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THE CANON MAGAZINE

Issue 163 • April 2020



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25 PRO TIPS

HOW TO TAKE GREAT SHOTS

Learn the skills for striking
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SUPER TEST

TELEPHOTO LENSES TEST

The best telephoto zooms
for getting closer to action



// I'm somewhere between a
28mm and 35mm by nature.
It's where I like to stand in the
presence of others //

Susan Meiselas – documentary photographer



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AMAZING ASTROPHOTOS

A long time ago, in a galaxy far, far away... discover how to take starry sky photos that are out of this world!

Page 8

Getty / Inga-Av

OUR GUARANTEE

- We're the only photo magazine in the newsagent that's **100% DEDICATED TO CANON EOS CAMERA USERS** so we're 100% relevant to your needs.
- **WE'RE 100% INDEPENDENT** which means we're free to publish what we feel is best for **EVERY CANON DSLR OR MIRRORLESS PHOTOGRAPHER** from beginners to enthusiasts to full-time professionals.
- We're **CANON ENTHUSIASTS** and, with our contributors, we can offer years of **EXPERT PHOTOGRAPHY EXPERIENCE**. We're always excited to pass on what we've learned.
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- Our Video Disc has **THE VERY BEST DSLR TECHNIQUE & PHOTOSHOP VIDEO GUIDES**, which can also be viewed via our digital editions.
- We're proud to use **THE WORLD'S TOP CANON PHOTOGRAPHERS** and experts. Meet them on page 6.



Peter Travers
Editor

Welcome

This issue we prove to you how easy it can be to capture awesome astrophotos. It may seem complex, but the right Canon kit, key exposure settings, and a good location free of light pollution is all you really need. This issue our Apprentice spends a night out with Canon pro photographer Chris Grimmer shooting starry skies, and even uses a telescope for some stunning shots of galaxies. See page 8.

Canon has also been busy this month launching a camera bag full of new gear: we preview the new Canon EOS 850D beginner DSLR, there's also a new RF 24-105mm budget offering, as well as development announcements for 2020, including a new EOS R5 mirrorless, a new RF 100-500mm telephoto lens, and RF extenders – see page 94. Plus we test the new EOS Ra, the mirrorless camera dedicated to astrophotography, see page 100. In our Super Test we test eight budget zooms, page 104.

There are 25 top tips for better family portraits with Louise Downham, from little newborns to older more active children, get started on page 26.

New photo projects to try this issue include smoky portraits, taking time-lapse movies the easy way, creating toy figure images, and black-and-white wildlife photos; plus tutorials for editing images in Lightroom, Elements and Affinity Photo. All with free video guides – from page 43.

Lastly, if you didn't know already, our Digital Camera World forum as part of our website is well and truly alive and kicking. Come and join in the fun and discussions. It's a great place to ask questions and to read and learn! Go and register today at:

<https://forums.digitalcameraworld.com>

Peter

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**FREE
SOFTWARE
SKYLUM
LUMINAR 3**

Discover how easy it can be to edit and organize your Canon Raw files with Skylum Luminar 3. Find out how to get your free copy on page 62.



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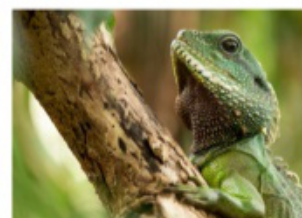
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Meet the team...

PhotoPlus

THE CANON MAGAZINE

Who we are, what we do, and our favourite bits from this issue...



Peter Travers

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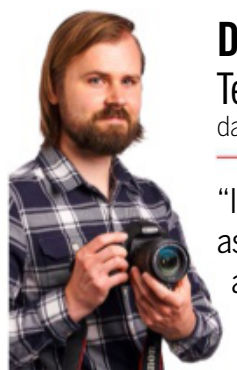
"There's a real art to capturing great family portraits, and this issue Canon photographer Louise Downham shares her top 25 pro secrets to success." **PAGE 26**



James Paterson

Technique writer • 5D Mark IV
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"Smoking may be bad for you, but I tame the billowing pillars of smoke and create a smokey portrait that will impress all your photography friends." **PAGE 44**



Dan Mold

Technique editor • 7D Mk II
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"I ventured to Suffolk to meet pro astro photographer Chris Grimmer and paired him with Apprentice, Colin. Their shots are literally from another galaxy!" **PAGE 08**



Martin Parfitt

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"Heading over no-man's land and MOD firing ranges, David Noton takes his life in his hands as he explores the hidden gem of Mupe Bay on the Jurassic Coast." **PAGE 40**



Ben Andrews

Lab manager • 5D Mark III
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"We get the chance to test Canon's new and exciting EOS Ra – a camera specifically for shooting the night sky! See what we make of it in our big review." **PAGE 100**



Matthew Richards

Technical writer • 6D Mk II
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"I've rediscovered the joys of budget telephoto zooms this month. As well as being great value, the pick of the crop give you powerful reach without the weight." **PAGE 104**

This issue's contributors...



Chris Grimmer

Pro star shooter, Chris, takes our Apprentice under his wing and shows them how to shoot amazing night skies. **PAGE 08**



Louise Downham

They say never work with kids, but pro family photog, Louise shares her tricks on how to get ace family shots. **PAGE 26**



David Noton

David explores some of the lesser known areas of the Jurassic Coast in search of a landscape with that X factor. **PAGE 40**



Susan Meiselas

Magnum alumni Susan shows how she went from strippers to pre-conflict Nicaragua and the in-between. **PAGE 64**



Marcus Hawkins

Our resident Canon nerd Marcus shows you how to use camera features for controlling colour. **PAGE 82**



Brian Worley

Is there anything about Canon gear that Brian doesn't know? Find out in the latest batch of techy Q&As. **PAGE 88**

Our contributors Ben Andrews, Louise Downham, Marcus Hawkins, Chris Grimmer, Gareth Jones, David Noton, James Paterson, Matthew Richards, Susan Meiselas, Brian Worley



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 **WHITE WALL**

APPRENTICE

NAME:

COLIN BRAY

CAMERA:

CANON EOS R



COLIN is an avid nature and wildlife photographer from Norfolk and regularly goes photographing at Pensthorpe, his local nature reserve. He's been shooting for over a decade, picking up a Canon EOS 1000D as his first DSLR and progressing later to a 5D Mark III. However, he's recently made the switch to mirrorless, investing in Canon's EOS R, so we've teamed him up with astro photography pro Chris Grimmer to show him how to get the most out of it, even in pitch-black conditions.

