

DIGIT

THE MAGAZINE OF THE ROYAL PHOTOGRAPHIC SOCIETY DIGITAL IMAGING GROUP



Upcoming DIG events

Details of all DIG events are available on the Group's website at tinyurl.com/sxzl487



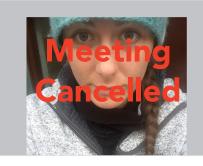
As a result of the COVID-19 pandemic, some planned events have been cancelled. Please see the RPS website at rps.org/ covid-19 or contact the Centre Organiser to get the latest information before travelling to an event. **Digital Imaging: South East** Saturday 28 March 2020 Maidstone ME14 3AU



Tesni Ward 'A Workshop with Tesni at the Owl Academy, Kent Life, Maidstone

www.rps.org/workshop-with-tesni-ward

Digital Imaging: South East Sunday 29 March 2020 Maidstone ME17 4HX



Tesni Ward 'A Presentation from this young and upcoming Nature Photographer

www.rps.org/talk-with-tesni-ward

Digital Imaging: Southern Sunday 5 April 2020 Ringwood BH24 1DW



Kevin Maskell FRPS Margery Maskell ARPS 'Prints from out of the Box'

Fine Art, Nature, Landscape, Travel www.rps.org/digsouthern-2020-04

Digital Imaging: Thames Valley Sunday 19 April 2020 Wokingham RG41 3DA



Io Teasdale FRPS

"THE FACTORY" 'MY ADOPTED FAMILY'

+ PDI Competition

www.rps.org/digtv-2020-04

Digital Imaging: Western Sunday 10 May 2020 Ilton, TA19 9HG



Sandie Cox ARPS DPAGB How to take better wildlife images plus This and That and Travels around the World

www.rps.org/DIGWesternSandieCox

Digital Imaging: Eastern Sunday 17 May 2020 Foxton CB22 6RN



Les Forrester ARPS 'My Vision My Photography' architecture, fine art scapes and more

www.rps.org/dig-eastern/les-forrester/

Digital Imaging: Thames Valley Sunday 17 May 2020 Wokingham RG41 3DA



Sam Gregory MORE THAN AN IMAGE A JOURNEY INTO

LANDSCAPE PHOTOGRAPHY & BEYOND

www.rps.org/digtv-2020-05

Digital Imaging: North West Sunday 24th May 2020 Frodsham WA6 7QN



Adrian Beasley Getting the most out Lightroom

www.rps.org/dignw-may2020



DIG Committee

lan Race (Chair) digchair@rps.org

Lynn Phillips LRPS (Secretary) digsecretary@rps.org

Trevor Pogson LRPS (Treasurer) digtreasurer@rps.org

Chas Hockin LRPS (Web Editor) digweb@rps.org

Deborah Loth (Communications) DIGNews@rps.org

Rex Waygood (Operational Manager) rex_waygood@mac.com

lan Thompson ARPS (DIG PIComps and DIGIT Asst Editor)

digPlcomp@rps.org

Dennis Knowles (Membership Sec and Accolade) DIGmem@rps.org digaccolade@rps.org

Dr Barrie Brown LRPS (Head of Publications) drbjbrown@gmail.com

Jeff Hargreaves LRPS jeff.hargreaves@btconnect.com

Co-opted

Dr Barry Senior Hon FRPS barrysnr633@gmail.com

Holly Stranks LRPS (Accolade Assistant Manager) hollystranks@gmail.com

Gary Beaton (DIGIT Editor) digeditor@rps.org

Sue Totham (DIG Print Exhibitions) DIGexhibition@rps.org

Greg Dunn (DIG Catalogues) gregdunnpictures@gmail.com

DIG Centre Coordinators

Eastern

Mark Gillett 07984 518959 mark_gillett@icloud.com

North West

Malcolm Blackburn 01298 812 233 mblackburn@redseats.net

Southern

Dr Barry Senior Hon FRPS 01425 471 489 digsouthern@rps.org

South Eastern

Avril Christensen and Melanie Chalk ARPS 07718 537993 digse@rps.org

Thames Valley

Alan Bousefield ARPS 01494 764 975 digthamesvalley@rps.org

Western

Sheila Haycox 01392 468859 sah2@live.co.uk

Yorkshire and North East

Susan Gibson sue.gibby@gmail.com

Cover image: Tor mist by Rose Atkinson LRPS

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Printed by Henry Ling Ltd., at The Dorset Press, Dorchester, DT1 1HD.

From the chair

Ian Race

Janet Haines stepped down from DIG Chair at the DIG AGM in February. Janet, together with the rest of the DIG committee, have, over the 5 years term of her tenure put in much effort to make DIG the successful and informative Special Interest Group of the RPS that it is today.

I would personally like to thank Janet and her committee for their time, effort and expertise in supporting the Group through her term of office. I would also like to thank Janet for her support, time and advice in handing over to me the role of Chair.

Most of the DIG Committee are staying on, with the addition of a handful of new members. The whole committee, their roles and brief biographies are on the DIG Committee page of the RPS website.

The current committee are revising the Strategy Document for the Group and we would like to hear from our members if there are issues that we need to address and your thoughts on things that we can do to add value for you.

I recently had the pleasure of listening to a very interesting In Focus Tour in the Photography galleries at the Victoria and Albert Museum on 'Women missing from the history of photography'. If you have the opportunity, I do recommend that you visit the V&A photography galleries if you haven't yet done so. Keep an eye out for these tours which are free and are 'drop in' and last about 45 minutes.

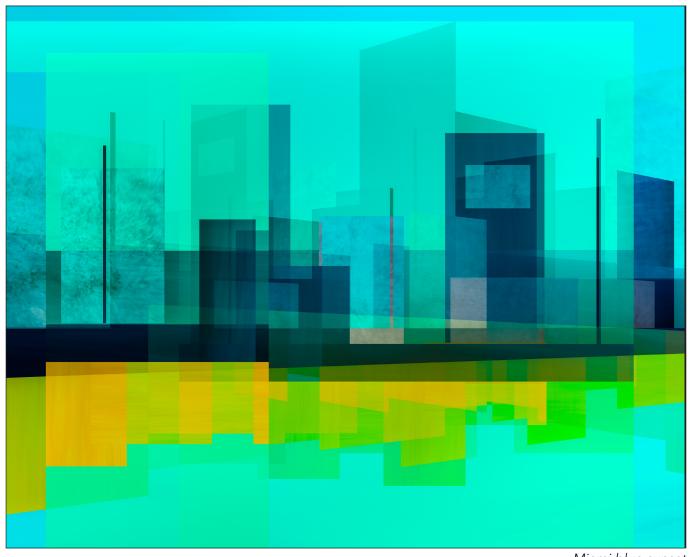
Editorial

Gary Beaton

For most of us, Spring is here (well, hopefully, I write this a few weeks before it arrives on the doormat), and no doubt ideas for images taking advantage of the better weather are coming to mind. I hope that this latest issue of DIGIT will help to inspire and offer more ideas.

As ever, we have a broad selection of articles, ranging from a bit of history of car and racing photography, to astro-photography using equipment which many of us have available, and approaches to modifying a captured shot to create fascinating and beautiful derivitive images.

Add in a variety of members' Challenges, showcasing images and their creation, and I hope there will be something for everyone within these pages. I wish you good reading.



Miami blue sunset

Variations on a sunset



NEIL MILNE takes an image and then follows his imagination to create a variety of derivations, each with its own character.

I was asked to write an article about how I process images and where my ideas and inspiration come from.

I thought the easiest way to demonstrate this would be to show a number of different images I produced using the same photograph each time as my source of 'raw material' for the other images shown here.

To talk briefly about my inspiration I have always been a keen cinema-goer and love the rich visuals in sci-fi films in particular. My two children have grown up in the era of Playstation games and Japanese manga comics. I think I have picked up some of the influences from them.

