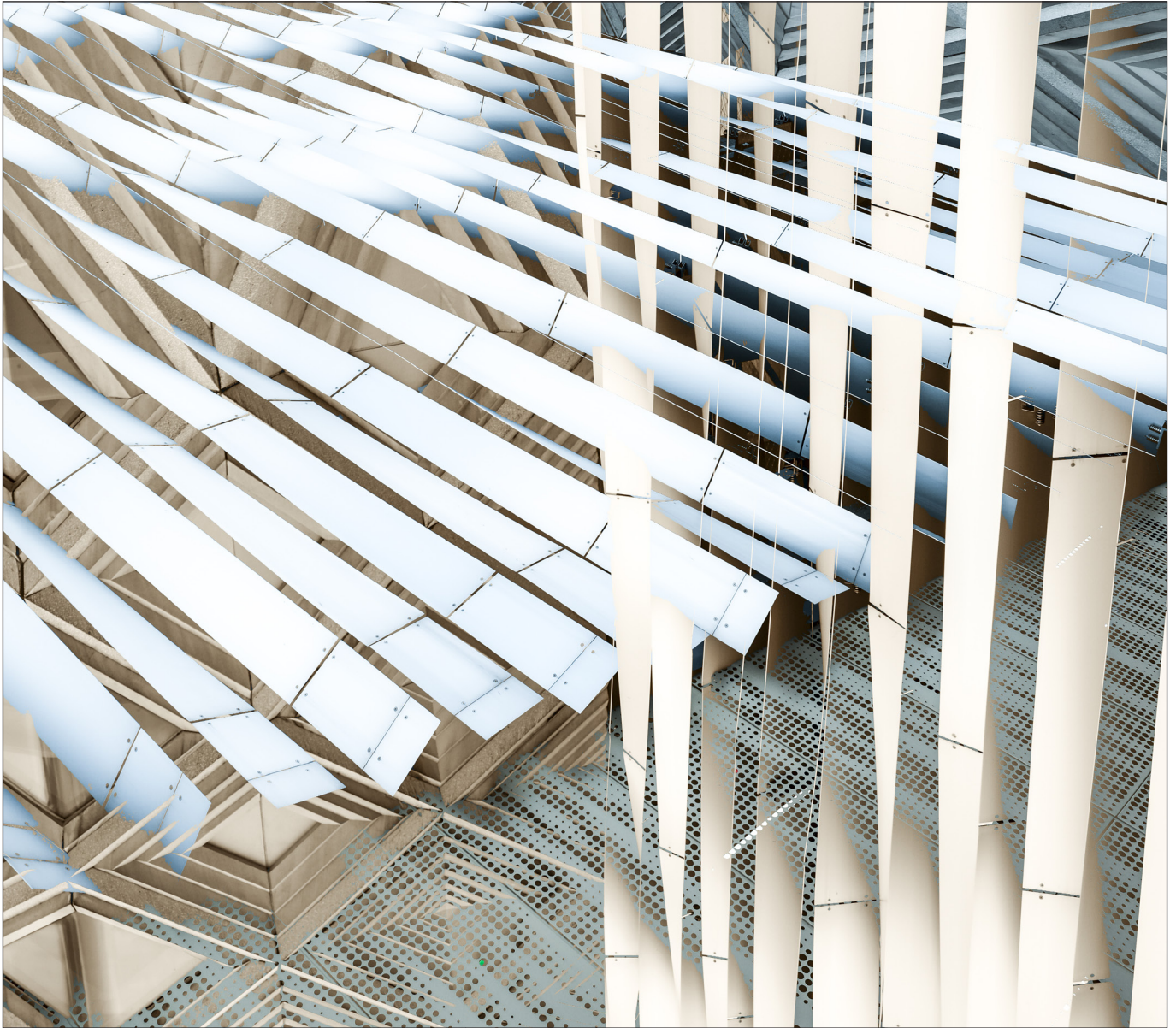
my inspiration from 20th Century abstract artists like painters Rothko, Kandinsky, Mondrian, Klee, Still, just to name a few, and photographers Ernst Hass and Aaron Siskind. The latter being two of my favourite photographers and their philosophy and approach to abstraction in photography really resonates with me.

My purpose with this project wasn't to make a travelogue or an advert for the city but more to find elements of the architecture that I could use to create entirely new images. In fact, many of the images could be taken in any city that has a mix of architecture. It doesn't matter to



*Princes Exchange*





Victoria Gate

me if the buildings are recognizable or not, it is more about the shapes and structures and how I can use them to the best effect in a capture.

*“Photography is a transformation not a reproduction”*

Ernst Haas

I've always felt there is such a good mix of old historical and shiny new buildings in the city, but the newer buildings and the modern skyline are what appeals to me most, and in my view better suit the techniques I use.

Like most cities, the Leeds skyline is constantly changing, and it doesn't matter to me that

things like cranes and semi-built shells of buildings might dominate. I don't try to hide them, they are part of the urban landscape whether we like it or not, for me they are just another element I can use in the image making process.

I set about organizing myself and looking at ways to approach the project with a real sense of enthusiasm that I haven't really felt for a long time. I knew there was no point in just going into Leeds and wandering around without a focus, it is a large city centre and there are some iconic buildings and locations that draw lots of tourists. I made a list, choosing key areas of the city and then planned my visits around these. I decided to make two visits to each area, the first to make initial captures and then a return visit if required to get more specific