CANON PRO

NAME:

CHRIS GRIMMER

CAMERAS:

70D & 500D

70D converted to shoot full spectrum astro and 500D Infrared converted



IN 2015 Chris was shortlisted for the Insight Astronomy Photographer of the Year and was shortlisted twice for the UK Astrophotographer of the Year! It's safe to say Chris knows a thing or two about creating amazing star-filled shots and he uses a whole host of equipment from converted cameras to tripod heads that rotate to tracks stars and telescopes. We've paired him up with Colin to show him the ropes. www.chrisgrimmerphoto.com



SHOOT WITH A **PRO**

SHOOTING STARS

This month we paired reader Colin with professional Canon astrophotographer Chris Grimmer to take some sensational starry sky shots that are out of this world!



THE APPRENTICE

TECHNIQUE ASSESSMENT

Chris dials in some key settings on Colin's camera to take amazing astro images



BULB MODE

IN MODES like Manual and Aperture or Shutter Priority, the max shutter speed you can shoot at is 30 seconds.

We'll use Bulb mode, which allows you to use a remote shutter release to keep the shutter open for as long as needed – several minutes for astro work. We also pushed Colin's ISO to 1000 on his EOS R and opened the aperture to f/2.8 to let in as much light as possible.



RAW POWER

WE WENT into the settings of Colin's EOS R and set it to shoot CR3 Raw files, as these will contain loads more exposure information than

simple JPEGs, and you need as much data as possible to play with when shooting in poorly lit conditions. We also switched off any image stabilization on his lenses to be safe – these can introduce blur when shooting on a locked off tripod.



TOP GEAR #1

Sky-Watcher Star Adventurer Pro

SHUTTER speeds of around 20 seconds and longer will turn your stars from pin-points of light into longer trails as you begin to record the Earth's rotation. But an equatorial mount like this Sky-Watcher Star Adventurer Pro can be lined up with the North Star to then turn at the same rate as the Earth. This allows you to shoot exposures several minutes long and still achieve those pin-sharp star shots.



PRO TIP

ACHIEVE PRECISE FOCUS



FOCUSING at night is no easy feat, but Chris has developed a clever and simple way to get sharp focus in seconds. He goes into Live View mode and then boosts the ISO as far as it will go to reveal the detail in his shadowy

foreground, which he can then clearly focus on manually. He then just has to remember to lower the ISO again with the focus set to avoid getting excessively noisy images when he actually takes the picture!



SHOOT WITH A PRO

COLINS COMMENT



My current setup is a Canon EOS R mirrorless camera paired with a 24-105mm f/4 IS USM RF lens. *PhotoPlus* were able to get me access to the brand-new EOS Ra, a version of the EOS R that's much more sensitive to light for astro work. I also used an RF 15-35mm F2.8L IS USM lens, which is a much wider angle lens and has a wider maximum aperture – handy for sucking in all of the available light at night. For our first setup we set up on Chris's equatorial tracker to get pin-sharp stars with a long shutter speed of around 90 seconds. We illuminated the abbey with the red light from my head torch to make it stand out that little bit more.

HOT SHOT #1

Lens	Canon RF 24-105mm F4, L IS USM
Exposure	91 secs, f/4, ISO800



EXPERT INSIGHT CONVERTED CAMERAS

CHRIS uses a Canon EOS 70D which he's modded to make sensitive to full spectrum light images and also a Canon EOS 500D – converted to Infrared. Both capture more than the naked eye can see, making for astounding astro images. Both are APS-C DSLRs, so he benefits from the 1.6x crop factor, making lenses feel more zoomed in. Meaning it's easier to get frame-filling shots of galaxies.



THE APPRENTICE

CHRIS TOP 10 TIPS FOR OUT OF THIS WORLD SHOTS

- 1 Check the weather**
Use an app or website to check the weather in the area you're planning to shoot in. Making sure it's going to be a clear, cloud-free night.
- 2 Use a dark sky map**
There are certain 'dark sky' spots all over the UK with low levels of light pollution, so check these out and plan your shoot here for the best astro images.
- 3 Shoot on a new moon**
A new moon is the opposite of a full moon, and in this phase reflects little to no sunlight – ideal for astro shots, as it will reduce light pollution and make your starry skies much more visible.
- 4 Stock up on spare batteries**
Cold weather at night is sure to drain your camera batteries quicker than normal, so be sure to charge your batteries and take plenty of spares.
- 5 Wrap up warm**
Wearing warm clothes, thermals, gloves, thick socks and a well-padded winter coat will help fend off the cold at night and keep you going longer.
- 6 Convert your kit**
If you want to take your astrophotography to the next level, it's worth converting one of your old cameras to full-spectrum, or infrared, to get even better star shots. Chris converted his cameras himself to keep costs down. You can try too, if you're feeling brave!
- 7 Get a head torch**
A head torch is an essential gadget for low-light photography as it'll make it easier to see the controls of your camera and frees up your hands from holding a torch. Be sure to get one with a red light so it doesn't interrupt your night vision.
- 8 Combat condensation**
You can get electronically powered bands that wrap around your lens or telescope to warm them up and stop condensation forming on the glass of the lens on cold nights. This will give you crystal clear shots.
- 9 Look after your lenses**
When you bring your kit bag in from a cold night into your warm home this will cause condensation to form, which could lead to fungus growing inside your optics! Leave your kit bag in the coldest room of the house and let it come up to temperature gradually to avoid any unnecessary fungus.
- 10 Go with a friend**
Shooting at night isn't without its dangers so buddy up with a friend, or another keen photographer, when you go out to stay safe and also help each other with capturing the best possible astrophotographs.