I have only recently come to photography and I certainly don't claim to be particularly skilled in the use of Lightroom and Photoshop. That said, I'm not scared of them either and I am happy to follow my imagination wherever it takes me. A lot of the time the ideas run out of steam but now and again an idea comes good and I get

VARIATIONS ON A SUNSET



Hong Kong sunset

genuinely excited at seeing the end result.

My workflow follows generally the same lines. I start with images in Lightroom, make a virtual copy which immediately means I'm free to play around without any adverse consequences. After some technical adjustments for white balance, cropping etc., I export the image to Photoshop.

At this stage I will start with a plan. Each of the images that follow the 'Hong Kong sunset' picture were visualised beforehand to an extent.

'Shades of gold' was a first attempt and looks fairly simple but contains a good number of differently hued sections of the sky layered against each other. I was looking for the blocky effect.

'Sci-fi sunset' came next. My idea here came from the visuals of the recent Blade Runner 2049 film showing a dystopian cityscape. 'Cyborg eye' followed on from that. I wondered what an artificial robotic eye would see as it looked at the sunset. This consisted of various layers each adapted using the mosaic tool in Photoshop.

'Barcode' was an idea that came to mind when I looked at the image in B and W. I thought by offsetting multiple layers of the image it would create an abstract barcode effect.

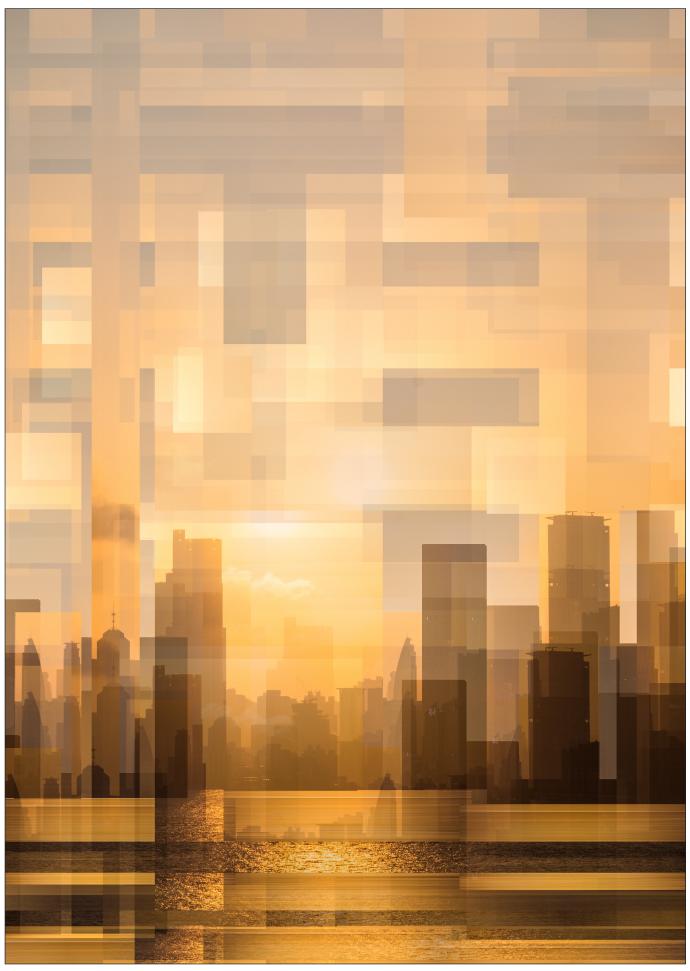
'2001' was inspired by the film of the same name. I simply altered the perspective of a number of layered sections from the original image to look like the monolith and added a lens flare to give it a 'spacey' feel.

Finally 'Miami blue sunset' (see previous page) harks back to the days of watching Miami Vice. This is a construct using small sections of the original but I altered the hues and created several offset layers to create depth.



Sci-fi sunset

VARIATIONS ON A SUNSET



Shades of gold

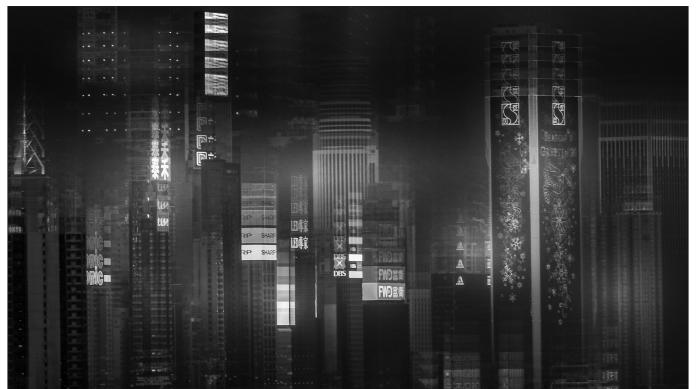
VARIATIONS ON A SUNSET

I'm fortunate in that I only work seasonally in the summer, so on the long winters nights its easy for me to spend time experimenting with different ideas. Of course these images could be produced without taking many photographs but for me it is important that what I am producing is drawn from images that I have taken.

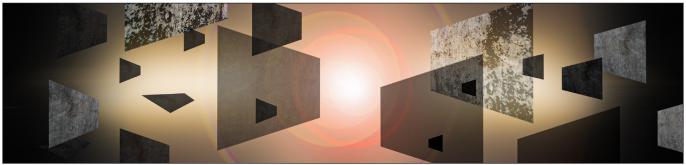
Most of all it's fun and creative. I have recently started to paint with acrylics. I'm 60 this year and have never picked up a paintbrush until now. It's definitely inspired by my photography and I've just started to experiment with blending art and photography.



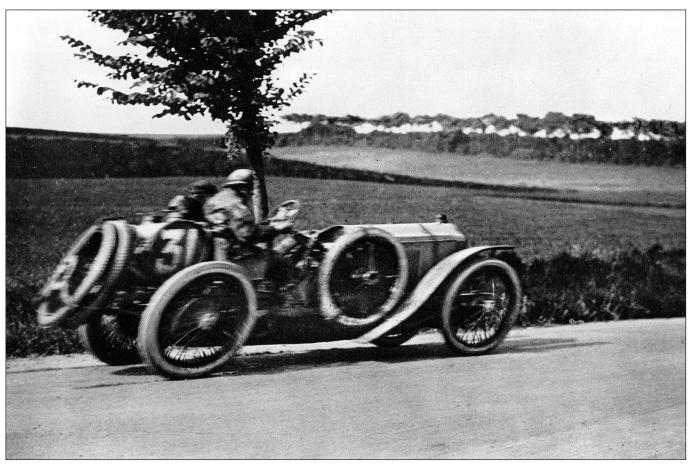
Cyborg eye



Barcode



2001



A Lorraine-Dietrich racing car by Jacques-Henri Lartigue

The birth of car photography



JAMES MANN is a self-confessed car nut and shoots cars for *Classic and Sports Car* magazine. Here he takes a look at the beginnings of car photography and some of the challenges that early action photographers faced.

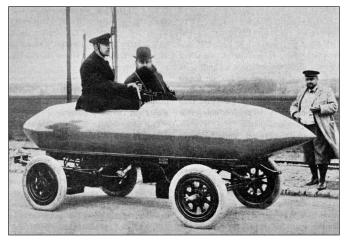
By the time Karl Benz introduced his Motorwagen to the world in 1886 photography was already established as both an art and a science.

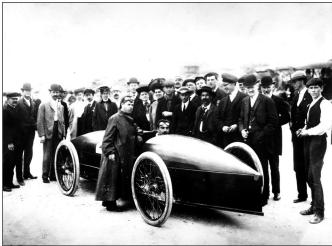
In fact Frenchman, Joseph Nicephore-Niépce, the prolific polymath credited with the first process to fix an enduring image, Heliography, in 1827, had invented an early form of internal combustion engine way back in 1807, although he fitted it to a boat rather than a car.

