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Issue 278 March 2024 www.digitalcameraworld.com

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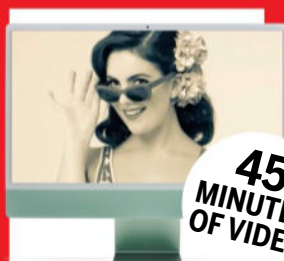


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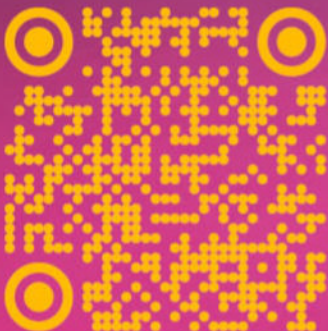
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Photography Bath Photo Studio
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Printed by

William Gibbons on behalf of Future

Distributed by

Marketforce UK Ltd, 121-141 Westbourne Terrace, London W2 6JR
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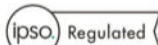
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Digital Camera, ISSN 1477-1721, is published monthly with an extra issue in April by Future Publishing, Quay House, The Ambury, Bath, BA1 1UA, UK. The US annual subscription price is \$175.37. Airfreight and mailing in the USA by agent named World Container Inc, 156-15, 148th Avenue, 2nd Floor, Jamaica, NY 11434, USA. Application to Mail at Periodicals Postage Prices is Pending at Brooklyn NY 11256.

POSTMASTER: Send address changes to Digital Camera, World Container Inc., c/o BBT 150-15 183rd St, Jamaica, NY 11413, USA. Subscription records are maintained at Future Publishing, c/o Air Business Subscriptions, Rockwood House, Perrymount Road, Haywards Heath, West Sussex, RH16 3DH, UK.



Future plc is a public company quoted on the London Stock Exchange (symbol: FUTR) www.futureplc.com
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Welcome



Photography doesn't have to be an expensive pastime – this month, we present a variety of projects that can

be tackled with basic or existing kit (page 50). You'll find a selection

of seasonal shoots to try in Photo Active (p16), while Camera Clinic (p70) focuses on our flexible

friends – zoom lenses. See the year's best astrophotography

images in Hotshots (p43) and find out more about 2024's Remembering

Wildlife reader competition (p100). The Photography & Video Show is fast approaching and we

hope to see you on the *Digital Camera* stand in March. In Focus (p99) has details of speakers at the show and you can meet

one of them in an interview special (p8). This month's reviews include a new Leica

rangefinder (p106) and DJI's Mini 4 Pro camera drone (p110). Enjoy the issue.

Niall

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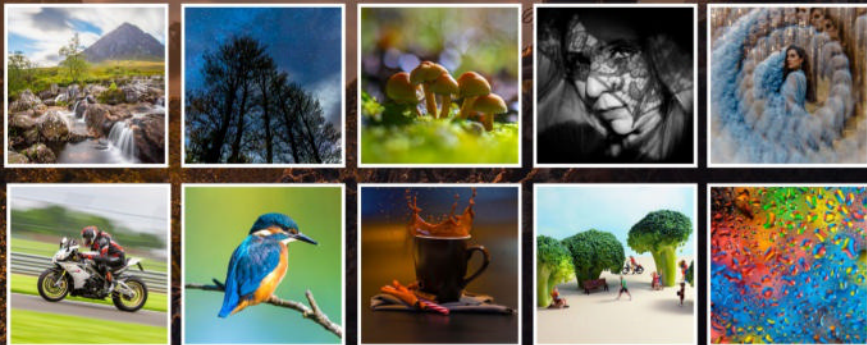
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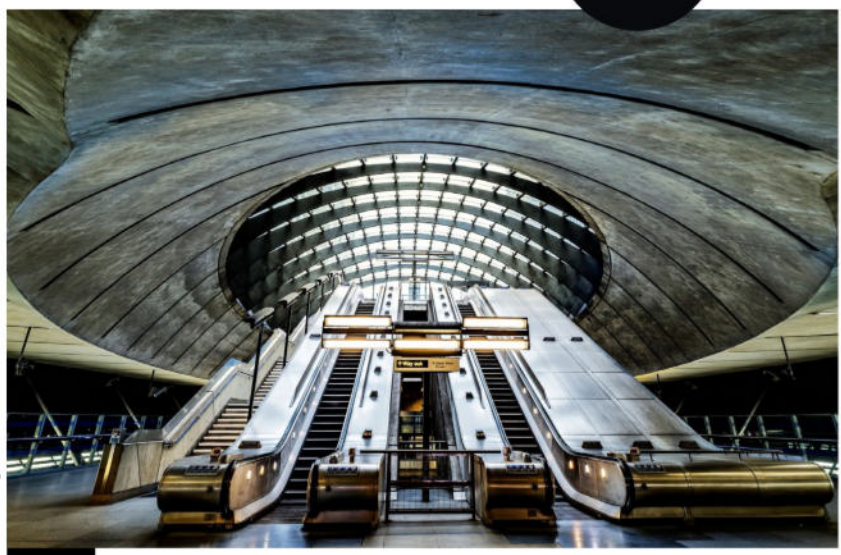


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Will Cheung

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Sean Tucker

8 **Interview special** _ Ahead of his talk at The Photography & Video Show, the photographer, author and YouTuber Sean Tucker tells us about his route into photography, and why he was moved to write a book about creativity

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Getty



Sean Tucker

Sean Tucker
Photographer and author

Speaking at The Photography & Video Show in March, Tucker tells us more about his photographic career and why there's always a meaning in the making. **Page 8**



Will Cheung
Photographer and writer

A fellow of the Royal Photographic Society and the former editor of many photography titles, Cheung is the man behind Camera Clinic, which continues on **page 70**



Claire Gillo
Photographer and writer

Digital Camera's former technique editor now specialises in creative and fine-art photography – you can find her latest photo project contributions from **page 20**



Andy Rouse
Wildlife photographer

Remembering Tigers will be the next book in the Remembering Wildlife series – and one of the leading tiger photographers has supplied images for it. **Page 102**



Jon Devo
Photographer & writer

Our resident tech columnist enjoys considering the latest developments in photography and digital imaging. Read his latest dispatch on **page 104**



Dan Mold
Photographer and writer

Experienced in many different genres of photography, Mold writes for our sister magazine *PhotoPlus*. He shares his tips for budget photography on **page 50**

Your gifts

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9 PHOTO TIPS CARDS TO TAKE ON LOCATION!

Our latest selection of tips cards gives wallet-sized advice on how to take better photos this month



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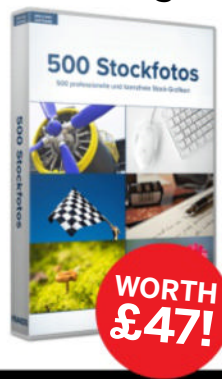
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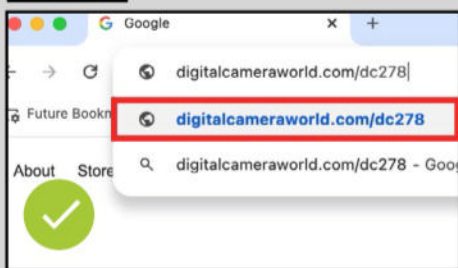
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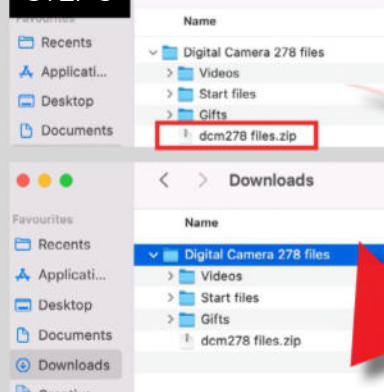
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Sean Tucker



Sean Tucker

Sean Tucker
**Photographer,
filmmaker and author**

Based in the UK, Tucker came to professional photography after a period spent making films for corporate clients.

His output spans a variety of genres, including street, portraiture, documentary and still-life.

In 2021, Tucker self-published a book about creativity and the important role it plays in the lives of humans.

He also runs a successful YouTube channel, where his videos cover a wide range of photographic techniques.

**www.seantucker.
photography**

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The photographer and author of *The Meaning in the Making* will speak at The Photography Show in March. **Niall Hampton** finds out what can we expect

Sean Tucker will appear at the NEC in Birmingham on 16 March to discuss his book *The Meaning in the Making*, an exploration of the importance of creativity. The book draws on Tucker's career, as well as insights from his psychology degree. Rather than specialising in one photographic genre, Tucker produces work across the spectrum, taking in portraiture, still-life product photography and street photography.

Digital Camera readers can get a good flavour of his work on his YouTube channel, which offers many highly polished informative tutorials, equipment discussions and much more. But we sat down with Tucker to get a flavour of what to expect in his upcoming talk...

What has your photography journey been to date?

I didn't work as a photographer for the first 30 years of my life; I enjoyed photography as a child but didn't do anything with it. In my 20s, I worked for the church in South Africa, as an ordained pastor, and started doing videos for corporates to subsidise my income, because the church didn't pay very well. I had just turned 30 when I ended my job with the church and a friend of mine said that if you have to start a new career at 30, then you might as well pick the thing you want to do and see if you can make it work.



At that time, photography and video were definitely my main passions. It took me three or four years of trying – and failing – to launch my photography career, working in restaurants as a waiter to pay the bills. Then I got my first full-time job with a kitchenware company called Yuppie Chef; it hired me as its food and product photographer, and then as a food photographer for its magazine.

After a year, I came back to the UK and did product photography for a company called World Stores. I headed up their photography for five years, then did photography and video for an American consultancy. About five years ago, I started working for myself, taking portraits, shooting street photography and making videos. So there's a range of genres in there.

Do you have a favourite? Is there a genre that you like to switch to every now and then?

Portrait photography is probably my first love. I think it's what I've got the strongest skillset for and I like that one-on-one intimate working with somebody. My university degree was in psychology and one of my favourite things to do is counselling; I'm currently studying to become a qualified therapist in the UK. I think any portrait photography photographer will tell you that they become a bit of a therapist on some days, and I love that element of it.

So I would say that portrait photography is top of the pile for me. Some of my Instagram followers might be surprised by that because I don't really post portraits on my feed – it's mostly street photography. →

Above: 'Regal', London, 2017.

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Sean Tucker

Above: 'Autumnal', Brighton, 2019.

Which photographers inspired you when you were starting out in the medium?

Photographers like Steve McCurry, Jimmy Nelson, who is a photographer out of New York, and Joey Lawrence. Looking at the work they did around the world, I found it really inspiring and it gave me an idea of what I thought I wanted to do. For street, it would be photographers like Trent Park, Ray Metzker and Fan Ho, who play with light and shadow in interesting ways. These were the ones I gravitated towards because from early on I wanted to produce images that were quite graphical in nature.

Is your talk going to focus on one thing in particular, or will it draw from your various interests?

I'm speaking twice at The Photography Show: the first is a talk I'm giving and the other one is an on-stage discussion with Thomas Heaton. My talk is called 'The Meaning and the Making', which is the title of a book I published in 2021. Basically, it's my philosophy for the creative life, how to stay mentally healthy and motivated and inspired and so on. I'm going to be doing

a truncated version of the talk that I've been giving about the book, which is normally for over an hour. However, I don't get that long at The Photography Show so I'm going to give a flavour of a little section of the book and hopefully talk about inspiration and how we can find it. The other event is a discussion with [landscape photographer] Thomas Heaton and that will have a moderator present. We'll be talking about our forays into YouTube and how we built our channels and grew our audiences.

How would you describe your work to someone who's never seen it?

The portrait photography I attempt these days has a classical approach. There was a time when I was throwing three, four or five lights on my subject, using coloured gels and trying to get very fancy with things. Over the years I've stripped everything back and 90 per cent of the portraits I shoot now are with a 50mm lens and one light, and that's it.

At some stage in the middle of my journey, I got quite inspired by the Old Masters. I used to sit in Room 22 of the National Gallery, where the Rembrandts are. I just realised that there was something about what he did that didn't feel glossy; it felt quite gritty and earthy and he wasn't trying to beautify people or hide their age. He was trying to make honest portraits and obviously didn't have multiple lights to work with. He had

“Some will say that I'm not a street photographer as I'm more interested in light and shadow in urban spaces”



natural light entering the room which he would control with shutters to narrow it and, because he used it so effectively, Rembrandt lighting is something we still talk about today. So I'm attempting a classical approach with my own portraits, as well as trying to keep them honest and simple in terms of execution.

And then there's the street photography. Some street photographers will tell you I'm not a street photographer because I'm less interested in the reportage of human interactions, which is a traditional approach to street photography, and more interested in light and shadow in urban spaces. The human elements in the frame are often incidental or smaller in the frame and just provide some scale. I probably don't fit that traditional model or definition of street photography, but whatever it's called, that's what I do in my street photography. I play with lines and shapes with the shadows, so there's a graphical element to it.

So all this comes from you responding to the things you've been influenced by?

Yes, it was the photographers I mentioned, realising that I found them when I was trying to find my way with street photography and doing things quite intuitively and just taking images that I liked the look of. It really was that simple and it was at that time I started getting a bit of pushback from some people saying that what I was doing wasn't street photography.



Finding these photographers gave me permission to say 'Well, I'm not really concerned with the label'. There are lots of other photographers who were much better than me who've done this for a lot longer, so it gave me permission to say, 'This is also valid. Whatever you're doing here, whatever you want to call it, is valid and enjoyable'. That meant I could keep going. →

Top: 'Himba Woman 1', Namibia, 2018.

Above: 'Himba Woman 2', Namibia, 2018.



Sean Tucker

Above: 'The Girl with the Wings', Westminster Bridge, London, 2019.

Above (right): 'Shapes and Shadows', Barbican, London, 2020.

Across your creative output, how important are your videos about photography?

Very important. I wouldn't have been able to go freelance as just a photographer now. I knew who I was and no one cared or should have cared; I was just doing run-of-the-mill work to serve clients and that's fine. I always struggle with the marketing side. It really has been because I've built an audience by talking about teaching photography or talking about creativity more generally on my YouTube channel that anyone knows who I am now. This has afforded me the ability to put some of the client work aside and just make the work I believe in and fund myself by building my own thing, which I'm grateful for every day.

There's a certain amount of luck and good timing in it, too. It's a lot harder to do now than it used to be. When I started [in 2016] it was probably easier, but I have been plugging away slowly and building it up over the years. For now, it works and that's probably going to change sometime, but I've been very lucky so far.

What has been your photographic career highlight to date? Or do you think there's more to come?

In so many ways, I just feel like I'm getting started. I'm proud of the book that came out a couple of years ago – it felt like an inflection point, somewhere things had been building up to for a while. Of all the things I've done so far, the book has felt most like a potential legacy,

like it has the best chance of living after me, which feels quite special. When it comes to photography, in many ways, I feel like I'm like a baby. I have spent so much of my career serving the needs of clients, photographing products or food or whatever, that I'm still in that first half of trying to work out what I really want to say.

It's funny, isn't it? Because so many of us spend a lot of time and energy building skills and learning all the tricks, and then we go through this process of stripping it back and trying to find a voice. Then we have to sit and say, 'Well, I've got a voice, I've got techniques, what do I point this thing at?'

That's something I'm just taking baby steps into now, and I'm not in a rush because I really want to do it well. But that's definitely the next part of the journey.

Writing a book about the creative process is a distinctive thing to do and surely sets you apart from many other photographers...

I'm very happy to teach photography online but I think people who watch my channel know I use photography as a bit of a Trojan horse to talk about things that I think are more important, like our well-being and what creative output is actually for, the good it does us and how we have to keep all that in context so that we don't take it overly seriously and lose that motivation.

All that stuff is what I really care about because I've seen that it makes such a difference to people's lives.



Sean Tucker

I get emails from people thanking me for one thing I said in a video that really hit them at just the right time and made all the difference. Those are the emails I care about more than, 'Thanks for teaching me which aperture I should be shooting at'. So much like it's a different level of meaning for me, and while I say I'm very happy to teach photography, I'm always looking for that other level in what I do because it makes such a long-term difference for people.

What good do you think a photograph can do?

Here's an example. In portrait photography, I've had many experiences where people who sit for a portrait come in with a mask. They present themselves in a way that they want to be captured and don't necessarily want you to capture the 'real' them. And I have to work quite hard to get through to who they really are, work out who this person really is and capture it in a portrait.

There's a quote I use in a video but I can't remember who said it and I can't find it anywhere online. It goes something like, 'Every portrait is a war between the sitter's vanity and the photographer's guile'. It's like a little battle that needs to happen: I need to look for the chink in the armour and capture the real you.

I often have this experience where I'm taking somebody's portrait and I capture an honest moment with them. When we're going through the images afterwards, we're trying to capture the real person,

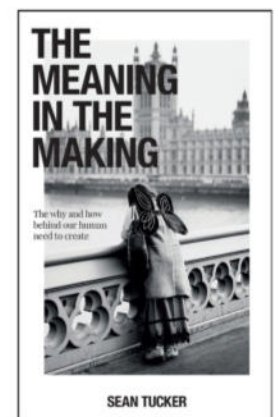
making the selections they want me to go away and retouch and work on. I'll often suggest the image I'm most excited about because I felt what happened at that moment. And they're almost always uncomfortable with it because it might be quite revealing and they feel quite vulnerable.

My challenge to them is to let me edit it, give it to them, ask them to take it to their friends and family and tell me what they say. They'll often come back and say, 'Yeah, they love it. They say that's exactly who I am.' When they look at that image, and then they start to see not the face that they pull in the mirror every day, their very practised persona, that version of themselves, they see a different side of them that everyone else gets to see and enjoy.

For a lot of people, I think it's quite a profound healing moment where they really get to know themselves better. And I've had lots of interesting experiences with people around that. So I think that when portrait photography is done right, there's

Above: 'Dappled Silhouette', Oxford Street, London, 2021.

Below: Tucker's book, which is available as a paperback or a digital download (see p118).



“For a lot of people, having a portrait taken is a profound healing moment where they get to know themselves”



Sean Tucker

a lot of personal acceptance and healing that can come with that. It's really powerful.

As a portrait photographer, how do you try to get that mask to slip? How do you wrestle back the initiative to your side?

I just get them talking about something they love, because when you talk about something you love, you get quite animated and you come out of yourself and you forget the mask a little. I used to use a trick when I was shooting headshots. One year, I shot the headshots for Masters students at RADA [the Royal Academy of Dramatic Art]. I knew from the first sitter that they had an exercise where they had to choose an animal and then stand on a stage for half an hour and embody that animal in movements, which is obviously a strange experience.

I knew that if I was going to struggle on a particular session with one of these students, if I felt things had hit a bit of a lull, I would ask them which animal

they were. And of course, out of context, it would take them a second to reply, 'Oh, how do you know about the animal thing?'

Then they'd usually say, 'Oh my gosh, I had to be a flamingo and prance around the stage for 20 minutes. It was ridiculous!' They suddenly came out of themselves and their personality came to the fore. And if I could shoot in the gaps while they were telling me about this, I'd start to get more interesting shots. So a good way of getting people to open up for portraits is to ask them about something they love and get them to tell you about something they find interesting or an experience that they've had.

That's a great tip. Aside from promoting your book and becoming a qualified therapist, is there another photographic ambition you'd like to achieve?

It's more on the filmmaking side – I've always had a dream of one day, producing a feature-length documentary on certain subjects. That's a lofty goal I have that may or may not happen, but it's good to have a vision to aim for.

What's your plan going forward?

Continuing to talk about my book, hopefully in the USA and Canada and, potentially, Australia. To keep going with the YouTube channel, and I also have one or two portrait projects that I'm just starting to work on. ●

Above: 'Easter Day Parade', Malta, 2018.



'The Meaning in the Making' with Sean Tucker takes place at The Photography & Video Show on 16 March at 3.45pm.

Thomas Heaton & Sean Tucker: In conversation takes place at The Photography & Video Show on 16 March at 1pm. www.photographyshow.com

“When portraiture is done right, healing can come from that. It's powerful”

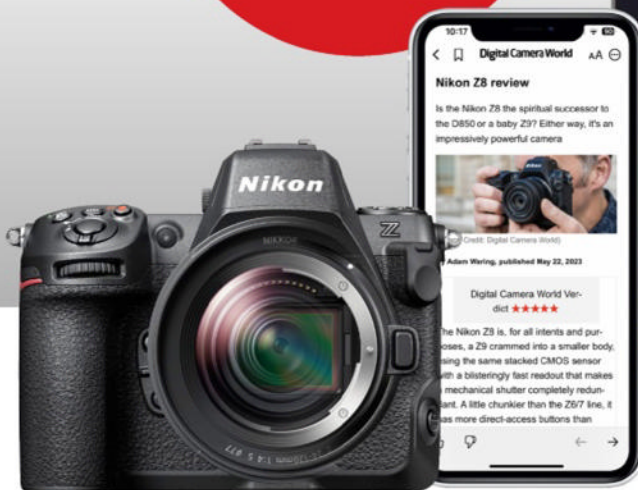
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Photo Active

10 things you can shoot, edit or create this month, from double exposures to winter sports and wildlife

1 | CREATIVE

A love triangle

With Valentine's Day on the horizon this month, why not use your photography to treat a loved one to something personal with this trio of ideas from **Dan Mold**

It's February and love is in the air. For many people that means a quick trip to the petrol station to buy some flowers and chocolates, but if you're looking for something with a more personal touch, why not take some unique photographs for your loved one that could be printed as a personal card or as an art print? Going to an extra little effort will create a unique Valentine's gift for your loved one!

Here are three potential projects you could try, each of which will produce a special one-off image for your significant other. From light painting outdoors for a vibrant Valentine's Day photo to two projects that can be done in the comfort of your own home, go the extra mile this year.



PROJECT 1: CAPTURE A LIGHT-PAINTED HEART

1

Shoot from a tripod

Set up your camera on a tripod and using Manual exposure mode, dial in the settings shown above. You'll need a friend (or the camera's self-timer if working alone) to write your text. Take an 'empty frame' first, so you have an image you can use to fill in the background inside the heart, if required, in editing afterwards.

2

Focus on a friend

Have your friend stand in the scene ready to start writing with their torch or sparkler. For pin-sharp shots, ask them to shine a torch on themselves so that you can achieve autofocus, then lock it off using manual focus.



3

Start the exposure

Now using a remote shutter release, begin the long exposure and ask your friend to start drawing a heart shape in the air. Repeat this motion a few times to get a more solid effect, as seen above.



PROJECT 2: GIVE YOUR LOVED ONE A ROSE PRINT

1

Use a macro lens and reflector

To get a close-up of a red rose, we're going to use a macro lens on a tripod. This might obscure some of the light in the shot, so we may consider using a five-in-one reflector to manipulate the natural light. These usually offer gold, silver and white sides, enabling the quality of reflected light to be changed.



2

Add small droplets of water

Adding water to your flower pictures is a great way of giving them a shimmer and shine. To add lots of small water droplets, as seen on the right, you can pick up a cheap atomising spray bottle to give your flowers a light misting of water droplets – it's an effective way of adding extra shine and eye-catching reflections. Alternatively, use a pipette to carefully place a drop of glycerin exactly where you want it to be. This will remain as a large glistening bead of liquid.



Dan Mold



Dan Mold

PROJECT 3: CAPTURE A LOVE HEART

When you place a ring in the right position, you can cast a 'love heart' shadow onto a book of your choice with a simple torch. It's really effective – and best of all,

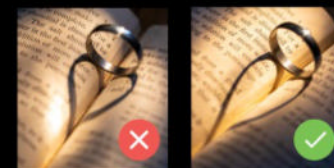
it doesn't require any expensive lights or studio flashes. You can compose your shot in daylight or with the lights on so that you can see your framing clearly.

Dial in the settings above and focus accurately, then switch off the lights when you're ready. Some blackout blinds can help stop external light sources from leaking in.

TOP TIPS

Watch out for bright hotspots

Try to avoid overexposed areas in the frame. For an evenly lit scene, experiment with the angle and power of the torch, how close it is to your subject, and your exposure settings.



Use Live View to check your focus

Enter Live View mode and zoom in to see the ring in detail. Now go into Manual Focus mode and set the focus by turning the focusing ring on your lens until the ring is pin-sharp.

Light up your subject

A simple hand torch is all that's required to cast a love heart shadow on your book. We used a MagLite, which allows you to change the focus of the light to a more targeted or wider spread.



1 Set the scene

Open a book of your choice somewhere in the middle and place your ring on the spine near the top. We used a blob of Blu-Tack to keep it upright and made sure this was out of shot underneath the ring. We also gave the ring a quick buff with a microfibre cleaning cloth to remove any greasy fingerprints.



2 Now frame up

Compose on a tripod and lock it off once you've found the ideal framing. This will free up your hands to move the book and ring into the perfect position. Switch on the 10-second self-timer mode to give yourself time to get into position and cast the love heart shadow precisely where you want it to be.





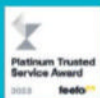
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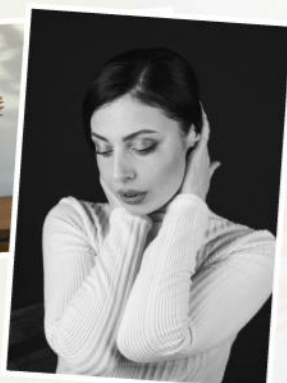
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2 | PHOTOSHOP

Double vision

Claire Gillo shows you how to create an easy and arty double-exposure portrait effect using Photoshop

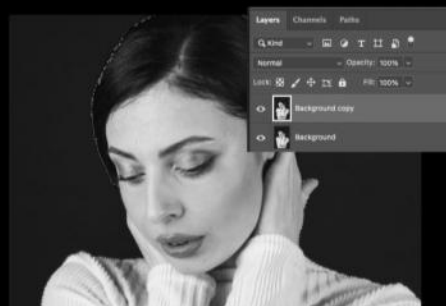


Claire Gillo

Double-exposure portraits have been around for ages. Film photographers had to trick their cameras into shooting two exposures on the same piece of film and then had to wait until the film had been developed to see whether it had worked. These days, the effect is much easier to achieve and only requires some knowledge of Photoshop, in particular Layers, Adjustment Layers and Layer Masks.

For our starting image, our model was shot against a black background; however, it looked more effective against a white background so we've shown you a quick way in Photoshop to get around this. The technique we used created a dark rim around our model, replicating a solarised darkroom effect, which is an old developing technique (see the work of Dada photographers such as Man Ray for inspiration). We kept this in for the arty result.

Three simple steps for creating your double-exposure artwork in Photoshop



1

Select and mask

Start by duplicating the background layer (right-click on the layer and select Duplicate Layer). Next, go to the Quick Selection tool and on the top bar click 'Select and Mask' then press 'Select Subject'. Change the Output to New Layer and then click OK. You have now created a Layer Mask of your subject. To make the background white, go to the Adjustment Layer setting at the bottom of the Layers Palette and select Invert.



2

Invert layer mask

On your Layers Palette, replace the Layer Mask on your inverted layer with the Layer Mask you have just created of your subject. Click and pull the Layer Mask up and drop it onto the Invert Layer. Select 'Yes' when it asks 'Do you want to replace the Layer Mask?' The Layer Mask is inverted so staying on your keyboard select Ctrl + I (or Cmd + I on a Mac) to invert. You should now have a white background with your model looking correct.



3

Flower image

Import the flower image into your portrait. Change the Layer Blending mode to Screen and place it using the Move tool. You can play around with the opacity of the layer. Finally, add a Layer Mask to the flower image and, using a soft black Brush, remove any areas of the flower you don't want. We took out the flower stalks and the wooden chest in the image. We changed the brush opacity to 50 per cent to soften the flower effect and bring out the eyes.



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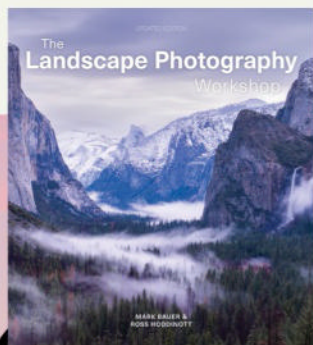
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**PART
2 OF 6**

Part 3 in issue
279, on sale
1 March

3 | LANDSCAPES

Master balance and harmony

Find out more about another essential element of classic landscape photography, with **Mark Bauer and Ross Hoddinott**

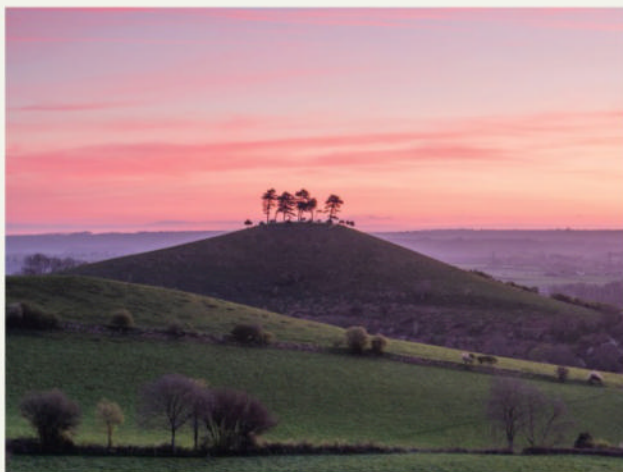
Photographers often talk about trying to achieve a 'balanced' composition. However, the word 'balance' can be misleading in this context, as that may suggest symmetry and visual balance are not necessarily the same thing. In general, it is better to think in terms of achieving 'harmony' in your photographs.

Placing the subject

Although a landscape photograph may not have a single, obvious subject in the same way as a portrait – the view itself may be the subject – most successful landscapes contain a strong point of interest or focal point. For example, this could be a tree, a dominant hill or a building, such as a church.

Placing the subject centrally in the picture frame usually results in a static rather than a dynamic composition, as the eye tends to shoot straight to the subject; the viewer's gaze is not encouraged to travel around the frame. By placing the main subject off-centre, the picture becomes more dynamic, as the eye is encouraged to move around the frame, seeking out the subject. There are exceptions to this, for example, when there are powerful converging lines in the scene.

To increase the sense of harmony in a composition, you can use lines, either real or implied, arranged according to the rule of thirds or golden section with the focal point on an intersection of horizontal and vertical lines.



Harmony: Placing the focal point in the centre of the frame can result in a rather dull, static image (above). Placing the main subject off-centre (left) encourages the eye to move around the frame, producing a more dynamic image.

Settings: Fujifilm GFX 50S, 32–64mm (at 64mm), 1.3 secs at f/8, ISO 100, 3-stop med ND grad



Ross Hoddinott and Mark Bauer

Highlighting the main subject

Using lines – in this case, a breaking wave as it drags back out to sea – is a useful way of highlighting the main subject in a composition. **Settings:** Canon EOS 5DS, 16-35mm (at 16mm), 1 sec at f/11, ISO 100, polariser, 2-stop hard ND grad



Ross Hoddinott and Mark Bauer

Converging lines

Converging lines are hugely dynamic, but take care when constructing a composition around them, as it is easy to lead the viewer's eye straight out of the picture. However, in this example, there is sufficient interest in the background to prevent this from happening. **Settings:** Nikon Z 7II, 24–200mm (at 38mm), 13 secs at f/11, ISO 64

Lead-in lines

Another way to emphasise the main subject of your photographs is by using lines to lead the viewer's eye through the frame. This can also help to highlight the relationship between the subject and the foreground and enhance the feeling of depth in a photograph.

Lines are everywhere in the landscape and can be man-made, such as roads, paths and hedgerows, or natural features such as rivers and coastlines. Lines don't have to be 'real' – they can also be implied. Examples include the patterns created by waves photographed with a long exposure, or a row of objects.

Using implied lines is a subtle but effective way of highlighting the focal point in your landscape image. They aren't always easy to find, but if you can find a composition in which other objects are pointing towards the main subject, the results can be powerful.

Wide-angle lenses can help you achieve this look, as the distortion they create at the edges of the frame can stretch and enhance lead-in lines and angles. Having 'pointers' in the corners of the frame also helps to direct attention inwards and stop the viewer's eye from wandering out of the frame.

Top tip: Live view

Use the camera's Live View to help you see how balanced the composition looks as a two-dimensional image.



Ross Hoddinott and Mark Bauer

Curves

Gently curving lines lead the eye through a picture slowly, encouraging the viewer to examine the details in the rest of the composition. Rivers, streams and footpaths all make excellent photographic subjects.

Settings: Fujifilm GFX 50S, 23mm, 2 secs at f/16, ISO 100, polariser

TOP TIPS

Diagonals and horizontals

Diagonal lines in an image suggest action and depth. They work best if they come from the left of the frame, travelling towards the right, following the natural scanning pattern of the human eye, which is from bottom left to top right. The feeling of dynamism is increased if you shoot in portrait format, as this allows a more acute angle.

As with converging lines (see above), there is a risk that strong diagonals will lead the eye out of the photograph – using them to highlight a point of interest in the frame will help to prevent this. In general, diagonal lines should enter the frame from just above or below the corner, so that the frame is not split in two.

Horizontal lines are more relaxing than diagonals, suggesting peace and restfulness. Related to this is the use of layers in a composition. Layers have the same calming properties.

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4 | ARCHITECTURE

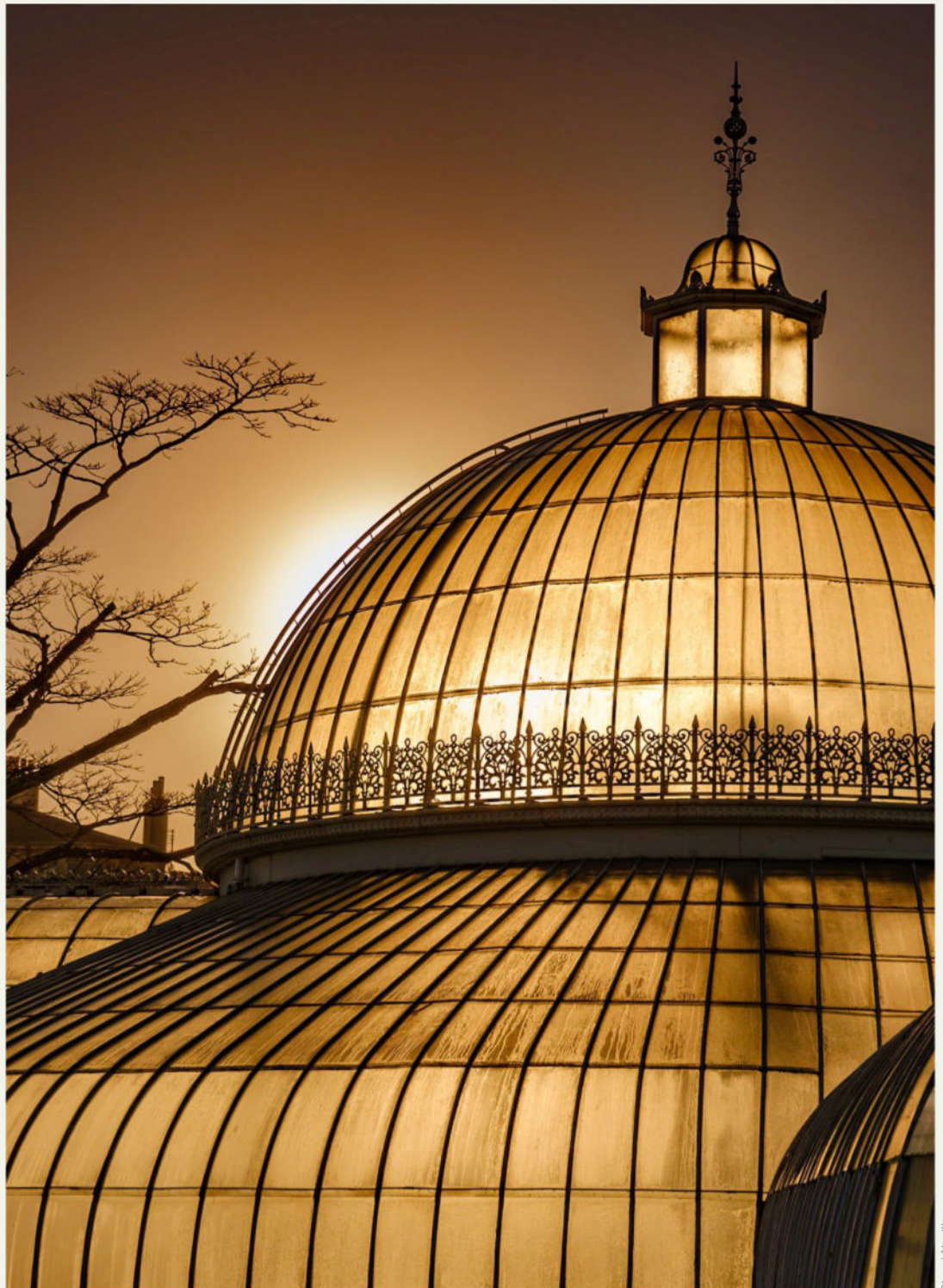
Let there be light

Stuart Neville used the power of natural sunlight to produce this stunning capture of an architectural gem in Scotland

The Kibble Palace is a 19th-century wrought iron glasshouse located in the Botanic Gardens in Glasgow. It is one of my favourite subjects to shoot and a really cosy place to visit on a cold day. I shot this image with my Fujifilm X-T3 and a 16-80mm lens. The exposure was 1/2400 sec at f/9, ISO 400.

Around noon, the sun was behind the Palace, highlighting the intricate ironwork. I adjusted the colour balance in Lightroom to warm up the image and produce a pleasing golden colour.

Instagram: @glasgowpixman



Stuart Neville

Three tips for capturing light with architecture

1

Position yourself

It is worth walking around your subject to see how the light reflects or shines through the building, especially if it's a glass one. You will see how the subject changes with the light. Try shooting in a few different positions and compare the results.