HOT SHOT #2



Lens	Samyang 14mm f/2.8
Exposure	30 secs, f/2.8, ISO1250 (87 images stacked)

TOP GEAR #2 Samyang 14mm f/2.8

THIS IS a prime wide-angle lens from Samyang that provides crisp and sharp images. It's manual focus only, but that's not a problem as I only use manual focus at night to get the stars nice and sharp. I generally use this lens on my Canon EOS DSLR bodies that have an APS-C sensor, giving the lens an equivalent focal length of around 22mm due to the 1.6x crop factor.



PRO TIP

SHUTTER RELEASE CABLE

TO GET a shutter speed longer than 30 seconds you usually have to use Bulb mode, which allows you to hold the shutter down for as long as you need, releasing the shutter to end it. But holding the camera shutter down would surely introduce camera shake? Use a shutter release cable, which you can use to fire the shutter and lock it in place remotely for the desired amount of time without nudging the camera.



SHOOT WITH A **PRO**

CHRIS'S COMMENT



I set up my Canon EOS 70D to shoot a stream of 30 sec exposures and left it running so

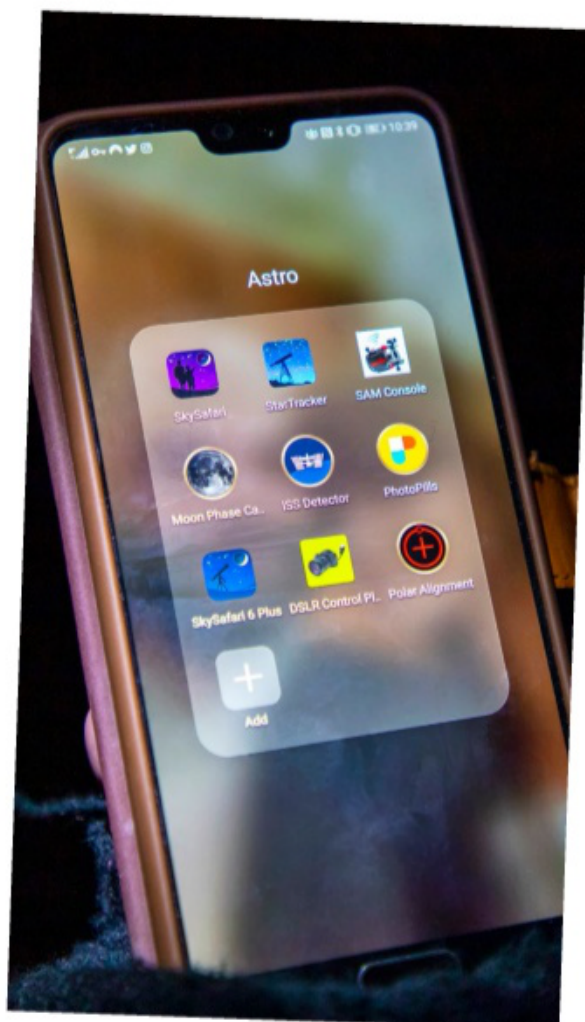
Colin and I could go and shoot some other astro images with his camera. When we came back to my camera later to stop it, it'd taken 87 images and been running for about 44 minutes. You'll want to capture at least half an hour to get a good star trail effect, but the longer you leave it the better. I process and convert my Raw files to JPEGs, then use the free Startrails software to merge all the images together to turn the stars into trails. It's worth carrying plenty of spare fully charged batteries for your Canon – multiple long exposures on cold nights will drain them surprisingly quickly.



EXPERT INSIGHT

ASTRO APPS

CHRIS USES a whole host of apps on his phone to help him take astro images, in fact he's created a folder on his phone to keep them all organized. His favourite two apps currently are Stellarium Mobile Sky Map (£2.99 iOS / £2.59 Android), which is useful for locating the Milky Way in the sky. He also uses PhotoPills (£9.99 iOS / £9.99 Android), which has loads of handy features for shooting at night – including a Star Trails and Spot Stars mode as well as Night Augmented Reality, Time Lapse and Meteor Showers modes.



PRO TIP



DIM THE LIGHTS

A BRIGHT screen will impede your night vision and drain your batteries faster, especially if you're using a mirrorless camera, like Colin's EOS R or the Ra. Luckily, you can go into the settings menu of your Canon camera where you'll find the Display Brightness option. You can then dial in a much lower setting to stop the screen from being so bright and make your battery last longer.

THE APPRENTICE

CHRIS'S COMMENT



Orion the hunter is one of the best-known constellations, most famous for the three bright stars in a row that make up Orion's belt. For astrophotographer's it's a beautiful area of night sky, including the Horsehead Nebula, Flame Nebula and fainter Barnard's Loop. But the Orion Nebula was the best choice here, as it's large and bright, so it's easy to shoot with a camera and a long zoom at 600mm. We used the brand-new Canon EOS Ra for this shot as it's more sensitive to the nebula's gases, and on my equatorial mount we were able to take exposures 90 secs long.