So fast was the development of new technologies in the Victorian era that Benz's quadracycle

powered by an internal combustion engine did not evolve much and was quickly overtaken by steam and electric powered vehicles that proved not only faster and more efficient but also the most popular cars in those early days of motoring.

In 1899 Camille Jenatzy broke the important 100km/h or 62 mph land speed record in his electric car Le Jamais Contente, and in 1906 Fred Marriot in a American Stanley Steamer, the Stanley Rocket, set a new land speed record on Daytona beach in Florida at 127mph.

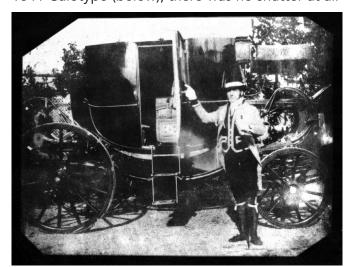




The land speed record breakers; Le Jamais Contente in 1899 driven by Camille Jenatzy (top), and the Stanley Rocket in 1906 driven by Fred Marriot (bottom)

But how to record all this high-speed derring-do?

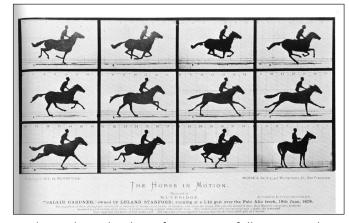
Exposure times in the early days of the Daguerrotype were up to 30 minutes and elaborate frames and braces were offered to hold the subject of a portrait still for the time the shutter was open. Henry Fox Talbot's coachman had to stand still for 3 minutes for this very early 1841 Calotype (below), there was no shutter at all



for the earliest cameras just the lens cap that was removed and then replaced. Exposure times were quickly reduced with further advances in lens technology and accelerators, added to improve the light sensitivity of the plate, which brought these down to under a minute.

But even the portable photographic equipment of the Victorian era was heavy and unwieldy with early models using glass plates that needed coating with wet collodion emulsion on site and developed immediately afterwards. The search for the technology that would allow an 'instantaneous' image was on.

Fox Talbot had successfully managed to capture motion in 1851 using a sudden electric flash on a copy of the Times newspaper attached to a spinning wheel, but was not until 1878 that action photography really came of age when inventor Eadweard Muybridge successfully captured a race horse in motion, using a shutter of his own design with speeds of between 1/125-1/1000th second, that the problem was solved.

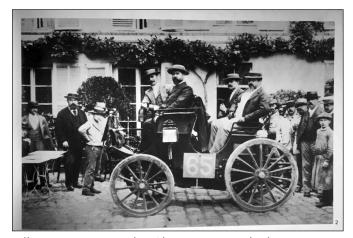


Eadweard Muybridge's first successfully captured images of a race horse in motion

Cameras were still large and cumbersome but, with the invention of the gelatin coated plate, started to come down in size and by the 1880s there was a myriad of hand held equipment available. Enter George Eastman, the manufacturer of 'American Film', an emulsion-coated paper he invented, and his Kodak box camera. At just 3 x 6 inches it had a fixed focus 57mm lens set at f/9, a barrel type shutter and was preloaded with sufficient film to produce 100 negatives.

Just as camera and film technology was becoming more accessible, so too were motor vehicles. The world's first motor race, the Paris to Roeun trial, was organised in 1894 with 21 starters.

First car home was a steam tractor that was disqualified as it took two people to operate it, a driver and a stoker. But Albert Lemaître, in a 3hp Peugeot, as shown in this fine photograph (below), came in second and was determined the winner.



Albert Lemaître, in his 3hp Peugeot which was ultimately declared the winner of the world's first motor race, the Paris to Roeun trial, in 1894

In 1895 the Lumière brothers showed their first cinematograph, the first moving image film. Although the quality was poor, it quickly improved and it asks the question why should photographers persevere to shoot stills of action when you could see the subjects move?

The answer is complex. Cinema was costly and difficult to produce whereas photography, with Mr. Eastman's help, was simpler and a whole lot cheaper. Publications sprung up that demanded imagery from races and events, and now with advancing technologies 'the decisive moment', as Henri Cartier-Bresson called it later on, came into play. Photography could capture a still frame of the action whereas the movie could not.

Freezing action with a fast exposure was only part of the story for, although the image was captured, it didn't offer any expression of movement. New techniques would have to be developed to capture the atmospheric type of action photography now possible due to the faster shutters, lenses and emulsions.

Movement in a photograph was often unintentional in the early days, and more by luck than judgement as professional photographers grappled with handling their ungainly plate cameras. It's remarkable that there were so many successful action images in those early days.

Viewfinders were still basic affairs, usually just a



Lydston Hornsted's land speed record-breaking Mercedes in 1914

wire frame mounted on the front of the camera, making it difficult to track a moving vehicle. Light metering was by external light-meter or general exposure tables, and relied heavily on the latitude of the media to capture the image.

There are many atmospheric images of racing from this first decade of the 20th century, but as equipment improved photographers started to experiment with what was achievable.

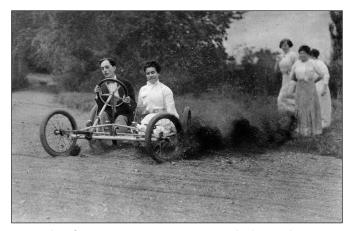
One of the most famous early motor racing photographs (below), taken in 1912 by a young French Photographer Jacques-Henri Lartigues, shows a passing Delage taken from the side of the road during the Grand Prix organised by the Automobile Club de France. It has become famous for it is one of the first action images using a focal plane shutter which scanned from bottom to top, hence the leaning forward nature of the subject. Cartoonists of the day picked up on this and used what was effectively an aberration, with oval wheels pitching forward, to depict speed in their drawings from then on.

Lartigues had developed his techniques earlier



Grand Prix de ACF Delage 26th June 1912 taken by Jacques-Henri Lartigues

to produce interesting action imagery of his friends larking about with a go kart in their garden (below), and it was only in retrospect that the significance of these very modern looking photographs was recognized with their informal approach and technical skill.



Friends of Jacques-Henri Lartigues larking about in a go-kart

He used a range of equipment from large plate cameras, a Kodak Brownie and a Leica, the new, high quality German camera, that had first appeared in 1925 and was small enough to put in your pocket. Leica's motto was 'small negative, big pictures'; beautifully engineered, they featured a very high quality lens and were virtually silent.



By 1922 technology was advancing and permitting relatively high-quality images of movement to be captured, such as this example of Jules Goux in his Ballot at the Targa Florio

The most successful of the early action images were scenes with the car passing through the frame, with the camera static. However, as shutters improved and lenses became faster, a new style of action photography, that of panning the moving car as it passed by, matching the



An early example of panning; a 20hpTalbot taken at the 1908 2000 miles RAC trial

speed of the swing to the subject, began to be developed. This gave the impression of what the spectators saw as they swung their head to follow the car as it passed by with a sharp subject and blurred background.

The amount of blur and the success of the shot relied on a number of variables, some of which could be controlled and others not. First amongst these was the speed of the subject and its axis. Whether it was passing straight by or coming towards camera was the most significant of these, with a faster shutter speed needed for a car in ¾ view. With practice early motoring photographers were panning at speeds from 1/250th second down to 1/100th second which, when you consider the equipment, was no mean feat.

Dramatic action images started to appear in the *The Motor* or *Autocar* that wouldn't have seemed possible a decade before. Many of these images were taken on the new 35mm film stock, popularised by Leica and launched by Kodak in a pre-loaded single use cartridge in 1935. 35mm film had been used before as early as 1908 by photographers but it was 70mm movie stock, split down the middle and re-sprocketed, and had to be loaded into reusable cassettes for each use.