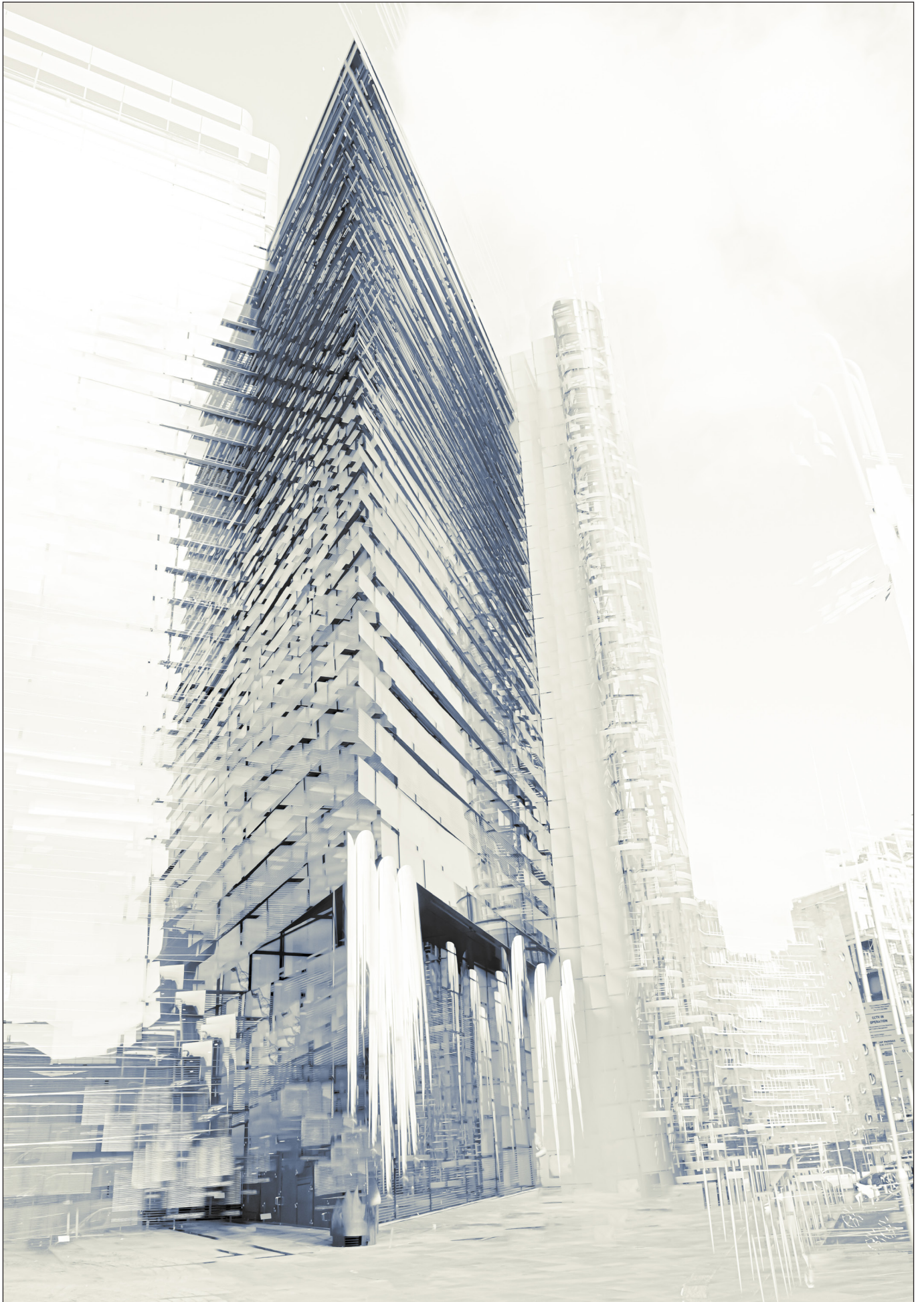


*Playhouse*

images or that might need fine tuning, or more captures that might require a slightly different approach, conditions or different lens, etc.

The locations I chose to concentrate on, mainly because they have lots of interesting buildings old and new, and plenty of details to

photograph, included Millenium Square, Civic Hall and the Town Hall, University buildings, Leeds dock, Granary Wharf and Dark Arches, River and canal, the Victorian Quarter and Victoria Gate, and markets and the Corn Exchange.



*Princes Exchange*





*Leeds Station South Entrance*



*Leeds Dock*

## LEEDS: A NEW EYE

One of the challenges I set myself was to capture an image of the Leeds skyline and so I scoped out a number of potential locations but couldn't really find anything that worked for me. A bit of luck occurred that gave me the opportunity to make a capture that would fit the bill. I was visiting St. James's Hospital and it so happens the roof of the car park presents a view across the city which affords a wonderful panorama, from Quarry Hill in the West to Leeds Arena in the East. However, finding a gap in the metal grid was difficult. I managed to find a window through one of the concrete blocks above my head, but had to shoot a double exposure blind using the back of the swivel screen at arm's length, but I was more than happy with the result.

The large majority of the images I've taken are multiple exposure captures, but I have also taken a series of straight images that will feed into the overall project and give some context to some of the locations.

I've been using the Fuji X-Series cameras now for over eight years and experimenting with multiple exposure captures throughout that time however, it wasn't until I upgraded to the Fuji XT4 that I was able to make the most of the more advanced in-camera multiple exposure features. With potentially nine exposures and four blend modes I can produce images that allow me to abstract the subject more in keeping with my inner vision.

Anyone who has experimented with multiple exposure will know that certain subjects work better than others with the different blend modes. I've spent a lot of time perfecting my technique to the point where I can get much more predictable results straight out of camera.

With architecture I tend to use the Average or Bright blend modes, with the Bright blend mode being my most favoured setting. The difficulty with using the Bright or Dark blends in camera is that you don't know the result of the blend until you press the shutter, so you need an understanding of how they work with the pixels. With the Bright mode, the pixels below 50% grey are discarded in each subsequent capture, it is the opposite with the Dark mode. I always shoot in full manual mode as I need complete control of exposure when blending the images, a slight increase or decrease in exposure can make a difference to

the way the blend works so it's an important part of the process.

I also use one of the features, which to my knowledge is only available to Fuji shooters, that of being able to change the film simulation mid-capture. For example, I can take an image in colour and then overlay the next image in black and white or sepia and back to colour if required. This creates some interesting combinations for me and adds another dimension to the image-making process.

### Processing in Lightroom

I do most of my processing in Lightroom Classic and rarely have to edit them in Photoshop.


When making multiple exposures there is sometimes a need to do some additional processing on the images. They are abstract and so it does give you some flexibility to take the images in different directions with colour and/or tonal editing. I really like the graphic nature of images made using these techniques and I edit them to reflect that. Colour is an important part of my editing workflow, and I will often spend a lot of time making minor adjustments to get just the right hue or colour for a specific area of an image.

In my view, some images suit a specific style that compliments the image-making approach. For example, I feel Average mode or the Overlay style images work well when converting to mono and/or split toning, where colour can sometimes be a distraction.


All of these images have been taken with the Fujifilm XT4, using either the Fujifilm 18-55mm f/2.8 or 55-200mm f3.5 or Fujifilm 14mm f/2.8

The project is still ongoing, and I am planning to finish it by the end of October, and hopefully put together an e-book and a self-published book.

See more of Glenys' work at her website at [ggcreativeimages.co.uk](http://ggcreativeimages.co.uk) and on these social media sites:

 [twitter.com/ggcimages](https://twitter.com/ggcimages)

 [instagram.com/ggcimages/](https://www.instagram.com/ggcimages/)

 [facebook.com/ggcreativeimagesviews](https://www.facebook.com/ggcreativeimagesviews)





*Brighton beach through a pinhole*

# Back to basics

**Amongst the high-tech, high-resolution world of modern photography, there are photographers keeping some of the earliest techniques of image-making alive.**

Whilst the cameras we often buy (or covet!) today are packed with technology, there remain groups of photographers who enjoy doing things in 'the old ways'. For example, there is a thriving community of photographers who are discovering - or rediscovering - their film cameras and, sometimes, their darkroom equipment. This group of analogue enthusiasts seem to share a delight in the flaws and other distinctive artefacts in images which digital photographic technology has either eliminated or rendered easily remedied. There is a similar interest in analogue technology amongst audio enthusiasts for whom the odd crackle or pop when listening to a piece of music is sometimes seen as a sign of authenticity rather than a distraction.