TOP GEAR #3

William Optic ZenithStar ZS61 telescope

CHRIS USES

this telescope with a T-mount adapter, so he can fit one of his Canon bodies onto the eyepiece end of the



scope to take photos. It has a 35mm equivalent focal of 360mm and a fixed aperture of f/5.9 and is only manual focus only. Compared to many telephotos it's lighter, weighing 1.45kg, which is ideal as there is a maximum weight limit to the equatorial tripod heads. This is what Chris uses to take shots of distant stars, galaxies and nebulae.

HOT SHOT #3

Lens	Sigma 150-600mm f/5-6.3 DG OS HSM
Exposure	90 secs, f/6.3, ISO1600 (15 pictures stacked)

CHRIS'S TOP THREE ASTRO IMAGES

Chris heads to infinity and beyond with these choice picks from his portfolio



ELEPHANT TRUNK NEBULA

THE Elephant Trunk Nebula is a part of a large Nebula region in the Constellation of Cepheus. I used two bandwidth filters to capture light solely from hydrogen and oxygen and had an exposure time of around four hours.



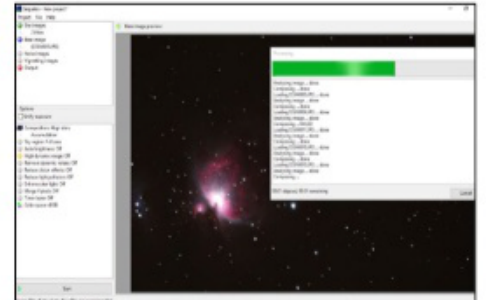
HALF MOON

THE 50% illuminated moon, an object we all think we are familiar with and have spent our entire lives watching in the night sky. But the familiar object hides craters, valleys and mountain ranges revealed here by my telescope.



ROSETTE NEBULA

THIS is a six hour exposure of the Rosette Nebula. It's a large Emissions Nebula in the winter Constellation of Monoceros, which surrounds a central cluster of hot stars. These push the gas away leaving heavy dust behind.

EXPERT INSIGHT**SEQUATOR FREE SOFTWARE**

CHRIS USED Sequator software to stack the best 15 Raw files he shot of the Orion Nebula. Layering up several images helps build up deep tones and rich colours. The program also allows you to add a blank frame to reduce noise, and images to reduce vignetting, as well as a whole host of other features. If you fancy giving it a go yourself it's worth installing Sequator – it's free to download and use. Go to our quick link for more info <http://bit.ly/sequator>

PRO TIP**FINDING THE NORTH STAR**

FOR THE equatorial mount to work it has to be calibrated by lining it up with the North Star – Polaris. The mount will then rotate at the rate and orientation of the Earth, allowing pin-sharp star shots with longer shutter speeds, which will make them brighter and less noisy than pushing up the ISO. Chris uses a makeshift red dot sight and places it along the barrel of his telescope and adjusts the setup by eye until it's spot-on, though he said even if it's a bit out it shouldn't matter much.

**TOP GEAR #4**

Canon EOS Ra

THE EOS Ra is a new mirrorless version of the 30Mp EOS R, but with a modded Infrared filter, making it four times more sensitive to Hydrogen Alpha (HA) light – for capturing the reddish tint of nebula. It also has a 30x Live View magnification to make it easy to focus on the stars with the LCD screen and can essentially let you see in pitch black conditions (full test of the Ra on page 100).

THE APPRENTICE

COLIN'S COMMENT



For this shot, we set up my Canon EOS R on Chris' equatorial mount again to track the stars for a minute and a half to make sure they were nicely exposed. I then took a second shorter exposure to get a sharp foreground and illuminated the abbey with my torch to make sure this stood out and combined the two images in Photoshop to create the final result. It was a real privilege to be this month's *PhotoPlus* Apprentice and I loved every minute of it. As someone who predominantly photographs wildlife this was a real eye opener and has taught me much more about my Canon kit – I didn't even know it was capable of some bits! I'll definitely be giving this a go again on the next clear night!

CHRIS'S VERDICT



Astrophotography is usually done sporadically, as you have to wait for the perfect conditions to get the best shots. This photoshoot was no different and when I rang Colin to see if he was available to meet up that very night, he was totally up for it and even got there before me! We worked on the Hot Shots together and he was eager to try out some of his own compositions too. As a wildlife photographer with a Canon EOS R and 150-600mm telephoto lens, Chris already has the basic equipment he needs to get into astrophotography. If he catches the astro bug it would be well worth him adding an equatorial mount to his gear wish list, as this will make it ever more likely for him to get the best possible astro photographs.

EXPERT INSIGHT

PAINT WITH LIGHT

WHILE THE shutter is rolling you can shine a bright torch, or fire a flash, at your foreground to illuminate it like we have here on the abbey and it will really help it to pop out of the landscape. Just be sure to check your exposure when you're done to make sure you've illuminated all of the structure and lit evenly too. If it's quite a large structure you can light up different parts in multiple exposures and merge them together in Photoshop.



BE OUR NEXT APPRENTICE

Do you need some help to take your Canon photography to the next level? Let us know what you'd like help with and we could pair you up with a top pro for the day! Send an email to photoplus@futurenet.com with 'PhotoPlus Apprentice' in the subject line, and include your telephone number and address.

SHOOT WITH A **PRO**

SHOT OF THE DAY!



Lens	Canon RF 24-105mm F4L IS USM
Exposure	91 secs, f/4, ISO800

INSPIRATIONS

STUNNING IMAGERY FROM THE WORLD OF CANON PHOTOGRAPHY





01 DUSSEHRA KALI ON AIR BY VASANTH S
This contest-winning capture from the Dussehra Hindu festival is immersive with its striking central composition and use of a wide-angle lens – you feel like you’ve been transported to India. Impressively, Vasanth was able to freeze the moment the figure jumped up, making them appear to levitate. He’s also retained detail in the sky that could have easily been blown out.