The next development that helped action photographers was the arrival of the 35mm single lens reflex cameras, such as the Kine Exakta, that appeared just before the war. Reflex cameras had been around for a while but the viewfinder was blanked as the mirror sprang out of the optical path just before taking the picture, effectively delaying the shutter release which was not ideal for action photography. This was solved by Pentax in 1954 with the introduction of their instant mirror return mechanism, a system still in use today.



Early use of Kodachrome; Phil Hill in his Ferrari taken at the 1958 Portuguese Grand Prix

Although the Lumière brothers had invented their colour Autochrome process back in 1908, it remained costly and unreliable and it was not until Kodachrome, and shortly afterwards Agfacolor, was introduced in 35mm format in the mid 1930s that colour action photography became more popular and practical. It was still expensive however, and many photographers still used black and white film stock until the 1990s, as it still offered better latitude and was better for action in low light.

Telephoto lenses with longer focal lengths had first started to be developed in the Edwardian era, with some featuring multiple positive and negative lens groups as used in opera glasses, but it was not until the rapid development that WWII brought to many imaging technologies that affordable versions started to appear. Wide angle lenses were also developed and the first zoom lens, the Voigtlander 36-82mm, appeared in 1959. Also in the late '50s, Nikon introduced their SP camera, although only a rangefinder, it allowed a motor-drive capable of 3 frames per second to be attached.

A new breed of motor sports photographer started to appear. These photographers followed the races internationally, supplying imagery to magazines and news organizations, as well as to sponsors as more money flowed into the sport. French photographer Louis Klementaski was one of the finest and he experimented with action imagery using close-ups and slow shutter speeds. Jesse Alexander, Gunther Motler and Colin Waldeck were also

shooting high quality innovative action images with their manual cameras at this time that developed the art.

Until 1960 all photographers needed to use an external light meter to work out the correct exposure. But soon after, built-in light meters, measuring light levels 'through the lens', started to appear and, although not very accurate at



Juan Manuel Fangio in his V12 Maserati 250F in the 1957 French GP; taken by Louis Klementaski

first, proved to be invaluable for speeding up the process of shooting an opportunistic image. Other developments that helped the action photographers were semi-auto exposure modes that appeared first in the '60s, and then, in the late '70s, the first full auto exposure cameras arrived (Canon A1). With autofocus coming in 1981 (Pentax ME-F) and the first digital camera in 1991, (Kodak DCS 100), the modern age of car photographers were properly equipped.



Candyfloss - Four in-camera multiple exposures rotating around the vase. Modified Helios 44-2 58mm lens with the front element reversed. 1/50 second exposure at f/2.8 and ISO 800. Processed in LR with textures added in Photoshop.

Exploring impressionism



After retiring and moving home, ROSE ATKINSON LRPS ventures into new photographic territory and produces some beautiful impressionistic images.

Daddy made me a toy camera when I was three, because I wanted to be just like him. My first real camera was a Kodak Instamatic and I've dabbled with photography ever since, joining my first camera club in 2009. I have enjoyed all sorts of genres, particularly urban, street and - perhaps unusually for a woman - WWII aviation and Spitfires in particular. A long family connection with the RAF; and seeing Spitfires fly past our living room window in Biggin Hill almost every day for over 30 years, definitely had something to do with that. However, after retiring and then relocating to Somerset in 2016 I lost my photographic anchors. I tried to learn

landscape photography - who wouldn't, when you live surrounded by such beauty - but I struggled with it. In 2018 although I was doing well at club level, I was in a photographic rut, lacking direction and I still didn't feel I had developed a voice I could call my own. I decided to set myself three goals for 2019: (i) learn how to print my own images, (ii) join the RPS and work towards a distinction; and (iii) learn about creative and impressionist photography. The structure of the distinctions process grounded me and embedded good practices; I printed my own panel and was awarded the LRPS in October 2019. Alongside that, by exploring impressionist



Beauty in decay - One stem of wilted tulips photographed on a light pad with smooth ICM following the shape of the petals. Lensbaby Velvet 85mm lens, 1/60 second exposure at f/16 and ISO 50. Processed in Lightroom, several images then resized, rearranged and blended with texture layers in Photoshop.

photography my aim was to put aside the disciplines of 'good technique' and explore a world of soft focus, shape and form.

I started out like many others, using intentional camera movement (ICM) in some local woods; and I began playing around with my camera's multiple exposure (ME) function. Combining ME and ICM for the first time was definitely a moment – I do like using both of these elements together and it is a recurring feature in my work. I discovered the Pep Ventosa effect and spent some time trying to recreate the look in-camera as I hadn't a clue how to work with layers in Photoshop. (I've always been a

Lightroom user – I've had it since day one of version one, but came very late to Photoshop and have never found it as intuitive.) I absorbed many online articles, watched video tutorials; and drove half way across the country for a workshop on impressionist photography. I was having fun and learning lots of new skills that were also benefitting my 'normal' photography – finally getting to grips with layers in Photoshop was a major milestone, for example.

On a wet afternoon last April, I took some wilted tulips that were way past their best and photographed a couple of stems on a light pad using some ICM. After basic editing in Lightroom



Purple Haze - Aquilegia and daisy stems photographed on a light pad in different positions, with a combination of smooth and jiggly ICM. Tamron 24-70 lens, 1/30 second exposure at f/13 and ISO 50. Processed in Lightroom, then several images rearranged and blended with texture layers in Photoshop.



On the Pier - Two images of people on a pier photographed with some up/down ICM. Canon 70-300L lens and variable ND filter, 1 second exposure at f/13 and ISO 100. High key processing in Lightroom, images rearranged and blended into a composite image in Photoshop.

I took several images into Photoshop, rearranged them in different positions on different layers and blended them together to recreate a bunch of dead flowers. After some playing around with textures, I had the first creative image I thought was truly mine and not something that was trying to emulate someone else. I liked the painterly effect that was more art than photography and wondered if I might have the beginnings of something. Similar experiments followed with varying results. I discovered certain flower shapes don't lend themselves well to this technique; and subtle changes in ICM can make a huge difference. For example, up/down, random jiggling, or a smooth movement in one direction. How long I wait until introducing ICM into the exposure is a key factor, and sometimes I also move the camera in and out of the plane of focus. Everything is done handheld and I don't use a tripod. I use Live View to compose and line up in-camera multiple exposures, but the overall capture process is often very random and I don't always remember what I've done, which I know isn't good practice as it's hard to replicate when something good happens!

Taking the photos is actually the easy part, there's more work involved in the processing. After some fairly basic Lightroom adjustments I make a selection of individual images and open them

as layers in Photoshop, re-arrange them into a pleasing composition and blend them together with a few textures and layer masks (another learning curve for me). More recently, instead of creating flower composites from separate images I have been making compositions in-camera with multiple exposures, which also means fewer layers to arrange and blend during processing. I'm moving on from photographing dead flowers on the light pad to livelier specimens in vases photographed against natural light from a window. And I am thinking about ways of applying the techniques to other subjects.

Whilst the flower composites are done at home and are a great way to occupy a wet afternoon, I've tried a different style of impressionism using ICM outdoors which is more graphic and high-key; and this is something I want to do more of. The strange thing for me is that my natural approach to photography has always been to expose to the left; friends say they can recognise my work because it is dark and moody. High-key graphic images and subtle flower impressions are very different and definitely at the other end of the spectrum for me. Maybe it's tapping into the other half of my brain? It also seems to be having a wider influence as I am now producing higher key images in other work.