For some though, seeking to experience the origins of photography, even this is not enough. The history of photography began with the discovery of the camera obscura and the recognition that an image

of the outside world could be projected on the wall of a darkened room if there was a small hole in opposite wall. It soon became clear that the smaller the hole, the sharper the image, although, of course, this also resulted in a dimmer image, presenting a dilemma which still creates challenges for today's photographers. The fact that this image was upside down and reversed left-to-right must have done little to suppress the sense of awe that this created for the early viewers. But this was an auspicious start to photography as we know it today, indeed, modern cameras are simply developments of the camera obscura. Over time, the ability of a lens to focus light (thereby enabling a lens to replace the small hole in the wall) and the discovery of ways to capture the image formed by the camera obscura, formed the essence of today's photography.

So what could be better to explore the origins of photography than recreating one of the earliest



*Springtime in the forest through a zone plate*

cameras: the pinhole camera, a miniaturised version of the camera obscura? Pinhole enthusiasts have been around for a long time and, early in the new millennium, a group of them got together and established Worldwide Pinhole Photography Day (WPPD) as a way to celebrate this ancient technology. WPPD is an international event created to promote and celebrate the art of pinhole photography. On this unique day, usually the last Sunday of April each year, people throughout the world are encouraged to take some time away from our increasingly technological world and to participate in the simple act of making a pinhole photograph, to share their visions, and to help spread the unusual beauty of this historical photographic process.

Over the years, WPPD has evolved to include other lens-less methods of image-making, the most common being the use of a zone plate. A zone plate uses a pattern, often of concentric rings, to create an image as a result of diffraction and interference. Zone plates are commonly used in industrial processes to focus electromagnetic waves outside the visible light spectrum, but work equally well with visible light. Whilst many contributors to WPPD complement the use of a pinhole or zone plate to create an image with film or paper to capture that image, there is a significant proportion who choose to record the image with a digital camera.

Each contributor to WPPD can upload their favourite

image to an online gallery; the rules are simple, and boil down to little more than the image must have been taken on Worldwide Pinhole Photography Day, and have been made with a lens-less photographic device.

The image created by a pinhole or zone plate tends to have distinctive features which mark them out from more traditional photography. By their very nature, pinhole images are typically soft, and the small size of the pinhole results in long exposures which can cause some elements of the image to blur or smear. Zone plates, by contrast, use relatively large apertures and produce a glowing, soft-focus image. Commonly, the size of a pinhole will result in an aperture from  $f/150$  to  $f/200$  or higher, the effective f-number of a zone plate is more likely to be in the region of  $f/40$  and lower. This makes hand held shots feasible at the higher ISO settings available with a modern digital camera.

It's easy to try out a bit of lens-less photography with body caps fitted with a pinhole or zone plate readily available online, and a home-made pinhole can be quickly made using tools most of us have around the home.

In the following pages, some of the contributors to Worldwide Pinhole Photography Day 2021 who have used digital cameras share their results and a few words about their images.

### **Want to learn more?**

[pinholeday.org](http://pinholeday.org)  
[pinholephotography.org](http://pinholephotography.org)  
[pinholeresource.com](http://pinholeresource.com)

[en.wikipedia.org/wiki/Pinhole\\_camera](https://en.wikipedia.org/wiki/Pinhole_camera)

[en.wikipedia.org/wiki/Zone\\_plate](https://en.wikipedia.org/wiki/Zone_plate)

*Put a date in your diary - WPPD 2022 is 24th April*



**Carolann Beine***South Africa*

For the past five years, every year our group of photography friends get together for the Worldwide Pinhole Photography Day. This year a local camera shop hosted a workshop where we all made a pinhole lens for our cameras. They gave us a bit of instruction on how to take photos with the pinhole lens, and then we went out around the neighbourhood to capture some street scenes.

The photo is soft and does not have the sharpness and clarity of a modern lens, but it does have a retro timeless charm.

**Nathalie Moyaert***Belgium*

This is the Sint-Gummarustoren (St. Gummarus Tower), which is a part of the Sint-Gummarus Kerk (St. Gummarus Church) in the city of Lier (Belgium). It is one of the prides of the city.

I used a digital camera with the Thingyfy Pinhole Pro Multi aperture lens. Because it was a very sunny day on the 25th of April, the exposure time was 13 sec and the pinhole itself was only 0.1 mm in diameter.

What I really like is the 'softness' of this picture, it's an almost fairy-like interpretation of the tower and (part of) the church.

**Thom Myers***USA*

This year I was a student in the New York Film Academy photography program in Los Angeles, California. Along with all the modern techniques and equipment the school offers, one of my favorite classes was Alternative Photography which led to my interest in pinhole photography, and finding the WWPD submission. I found out about WWPD through Justin Quinnell ([pinholephotography.org](http://pinholephotography.org)) while learning more about pinhole photography.

I have done film pinhole photography including beer can pinhole cameras, this image was created with a very modern Canon 5D Mark III digital camera with a Pinhole Rising pinhole lens attachment. The convenience of using a digital capture for a very non-modern pinhole image allows for very immediate results.



## BACK TO BASICS

### Michi Ueno

*Japan*

Pinhole photography has a very simple structure, so it can be involved in almost all parts of the camera. At present, there is a limit to what the user can do in combination with a digital camera. Only the manufacturer can work on the angle of incidence on the sensor.

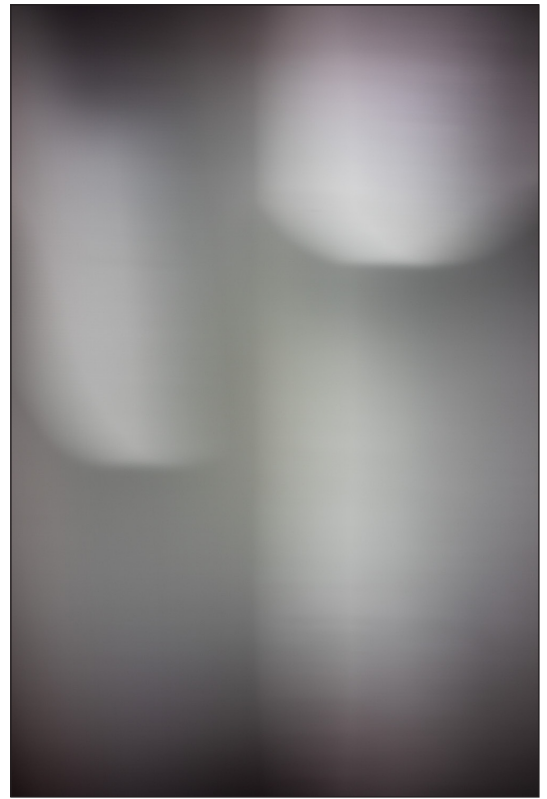
However, I think that advances in digital sensor technology have made it possible to obtain fairly good results. I feel that being able to work on new technologies is the freedom.

Freedom, that's what inspired me to take pinhole photos.

The photo that I posted on WPPD 2021 is taken using slits. The shape of the pinhole does not have to be a perfect circle. It can be suitable for each expression, the pinhole size can be large, distorted, or multiple.

Shooting with a lens can be very nice, but there are also a variety of expressions that you wouldn't expect when shooting without a lens.

For me, pinhole photography is the joy of drawing with light.