Lens	Samyang 14mm f/2.8 ED AS IF UMC
Exposure	1/1600 sec, f/8, ISO400

INSPIRATIONS



02



Photocrowd

This month's Inspirations features our 'celebration of culture' Photocrowd competition. Our favourite image wins a Manfrotto Pro Light RedBee-310 backpack (worth £160), and a selection from our top 10 choices get published. The theme for the next competition is 'minimalism', enter and vote at www.photocrowd.com

02 MUNDARI CATTLE CAMP BY JOE BUERGI
Joe tells us: "I took this image on a 2019 trip to South Sudan. We mainly went for the Mundari Tribe. The Mundari are cattle herders who live along the White Nile. This image was taken on a photo stroll in the Mundari cattle camp right before sunset. The conditions were demanding because of the burning cattle dung and dust from the cows."

Lens Canon EF 70-200mm f/2.8 L USM

Exposure 1/2000 sec, f/2.8, ISO200

03 MARIACHI CATRIN BY CHIMBALA
Chimbala took this portrait at a Day of the Dead festival in Mexico City. His model looks the part, wearing decorative Catrin makeup, an embellished jacket and a sombrero. His creative decision to desaturate the image in post works well.

Lens Canon EF 85mm f/1.8 USM

Exposure 1/160 sec, f/1.8, ISO640

04 VENICE BY MARCO TAGLIARINO
The 2019 Venice Carnival has proved popular – this is the third shot from the event that made it into our top 10! We love Marco's shot for his composition and eye-contact, and there's a top wash of pink colour that draws the viewer's eye in to. By positioning the model's white face mask in the top right and posed white glove in the bottom left that helps balance the frame.

Lens Canon EF 70-200mm f/2.8L IS II USM

Exposure 1/1250 sec, f/2.8, ISO200



03



INSPIRATIONS

05

GEISHA BY DOMINIC BEAVEN

Dominic explains: "This was a genuine Geisha who travelled all the way from Aizu, Japan to perform some traditional dance routines. For me this was one of those occasions and was such an honour to be one of the few chosen". We love the Geisha's pose in this shot and the tones of her blue robe and red umbrella give this photo a great kick of colour.

Lens Sigma 85mm F1.4 DG HSM Art

Exposure 1/125 sec, f/5.6, ISO100

05



FANTASTIC CANON PHOTOGRAPHY



06 CARNIVAL TIME BY MELINDA NAGY
Melinda has captured a magical moment from the carnival in Cluj-Napoca, Romania. She's done well to frame up with the two waving people on the left with a wonderful stream of confetti spiralling towards them from the right. My only criticism is that the focus has locked onto the Church in the background, rather than the two people.

Lens Canon EF-S 18-55mm f/3.5-5.6 IS II

Exposure 1/200 sec, f/7.1, ISO200

07 GOLDEN HOUR TRIO BY ALLAN MOIR
Allan tells us: "I was at the 2019 Venice Carnival and I wanted to get away from the main crowds, so asked these three people in fancy dress to come over to the canal for a more staged shot and got lucky with the golden light as the sun set."

Lens Canon EF 24-70mm f/2.8L II USM

Exposure 1/640 sec, f/5.6, ISO800

08 THE NOVICE MONKS OF BURMA BY UKU SÖÖT
We love the simplicity in the composition of Uku's shot, which he's posed and carefully taken the time to setup with two young monks in each window. Usually, it's best to frame your shot with the rule of thirds, but Uku's symmetrical composition works very strongly here and is all the better for it.

Lens Canon EF 24-105mm f/4L IS USM

Exposure 1/60 sec, f/10, ISO100



Photocrowd

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INSPIRATIONS



09



Photocrowd

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09

GIRL WITH MASK BY STEFAN NIELSEN

At the 2019 Venice Carnival Stefan set up this posed portrait. He's focused on the eyes to make sure they're the obvious focal point, which works wonderfully. The positioning of the woman's face and the mask really helps to balance the frame and brings a sense of mystery to the shot too.

Lens Canon EF 70-200mm f/4L IS USM

Exposure 1/800 sec, f/4, ISO100

10

SURMA CHILD - SOUTH ETHIOPIA BY DANIELE BONAGLIA

Daniele tells us: "I took this pictures at a Surma ceremonial duelling contest in the West Omo zone in Ethiopia, where young children fight with sticks in a right of passage called saginé. The children are sometimes painted with white or coloured clay paint, sometimes dotted on the face and body, and I wanted to get some portraits of these children as well as the stick fighting too."

Lens Canon EF 28-80mm f/3.5-5.6 USM

Exposure 1/640 sec, f/5.6, ISO500



10

ROAD TESTED



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How to take
**AMAZING
FAMILY
PORTRAITS**

Canon pro portrait photographer Louise Downham shares her expert tips on how to take great photographs of babies, children and families

Whether you're photographing a tiny newborn, a toddler or an older child, our essential tips will help you take your family photographs to the next level. Discover which lenses to reach for in particular portrait scenarios; which Canon camera

settings to use; how to get the most out of little ones; and how to take the most flattering and memorable family photographs they'll be proud to display.

Learn everything you need, and more, to confidently take beautiful images of families – photographs that will be cherished for years to come.



25
PRO TIPS
FOR FAMILY
PICTURES!



Louise Downham

Canon EOS 5D Mk IV



Louise, 37, has been a Canon user since she was 10. She's based in London, and has been a full-time family photographer for eight years. Her portfolio is enormous (there are 4000 photographs on her website alone, a selection of the 30,000 photographs she has shared with her clients). Louise specializes in natural, emotive photographs of children and families. Previously manager of a photography gallery, Louise finally became a full-time photographer herself and has never looked back. Her first camera was a Canon EOS V, but now uses a Canon EOS 5D Mk IV.

www.louiserosephotography.com

01 Camera settings for close-up portraits

For close-up baby portraits, use Spot metering with the focus on the baby's eyes as you'll want the eyes to be perfectly exposed. I find it best to use a single AF point. Utilize a wide aperture and prime lenses to create lush background blur – I tend to use f/2 for my close-ups. You may find it helpful to shoot in Aperture Priority mode while you become familiar with apertures, shutter speeds and ISO – use Manual mode when you're comfortable with the variables.