Whilst I started out using textures that were



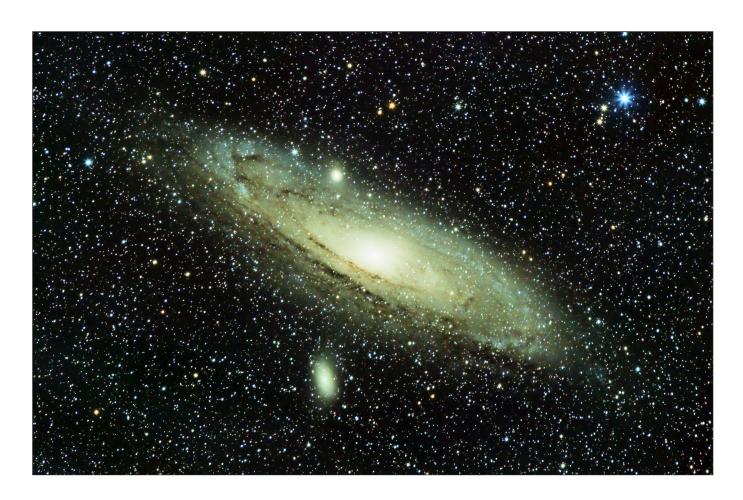
Becalmed - Boats on the water photographed with a jiggle of ICM. Canon 70-300L lens and variable ND filter, 2 second exposure at f/32 and ISO 100. High key processing in Lightroom and Photoshop.

included with my Adobe CC account, one of the things I needed to do was learn to create my own. My Lensbaby Velvet 85mm lens works well because at large apertures it has a lovely soft feel, and by de-focussing the lens I can create a palette of diffuse colours and shapes that make good backgrounds. Photos of bark, tree branches, peeling paint, rust, concrete, brick etc., provide more defined textural elements. Most of my files are derived from photos taken in and around the house and garden. The local architectural reclamation yard is also a great source of inspiration.

Something that has happened along the way is that I discovered vintage lenses. The Lensbaby first opened my eyes to creative optics. But you can buy 50-year-old Russian lenses for around £30 which are wonderful for creative photography. They may have characteristics that are considered optically imperfect, such as edge distortion, flare, soft focus... but these features can offer great artistic potential and they have bags of character which definitely adds something to the look of a final image. Some vintage optics can have up to 12 aperture blades, with bokeh which is buttery

smooth and full of character. I have two Russian Helios 44-2 58mm lenses – one has had the front element reversed which creates some very quirky, swirly bokeh when wide open. I particularly like doing multiple exposures of flowers using the Helios lenses. Wide open, the soft focus and bokeh is like candyfloss.

Have I now found my voice? I'm not sure, but I have found something which feels right for me. I also haven't finished my creative journey; I'm still learning and still enjoying the process. There might be potential in some of this new work for an ARPS panel in due course. Who knows, but whatever happens and wherever my photography takes me, this particular journey has been one well worth travelling. In particular, exploring impressionist photography is very liberating and quite different from, for example, trying still life if you're a landscape photographer. It's more than just learning different techniques, it's a whole new way of thinking. I can definitely recommend taking on a project outside of your comfort zone. Don't be surprised if it leads you in a direction you hadn't expected - go with the flow, you won't fail to learn a lot and you will certainly come out of it a better photographer.



Photographing the night sky with stock camera lenses



DAVID BROWN captures the type of incredibly detailed images of the cosmos which normally require sophisticated and specialist equipment. He manages it with little more than a camera and lens combination that we probably all have at home.

The night sky holds many wonders that become far more evident when longer exposures are utilised. However, long exposure usually also means that the stars do not remain as point sources and nebulae lose definition thanks to the rotation of the earth. There are, of course, ways around combatting this movement without additional equipment by utilising the 500 rule; 500 divided by the effective focal length of your lens. So, the table to the right shows the longest exposures for a typical range of focal length with both full frame and crop sensors for Canon and Nikon:

Focal length	Full Frame	Nikon 1.5	Canon 1.6
10	50	33	31.3
14	35	24	22
18	27	19	17
24	20	14	13
35	14	10	9
50	10	7	6
70	7	5	4
85	5	4	4
100	5	3	3
135	3	2	2
200	2	1.7	1.6
300	1	1.1	1.0
400	1	0.8	0.78



As you can see from the table the exposure times are quite short so light capture is at a premium. Forego low ISO and get that aperture as wide as possible. Depending on light pollution in your immediate vicinity attempt to gain a peak between a quarter and a half way along the histogram. Note also that the rule works best at lower angles from the pole, the closer to the pole the more obvious the rotation.

To get longer exposure times additional equipment needs to be employed. The

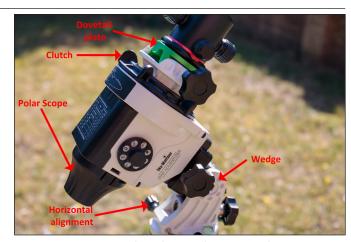
Setting up the Star Adventurer Pro

The setup process for the Star Adventurer Pro, and any of the similar sized devices, is simple;

- 1 Level the tripod
- 2 Set the wedge to your current latitude
- 3 Remove polar scope cover and dovetail plate
- 4 Insert polar illuminator
- 5 Release clutch, orient the viewfinder to zero and re-tighten the clutch
- 6 Set Polaris position

The appropriate position of Polaris in the viewfinder can be determined from applications available for mobile phones, in this case I'm using an example from the Skywatcher SAM Console app for Android. Simply place the position of Polaris as that shown on the screen by using

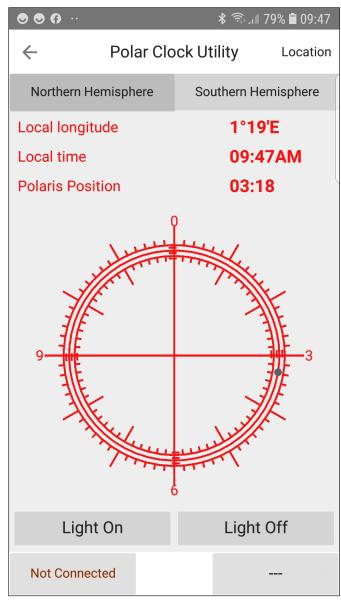
unfortunate situation here is that exposure time and quality to cost are directly proportional. The equipment I use at present is a Skywatcher Star Adventurer Pro which performs well with smaller focal lengths but can be a bit flaky with either my Canon EF 70-200 f/4L or 300 f/4L lenses on board. I can usually bank on 1 in 3 useable exposures when using one-minute exposures using the longer focal lengths compared with a 90% return when shooting at 50mm or below. In the image of Cygnus (above) I was able to use all the shots obtained in the session.



The Skywatcher StarAdventurer Pro

the horizontal alignment screws (which take a bit of getting used to) and the wedge latitude adjustment. Getting Polaris in the right place is more important for longer focal lengths.

If you are using an iOptron unit watch out for the Image Orientation setting, this defaults to



Skywatcher SAM Console app for Android screenshot naked eye, but of course you are looking through a dinky telescope, so the correct option is 'Telescopic'.

Once you are polar aligned you can switch the unit to tracking mode, take off the polar scope illuminator and mount your dovetail bracket, be that the simple ball-head mount or the counterweighted bracket. The clutch can be released to aid camera positioning.

Next comes focusing the camera. Forget attempting autofocus. A focus by eye is never quite right, so put a bright star in the camera viewfinder and switch to live view. Zoom to 10x on the star then move your focus wheel such that the star is reduced to its smallest possible size. Finally, home in on your target and if you have a large lens fitted, make allowance for settlement when you tighten the head. Finding faint targets is a bit hit and miss I'm afraid, double the ISO and

half your shutter time to shorten your seek times.

Capturing is best done with a remote trigger. I set mine for 150 raw exposures (the most I'll get from a battery), one-minute exposures and 10 seconds in-between, which gives you a fighting chance to look at the preview. The Star Adventurer does have a trigger port, but I must admit I haven't used the facility.

Astro-photographers will also advocate the use of 'dark' frames – taken with the lens cap on to eliminate long exposure noise from the processed images, 'flat' frames – taken against a neutral background, often the dawn sky, to eliminate lens artefacts from the processed images and 'bias' frames – again with lens cap on but short exposures to eliminate base sensor noise.