### David Passage

*USA*

Cameras are optical platforms, film or digital. It's the optics that are important. Whether you put on a Canon RF prime lens, or a pinhole made from a Coke can, that is what is important.

Digital makes your life simpler, but it doesn't make it better. I love the purity and simplicity of pinhole lens. The only aberration they suffer from is diffraction.



### Alan Summerfield

*Germany*

I live in Heidelberg, Germany and there are many old buildings and castle ruins in the area and the softness of the pinhole image lends itself to creating soft, romantic, mystical, 'olde worlde' images of these structures. The inherent long exposures cause moving objects to vanish, thereby not spoiling the picture with modern cars or people wearing modern styles of clothing.

My pinhole photographs are usually monochrome but this picture I took in colour as an advert for Heidelberg. I usually photograph on windy winter days when any tree branches are bare and blurred, emphasising the strength and stability of the building or ruin. On the PC I use HDR to combine 3 different exposures to create one image with an improved tonal range and then I remove any spots caused by dust on the sensor.





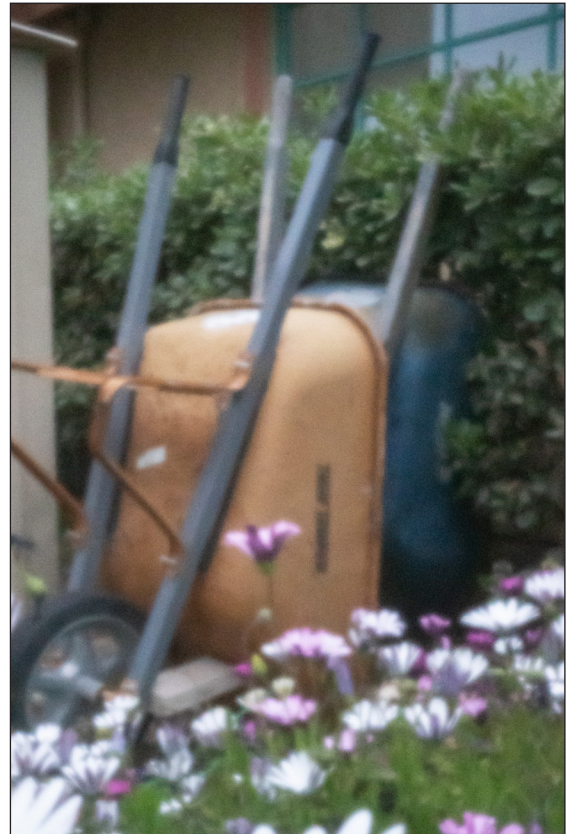
**Tony Martindale**

*USA*

My interest in pinhole photography was sparked when I took a college course in alternative and historic photographic processes. One of the first things taught was pinhole photography. Part of the attraction for me was the inherent lack of sharpness but with infinite depth of field.

I then took the body cap for my Canon 60D, drilled a hole in the center of it and, using a square of aluminum cut from a soft drink can, I made a pinhole with a sewing needle. This allowed instant shots without developing film and paper. There are commercially made pinhole body caps, with laser drilled pinholes to exact specifications available, which makes this easy for anyone to try for little cost. I'm currently using one of these on my Sony A6300.

Every year since, our tutor has held a pinhole party at his home and those of us that are around will go out and shoot pinhole photographs. This year due to COVID 19 I went out and shot pinholes in the community where I live and I was attracted to the wheelbarrows and flowers.



**Jared Gerlach**

*Ireland*

This is an in-camera double exposure of Celtic crosses and flowers. I made this exposure to celebrate spring and (hopefully) the potential for things to improve for people around the globe this year. The image was made with a Pentax K-5 and PK-mount COMA 0.25mm pinhole. Two sequential exposures were made and merged in-camera. The resulting black and white image was tone mapped in Affinity Photo, imported into PowerPoint, given the blue wash and finally the frame.

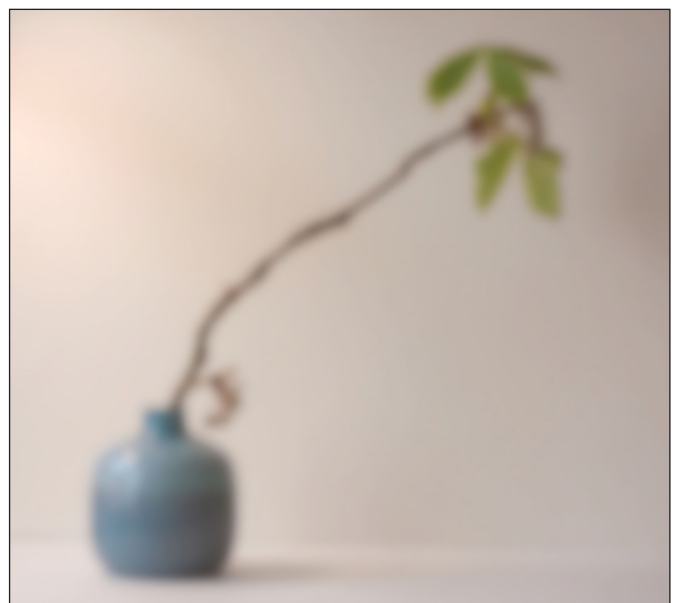


**Christoph Just**

*Germany*

For me, a magic radiates from images taken with a pinhole camera that is inexplicable to me and thus remains fascinating. Is it the long exposure time? Is it the blur? Or is the magic based on the fact that you can't see the finished picture in the viewfinder?

Once a year I try to get behind the nature of this magic.



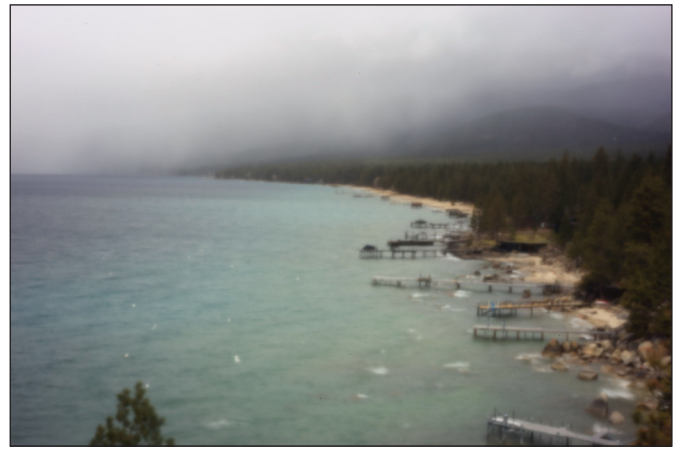
## BACK TO BASICS

### Tyson Stephenson

USA

I originally learned about WWPD in 2014 through a friend, and I quickly caught the pinhole bug. What appeals to me the most about this event is the narrow timeframe (once per year) and that it is worldwide. I also like that creating pinhole images is not an exact science with blurry yet recognizable subjects, with framing that requires some guesswork and the need to be creative artistically and mechanically. I made the pinhole myself.