LENS PICK
100mm Macro f/2.8



Improve your newborn photography

Simple solutions for lovely newborn images

02 Position the nose away from the camera

A common mistake some people make is photographing newborn's faces looking up their nostrils. You wouldn't do this for an adult, so don't do it to newborns! A much more attractive angle is to place the baby with their eyes near the camera, but their nose angled away. The focus of a portrait should generally be the eye closest to the camera, and this is especially true when it comes to shooting close-up baby portraits.

Don't aim up the nostrils – it's just not flattering for any type of portraits





03

Capture their tiny details

Tiny feet, little fingers and delicate eyelashes all change fast – photographing these bring back special memories of the newborn phase. The Canon EF 100mm f/2.8L IS USM Macro lens is expensive, but perfect for just such an occasion. A cheaper alternative is to use an extension tube, which you can attach to a 50mm lens to take close-up details of newborns. Use an aperture of at least f/4, so enough of the details are in focus – it can look odd if only a portion of a close-up detail is sharp.



Get up close and photograph those tiny, intricate details for more intimate images

04

If available, use the silent shutter option

Top-end Canon cameras (such as the EOS 5D series) include a silent shutter option, which minimizes the sound made when you completely press the shutter. This is invaluable for newborn photographs as they can be easily startled. Use the silent shutter single option – there's no need for continuous mode as babies hardly move when sleeping. To apply this setting, press the AF Drive button, and then turn the dial on the back of the camera to find the rectangle icon with an S beside it. You may need to first enable this setting in the main camera menu.

The Canon Magazine



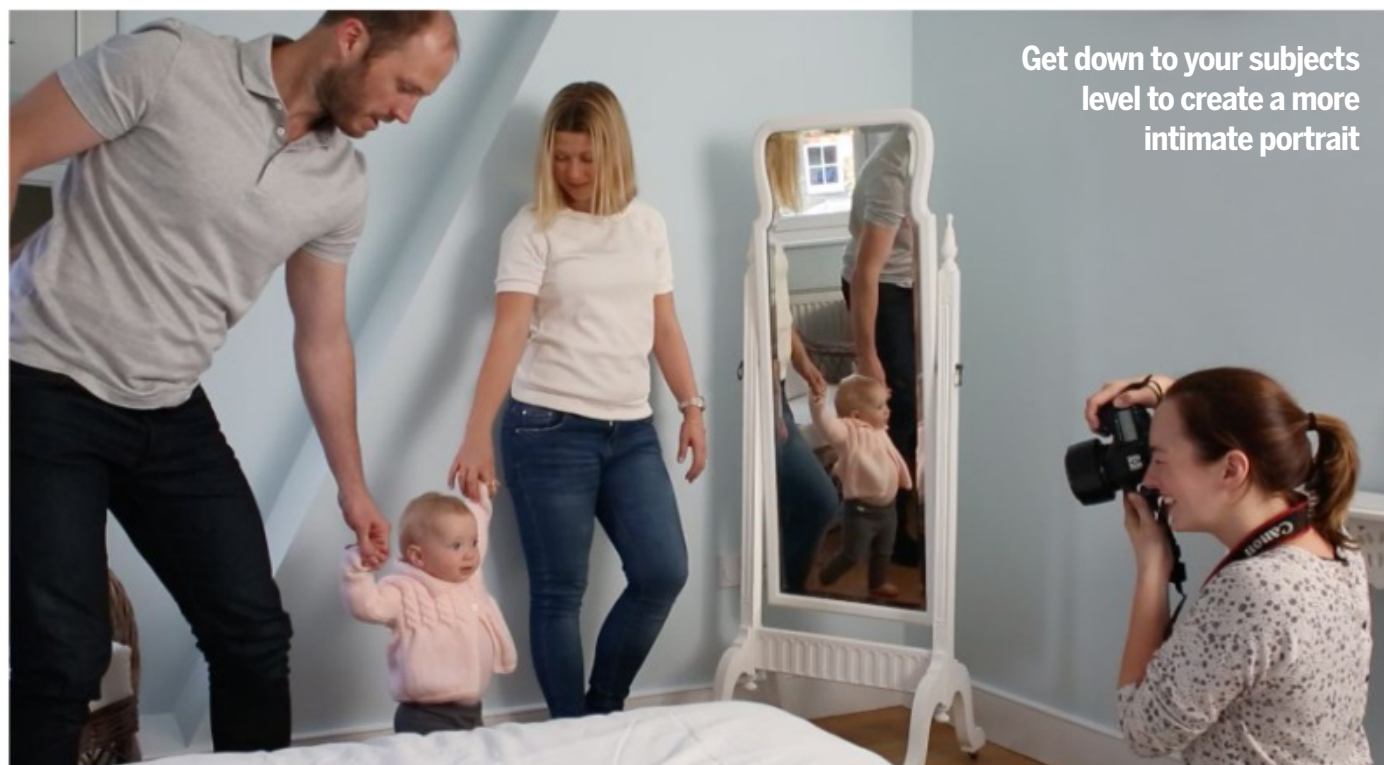
05

Vary the backgrounds

Using quilts is a great way of introducing variety. Ask parents if they have fabrics with sentimental value to them – blankets knitted by grandparents can be a great option. Remember, contrast is good – use plain as well as patterned fabrics, and choose clothing for the baby that compliments the fabrics.