I started off using these but found little benefit in doing so when it came to finished results as the software I use has fabulous noise reduction algorithms.

In post-processing I use a software package named PixInsight. This can be purchased online for around £275 (there is a fully functioning trial available) and is well worth the outlay if you are serious about night sky imaging. Documentation of the various processes is somewhat scant and you need to be something of a boffin to get your head around some of the jargon, but the results once you have the hang of the software are fantastic. Be aware that the use of PixInisqht with raw files requires a huge amount of disk space. Each 24MB frame morphs into a whopping 284MB XISF (eXtensible Image Serialisation File) once the image has been de-bayered as the data has been split into channels. If you are starting out with PixInsight then I would strongly suggest reading and following the tutorials from Light Vortex Astronomy (https://www. lightvortexastronomy.com/tutorials.html).

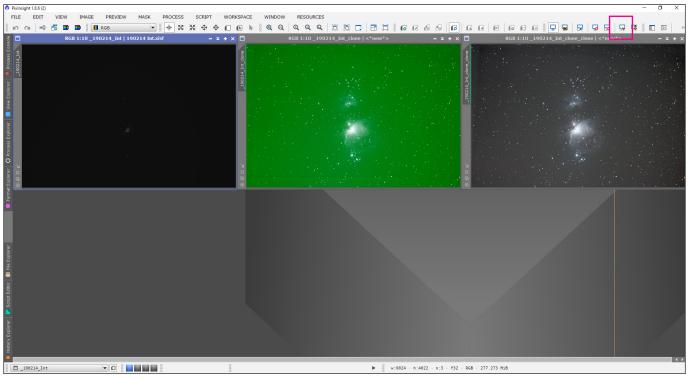
There are other options of course; Deep Sky Stacker is free and does the stacking job pretty well, but with far less detailed pixel rejections. Post-processing can be done with any photo manipulation package such as Photoshop or even GIMP.

The workflow described below works for me and my patience quotient, those with more perseverance will most likely go far deeper and roll their eyes at my shortcutting! A quick word about displayed images in PixInsight. The XISF file format categorises the RGB components of

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each pixel from 0 (black) to 1 (white), so most of your data is in the very low reaches of the range and a displayed image will just look like the odd star here and there. PixInsight uses an auto-stretch function to better display the visible range of the image (there's an icon with a screen and a radioactive badge to run the auto-stretch – marked in the pink box in the figure below). At

this point you may well see a 'Jolly Green Giant', this is because most CFA sensors utilise an RGGB pattern, so there are two greens for every blue and red value. Holding the Ctrl button when clicking the auto-stretch icon will de-link the channels and display a slightly more reasonable image. It'll look pretty dreadful for a while yet!



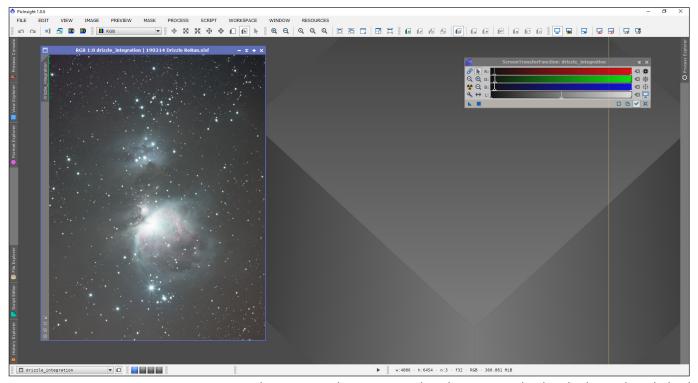
PixInsight window with original, auto-stretch and unlinked channel stretch

My image integration workflow

- 1 Inspect your captured images in your usual image handling software. I use Lightroom so my first inspection is in there. Reject any frames with star slip or excessive cloud. You'll get away with aircraft trails, satellite trails or meteor trails. Though if you have enough good subs, more than thirty, then these can be rejected too.
- 2 The first stage is to de-bayer the raw files via an aptly named process called Debayer. Simply add the raw files, specify a save location and run the process.
- 3 Next comes Star Alignment from the Image Registration group, this is the process by which the various images are aligned based on a reference image or view. Pick the best of your sub-frames as your reference frame. I run this process with default options, but I do generate the drizzle data. Again, simply add your files, select your reference image (a double click in

- the Target Images box will load the file as a view) and run the process.
- 4 Load your registered images into the Blink process, this flicks through your files displaying each in turn. Watch for any strangeness in the image sequence, note any offending frames for deletion.
- 5 Integrate the frames using the Image Integration process. Here you add your registered files along with any drizzle files you've created. Drizzling by a factor of 2 doubles the proportions of your result image, but not at this stage. I leave the Image Integration settings at default but change the Pixel Rejection settings to Linear Fit Clipping if I have more than 20 good frames, Winsorised Sigma Clipping between 10 and 20 or Percentile Clipping where I have less than 10 good frames. Running the process can take quite a while.

6 - If you've generated the drizzle data then a final integration piece is to run Drizzle Integration. Here you can select a specific area of the integrated image for drizzling, which speeds the process up a little. Open the Screen Transfer Function process, delink the channels by clicking the chain link icon and hit the stretch button (the radioactive icon) and you'll get an idea of your finished image.



Drizzle Integrated image saved and auto-stretched with channels unlinked

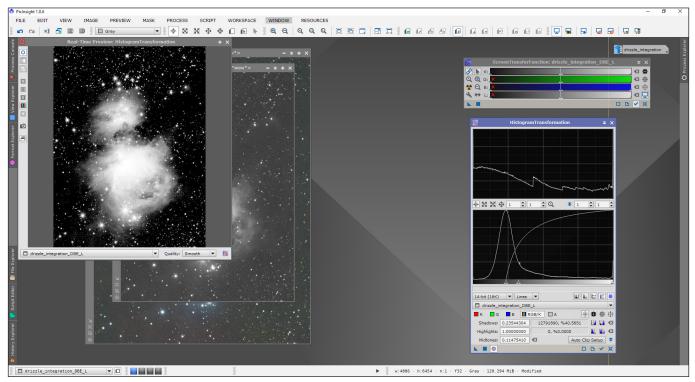
My post-processing workflow

Now we come to the post-processing part where the image is tidied, de-noised, colour corrected, luminosity balanced, and contrast adjusted. One of the key elements to the post process is the generation of masks to target and protect areas of the image, I've found that hard black and white borders often cause problems and lead to fake looking images, so try to keep boundaries smooth and fuzzy in your masks. Less is more in almost every case, don't be looking for a completely smooth background. The workflow below is again what works for me, it more or less follows the Light Vortex tutorial on M32 but with a few subtle differences. Where these occur, I'll go into a little detail;

- 1 Dynamic Background Abstraction this is where my lack of darks and flats is countered.
- 2 Photometric Colour Calibration much improved since the Light Vortex tutorial was written, things to watch out for here; pick an object or star evident in your image and use the search facility to return Right Ascension and Declination, if the image fails to solve adjust the

Limit Magnitude value (brightness of the stars – higher values include dimmer stars) in both Plate Solving and Photometry Parameters upwards, if your image is drizzled then half your pixel size value, my Canon EOS 760D has a pitch of 3.7µm so when solving the drizzled image I use 1.9µm. Run your mouse around the background and check that the R, G and B values are less than the Background Neutralisation upper limit, otherwise adjust the parameter to be larger than the largest of R, G or B. If this fails, use the method in the Light Vortex tutorial. You can now link the channels in your auto-stretch, note that until you've stretched the image you should re-run the auto-stretch after every change.