Appealing to me in my 2021 submission is that the lake's docks almost present as a tilt-shift miniature effect, and the rainy/moody cloud layer is fairly rare with the high quantity of sunny days in Nevada. The technique was the most basic of any available... Set up the tripod, estimate the shutter speed/ISO to 'freeze' waves, aim, shoot. I used a Canon 6D, homemade metal pinhole affixed to body cap, ISO 100, and an exposure of 1½ sec.



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### Dave Levingson

USA

I first did pinhole photography on film in photo school in the 1970s and I didn't really like it.

But my interest in pinhole photos increased when I started using digital cameras. In the early days there was still much guesswork because it was impossible to see through the finder of a DSLR with a pinhole. And at this stage, of course, the camera was always on a tripod.

Then I got a micro 4/3 camera and everything changed. With the electronic viewfinder, I could now see what the pinhole was seeing, and actually compose the photo. The meter in the camera would give me an accurate exposure. As the sensors in the micro 4/3 cameras improved I was able to use high ISOs and, with the help of in-camera image stabilization, could often hand-hold the camera for outdoor photos.

Now I regularly do pinhole photos and always make an effort to contribute one to Worldwide Pinhole Photography Day



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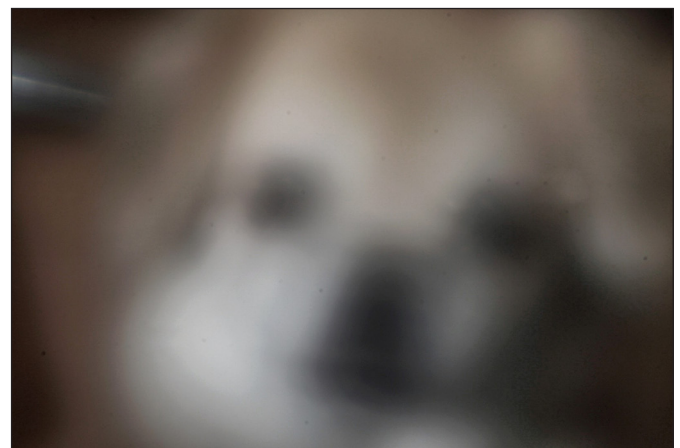
### Ari Rapo

Finland

Digitally realised pinhole is a technique where the 'lowtech' meets the hightech. I mean, the secret of camera obscura lens will produce the image for the digital camera sensor. There is something meaningful and magical for me.

There is also some kind of contemplative or meditative manner of the pinhole photography. You cannot see beforehand the result, it is somehow a creative but also a random process when you 'take photos' with pinhole technique. Playfulness and curiosity are probably the main factors which make us pinholers play with these photos.

Inspiration for my WPPD image came from our Tibetan spaniel Jazzmine's begging face and staring gaze.







*The judging pavilion in the evening*

# A moment of fame



**An unexpected e-mail resulted in JULIA WAINWRIGHT FRPS joining the panel judging the BBC Countryfile calendar competition.**

When an unsolicited email, purporting to be from a BBC researcher, landed in my inbox I admit I was more than a little suspicious. It said the BBC were seeking wildlife or landscape photography enthusiasts, to help judge the photos for this year's Countryfile calendar competition. After a bit of searching on the internet, I satisfied myself that the enquiry was genuine and so confirmed my interest.

After a background checks on my photographic skills and experience and signing some forms, I was enlisted as a judge. The BBC required six judges to work in pairs, and their COVID rules required those pairs to be part of the same social bubble. After a bit of persuasion, I convinced my

partner (Ian Roberts) that he would be ideal for the role and he too was enlisted.

The Countryfile Calendar competition has been running for 30 years and is one of the biggest photography competitions in the UK. The calendar is sold in aid of the BBC Children in Need appeal and last year's issue brought in more than £3 million.

Filming and judging took place on a sunny July day, at a Pavilion on the private 2700 acre Wormsley Estate in Buckinghamshire. First mentioned in the 1106 official records, the estate is now owned by Mark Getty, co-founder and chairman of Getty Images.

We arrived for a 9.30 am start and were given





*Coyote in the snow*



*Starling squabble*





*Cheetah siblings playfighting*

a short briefing on how the day would pan out. It was at that point we realised that filming was going to be as big a part of the day as the judging.

We were filmed constantly throughout the day; in action with our cameras, individual interviews, arriving and departing (numerous times) over the bridge to the pavilion (a drone hovering just inches above our heads) and, of course, when judging the images. Hours of footage are required for a few minutes of airtime. For someone who is much more comfortable behind, rather than in front of the camera, this presented quite a challenge, and I now appreciate the skill required to make re-take after re-take look natural.

The competition theme was 'Miracles of Nature', and entries featured anything from UK landscapes



*The judges take a break*

to wild or farm animals in a natural setting. Pets, zoo animals and captive wildlife images were not eligible, although we did spot a few that had slipped through the net, including the occasional domestic cat and a shot of Niagara Falls which, to my knowledge, has not been re-sited in the UK!

This year there were almost 46,000 entries. By the time we got to see them this number had been whittled down to 4500, and we were tasked with paring them down to 1000. Three computer tablets were each loaded with 1500 images and we sifted through these until we reached the required 1000, finally finishing at 9.30 pm. A long, tiring day but a unique experience. The following day it was the responsibility of the main judging panel of John Craven, Simon King and Cerys Matthews to reduce the 1000 down to 12.

The show went live on 22nd August 2021, and it certainly gave me quite a buzz when they showed four of my own images on screen (see above and previous page). Over the next few weeks we were inundated with phone calls, emails and social media messages from people who had watched the show. Some friends had known we were going to be on the programme whilst others were suitably shocked when we were suddenly beamed into their respective living rooms.

If you feel the urge to take a look, the episode will be available to watch on BBC iPlayer until July 2022 ([www.bbc.co.uk/programmes/m000z3mq](http://www.bbc.co.uk/programmes/m000z3mq)). Our moment of stardom begins at 7m 44s and I then appear again briefly at 20m.





All around by Sanjoy Battacharya

# The RPS in India



For many of us, India may be a holiday or 'wish list' destination. Offering a huge range of photographic opportunities for the tourist, it is little surprise that there is also a thriving community of photographers in the country. **ASHOK VISWANATHAN** tells us a little about the activities of the India Chapter of the Society and shares some of its members' work.

Traditional RPS activity in its 168-year history has predominantly been based in the United Kingdom. Nevertheless, over the last few decades, a few Indians have had their work featured in the RPS Journal and gained FRPS and ARPS distinctions. Examples include A L Syed, C Rajagopal, Dr C Bardrinath, Dr G Thomas, R R Bharadwaj, Benu Sen, T F Geti and O P Sharma. However, the Society was not generally known to the average Indian amateur or professional photographer.

The India Chapter of the Royal Photographic Society was founded in 2008 by Rajen Nandwana, who acted as its local representative. Rajen is an

industrialist and a keen photographer himself. Using Canon and medium format Fujifilm GFX systems, he creates arresting architectural and landscape images. He is also a recognised master printer using Epson large format printers.