2

Composition

When taking pictures of architecture, it is important to think about how you are going to compose your shot using the shapes of the building. Cropping into the building, rather than trying to capture the whole building, can create great results.

3

Consider using a polariser

You could think about using a polarising filter, which reduces glare and reflections. However, it can reduce the amount of light that reaches your sensor, so always check your images on your viewfinder or LCD screen just in case you decide to reshoot with a wider aperture.



The high key to winter wildlife

Roddy Llewellyn suggests using the high-key technique when shooting wildlife this winter

Many areas of the UK will see some snowfall this winter, even as late as March. When a blanket of snow covers the land, details are hidden – creating a monochromatic and less cluttered scene. These wintry conditions lend themselves to a simplified style of image, known as high key. By overexposing the snow, many details will be removed, leaving you with a high-key image of the wildlife you are photographing on a pure white canvas. High-key lighting can turn a difficult photo situation into something more compelling. So wait for some snow in your area, grab your camera and try it with the local wildlife.

5 quick tips for high-key

- 1 Go bright**
Work in Aperture Priority and use your camera's spot metering mode to expose the subject. You can now increase exposure compensation for the desired effect.
- 2 Background**
Find a non-distracting background. This means the background tones should be continuous, without deep shadows.
- 3 Slide to the right**
On your camera's histogram, the peaks of the graph should all be leaning to the right.
- 4 Restore in post-production**
During the editing phase, you can tone down the lighting to ensure that enough detail shows up in your images.



High-key is a great style for beginners aiming to go beyond the basics. Exposure compensation of +0.67 was dialled in to lighten the background of this image.





Ross McLaren

6 | STREET

Try a winter photo walk

Keep your eye in and get some shutter therapy during the shorter, colder days, says **Ross McLaren**

With a young family, it can be difficult to find the time to get out and enjoy some shutter therapy. For me, this has usually involved being away for up to a whole day, spending a few hours underwater in a cold Scottish loch taking photos of crabs. As you might imagine, this isn't really an option at the moment, so lately, I have tried incorporating my photography into family days out, turning my hand to shooting street

scenes. When we head out on our adventures, the last thing I want to do is carry bulky camera gear around, so more often than not, I find myself leaving it behind. Discovering Micro Four Thirds cameras has been a revelation. The overall size of the system meant I was able to throw a body and a couple of lenses in the nappy bag (formerly my camera bag) and still have room for all the other essentials that new parents need. **Instagram:** @r.s.mclarenphotography

Ross McLaren





1.3
secs

f/20

ISO
64

With a toddler in tow, you can find time for photography by building it into a family day out. This shot of Buchanan Street in Glasgow shows it can pay off.



1 Choose your kit carefully

I limit my setup to one body and a maximum of two lenses. For me, the OM Systems (formerly Olympus) Micro Four Thirds ecosystem is perfect. The difference in size between the latest full-frame mirrorless cameras and MFT bodies is not vastly different, but the size advantage that MFT enjoys is in its lenses. These tend to be far smaller than their full-frame or APS-C equivalents, which is great when the rest of the bag is stuffed full of nappies, wipes and snacks.

2 Settle any nerves

With so many people snapping away on smartphones in towns and cities, seeing someone with a camera isn't that big a deal. If you're nervous about taking photos of people, don't do it. Start with buildings, cars, bikes, shapes, patterns or even urban wildlife... there is so much to photograph other than people. When you begin to feel more confident, perhaps try shooting people from behind or capture them in silhouette. Eventually, you could start taking candid portraits, and if you do get caught in the act, then a little smile and a hello can go a long way. People might even want to stop and chat – candid portraits can be a great way of striking up conversations with really interesting characters.

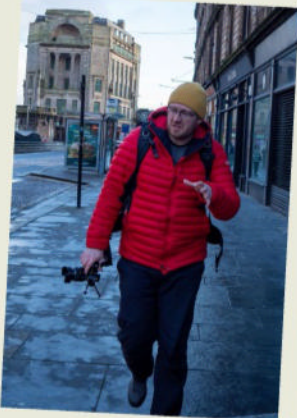




3

Find your focal length

Street photographers often shoot with prime (fixed focal length) lenses. But if you're just starting out, which focal length should you go for? What one photographer suggests might be different for another. Using a zoom lens for your first few outings will mean that you can shoot at a variety of focal lengths and experiment with them. At the editing stage, you can choose your favourites and check the focal lengths; you may find there's a particular one you like and from there, think about moving to a prime lens that corresponds with it.



4

Have a focus in mind

It can be overwhelming when you first hit the streets – no idea where to start or what to shoot, for example. To overcome this, I would suggest heading out with a list of things in mind for the day – shooting at one focal length; seeking out reflections; looking for patterns and textures; shooting through objects; capturing colour, finding interesting architecture; and shooting street portraits. You're not limited to these, but having some rough ideas will give your photo walk a purpose.

5

Auto isn't a dirty word

There are many different ways of capturing street scenes, so if you're new to it, things can feel a bit daunting at first. Let the camera do the work while you focus on getting your eye in. Put it in Program mode, or even go full Auto. Concentrate on capturing candid moments, and self-evaluate your shots afterwards during editing. Was the image blurry when you wanted it sharp? Perhaps you need to focus on shutter speeds more. Would an image have looked better if the background was out of focus? Make apertures a priority on your next photo walk.



6

Try something different

Shooting street photography with a telephoto lens might be an even more unpopular suggestion than using a zoom, but it can make for some distinctive images. The big advantage of the MFT system is its size, and with a full-frame equivalent focal length of 80-300mm, my Olympus 40-150mm lens is still small enough not to be too daunting to passers-by but produces fantastic results. A telephoto lens allows you to capture scenes and architecture that might normally be out of reach, and I really like the pleasing compression effect it adds to images. A telephoto also means that you don't have to be close to your subjects.



TOP TIPS: SETTINGS

Shutter speed: I will start around 1/250 sec; it's a medium setting which can be changed easily.

Aperture: f/4 to f/5.6 is a good place to be; from there I can quickly create blurry background separation or bring everything into focus.

ISO: I use Auto ISO and set the upper limit to 1600 or 2000 – the camera can do some of the work without jeopardising image quality.

Shoot winter sports!

It's the perfect time to dust off your lenses and capture some sporting action, says **Roddy Llewellyn**

Whether you're jetting off on a skiing holiday or staying at home to watch football or rugby, winter is a great time to shoot some sports and action photography. Here's a quick guide to

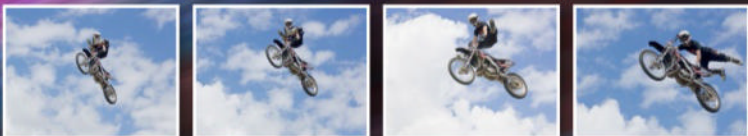
getting started in some of the most commonly viewed sports, showing you how to set the correct shutter speeds, depending on the subject, and capture sharp shots of the action that's playing out in front of you.

1

Choose the right lens

You don't need a long lens for all sports – but with many, the longer the lens, the more impressive your action shots will be. It all depends on how close you can get to the action without standing on the field of play or endangering yourself. The lenses listed in the table below offer a rough guide to the focal lengths that will be most useful when using DSLR or mirrorless cameras for shooting various sports.

Cricket:	400mm
Motocross:	100mm
Rugby:	300mm
Showjumping:	200mm
Skateboarding:	35mm
Football:	300mm
Surfing:	500mm

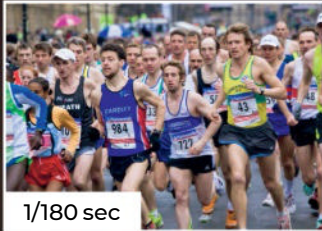


2

Switch to Continuous drive mode

To increase your chances of success, switch the camera's Drive mode to Continuous. Most modern digital cameras can shoot a sequence of images at a rate of at least 3fps. Most sports pros use Continuous because it increases the likelihood of capturing a dramatic moment. One disadvantage of this approach is that most cameras can only shoot in Continuous drive mode for a limited number of shots. Beyond this, the camera has to stop and catch up with processing and writing the captures to the memory card. As this buffer limit is reached much sooner when shooting raw files, most photographers using Continuous drive mode will save their images as jpegs instead. Then they could shoot at 3fps for a full nine seconds, for example, rather than just three seconds if shooting raw files. If you need to know how many shots can be taken before the memory card fills up, this information is displayed in viewfinder.





1/180 sec



1/200 sec



3

Use Shutter Priority

For action photography, it's best to select the Shutter Priority option on your camera. This now gives you control to set your shutter speed according to the sport you are covering, whether it's a quick shutter speed for rugby, football or running, or a really fast shutter speed for capturing a moment during ski jumping (below). To capture sharp shots of fast action sports, increase the ISO and aim for shutter speeds higher than 1/2000 sec.



4

Keep your eyes open

When they take a shot, most photographers close the eye that isn't looking through the viewfinder so that they can concentrate on the composition and exposure information. When shooting action, however, try getting used to keeping both eyes open: your second eye is useful for seeing things outside the frame. This can help you get better pictures, because you may be able to see the action unfolding from the corner of your eye. It can also give you advance warning of any potential dangers heading towards you.



1/15 sec – camera stationary



1/15 sec – camera panned

5

Panning to perfection

'Panning' refers to the technique of moving your camera at the same speed as a moving subject so that it appears stationary in the camera's viewfinder. Panning takes a lot of practice and if your camera has a fast frame rate, be prepared to shoot a lot of out-of-focus images before you get it right. The key to successful panning is to judge the movement of the subject correctly. The best way to do this is to start panning while the subject is still too far away to capture and stay with it as it passes by. Here, I started tracking this cyclist as he approached from some distance and started shooting as he passed my position. Notice how the cluttered background has become much less prominent when it is blurred and how the panned image is more dynamic and gives a heightened impression of movement. With practice, you can master panning high-speed sports, like the ski jumper here, shot by a pro sports photographer.





8 | PHOTOSHOP

Get creative with your 500 free stock photos

Use these bonus photos as a springboard for your creative projects

Stock photo sites such as Stock.adobe.com or shutterstock.com are excellent sources of visual resources, for example, when you need an image to illustrate a poster or a flyer. You can also use stock photos as components for your creative projects, such as replacing a dull sky in your landscape shot with a more interesting one from a stock site.

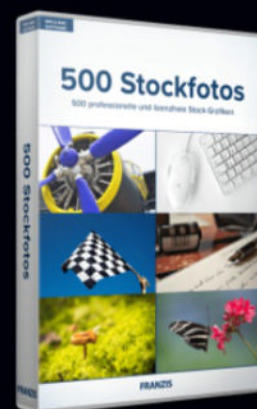
However, stock images can be expensive, so we've teamed up with software company Franzis to give you 500 bonus stock images that you can use wherever you want, for as long as you want – without worrying about licensing issues.

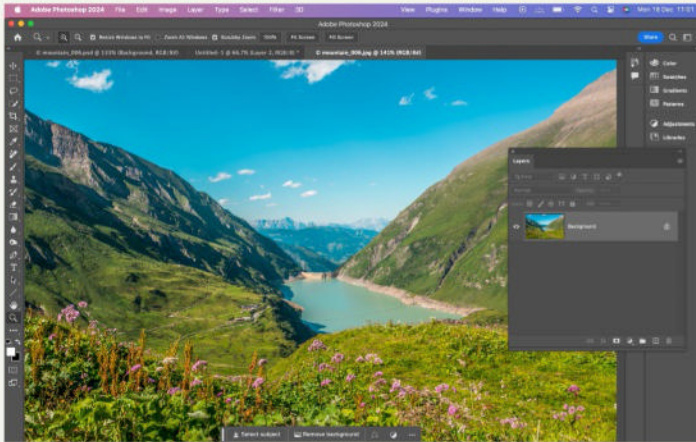
This walkthrough is designed to help you get creative with a couple of images from this free '500 Stockfotos' collection by using Photoshop CC's Replace Sky command and its Neural Filter menu's season-shifting Landscape Mixer.

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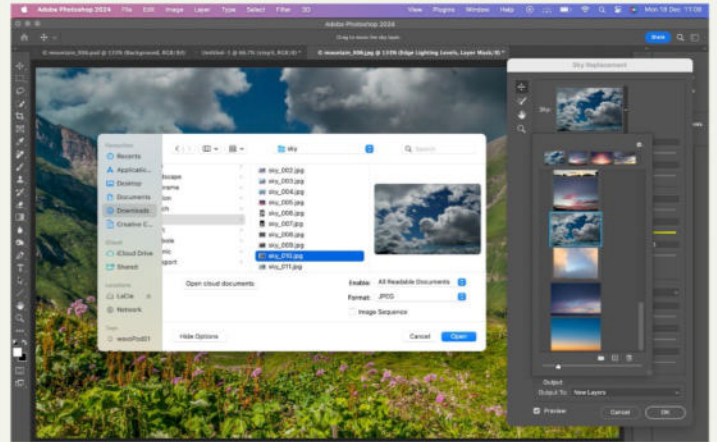
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In Step 1, type your email address into the field, tick the boxes and click Send. This takes you to Step 2, where you need to check your inbox for an email from Franzis GmbH. Open the email and click on the 'Click here to activate your product' link. This takes you back to the site, where you then click 'Start Download'. The 'stockphoto500' folder of images is 711MB in size and contains photos organised into sub-folders, such as City, Flowers and Sky.

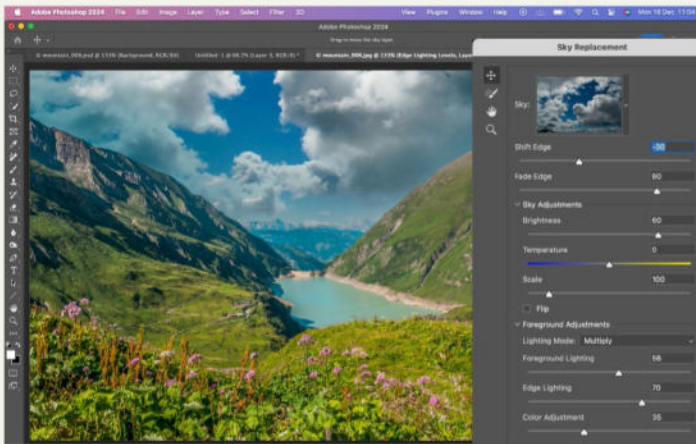




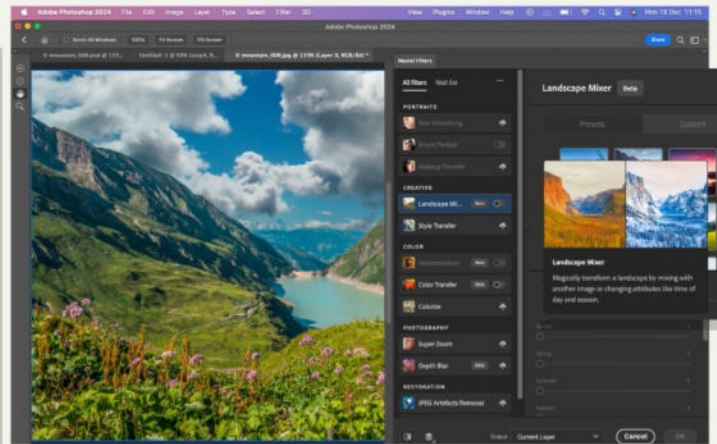
1 **Open a stock shot**
 Choose File > Open. Go to the stockphoto500 folder, then to the Landscape folder. Click on Mountains and choose the file called mountain_006.jpg. Click Open to view the shot in Photoshop.



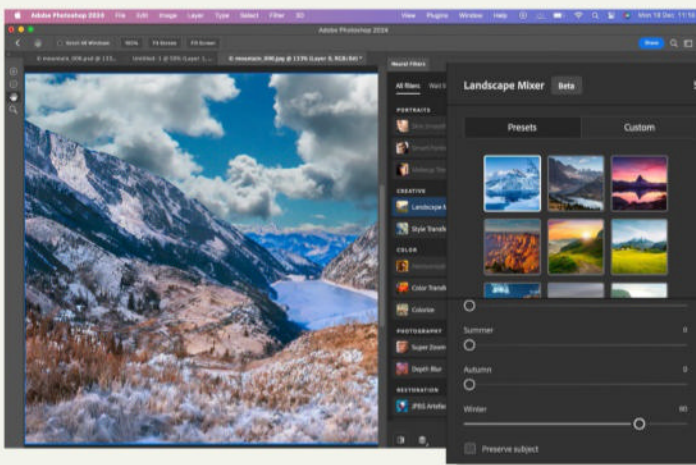
2 **Choose a sky**
 Choose Edit > Sky Replacement. Click the drop-down icon by the currently selected sky. Click the + icon to browse to a sky in the stockphoto500 folder. We chose sky_0010.jpg for a dramatic look.



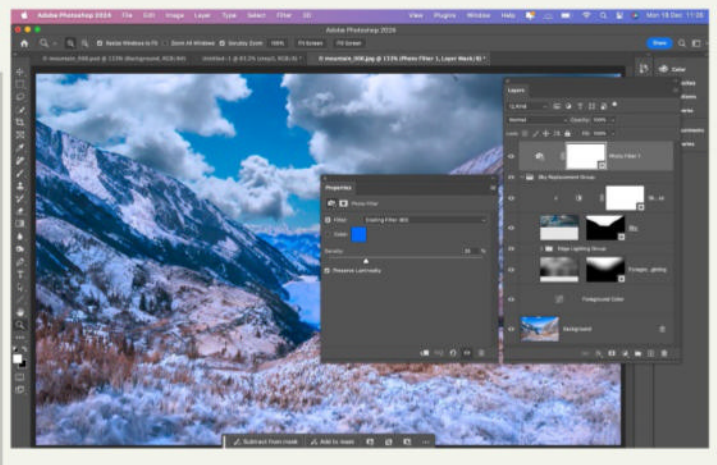
3 **Fine-tune the blend**
 To help the new sky blend with the edges of the distant mountains, set Shift Edge to -30 and Fade Edge to 80. In Sky Adjustments drag the Brightness slider up to 60 so the sky matches the brightness of the landscape.



4 **Download the Landscape Mixer**
 You should now have a Sky Replacement group in the Layers Panel. Click on the Background layer in the Layers panels to target the landscape. Choose Filter > Neural Filters, then click to download the Landscape Mixer.



5 **Apply a preset**
 In the Landscape Mixer, click on the wintery landscape preset at the top left of the window. Drag the Winter slider to the right, choose a blend between the original photo and computer-generated snow and click OK. We eventually opted for 90.



6 **Finishing touches**
 To help blend the stock sky with the snowy landscape, choose Layer > New Adjustment Layer > Photo Filter. Drag the adjustment layer to the top of the Layers palette and select Cooling Filter 80 for a cold colour palette.

Explore tools and filters in software

Gary Rogers shows how to create artistic masterpieces using photo-editing software

In the previous issue (277, February), I suggested some ways in which promising photos can be turned into much better ones during the editing process. This may sound like an obvious point to make, but not everyone enjoys spending time sitting at a computer tweaking their images.

My preferred genre is flower and plant macro photography and I use entry-level camera equipment and accessories. Affinity Photo and Photoshop Elements are easy to learn and are powerful enough for my needs – I have discovered several techniques that have transformed the look of my photos, just by exploring the tools and filters offered in the software.

The image on the right was produced using the creative filters in Adobe Photoshop Elements 23. The technique can be used on any photograph but the variety of shapes and colours to be found in nature, and particularly in flowers, makes this a great way of producing stunning and unique images that stir the imagination.

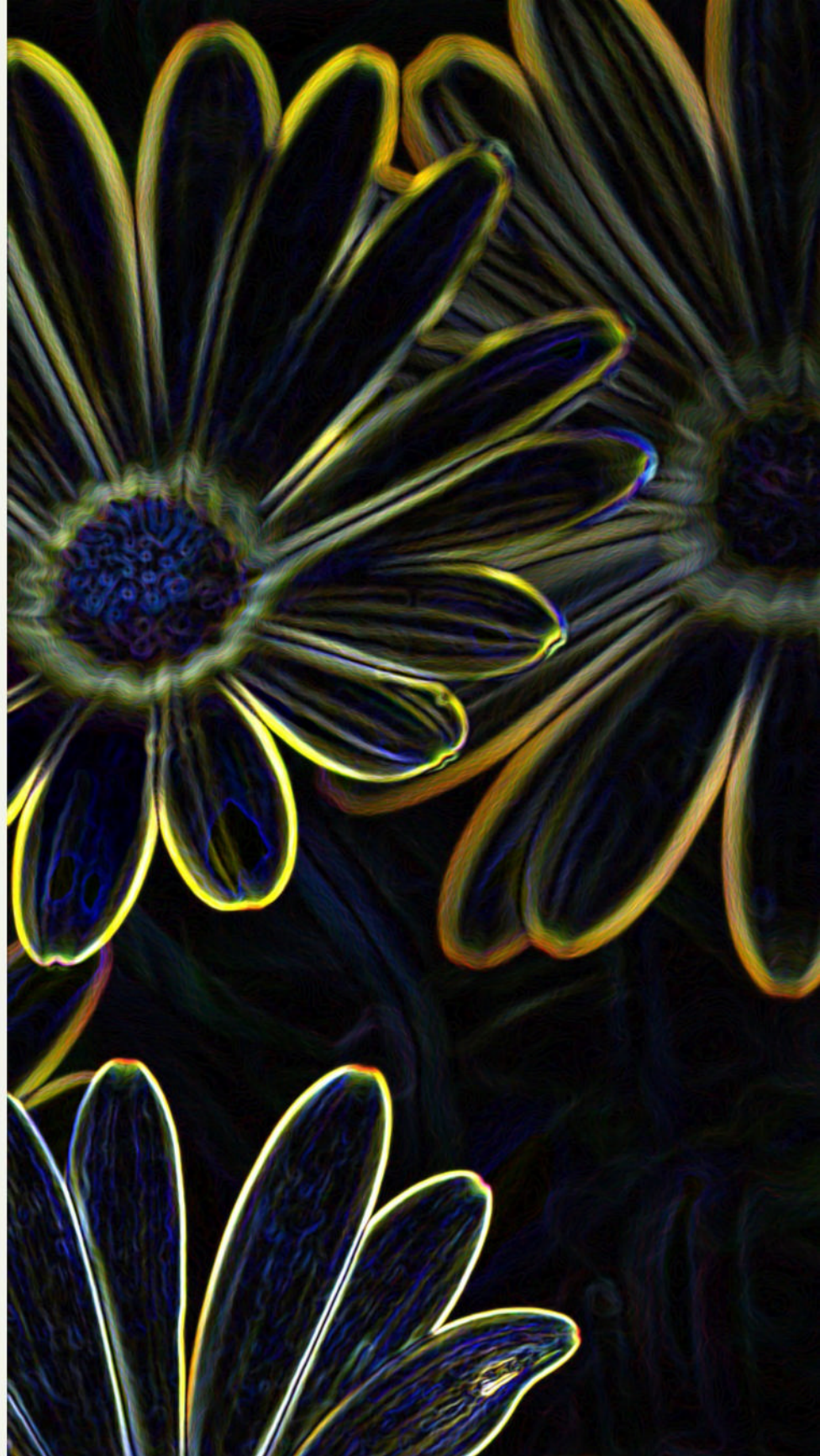
This technique is easy to do and works well with single, elegant blooms or flower bouquets and bushes. By using the smart selection brushes in Affinity Photo or Photoshop Elements, it is simple to change the background to produce the effect you want. Here's how to do it...



1

Start with a good image

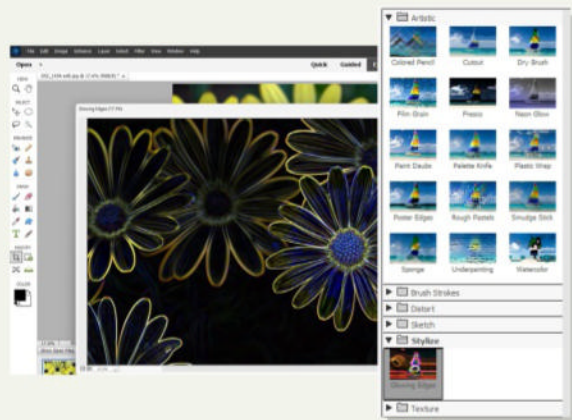
To produce a well-exposed and crisp start image, use the exposure and contrast sliders along with the clarity and sharpening filters in your post-processing software. I tend to do this in Affinity Photo.



2

Apply the filter

Open the image in Photoshop Elements 23's Expert mode and go to Filter > Artistic > Neon Glow > Stylize.

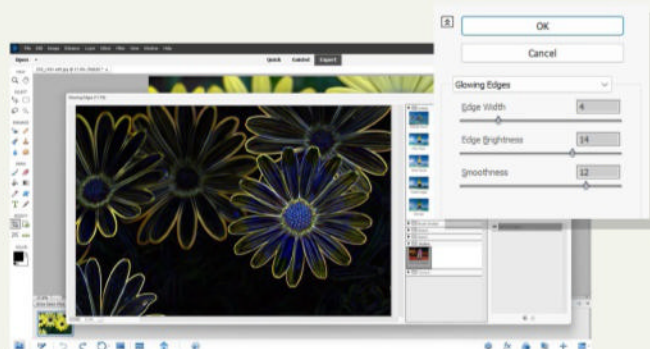




3

Fine-tune the filter parameters

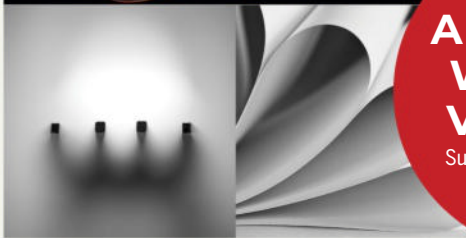
Use the sliders to refine the image as desired. I usually find that a narrower edge width is better.



4

The final image

And that's it. The possibilities for this technique are endless. Photo editing software such as Affinity Photo and Photoshop Elements enables you to get creative with your original shots and produce colourful and artistic imagery, such as this osteospermum (above). Give it a try!



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10 | COMPETITION

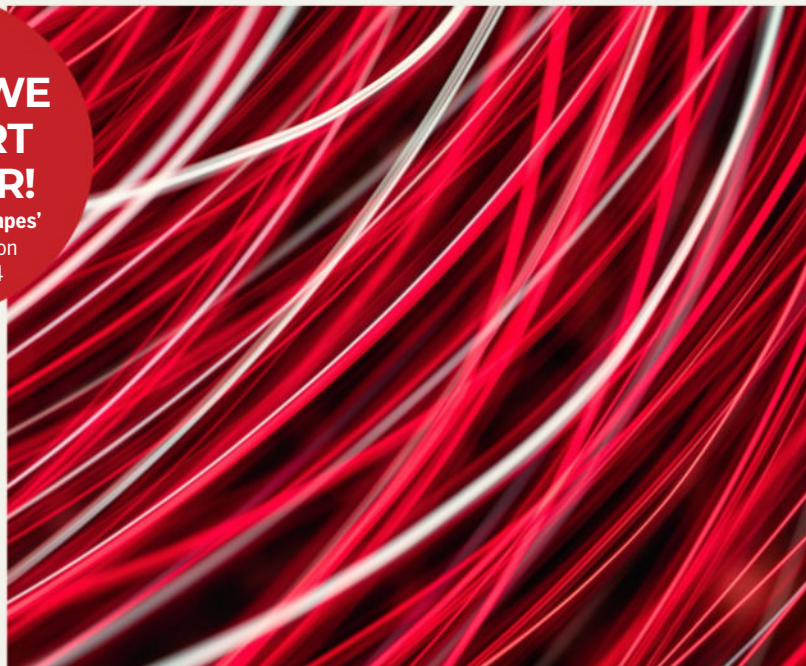
'Shapes' photo challenge

Send us your best image to win a £50 voucher towards Cewe Wall Art

The latest theme of our monthly Photo Challenge is 'Shapes' – whether they're ones found in the natural world or everyday life, or something set up by the photographer, we're looking forward to seeing how you meet this open-ended, and potentially very creative, brief!

Enter via email or Facebook

Email your entry to digitalcamera@futurenet.com with 'Shapes challenge' as the subject, including a brief description of the image. Or look for the 'Shapes challenge' post at www.facebook.com/digitalcameraworld and upload your entry into the feed. Enter by 29 February 2024 (only one image per reader, please). The winner will be announced in issue 280, on sale 28 March. (Please note that this competition is only open to readers based in the UK.)



Palabrica

The winner of the 'Light' challenge is...

Palabrica

In *Digital Camera 276*, we challenged our readers to submit an image that best summed up 'light' for them. Congratulations to Palabrica, who takes us behind the scenes of this captivating photo: "This image is called 'Streaks in Scarlet.' Having never tried light painting before it was a bit of trial and error at first. I used my Canon EOS RP with a Canon RF 100mm F2.8L Macro IS USM lens, and some red and white Christmas tree lights. I was surprised to see that the vibrant, colourful results make for a really quite effective abstract!"

Settings: 10 secs at f/7.1, ISO 400

Email your entry to: digitalcamera@futurenet.com
or enter at: www.facebook.com/digitalcameraworld

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SCAN ME



Seeking out beauty in the banal can be a great way to engage with the world and make photographs.

I am increasingly drawn to these places and now actively seek them out, often avoiding the obvious hotspots. I turn my back on getting 'the shot' and try to explore with a reverence that transcends the seeming banality of the subject I'm looking at.

This image was made in the Costa Rican port town of Puntarenas on the Pacific coast. It's a relatively humdrum port where cruise ships dock as a stepping stone to exciting adventures and day trips. Typically, lines of coaches will ferry the passengers to epic locations up in the mountains, deep in the jungle or other exotic delights. These are undeniably great experiences, although chaperoned tours aren't for me or conducive to the roaming, roving eye of an inquisitive, curious photographer.

To this point, I avoid these activities, instead, preferring to wander aimlessly around the port. It can take a while to 'tune in' and start 'seeing' but after a couple of hours or so, I see potential photographs just about everywhere. I love seeing like this; it gives me a high. It's a shame that only travelling and being in new places fuels this sort of creative instinct; perhaps when I'm at home, I'm too distracted by deadlines, paying the bills and other domestic concerns. I'm working on finding this inquisitive state closer to home and, although meditation and mindful practice are helping, it's taking time.

This photograph was taken at the end of a long, hot day of mindful meandering. I turned a corner and discovered this quiet, seemingly run-down street. The low light cast beautiful shadows of nearby trees onto a graffiti-scrawled wall. It would be so easy not to see this and simply walk past but I was transfixed and easily spent an hour or so absorbed in the beauty. It was challenging to decide which image to share in this column. However, I settled on this one as I like the way the trunk and shape of the tree's shadow seem to grow from the weeds at the bottom of the wall. ●



The art of seeing

Benedict Brain on meandering mindfully in Central America, looking for beauty in the banal



Benedict Brain
www.benedictbrain.com

Camera: Fujifilm GFX 50R and GF45mm F2.8 R WR
Exposure: 1/125 sec at f/10, ISO 125

I am at my happiest when photographing in an area where my inquisitive eye can explore quiet, small and easily overlooked corners of everyday life.

Often, this can be in locations that seem unphotogenic and easy to dismiss as unworthy of attention – 'There's nothing to see (or photograph) here'. However,

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Next month

FINE-ART LANDSCAPES

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Page 40



REGULARS

10 all-new photo projects
Camera Clinic: prime lenses
Expert editing tutorials
One to One pro masterclass

ON TEST

Sony A7C II
Viltrox AF 27mm F1.2 Pro
Lumix S 100mm
f/2.8 Macro

ON SALE Friday 1 March

i

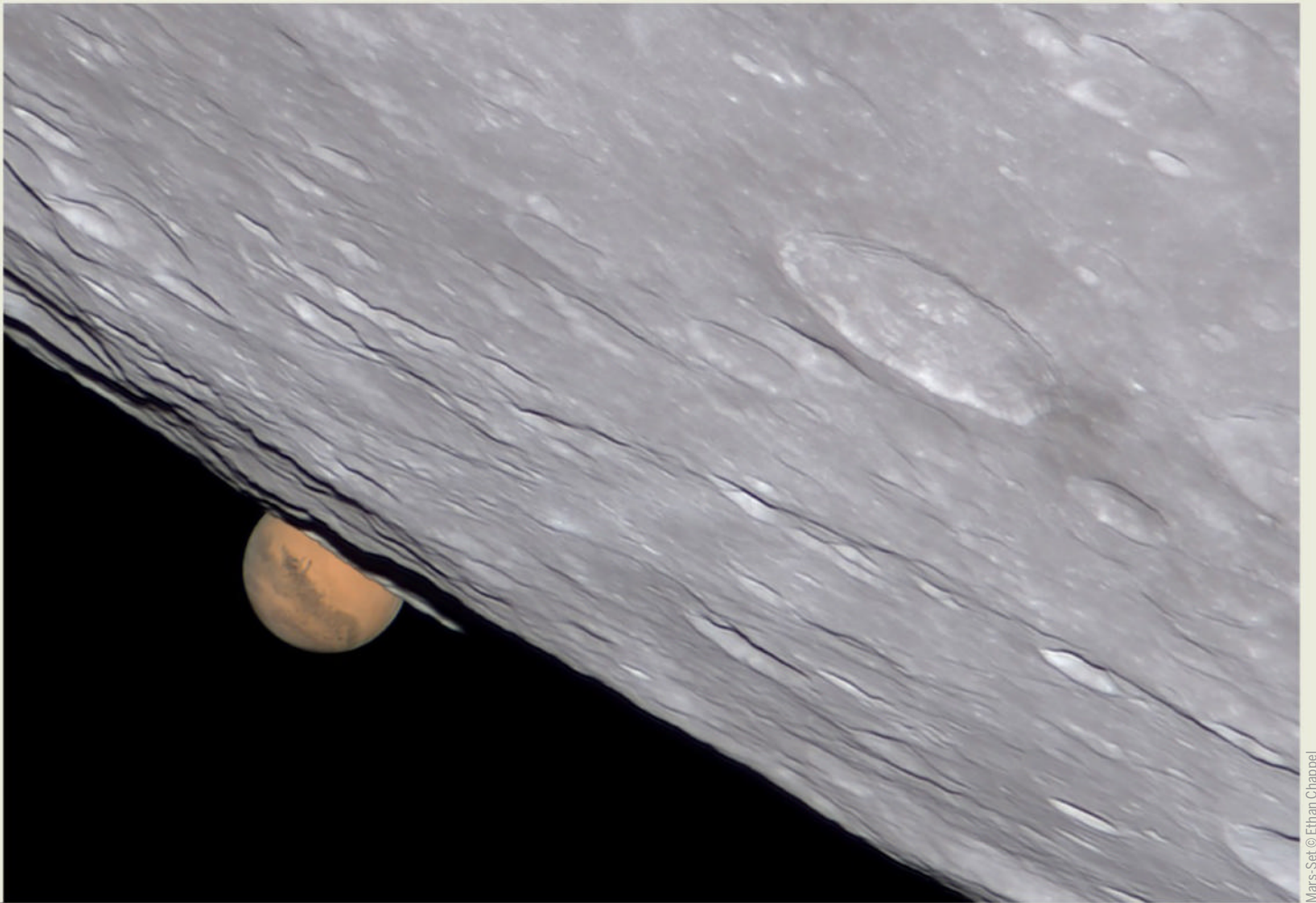
GALAXIES & OVERALL WINNER
'Unexpected' Marcel Drechsler,
Xavier Strottner and Yann Sainy

"The Andromeda galaxy is the closest spiral galaxy to our own Milky Way and one of the most photographed deep-sky objects," the judges note. "Yet this particular photo, captured by an international trio of amateur astronomers – Marcel Drechsler, Xavier Strottner and Yann Sainy – revealed a feature that had never been seen before: a huge plasma arc, stretching out across space right next to the Andromeda galaxy."

Andromeda, Unexpected © Marcel Drechsler, Xavier Strottner and Yann Sainy

Hotshots

The winning entries from Astronomy Photographer of the Year 2023



Mars-Set © Ethan Chappel

i

WINNER: OUR MOON

'Mars-set'

Ethan Chappel

"The occultation of Mars by the Moon was one of the last and greatest celestial events of 2022 and it was also one of the most challenging to image. To capture the level of detail on Mars that you see here takes a huge amount of skill and practice. Combined with a crisp, clear and perfectly processed lunar limb, the result is like taking a gigantic telephoto lens into lunar orbit itself. This image is a technical marvel and a real treat to look at – two factors that make it a worthy winner in this category."