3 - Extract the Lightness from the image to use as a mask (Image menu, Extract, Lightness(CIE L*)) run an auto-stretch on the grayscale image then open the Histogram Transformation process. Drag the triangle icon from the screen transfer function down to the bottom bar of the Histogram Transformation dialog, this sets the parameters for the transformation to that in the displayed image. Reset (far right icon in the



Creating the Lightness Mask

bottom bar) the Screen Transfer Function for the image (it'll go dark), then run the Histogram Transformation, the original image should return. Then emphasise the contrast by resetting the Histogram process, select the lightness view from the dropdown, which will display the histogram in the two windows. Drag the shadows slider to about halfway up the peak of the histogram (you'll see the effect of the move in the top window and if you enable the real time preview (unfilled circle icon) then you'll see it in real time too. Pull the midtone towards the shadows to really boost the contrast. The idea here is to create a mask that will protect the lighter areas and allow the background to be targeted.

- 4 On your master image choose Mask and Select Mask from the menu, point to your lightness mask and then choose Mask and Invert Mask. This should show red on your light areas (protected) and dark on the background (less protected).
- 5 The next stage is noise reduction; a multiscale linear transform with noise reduction selected on the first 5 layers works well with parameter values threshold, amount and iterations set to 4, 1, 1 for layer 1; 3, 0.8, 1 for layer 2; 2, 0.7, 1 for layer 3; 1, 0.6, 1 for layer 4; 0.5, 0.5, 1 for layer 5. Remove the mask by selecting Mask and Remove Mask.
- 6 Now the image can be stretched from its

linear state. Reset the screen transfer function and the histogram tool, choose the master image from the dropdown and enable the real time preview. Pull the midtones towards the shadows until the histogram peak is around the quarter mark and execute the change. Reset the histogram once more and then drag the shadows up to clip the histogram by about 0.05% and adjust the midtones such that the detail is evident, but colour noise is not emphasised and execute again.

- 7 Re-create your lightness mask and apply it inverted to your image.
- 8 Run another noise reduction iteration but decrease the threshold for each layer. Then run ACDNR with default values.
- 9 With the mask still active go back to the histogram tool and clip the shadows again. Then remove the mask.
- 10 If you have targeted a galaxy or nebula with very bright cores, the cores may look burned out, but a surprising amount of detail is lurking! Open the HDR Multiscale Transform process and check the Lightness Mask checkbox. Now create a preview of a bright section (sort of page icon in the toolbar), you'll notice the preview appears as a tab below the master image. Here you can test what the process will do without affecting the master image as this process is very much trial

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and error. Adjust the number of layers parameter and run the process on the preview to see the results. There are icons on the toolbar to reset the preview or undo / redo. 11 - Finally use the Curves Transformation tool to adjust contrast, saturation and lightness to generate a finished image.



Completed Image of M42, f/5.6, ISO 1600, 300mm 282 x 60s



PASSING STORM SANDYMOUTH BAY

Janice Payne ARPS

This image was bought about by attending a workshop run by the RPS Landscape group 'Using filters in the landscape'. Ross Hoddinott and Mark Bauer were the tutors for the day, held near Bude in Cornwall.

We travelled down the day before in our campervan, when we woke the next morning it was blowing a gale and absolutely tipping it down!

Being optimistic, everyone decided that we should extend the morning session (held indoors). We changed locations to be visited, with no chance of early morning light and headed off for lunch at Trebarwith Strand. Here the wind was blowing so hard and the rain was horizontal, it was almost impossible to open the car door, the idea of any photography there was abandoned.

We headed instead to Sandymouth Bay. Here we could photograph the rock strata as the cliffs provided some shelter from the rain and wind. The rain eventually eased a little so some of us ventured onto the beach, making compositions of the rocks and rockpools I had seen. Further along the beach

the tide had receded leaving amazing patterns of white foam on the sand.

The scene that appealed to me the most was facing straight into the oncoming wind! With the sand stinging my face, I managed to set my camera up on the tripod which still needed a firm grip, despite hanging my camera bag from it, at 15.57pm on the last day of June!

My camera at the time was a Fujifilm XT1 using the XF16-55mm lens, at 16.5mm (25mm full frame equivalent). I think that I must have used a filter, even if only to protect the lens, possibly a graduated ND. I set the ISO to 200, auto white balance and f/11 at 1/20 sec.

My processing at that time was in Adobe Photoshop CC2017, doing what I can in ACR first. My intention was towards a high key image. My workflow is very much 'try it and see'; I am sure many of you will know much better ways of doing things!

I could see from the raw file that I had to straighten the image slightly, probably caused by having to keep hold of the tripod! I also had to add vibrance +12, reduce the blacks -13, and contrast -3, increase the whites +17 but reduce the highlights -11. Next, I applied a radial filter (see right) to bring the viewers' attention into the centre and to lead the eye to the farthest point, masking the outside and adjusting the exposure, contrast, whites and clarity by +10. I also added another, masking the centre to bring down the exposure by -10 around the outside of the image.

Next, there were two graduated filters applied, one for the sky, masking the beach and the other bringing the beach exposure down by -10, contrast -9, highlights -32 and clarity +17. Once in Photoshop, (see right), a few final tweaks; a little high pass sharpening on the cliffs, a very slight levels adjustment and a curves soft light adjustment at 10% only on the cliffs and finally (or so I thought) a levels luminosity tweak.

I had never been completely happy with the 'finished' image so I tried a square crop which I felt worked well, then a black and white conversion in Nik Silver Efex Pro 2, unfortunately not recording what I did, but I usually use a pre-set such as Film Noir or Wet Rocks and then tweak the sliders until I am happy and the histogram shows a good range of tones.

Once back in Photoshop the sensor spots in the sky had to be cloned, after, details in cliff bought out and final levels adjustment.

The final image was accepted in the 2019 DIG Annual PDI Exhibition. This version was also selected by the RPS Landscape group to be printed on one of their pull up banners, so it turned out to be a good day after all!



The RAW file straight out of camera with no adjustments



The image with a radial filter



A few final tweaks in Photoshop



A square crop, conversion to black and white, sensor spots cloned out



THE AGEING LILY

Holly Stranks LRPS

The Ageing Lily came about as I needed to do a black and white image for an open competition at my Camera Club. I enjoy macro photography amongst other types of genre but have struggled in the past

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to get the perfection that I required.

This is a focus stacked image, using 30 images. They were shot on a Sony A7R3 with the Sony FE 90mm f/2.8 Macro G OSS lens, $\frac{1}{4}$ sec, $\frac{1}{8}$, ISO 200.

I set the shot up in my conservatory with the Lily stem in a vase against a black sheet. I use continuous lights rather than speedlights and had two – one left facing the subject and one right facing the subject. The reason I use continuous lighting is that I do a lot of dog portraiture and find them a lot quicker to set up than flashes, particularly as the dog will not sit in the same position for very long.

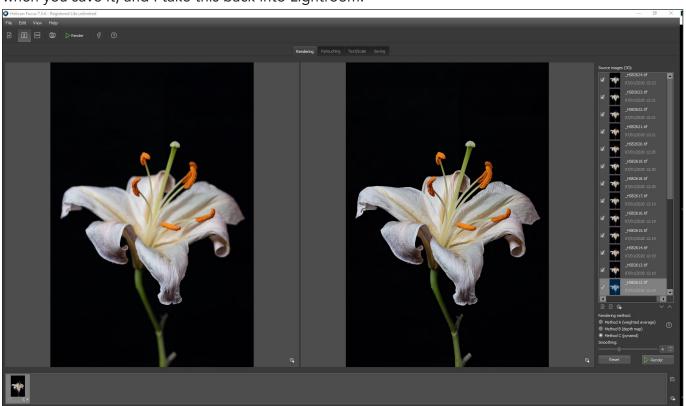
I have long used Helicon Focus software to blend the multiple exposures together, but because I progressed the shot manually on focusing rails, I would often get missing planes of focus, which would ruin the image.

However, I now have a Sony Bluetooth remote commander that has a focusing button on it which I find works perfectly for me.