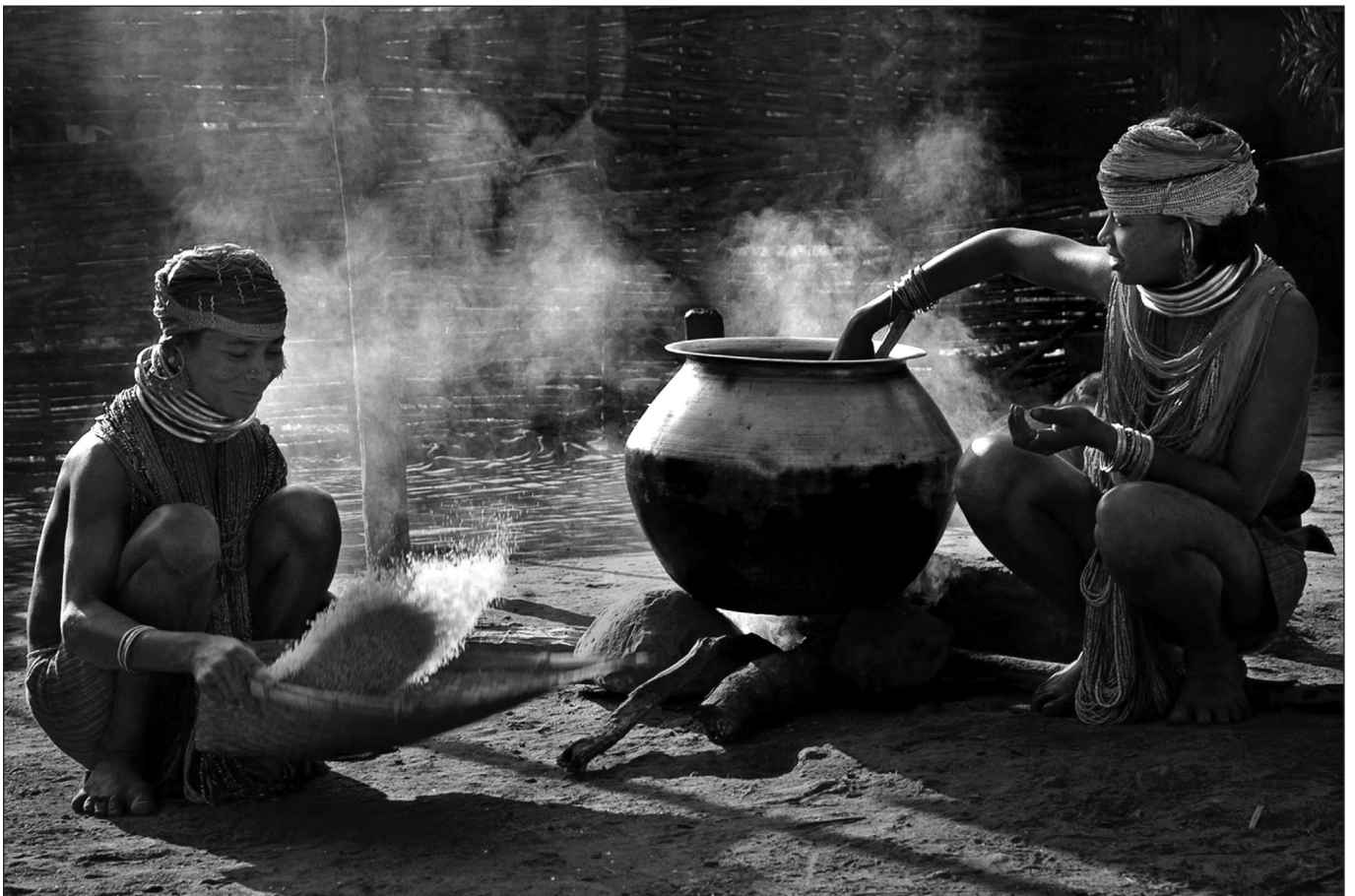
Currently, the RPS has only tens of resident Indian members some of whom have secured RPS distinctions. Indian RPS members are active on the international exhibition circuit winning acceptances and awards. The scope of work covers landscape, seascapes, documentary, architecture, nature, portrait and travel. A wide variety from a small group!