A Sun Question © Eduardo Schabberger Poupeau

i

WINNER: OUR SUN

'A Sun Question'

Eduardo Schabberger Poupeau

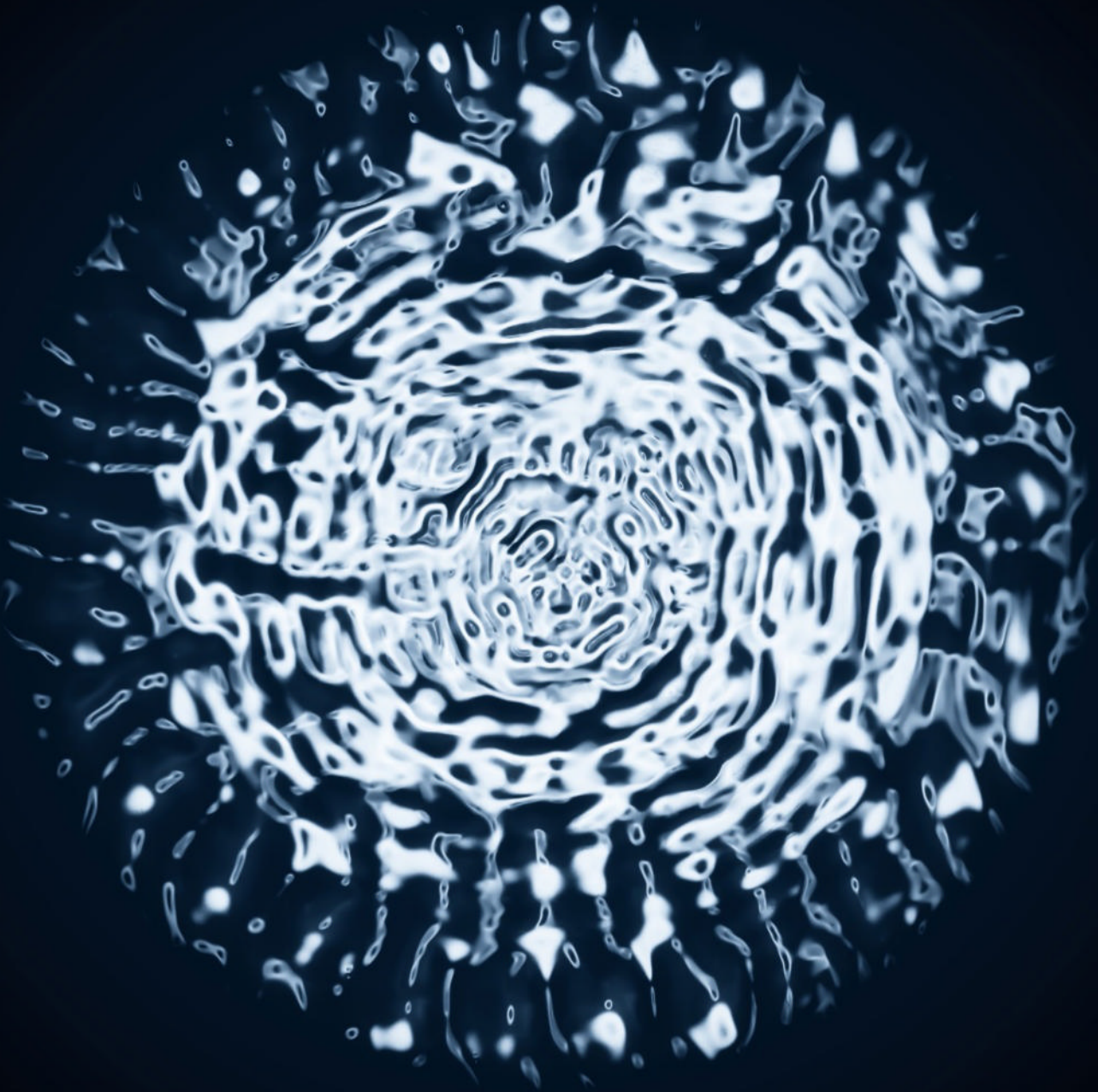
"This is such a clever image. While we've seen the granulation and surface of the Sun before, I've never seen a filament shaped like a question mark. If you zoom into the surface of the Sun, the image has a paint-like quality – it feels as though you can see the brush strokes. There's a sense of movement and if you stare long enough, you can almost see the question mark filament moving."



WINNER: SIR PATRICK MOORE PRIZE FOR BEST NEWCOMER
'Sh2-132: Blinded by the Light' Aaron Wilhelm

"The perseverance and stamina of astrophotographers is what makes us truly stand out in the photography field. Here is an image that really brings home the application required, especially when focusing on the deep sky. This photographer has really put in the hours and studied their craft to create a beautiful image of this field of nebulosity. With subtle but varying colours across the whole palette, the dark twisting lanes of dust are resolved in exquisite detail and the stars are perfectly round with no hint of trailing. All this from a newcomer to the hobby. It shows that, even at the early stages of astrophotography, there are no limits to what we can achieve."

Sh2-132: Blinded by the Light © Aaron Wilhelm



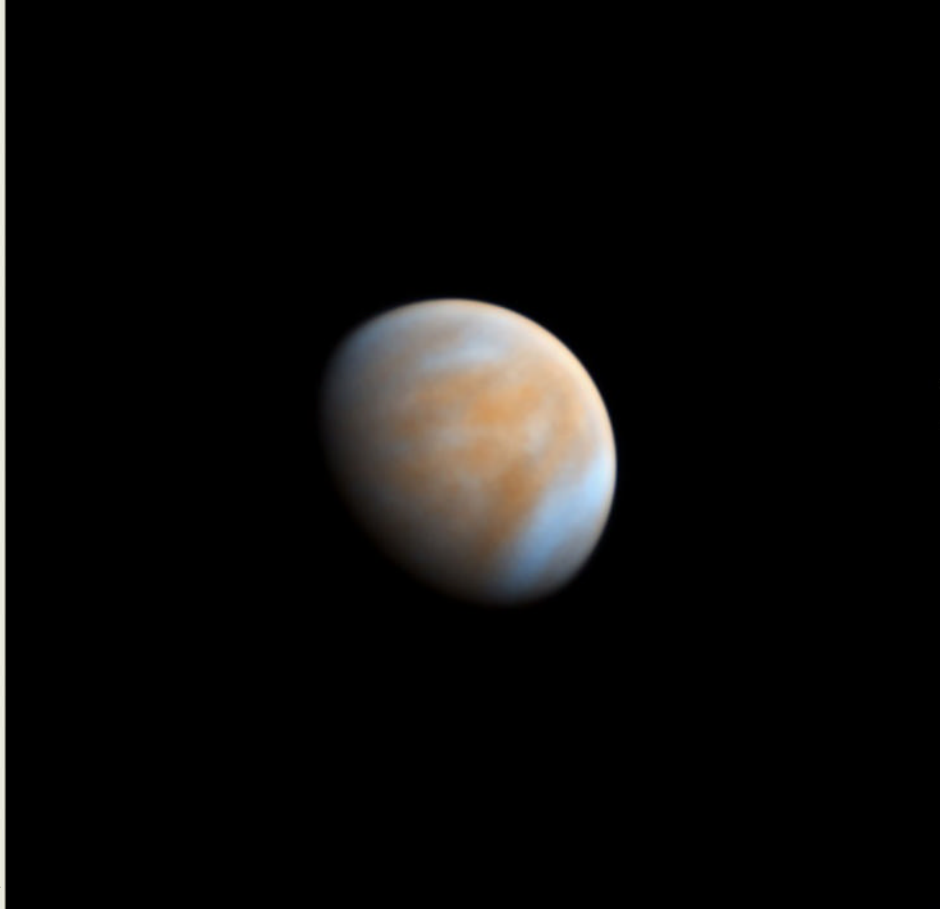
Black Echo © John White

i

WINNER: ANNIE MAUNDER PRIZE FOR IMAGE INNOVATION 'Black Echo' John White

"Most of the information in the universe is imperceptible to human senses (or delivered by mechanisms that would annihilate an observer), yet many modern astronomical developments are about capturing such information. Interpreting and presenting that information is vital and here is an interesting visualisation of astronomical data that we could not 'see' by ourselves, nor 'hear'. Using water, a macro lens and audio source material from NASA's sonification project, John White visually captured the sound of a black hole. Stark, beautiful, rather weird, and certainly innovative!"

Suspended in a Sunbeam © Tom Williams



i

WINNER: PLANETS, COMETS & ASTEROIDS
'Suspended in a Sunbeam'

Tom Williams

"Venus is the planet with the largest angular diameter that can be seen from Earth and so it can be easily located with the naked eye or photographed with a small telescope – but not usually like this. Capturing these atmospheric details from the sunlit side of the planet when it is so far from Earth is a remarkable achievement."

Zeila © Vikas Chander



i

WINNER: PEOPLE AND SPACE 'Zeila' **Vikas Chander**

"I love how the star trails poking through the grey sky provide a stunning backdrop for this stranded ship, which looks as though it's floating on a sea of fog. It is a hauntingly beautiful image that would be the perfect setting for a ghost story and it's one of my favourites from this year's competition."



New Class of Galactic Nebulae Around the Star YY Hya © Marcel Drechsler

i

WINNER, STARS & NEBULAE 'New Class of Galactic Nebulae around the Star YY Hya' Marcel Drechsler

"A team of amateur astronomers, led by Marcel Drechsler from Germany and Xavier Strottner from France, discovered a previously unknown galactic nebula. Over 100 nights, the team collected more than 360 hours of exposure time and discovered a pair of stars surrounded by a common envelope. The result is an ultra-deep stellar remnant that the team labelled 'the heart of the Hydra'. This is an absolutely breathtaking image of the YY Hya star and its interstellar environment. Not only is this image truly captivating, but it also serves as a fantastic illustration of how amateur and professional astronomers and photographers can come together and achieve great results through collaboration."

i

WINNER, SKYSCAPES

'Grand Cosmic Fireworks' Angel An

"This is not, as it might first appear, an enormous extraterrestrial, but the lower tendrils of a sprite (red lightning). This rarely-seen electrical discharge occurs much higher in the atmosphere than normal lightning – and, despite the name, is created by a different mechanism – giving the image an intriguingly misleading sense of scale. While the gradient of colours is beautiful by itself, the image also impressively captures the delicate structure of the plasma. We really loved that the photographer hasn't captured the whole structure, which extends far beyond the top of the frame. It creates an unsettling, alien image that can't help but draw your eye."



Grand Cosmic Fireworks © Angel An

The Running Chicken Nebula © Runwei Xu and Binyu Wang



i

WINNER, YOUNG ASTRONOMY PHOTOGRAPHER OF THE YEAR
'The Running Chicken Nebula'
Runwei Xu and Binyu Wang

"This is a strikingly beautiful picture of the Running Chicken Nebula (IC2944), with the photographer managing to capture the vibrant colours of the nebula as well as the embedded star cluster. This cluster contains several hot, young stars whose intense radiation causes the surrounding nebula to glow. The interaction between the stellar winds from these stars and the denser pockets of material in the nebula leads to the creation of interesting features, such as Thackeray's globules, which are potential sites of future star formation."

i

WINNER, AURORAE
'Brushstroke'
Monika Deviat

"The judging panel loved the elegant simplicity of this abstract image. We are accustomed to seeing aurora from an earthly perspective with mountains, trees and human-made structures framing the dancing lights. This photograph offers something different, showcasing the beauty of the aurora in isolation. The composition evokes the arts of brush-painting and calligraphy, which are practised in many cultures around the world."



About the competition

Featuring the world's greatest space photography, entrants from across the world compete to take home the prestigious title of Royal Observatory Greenwich's Astronomy Photographer of the Year. Entries for the next competition close at midday on 5 March. Find out more at: www.bit.ly/dcm278 **astroptoty**

Brushstroke © Monika Deviat



PHOTOGRAPHY ON A BUDGET

10 creative ways to capture professional-quality pictures with basic photo kit, by **Dan Mold**



W

With modern full-frame cameras often costing upwards of several thousand pounds and many top-flight optics costing the same again, photography can often feel like a pursuit for the well-off. However, in this budget photography special feature, we'll show you that this need not be the case.

While many expensive pieces of camera equipment will undoubtedly be worth the

asking price for working professionals, where any edge over the competition is vital, this is not something the everyday amateur or enthusiast photographer should feel restricted by.

Casual shooters might be surprised by how capable even entry-level modern digital cameras are, an important benefit given the current cost-of-living pressures. Over the next few pages, we have assembled 10 photo projects that can be tackled using

an entry-level DSLR or mirrorless camera with a kit lens or budget-friendly optics, such as a nifty 50mm f/1.8, costing around £100/\$100 rather than thousands.

In this feature, you'll also learn how to get the most out of your current camera kit, how to shoot macro shots without the need to fork out for a pricey macro lens, take top bird portraits in your local area and change up your portraits without having to break the bank balance.



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Kit lenses are surprisingly sharp at medium aperture values, so you should be able to capture as much detail as in this long-exposure shot.



7 SHARP SCENICS WITH A KIT LENS

These optics are often razor sharp at middle apertures, making them a fantastic choice for stunning vistas



For sharp shots, close the aperture down to f/11 and focus about one-third of the way into the scene. A tripod and 10-stop ND filter are essential accessories that won't break the bank; they allow long exposures for blurring moving elements like clouds and water.

optic, but if you are still using the kit lens that was bundled with your camera, then you might be surprised at how effective this basic but versatile lens can be when used in the field to shoot scenic photos.

A kit lens is an optic that comes bundled with cameras that have interchangeable lenses, such as a DSLR or mirrorless.

A typical kit lens is an 18-55mm f/3.5-5.6, which most brands offer for camera bodies with a cropped APS-C sensor. The focal length of kit lenses will change depending on the sensor size, such as Panasonic's 12-60mm f/3.5-5.6 kit lens for Micro Four Thirds bodies.

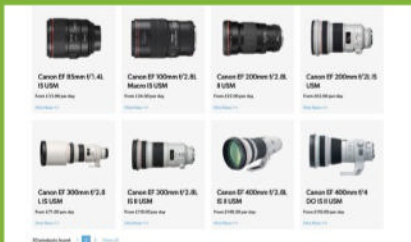
The purpose of a kit lens is to provide versatility with a zoom range covering wide-angle to short telephoto. While

a kit lens is a jack-of-all-trades, it is a master of just one – sharp shots, as the aperture rating of a kit lens is quite restrictive when it comes to depth of field. This makes kit lenses ideal for landscapes and street scenes, or other scenarios where a deep depth of field is required.

You can bolster sharpness further by shooting from a tripod and enabling the camera's two-second self-timer to eliminate shake. While image stabilisation is great for handheld shots, switch it off when using a tripod. If you've already upgraded your kit lens, then you can use the replacement



Dan Mold / Future

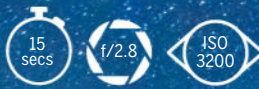


PRO ADVICE HIRE EQUIPMENT

Not owning professional equipment doesn't mean you have to miss out. Hiring a specific lens or camera body can be cost-effective and is a great option if you need a particular piece of equipment for a photoshoot – whether it's recording a rare celestial event in the night sky and needing an astro-converted camera, such as the Canon EOS Ra, or going on a wildlife safari in Africa where a longer lens will be required. For example, Canon's EF 400mm F4 DO IS II USM costs £6,729/\$6,500 when new, but can be rented for as little as £110 per day in the UK, via hirecamera.com



Dan Mold



2 SHOOT FOR THE STARS

Wait for sundown and shoot starry skies

Just because the sun has set doesn't mean the fun has to end... there are plenty of possibilities in low light. In recent years, even entry-level digital cameras are highly capable in low-light situations.

While you can use a kit lens, an optic with a wider maximum aperture, such as a 50mm f/1.8 or a 35mm f/1.8, will help draw in even more light. Ideally, your lens will have a fairly wide-angle focal length, too, as this will help you squeeze in loads of foreground as well as the starry skies above. If you have access to a lens, such as a 16-35mm f/2.8 (full-frame) or a 10-20mm f/2.8

(APS-C), it will work even better. Once in place, set your camera up on a tripod and frame up. To focus, enter Live View and use the magnify button to zoom in so you can see the stars clearly, then manually focus on the stars until they are sharp pin-pricks of light. To start, use the Manual exposure mode and open the aperture as wide as it will go. Now, set the ISO to 3200 and the shutter speed to 15 secs.

Take a test shot and check your image on the LCD screen. If it's too dark, boost the ISO a little; but if it's too bright, lower the ISO or close down the aperture and take another test shot to make sure it looks perfect.



Using a wide aperture and bouncing light onto your subject with a reflector brings much needed light into your image. A wide aperture will also make your subject stand out against a blurred depth of field.



PRO SHOT Magic mushrooms

Depth of field becomes much shallower the closer your focus. Even with a narrow aperture like $f/22$, you'll struggle to render the whole scene sharp. It's sometimes best to lean in to the shallow depth of field and create beautiful blurry background bokeh.

PRO ADVICE Home-made reflector

Macro photography can often benefit from a reflector to bounce light back onto your subject and fill in the shadows. Luckily you can make a small reflector yourself, by taping a sheet of aluminium foil to a stiff piece of card or even using a small mirror.



TOP TIP EXTENSION TUBES

Extension tubes increase the distance between the camera and the lens – the more distance between them, the closer any attached optic will be able to focus, therefore enhancing its macro capabilities. Extension tubes come in manual or autofocus varieties and the MF tubes are cost effective. Extension tubes will even work with the reversing ring method shown here, too.

3 COST-EFFECTIVE CLOSE-UPS

You don't need an expensive macro lens to capture fantastic close-up shots – here's how to shoot macro on a budget

Specialist optics designed for specific tasks, such as macro photography, can command a high price. Sony's FE 90mm $f/2.8$ Macro G OSS lens costs £849, for example, while Canon's RF 100mm F2.8L Macro IS USM costs an eye-watering £1,379. While they are undoubtedly brilliant lenses, it isn't essential to spend such a large

amount to capture amazing close-up photos. In this project, I'll introduce you to reversing rings – inexpensive adapters that fit any lens with a front filter thread. Old prime lenses, such as a 50mm, will also work well and, once attached to your camera body in reverse, will allow you to focus much closer, making macro photography much more accessible. Here's how to use a reversing ring...



USE A REVERSING RING

OLD PRIME LENS

1 Older lenses with manual rings for both the aperture and focus can be handy when using a reversing ring. Most modern lenses don't have an aperture ring, so the aperture either opens or closes fully when detached, giving you little control over depth of field. Here, we're using an Olympus 50mm f/1.8 Zuiko lens that cost £10 from a charity shop.



Dan Mold

REVERSING RING

2 Buy a reversing ring with the correct mount for your camera, as well as the corresponding filter thread of the lens you wish to use it with. Screw it into the front filter thread and attach it to your camera. Reversing rings can be found online from as little as £13/\$13 – a fraction of the price of a macro lens.



SET THE APERTURE

3 The next step is to set the aperture on the lens ring. A wide aperture setting, such as f/1.8, will produce a shallow depth of field, so if you need a deep zone of focus, be sure to close the aperture down to f/8 or f/11. Some old lenses have a depth-of-field preview button, which makes it easier to see the depth of field in real-time.



MANUAL SETTINGS

4 With lens connections to the camera severed, you'll need to expose and focus manually. Enter Manual mode on your camera and dial in ISO 800. Shoot from a tripod to help with focusing manually and reduce camera shake. Use your camera's built-in light meter to hone your shutter speed and take a test shot.



MAKE YOUR OWN MINI TRIPOD FOR LOW-ANGLE CLOSE-UP PHOTOGRAPHS

A miniature tripod is tremendously helpful for low-level close-up shots, but they don't come cheap. Professional miniature tripods can cost into the hundreds, so we made big savings by crafting our own from an old tripod with a few basic tools. Here's how to do it...



CHOP IT DOWN TO SIZE

1 An old unused tripod was gathering dust, so we decided to give it a second lease of life as a miniature tripod. The first step was to mark out around 10cm (4 inches) for the top leg sections and cut them down to size with a hacksaw.

SHORTEN THE CENTRE COLUMN

2 Next, we need to modify the centre column of the tripod so that it doesn't get in the way when we are shooting close to the ground. If your tripod has a longer centre column, then simply cut it down to size with the hacksaw.



PUT IT ALL TOGETHER

3 Now bond everything together. We used superglue as the join wouldn't be load-bearing and it is ideal for adhering the metal pipes. Finally, we need a suitably compact tripod head. We used a ball head from a Vanguard travel tripod, which worked perfectly for our needs.



A lace parasol with a floral pattern casts wonderful shadows onto a model in the midday sun, though you could use some cheap netted fabric instead.

4 CAST SHADE FOR DRAMA

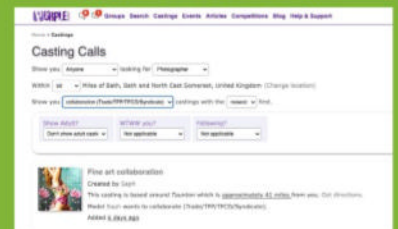
Block light sources to get distinctive-looking photos

Taking something away from your image often has more impact than adding it. This is the case with portraiture, as you can get creative by blocking your light source using everyday items you have around the house – from netted curtains with an interesting pattern to the colander in your kitchen cabinet.

Putting any of these between your light source and the model can create some really interesting shadows for eye-catching contrast. It's then just a case of experimenting with the position of the shadows and carefully guiding your model into the position that works best.

For this technique, you will need to shoot indoors with the lights off so they don't interfere with your shadows. Hang up your fabric in front of a bright window and ask your model to move closer or further away until the shadows look just right. The closer your model is, the more defined the pattern and shadows will appear. The further away they are, the softer and more ambiguous the shape of the pattern will be.

Try it out on friends and family members around the house and take plenty of test shots to make sure the shadows look just right. For even more contrast, you can convert to monochrome and add a little dodging and burning in Photoshop CC.



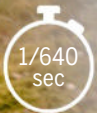
Purple Port

PRO ADVICE CASTING CALL

Plenty of models can be found online, to suit a wide range of budgets. This includes new models willing to work for free to gain some experience and add some shots to their portfolio and those looking to trade time for print (TFP) – in other words, prepared to work for free in return for published pictures. Of course, you can also pay to work with a more experienced model. To find models local to you, have a look through casting calls or set up your own on sites such as Model Mayhem or Purple Port.

Dan Mold

Prisms are a brilliant way to freshen up your portraits and create unique, eye-catching pictures of people.



5 PLAY WITH PRISMS FOR PUNCHY PORTRAITS

Create a kaleidoscopic effect with distorted visuals and vibrant colours. Prism portraits are quirky and guaranteed to turn heads



GEAR ADVICE NIFTY FIFTY

Commonly referred to as a 'nifty fifty', a 50mm f/1.8 lens is usually priced around the £100-150 (\$100-150) mark and even less on the second-hand market. With a brilliant focal length for portraits, when used on a full-frame camera, the wide maximum aperture of f/1.8 will create separation between your model and the background by turning the latter into blurry 'bokeh'. See some of our best-buy options here: www.bit.ly/dcm278nifty

This head-turning effect may look like it was created entirely in post-production, but it's less complicated than that. To achieve it, you'll need to get hold of a glass prism, which can easily be found in all shapes and sizes and to suit all budgets on sites like eBay and Amazon. A 4-inch glass prism can be sourced from eBay for less than £10/\$10 and is a great way to get started. If you like the prism technique, you may want to upgrade to a Fractal Filters Classic 3-pack, which is more versatile but comes with a premium at \$119.

Bear in mind that the prism needs to be long enough to cover the whole front element of your lens (for most 35mm, 50mm and 85mm prime lenses, the 4-inch version will be fine). Requiring hand-holding, the prism needs to be long enough to avoid your fingers appearing in the shot.

Start in Aperture Priority mode and select the widest aperture on your lens,

such as f/1.8. This will not only throw the background out of focus but will also render the prism in the foreground out of focus. Adjust the ISO value until you can shoot with a shutter speed of 1/200 sec or above to eliminate camera shake and enable any image stabilisation.

Now it's time to start shooting and asking your model to experiment with their poses.



With basic models starting at £10, glass prisms offer great value. Although this pro kit from Fractal Filters is more expensive, it gives you many more options.



Most modern telephotos come with image stabilisation and various stabilisation modes that can be used to get better results.



Dan Mold/Future

6 HARNESS IMAGE STABILISATION

Change the image stabilisation mode on your telephoto lens to suit different scenarios, such as panning for action shots

Whether you're taking pictures of wildlife, motorsports or even landscapes, shooting with a long telephoto lens means camera shake is prone to creeping in. A 50mm focal length on a full-frame camera is roughly the same angle of view as the human eye, so any focal length higher than this is more zoomed in and considered to be 'telephoto'. A 70mm focal length is called a short telephoto, while a 300mm is a long telephoto. The more you zoom in, the more apparent shake and blur will become in your photographs, so image stabilisation can be handy.

If you can, it's worth stabilising your camera with a tripod, monopod or even a beanbag if you're shooting from a wildlife hide. Most modern cameras and lenses have some form of stabiliser, although different names are used – Vibration Reduction (VR) on Nikon, Image Stabilization (IS) on Canon and Vibration Compensation (VC) on Tamron, for example. Image stabilisation can be found optically (OIS) or in-body (IBIS), and both systems can sometimes be used together to better effect. Optical image stabilisation systems, where a group of lens elements can move to compensate for handheld vibrations, often come with several stabilisation modes that will help you get better shots in particular scenarios.

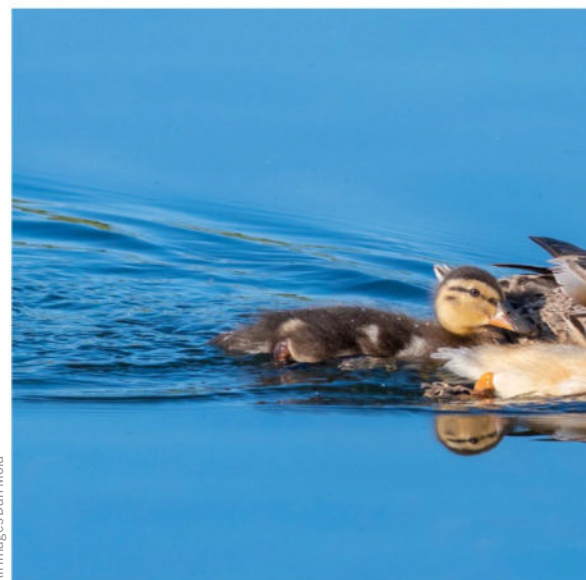
If you have such a lens, it's worth getting to grips with the stabilisation modes as they come with your lens for free. If your

stabilised optic has a switch for different modes, Mode 1 is usually to correct movement on both the X and Y axes – great for handholding where movement is coming from all directions. Mode 2, however, usually only corrects vertical movement, which makes it ideal for panning shots, such as wildlife or motorsports, and won't cancel out the movement on the X-axis. Some lenses offer Mode 3, which does the same job as Mode 1 but only activates the stabilisation at the moment the shutter is pressed, so when you look at the LCD screen or through the viewfinder, the stabilisation won't distract you.



TELEPHOTO LENS

While new lenses can cost a small fortune, don't be afraid to search the second-hand market. Looking online, we found a used Sigma 70-300mm f/4-5.6 Macro DG Lens for just £40, or the Tamron 70-300mm f/4-5.6 SP Di USD (above) for just £100. If you are using a DSLR or mirrorless camera with an APS-C sensor, you'll also benefit from the 'crop factor' (see page 75), which makes small distant subjects appear even closer.



All images Dan Mold



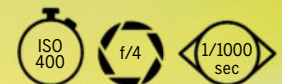
PRO TIP SETTINGS FOR WILDLIFE

Manual or Aperture Priority modes work well for wildlife, depending on what you're comfortable with. Open the aperture up as wide as it will go, to f/4 (or wider), for fast shutter speeds and better background blur. Increase the ISO until you have a shutter speed of at least 1/250 sec when shooting birds on a perch, or at least 1/2,000 sec for capturing bird-in-flight shots.



USE YOUR FREE TIPS CARDS

This project features in this month's bonus tips cards. For a handy guide to capturing creative photos like this, keep your tips cards in your camera bag.



Practise taking bird portraits in your garden or at a local nature reserve, using a telephoto lens at wide apertures, such as f/4.

7 TAKE TOP NATURE SHOTS CLOSE TO HOME

Set up bird feeders in your garden or sign up to a local nature reserve to get access to bird-watching hides – these are usually free to join and provide brilliant photo opportunities

You don't need to travel to exotic places to bag incredible wildlife photos; you can take top wildlife portraits in your back garden or if you don't have access to one, a nature reserve. To take winning portraits of garden birds, you need to think carefully about where it is best to place bird feeders and take into consideration the background and lighting that these places get throughout the day before setting them up or moving them to a better position. You will also need

to feed your birds on a regular basis to encourage wildlife into your garden.

Set up some mossy logs near the feeders so that the birds have a photogenic place to perch. As it can look a little scrappy, you don't want to take shots of the birds on the feeders themselves. A bird bath can also make for some great photos – just be mindful that the background is far enough away from the bird bath so that it can be easily blurred by using a wide aperture.

When considering the choice of lens, a telephoto optic, such as a 100-400mm

or 150-600mm, will give you plenty of reach, so you can shoot at a safe distance and not risk scaring the birds away.

Be sure to research any local nature groups close to your home. My local nature reserve is free to join and has an excellent hide where I regularly spot kingfishers, goldfinch, reed warblers, woodpeckers, bitterns and other interesting species. It's also a great way to meet other like-minded photographers, share experiences, learn new skills and become more involved with the local community.

AND FINALLY... 3 EASY STILL LIFE IDEAS TO TRY AT HOME

Here are some quick still-life ideas to try at home using everyday household items that you are likely to have already and that won't break the bank

If the weather takes a turn for the worse, don't worry – we've got you covered! Try one of these still-life setups that can easily be shot indoors on a rainy afternoon with basic camera kit and a few household items...



8 MAKE A SPLASH

A dramatic high-speed coffee splash shot is easy to achieve at home, though it is inevitably messy so it could be worth attempting this in your garage or the garden.

To get started, place a cup of coffee on a table and add some set dressing by adorning the scene with some hessian cloth and a few coffee beans or cinnamon sticks. If you have a vinyl background, you could also set one of these up to change how the background looks. Mount your camera on a sturdy tripod and



lock the focus on the coffee cup. Go into Aperture Priority mode, set an aperture of f/4 and increase the ISO until you get a shutter speed of 1/400sec to freeze the action. Then fire a burst of photos as you or a helper drop a sugar cube into the coffee to create the splash.



Getty

9 SHOOT TINY TOWNS

Use miniature models to turn a bowl of cereal into a macro swimming pool – or food into a forest – and produce some fun images, too. A macro lens will help you get close to the miniature figures and make them look more life-size, but if you don't have a macro lens, try our hack in project 3 (p54).

We found that 1:100 scale miniature figures worked well, and as they come in all shapes and sizes and are pretty cheap to purchase online, you could quite easily buy a few packs to experiment. Carefully position your mini figures around the scene – use a pair of tweezers for extra precision. Set up on a tripod and use natural light or a little bit of camera flash to brighten up the scene.

A wide aperture like f/2.8 will produce a shallow depth of field so only one or two figures will be in focus, while a narrow aperture like f/22 will result in a much deeper zone of sharp focus.



Getty

10 SWEETNESS AND LIGHT



Here, some water drops on a sheet of glass combined with an assortment of colourful sweets has created a vibrant and eye-catching still-life macro photo.

Hit the 'sweet' spot using nothing more than your camera, a sheet of glass, water drops and a few bags of colourful candies



ou can create vibrant abstract still-life shots at home using colourful sweets such as M&Ms or Skittles (other options are available). To start, put a sheet

of paper down and carefully place the sweets on it. Either put the sweets in rows of one colour or randomly mix them up to create the blurry out-of-focus colours of your choosing.

Now take a sheet of glass and position it above the sweets so that there is enough distance between the glass and the sweets to blur the colours with the shallow depth of field from using a wide aperture. For the sheet of glass, we took an old picture frame apart and gave it a quick clean with some window cleaning spray and a microfibre cloth to remove any streaks and fingerprints.

We cut down some kitchen roll tubes to the same height and positioned one under each corner of the glass sheet to create a gap. Now, add some water drops, which will become your focal points – you can carefully position each drop with a pipette or just use a water spray bottle if you're not feeling so precise.

As it will be tricky to set up a tripod above your table, shooting handheld works best. A macro lens or a kit lens with a close focusing distance will both give good results. Open the aperture to its widest setting for the maximum background blur and, for a sharp handheld photo, boost the ISO to enable a shutter speed of at least 1/200 sec.



PRO TIP Water beads

For more defined water drops, rub a little wax onto the glass until it is clear. This will make it more water repellent and help turn the water spray into larger and more defined droplets.



Reader gallery

Digital Camera readers continue to impress us with their captures, by submitting images across a range of genres



T **'Chrome Hill (Dragons Back)' by Lee Howdle**

This image was taken on a hillside near Chrome Hill in the UK's Peak District. "There are lots of things I love about this scene," says Lee. "First of all, I like the winding wall that snakes down the hill leading to the snowy Chrome Hill, which towers over the landscape. The drifts were impressive, especially the shapes in the untouched snow. To top it off, the tones in the sky complement the beautiful wintry scene."

Settings: 1/30 sec, f/11, ISO 400

Instagram: @leehowdle

Digital Camera says: Lee has captured a fantastic view of Chrome Hill. It works brilliantly as the eye is drawn diagonally from the bottom right along the wall to the setting sun in the distance. From the detail along the wall in the foreground to the colourful sunset in the distance, this is a superb capture of Britain's landscape at its best.



2 'Owl' by Gemma Warr

"This photo was shot in Hampshire. What I like about the image is that it reminds me of how far my photography journey has come. I started photography to improve my mental health and never thought people would enjoy seeing my photos as much as I love looking back at them. I often take shots of birds on a branch or another object but, here, I wanted to achieve a different style of image. I thought this was a much better setting for the little owl."
Instagram: @gemma_warr_wildlifephotography

Digital Camera says:

If this shot is a typical example, you certainly have come a long way in your photography, Gemma. With a stunning central capture and focus, this is an image that has lots of appeal.

3 'Embankment' by Graham Borthwick

"The image was taken on the Embankment in London, along Oystergate Walk near London Bridge, handheld with a Canon EOS R5 with an EF 24-105mm F4 IS USM lens and with settings of 1/200 sec at f/9, ISO 100. I like the simplistic nature of the shot, coupled with the symmetry and bright, contrasting colours. The main challenge here was in maintaining the symmetry, which made it a little more difficult to shoot accurately. I had a free day to walk around London and shoot some pictures, so I was particularly seeking out images that invoked a theme of symmetry. This scene screamed out but, of course, it's not always one that you initially see. There are times you have to look up and down, even behind you, to see the whole picture. The real challenge was to gain the correct composition in the autumn midday sun so that the light complemented the striking yellow of the building and contrasted with the bright blue sky."
Instagram: @shadow_shots

Digital Camera says:

This is a jaw-droppingly colourful photo. The contrasting colours, especially coupled with the sharp pointed symmetry across the central axis, really make this image stand out. Graham has done brilliantly to avoid any sun glares on the glass panels and he has positioned himself perfectly. It's a really well-balanced shot, and one that could easily grace the pages of any architectural journal.



READER SHOT OF THE MONTH

Graham Borthwick wins a year's subscription to *Digital Camera* for this image.
Well done, Graham!





4

'St Paul's' by Ben Lewis

"This was my first visit to London, and I was on my way to a shopping centre when I visited St Paul's Cathedral. I was struggling with the bright lighting conditions, so I used a really fast shutter speed. London was busy so I had to be quick taking the shot. As you can see by the glow, I used my Nisi Pro Mist Filter and shot handheld with my Sigma 18-35mm Art lens."

Instagram: @Lewis_photography1991

Digital Camera says:

The gutter draws the eye into the shot and by using a mist filter, Ben has captured a brilliant atmospheric shot of a well-known landmark.



5 'Young Bull' by Jonny Stubbs

"This image was taken at Shipley Park in Derbyshire, UK. It's a great park, where I spent a lot of my childhood. It was the end of the day and I was walking towards the field thinking to myself, 'I'll just see what's there, you never know' and as I stood at the gate, these beautiful bulls approached me. I've always wanted to take a shot of a bull's eye – they have such an innocent look in their eyes and their eyelashes are astonishing. But to get my eye shot, I had to

kneel down and shoot through the gate. So I was there, getting dirty by kneeling in the mud and muck and using the gate timbers as a tripod, waiting patiently for my shot. It couldn't come quickly enough as my legs were freezing and my hands were cramping up."

Digital Camera says: We were taken by the tight crop of this bull and its textured hair. As Jonny says, the eyelashes are impressive and seem to capture the 'soul' of the bull.

6 'Squirrel' by Adam Koperdan

This image was shot by Adam, 13, at Burton Chace Park in California, USA, with a Nikon D3500 and a 35mm lens. He liked the curious expression on the squirrel's face. "Though animals are different to humans, at times they can be strangely similar," he says. **URL:** wildlife.adamkoperdan.com

Digital Camera says: We love Adam's shot of this squirrel in an unusual pose that almost looks like it's holding the tree. A wide f/1.8 aperture has created a sharp focus on the squirrel's face, with the tail being slightly defocused, which offers a central focal point for the viewer. A great shot, Adam!



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Want to feature in our gallery?
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image (at least 2.5MB) marked
'Reader Images' and including
a title and brief description to:
digitalcamera@futurenet.com
or share it on Instagram,
including the tag:
#digitalcameramag

7 'Reculver' by Andrew Parker

This photo was taken at Reculver Towers on the north Kent coast, using a Sony A7 III and 35mm Samyang prime lens (six seconds at f/5.6, ISO 1000). "I like the fact that I was able to shoot the vivid colours and movement of the aurora borealis so far south in the UK," says Andrew. "The clear skies were perfect but I was conscious that, this far south, the aurora would look quite faint. Therefore, I chose to shoot with my 35mm lens to try to fill the frame. The viewpoint in the foreground gives the shot some interest, without taking anything away from the main subject. With an unbroken view towards the northern horizon, Reculver was a perfect spot." **Instagram:** @balders18

Digital Camera says:

A dreamy photo, Andrew! The colours of the sky contrast really well against the stillness of the water. The railings in the foreground are a great inclusion and they help set the stage for the scene, with the viewer looking out across the water.