Of course, all you Nikon D850 users (personal friends of mine included) are lucky enough to have this feature in the camera. I believe some other cameras have this feature too. Until Sony get on board, I will keep using this technique.

Basically you put the camera into manual focus, focus on the point closest to the camera, take the shot, press the '+' button on the remote (I found pressing it twice when shooting f/8 advances the focus sufficiently), and keep taking pictures until you have the furthest point in focus.

I did this on a few compositions and then loaded everything up into Lightroom. Once I had decided which image set to use, I did some basic sharpening and noise reduction and lens profiles. I then exported the 30 images over to Helicon Focus. The software does its magic, and I personally find that their 'Method C (pyramid)' works best for my images. This creates a stacked image as a TIFF when you save it, and I take this back into Lightroom.



30 focus stacked images in Helicon Focus



Adjustments to the TIFF file in Lightroom

With this TIFF file I did some further edits to it in Lightroom.

From there I worked through my normal workflow. I used the Nik Collection Colour Effects Pro 4 to add a touch of Detail Extractor and Tonal Contrast. I then check my curves and make adjustments there to add punch.

Then I did dodging and burning using Greg Benz's Lumenzia. After this, in order to give separation from the lily to the black background I added a reduced opacity white radial filter behind the lily layer.

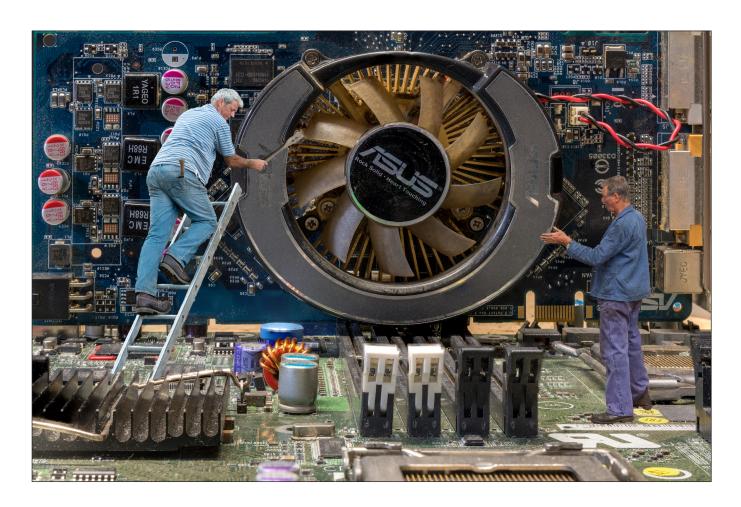
Before leaving Photoshop, I add a mild vignette just to ensure attention is on the subject.

Back into Lightroom where my highlight and shadow clipping buttons are selected to make sure nothing is blown or lost.

Obviously in this image there is a lot of pure black, this is of course intentional.



The final version, before conversion to monochome



WORKING ON UPDATES

Sheila Haycox ARPS

The idea for Working on Updates evolved from a few members of our club getting together to produce a panel of 5 images on a theme for a battle between several clubs in Devon. To start with we decided to create the 'inside of a computer' with little people 'working on updates'. We gathered a number of different components from old computers, scanners etc., and arranged them to form the inside of a computer. We started with models of people inserted amongst the components but felt they didn't work as the models were very artificial with no detail. They just didn't look right.

It took quite a bit of time getting the different bits and pieces together from old computers. I scrounged one from my son so that I could pull it apart. The boards, fans, components and wires were twisted and turned in many different directions to create a suitable arrangement.

The answer was to photograph just the 'inside of the computer' using different motherboards, fans, circuit boards etc. It was then up to each photographer to find 'suitable people' to fit the image.

The project was shot in my garage and I used a Sony A6500 on a tripod using daylight only. ISO 200 with apertures between f/11 and f/16, and anything from 2 to 4 seconds shutter speed. We all used Photoshop for the subsequent processing and manipulations similar to my methodology as described below.



The original four stacked RAW images used for the background

In order to get the image sharp from front to back it was necessary to take four images focused in different places. To do this,

- Select the four RAW images in Bridge and use Tools > Photoshop > Load Files into Photoshop layers
- Select all the layers
- In Edit > Auto Align all layers
- In Edit > Auto Blend > Stack Images
- Flatten layers and crop as required

The result is shown above.

It was then necessary to find appropriate people to insert to give the impression they were little men working on the computer. Each person had to be cut out and for that I used Photoshop Select and Mask and then saved them as PNG files.

I then searched amongst my images for suitable people to add to each image (see next page, top). I decided that the fan in the middle of the image was ideal to have a man up a ladder and used a thatcher for this purpose, the image I wanted didn't show much of the ladder so had to use another image of the thatcher on a longer ladder which again I cut out and added to the first image. I also had to put a 'tool' into his hand rather than the straw he was holding.

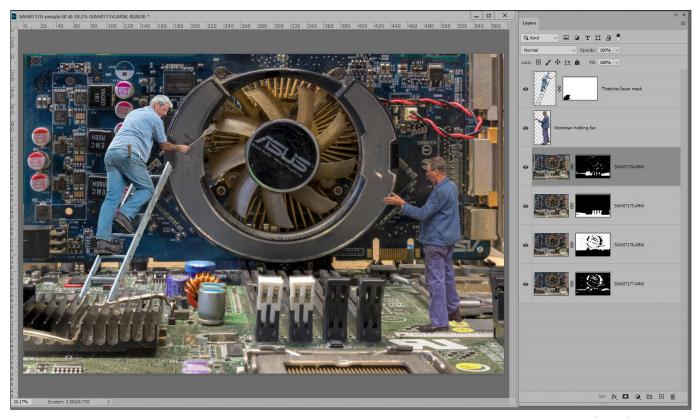
I transferred the cut-out people to the 'computer' and made adjusts using a layer mask to put the bottom of the ladder behind some of the components. The other man needed a shadow by his feet which I created on another layer.

Finally, I added layers to the image for the two people used (shown in the image at the bottom of the next page). The thatcher on the ladder shows the layer mask to hide the ladder base and there is a layer for the shadow under the man's feet on the right.

I did have to change a couple of hats as the train cap wasn't suitable and I also changed the colour of a uniform.



Potential people to include in the final image



The components of the final image

DIGIT CHALLENGE



STORMY LANDING

Colin Harrison FRPS

This image is a very simple montage to describe as it only has two elements: the biplane and the clouds

The picture of the aircraft was taken at a local air show and the lighting was good - with the sun hitting the side of the aircraft and the shadow created by the top wing did not overpower the aircraft. It was easy to cut out using the lasso tool in Photoshop as most of the edges were straight. Rather than masking around the aircraft's thin wire support lines it was easier to erase them and put them back by stroking a lasso line or just leaving some out. I could have used the radial blur filter in Photoshop to rotate the propeller but thought it was not necessary.

I wanted a dramatic sky with the right shape and found one taken on a holiday flight to the States. I desaturated the sky a bit to remove the colder blue tint and also darkened the clouds in the bottom left and right-hand corners.

In conclusion I think this image works due the simple composition with the small yellow biplane standing out against a large dark backdrop.

All previous issues are available from the Digital Imaging Group magazine page of the Group's website at rps.org/digitarchive



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Digital Imaging: South East Saturday 27 June 2020 Dungeness TN29 9NA



Steve Gosling
Dungeness: Landscape Workshop

www.rps.org/Steve-Gosling-Workshop

Digital Imaging: South East Sunday 28 June 2020 Wye TN25 5EJ



Steve Gosling Hyperbole, Exaggeration, Distortion & Nature of Creativity

www.rps.org/Steve-Gosling-Talk

Digital Imaging: South East Mon 29 June 2020 Dungeness TN29 9NA



Steve Gosling
Dungeness: Landscape Workshop

www.rps.org/Steve-Gosling-Workshop