In 2021, the RPS made a strategic decision





Lake Nakuru, Kenya by Ashok Viswanathan

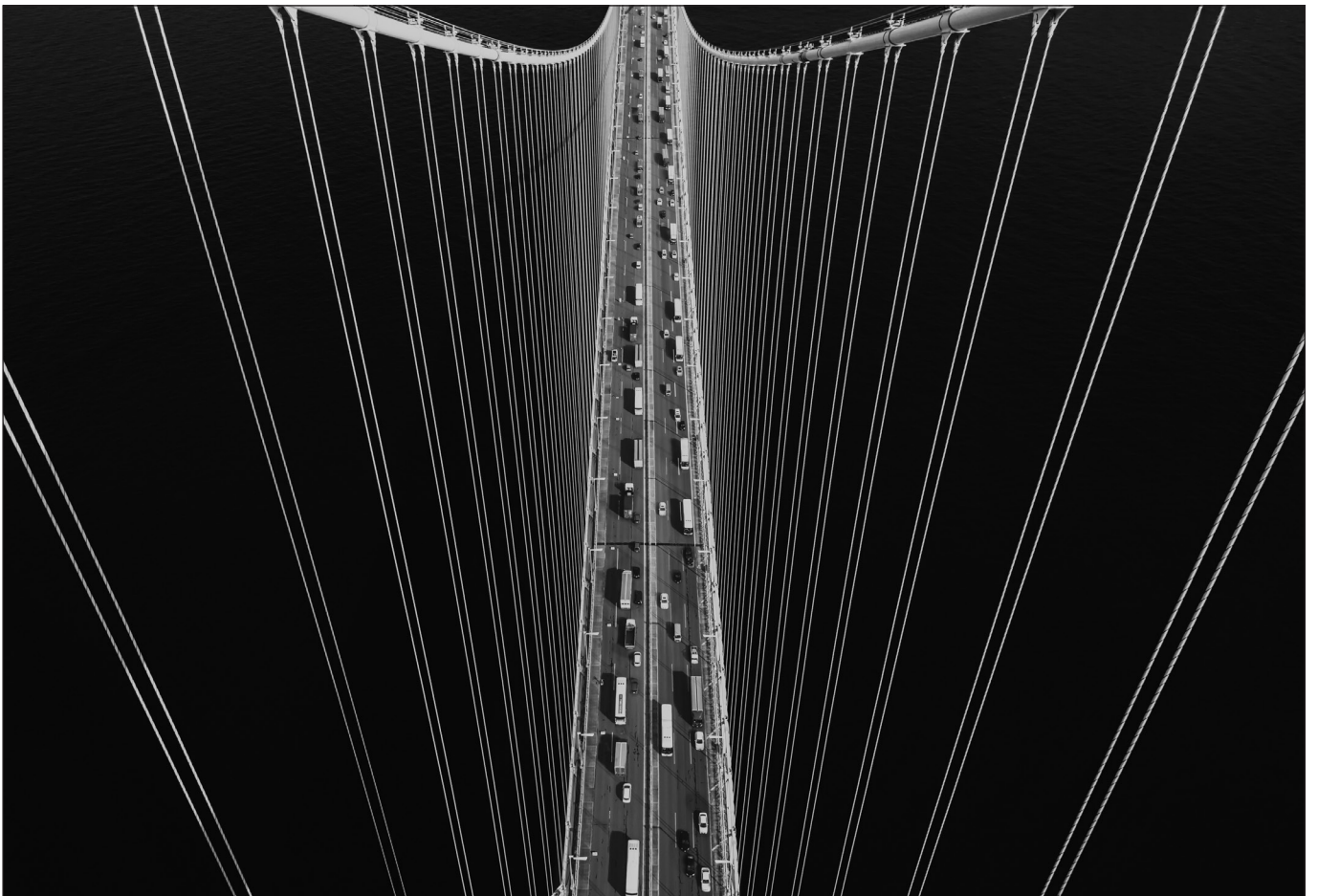


Tribals by Srinivas Reddy





*A pair of Red-eyed Tree Frogs by Dr Pramod Shanbhag*



*No boat by Satheesh Nair*



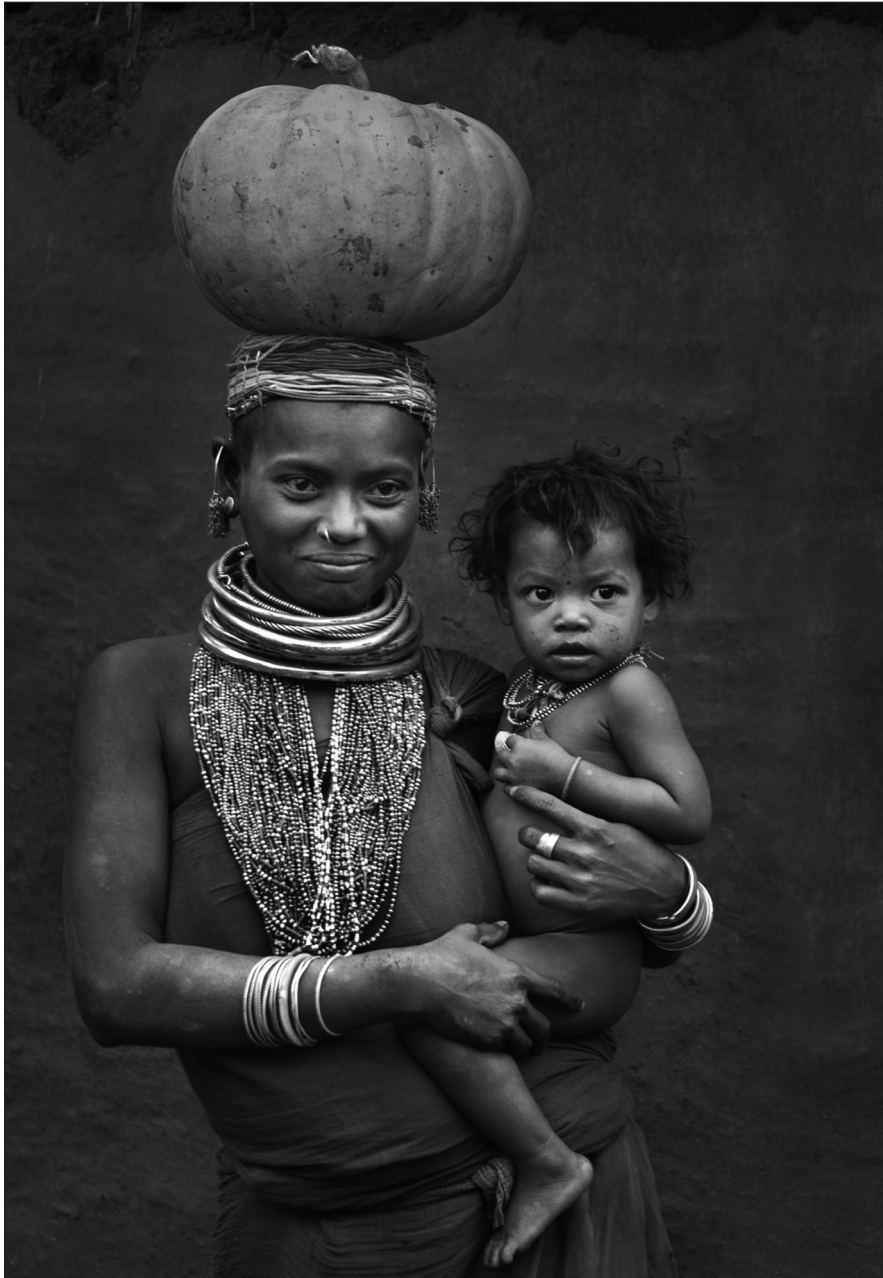


*Layers of colours by Sanjoy Battacharya*



*On duty by Partha K Palit ARPS*





*Tribal woman by Srinivas Reddy*

to expand its footprint, and to promote 'Photography for Everyone'; this also encompasses geography. Competitions, such as the annual International Photography Exhibition and the Documentary Photographer of the Year are open to all worldwide and no membership is required.

Notwithstanding Coronavirus spread and international lockdowns, the Society has increased its activity and reach. Using Zoom, a wide range of talks and workshops on a variety of photographic subjects have been available.

From this standing start, the RPS India Chapter is gaining momentum. It hosts both Indian and foreign photographers who showcase their work in RPS India events. In a matter of five months, RPS India events have become recognised

as sensational and become very popular. The talks cover a wide variety of subjects including architecture, aerial panoramas, the Antarctic and the Himalayas - from the temples of South India to the skyline of Manhattan. The recent talk by Jonathan and Angela Scott (renowned for their BBC series, 'Big Cat Diaries'), broadcast live from the Masai Mara, Kenya, had 200 international viewers. Speakers and viewers come from five continents and at best 15 countries from around the world. The talks are entirely free with the sole aim of promoting photography, and the RPS, in India to any who are interested. All this has been done single-handedly by Rajen Nandwana.

Written audience feedback has praised both the prodigious quality, and quantity, of educational programmes from the RPS India Chapter.





## SPRINGTIME

**Roger Hinton LRPS**

A club competition judge here in Aberdeen summed up one of my altered reality images as 'fichering and spot welding'. Clearly a good Scottish word, 'fichering' requires a certain amount of throat clearing to pronounce the 'ch'. The Dictionary of Scots Language (where else?) defines 'ficher' as: 'to work in a footling or trivial way' - so I don't think I was receiving a compliment. There's maybe a Photoshop plug-in somewhere to help one footle, but I presume 'spot welding' is the equivalent of the clone tool.

The idea for *Springtime* came to me as I tidied up my workshop during lockdown, and found a box of springs. With the first signs of life beginning to emerge from the garden's own winter lockdown, a table-top project started to form in my mind. The springs could form the stems of flowers.

This composite comprises nine main elements. It ended up with 28 image layers, mostly with masks, and 17 adjustment layers. These break down parts of each element, which makes it easier to edit the details. So it pays to be systematic in the workflow. The various parts were organised into separate group folders and named in order to keep track of the layer order and processing.