CAMERA

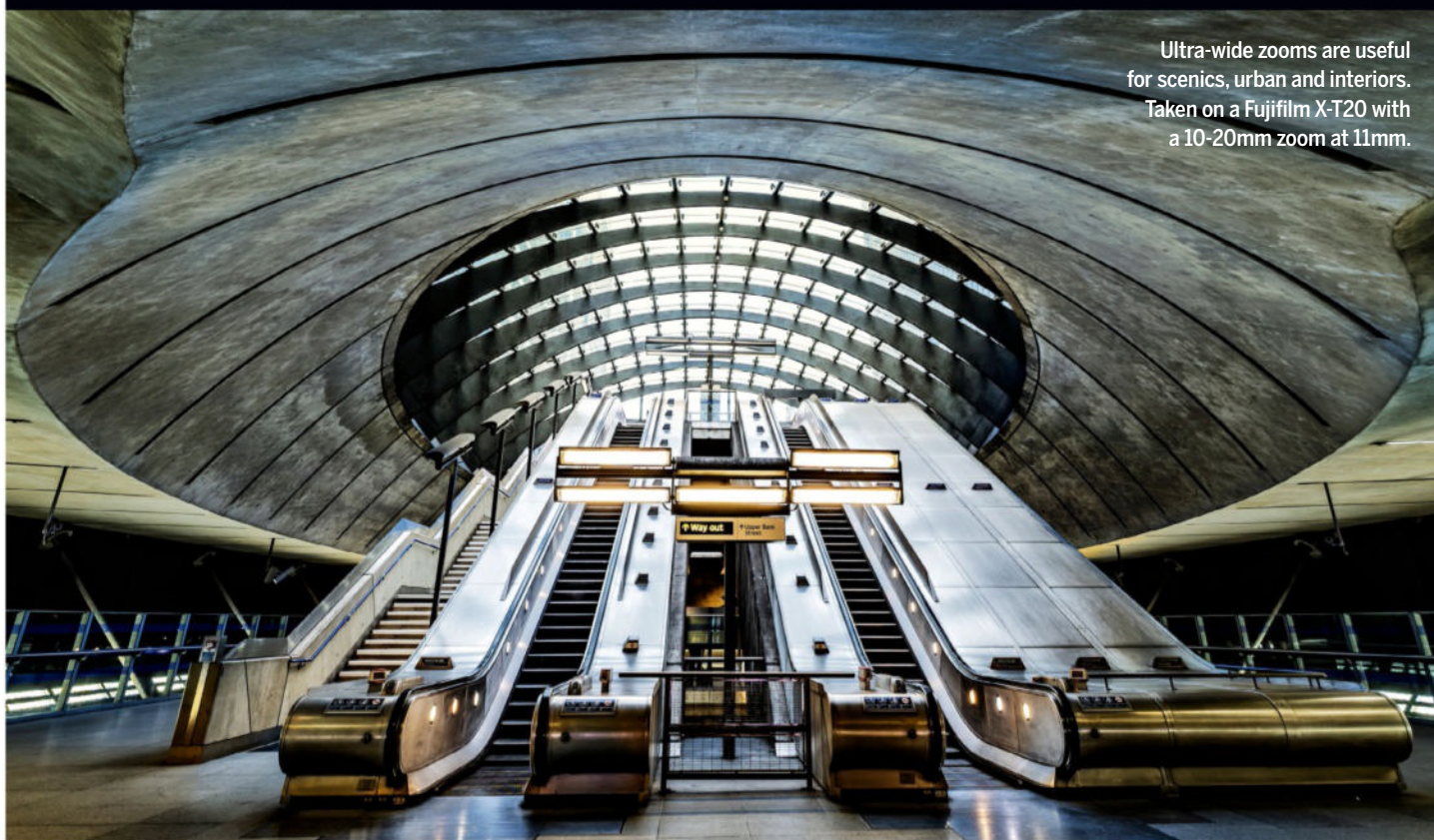
NEW
SERIES!

CLINIC

Master the art of modern photography

This month: Zoom lenses

We kick off a lenses two-parter with a close look at the mighty zoom



Ultra-wide zooms are useful for scenics, urban and interiors. Taken on a Fujifilm X-T20 with a 10-20mm zoom at 11mm.

Will Cheung



Will
Cheung

An imaging journalist and freelance photographer based in London, Cheung has a wealth of experience over several decades.
www.williamcheung.co.uk

Your camera is basically a light-tight box – an expensive box packed with tech but no more than a fancy paperweight until fitted with a lens. This could be anything from a tiny hole punched into a piece of silver foil to a lens designed for the purpose of delivering sharp images onto the sensor. The most widely used lens type is the zoom and they dominate the market for a simple reason. In a single lens, there's a broad range of focal lengths at your disposal to portray the subject as you see fit without having to move. Fixed focal length lenses, known as primes, remain popular and we'll explore these in the next issue. But in terms of sheer popularity, zooms rule the roost.

Zooms range from budget lenses with modest maximum apertures that are often sold together with a camera to provide an entry point into the brand's ecosystem, to fast aperture, weather-proofed zooms costing several

thousands. Deciding which zoom to invest in depends on many factors so you need to consider the options, depending on your budget and what you want to shoot. There is also the question of sticking with your camera brand or opting for independent third-party brands which offer good performance at lower prices.

A 24-70mm and a 70-200mm (or equivalent for your camera format) pairing works well while adding a 15-30mm would expand potential further. If you prefer to travel light, a superzoom covering around 24-200mm or so is a good one-lens solution although you will get better quality with shorter-range zooms. If you have the funds, a fast aperture zoom could be the way forward, while on a more limited budget, you can still take the two/three lens approach but go for optics with more modest maximum apertures, perhaps from third-party lens manufacturers.

Get the knowledge

Considerations when shopping for a lens

There are three key factors when buying a zoom lens: the budget, your subject and availability. Also consider the focal length range, maximum aperture, minimum focusing and physical properties.

If you own a DSLR, then Canon EF, Nikon F and Pentax K mounts have been around for decades so there's a huge choice of camera brand and third-party options. For mirrorless owners it's more limited. Micro

Four Thirds (OM System and Panasonic) users have an impressive choice, with Fujifilm and L-Mount cameras next, while Sony is the best brand for third-party zooms.

Recent mirrorless entrants, Canon EOS R and Nikon Z, are playing catch-up although their DSLR lenses can be used via adapters. Both brands have a good choice of AF zooms but not yet from independents.

Lens barrel buttons and switches

What these features are, and why you would use them



FOCUS LIMITER

Autofocus takes a fraction of a second but the decisive moment can still be missed if the lens is hunting through its entire range trying to find focus. This can be an issue with telephotos and macros so it's on these lens types where you'll find the focus limiter. Just select the distance range where you expect the subject to be; leave it set to 'full' if you're not sure. A few cameras have a customisable AF limiter feature built-in, which is more versatile.



ZOOM LOCK

Many zooms increase in physical length as the lens is zoomed towards its telephoto end. That can be annoying when you're not shooting and are walking around with the camera hanging off your shoulder. This is where a zoom lock comes in useful to keep the lens locked in position at its shortest focal length. Some telezooms have a zoom lock that works at several focal lengths while others have a twist lock that can be applied at different settings.

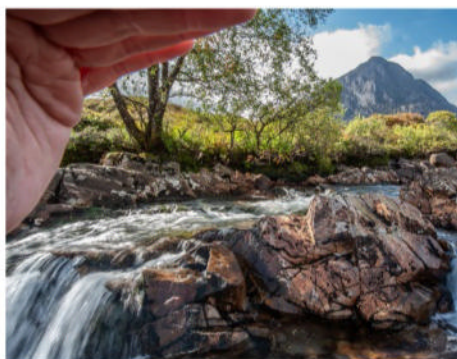


OPTICAL IMAGE STABILISER

Before in-body image stabilisers (IBIS) arrived, we had lens-based optical image stabilisers (OIS) with gyroscopic sensors to detect movement and move a group of elements to compensate. Every camera and lens maker has its own take on the idea. For example, Tamron's Vibration Compensation (VC) can give up to five stops of benefit. With the camera brands, the body's IBIS can work together with lens OIS for up to eight stops of benefit.

Improve your lens technique

Every lens has its shortcomings, so here are a few tips to make the most of yours



DEFEATING FLARE

Every brand uses advanced lens coatings to defeat flare but when shooting obliquely towards the sun there's a risk of flare. So there are two things you can try. If the lens is fitted with a protection filter, take it off. The second technique is to use your hand to shade the lens. Start by holding your hand a few inches from the lens front and in view, then move it out of frame while checking there's no flare.



LENS DIFFRACTION

Diffraction is caused by light scattering off the edges of the lens's diaphragm blades and it is most evident at the lens's minimum apertures. You can test your own lenses by shooting a detailed scene at the two smallest f/stops and then at f/5.6 or f/8 and compare the shots. The 200 per cent blow-ups shown above were taken from raw files shot at f/8 (left) and f/32 (right) on a Canon 100-400mm zoom on an EOS R5 body. Thanks to diffraction, the f/32 shot is much softer.



PROTECT THE LENS

The part of the lens at greatest risk from damage is the front element. Attaching the lens hood helps but the better option is to fit a protection filter. These are clear and if it gets dirty, you don't have to take as much care as you would with cleaning the lens itself. Also, if you drop a lens, you may get away with just a shattered filter rather than a wrecked lens, which is what happened here.

Make the most of zoom lens features

The versatility of these popular optics is a real boon for photographers

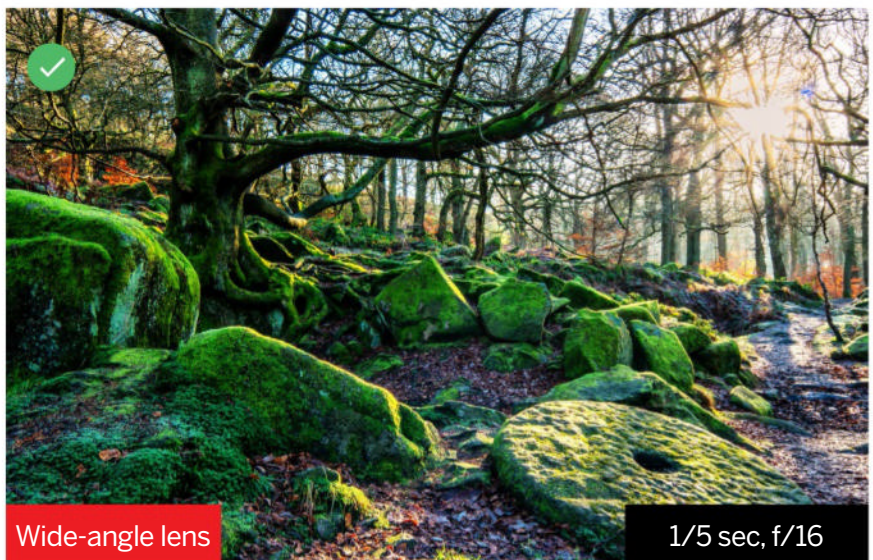
GET THE COMPOSITION RIGHT

A zoom lens lets you fine-tune compositions in-camera and saves you from wasting pixels. This is also good practice, too, rather than just snapping away and hoping to resolve any composition issues later in post-processing. Adjusting focal length is one thing but it should be done in conjunction with physically moving when needed to get the best photo. A really useful tool available in many cameras is an aspect ratio feature, so if you want to shoot square, in a 5:4 ratio to simulate large format or a panorama, you get a mask or cropping guidelines in the viewfinder or monitor to assist your composition. Using the aspect ratio tool affects jpegs only as raw files usually take up the whole sensor, depending on the camera, so if you have a change of heart later, all is not lost.



CHANGE THE VIEWPOINT

A favourite lens for many experienced landscapers is the wide-angle; this scene was taken at a 21mm equivalent focal length. For making the most of bold foregrounds and strong lines, and to fit everything in the frame, wide zooms are incredibly useful but they need to be used with a little care. It is too easy to fall into the trap of not filling the foreground and ending up with compositions lacking interest. Changing the camera viewpoint helps add drama to your photos and by getting low, the foreground is made even stronger. Use f/11 and there will be extensive depth of field so the whole scene is sharp. One simple but often overlooked tactic is to turn the camera on its side and shoot vertical format. Doing this while moving in close to any foreground can benefit the end result.



TAKE ADVANTAGE OF IBIS AND OIS

In-body and lens-based optical image stabilisers are wonderful innovations that can help you achieve pin-sharp shots even when the light levels drop. It means there's more freedom when shutter speeds start dropping away and gives greater wiggle room when it comes to aperture and ISO selection. This scene in London's Canary Wharf was shot with a 14-35mm lens at f/5.6 using a shutter speed of 1/20 sec.

The raw file was processed through DxO PureRaw 3 to remove the small amount of digital noise resulting from shooting at ISO 1600. With an ultra-wide focal length, such as 14mm on the 35mm format, even setting a mid-aperture of f/5.6 was enough to produce a result with a deep depth of field and with image sharpness throughout.



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ASTRONOMERS ARE CLOSER TO SOLVING THE RED SUPERGIANT'S GREATEST MYSTERY

ISSUE 152
FEBRUARY 2024

ALL ABOUT SPACE

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Lens skills

Build a lens system to suit your photography interests

There is a huge choice when it comes to what lens to buy and that's great news because we all 'see' pictures in different ways, depending on what we photograph and our personal vision. Lens choice is a great way to express ourselves.

If you enjoy photographing a range of subjects, a lens outfit comprising two or three zooms can cover everything you need. A three-lens outfit could comprise of a

14-35mm, 24-105mm and 100-400mm and while that is a significant investment, it has great potential and isn't too bulky.

Here's the same scene taken at different focal lengths from the same spot using a 35mm full-frame camera. If the same focal lengths were used on a Micro Four Thirds format camera the field of view would be different, thanks to the effect called the 'crop factor' – explained opposite.



f/8 at 14mm



f/8 at 20mm



f/8 at 50mm



f/8 at 85mm



f/8 at 200mm



f/8 at 300mm

What is the crop factor all about?

Focal length is focal length regardless of camera format, but you do get a different field of view depending on the sensor size, so we need a guide or tool to indicate the equivalent look on formats other than 35mm. That tool is the crop (or magnifying) factor which is calculated by dividing the diagonal of the 35mm format by the diagonals of the other formats. So for Micro Four Thirds the crop factor is x2, Canon APS-C is x1.6, Fujifilm/Nikon/Pentax APS-C is x1.5 and Fujifilm/Hasselblad/Pentax medium-format is x0.79. Therefore, a 100mm lens gives a 35mm format equivalent view of 200mm on MFT, 160mm on Canon APS-S, 150mm on other APS-C formats and 79mm on medium-format.

CROP FACTOR FORMATS

- 1 Micro Four Thirds, 17.3 x 11mm, Crop factor: x2
- 2 APS-C Canon, 22.2 x 14.8mm, Crop factor: x1.6
- 3 APS-C Nikon/Fujifilm, 23.6 x 15.7mm, Crop factor: x1.5
- 4 35mm Full-frame, 36 x 24mm, Crop factor: x1
- 5 Medium format, 44 x 33mm, Crop factor: x0.79



f/8 at 24mm



f/8 at 35mm



f/8 at 100mm



f/8 at 135mm



f/8 at 400mm



f/8 at 500mm

Pros and cons Zoom lenses

Simple processes will help you
get the most from your zoom

Compared with primes, the upsides of zoom lenses are considerable and the downsides relatively minor. Making sure your camera technique is on point will help you get the most from your zooms. Accurate focusing, using a mid-aperture for optimum sharpness and a smooth shutter release, assisted by any image stabilisation your camera or lens has, all help. Keep the front and rear lens elements and the lens and camera communication pins clean to ensure peak performance.

✓ Precise compositions

For both a more frame-filling shot and a wider view, zooms can achieve both quickly without changing camera position. Vary the zoom to ensure the best composition, but if in doubt, include more of the scene because you can always crop in editing.

✓ Versatility

A zoom means not having to swap lenses, which saves time and cuts the risk of dust getting onto the camera sensor. But they can make you lazy, so try not to fall into the trap of zooming in and out without thinking about framing and composition.

✓ Keeping weight down

With telephoto zooms, saving weight is a clear benefit and a zoom such as a 100-400mm, 100-500mm or 200-600mm will save weight (and money) over a line-up of two or more fast primes.

✓ Convenience

Carrying a single zoom rather than several primes makes life easier, but may limit your creative potential unless you own a wide-ranging 8x or 10x superzoom, covering from 24mm to 200mm (or equivalent). Superzooms are handy optics but they are not in the front rank of optical performers.

✓ Money saving

Investing in one zoom instead of several prime lenses is a potential cost-saver. Those primes may be better specified with faster maximum apertures and give a better overall performance.

✗ Optical performance

Primes generally outperform zooms but a budget prime won't be as good as a top-end zoom. Modern zooms satisfy all but the most critical users.

✗ Slow maximum aperture

With modest maximum apertures, using zooms in low light means choosing slower shutter speeds and higher ISOs. Faster zooms are available in most focal lengths but they are pricier and bulky. However, the high-ISO performance of modern cameras makes this less of a factor.

✗ Hood matters

A lens hood designed to help defeat flare at one end of the zoom won't have any performance benefit at the other. Hoods for primes are designed for that lens's single focal length.



Frame your photos

Exploit the compositional flexibility of zoom lenses and take your time framing up your photos by excluding any parts of the scene that don't add to the overall success of the picture.

Lens know-how How close is close? Minimum focus and minimum object distance explained

Some lens brands quote a minimum or closest focus distance while others quote a minimum object distance (MOD). The former is how close the lens focuses measured from the focal plane, ie. the sensor, which is indicated by a small circle with a line through it. The MOD is the distance from the subject to the front element. The Canon RF 100mm macro lens (pictured right) has a minimum focus of 26cm, but you can see how close the lens front is from the subject with the lens focused at that distance. The MOD is about 10cm and the lens is so close that there's the risk of it (or you) casting a shadow across the subject, especially with the hood attached.



Minimum focus is measured from the focal plane, while the MOD is the distance from the subject to the front element.



Fit the lens hood

Lens hoods are reverse-fitted when you aren't shooting, so don't be lazy and always turn it around and fit it correctly when you're shooting. It also means you can operate the zoom's controls.

Find the sweet spot

When it comes to the best aperture to use, every lens has a 'sweet spot'. Typically, two f/stops down from the maximum aperture usually gives the best sharpness across the whole frame with low levels of vignetting.

Lens tech The optics

There are teams of engineers dedicated to designing the optics we use

Lens design is a complex business, requiring specialist optical glass, advanced coatings and uniquely shaped lens elements. A lens's construction is quoted in elements and groups: the number of pieces of glass and how they are grouped together. Many advanced lenses feature aspheric elements where the front surface doesn't form part of a sphere and these help eliminate distortion in wide-angles and control spherical aberration. To control chromatic aberration, where light of different wavelengths focuses at different points, low dispersion or extra-low dispersion glass is used. All this advanced optical tech comes at a cost, so expect a hefty price tag. The Nikkor 18-300mm f/3.5-5.6G ED VR lens (right) is a modern lens with a wide zoom range and this is reflected in its complex design. You see lenses described as containing a number of elements within a certain number of groups. This one has 19 elements (including three ED and three aspherical elements) in 14 groups.



Cross-section of a Nikkor AF-S DX 18-300mm f/3.5-5.6G ED VR

KEY: ■ ED Glass elements □ Aspherical lens elements

- 1 Front element
- 2 Rear element
- 3 Lens group
- 4 Vibration Reduction
- 5 ED glass
- 6 Aspheric lenses

Shoot photos like a pro

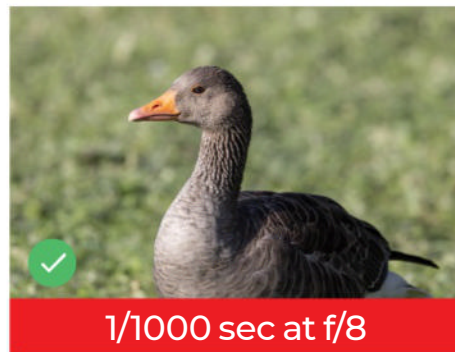
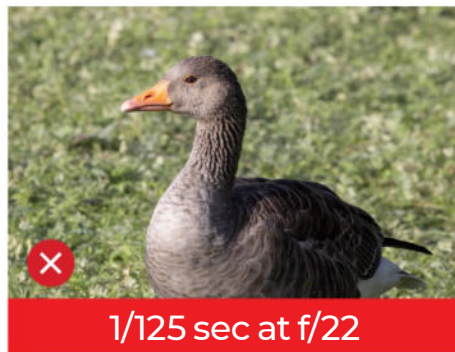
Fine tune your technique and never miss a shot again

With fast-moving subjects, if the camera doesn't get in focus, quickly adjust the focus barrel until the image becomes distinct enough for the camera to lock on. Knowing which way the focus barrel rotates to get a subject sharper can make the difference between getting the shot or not. It's worth practising manual focusing and you can do this at home.

If you have a lens that focuses in one direction and another that works in the opposite way, the camera may let you set it up so you can have your optics working identically. Some lenses have function buttons and control rings for extra functionality, such as engaging exposure compensation or performing AF, and they are worth setting up to speed up the shooting process.

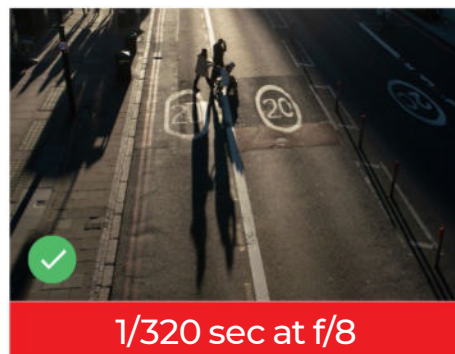
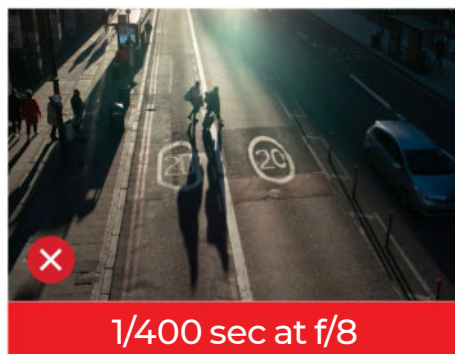
Blur the background

One reason why expert nature photographers prefer fast aperture telephoto primes is because when used at their wide f/stops, they do a fantastic job of giving excellent subject and background separation and smooth defocused backgrounds. Slower telezooms can still give blurred backdrops by sticking with wide apertures although the result is less refined. This pair of shots of a grey goose was taken with a 100-500mm zoom at f/8 and f/22.



Defeat flare with your hand

Shooting into the sun can be a problem. The idea for this shot was to make the most of the long shadows created by the low winter sun and this has resulted in a large patch of flare. A lens hood wouldn't help but your hand can. Holding the camera in the right hand (or on a tripod), position the left hand (or a sheet of card) while keeping it out of the frame, to shield the lens from the sun.



Keep verticals vertical

Take a photograph looking up at a tall building and you'll get converging verticals that make it look as though the building is tipping over backwards. To correct this phenomenon, there are three options: invest in a tilt/shift lens (not a realistic option for most people); zoom out even wider to allow room for vertical correction in software; or retreat further away until you can shoot with the camera back vertical so the subject appears upright, then crop the image afterwards.



Lens know-how What's in an f/number?

Those numbers on the lens barrel are important

Look at a lens's name and you'll see the focal length expressed in millimetres and its maximum aperture as an f/number. If there's one f/number (f/2, f/2.8 or f/4) that means the zoom has a constant maximum aperture throughout its range, such as the Nikkor 24-120mm f/4. Where there are two f/numbers it means the zoom has a variable maximum aperture. On the Nikkor 100-400mm shown here it is f/4.5 at the 100mm end and incrementally slows down to f/5.6 at 400mm.

The f/number is determined by dividing the focal length by the diameter of the aperture. Basically, fast apertures need a wider front element to gather in more light, which means more cost and bulk. The flipside of this means that variable aperture lenses are smaller and lighter. Most lens makers offer both options to satisfy users of different budgets and needs.





Wai Cheung



4 secs at f/11



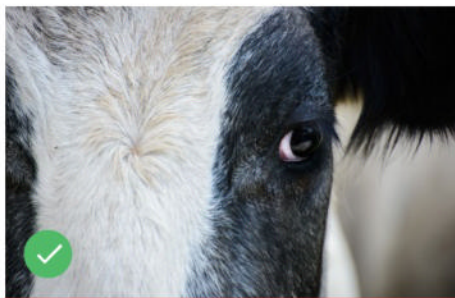
4 secs at f/16

Zoom for action

Zooming the lens during a long exposure gives eye-catching effects. Here, the 70-300mm lens was on a tripod-mounted camera and framed up to include the church window. About 0.5 sec after the four-second exposure started, the lens was slowly and smoothly zoomed out. Variations include zooming in, operating the zoom during the exposure or using a handheld camera. Twisting the body on the lens axis while zooming also works well.



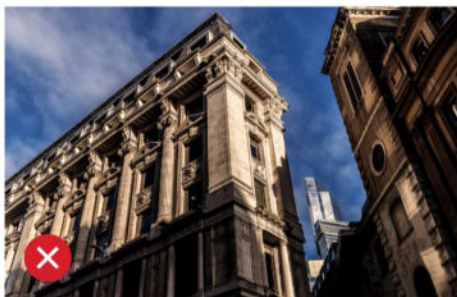
1/160 sec at f/5



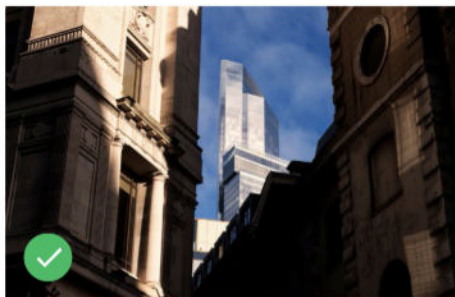
1/200 sec at f/5.6

Get in closer for impact

Cropping into a final shot is useful when you don't have enough focal length. However, cropping in-camera with a zoom means you don't waste pixels. The shots here were taken at different settings on a 70-300mm lens: the tight shot at 300mm and the wider view at 180mm. The wider view is croppable but, instinctively, I wanted to frame without the distracting yellow ear tag in the first place and the zoom let me do that easily.



31mm – 1/500 sec f/11



56mm – 1/500 sec f/11

Context or a tighter crop

The ability to alter a picture crop by zooming in or out is a powerful tool and whenever you're faced with a good composition, it's worth trying a few variations on the theme. The wider shot taken at 31mm on a 24-105mm zoom works fine with the skyscraper neatly framed by the foreground buildings and the attractive sky. However, zooming in to 56mm for a tighter crop works well, too.



1/2000 sec at f/3.2



1/3200 sec at f/3.2

Watch your focus

Many photo situations call for quick decisions to make the most of the scene. In this case, it was where to focus – on the Guy Fawkes mask or his camera? With a small focus point, we quickly moved over both options and took a few shots. It isn't always possible but if you have the time, it is worth exploring a few different options and making the final decision at the editing stage.

Pro tip Lens changing

Improve your lens-swapping skills

A slicker lens change reduces the risk of dust on the sensor. To speed things up, one tip is to remove the back cap of the new lens so you're ready to swap over. Tuck the lens under your arm, put it in a pocket or rest it on your bag ready, then push the camera's lens release button and twist the mounted lens so it's unlocked but secure and ready to unmount. When you're ready, remove the old lens and quickly fit the new one. This method can minimise the time the sensor is exposed. Finally, remember to turn off the camera before swapping lenses.



SEND US YOUR PHOTOS!

Now you know how to use your zoom lens like a pro, show us what you've learned and you could feature in our Reader Gallery: digitalcamera@futurenet.com

LIZARD

Adaptador de Guiado GPS y Láserico para Bombas
The Modular Guidance Kit for Precision Strike Capabilities



Nikita Teryoshin

Shot of the month

In a timely new book, **Nikita Teryoshin** takes his viewers behind the curtain of the global arms industry



Nikita Teryoshin
Street and documentary photographer

Title: 'Entering the Back Office'

Location: Lima, Peru

Date: 2019

Camera: Nikon D810 and 50mm lens

Instagram: @teryoshi

Ongoing conflicts around the world have made the publication of Nikita Teryoshin's book very timely. *Nothing Personal: The Back Office of War* takes us behind the curtain of the global arms industry. The Berlin-based photographer was inspired to compile this book following a visit to a hunting fair and seeing the extent to which the attendees were attracted to guns.

Teryoshin's curiosity took him across the world, including a visit to Peru, where he photographed two men entering the Israel-based Elbit Systems stand at the SITDEF trade fair in Lima. "The stand design was very bold and direct," Teryoshin recalls. "When I realised that this was the entrance to the

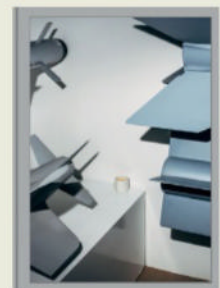
Entering the back office of the Elbit Systems stand. In the foreground is a dummy of the air-to-ground Lizard missile. SITDEF, Lima, Peru.

back office, I stayed here for a while trying to get a photo. "My first shot was a reaction to two men coming out of the office, but then these two businessmen walked inside."

Working with flash as the light source at trade shows is "just horrible", says Teryoshin, but he was pleased with this shot. The following day, he returned to the show and photographed a waitress entering the stand; however, he felt that the symbolism and banality inherent in this photo were more what he was intending to highlight.

Explaining what he was trying to achieve with the 100 photos that appear in *The Back Office of War*, Teryoshin says: "One of the biggest contrasts in the arms trade is the one between the people selling weapons and those who later experience the power of their destruction in war. Not to mention the money – the price of guided missiles like this could be around \$300,000 each." ●

Nothing Personal: The Back Office of War by Nikita Teryoshin is published by GOST Books (ISBN 978-1-915423-22-1) priced £45/\$60 gostbooks.com



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45 MINUTES OF VIDEO

This month...

Free software: Excire Foto Light
Manage your photo collection with our bonus Excire Foto Light download and let its AI-assisted tools do the hard work

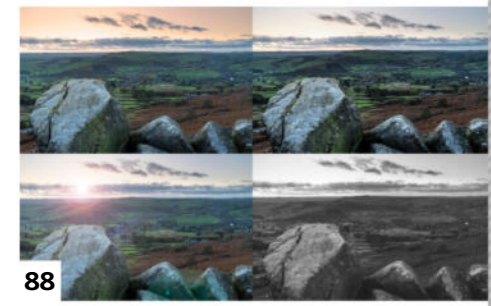
Tool School: The power of Point Color
Fine-tune colours in your shots with precision using the Point Color tool for Lightroom and Photoshop



Fundamentals: Transform photos by boosting contrast
Explore the whole range of tools available to boost contrast in Lightroom



Get the Look: Quick landscape editing effects
Editing images doesn't have to be a laborious process with these quick and easy Photoshop tools



VIDEO TRAINING

The issue 278 download includes video lessons that build on our tutorials, plus bonus videos with extra tips!
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BONUS SOFTWARE EXTRAS:
Actions for Photoshop and two sets of presets for Lightroom
Page 90

CAMERA RAW & LIGHTROOM
The power of Point Color

LIGHTROOM
Transform shots with contrast boost

PHOTOSHOP
Quick landscape editing tools

PHOTOSHOP
Make a vintage sepia print

Download 45 minutes of video training for Photoshop and Lightroom

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LIGHTROOM
Use presets for speedy edits

PHOTOSHOP
Master Dodge and Burn

PHOTOSHOP
Simple luminosity masking

Discover Excire Foto Light

Keep your photos organised with this month's bonus software download

If your New Year's resolution was to sort out and manage the ever-growing collection of photos captured on your digital camera, then be sure to download this month's bonus Excire Foto Light software and let its AI-assisted tools do the hard work for you.

Excire Foto Light is a digital asset management (DAM) app that uses artificial intelligence to analyse imported photos and then automatically assign keywords to them. You can then search for specific keywords to find your files much faster than

by scrolling through thumbnails. This powerful software also enables you to manually sort your shots by popping them into collections or assigning ratings and colour labels to them. Ratings and labels can then be filtered to help you in the culling process so your best shots are easy to find while the duff ones can be deleted.

The Light version of Excire Foto has limitations (such as not supporting raw files), but if you enjoy using this giveaway version and want to expand its capabilities then you can purchase the full version for Windows or Mac from the Excire website.

Key features

1 Add labels

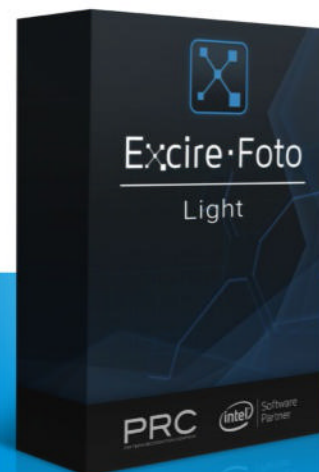
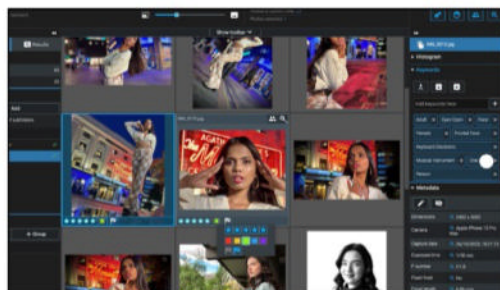
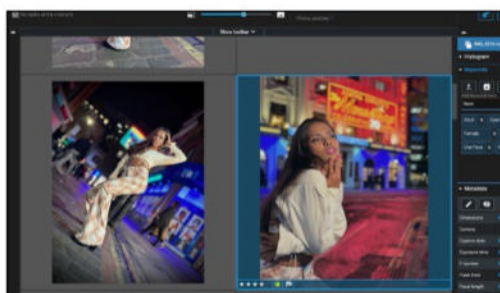
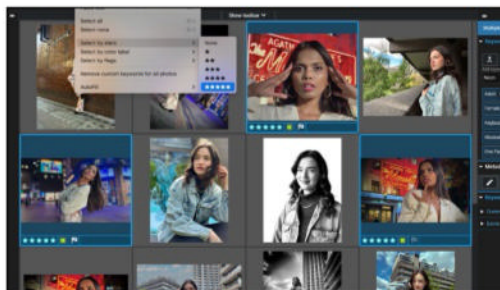
In the Folders panel click Add and browse to a folder of photos. Click Start. Excire Foto will analyse the shots. Click on the imported folder to view thumbnails of its contents. Click on the bottom left of a thumbnail to add a star rating and colour label and flag the shot as Accept or Reject.

2 View AI keywords

When importing shots, Excire Foto's AI tool analyses their contents and generates keywords, saving you a huge amount of time. Click on a thumbnail then look in the Keywords panel. Here, you'll see keywords such as 'Portrait'. You can also assign keywords manually by typing in a text field.

3 Search via attributes

Now that you've assigned labels, flags, stars and keywords to your photos, you can start culling. By choosing Edit you can search for shots that have an Accept or Reject flag (or a specific star rating). You can also click on the Find by keyword icon and search for files that have been AI-tagged 'Portrait', for example.



YOUR BONUS SOFTWARE

Download and install your free copy of Excire Foto Light

1 Navigate to <https://excire.com/en/aktion/>. Click on the blue Get Excire Foto Light button. Excire Foto Light is free to download but you still need to type your email into the 'Your Payment' panel's field and agree with the terms of service. Click Enter Payment Details then fill in your name and address. Click to submit the form.

2 You will then be taken to the Checkout page. Click and hold on the Download Now button pop-up options to choose a Windows or macOS version of Excire Foto Light. There are two versions of the Mac software to choose from. If you have a new Mac with an M1 or M2 chip, choose the arm64 option. Mac owners with older Intel chips should choose the intel-x64 version. Once you click on a download option, the Excire Foto Light installer will appear in your Downloads folder.

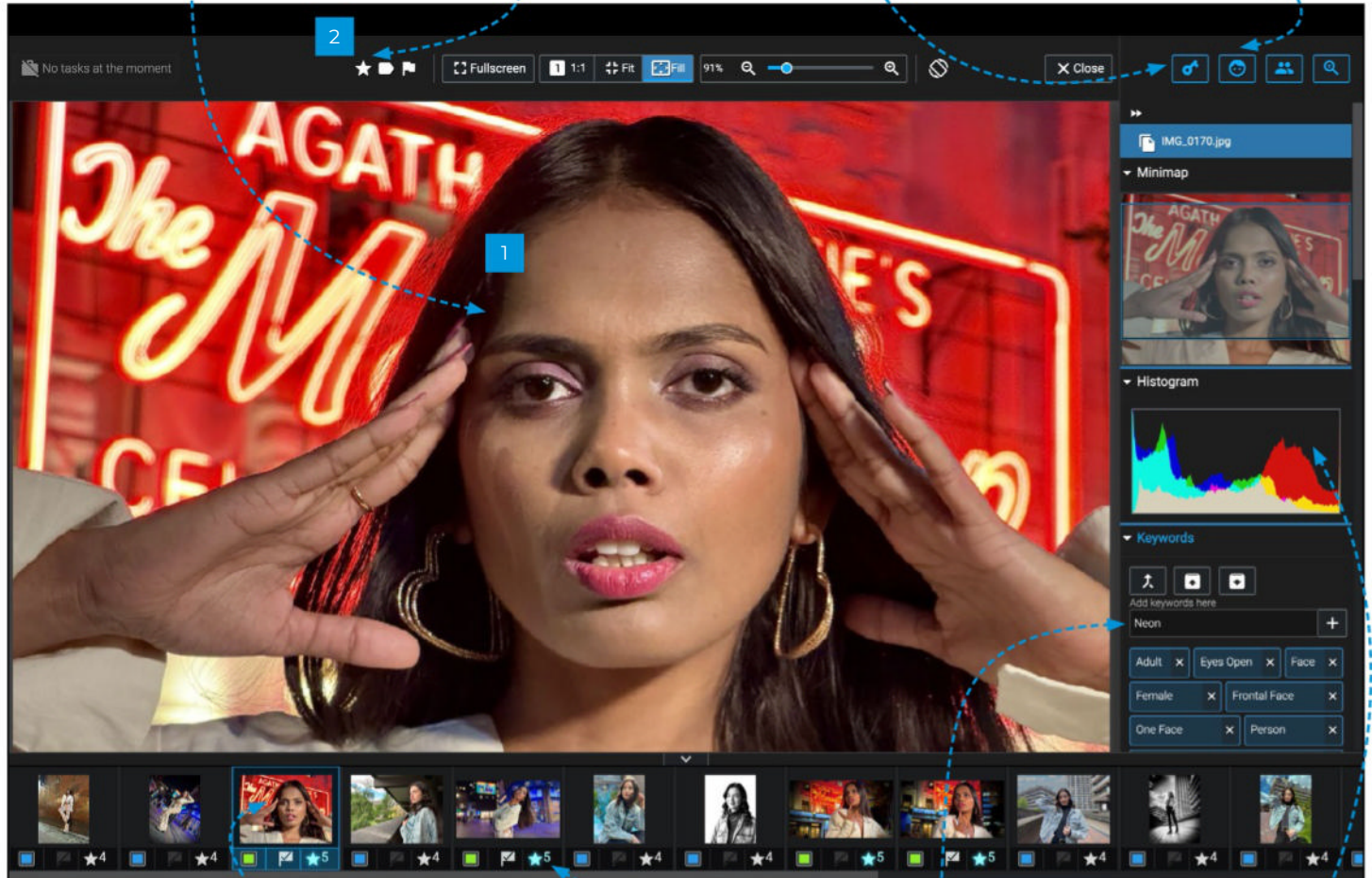
3 Once the installer has downloaded, double-click it and follow the instructions to install Excire Foto Light on your computer. You'll receive an email with tips and tricks to help you get more familiar with the software.