FAMILY PORTRAIT TIPS



Dos and don'ts for baby photography

Follow these golden guidelines for beautiful baby photos

LENS PICK 50mm f/1.2



06

Do: get down to the baby's eye level

Getting to your subject's eye level almost always creates more intimate and expressive photographs than shooting from a standing position. This can be a challenge with babies that aren't being held. Lying them on a bed is a great way to have them at a lower level, whilst still being able to move around them easily. You'll need to be on your knees for this – if you have knee problems, try using a pad or cushion for support.



Take the time to entertain your subject, you will be rewarded with more engaging expressions



07

Do: keep making eye contact, and smiling

Babies are reassured by smiling faces – keep popping out from behind the camera so the baby can see you smiling. Do also put the camera down and make eye contact every now and again, this will help to keep the baby engaged throughout the shoot. People who aren't familiar with babies sometimes think they all look the same and just gaze around the room – but their personalities start coming through at a very early age, and if you make the effort to entertain them, they will respond and this can make for some great photographs.



08 **Don't: blow the highlights**

With close-up portraits, keep an eye on the exposure reading inside the camera, but also keep checking the recorded image on the playback screen. It can be all too easy to over-expose the highlights if you're incorporating lots of skin and pale bedding. Rather than risk blowing the highlights, I tend to slightly underexpose these shots, and increase the exposure in Lightroom. You may also find it helpful to enable the highlights alert option in the main camera menu, so over-exposed areas will flash as you preview the image through the viewfinder.

09 **Don't: choose a difficult age**

Although babies develop at their own pace, there are distinct phases that can make photographing them easier and conversely harder. The ages that I find work especially well correlate with baby milestones: three months (able to hold their head up whilst lying on their front), six months (sitting), nine months (standing) and 12 months (first steps). I advise parents to wait if their baby is four or five months – they're often busy with teething and not at their jolliest. Separation anxiety can also be a problem at seven or eight months old.



10 **Don't: photograph babies late in the day**

Babies tend to be at their best in the mornings, and become grizzly through the day, until the infamous witching hour in early evening! Wait until about 10am to give the sunlight time to brighten up. Look for window light as this'll create soft lighting that's ideal for portraits.



Tips to photograph little toddlers

Make sure that you capture tots at their best

LENS PICK 85mm f/1.8



11

Choose a fast shutter speed

Toddlers move fast! To minimize motion blur, I tend to use a shutter speed of 1/250 sec for most situations. If they're running, I'll increase it to 1/500 sec. If they're on a swing, or a parent throws them up in the air, or spins them around, I'll ramp up the shutter speed to 1/1000 sec to freeze the motion. Bear in mind that the longer focal length (eg 135mm lens rather than a 50mm lens) you're using, the faster shutter speed will be required for sharp shots.

Remember to increase your shutter speed according to the action in your frame



12

Make funny faces or silly sounds

Do whatever it takes to make them laugh! Leave self-consciousness at the door – you may have to ham it up to get toddlers giggling. Funny faces and silly sounds work wonders. Shy toddlers can be won around with a smile and compliment. If they're unsure, show them the camera so they can see what you're doing.



13**Be sensitive with lighting options**

Toddlers can be naturally cautious of new situations and environments – using flash can put off little ones. If the lighting is low and you'd like to boost it, try using a reflector to bounce light back onto the toddler's face. Have a parent hold it so the child feels safe and secure, and show the parent the angle you'd like it held at to brighten up the child's face. Using a white or silver reflector generally works best for children, as a gold surface can create a much warmer effect. I tend to encourage children to play near a window where the light is naturally good.

14**Use AI Servo AF**

You may want to use AI Servo AF for moving toddlers, which is an option specific to Canon EOS cameras. This mode tracks subjects, and is helpful for focusing on moving toddlers. While half-pressing (or fully press) the shutter release, keeping the toddler in the camera's selected focus point, AI Servo AF mode will continue to track and adjust the focus to keep your subject sharp.

**15****Indoor group photographs**

You'll need to balance a narrower aperture (so that the whole family is in focus) with an ISO that's not too high. I use an aperture of f/5.6 on a 50mm lens. Utilize available light by putting families near windows to maximize natural light. With new Canons, you can use high ISOs without introducing much noise – an ISO of 1600 on the 5D Mark II is fine; or an ISO of 3200 with the 5D Mark III or Mark IV. If in a pinch, step back to use the light bounced from white walls – leaving more space around the family means more light in the shot.



LENS PICK 35mm prime



16

Suggest some favourite activities

Children relax quickly when you show interest in their favourite games and activities. As they become absorbed in their activities, great photo opportunities can emerge. Using a wide-angle lens means you can include some environmental details, for example parts of their bedroom or the garden, which help with storytelling in your photographs. Also look for what makes their home unique, and incorporate those elements into your shots for creative results.



Engaging children for better portraits

Entertaining kids will make for more powerful images

17

Slower shutter for creative results

Panning as kids whiz past will freeze their faces and blur their movements and the background. To do this, use AI Servo AF mode to track focus on your subject. Select a slow shutter speed (between 1/30 sec and 1/250 sec), and try using Shutter Priority, so the camera calculates the aperture and ISO. Half-press the shutter to focus on the child as you pan and they enter the frame, and then fully press the shutter when they're in front of you.

Motion blur can add a great sense of dynamism to your people pictures



18**Play with the rule of thirds**

A classic composition rule is to divide a scene into thirds, and then place your subject along one of those imaginary lines. This can make for more creative and visually pleasing results. Try looking for backgrounds that will be interesting in thirds and then wait for the perfect moment to photograph when the child passes that point. Try and work with older children – you may be able to tell them where you'd like them to jump (or in this case, to land). Point out a specific marking on the ground to help them judge where to jump. It's all about experimenting and having fun, but remember to always communicate with your subjects for the best results.