All the images were taken in RAW with a Fuji XPro-2 and 18-135mm lens. An 11mm extension tube was added for close-up shots of the springs. My table-top background comprised a sheet of white wallpaper draped over a chair to form an infinity curve. This was illuminated by a couple of small LED panels. The lights could be moved around to produce a shadow consistent with the lighting of the

## DIGIT CHALLENGE

figure (see figure 1 – The springs). Initial adjustments were made in the Lightroom Develop module, before transferring the images to Photoshop CC for cutting out, masking and building the individual layers in the final file.

The background has two parts, ground and sky. Gradient masks soften the edge between them. The ground is a large black and white checked carpet. Check patterns seem to be *de rigueur* for lots of creative stuff so I am building a stock of them! This image provided a nice matt surface (no pun intended) so I can create simple shadows and don't have to worry about reflections. The perspective was almost symmetrical. It just needed a tweak with the Skew Transform tool to get it lined up. The sky was made from an image of clouds in a blue sky. These were stretched with a horizontal motion blur and softened with Gaussian Blur.

All the remaining elements were cut out using the Object Selection Tool to capture the relevant subject. These selections usually needed some refining using the Polygon Lasso tool. The edges were softened so things don't look just 'stuck on' by applying 1 or 2 pixel feather using the Select and Mask tool. Completed selections were saved as a layer mask on the relevant image layer. Further fine adjustments can then be made by painting black or white into the mask. Displaying individual layers over a solid white or black background can help here.

The narcissus blooms were cut out and sections of the springs cloned to join up with their stems. A blurred grey-scale copy of each flower was used to locally adjust their brightness and add some shading to the petals. I now had three 'spring' flowers in a row (see figure 2 – Three in a row). That looked a bit staid, so I moved the centre flower back out of alignment for better 3D effect. Still not very interesting, but I knew I had a butterfly (from the University Zoological Department) which I could add to the scene. It needed warping, shading and a shadow adding in order to match the angle of the flower (see figure 3 - Butterfly).

The figure in red came from my collection of street images. Here, people were looking up at a fairground ride - just what I needed (see figure 4 - Boy in red).

The main elements were grounded by adding the shadows just above the background layer. For the figure, the shadow was lightly painted in black onto a blank layer using a soft, low opacity brush. The springs had shadows from the original image.

Finally, a very low opacity layer of rendered clouds was overlaid to soften the whole image. The overall lighting was adjusted by 'fichering' with curves, exposure and contrast and a keyline added.

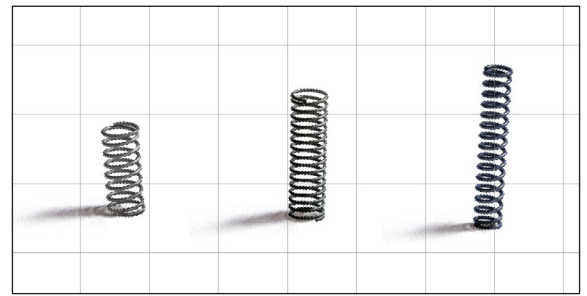


Figure 1 - The springs

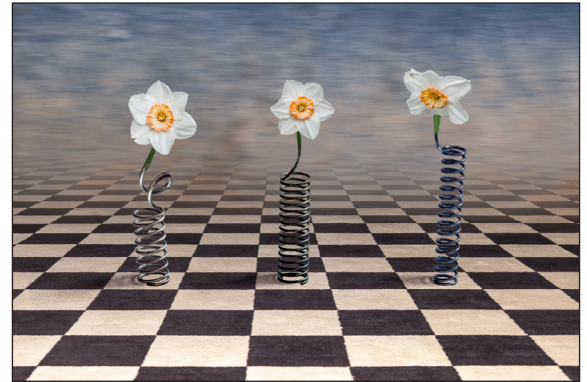


Figure 2 - Three in a row



Figure 3 - Butterfly



Figure 4 - The boy in red





## FIRE FLOWERS

**Samantha Ruth**

*Fire Flowers* was the result of various cyanotype experiments undertaken last summer during lockdown. It was a visit to 'The International Garden Photographer of the Year' exhibition at Hardwick Hall in 2019, and seeing the winning image by Jill Welham, that inspired me to create my own cyanotype. Having a background in Fine Art, I am particularly drawn to different photographic techniques which have a more 'painterly' feel. As a result, I decided to conduct some more research into the whole process.



## DIGIT CHALLENGE

One question that might immediately arise is: 'What is a cyanotype?' and secondly: 'Is it photography?' A cyanotype is an old established photographic printing process, invented by Sir John Hershel in 1842, that typically produces a cyan-blue print. Engineers used it as a simple and low-cost process to produce copies of drawings, referred to as blueprints. The process uses two chemicals: ferric ammonium citrate and potassium ferricyanide. Combining the two chemicals in water creates a solution which is a light sensitive substance that can be applied to paper. Objects are then placed on the light sensitive paper and exposed to the sun, producing an image.



Image 1



Image 2

The chemical solution produces a yellowy green coloured liquid once it has been applied to watercolour paper. There are two types of cyanotypes: dry and wet. As the names suggests, the chemical solution can be applied to paper and left to dry - an artistic way of creating a negative. The colour changes from a yellow-green to a rich Prussian blue once it is exposed to ultraviolet light or sunlight. After exposure, the paper is developed by washing it in cold running water. The colour blue darkens upon drying.

I preferred to experiment with the wet process and tried a variety of techniques to create an assortment of different images.



Image 3



Image 4

I placed dried flowers on the wet paper first and then added other general household chemicals, such as bicarbonate of soda and washing up liquid, to see the different reactions these would make. It was interesting, for instance, to see how areas on the paper would lighten where I had placed the baking powder. For me the real delight was watching the exposure and developments of the image and capturing it mid-process.

My experiments were conducted in July last year and on a bright, sunny day. It was fascinating to watch the colour of the solution change very rapidly, within minutes. Image 1 shows the original *Fire Flowers* image, ready to be placed in the sunlight and was exposed at 09.24am. Image 2 shows the same image, on the same day, just 7 minutes later, at 09.41am.

Once I had captured my raw cyanotype image, I decided to further enhance it with additional post processing. The final *Fire Flowers* image was a result of this. Intermediate image 3 shows how different the photograph begins to look just by adding a texture layer. I have a library of different images of peeling paint, old tombstones, tiles and leaves, which I use as a texture layer in a variety of ways. As the name suggests, I wanted *Fire Flowers* to be a vibrant image so I increased the red contrast to bring out the colour (image 4). The final image is beginning to take shape with this adjustment. I felt the oranges and reds needed toning down and adjusted this accordingly. Less is more sometimes!

It was relatively simple to conduct the experiment and I enjoyed trying out an alternative form of photography. No camera required! I hope you'll agree that, although it is an old technique, it still produces, with additional modern post processing software, intriguing, fresh and vivid results nearly two centuries later.



All previous issues are available from the Digital Imaging Group magazine page of the Group's website at [rps.org/digitarchive](http://rps.org/digitarchive)



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