Any questions? Please email digitalcamera@futurenet.com with the subject line 'Excire Foto Light reader offer'

Get your bonus software at: www.bit.ly/dcm278excire

Excire Foto Light Explore the interface

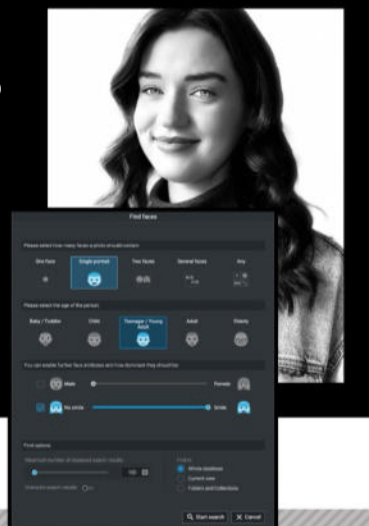
- 1 Main view**
By double-clicking on a thumbnail you can make the image fill the main view window. Click Close in the toolbar when you've finished with the main view.
- 2 Toolbar**
Here you can click icons to assign star ratings, colour labels and flag your selected photo as Accept or Reject. You can also change view sizes and rotate the shot.
- 3 AI bar**
In the AI bar you can search your photos via AI-generated keywords assigned during import. For example, you can search for 'Eyes Open' to find useable shots.
- 4 Face search**
You can also use the AI bar to search your assets by the number of faces in a shot, the subject's age and even their expression (such as whether they are smiling or not!).



- 5 Filmstrip**
The filmstrip displays all the thumbnails in a folder or collection of images. Use your keyboard's arrow keys to make each thumbnail fill the main view so you can check the focus is sharp.
- 6 Ratings**
Colour labels, star ratings and Accept or Reject flags appear at the bottom of each thumbnail in the Filmstrip. Click in the Toolbar to assign these attributes.
- 7 Keyword panel**
AI-assigned keywords for the currently selected shot appear in blue. You can also type keywords into the text field. Manually assigned keywords appear in grey.
- 8 Histogram**
This helpful histogram display enables you to view the spread of shadows, midtones and highlights in a shot, and identify any problems with the image's exposure.

Face finder

Excire Foto Light's AI tools help speed up the culling process. If you have a portfolio full of posing models but need a subject with a smile, then you can click Find Faces and adjust a slider to prioritise the display of subjects who are smiling. You can also prioritise the results for male or female faces.



Go further and upgrade!

Impressed by what Excire Foto Light can do? For £120/\$150 you can buy the full version of Excire Foto 2022, to expand its toolset, edit raw files – and more. The 2024 version of Excire Foto (£189/\$189) boasts new features such as X-prompt AI, a text search field that lets you describe the photo you're looking for. Its AI tagging tools will recognise up to 600 objects, and the X-tetics AI tool helps cull shots faster. <https://excire.com/en/>





Before



After



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The power of Point Colour

This new tool for Photoshop and Lightroom lets you fine-tune colours in your photos with precision

Point Color is a new feature in Lightroom and Camera Raw that allows for fine adjustments to colours. It works by allowing you to zero in on a specific colour range. As such, it's a bit like the Hue, Saturation and Luminosity controls in the Colour Mixer panel. But while these older tools only allow for adjustments to eight predefined colour ranges, with the new Point Color tool, you can be much more specific in defining your own range of colours to be adjusted. When you want to adjust something like the delicate range of reds and oranges in a sunset, the tool can work wonders.

Once you've targeted the range of colours you want to tweak, you can make changes to the Hue, Saturation and Luminosity of the range. The tool isn't really designed for making huge colour shifts and heavy edits, like changing red to green. Rather, its function is to make more subtle changes, perhaps to remove a blue colour cast from shadows or even out rough patches of colour. Here, it allows us to target the slightly insipid yellow tones in the lower part of the sunset sky and match the colours with the vibrant reds in the clouds above, then target and tweak the reflected colours in the water in a similar way.



James Paterson

With over a decade as a writer and photographer, James Paterson knows exactly which Photoshop and Lightroom tools and techniques matter most.

Use your bonus colour-boosting presets



This month, we've supplied 10 free presets for Lightroom and Camera Raw. These let you add a range of colour-boosting effects with a single click. To install them in your copy of Lightroom or Camera Raw, head to the Preset panel, click the menu, choose Import Presets and Profiles and then navigate to the supplied zip file. Experiment by hovering over each preset then, if you find one you like, click to apply and use the Amount slider in the Preset panel to fine-tune the strength of the effect.

1

Sample tool

Point Color lets you target specific colours before tweaking them.

Open an image in Camera Raw or Lightroom and scroll down to the Point Color Panel on the right (in Camera Raw's Color Mixer Panel). Grab the eyedropper tool and click on the colour you want to tweak. You might want to zoom in close (in Camera Raw hold Cmd/Ctrl and drag right/left) so you can zero in on a specific colour range.

2

Range Overlay

The Range controls are the main reason to use Point Color over

other colour-altering tools, as they let you zero in on a specific colour range. Turn on the Range Overlay, which temporarily turns everything outside the targeted range grayscale so you can see what's included. Experiment by dragging the range slider and see how this expands or contracts the range of included colours.

3

Range controls

The Hue, Saturation and Luminosity Range controls let you target

a colour range with precision. Sample a colour and three dots in each slider show the original hue, saturation and luminosity. The rectangular area shows the range of colours. Drag the box left or right to shift this range, the edges to expand or contract the box or the arrows to change the transitions between colours.



4

Colour box

The box displays the full range of colour changes that can be made. The

large point in the box is the new colour and the small point shows the original colour (before and after colours are also displayed in the bar). Drag the point left or right to alter Hue and up/down for Saturation. The slider on the right controls Luminosity, or use the three sliders below. Tweaking Hue and Saturation here fine-tunes the yellows in the sunset colours.

5

Local Point Color

The best thing about Point Color is using

it in combination with masking. Create a mask to cover part of the photo and fine-tune the colour ranges within. Hit K for the brush tool and paint over the waves then make a mask and use Point Color to sample the red reflections. After fine-tuning what's included with the Range slider, boost the saturation of the reds to make the colours in the waves more intense.

6

Swatches

Sample a colour with the Point Color eyedropper and a

colour swatch box appears next to the eyedropper. You can add up to eight swatches and go back and tweak previously targeted colours at any stage by clicking back on the swatches. You can also right-click on a swatch to delete it. The order of your swatches is important, as any newly created sample colours will in turn affect previously adjusted colours.



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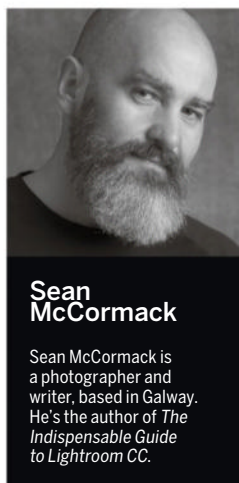
Before



After

Transform photos by boosting contrast

Let's explore the range of Lightroom tools for adding contrast and beefing up your shots



Sean McCormack

Sean McCormack is a photographer and writer, based in Galway. He's the author of *The Indispensable Guide to Lightroom CC*.

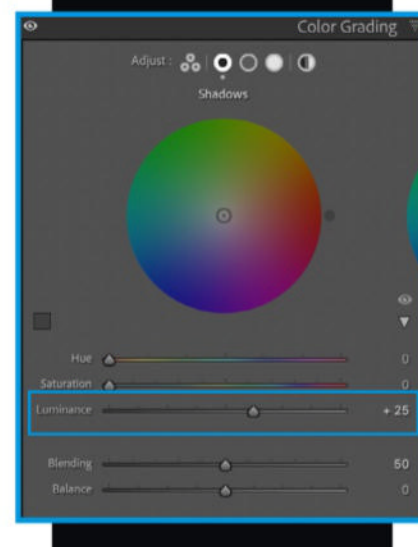
If there's one thing that can really make a difference to your photo, it's increasing the contrast. What's contrast, I hear you say? In a nutshell, adding contrast deepens the darker areas of the photo and brightens the lighter areas. Reducing the contrast does the opposite and makes everything look greyer. There's another word you can use for low contrast – flat. And who wants their images to look flat?

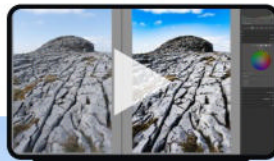
Contrast has an added side benefit. Unless a tool specifically includes a way to prevent it, adding contrast will also add saturation as a bonus effect. As well as getting a richer tone, you also get better colour – a true win-win situation. Lightroom has several tools that add contrast in different ways and you'll see these in action as you explore.

The most obvious is the Contrast slider, which is great for quick adjustments. For more control, use the Point Curve in the Tone Curve. That's not all, though: there's also the Dehaze slider, which adds contrast and saturation, and the Clarity slider, which adds punch. It sounds like a lot, but they work in complementary ways. Let's beef up your photos with contrast.

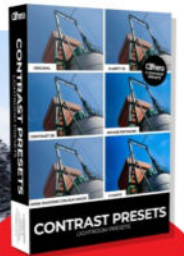
Expert tip: Luminance

In Color Grading, the Luminance Slider in Shadows can greatly impact the darker parts of the photo. You can darken or lighten, but here's how it looks at +25. Click the triangle below the eye to see the sliders.



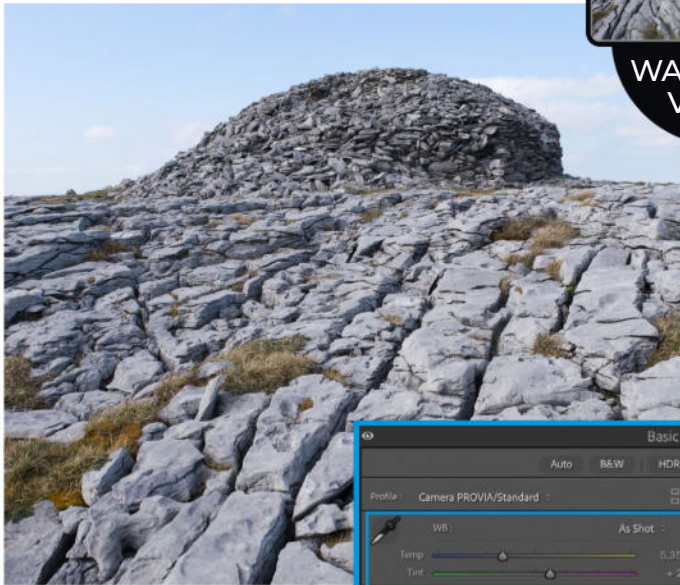


WATCH THE VIDEO!



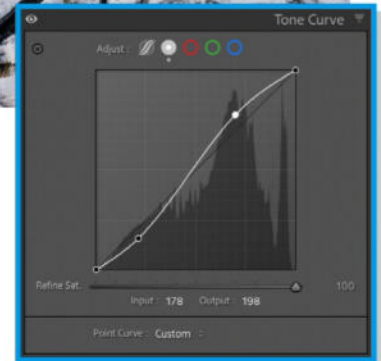
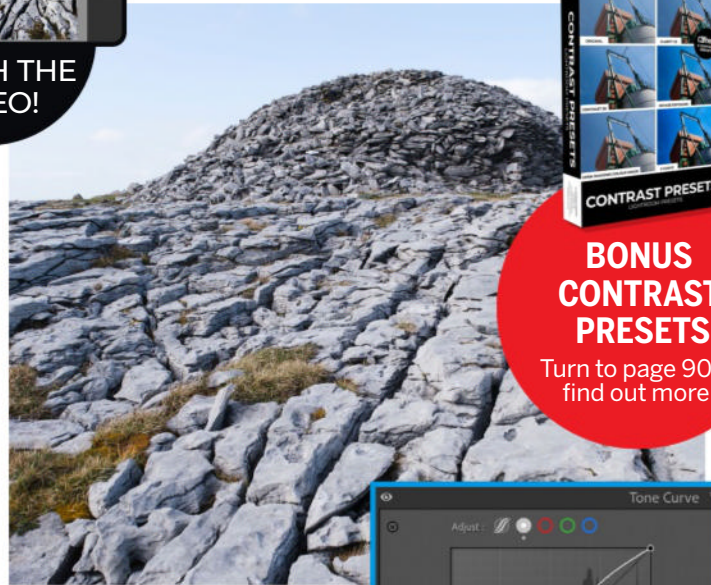
**BONUS
CONTRAST
PRESETS**

Turn to page 90 to find out more!



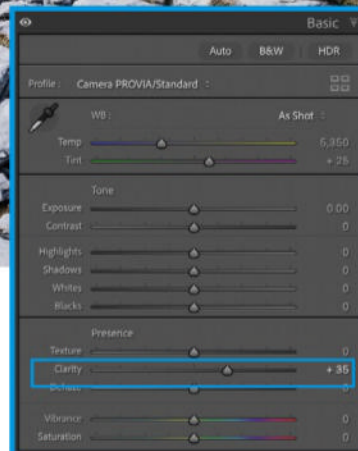
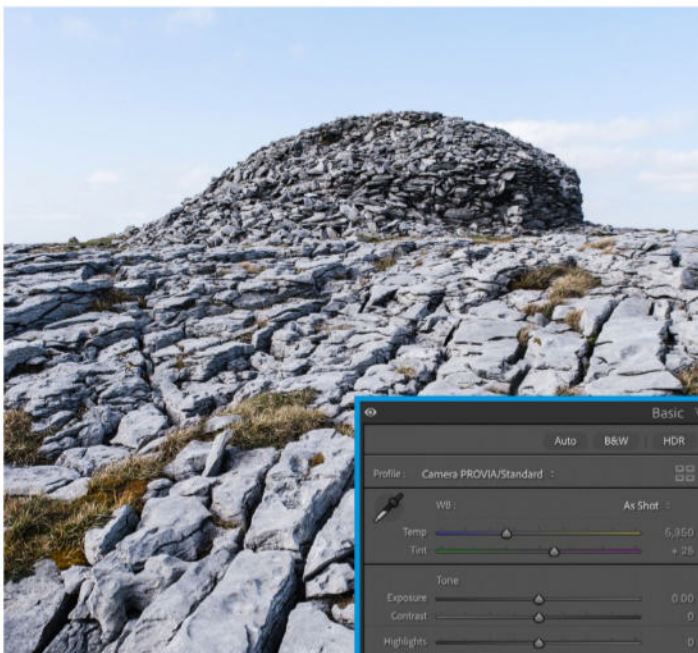
1 Use the contrast slider

For quick changes, use the Contrast Slider. It's a broad change with little nuance, but works when you're in a hurry. Try this at -100 and +100 to see how flat a photo can be and what 'too much contrast' looks like. We settled at +30.



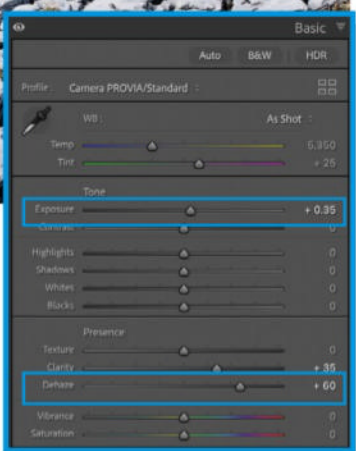
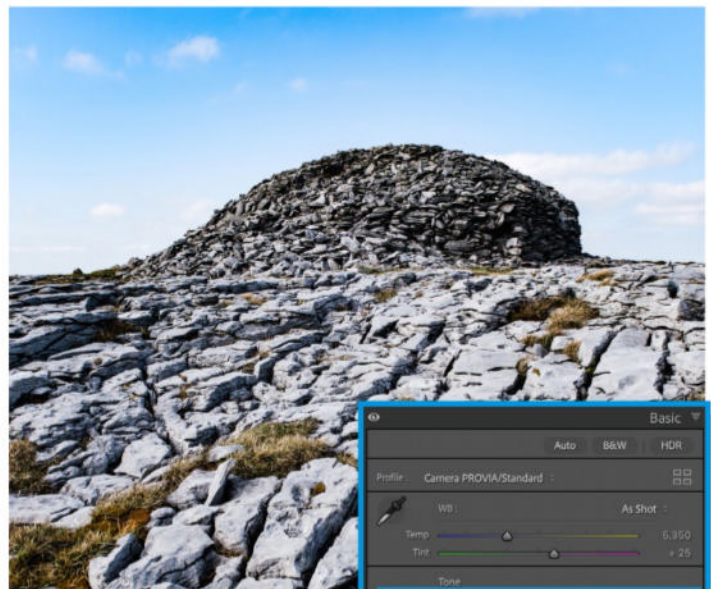
2 Use the Point Curve

If you want more nuance, use the Point Curve, the second of the five options at the top. Reset the Contrast slider first, then click and drag a point on the left down to increase the amount of contrast in the shadows. Repeat that with a point on the right, but push it up to create the classic 'S-Curve'.



3 Add clarity to the image

Clarity gives more punch to the image and brings out texture and shape. It's the classic tool for wizened old men but will look great on these limestone clints and grikes. Increasing Clarity to +35 gives more depth to the cracks. Negative Clarity can be used to soften a photo.



4 Use Dehaze to increase the contrast

Dehaze is mostly used to remove haze but it can also have a wonderful impact on landscapes in general. Haze lowers contrast while Dehaze increases it. It also darkens the image, so typically, you will need to increase the Exposure. Here, we set Dehaze at 60 and increased Exposure by 0.35.



WATCH THE VIDEO!



GET YOUR LANDSCAPE EFFECTS ACTIONS

Turn to page 90 to find out more!

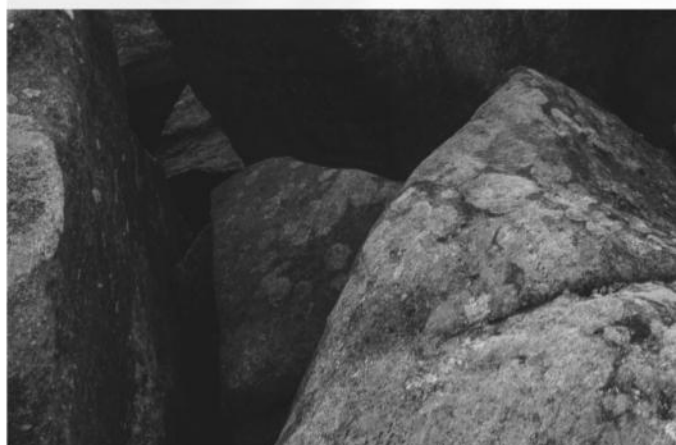
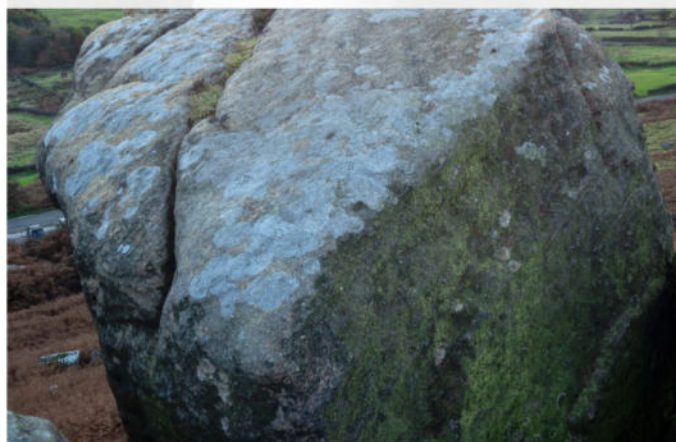


FILE & VIDEO

www.digitalcameraworld.com/dc278



Before



Quick landscape editing effects

Editing any image doesn't have to be a laborious process, with Photoshop providing some quick and effective tools for applying creative adjustments

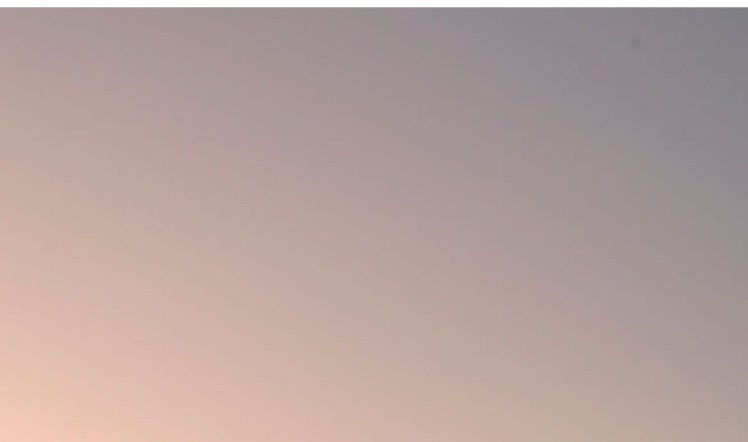
If you're anything like me, you'll enjoy the shooting process much more than editing, while also relishing the sense of achievement when an image you're proud of has been fully processed. While some photographers spend hours working on a single image, this is rarely necessary and as little as five to 10 minutes can be plenty of time to take a landscape image from a raw file to fully processed and ready to print or share online.

Admittedly, every image is different, so the time required to process each one varies. But with speed and efficiency in mind, we're going to cover four techniques that are designed to be quick and easy to apply while also adding creative effects that appear to have required much more time spent on creating them. For speed, two of these use Photoshop's AI-powered selection features. They aren't always perfect, but when they work well, they're incredibly useful.



James Abbott

A professional photographer specialising in landscape and portraits, James Abbott is an advanced Photoshop user and has created hundreds of tutorials.



1 Warm the sky

Select the sky by going to **Select > Sky**. In most instances, this selects the sky only, leaving out the clouds to produce a more natural result. Once the selection has been loaded, click on the **Create new fill or adjustment layer** icon at the bottom of the Layers panel and select **Photo Filter**. Leave the Filter at the default of **Warming Filter (85)** but increase the **Density** to 40 per cent before closing the dialog. For a stronger or weaker effect, simply increase or decrease the filter density.



2 Make the foreground gritty

Go to **Select > Focus Area** to select the ground. This tool looks at the depth in the image to create a selection, so avoid the sky. Dragging the **In Focus** range slider left decreases depth while moving right increases it. Drag the slider to 3.93 to select the ground, select **Output To > New Layer** and hit **OK**. Turn on **Background Layer** visibility, go to **Filter > Camera Raw Filter** and set **Clarity** to 30 and **Texture** to 10 before pressing **OK** to apply the adjustment.



3 Add lens flare

With the **Background Layer** active press **Ctrl/Cmd+J** to duplicate the Layer. With the Layer copy active, go to **Filter > Render > Lens Flare**, and when the dialog opens select **50mm Prime** and set **Brightness** to 120. In the dialog window, you'll see the flare effect and a small black cross, so drag the cross over the part of the sky where the sun either is or would naturally be (in this image, it's on the left behind the cloud) then hit **OK**. You can erase part of the flare if you wish.



4 Apply vintage mono

Press **D** on the keyboard to set the default palette colours of black and white. Make sure black is in the foreground and, if not, press **X** to toggle between the two. Next, create a **Gradient Map Adjustment Layer** for a high-contrast conversion with deep shadows. Close the Gradient Map dialog and create a **Levels Adjustment Layer** where you simply need to drag the **Black Output** point to 30 to lift the shadows and create the softer shadow look associated with mono film.



THIS MONTH'S BONUS SOFTWARE EXTRAS

Improve your shots with our Actions and Presets



As seen in this month's tutorials, you'll be able to transform your photos in just a few clicks

This month, we have curated another collection of software extras to help transform your images. Once installed in Adobe Photoshop, Lightroom or Camera Raw, these actions and presets can have a huge impact on your photos in a matter of seconds, saving you lots of time at the editing stage. Rather than having to manually

adjust a photo to give it a certain look, these actions and presets will get you there in a few clicks.

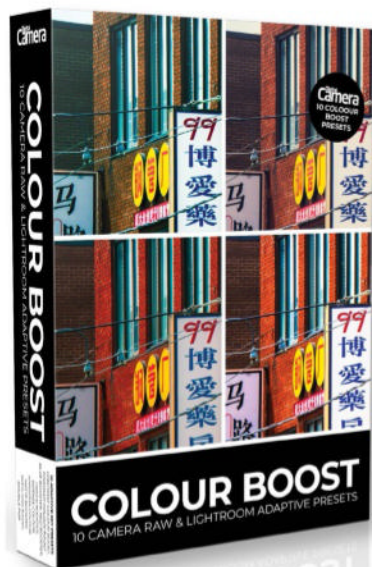
This month, we're giving away two different sets of presets for Lightroom and Camera Raw, plus four Landscape Editing effects actions for Photoshop. So whether you want to improve your landscapes or transform your images with a colour or contrast boost, give these a try.

How to use your software extras

Once you have downloaded the 'dcm278-files.zip' file to your computer, extract it and put the Actions and Presets folders where you can easily access them. These folders contain the files, PDFs and installation instructions.



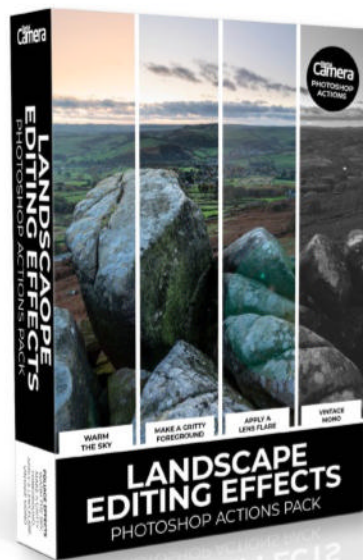
Instruction PDFs can be found in the Gifts folder of the issue's download file



10 COLOUR BOOST PRESETS

Software: Lightroom and Camera Raw

Presets are saved settings that can be applied to raw or jpeg files. To complement this month's Point Colour tutorial on page 84, we have included 10 Colour Boost presets that allow you to add a range of colour-boosting effects with just a single click, offering a great range of options.



FOUR LANDSCAPE EDITING ACTIONS

Software: Photoshop

Photoshop Actions are a creative tool that can transform your images with just one click. To go with our tutorial on page 88, we're giving away four Landscape Editing Effects actions that can be applied to create awesome effects on your scenics. The four actions are Warm the Sky, Make a Gritty Foreground, Apply a Lens Flare and Vintage Mono.



FIVE CONTRAST PRESETS

Software: Lightroom

As seen in our tutorial on page 86, these presets can transform your images by offering alternative ways to boost contrast. The five options are Clarity +30, Contrast +30, Dehaze Exposure, Open Shadows Colour Grade and S-Curve. You can fine-tune these effects by adjusting the amount sliders in your presets palette.

Download all three packs from: www.digitalcameraworld.com/dc278



TOP PHOTOGRAPHER
MGerhold, Austria

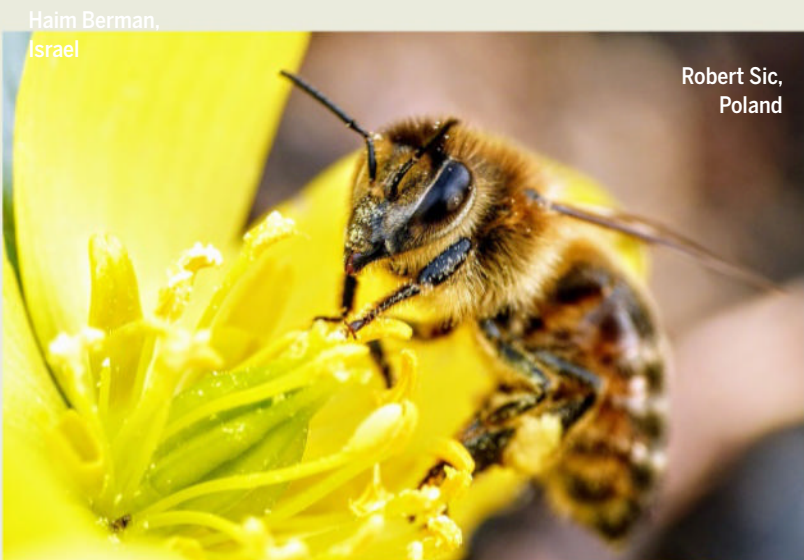
GuruShots

We've joined up with GuruShots, the world's greatest online photography game, to present the winning images from its Macro View contest

GuruShots is billed as the world's leading photo game. It's an online platform conceived to give global exposure to people who love taking photographs. GuruShots members start out as 'Newbies' and compete with other photographers to win challenges, increase their ranking on the site and eventually progress to the coveted 'Guru' status. Challenges are voted on by Gurus and the wider GuruShots community, and there's a fresh challenge – for example, 'Macro View' – every day. Winners receive prizes from GuruShots' partners, including Adobe Stock, Lowepro and Kodak. **Find out more at www.gurushots.com**

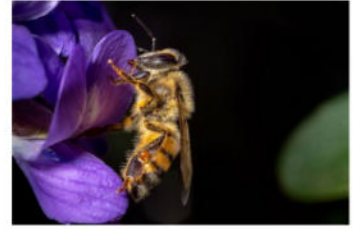
Enter GuruShots contests

Sign up to GuruShots for free, upload your best photos and start entering competitions today! Vote for your favourite entries from other photographers and receive helpful feedback from the GuruShots community. You'll improve your photos and have fun!
www.gurushots.com



Honourable mentions

Royce Robison,
United States



Valdis Kundziņš,
Latvia



Nahal Tabatabai-
Chury, Austria



Jurgen Bauwens,
Belgium



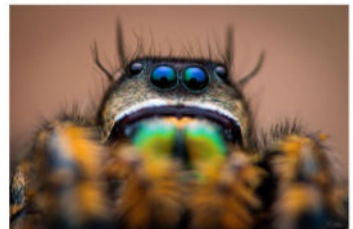
Guenter
Horniak,
Austria



Jacqueline Pruett,
United States



Roberto Valdes,
Cuba





CLOCKWISE FROM TOP LEFT: Ilan Horn, Israel; Mike Hoekwater, United States; Roy Egloff, Switzerland; Mel Stratton, Australia; Suave, United States

More honourable mentions

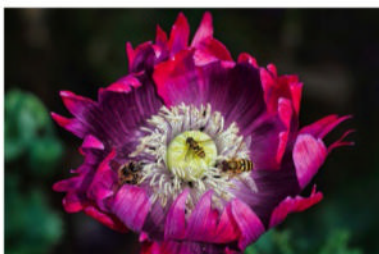
Fabien Perrochon, France



Aman Sarda, India



Lauren Smith, United States



Steve Gilman, United Kingdom



Nikki G, United States



Eric Head, United States



Viktoria Varga, United Kingdom

Photo Answers



Andrew James

Andrew is a highly experienced writer and photographer – if you have a problem, he is here to help.

Annoyed about aperture? Losing it over long-exposure? Send your technique and camera questions to digitalcamera@futurenet.com



Andrew James

The best way to mono

Q I've always loved black-and-white images but am unsure of the right way to convert my pics to mono, as there seem to be lots of different ways of doing this. What's the expert view on the best method?

James Robinson, Wivenhoe

A There are many ways of making a colour-to-mono conversion, and although there isn't really a 'right' way, the method I prefer is to convert directly from a raw file in software, such as Lightroom or

Adobe Camera Raw. By doing it this way, you'll have all the extra quality and data present in the raw file at your disposal.

To do it, with the file on screen in Adobe Camera Raw, open the Optics panel and tick the two boxes to reduce chromatic aberration and correct lens distortion. Now, at the top, select Adobe Monochrome in Profile. You'll get an instant mono image, but to refine it, open the B&W Mixer panel, and adjust the eight colour sliders to make the colour data in each group brighter or darker. This will allow you to reveal the colours as different grey tones, creating separation between them.

If a particular colour is not present in the photo, the slider won't have any effect, so a quick play with these controls will allow you to get a good general balance that shows off your subject in the way you want.

Once you've done this, open the Basic panel and make further adjustments to Highlights, Shadows, Whites and Blacks, checking the

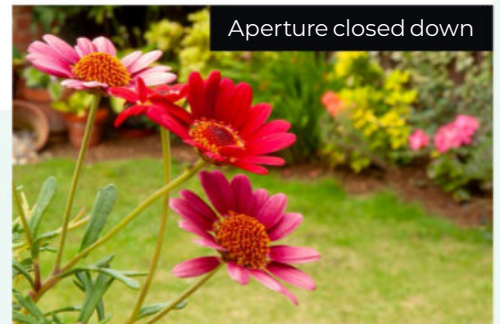
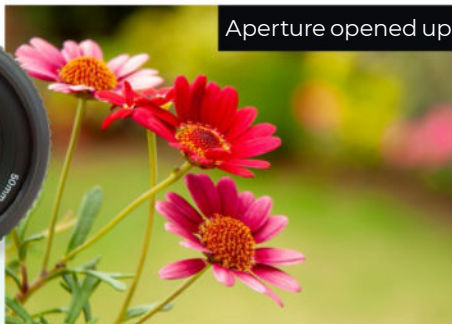
Histogram at the top right of the display to ensure you have a full range of tones across the graph. You may also want to tweak the Exposure slider if needed. If you want some extra 'bite' and enhanced detail, use the Texture and Clarity sliders to accentuate the hard edges in the pic.

That's a solid approach used by many photographers, though if you need to make a specific area of the pic darker, brighter or more contrasty (such as a sky, for example), then you can use the Masking tool to isolate the area (via a Brush or a Linear Gradient) and then adjust the sliders beneath – just as you did in the Basic panel. Once you're finished, hit Open and the file will load into Photoshop, where it can be saved in your preferred format.

Tech Check

Aperture

Confused as to how aperture affects your images? Let us explain



What is aperture?

The term aperture refers to the variable 'hole' inside the lens. This can be 'opened up' to let more light through or 'closed down' to do the opposite and restrict the amount of light.

Why would I 'open up' the aperture?

When you make the aperture bigger, the increase in the amount of light means you require less time to record a good exposure. This means you can use a faster shutter speed, which would be needed for avoiding blur caused by camera shake or for 'freezing' fast-moving action.

When would I 'close down'?

Making the aperture smaller results in needing a slower shutter speed to make a good exposure,

as you need more time when the light passing through the lens is reduced. Slow shutter speeds allow movement to be recorded as blur in the picture, which can be attractive.

Are there any other benefits?

A large aperture decreases the zone of sharp focus in front of and behind the point you focused on in the shot. This gives a limited depth of field, which isolates the sharp area from the background. A small aperture does the opposite, increasing the zone of sharpness in the picture from front to back.

What do the aperture values mean?

Apertures are expressed as 'f-stops' which are ratios of the focal length of the lens divided by the diameter of the aperture hole. The usual f-stops,

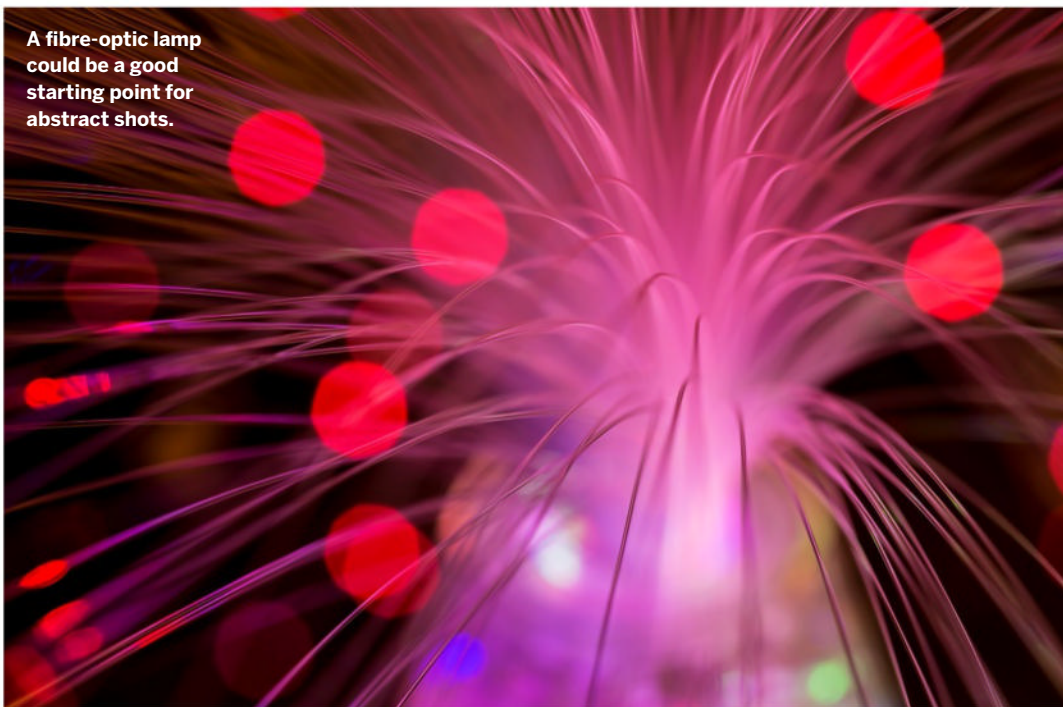
A large aperture (left) reduces the zone of sharp focus in the shot, isolating the subject from the background. A small aperture (right) increases the sharpness from front to back.

from large to small, go f/2.8, f/4, f/5.6, f/8, f/11, f/16, f/22, and each one represents a halving of the light that passes through.

Are the f-stops the same for every lens?

The range of aperture values available varies depending on the construction of the lens, but the ratios are consistent across all different lenses, so f/8 on one lens lets the same amount of light through as f/8 on any other lens, even if the lens has a completely different size and focal length.

A fibre-optic lamp could be a good starting point for abstract shots.



100mm in focal length). Macro lenses allow you to focus much closer than regular lenses and, since you can fill the entire frame with a 'stage' measuring just 36 x 24mm, you're already halfway there to an abstract image, as our eyes don't normally see or process the world at that magnification.

Another important aspect of 'abstracting away' from reality is the use of a shallow depth of field. Since macro lenses generally offer a large aperture of f/2.8, this is easy to achieve, and gives an incredibly narrow zone of sharp focus, so you can arrange sharp shapes and blurred shapes in the viewfinder to create your composition.

From cheese graters to rusty gardening tools, everyday household objects offer all kinds of opportunities, but something like a fibre-optic lamp can be an ideal starting point, as it will get you thinking about arranging shapes and colours (both blurred and sharp) in an abstract way.

Mastering abstracts

Q I love seeing arty abstract shots but haven't had much success in taking my own so far. What would you recommend as the best kind of lens to use and what's the easiest way to get started?

Sandra Davies, Warrington

A With abstract images, you're looking to present a balanced arrangement of shapes and/or colours rather than show the clear identity of a particular subject, so a great choice of lens is a macro model (around

Long exposure maths

Q I've bought a 10-stop ND filter for taking ultra-long exposures, but I'm not sure how to calculate the increase in exposure time that's needed. What is the best way of accurately timing the exposure?

Derek Smith, Glasgow

A 10-stop neutral density filters are almost opaque to the naked eye, but when fitted over a lens, they let a tiny amount of light through to the camera. This trickle of light vastly increases the time it takes to make a good exposure, so you have to do a little maths to double the shutter speed duration, and then double it again, and then double it again... until you've gone through this doubling 10 times over. However, a good starting point is that if your scene gives 1/30 sec without the filter fitted, then that translates to 30 secs with the filter in place. This '1/30 means 30' rule is easy to remember, if you forgot to bring the filter's exposure chart crib sheet with you.



Andrew James

This shot indicated a 1/4 sec shutter speed at f/22, so with a 10-stop ND filter, the shutter speed was timed at 4mins using the camera's Bulb setting.

When using a 10-stop ND, the standard process is to frame up on a tripod with no filter, lock the camera in place and then note the shutter speed setting at your preferred aperture (say, 1/30 sec at f/16). Make sure you are accurately focused then switch to manual focus and Manual exposure (M on the main mode dial). Now, carefully attach the filter, ensuring you don't disturb the focusing ring and then, leaving everything else the same, dial in an aperture value of f/16 and +10 stops on the shutter speed (30 secs in this case). Now take the shot, using the self-timer or a remote shutter release.

If you have an initial (unfiltered) shutter speed of 1/15 sec, 1/8 sec or 1/4 sec, then you'll need a shutter speed of 60 secs, 2 mins or 4 mins. You can count off 60 secs in your head, but this is no fun for a 4min exposure, so it's best to use a locking cable release and the countdown timer on your phone. When the time is up, close the shutter and check the result on screen.

You can use Live View to 'see through' the filter and compose your shot on screen if you want to avoid all this, but this will usually work on shutter speeds up to 30 secs, so you'll still need to do the manual start and stop for longer times.

Spotting a mid-tone

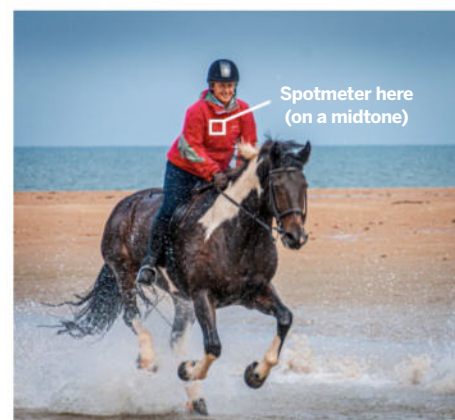
Q I want to experiment more with my camera's spot meter so I'm not at the mercy of my camera's evaluative setting, but I'm not totally sure how to use it to get accurate exposures. What's the basic process involved if I switch to spot?

Sarah Daniels, Pontypridd

A Your camera's spot meter measures the light reflected from part of the scene and bases the exposure setting on that point, assuming that it's of average reflectance (a 'mid-tone'). If you spot meter on an area that's darker than a mid-tone, your light meter will overexpose the shot. If you spot meter on an area that's brighter, your light meter will underexpose the shot.

So to use a spot meter effectively, you need to pick a target point within the scene that is a mid-tone. If you go brighter or darker than this, you'll need to compensate for an accurate exposure, using the Exposure Compensation control. Seeking out mid-tones to target is clearly the quickest way, as no messing around with exposure compensation will be needed, so once you've found one (say, a red rose or a red Gore-tex jacket that is in the same lighting as the dominant part of your scene) you can then hold down your camera's Exposure Lock button, recompose, refocus and shoot.

Spot metering comes into its own in uneven lighting, strong backlighting or overly bright or dark scenes, such as polar bears in the snow, black cats in coal cellars, and such like. However, it's important to remember that the lighting will remain the same at the moment of exposure, regardless of any metering mode you choose, and many pro photographers just use the Matrix or Evaluative setting that measures the overall scene, and if needed, then apply some exposure compensation



Andrew James

Mastering your spot meter can help you tackle uneven lighting, such as strong backlighting or overly bright or dark scenes.

before reshooting if the metering has over- or under-cooked the exposure.

This tends to be quicker than spot metering, so with the exception of tricky lighting conditions or creative exposures, checking the screen and compensating accordingly is just as good, and often quicker than spot metering.

Image Rescue

Changing exposure and straightening a scenic in Adobe Camera Raw

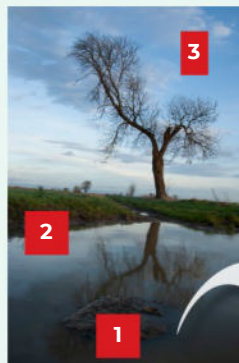
This shot of a tree and its reflection in floodwater was taken at the end of the day, though there was just enough soft sunlight left to pick out the trunk and the rock in the foreground. However, the relative brightness in the sky has resulted in both the tree and the lower half of the shot being underexposed.

Another potential issue is that because it was taken handheld in an awkward position above the floodwater, there's a wonky horizon that will need correcting. Thankfully, all this can be done in Adobe Camera Raw.

We'll start by dragging a Linear Gradient Mask over the foreground up to the horizon **1**. Then in the panel, we'll increase the Exposure, boost the Shadows and reduce the Highlights to

bring out the detail, so the foreground's exposure is balanced with the sky.

To straighten the horizon, let's open the Geometry panel and in the drop-down menu, select the Guided mode **2**. Now, we need to draw a horizontal and a vertical line over the image to level the horizon and improve the perspective at the same time. This leaves us with a better-looking image, but we still need to deal with the foreground and improve the detail in the tree and the sky. Open the Basic panel and boost Shadows, reduce Highlights and pull back Exposure a touch to enhance detail in the tree and sky **3**.



When shooting cityscapes at night, check the histogram graph. If it ends inside the right-hand edge, your exposure should be fine.

Underexposed night shots

Q I tried taking some night shots in the city, but all my exposures have come out much darker than they appeared on the camera's screen. What do you think went wrong?

Alan Mitchell

A When you shoot at night, your eyes will become accustomed to the dark, and as a result, the screen will appear really bright in comparison. For this reason, everyone underexposes night shots when starting out, so nothing has 'gone wrong' as such!

What you need to do is check your histogram in conjunction with the picture on screen, and if there's a big gap on the right-hand side, use some positive Exposure Compensation (say +1 or +1.5 stops) and

reshoot the pic. It'll seem glaringly bright on screen, but so long as your histogram graph ends inside the right-hand edge, your exposure will be fine. Another way is to reduce the LCD screen's brightness for night use, but you'll still need to use the histogram as an objective reference.

Powder power

Q I'm using a studio flash kit with a softbox, but my family 'models' are getting a lot of unattractive shine bouncing off their skin, which I don't see in professional portraits. How can I fix this?

Hannah Thorpe

A To suppress these shiny reflections, get some pressed powder and dab it gently on the nose, forehead and cheekbones with a makeup sponge or brush (or get them to do this).

It's cheap to buy and comes in a variety of shades to suit different skin colours. You can also buy 'translucent' powder, which will suppress shine on just about anybody. It works like magic!



The 14-bit setting give you the maximum range of tonal graduations the camera can handle, which results in larger file sizes.

Which bit?

Q My Nikon D500 has the option to shoot 12-bit or 14-bit raw files. I mainly shoot landscapes, so which is the best to use?

Gavin Reilly

A The 12-bit setting will give you great quality, but the 14-bit setting will give you the maximum range of tonal graduations the camera can muster. The extra data it records results in larger files.

If card space isn't a problem and you have spare memory cards standing by, then the 14-bit setting will give you everything you can possibly have. But if you want to get more shots per card, or save some storage space on your computer, then the 12-bit setting will be fine.

In Focus

The latest photography news from around the globe



1 NIGHT AND DAY LENSES

In a first for an action camera, the SJCam SJ20 offers two lenses – an f/2 for daytime shooting and an f/1.3 for night.

2 SHOOTING MODES

Get creative with live streaming, vertical video, slow video and timelapse... you can also use the SJ20 as a dedicated webcam.



3 DUAL LCD TOUCHSCREENS

Monitoring your video or shooting selfies will be a cinch, thanks to the 2.29-inch screen on the rear and the 1.3-inch unit on the front.

4 EXTENDED BATTERY LIFE

The SJ20's battery life can be extended by adding an external battery (shown here), or a rechargeable camera grip.

SJCam SJ20 action camera

World's first action cam with dual lenses for day and night shooting and recording

Featuring not one but two lenses, for recording during the day and night separately, the SJ20 action camera can capture 4K, 2.5K and 1080p resolution MP4 video and up to 20MP jpeg stills. The SJ20's ultra wide-angle 154° field of view is roughly equivalent to a focal length of 8mm and it offers an 8x digital zoom. A built-in six-axis gyroscope delivers smooth footage capture whatever the use, claims SJCam, and an LCD touchscreen on both sides enables easy monitoring while filming.

Offering a separate lens for day and night capture is a first for an action camera and the SJ20 is also the first action cam to feature an f/1.3 aperture for filming or shooting at night (the

other lens has an f/2 aperture). Other noteworthy features include a modular interface on the bottom of the case, for connecting accessories including an external battery and SJCam's rechargeable camera grip, plus the ability to work underwater to a depth of 40m with a case or 4.9m without.

One of SJ20's most impressive specifications is its extended battery life. Using the 4800mAh battery in the rechargeable camera grip (sold separately) with the integral 800mAh battery, the SJ20 can be put to work for a whopping eight hours without having to be recharged.

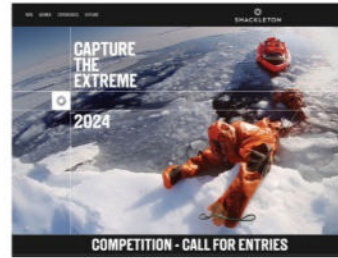
www.sjcam.com; £179/\$229

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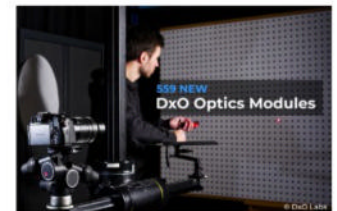


Focal point

Rounding up what's new and exciting



Capture the Extreme and win a Leica camera
Outdoor and adventure photographers... clothing brand Shackleton wants to see your best shots of extreme landscapes and weather conditions. Prizes, including a Leica V-Lux 5 compact (worth £1,770) and Shackleton clothing, are up for grabs. www.bit.ly/dcm278extreme; £/\$ free



New Optics Modules added by DxO
Support for 559 new camera and lens combinations has been added to DxO editing software. Joining the roster are the Lumix G9 II and DJI Mini 4 Pro drone, plus new lenses from Canon, Nikon, Tokina and Viltrox. www.dxo.com

Keep a LevelHed with 3 Legged Thing
A slightly larger version of 3LT's Levelling Base, LevelHed will make levelling up your tripod easier and less hassle. Ideal for those who shoot photo panoramas or film video, LevelHed has a load capacity of 20kg and is available in slate or matte black finishes. www.3leggedthing.com; £130/\$140



Jo Bradford



Ben Moore



Dr Denise Maxwell



Kevin Mullins

The Photography Show speaker lineup

Catch more than 60 talks across six stages at the event, many for no extra cost

The organisers of The Photography & Video Show have shared more details about talks and masterclasses at the event. Taking place from 16-19 March, more than 250 of the biggest international photography brands will descend on Halls 2-3 of the NEC Birmingham. Six stages will host a range of speakers – excluding Masterclass events, these can be enjoyed for no additional cost. Highlights include portrait and street photographer Sean

Tucker (see page 118), pet photographer Jess McGovern, action and adventure photographer Sam Davis and many more. Many photographers who have appeared in *Digital Camera* are also speaking, including Jo Bradford, Kevin Mullins, Denise Maxwell, Ben Moore and Thomas Heaton. www.photographyshow.com; from **£14.95 (single-day standard entry)**. Students, professional photographers, filmmakers and content creators can apply for free admission.

Panasonic Lumix S 100mm f/2.8 Macro

World's smallest and lightest 100mm 1:1 macro lens for full-frame cameras

A major omission to the Lumix line-up – the lack of a standard macro lens – has just been addressed. And, thanks to a newly developed Dual Phase Linear Motor (the motor used for focusing), Panasonic has achieved this in some style. The company claims it is the world's smallest and lightest full-frame macro lens over 90mm with a 1:1 magnification. Not only that, it also has the world's closest focusing distance for a macro lens, with a minimum focus distance of just 20.4cm.

At just 300g, the new optic is less than half the weight of rival lenses from Canon, Nikon and Sony, and has an identical body size and filter thread as other Lumix S f/1.8 prime lenses. Optical construction features fewer total lens elements than other comparative optics and the in-body stabilisation in Lumix cameras should make up for the lack of optical stabilisation in the 100mm f/2.8 Macro. www.panasonic.com; £999/\$999



COMPETITION

Remembering Tigers

ENTER TODAY! Submit your images of tigers in the wild for the chance to be featured in the latest in the Remembering Wildlife fundraising book series: Remembering Tigers



Remembering *Tigers* will be the ninth title in the charity book series started by wildlife photographer Margot Raggett MBE in 2016. She was prompted to take action after seeing a poached elephant in Kenya and started asking fellow wildlife photographers if they would contribute to a fundraising book. *Remembering Elephants* and its successors – *Remembering Rhinos*, *Remembering Great Apes*, *Remembering Lions*, *Remembering Cheetahs*, *Remembering African Wild Dogs*, *Remembering Bears* and *Remembering Leopards* – have between them raised more than £1.1 million/\$1.4 million for 70 conservation projects across 31 countries.

For 2024, Raggett has announced that the next book in the series will be *Remembering Tigers*. The book will be published on 7 October and will feature stunning images donated by many of the world's leading wildlife photographers, including Art Wolfe, Andy Rouse, Greg du Toit and Will Burrard-Lucas.

The work of up to 80 wildlife photographers will be included under the banner of 'Wildlife Photographers United' – and that's where *Digital Camera* readers come in.

Once again, the publishers have teamed up with the magazine to find further images for the book via this competition. This year, we have 20 spaces for winners – including the chance to become the prestigious cover image of the book, if we find the right photograph via this route.

What to submit

We are looking for images taken in the wild in Asia only (no zoos, sanctuaries, baited hides or reserves outside of Asia, please) of all extant species of tigers.

The submitted images will be judged by Margot Raggett and six other judges (see opposite page). The judges are looking for striking and beautiful images that are true to the original scene, with nothing added or taken away. There should be minimal editing.



WIN AND GET PUBLISHED!

See your photo printed alongside some of the world's finest wildlife photographers



2



3



5



4



6



7

1 Bengal tiger, Ranthambore National Park, Rajasthan, India
by Andy Rouse

2 Bengal tigers, Bandhavgarh National Park,

Madhya Pradesh, India by Paul Goldstein

3 Amur Tiger in Land of the Leopard National Park, Russia by Sergey Gorshkov

4 Bengal tigers, India by Andy Rouse

5 Amur Tiger, Russia by Sergey Gorshkov

6 Amur Tiger, Russia by Sergey Gorshkov

7 Bengal tigers, India by Andy Rouse

How to enter

You will need to sign up and upload your pictures at the Remembering Tigers competition page (<https://rememberingwildlife.awardsplatform.com>), where you can also find full terms and conditions.

The entry fee for the first image you submit is £10, with each subsequent entry costing £5. All funds raised after costs will go to conservation projects. The deadline for submitting entries is Saturday 2 March 2024.

The prizes

The 20 best photographs in the opinion of the judging panel (pictured, right) will be printed in the *Remembering Tigers* book, alongside shots from some of the world's best wildlife photographers.

The images will also be printed in issue 281 (May) of *Digital Camera*, which goes on sale on 26 April. Each winner will receive a copy of *Remembering Tigers* and an invitation to attend the launch event at the Royal Geographical Society in London in October. ●

ENTER TODAY AT
rememberingwildlife.
awardsplatform.com

TURN OVER FOR MORE!

Wildlife photographers Andy Rouse and Paul Goldstein discuss their passion for tigers and conservation

THE JUDGES

Meet the competition's expert panel



Andy Rouse

Wildlife photographer, educator and safari guide



Paul Goldstein

Wildlife photographer, author and safari guide



Sergey Gorshkov

Wildlife Photographer of the Year 2020



Niall Hampton

Editor, *Digital Camera* magazine



Lorna Dockerill

Editor, *Remembering Tigers*



Eddie Ephraums

Photographer, publisher and mentor

Remembering Tigers



Andy Rouse
Wildlife photographer,
educator and safari guide



Paul Goldstein
Wildlife photographer,
author and safari guide

BEHIND THE SCENES WITH ANDY ROUSE & PAUL GOLDSTEIN

Wildlife photographers
and contributors to
Remembering Tigers
www.andyrouse.co.uk,
paulgoldstein.co.uk

As seen on the previous page, the next title in the *Remembering Wildlife* series will be *Remembering Tigers*, due to be published on 7

October. As with all books in this successful conservation series, it will feature images captured by many of the world's leading wildlife photographers, including Art Wolfe, Greg du Toit, Will Burrard-Lucas and Andy Rouse. The latter is one of the best-known tiger photographers in the world – regular *Digital*



Andy Rouse

Bengal tiger, Ranthambore National Park, Rajasthan, India by Andy Rouse.

Camera readers may recall that he was featured in issue 217's Shot of the Month, taking us behind the scenes of one of the images in his book *Noor: Queen of Ranthambhore*, which he co-authored with Aditya 'Dicky' Singh.

We caught up with Rouse – and his fellow *Remembering Tigers* contributor Paul Goldstein, the wildlife photographer, safari guide and author – to find out more about their involvement in the project.

What is it about tigers that makes them such popular photographic subjects? Is it their sheer size and power... or something else?

Andy Rouse: I have a natural affinity with tigers. Every time I see one, it's like the first time again, and I look at them with wide childlike eyes. I just love them, pure and simple.

Paul Goldstein: They are endangered, they are fabled, they are staggeringly beautiful and there should be many more of them. They are also notoriously difficult to photograph... and that's just how we like it.

What has been your photographic highlight with a tiger?

Andy: Probably recording a rare kill from start to finish in the open with my favourite tigress Noor. It was amazing to see the stealth followed by the sheer explosion of power as she chased down the Sambar.



Paul Goldstein

Bengal tiger, Bandhavgarh National Park, Madhya Pradesh, India by Paul Goldstein.



Andy Rouse

Bengal tigers, Ranthambore National Park, Rajasthan, India by Andy Rouse.

It was amazing to see it take place completely in the open.

Paul: My first: a huge male on a dusty Ranthambore buffer zone track in the 1990s – it left an indelible impression on me. Sadly, it was my lowlight too, as six months later, I learned that its pelt resided on someone's back in Shanghai and all its other body parts filled various obscene menageries in China.

Which photographic equipment do you use, and what is your go-to setup for photographing tigers?

Andy: An OM System [Olympus] OM-1 and an M.Zuiko 150-400mm f/4.5 TC 1.25x IS PRO, plus a second OM-1 with an M.Zuiko 40-150mm f/2.8 for closer encounters.

Paul: A Canon EOS-1Dx Mark III (I haven't gone mirrorless – does that make me a bad person?), a Canon EF 600mm f/4L IS II – generally used with a Canon EF 2x III Extender – and an iPhone 12 Pro.

For any readers thinking of taking a safari soon, can you share some pro tips for photographing tigers?

Andy: Be flexible with the kit you take. A zoom lens is always best, always have

your camera switched on and ready, and remember that it's better to take one good photo than a load of record shots.

Paul: India is not Kenya or Tanzania; initially, it is all about seeing tigers. The first sighting is better in your memory rather than recorded as megapixels. Use a long lens for photographing tigers at waterholes, probably a phone for anything close, and remember to *watch* – don't be governed by a viewfinder.

When you judge the competition, what is going to separate a good image of tigers from a great one?

Andy: Great light, an interesting composition... an image that stops me in the judging process because it has a story to tell.

Paul: For me any safe, chocolate-box portraits will be immediately discounted. I want to see graft, originality and a degree of difficulty as well as ambition and action. What could go wrong?

Why did you both want to work with Remembering Wildlife?

Andy: There is no downside to working with Remembering Wildlife – it raises

great awareness, it raises funds for much-needed projects and it's just an honour to work with it.

Paul: It is a brilliant idea. I have spent much of my life with its subjects and it throws an often revealing but also harrowing spotlight on the often perilous future of these animals.

Do you have a favourite Remembering Wildlife book so far?

Andy: Leopards, because they are cats!

Paul: It will be *Remembering Tigers*. When you've run 25 marathons and climbed a few mountains in a tiger suit raising money for this often butchered creature, it is very close to your heart.

A world without tigers? Not on my watch – these stripes are overdue. Thank you, Margot. ●

“They are endangered, they are fabled, they are staggeringly beautiful. They are also notoriously difficult to photograph...”



Oppo's Find X7 Ultra features a Quad Main Camera system, comprising four 50MP cameras, two of which have periscope zoom lens systems.



Jon Devo

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

Jon is a professional photographer, videographer and technology journalist.

Scanning ahead...

With new smartphones rolling out, **Jon Devo** considers the impact of AI-driven creative tools

In 2024, smartphones seem to be truly living up to the 'smart' aspect of their names. Back in 2021, when the Google Pixel 6 was released, we saw the beginnings of explicit AI integration with features such as Google's Magic Eraser. And, at last year's Mobile World Congress, Qualcomm Snapdragon treated me to an exclusive preview of Stable Diffusion's generative AI tools working on a mobile device for the first time. If you're familiar with generative AI tools such as SD, you'll be aware of how mind-blowing it is that the computing power required to run complex generative AI tasks was possible on a smartphone a year ago.

Oppo's latest flagship device, the Find X7 Ultra, is pushing things forward with the world's first Quad Main Camera system, comprising four 50MP cameras, two of which feature periscope zoom lens systems. At the

heart of the Find X7 Ultra's camera system is the Sony LYT-900 sensor. It's a one-inch type sensor, designed specifically with computational photography in mind, and is powered by Snapdragon 8 Gen 3, which has a custom, dedicated Image Signal Processor. Sharing a similar classy chrome and leather aesthetic, I'd like to think of this device as the spiritual successor to the Panasonic Lumix DMC-CM1, which was well ahead of its time as the first mobile to feature a one-inch sensor way back in 2015. The Find X7 Ultra takes the torch from the CM1 and runs with it, offering what is effectively four flagship smartphone cameras in one device with a combined equivalent optical focal range of 14-270mm, it's an impressive package.

We saw a belligerent use of the term 'AI' during the Samsung Unpacked launch event in mid-January, where its latest smartphones were announced. The S24 series devices rely heavily on AI to deliver some of their key features.

For example, you can select and move objects within your pictures on the device and it will cleverly use content-aware generative fill to replace the gaps left by the removed objects. It's a similar implementation to the tools deployed in the latest Google Pixels.

Galaxy flagships are particularly famous for their extensive zoom ranges. However, this year's Ultra device ditches 10x optical zoom for a maximum of 5x magnification. Instead, the S24 Ultra achieves the rest of its upper zoom range with AI-powered digital zoom eking out detail from its 'Quad Tele' zoom camera setup.

An especially interesting addition to the Galaxy S24 series is the ability of the device to take advantage of distributed computing power. This means that photo or video content captured and created on the device can use the power of cloud-based AI to process your content as you shoot and edit, spreading the computing load around and enabling a whole raft of groundbreaking functions.

Many of the new AI-powered features that we're starting to see rolling out in smartphones – or 'connected cameras', as I like to call them – this year will undoubtedly have an effect on the way people capture and create content on the go. We've all seen the predominantly negative impact that the introduction of filters had on portraiture, so I'm intrigued to see what new trends emerge as these latest AI-driven creative tools become standard.

How do you feel about the inevitable consequences of cameras being developed around the use of AI? Does it take something away from the art of creating photos and videos, or are you excited about what's ahead? Personally, I'm sick of hearing about 'AI', but it's firmly a thing now, so we have to talk about it! Forgive me. ●

“We've all seen the negative impact that the introduction of filters had on portraiture, so I'm intrigued to see what new trends emerge as these AI-driven creative tools become standard”

KitZone

New gear, buying tips and the world's toughest tests



106 **Leica M11-P** _ Rangefinder with built-in content protection feature



110 **DJI Mini 4 Pro** _ Does DJI's latest camera drone live up to its Pro tag?



114 **7Artisans 9mm f/5.6** _ Full-frame prime with impressive field of view



116 **Tamron 70-180mm F2.8 Di III VC VXD G2** _ Updated zoom for Sony E



f 2022 was the year of NFTs (remember them?), then 2023 was when artificial intelligence gatecrashed the image-making mainstream.

While the increasing implementation of AI in image editing software is reducing the time we all need to spend hunched in front of our computer screens, the implications of generative AI on images (see issue 272) are more problematic, especially what AI has to use to gather the data it needs. Leica is one of a number of imaging companies to have signed up to the Content Credentials

initiative, and the Leica M11-P sees the brand's first implementation of Content Credentials, delivered via hardware. Find out what we make of the M11-P over the page.

Also this month, we test the latest sub-250g camera drone from DJI – will serious enthusiasts no longer have to consider heavier drones? Plus, a pair of new lenses goes through our lab. The 7Artisans 9mm f/5.6 offers a distinctive perspective for a range of uses, for an affordable price, while we assess an updated Tamron 'alternative trinity' zoom for owners of Sony E-mount cameras. *Niall Hampton*

The awards bestowed by the Digital Camera lab...



Given to the top product in a group test



For products that receive five stars overall



Given to products that offer superb value for money

Ratings explained

- ★★★★★ Best in class
- ★★★★☆ Excellent
- ★★★☆☆ Good
- ★★☆☆☆ So-so
- ★☆☆☆☆ Poor

All products reviewed in KitZone are tested independently by photographers with years of experience, using lab and real-world testing

Rangefinder Leica M11-P



1 The iconic red dot has gone, making the M11-P a discreet-looking camera for street or candid photography.

2 The triple-resolution 60.3MP colour sensor, also found on the M11, is capable of shooting in 60MP, 36MP or 18MP.

3 The optical viewfinder on the M11-P is a joy to use and shows that EVFs still have a long way to go to recreate the same feeling.

Leica M11-P

£8,000/\$9,195

Leads the fightback for AI accreditation – and looks great doing it

www.leica-camera.com

Specifications

Sensor: 60.3MP full-frame CMOS

Image processor: Maestro III

AF points: N/A

ISO range: 64 to 50,000

Max image size: 9,528 x 6,328px

Metering modes: Spot, Center-Weighted, Multi-Field

Video: N/A

Viewfinder: Direct vision rangefinder type, 0.73x magnification, parallax compensation

Memory cards: SD/SDHC/SDXC, UHS-II

LCD: 2.95-inch fixed touchscreen, 2.33m dots

Max burst: 4.5fps

Connectivity: Wi-Fi, Bluetooth

Size (W x D x H): 139 x 39 x 80mm

Weight (black): ~530g (incl battery)

Weight (silver): ~640g (incl battery)

All of Leica's cameras are iconic in their own right, but it's the M series that perhaps has the most fervent following. Since last year's reveal of the latest generation of the M-series with the M11, we have been waiting for Leica to unveil its usual collection of variations on that core camera. So far we have seen the black-and-white-sensor M11 Monochrom and now this generation's M11-P variant.

The Leica M10-P was unique for its focus on a redeveloped silent shutter for quieter street photography or photojournalism, where discretion is paramount. The M11-P is also aimed at these audiences, but a quieter shutter is not the focus of the M11-P. Instead, the camera has a trick to combat the rise in photos being misappropriated by AI.

The Content Credentials initiative is the start of a real fightback by imaging companies (including Adobe, Leica and Nikon) and photographers to protect works from being misused by AI image generators while providing accreditation

for photographers. The implementation of Content Credentials by Leica is hardware-based, with a dedicated chip in the M11-P that encodes the file with the photographer's details. These credentials can then, in theory, travel across the internet with the image, so credit remains with the photographer, even if the image is manipulated using editing or AI. Unfortunately for anyone with previous Leica cameras, due to the hardware aspect, this won't be coming in a future update to your camera.

Apart from the new focus on content credentials, internally the Leica M11-P is the same M11 as the first time around. Like other cameras in the M-series, the M11-P is also a manual-focus-only, rangefinder-style camera, with no video. But then this is the charm of the M11-P, with the photography experience being first and foremost. The triple-resolution 60.3MP colour sensor that was used in the M11 features again here, capable of shooting in 60MP, 36MP or 18MP, gaining a stop of dynamic range with reduced resolutions.

Leica M11-P Rangefinder



4

Focusing through the optical viewfinder is easy enough once you've had a bit of practice.

7

The camera's mechanical dials allow for manual adjustment of aperture, ISO and shutter speed.

5

The LCD screen on the rear has no tilting mechanism so it isn't the easiest to use.

8

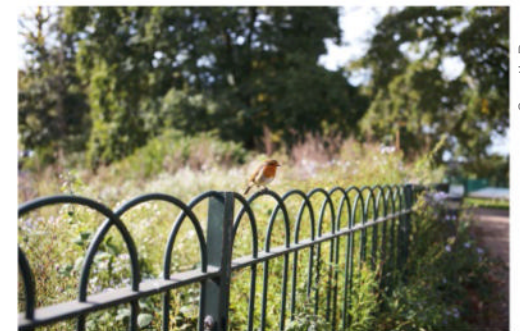
Like other models in the M-series, the M11-P is a rangefinder-style camera, with no video capabilities.

6

Leica M lenses also manage to be compact while still providing excellent image quality.

9

The battery has increased in capacity but the port on the bottom of the camera can be slightly awkward.



Gareth Bevan

Build and handling

The M11-P is available in black aluminium or brass chrome versions; the chrome version comes in heavier than the aluminium, however both benefit from the same renowned Leica build quality. The iconic red dot that usually adorns the front of Leica cameras is gone for a more discrete-looking camera. If you like your camera not to stand out when out on the street, the M11-P fits the bill.

The camera is pleasingly compact, although with no grip as standard, the camera isn't the most comfortable to hold for long periods. I found the bottom corner of the camera digging into my palms or fingers a lot. Thankfully, the Leica M lenses also manage to be

remarkably compact while still providing excellent image quality. Leica's lenses have their own unique characteristics that have won them such a following; the way the lenses render images, especially foregrounds and backgrounds, is lovely.

Thankfully Leica dropped the baseplate for the M11-series and uses a new spring-loaded battery compartment that has a little trigger for popping the battery, a small push on the battery itself then unlocks it. The battery is a big increase in capacity from the previous generation, and can now be charged by USB-C, although the port is on the bottom of the camera, which means you have to balance the camera on its side, which is slightly awkward. →

“In terms of aesthetics, the M11-P takes its cues from the sleek, minimalist design of the M11 Monochrom”

This image (top) was shot at 35mm, but the crop at 100 percent (above) still provides a sharp image that is usable on the internet or social media.



The M11-P camera is satisfyingly compact, although as there is no grip as standard, the camera isn't the most comfortable to hold for long periods.

Rangefinder Leica M11-P



Gareth Bevan

The SD card slot on the camera is under the battery, so you have to pop the battery out to access your photos or change the card. However, with a built-in 256GB hard drive, you might connect the camera via USB-C more, especially as Leica encourages you to use the Leica Fotos app. It's a great experience, but some may prefer to whip out the SD card and copy the photos manually.

The optical viewfinder on the M11-P is a delight to use and shows that EVFs still have a long way to go to recreate the same feeling. Focusing through the viewfinder is easy enough once you've had a bit of practice, and makes you think about framing and subject matter,



The M-11P is available in classic black aluminium or brass chrome versions. The chrome version is slightly heavier.

although all Leica M lenses come with a distance scale, so you can estimate the distance if you're brave enough. Using the viewfinder you can get accurate focus with a bit of practice, but this isn't a camera for fast-moving subjects.

Focusing through the LCD screen on the rear is also possible, although with no tilt to the screen, this wasn't the easiest. The camera can use focus peaking to help, but seeing the red peaks when the scene was especially bright or colourful was often an issue.

Performance

Photo performance is distinctly Leica, with rich, punchy and sharp images and a great dynamic range. In testing, the ISO performance was excellent. On the gloomy London Underground, the noise was kept well under control but, like all modern cameras the ISO tops out at unusable numbers.

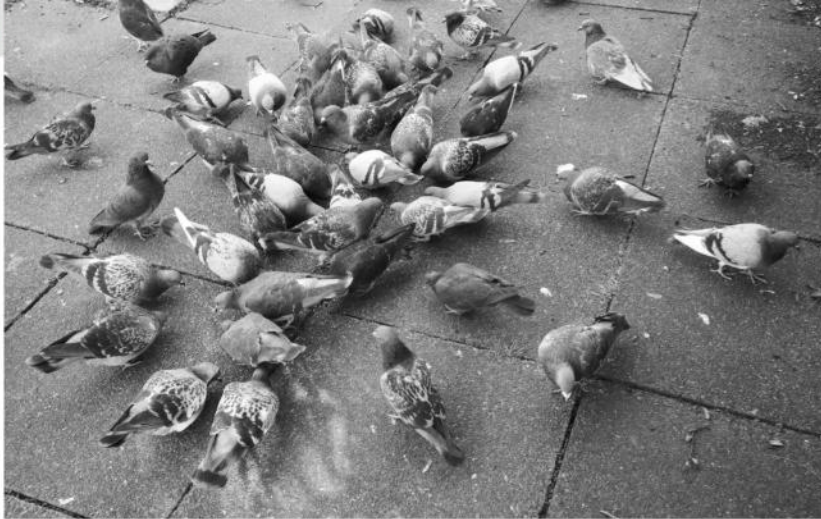
The Leica M11-P has a tendency to expose images on the darker side, giving scenes a grittier look beloved by many a Leica fan. There are some alternate styles in the settings, including a Monochrome look, but the Natural style suited us a little more. The M11-P combined with the Summilux-M 35mm

F/1.4 ASPH lens produced some intense vignetting especially wide open, and while this could be quite easily cleaned up in Lightroom, it shows the limitation of some Leica lenses with this camera.

One issue with processing was that the M11-P often made skies a deep blue that didn't reflect reality. It was mostly in bright scenes but meant that a few photos couldn't be used straight out of the camera. Otherwise, Leica M lenses provide stunning photos with beautiful rendering of foreground and background, while the subject remains sharp.

Also at 60MP, there is potential for cropping images, which is useful if you have a wider lens. The image on the previous page was shot at 35mm, but the crop at 100 per cent still provides a sharp image that is usable on the internet or social media. Although with 50-100MB DNG files, the lower-resolution modes might be better if you don't plan to buy a lot of storage.

But Content Credentials are the key feature of this camera and it is incredible to see companies trying to help protect photographers' work in this way. Content Credentials are simple – enter your details on the camera and each photo you take will have the details coded in.



There are some alternate picture styles you can select in the M11-P's settings, including a Monochrome look. However, during testing, we found the Natural style suited us better.



Above: Content Credentials are the M11-P's key feature and although it's great to see Leica trying to protect photographers' work, the technology feels a little vulnerable at present.

Above left: The M11-P has a tendency to underexpose images, giving scenes a darker, grittier look. However, this style is loved by many Leica fans and can always be altered in editing.

Credentials can be tracked across image editing software, as well as uploads on downloads from platforms that support the feature. Adobe and X (Twitter) are two of the biggest partners, with Adobe Photoshop already having Content Credentials in its latest versions. You can also upload images to the Content Authenticity Initiative website to check its credentials.

However, for protecting work from unwanted manipulation, the system seems too easy to get around, and unfortunately, many out there won't be deterred by a few barriers. It appears to be possible to use photo editing software or screenshots to lift the image, remove the hard-coded content credentials and feed them into AI creations. If those images are registered, whether the lifted parts are still matched to the original owner remains to be seen.

Content Credentials will be a significant barrier to using AI in public works, like the uncredited AI entries (and winners) in recent photo awards,

or in professional media organisations where there is more scrutiny.

In a wider setting, it remains to be seen how robust the credentials system is and how well-supported it is. With the number of shady images unchecked on Facebook or WhatsApp groups, I am not sure how this helps in the fight against disinformation if sophisticated AI creators actively abuse the system and the public doesn't check the authenticity of what they are viewing. This is an important step from Leica, but the real onus lies with social and traditional media companies to implement it in a meaningful way. **Gareth Bevan**

“Photo performance is distinctly Leica; images are rich, punchy and sharp”

Leica M11-P Rangefinder

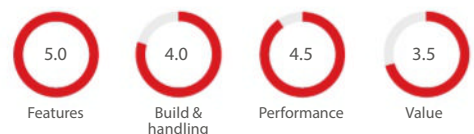


Content Credentials is Leica's big new feature on the M11-P camera and it works by simply entering your details on the camera – each photo you take from then onwards will have your details coded in. These credentials can be tracked across image-editing software, including Adobe Photoshop, and social media platforms that support the feature, such as X (Twitter). You can also upload images to the Content Authenticity Initiative website to check its credentials.

However, as welcome as it is to see camera manufacturers trying to protect photographers' work, the system just seems too easy to get around at the moment. It remains to be seen how robust the system is and how well it will be supported.

Digital Camera verdict

4.5 ★★★★★ Outstanding



The Leica M11-P continues Leica's blend of classic style and cutting-edge technology. In terms of aesthetics, it takes inspiration from the sleek, minimalist design of the M11 Monochrom, without the usual iconic red dot offering a more understated look that appeals to discerning photographers who want to go unnoticed on the street.

However, this camera isn't just about outward appearances. Inside, the M11-P mirrors the Leica M11, guaranteeing the same exceptional image quality that we loved in the original M11 model, with Leica's 60MP colour sensor and its triple-resolution tech offering big detailed photos. The M11-P produced impressive images that popped, with deep and rich colours, although it suffered slightly from underexposure. Leica's lenses continue to stand out, with their almost ethereal-looking out-of-focus areas, upholding the iconic Leica look.

What really makes the M11-P notable is the introduction of its content authentication component, which could yet prove to be a highly valuable and useful weapon in the ongoing battle against AI-generated image manipulation. However, its effectiveness in countering this currently appears somewhat vulnerable to those with ill intentions, although it is still early days for the technology. It will be interesting to see how Content Credentials evolves as it is more widely adopted.

Camera drone DJI Mini 4 Pro



DJI Mini 4 Pro

From £689/\$759

Makes the case for staying light, but does it live up to the Pro tag?

www.dji.com

Specifications

Camera: 24mm EFL F/1.7

Image sensor: 1/1.3-inch 48MP

Still image size: 8064 x 6048px

ISO: 100-6400 (or 100-1600 in high dynamic range modes), 100-12800 night mode

Video: 4K @ 60fps Normal mode, 100fps Slow-Mo mode

Max frame-rate: 200fps at 1080p/100fps at 4K

Colour modes: 8-bit or 10-bit 4:2:0 (HLG / D-Log M)

Radio / Range: DJI O4 / 20km (12.4 miles)

Max speed: 16m/s (35.8mph)

Flight time: 34 min perfect/30 min hover

Weight: 249g (with battery + memory card)

Dimensions: 148 x 94 x 64mm (folded)

DJI RC 2 weight: 416g

The Mini 4 Pro appears to be a refinement rather than an out-and-out replacement of DJI's already popular Mini 3

Pro model. When launching that generation of drones, the world's most successful drone manufacturer made clear that it considered it possible to offer three distinct tiers in the ultralight (below 250g) category.

The generational number hasn't advanced at the same time but it isn't a surprise that it's the Pro that changes first. So how can what is – or, at least, should be – DJI's best option under 250g keep itself ahead of the pack? The drone powerhouse has decided that it's the software and AI, rather than the camera sensor, that are worthy of attention. That's certainly something that chimes with not just the wider drone industry, but the world in general.

The AI, by the way, is a broad generalisation for the tech that can both avoid collisions and help track a subject for smooth shots. Collision sensors are

one thing but the way a drone uses them is quite another, so we're keen to find out whether the software is gimmicky or useful, and whether the drone truly lives up to the 'Pro' tag. The other crucial question for many readers, no doubt, is whether the Mini 4 Pro is of interest to photographers and videographers already equipped with its predecessor. For the record, that includes me, having previously chosen to spend my own money on a Mini 3 Pro.

With that my mind, and hoping the rain would hold off, I headed out with the Mini 4 Pro to see what it was made of.

Key features

DJI's strapline for the Mini 4 Pro's launch was 'Mini to the max', emphasising how the drone brought ever more flagship features into the ultralight category. Apart from a camera that is broadly similar to one of the two on the recent DJI Air 3, the stand-out additions are the all-round obstacle sensors. These can be used not only for avoiding objects when heading sideways (unlike the Mini 3 Pro)

DJI Mini 4 Pro Camera drone



1 Though it is made of plastic and obviously light in the hand, the hinges feel reassuringly strong.

2 The camera is similar to its predecessor, at least as far as the physical hardware is concerned.

3 The all-round obstacle sensors can be used for avoiding objects when heading sideways.

4 Its O4 video transmission system means the drone has a range of over 12 miles in clear line of sight.

5 The high-res screen hosts DJI's piloting app, which means you can keep your phone free while flying.

6 The DJI RC 2 controller looks like a regression from the previous one and the antennae feel retro.

7 The collision avoidance system now avoids and keeps going rather than stopping and hovering.

8 The Fly More kit includes the Mini 4 Pro, RC 2 controller and ND filters, among other accessories.



Adam Juniper

On the base of the Mini 4 Pro, there is a central LED light and two vision positioning sensors so the drone can land and hover near the ground in low light.

but also to bolster subject-tracking AI in an upgrade called ActiveTrack 360°. This system has also been boosted by a tool called the 'Trace wheel', allowing more complicated shots to be achieved using the automated tracking. There are other UI improvements that have some elements of augmented reality to make finding the take-off point easy or to see the projected flight path in the air. The camera has also gained Night Shots Video mode, improving the low-light performance, and an LED landing light on the base so you can land in the dark. At the same time, the drone has been upgraded to DJI's new O4 video transmission system, which has a range of over 12 miles with a clear line of sight, meaning the updated RC 2 controller with fold-out antennae is an option.

Build and handling

For this review, DJI sent a Fly More Kit sample with the RC 2 controller. I have previously used this controller when I reviewed the Air 3 recently. The kit includes the same high-quality and space-efficient shoulder bag with room for the three-battery charger, remote and quad, plus a lid full of spares, though it's a squeeze to jam the ND filters and

wide-angle lens adapter in too. The quadcopter has gained an additional protective strap, which makes sense to protect the flappy propellers when pushing it in and out of the tight bag. Holding the Mini 4 in my hand, the rear vents are noticeably bigger than its predecessor but the more obvious change is the fish-eye vision sensors – the front ones are now more exposed at the sides, like an insect, and the rear ones similarly so. The Mini 3 Pro's backwards-facing collision sensors were smaller and much less exposed but could only see backwards – obstacles to the side were ignored. While the top of the drone has grown a little, the battery seems interchangeable. On the base of the Mini 4 Pro, there is a central LED light, not unlike other larger DJI →

Camera drone DJI Mini 4 Pro



Adam Juniper

The Wide-Angle Lens adapter replaces the camera lens surround and offers an alternative perspective. It comes at the cost of a slight fish-eye effect, but this is easy to correct.



The DJI RC 2 controller looks like a slight regression from the Mini 3 Pro's controller and the folding antennae feel a bit retro.

drones, and two vision positioning sensors – both new to this model – as well as the obstacle avoidance cameras. The light and vision positioning means the drone can land and hover near the ground in low light.

The front arms have gained legs, just like the larger DJI quads, making it easier to land on short grass, if needed. Despite this, it's still possible to open them in either order, making it less fiddly than many folding drones and, although it is made of plastic and obviously light in the hand, the hinges feel reassuringly strong.

Controller build and handling

My experiences with DJI's alternative control choice, which has a grip for a phone that slides from the body, have generally been excellent, but for this review, I used a DJI RC 2 controller. Outwardly, it looks like a slight regression from the DJI RC controller that I've been using with my personal Mini 3 Pro. It has a folding antenna, which, given that it's about 20 years since my mobile phone last had an antenna, feels a bit retro. Similarly, there is no rubber cover on the base and one fewer USB-C socket.

Otherwise, the two controllers are essentially the same. A high-resolution screen that is bright enough, but occasionally could still be a little brighter, backing an Android variant that hosts DJI's piloting app and means that you can keep your phone free.

More importantly, the radio system, which not only sends controls but also receives the live video, is actually more reliable. How much of that is down to the antenna and how much is due to the upgrade to DJI's newer O4 system, we'll probably never know. It was already hard enough to get its predecessor to glitch out when flying within a reasonable range, nonetheless, this feels like a marked improvement. That one USB-C socket also serves as a DisplayPort so can be used with glasses.

Camera performance

In writing this review, I'm desperately trying to avoid reaching for my copy-and-paste commands, since the DJI Mini 4's camera is more or less the same as its predecessor, at least as far as the physical hardware is concerned. The processing grit now exists for nearly everything to be done in 4K 60fps if desired. This was not always the case – in the past, many auto-tracking modes or the QuickShots would require a drop to a lower resolution or frame rate.

The video output is gorgeous, no question about it. The bit rate fluctuates around 130kbps in the 4K 60fps clips when checked in VLC, sometimes higher, so there is always enough data to ensure rich detail in the video. It's a good idea to think about your shots and to use manual mode, too – the automatic exposure is susceptible to a quick shift when tilting the camera up or down. That's not always the wrong response, far from it, but it might not work in



Ultra-light drones will always be susceptible to strong winds but, during our testing, the Mini 4 Pro proved to be confidence-inspiring.



Adam Juniper

DJI Mini 4 Pro Camera drone



The DJI Mini 4 Pro is also available as part of the Fly More kit, which expands the capabilities of the drone camera by including an RC 2 controller and accessories such as the ND filter pack (left) and the wide-angle lens adapter (right).

The DJI Mini 4 Pro offers a 2x digital zoom which, although not especially stunning in its quality, should easily be sufficient for posting on social media. The image showing the football pitch (above) was taken with the Mini 4 Pro's Wide Angle setting.

certain creative circumstances. But anyway, it's good to have the choice.

I also had the opportunity to test the Wide Angle Lens adapter. This easily replaces the camera lens surround with a slight twist and offers an alternative perspective if the already generous 24mm EFL doesn't seem enough for you. Admittedly, this comes at the cost of a slight fish-eye effect, but since the lens detects the presence of the adapter and adds it to the metadata, it is easy to locate and correct.

At the other end of the spectrum, the drone offers a 2x digital zoom which, although not especially stunning in its quality, should easily be sufficient for an Instagram post, especially since the camera can be physically rotated so there is no additional cropping. I also noticed when shooting in JPEG + RAW mode that I still got to keep the uncropped version in the raw format anyway. That's a good touch from DJI.

I don't know if it's just my imagination, but the automated panorama, in which the drone automatically assembles many shots into a large still image as it flies, feels a little quicker than in the past.

Drone performance

The problem an ultralight drone faces will always be how susceptible it is to the wind, but during testing, I found the Mini 4 Pro to be confidence-inspiring. The motor control systems are clearly quick

to respond to inertial changes and I even flew around some tight gaps in a sports field with no problem. The waypoint system means it is possible to define a flight path (and gimbal angles) even before take off, and the drone will follow that route – the only issue is that it is a little too easy to forget to hit record! This is a fantastic mechanism for repeating routes in different conditions.

Usability can be fiddly on the small screen of the controller or a phone, but given the number of options, it feels a little churlish to complain. Though it isn't new here, I love that the collision avoidance can be asked to avoid and keep going rather than stop and hover – it just feels so much smarter. That said, while ActiveTrack subject tracking did seem better, it still lost a couple of subjects I tried it on – one moving and one static – so it isn't flawless. Between it and waypoints, however, it is easy to plan smooth, sweeping professional-looking shots without having to master fine piloting controls. **Adam Juniper**

“The video output is gorgeous, with enough data to ensure rich detail”

Digital Camera verdict

5.0 ★★★★★ A best-in-class product



The DJI Mini 4 Pro is a near-flawless device surfing the edge of drone tech and seems incredible given the weight restrictions. It's not cheap, of course, but that makes it so much more flexible for so many creatives looking to add the aerial string to their bow.

Casual users and those starting out don't need to spend quite this much to get decent video or pictures. The far cheaper DJI Mini 2 SE is still impressive, thanks to the drone's gimbal, so you can go down that route instead. That said, of course, if money is no object, then omnidirectional collision detection is an ideal feature for a beginner too, so bear that in mind if you can afford it.

For more serious content creators – especially those put off by the regulations concerning higher-weight categories – this is a great choice. In the same way that 4K from a high-end phone is often good enough to use professionally, this is true here too – with 10-bit and a high frame rate if needed.

I'd never rely on the AI features alone, but it has to be said that they are impressive. Though the improvements may be incremental, together with the better waypoints, there is a lot here for serious shooters to content themselves with. DJI's long-standing panorama features are still striking.

Personally, I'd buy this as my day-to-day drone for small professional jobs, taking advantage of the portability to get into a variety of locations more easily. As I mentioned, however, I already have the Mini 3 Pro so upgrading won't be a priority. Though the vision system is better on the Mini 4 Pro, I don't operate in the dark a lot and try to avoid obstacles myself so the core improvements wouldn't be essential. For some, though, they have the potential to be revolutionary – if you do a lot of indoor shoots then the upgrade is probably a step worth making.

Prime lens 7Artisans 9mm F5.6



7Artisans 9mm F5.6

£459/\$479

Small full-frame compatible rectilinear prime that packs in an impressive field of view

7artisans.co.uk

The 7Artisans 9mm F5.6 is a full-frame compatible lens that comes in Canon RF, Leica L, Nikon Z and Sony E mount options. For a rectilinear lens, it has an astonishingly wide field of view – pretty much as wide as it gets without going curvilinear or ‘fisheye’. Speaking of which, 7Artisans also offers a capable 10mm F2.8 Fisheye and some other desirable lenses, including the super-fast 50mm F1.05. Like those two, the 9mm F5.6 is a fully manual lens with no built-in electronics, but that isn’t a drawback, as we’ll see later.

Key features

There are 132° degrees of key feature packed into this diminutive lens. Put your eye to the camera’s viewfinder and it gives an instant wow factor – in fact, several people we tried this on genuinely said ‘Wow!’ out loud. It’s simply amazing how much you can squeeze into the image frame, making the lens ideal for sweeping vistas in landscape photography and cityscapes.

It also plays into your hands when you’re shooting architectural interiors and simply can’t get enough into the frame even when your back’s up against the wall. The lens could potentially be great for starry night photography, although the modest f/5.6 aperture is a bit on the slow side for full-on astrophotography. As a rectilinear lens, the 9mm aims to keep distortion to a minimum and give a natural view, unlike the notoriously extreme barrel distortion of the 7Artisans 10mm fisheye lens.

Considering the small size of the lens, it’s surprising that 16 optical elements are packed into it, arranged in 11 groups. High-end glass includes two aspherical elements, two ED (Extra-low Dispersion) elements and three HRI (High Refractive Index) elements. The overall aim is to maximise sharpness,

contrast and clarity while keeping unwanted aberrations to a minimum. Coatings are also applied to reduce ghosting and flare.

Aperture control is based on a five-blade diaphragm, which produces strong 10-point sun-stars when shooting into the light. As we mentioned earlier, the lens is fully manual and features no built-in electronics so there is no data communication between the lens and host camera body. As such, you not only have to focus manually, but you also need to set the aperture via the lens’s control ring. It also means that no lens-based EXIF information is stored in image files.

Build and handling

Considering the competitive asking price, the lens feels well-made. It has a durable metal construction that extends to the barrel, mounting plate, hood and even the slip-over hood. That’s a lot of metal. As usual with ultra-wide-angle lenses, the hood is integral and can’t be removed, as it gives physical protection to the bulbous front element that protrudes from the barrel. The only real downside is that there’s no filter attachment thread.

Compact and lightweight construction counts as a handling bonus. The lens measures just 70 x 86mm and weighs 463g. It certainly gives a bit of light relief if you’re used to big, hefty ultra-wide-angle zoom lenses for full-frame cameras.

The aperture control ring has full f/stop click steps, ranging from f/5.6 to f/22, with the addition of a half-stop click between f/5.6 and f/8. As a focusing aid, depth-of-field markers are printed alongside the focus distance scale for every full f/stop. The lens itself focuses down to a minimum distance of 0.2m (8 inches).

You might be put off by the lack of autofocus, but there is no need to be. When it comes down to it, the depth of field is so enormous that manual focusing needs little precision. In practice, we found that even at the widest aperture of f/5.6, we could set the focus distance to 3m and everything looked sharp from 1m away to infinity. The focus ring itself operates with a smooth feel and tactile feedback, while the forward position of the aperture ring helps to avoid unintended adjustments.

Another handling upside is that, as the lens is designed for mirrorless cameras with a live preview of exposure, there’s no darkening of the viewfinder when you stop down to narrow apertures. That can be a proper pain when using manual lenses on DSLRs. A final point on build quality is

1
The hood protects the bulbous element and cannot be removed.

2
The aperture control ring has click steps, from f/5.6 to f/22.

3
No weather-seals but, considering the price, that’s not surprising.





With 132° degrees of view, it's amazing how much you can squeeze into the image frame. It makes this lens ideal for sweeping vistas in landscape photography, internal architecture shots and cityscapes.

that the construction doesn't include any weather-seals but that's not surprising, considering the affordable asking price.

Performance

When you're cramming such an epic viewing angle into such a small lens, something has to give. But it's surprisingly little in this case. The 7Artisans 9mm might not be the sharpest tool in the box, but it's able to resolve a lot of fine detail in its huge field of view. It can't do ultimate justice to a 45-megapixel image sensor, but we got acceptable results with our 45MP Sony A7R III. As you'd expect, sharpness in the central region of the frame is more impressive than at the edges and corners, but it still holds up pretty well at the extremities.

Being a fully manual lens with no electronic communication, the 7Artisans lens is on its own in various other areas of performance, without automatic in-camera corrections being available. Bearing that in mind, distortion is remarkably minimal for such an ultra-wide-angle lens and colour fringing is well controlled.

One kind of distortion that you certainly can get is that the incredibly wide viewing angle lets you exaggerate perspective and stretch the distance between foreground and background areas within a scene. Again, automatic correction for vignetting is off the menu, and the drop-off in peripheral illumination can be noticeable at f/5.6.

The short focal length enables you to use fairly slow shutter speeds in handheld shooting without suffering the effects of camera shake. A further bonus is that, despite the lack of electronics, you can dial in the focal length and/or aperture of the lens manually with many full-frame mirrorless camera bodies, making in-body image stabilisation available.

All in all, the performance, build quality and handling are particularly convincing for such an ultra-wide-angle lens, especially at this reasonable and competitive selling price. **Matthew Richards**



The incredibly wide viewing angle allows you to exaggerate perspective and stretch the distance between foreground and background in a scene.

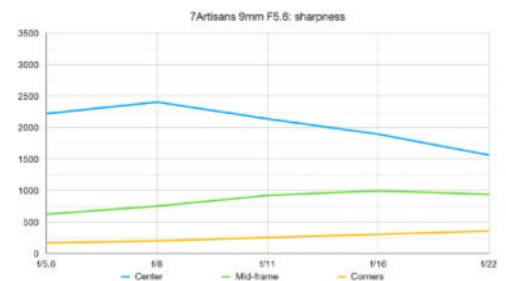


At 70 x 86mm and weighing 463g, it's light relief for those used to hefty ultra-wide-angle zoom lenses.

Prime lens

Specifications

Mount: Canon RF, Leica L, Nikon Z, Sony FE
Full-frame: Yes
Construction: 16 elements in 11 groups
Angle of view: 132°
Autofocus: No
Diaphragm blades: 5
Max aperture: f/5.6
Min aperture: f/22
Min focusing distance: 0.2m
Filter size: N/A
Dimensions (L x D): 86 x 70mm
Weight: 463g



Sharpness

In our lab tests, sharpness looks impressive at the centre of the frame but pretty dire towards the edges. However, the extremely wide viewing angle requires shots of test charts to be taken from a close distance, making it look worse than it is in 'real-world' shooting.

Fringing

2.84

Colour fringing can be noticeable towards the edges and corners of the frame under laboratory conditions but, as with edge-sharpness, we didn't find fringing to be a major problem in our real-world tests.

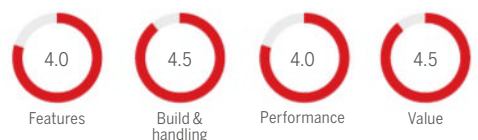
Distortion

-3.65

The closer you get, the more noticeable the distortion so ultra-close-range results look unflattering. In more typical conditions, barrel distortion isn't obvious and, either way, the 7Artisans produces less distortion than many other lenses designed for mirrorless cameras.

Verdict

4.5 ★★★★★ Outstanding



This compact lens has heavyweight credentials, shoehorning a 132° degree viewing angle into its small build and solid metal construction. It's a fully manual lens but focusing is quick and easy thanks to the depth of field, even at the widest aperture of f/5.6. At the price, it's a useful kit bag addition for capturing sweeping vistas in landscape photography, architecture, vlogging and more.

Zoom lens Tamron 70-180mm F2.8 Di III VC VXD G2



Tamron 70-180mm F2.8 Di III VC VXD G2

£1,329/\$1,229

This generation-two lens combines the inherited finery with evolutionary features

www.tamron.eu

The Tamron 70-180mm F2.8 Di III VC VXD G2 is the second 'Generation 2' lens in Tamron's alternative trinity for Sony E-mount cameras. It follows in the footsteps of the Tamron 28-75mm F2.8 Di III RXD G2 standard zoom and the Tamron 17-28mm F2.8 Di III RXD wide-angle zoom, the latter still in its original version. All three of the original lenses impressed us and we weren't the only ones. Nikon was so taken with them that they eventually morphed into Nikkor lenses for its Z-system cameras. So let's see what the 70-180mm G2 has to add to the equation.

Key features

There was nothing much wrong with the feature set of the original Tamron 70-180mm. Our only criticism was that, as with the Nikkor Z 70-180mm f/2.8 version of the lens, it lacked optical image stabilisation. Sure, all but the first generation of full-frame Sony mirrorless cameras have IBIS (in-body image stabilisation) but that tends to be less effective with telephoto lenses. A key feature upgrade of the G2 is that optical stabilisation is present and correct, in the form of Tamron's proprietary 'Vibration Compensation'. Not just for stills, Tamron says that the VC system in this lens uses AI (Artificial Intelligence) tech to deliver optimised stabilisation when shooting video, at least at focal lengths of up to 100mm.

While the addition of VC can make a big difference to sharpness in handheld shooting, outright image quality in terms of contrast, clarity and colour rendition, plus the sharpness and the lack of unwanted aberrations, is all about the glass. The optical layout of the G2 has been redesigned and includes one XLD (eXtra Low Dispersion)

element, one hybrid aspherical lens element, three LD (Low Dispersion) elements and two GM (Glass Moulded aspherical) lens elements. Tamron's BBAR-G2 (Broad-Band Anti-Reflection Generation 2) coating is also applied to minimise ghosting and flare.

Like in the original lens, autofocus is based on a VXD (Voice-coil eXtreme-torque Drive) system that uses a linear stepping motor. Tamron claims it delivers the fastest and most precise autofocus performance to date, as well as giving smooth and virtually silent autofocus transitions when shooting video. As you'd hope for in a Sony E-mount lens, the autofocus system is compatible with the likes of Fast Hybrid AF and Eye AF, where featured in recent Sony cameras.

Like the 28-75mm G2, the 70-180mm G2 adds a customisable function button, nominally assigned to 'Focus Set'. The two lenses also feature a USB port which you can use for applying firmware updates and customising the lens, using the free Tamron Lens Utility and Tamron Lens Utility Mobile apps. The 70-180mm actually makes more of this feature, as we'll explain later.

Build and handling

Although relatively lightweight for an f/2.8 constant-aperture telephoto zoom, the Tamron feels solid and robust. Convincing build quality is backed up by a set of weather-seals and a fluorine coating on the front element, which repels moisture and greasy finger marks and makes cleaning easier. Another handling bonus is that the lens has the same 67mm filter attachment thread as its f/2.8 16-28mm and 28-75mm siblings.

With the addition of Vibration Compensation and a redesigned optical layout, the G2 is slightly bigger and heavier than the original version, at 83 x 156.5mm and 855g, compared with 81 x 149mm and 810g. As we've mentioned though, that's considerably smaller and only about half the weight of many 70-200mm f/2.8 trinity zooms and the handling is the better for it. As with the original lens, the inner barrel extends a little as you stretch through the zoom range from 70mm to 180mm.

A bonus of the first edition lens was that it offered 0.5x macro magnification at the short end of its zoom range, but this was only available in manual focus mode. The G2 offers a more modest 0.38x magnification at 70mm, dropping to 0.21x at 180mm, but autofocus is available right down to the shortest focus distances of 0.3m and 0.85m, respectively.

Despite the inner barrel extending at longer zoom settings, the zoom ring works

1 The inner barrel only extends a little through the zoom range from 70mm to 180mm.

2 The zoom ring works smoothly and precisely, and comes complete with zoom lock switch.

3 Handling is enhanced by a function button and three-position custom modes switch.



As with many Tamron lenses, the bokeh is pleasing here. The only caveat is that bokeh disks produced by defocused bright spots tend to take on irregular shapes towards the edges and corners of the frame.

smoothly and precisely, and comes complete with a zoom lock switch. The manual focus ring also works with smooth precision, enabling fine adjustments.

Handling is enhanced by a function button and three-position custom modes switch, that were lacking in the original lens. As we mentioned, you can use the Tamron Lens Utility and Tamron Lens Utility Mobile apps to create custom modes, via a USB cable. These include options such as AF/MF, focus limiter, focus preset, dual position A-B focus and ring function (focus/aperture). You can also use the apps to set the MF ring rotation direction and whether its action is linear or non-linear. The lens function button can be customised via in-camera menus.

All in all, handling is excellent and the customisation options enable you to set things up just how you like them.

Performance

We were impressed by the performance of the original lens and the G2 is even better. During testing, it proved a little sharper in the central region of the frame and significantly more so in the mid-to-edge region. Colour fringing is also better controlled at the long end of the zoom range and less reliant on automatic in-camera correction. There's more distortion at most focal lengths and pincushion is rather noticeable throughout the zoom range. However, many lenses designed for mirrorless cameras rely on in-camera correction for distortion, so the G2 isn't unusual in this respect.

Tamron lenses often give particularly pleasing bokeh and that's true of this lens. The only caveat is that bokeh disks produced by defocused bright spots or pinpricks of light aren't particularly smooth and take on irregular shapes towards the edges and corners of the frame. Again, that's quite common, not only in zoom lenses but in primes as well. All things considered, the G2 is a top performer and a real step up from the original (and rather excellent) lens.
Matthew Richards



Pincushion is noticeable throughout the zoom range but, as many lenses for mirrorless cameras rely on in-camera correction, the G2 isn't unusual.



This Tamron lens is supplied complete with a petal-shaped, bayonet-fit hood.

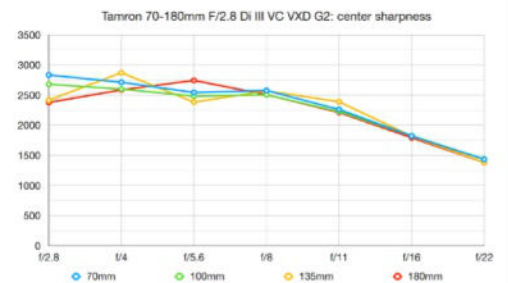


This image shows the inner barrel when it's fully extended, with the focal length set to 180mm.

Zoom lens

Specifications

Mount: Sony FE
Full-frame: Yes
Construction: 20 elements in 15 groups
Angle of view: 34.3-13.6°
Autofocus: Yes
Max aperture: f/2.8
Min aperture: f/22
Diaphragm blades: 9
Min focusing distance: 0.3m (W) 0.85m (T)
Max magnification ratio: 0.38x (W) 0.21x (T)
Filter size: 67mm
Dimensions (L x D): 156.5 x 83mm
Weight: 855g



Sharpness

Sharpness is excellent throughout the zoom range, even when shooting wide-open at f/2.8. And that's not just in the central region of the image frame, but right out to the edges and corners. It's well ahead of the original version of the lens for mid/edge-sharpness.

Fringing Short 0.50 Long 0.34

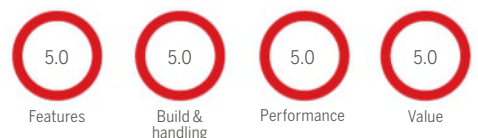
Colour fringing is well controlled and of a low order, throughout the zoom range and across the image frame. It's not quite as good as the original lens at the shortest zoom setting, but better at the long end; however, automatic in-camera correction is available.

Distortion Short 1.51 Long 3.22

The G2 has pincushion at the short end, which becomes more pronounced at longer zoom settings. Even so, there's less distortion than in many recent lenses designed for mirrorless cameras, some of which rely entirely on automatic correction.

Verdict

5.0 ★★★★★
A best-in-class product



Tamron bucked the 'trinity' trend with its first 70-180mm zoom, serving up a lens that was around half the price and half the weight of typical 70-200mm f/2.8 lenses, and the G2 is all about addition as well as 'edition'. It adds optical image stabilisation, uprated handling and revamped optics – and delivers it at a more affordable price than the original lens, at least when it was launched.



Buyer's guide

Use our real-world testing scores from across the market to purchase your next camera with confidence

● DSLR & MIRRORLESS CAMERAS PLUS: Our best-buy accessories

Sensor sizes at a glance

Three formats dominate DSLR and mirrorless cameras...



Full-frame (36 x 24mm)

These imaging sensors have similar proportions to a frame of 35mm film.



APS-C (≈ 25.1 x 16.7mm)

Based on the Advanced Photo System film format from the 1990s.



Micro Four Thirds (17.3 x 13mm)

The 4:3 aspect ratio allows smaller and lighter lenses to be used.

DSLRs

	PRODUCT	PRICE WHEN TESTED	SENSOR SIZE/RESOLUTION	CONTACT	REVIEWED
	Canon EOS 4000D	£370/\$n/a	APS-C, 18MP	www.canon.co.uk	Issue 205
★★★★☆	A great but basic beginner DSLR. At just £370 (body only), it's the cheapest EOS DSLR. Sadly, it's let down by a cheap kit lens that's tough to tolerate, so we suggest buying the better IS lens.				
	Canon EOS 2000D	£349/\$479	APS-C, 24.1MP	www.canon.co.uk	Issue 206
★★★★☆	A better-spec camera than the 4000D but with a modest price bump. Arguably, it's worth the extra outlay but, for an extra £200, the EOS 250D is a far better DSLR camera (Rebel T7 in USA).				
	Canon EOS 250D	£549/\$649	APS-C, 24.1MP	www.canon.co.uk	Issue 217
★★★★☆	Sold as the Rebel SL3 in the USA, we think it's the best budget/beginner DSLR with the perfect blend of power and value. Move beyond snapping with smartphones to taking proper photos.				
	Canon EOS 850D	£919/\$749	APS-C, 24.1MP	www.canon.co.uk	Issue 236
★★★★☆	Lightweight & powerful, the EOS 850D/Rebel T8i captures detailed, colourful and sharp images, plus 4K movies. Features iTR Face and Eye Detection AF, and Auto AF via optical viewfinder.				
	Canon EOS 77D	£710/\$550	APS-C, 24.1MP	www.canon.co.uk	Issue 193
★★★★☆	Key specs are identical to the 800D but extra controls (a top-plate LCD and a rear control wheel) make dialling in exposure settings quicker. Super image quality – even at high ISOs.				
	Canon EOS 90D	£1,299/\$1,199	APS-C, 32.5MP	www.canon.co.uk	Issue 221
★★★★☆	This impressive crop-camera comes with a 32.5MP sensor, rapid 10fps continuous shooting and 4K video, plus improved handling and decent AF. An ideal APS-C upgrade for enthusiasts.				
	Canon EOS 7D Mark II	£1,050/\$725	APS-C, 20.2MP	www.canon.co.uk	Issue 159
★★★★☆	Action-packed APS-C format EOS camera has 65-point AF with advanced tracking, 10fps continuous shooting, dual DIGIC 6 processors and GPS in a tough, magnesium alloy bodysell.				
	Canon EOS 6D Mark II	£1,399/\$1,399	Full-frame, 26MP	www.canon.co.uk	Issue 194
★★★★☆	World's smallest full-frame DSLR gets a major upgrade over the original 6D with improved speed and performance. It's a great all-rounder now, thanks to an improved AF system and burst rate.				
	Canon EOS 5D Mark IV	£2,869/\$2,699	Full-frame, 30MP	www.canon.co.uk	Issue 183
★★★★☆	The pro-level, weather-sealed, full-frame EOS 5D Mk IV has a hi-res 30MP sensor and 7fps frame rate. Specs include 4K video, touchscreen LCD, Wi-Fi and NFC connectivity, and GPS.				
	Canon EOS 5DS (DS R)	£2,999/\$3,699	Full-frame, 50.6MP	www.canon.co.uk	Issue 167
★★★★☆	A 50MP DSLR which delivers huge and amazingly detailed hi-res images. The more expensive 5DS R (£3,199/\$3,899) adds a low-pass cancellation filter for marginally sharper shots.				

Seen something that doesn't look right? Email us at digitalcamera@futurenet.com with 'Camera Guide' in the subject line

Wise buys
Landscape lenses

Good, better and best... three optics for shooting sceneries



Sigma 14-24mm f/2.8 DG HSM

Price: £1,269/\$1,299

Verdict: Well-made and optically excellent, this lens for Canon and Nikon DSLRs is a real bargain. Sharpness is



Canon RF 15-35mm f/2.8L IS USM

Price: £2,389/\$2,399

Verdict: Its 35mm reach offers extra flexibility for shooting landscapes, and it features an optical image stabiliser worth up to five stops.



Nikkor Z 14-24mm f/2.8 S

Price: £2,385/\$2,397

Verdict: Comes with all the bells and whistles: phenomenal sharpness, a customisable control ring, an assignable function button and a multi-function display.

DSLRs (CONTINUED)

PRODUCT	PRICE WHEN TESTED	SENSOR SIZE/RESOLUTION	CONTACT	REVIEWED
Canon EOS-1D X Mk III ★★★★★ The ultimate hybrid DSLR/mirrorless. Superb low-light performance up to ISO 102,400, plus Deep Learning AF and 5.5K Raw video. It can also capture up to 20fps in Live View mode.	£6,999/\$6,499	Full-frame, 20.2MP	www.canon.co.uk	Issue 227
Nikon D7500 ★★★★★ Steals most of the best bits from the now-discontinued pro-grade D500 and squeezes them into a smaller, lighter body at a much more affordable price. Superb image quality, great value.	£1,049/\$997	APS-C, 20MP	www.nikon.co.uk	Issue 193
Nikon D780 ★★★★★ Highly capable and entirely natural-feeling DSLR for shooting stills in viewfinder mode with good Live View, too. Despite its strong credentials, it looks overpriced compared with the Z 6II.	£2,299/\$2,297	Full-frame, 24.5MP	www.nikon.co.uk	Issue 227
Nikon D850 ★★★★★ Can turn its hand to pretty much anything; capable of stunning images with immense detail. For Live View and video capture, however, the contrast-detection AF system is inferior to Nikon Z's.	£2,799/\$2,997	Full-frame, 45.7MP	www.nikon.co.uk	Issue 196
Nikon D6 ★★★★★ Geared mostly towards action, sports and wildlife photography, the D6 is a high-performance 20.8MP DSLR. Stills performance is superb with a fast continuous drive rate and AF system.	£6,799/\$6,497	Full-frame, 20.8MP	www.nikon.co.uk	Issue 231
Pentax K-70 ★★★★★ Very much a camera of two halves – the K-70's weighty body and design quirks won't be to everyone's taste, but plenty of top features and great results make it worth considering.	£829/\$647	APS-C, 24MP	https://pentax.eu	Issue 186
Pentax KF ★★★★★ Well-made DSLR but essentially a relaunch of the K-70. The merits of this camera's autofocus system will be lost unless you are using a newer Pentax lens with an SDM, DC or PLM AF motor.	£849/\$847	APS-C, 24MP	https://pentax.eu	Issue 268
Pentax K-3 Mark III ★★★★★ Fast, powerful and packed with clever features, but also oddly dated, as if Pentax has stepped back from modern innovations like on-sensor phase detect autofocus and vari-angle screens.	£1,899/\$1,999	APS-C, 26MP	https://pentax.eu	Issue 247
Pentax K-3 III Monochrome ★★★★★ Based on the flagship K-3 Mark III and sporting a brand-new redesigned and optimised sensor, the K-3 III Monochrome lacks a colour filter and offers three dedicated B&W shooting modes.	£2,249/\$2,199	APS-C, 25.7MP	https://pentax.eu	Not reviewed
Pentax K-1 Mark II ★★★★★ Initially looks and feels like a throwback to an earlier time but its blunt, weighty handling and solid, intelligent controls provide relief from today's touchscreens and digital miniaturisation.	£1,799/\$1,997	Full-frame, 36.4MP	https://pentax.eu	Issue 204
Pentax 645Z ★★★★★ Extraordinarily well-built with excellent ergonomics for its size and supported by a lens system that boasts 16 different optical options. Pricy when compared to Fujifilm's GFX 50S II.	£6,800/\$8,500	Medium-format, 51MP	https://pentax.eu	Issue 164

What to look for in a... **DSLR**

Lens release To remove the lens, press the button and twist the lens anti-clockwise. Use the protective body cap, so you don't leave the sensor exposed to dust.

Shutter release To shoot, press the shutter release button. To focus and meter the scene, half press the shutter release.

Lens A DSLR is far more versatile than a camera with a fixed lens because you can change lenses and alter the angle of view.

Sensor This is where your images are recorded before being processed and stored on your memory card.

Mode dial The mode dial is where you access the camera's shooting modes. For first-time users, the fully Auto mode selects all the camera settings for you.

Hotshoe To attach a flashgun, slot it into place and tighten the catch on the device.

Command dial The command dial is used to alter camera settings and adjust features.

LCD screen This displays images while composing and shooting information. Some DSLRs have a vari-angle LCD screen.

Back panel controls A handy feature used to alter settings and navigate menus. Some cameras have a joystick multi-controller.

Viewfinder To compose an image, look through the viewfinder on the back panel.

Menu button Access shooting, reviewing and other menu options, and use the multi-controller and the OK button to navigate and select.



Connection points To connect your camera to another device, insert the cable into the correct port. You can also connect to a remote shutter release here.

Flash Beginner models and some enthusiast DSLRs include a built-in pop-up flash unit.

Memory card slot Some DSLRs include a memory card slot on the bottom of the camera in the battery compartment.

Camera buyer's guide

Wise buys Tripod heads

Good, better and best... three heads for stable shooting



Vanguard Veo 2 BH-50 ball head

Price: £69/\$70

Verdict: An inexpensive and compact ball head. The Veo 2 BH-50 has a separate panning axis and a 'universal' Arca-Swiss style, quick-release plate.



Manfrotto XPro 3-Way Head

Price: £94/\$116

Verdict: Precision and control – and more bulk – the XPro's stubby handles keep the size down but can be extended when needed.



Arca Swiss D4 tripod head

Price: £960/\$1,142

Verdict: Combines a ball mechanism with geared axis movements when required, plus a second pan axis below the camera plate for level panorama shoots.

MIRRORLESS

	PRODUCT	PRICE WHEN TESTED	SENSOR SIZE/RESOLUTION	CONTACT	REVIEWED
	Canon EOS M50 Mark II	£589/\$599	APS-C, 24.1MP	www.canon.co.uk	Issue 242
	★★★★★		A compact and capable camera that takes great stills and 1080p video. Ideal for travel, everyday imaging, plus vlogging and content creation. But if you need to record 4K, it's not for you.		
	Canon EOS M6 Mark II	£799/\$849	APS-C, 32.5MP	www.canon.co.uk	Issue 231
	★★★★★		Designed to deliver sharp images for amateurs on the move. It has the same 32.5MP APS-C sensor as the 90D DSLR but can shoot in 14fps blasts (30fps raw), plus uncropped 4K video.		
	Canon EOS M5	£780/\$n/a	APS-C, 24.2MP	www.canon.co.uk	Issue 188
	★★★★★		Flagship M mirrorless for enthusiasts. Shares much of the tech as the 80D but swaps the optical viewfinder for an electronic version, making this compact system camera a pocket rocket.		
	Canon EOS R50	£789/\$679	APS-C, 24.2MP	www.canon.co.uk	Issue 267
	★★★★★		With a 24.2MP APS-C sensor, 4K video, intelligent AF modes, and 15/12fps continuous shooting, the R50 uses the small and compact size of the M50 and is a great beginner camera.		
	Canon EOS R10	£899/\$979	APS-C, 24.2MP	www.canon.co.uk	Issue 259
	★★★★★		This budget, beginner EOS R10 with pro-level autofocus and 15fps speed, 4K 60p imaging and 120p slow motion at 1080p offers performance that punches well above its weight.		
	Canon EOS RP	£1,049/\$999	Full-frame, 26.2MP	www.canon.co.uk	Issue 214
	★★★★★		Ideal for crop-sensor M CSC or EOS DSLR users looking for an affordable full-frame upgrade. The EOS RP has strong specs and is notably smaller, lighter and cheaper than most rivals.		
	Canon EOS R7	£1,349/\$1,499	APS-C, 32.5MP	www.canon.co.uk	Issue 258
	★★★★★		A worthy successor to the 90D and 7D DSLRs, this is the first mirrorless to reach for if you want the advantages of APS-C with pro-level 15fps speed, intelligent AF, IBIS and image resolution.		
	Canon EOS R8	£1,649/\$1,499	Full-frame, 24.2MP	www.canon.co.uk	Issue 266
	★★★★★		The lightest full-frame EOS R camera can shoot it all. Same sensor and processor as the R6 Mk II, latest AF subject recognition, 24.2MP images and rapid 40fps shooting, but no IBIS.		
	Canon EOS R6 Mark II	£2,779/\$3,599	Full-frame, 24.2MP	www.canon.co.uk	Issue 264
	★★★★★		A hybrid camera that packs an obscene amount of firepower, with 24.2MP stills at a startling 40fps and up to 6K video, plus updated AF detection for tracking trains, planes and horses.		
	Canon EOS R5	£4,299/\$3,899	Full-frame, 45MP	www.canon.co.uk	Issue 233
	★★★★★		The perfect amalgamation of the EOS R's full-frame form, the 5D's function, the pro-grade autofocus of the flagship EOS-1D X Mark III DSLR: 20fps bursts, IBIS and intelligent Animal AF.		
	Canon EOS R3	£5,659/\$5,999	Full-frame, 24.1MP	www.canon.co.uk	Issue 248
	★★★★★		A top-tier tool of choice for working professionals that offers blackout-free 30fps stills and 6K raw video – plus improved autofocus performance, coupled with ghostly good Eye Control AF.		

What to look for in a... **Mirrorless CSC**

Interchangeable lenses

Like a DSLR, a compact system camera (CSC) doesn't feature a fixed lens. Instead, you can swap between lenses depending on the subject you are shooting or the effect you want to achieve. The lens mounts on CSCs are different to those on DSLRs, which means you can't use DSLR lenses on a CSC without purchasing an adapter to 'bridge' the two mounts.

Look, no mirror!

The most significant difference between a DSLR and a compact system camera is the lack of a mirror. Not only does this allow CSCs to be much smaller and lighter, but it also means they're much quieter in operation. As there is no mirror to reflect the sensor view in a CSC, you will have to use the Live View monitor or an electronic viewfinder instead while composing shots.

Pocketability

Compact system cameras are smaller than the majority of DSLRs. Rangefinder-style CSCs are more pocketable than those styled like compact DSLRs but the grip and handling of the latter can be an advantage.

Viewfinder – or not

The lack of a mirror means CSCs don't have an optical TTL (through the lens) viewfinder but many DSLRs boast a built-in electronic viewfinder (EVF), a small screen showing the Live View. Others can be fitted with a small viewfinder accessory on the hotshoe.

Light path

In a DSLR, some light passes through the mirror to the AF sensor, but the majority is reflected up to the pentaprism, exposure meter and viewfinder assembly. This system takes up a lot of space, though.

Flange Focal Distance

The FFD in a CSC is significantly shorter than in a DSLR. For example, Canon's EF and EF-S DSLR mounts have an FFD of 44mm, whereas the Q mount used in Pentax's CSC range uses a distance of just 9.2mm.

Electronic display

In a CSC, the light strikes the sensor, and an image is generated on the rear screen and electronic viewfinder, if present. This means that the body can be much slimmer and shorter in height.



MIRRORLESS (CONTINUED)

	PRODUCT	PRICE WHEN TESTED	SENSOR SIZE/RESOLUTION	CONTACT	REVIEWED
	Fujifilm X-E4	£799/\$849	APS-C, 26.1MP	www.fujifilm.com	Issue 243
	★★★★★	While its small size and design doesn't make it quite as versatile as the Fujifilm X-T4, the X-E4 is capable of producing the same quality images and is easy to carry everywhere.			
	Fujifilm X-H2	£1,899/\$1,999	APS-C, 40.2MP	www.fujifilm.com	Issue 261
	★★★★★	An extremely compelling camera at an equally compelling price. With its 40MP resolution and 8K video, the X-H2 takes on some full-frame big guns at half the price.			
	Fujifilm X-H2S	£2,499/\$2,499	APS-C, 26.1MP	www.fujifilm.com	Issue 258
	★★★★★	With double the processing power of its predecessor, it offers a class-leading 40fps continuous shooting with full autofocus functions. A terrifically powerful companion for sports and wildlife.			
	Fujifilm X-Pro3	£1,699/\$1,999	APS-C, 26.1MP	www.fujifilm.com	Issue 225
	★★★★★	With its rangefinder design, the Fujifilm X-Pro3 recaptures the purity and joy of taking photographs. However, this can sometimes impede your ability to shoot in a modern way.			
	Fujifilm X-S10	£949/\$999	APS-C, 26.1MP	www.fujifilm.com	Issue 238
	★★★★★	The excellent finish, build quality and handling, plus the inclusion of IBIS, give the X-S10 perhaps the best combination of performance, quality and value in the APS-C mirrorless camera market.			
	Fujifilm X-S20	£1,249/\$1,299	APS-C, 26.1MP	www.fujifilm.com	Issue 271
	★★★★★	The perfect camera for most people, with its straightforward controls, excellent fully automatic modes and its small and compact size, the X-S20 is the hybrid camera to beat.			
	Fujifilm X-T30 II	£769/\$899	APS-C, 26.1MP	www.fujifilm.com	Issue 251
	★★★★★	Fujifilm's pint-sized retro camera doesn't just look cool but works well, too, with old-school shutter speed and aperture dials. However, the lack of in-body stabilisation is a shame.			
	Fujifilm X-T4	£1,549/\$1,699	APS-C, 26.1MP	www.fujifilm.com	Issue 231
	★★★★★	The X-T4 gains the in-body image stabilisation that the X-T3 lacks and also brings a vari-angle screen and a faster, quieter shutter mechanism. The improvements to this camera are welcome.			
	Fujifilm X-T5	£1,699/\$1,699	APS-C, 40.2MP	www.fujifilm.com	Issue 263
	★★★★★	Takes the much-loved Fujifilm X-T4 further in terms of resolution but is still ideal for shooters who want a lightweight camera with traditional controls and an excellent 40.2MP resolution.			
	Fujifilm GFX 50S II	£3,499/\$3,999	Medium-format, 51MP	www.fujifilm.com	Issue 248
	★★★★★	The lack of 4K video won't endear it to all, but if speed and video aren't important then the advantages of a medium-format sensor can be had for a far more affordable price than before.			
	Fujifilm GFX 100S	£5,499/\$5,999	Medium-format, 102MP	www.fujifilm.com	Issue 241
	★★★★★	Far more accessible and more ready for broader use cases than traditional medium-format cameras. Any compromises made to produce the GFX 100S have not affected its performance.			

Wise buys Neutral density filters

Good, better and best... three options for long exposures



SRB ND 1000
Price: £32/\$44 (67mm)
Verdict: If you don't want the fuss of a full square filter system, this 10-stop circular ND filter is perfect. In our tests, we saw a slightly warm colour cast but that can be corrected.



Formatt Hitech Firecrest Ultra Circular 3.0 (10-stop)

Price: £146/\$158
Verdict: Offers a step up in construction and quality, with excellent colour fidelity in photographs.



Lee ProGlass IRND 100mm 10-stop filter

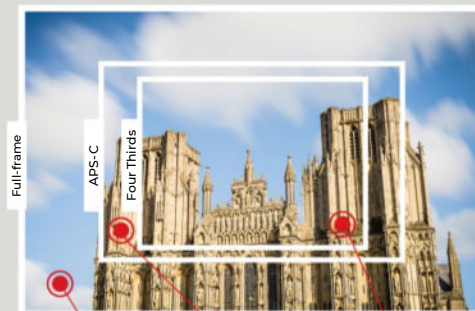
Price: £179/\$237
Verdict: Designed for the ultimate in neutrality and colour accuracy by a renowned brand with a legendary reputation.

Camera tech: Crop factors explained

Full-frame sensors provide the standard by which all other sensors can be compared

While the majority of interchangeable lenses are designed to fill the proportions of a full-frame sensor, plenty of digital cameras use sensors that are smaller than full-frame (see page 107). As they are exposed to a smaller part of the picture projected by a lens, smaller sensors produce a magnification effect, with the 'cropped' image looking as though it has been taken with a longer lens.

The focal length of the lens hasn't increased – a 50mm lens is a 50mm lens, regardless of the camera it's attached to – but the 'crop factor' of the sensor makes it appear that it has. Other differences that the sensor size makes include the larger pixels gathering light more efficiently so you'll get cleaner, better-quality images at high ISO settings. Plus, it's easier to exploit shallow depth-of-field effects, so that images have more blur and less sharpness.



Full Frame
 No adjustment is necessary with a full-frame sensor – the focal length on the lens is what you get.
Crop factor: 1

APS-C
 Most APS-C sensors have a crop factor of 1.5, although with Canon APS-C cameras, it's 1.6.
Crop factor: 1.5 or 1.6

Micro Four Thirds
 To get a 20mm equivalent view, you need a lens that has a focal length of 10mm
Crop factor: 2

Camera buyer's guide

Wise buys Travel tripods

Good, better and best... three options you can depend on



Benro Slim Travel

Price: £69/\$114

Verdict: Folding down to just 32cm and with a maximum height of 130cm, the aluminium edition is great value, and the carbon version is not too pricey at £125/\$150.



Manfrotto Befree 2N1

Price: £139/\$219

Verdict: Like the Benro, the 2N1 also converts into a monopod. It's taller at 150cm (41cm when folded), but is only available in aluminium.



3 Legged Thing Punks Brian

Price: £269/\$300

Verdict: With a beefy 14kg load rating, the carbon-fibre Brian stretches to a towering 187cm, yet still folds down to 41cm.

MIRRORLESS (CONTINUED)

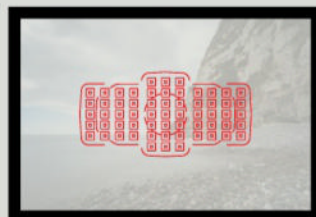
	PRODUCT	PRICE WHEN TESTED	SENSOR SIZE/RESOLUTION	CONTACT	REVIEWED
	Fujifilm GFX 100	£9,999/\$9,999	Medium-format, 102MP	www.fujifilm.com	Issue 220
	★★★★★	The Fujifilm GFX 100 is everything you might hope for and more. It is hugely expensive, but the performance, resolution and image quality you get for that price tag are stunning.			
	Leica SL2	£5,300/\$5,995	Full-frame, 47MP	leica-camera.com	Issue 224
	★★★★★	Likely to be sold in small numbers to connoisseurs and certain discerning pros, this is no overpriced toy. It incorporates a level of design and thought that is rather inspiring.			
	Leica SL2-S	£3,975/\$4,895	Full-frame, 24MP	leica-camera.com	Issue 240
	★★★★☆	Costs much less than the higher-resolution SL2 but even with such a drastic difference in price, the compromises are minimal, and the drop in resolution is the only major downside.			
	Nikon Z 30	£699/\$707	APS-C, 20.2MP	www.nikon.co.uk	Issue 260
	★★★★☆	Aimed at vloggers, for which the vari-angle touchscreen works much better than the tilting screen of the Z 50. The lack of an EVF isn't such good news if you primarily shoot stills.			
	Nikon Z 50	£899/\$857	APS-C, 20.9MP	www.nikon.co.uk	Issue 225
	★★★★★	Small and simple but power-packed, the Z 50 is capable of fabulous results. The slimline build brings the benefits of mirrorless; firmware updates have added Eye-Detection AF capabilities.			
	Nikon Z fc	£899/\$957	APS-C, 20.9MP	www.nikon.co.uk	Issue 247
	★★★★☆	Far from a case of style over substance, this DX-format Z camera is a pleasure to operate and captures quality images to boot. Matching 'SE' lenses complement its good looks.			
	Nikon Z 5	£1,349/\$1,397	Full-frame, 24.3MP	www.nikon.co.uk	Issue 234
	★★★★☆	Nikon's most affordable FX Z camera still boasts plenty of top-notch features including IBIS, the EXPEED 6 processor and dual card slots. Great image quality and 273-point hybrid autofocus.			
	Nikon Z 6II	£2,079/\$1,997	Full-frame, 24.5MP	www.nikon.co.uk	Issue 237
	★★★★☆	Delivers superb quality for stills and 4K video, and is a brilliant all-rounder, too. With fewer megapixels to process, the Z 6II beats the Z 7II with a 14fps rather than 10fps drive mode.			
	Nikon Z 7II	£3,099/\$2,997	Full-frame, 45.7MP	www.nikon.co.uk	Issue 239
	★★★★☆	Matches Nikon's similarly priced D850 for megapixels but especially when shooting handheld and for capturing movies, the Z 7II can yield even better results, thanks to features like IBIS.			
	Nikon Z 8	£3,999/\$3,999	Full-frame, 45.7MP	www.nikon.co.uk	Issue 270
	★★★★☆	The 'baby Z 9' inherits the vast majority of its sibling's specs, including its blisteringly fast electronic shutter and EXPEED 7 processor, in a more compact and manageable body.			
	Nikon Z 9	£5,299/\$5,497	Full-frame, 45.7MP	www.nikon.co.uk	Issue 250
	★★★★☆	The flagship Z series camera uses an electronic shutter to blow the D6 DSLR out of the water for resolution, speed and all-round performance. The Z 9 also boasts Nikon's best video specs.			

Camera tech: AF points explained

The amount of autofocus points varies between cameras – but in short, the more you pay, the more you get

Entry-level DSLRs have around seven to nine AF points, whereas a high-end mirrorless, such as the Canon EOS R3, has 4,779. Cameras that offer a densely populated array of AF points across the viewfinder make it easier to focus on subjects that aren't in the centre of the picture.

A large number of AF points also makes for smoother focus tracking, as the camera can 'hand off' autofocus from one point to the next and more accurately follow a subject moving across the picture.



AF point array

AF points are clustered towards the centre of a DSLR viewfinder. An AF point array typically contains standard AF sensors that measure sharpness in one plane and 'cross-type' AF sensors that are more precise.



How they work

The AF sensor detects a line of contrast that 'breaks' the line of the sensor – such as the horizon here. The AF system pushes the lens's focusing back and forth until the active sensor is able to find this high-contrast point.

Types of AF point
Beginner cameras may have one cross-type point, whereas high-end models have many. Dual cross points are the most powerful.



Standard













Cross-type



Dual cross

MIRRORLESS (CONTINUED)

	PRODUCT	PRICE WHEN TESTED	SENSOR SIZE/RESOLUTION	CONTACT	REVIEWED
	Olympus PEN E-P7	£749/\$799	Micro Four Thirds, 20MP	explore.omsystem.com	Issue 245
	★★★★★	A fantastic return to form for the PEN series – so stylish that you can take it anywhere, so simple that beginners can use it and so capable that experts can get sensational results from it.			
	Olympus OM-D E-M10 IV	£799/\$799	Micro Four Thirds, 20MP	explore.omsystem.com	Issue 235
	★★★★☆	With a 20MP sensor, improved IBIS and a flip-down and tiltable screen, the E-M10 Mark IV offers plenty of new features, while retaining the Mark III's 4K video and attractive styling.			
	OM System OM-1	£1,999/\$2,199	Micro Four Thirds, 20.4MP	explore.omsystem.com	Issue 254
	★★★★★	Packed with bleeding-edge computational photography tech, image stabilisation that blows the competition out of the water and ISO performance that promises parity with full-frame sensors.			
	OM System OM-5	£1,199/\$1,199	Micro Four Thirds, 20.4MP	explore.omsystem.com	Issue 263
	★★★★★	Turns clever computational technology into easy-to-use tools, liberating you from tripods and filters. It's an all-in-one tool that will enable you to make the most of your outdoor pursuits.			
	Panasonic Lumix G9	£1,499/\$1,698	Micro Four Thirds, 20.3MP	www.panasonic.com	Issue 200
	★★★★★	A fast and effective camera for both 4K video and fast-action photography. Substantial in the hand, which gives you a good grip especially with longer lenses, the image quality is excellent.			
	Panasonic Lumix G100	£599/\$748	Micro Four Thirds, 20.3MP	www.panasonic.com	bit.ly/dc843
	★★★★☆	Vloggers and creatives more broadly will enjoy the simplicity of the Lumix G100. With a decent viewfinder and 'proper camera' ergonomics, the G100 has an edge in a competitive market.			
	Panasonic Lumix GX9	£879/\$998	Micro Four Thirds, 20.3MP	www.panasonic.com	Issue 202
	★★★★★	On point for specs, size and price but it relies heavily on its menus and touch-screen interface and can feel fiddly to set up. However, its features and image quality can hardly be criticised.			
	Panasonic Lumix GH5S	£2,199/\$2,498	Micro Four Thirds, 10.2MP	www.panasonic.com	Issue 203
	★★★★★	Pros will love its 10-bit 4:2:2 recording and high bit rates. There's no in-body-stabilisation, though, and the 10MP resolution is just too low for the GH5S to be a convincing stills camera.			
	Panasonic Lumix GH6	£1,999/\$2,198	Micro Four Thirds, 25.2MP	www.panasonic.com	Issue 254
	★★★★★	Some may feel that having an MFT sensor and contrast autofocus is outdated, but the GH6 holds its own with cameras almost twice its price in terms of functionality and image quality.			
	Panasonic Lumix S1	£2,199/\$2,498	Full-frame, 24.2MP	www.panasonic.com	Issue 218
	★★★★★	The Lumix S1 is a hefty camera that offers excellent performance. It matches both the Nikon Z 6 and Sony A7 III for image quality, but costs more than either of them.			

Wise buys Macro lenses

Good, better and best... three options for life-size captures



Nikkor 40mm f/2.8 G AF-S DX Micro

Price: £269/\$277
Verdict: Typical of compact, low-cost, APS-C format macro lenses. The short focal length means having to shoot close to your subject and the lens is not particularly refined.



Sigma 105mm f/2.8 Macro EX DG OS HSM

Price: £359/\$569
Verdict: This optic offers terrific image quality and value for money for more discerning close-up shooters. It's quite big and heavy, but its 105mm focal length gives you a better shooting distance.



Tamron SP 90mm f/2.8 Di VC USD Macro

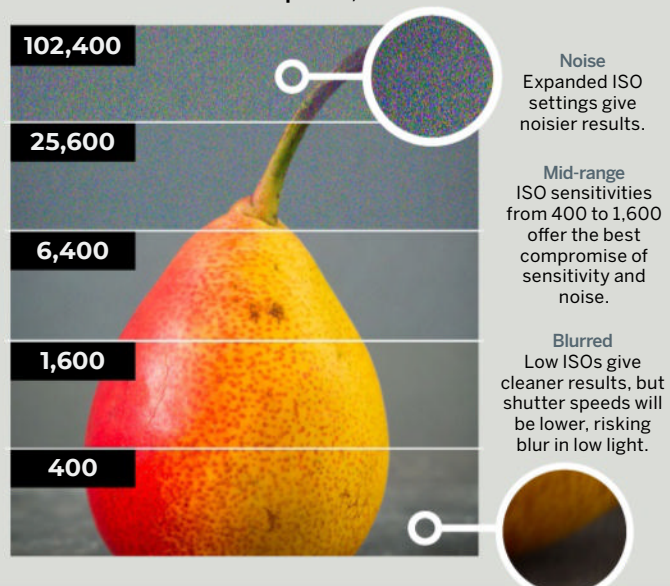
Price: £649/\$649
Verdict: The latest version of a legendary Tamron macro lens is more expensive but you get superb image quality, design and construction, plus it has built-in stabilisation.

Camera tech: ISO and image quality

Setting sensor sensitivity can be a compromise: increase the risk of blurred photos, or increase noise?

When you push the ISO higher on a camera, colours become muddier, and dynamic range (the amount of detail captured from shadows to highlights) drops off. But the most obvious side effect is an increase in the 'noise' – this is the digital equivalent of film grain but even less palatable, with the image covered in ugly coloured speckles.

ISOs in the region of 100 to 400 produce cleaner, richer and more detailed images; however, they require more light to make an exposure. This can be achieved by shooting with either a larger aperture or a slower shutter speed – or both. You can take a picture at low ISOs without making these adjustments, but it will take longer to make the exposure and that could result in a blurred picture if the subject or the camera move during this time.



Camera buyer's guide

Wise buys
Photo backpacks

Good, better and best... three bags for use in the field



Manfrotto Pro Light 3N1-36 PL

Price: £119/\$223

Verdict: A clever design makes this backpack equally adept at storing camera kit, video gear or a drone. It can also take a 15-inch laptop.



Lowepro ProTactic BP 350 AW II

Price: £149/\$162

Verdict: Fairly slimline, it's nevertheless super-tough and can squeeze a lot in. The waist strap doubles as a utility belt.



Tenba Axis 24L

Price: £199/\$229

Verdict: The range's mid-sized option, the Axis 24L can stow one or two cameras with as many as eight lenses, plus a 17-inch laptop and accessories.

MIRRORLESS (CONTINUED)

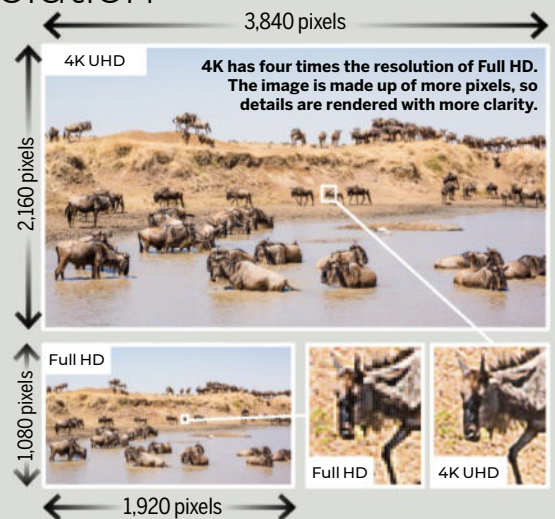
	PRODUCT	PRICE WHEN TESTED	SENSOR SIZE/RESOLUTION	CONTACT	REVIEWED
	Panasonic Lumix S1H	£3,599/\$3,999	Full-frame, 24.2MP	www.panasonic.com	Issue 232
	★★★★★	An interesting 'bridge' between system cameras and higher-end cine gear, but while it has the power for pro video productions, vloggers won't embrace its size, weight and patchy video AF.			
	Panasonic Lumix S1R	£3,399/\$4,199	Full-frame, 47.3MP	www.panasonic.com	Issue 216
	★★★★★	The Lumix S1R is big, hefty and solid and feels like it means business. It handles well and produces truly excellent image quality – and offers 60p 4K video, too.			
	Panasonic Lumix S5	£1,799/\$1,999	Full-frame, 24.2MP	www.panasonic.com	Issue 235
	★★★★★	Shares the impressive 24MP CMOS sensor housed in the S1, but with improved AF. It also delivers up to 6.5 stops of stabilisation with compatible lenses. As a result, it's tough to beat.			
	Panasonic Lumix S5 II	£1,999/\$1,997	Full-frame, 24.2MP	www.panasonic.com	Issue 267
	★★★★★	Can capture rich stills at up to 30fps in E-Shutter mode and offers unbeatable stabilisation. The S5 II's phase hybrid AF system matches or in some cases beats cameras above its price range.			
	Panasonic Lumix S5 IIX	£2,299/\$2,198	Full-frame, 24.2MP	www.panasonic.com	Issue 272
	★★★★★	Extra features over the S5 II, such as SSD recording, HDMI RAW output, ALL-I compression, Apple ProRes, and Streaming functionality, make the S5 IIX an enticing proposition.			
	Sigma fp	£1,999/\$1,899	Full-frame, 24.6MP	sigmauk.com	Issue 226
	★★★★★	The Sigma fp is a fascinating video camera that takes a genuinely fresh approach but, unfortunately, it feels no more than an interesting alternative in the stills market.			
	Sigma fp L	£1,999/\$2,499	Full-frame, 61MP	sigmauk.com	Issue 244
	★★★★★	The tiny body brings some handling issues and while the new phase-detect AF system is great for stills, the video AF remains slow and unreliable. Remarkable performance for the price.			
	Sony Alpha 6100	£679/\$748	APS-C, 24MP	www.sony.co.uk	bit.ly/dc249
	★★★★★	Brings a host of improvements over the A6000 but they don't come cheap. The A6100 is nearly twice the price of the A6000, somewhat limiting its appeal as an entry-level camera.			
	Sony Alpha 6400	£949/\$899	APS-C, 24MP	www.sony.co.uk	Issue 215
	★★★★★	For bloggers and vloggers, the Sony A6400 is a dream. But for stills photographers, its high-tech image capture is poor consolation for its five-year-old design and limited external controls.			
	Sony Alpha 6600	£1,399/\$1,399	APS-C, 24MP	www.sony.co.uk	Issue 226
	★★★★★	The A6600's stunning AF and image stabilisation make it suitable for demanding stills work, but its still image quality is good rather than class-leading.			
	Sony Alpha 7 II	£1,499/\$1,698	Full-frame, 24.3MP	www.sony.co.uk	Issue 162
	★★★★★	Offering all the benefits of a full-frame sensor without the bulk, the A7 II has superb image stabilisation and produces high-quality images. It's well worth your attention.			

Camera tech: Video resolution


You get more pixels to play with when you record in 4K

Before starting to record video, the fundamental decision to make is which movie-recording size to use. This is largely determined by three functions: the image size or resolution, the frame rate (how many images are recorded each second) and the level of compression.

The choice of resolution is key, as this determines how much detail can be recorded, with 4K being offered by the majority of current cameras. There are, in fact, two 4K standards: TV-friendly 4K UHD (3,840 x 2,160 pixels) and a wider, more cinematic 4K 'DCI' (4,096 x 2,160). If you have space available on your memory card or external recorder, it pays to shoot at the highest resolution your camera allows, as you can always reduce this later. That said, shooting at a lower resolution usually allows you to shoot at a faster frame rate for slow-motion playback.



MIRRORLESS (CONTINUED)

	PRODUCT	PRICE WHEN TESTED	SENSOR SIZE/RESOLUTION	CONTACT	REVIEWED
	Sony Alpha 7 III	£1,999/\$1,999	Full-frame, 24.2MP	www.sony.co.uk	Issue 203
	★★★★★	A terrific all-rounder – its handling and control layout aren't perfect, but that's soon forgotten in the face of its AF and continuous shooting performance, not to mention its 4K video capabilities.			
	Sony Alpha 7 IV	£2,399/\$2,499	Full-frame, 33MP	www.sony.co.uk	Issue 249
	★★★★☆	Not an 'entry level' full-frame mirrorless – it's too powerful, too complex and, yes, too expensive for that. It's more like a mini-A1 that's extremely good at everything but less than half the price.			
	Sony Alpha 7C	£1,899/\$1,799	Full-frame, 24.2MP	www.sony.co.uk	Issue 237
	★★★★☆	Unambitious specifications, particularly in terms of its video capabilities, but its practical performance, including a handy vari-angle screen and excellent AF, make it an effective camera.			
	Sony Alpha 7R III	£3,199/\$3,198	Full-frame, 42.4MP	www.sony.co.uk	Issue 199
	★★★★☆	Powerful and versatile but its battery performance is poor next to that of a professional DSLR. The A7R III's speed makes it supremely versatile but puts it up against tough rivals.			
	Sony Alpha 7R IV	£3,499/\$3,499	Full-frame, 61MP	www.sony.co.uk	Issue 223
	★★★★☆	The Sony A7R IV raises the resolution bar for full-frame sensors, but it's a subtle, incremental improvement rather than a giant leap forward and this model faces some serious competition.			
	Sony Alpha 7R V	£3,999/\$3,898	Full-frame, 61MP	www.sony.co.uk	Issue 264
	★★★★☆	While Sony pitches the A7R V as the resolution specialist, it also blurs all the video and sports boundaries. It's an amazing technological achievement but is it heading in the right direction?			
	Sony Alpha 7S III	£3,800/\$3,498	Full-frame, 12.1MP	www.sony.co.uk	bit.ly/dc503
	★★★★★	Apart from a big and expensive cinema camera, this is the only body that can shoot 4K at 60p full-frame with no crop, recorded internally in 10-bit 4:2:2 with no limitations on recording time.			
	Sony Alpha 9 II	£4,699/\$4,499	Full-frame, 24.2MP	www.sony.co.uk	Issue 232
	★★★★★	Blistering burst speed and AF performance are matched by its superb connectivity, which will be a game-changer for pros. The A9 II is a powerhouse performer for professional sports shooters.			
	Sony Alpha 1	£6,499/\$6,499	Full-frame, 50.1MP	www.sony.co.uk	Issue 242
	★★★★☆	A technological triumph, the A1 really can do everything. Previously, cameras might offer speed, resolution or video capability – the A1 offers all three. Its price is a major obstacle, however.			
	Sony ZV-E1	£2,350/\$2,199	Full-frame, 12.1MP	www.sony.co.uk	Issue 270
	★★★★☆	An excellent vlogging camera – small, compact and lightweight while packing in features such as an image-stabilised full-frame sensor, subject recognition and auto-tracking.			
	Sony ZV-E10	£679/\$699	APS-C, 24.2MP	www.sony.co.uk	Issue 246
	★★★★☆	A good camera for novice vloggers. It has 4K video, Sony's excellent autofocus system, a vari-angle screen and a clip-on muffler to cut wind noise. Plus, it's rather good value, too.			

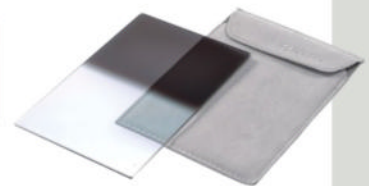
Wise buys
Graduated ND filters

Good, better and best... three options to balance exposures



Cokin Gradual ND Kit incl holder

Price: £62/\$69
Verdict: An inexpensive entry to graduated filters and designed for smaller lenses, with filter rings up to 82mm. Uses filters 84mm wide, not standard 100mm ones.



Benro Master 100x150mm Glass filters

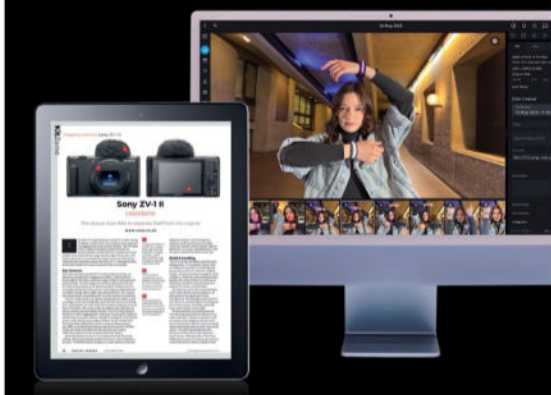
Price: £129/\$99 each
Verdict: Made of glass to high standard and delivers minimum image degradation. Can be fitted to Benro's unique 'geared' holder.



Lee 100mm ND Grad Hard Resin filter set

Price: £185/\$283
Verdict: A set of three graduated filters from one of the best-known names in quality photographic filters.

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Canon EF 16-35mm f2.8 L II USM Lens	£347
Canon RF 15-35mm f2.8L IS USM Lens	£888
Canon RF 100mm f2.8 L Macro IS USM Lens	£750

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What the f-stop?

How much do you really know about photography? Test yourself to the max every issue with our tricky trivia quiz!



AFP / Getty



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- 1 **Who is this singer with a camera?**
 - A Miley Cyrus
 - B Taylor Swift
 - C Britney Spears
 - D Katy Perry
- 2 **How much bigger is a full-frame sensor compared with an APS-C sensor?**
 - A 1.5x
 - B 1.6x
 - C 2.3x
 - D 3.6x
- 3 **Who makes this new toy camera? (pictured right)**
 - A Lomography
 - B VTech
 - C Disney
 - D Lego

- 4 **How many years ago did Kodak stop making Kodachrome 64 film?**
 - A 10
 - B 15
 - C 20
 - D 25

- 5 **How many exposures would you expect using a 120 film in a 67 medium format camera?**
 - A 10
 - B 12
 - C 15
 - D 18

- 6 **To remove a lens from a Nikon DSLR or mirrorless camera, which way do you turn it?**
 - A Clockwise
 - B Counterclockwise
 - C Right
 - D Left



- 7 **Who said 'The camera is an instrument that teaches people how to see without a camera'?**
 - A Dorothea Lange
 - B Rankin
 - C Ansel Adams
 - D Margaret Bourke-White



- 8 **What does Angelbird make?**
 - A Tripods
 - B Studio backdrops
 - C Drones
 - D Memory cards

- 9 **What effective focal length of lens will approximately give you a 45° diagonal angle of view?**
 - A 28mm
 - B 35mm
 - C 50mm
 - D 85mm



- 10 **Which brand is going to start making 35mm film cameras again this year?**
 - A Yashica
 - B Minolta
 - C Rollei
 - D Praktica

How did you do?

10 points You're a photo mastermind!
 8-9 points Fantastic, you're a brainiac
 6-7 points Really good score
 4-5 points Respectable, but no cigar
 2-3 points We'll keep your score secret
 0-1 points Epic fail

ANSWERS 1B,2C,3D,4B,5A,6A,7A,8D,9C,10C.



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Panasonic
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