Classic composition techniques are, more often than not, classic for a reason

**19****Head outdoors**

Older children can get bored if they're constantly being cooped up at home for a shoot. A trip to the park can really re-energize them and add some variety to your shots, so getting out is a win-win situation. Look for areas that offer up some gentle shade for flattering

lighting, and bright foliage to add some vibrancy to your photographs. Try to avoid top light when outside however, as it can be very unflattering for faces and will create some rather harsh shadows, potentially resulting in some squinting – this is where overcast cloudy days can work better for portraits than bright sunshine overhead!



Taking your energetic subjects outside can help inject some more variety and fun into your photo shoots with older children. Don't be afraid to let children have fun as you snap continuously away

**20****Experiment with flash**

You may like to experiment with using flash for older children. If a child is in their bedroom playing computer games, for example, the lighting may be low and difficult to work with. Using a flash here could be a great option, especially if your camera doesn't allow high ISOs. Use a diffuser or softbox over the flashgun to soften the lighting for a more flattering effect.

21

Photographing mums

Many mothers might be disappointed about having lots of photographs of their children, but very few with themselves in the frame. This is your opportunity to put that right! Invite mums throughout the session to get involved and join in on the children's games and activities. Be sure to use flattering angles – photograph women from above, and never from below their chin looking up.

Capturing natural emotions & expressions

Avoid overly posed subjects for more natural portraits

22

Photographing dads

Dads can be reluctant to stand in front of the camera and pose. Encourage them to play with their children to help them relax – and take some natural shots as they interact with their kids. Train

sets, reading a story and doing an 'aeroplane' (throwing children up in the air) work well. Be alert to any potential physical sensitivities, and minimize shots that show much of a balding spot or a bulging waistline – men can be just as sensitive as women to how they look in photos.



23

Shoot past the moment

Once you've got the shot you were aiming for, continue photographing the scene for a minute or two – the family have all smiled at the camera, for example, but what else might they do now? Having got

the safe shot, now see if you can capture something unexpected to push your creativity and give you more opportunities. Giving children some quiet moments to explore and do their own thing can lead to more intimate photographs that will really bring back memories for years to come.

Quiet moments can help children, and parents, open up a bit

LENS PICK

70-200mm f/2.8

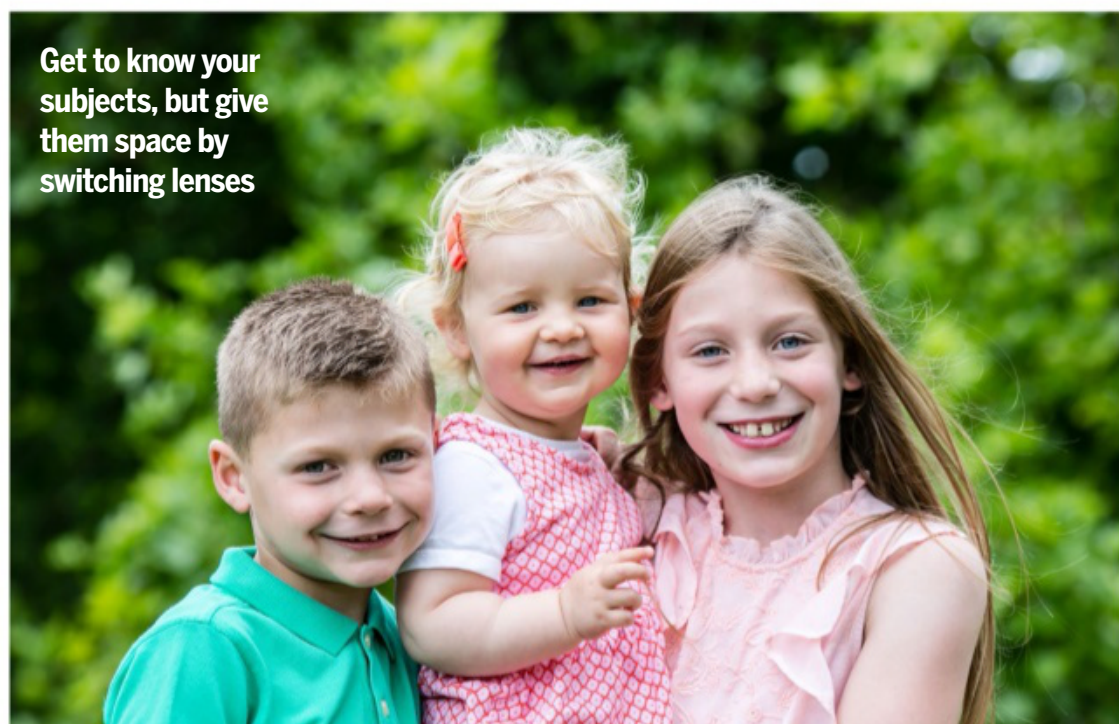


24

Group shots from a distance

Giving a family space can help them to relax and be themselves. A long lens (like a 70-200mm) will help you to get far back, but still have the family fill the frame. Once you've loosened the family up with some shots taken from a distance, switch to a shorter lens (such as a 50mm) and come in closer for variety. Use Evaluative metering for group shots.

Get to know your subjects, but give them space by switching lenses



25

Get to know other children

Spending time with kids of all ages will let you understand little ones, help predict what they might do next and how best to work with them. Being tuned in to what kids are into will give you an invaluable bag of tricks – being able to sing the theme tune to the TV show of the moment, for example, will win you many hearts! 

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Mupe Bay

Mupe Bay, Jurassic Coast, Dorset, England. 14:42pm. 3 January 2020.

David heads off the beaten tracks and shows that it's not what, or where, you shoot, it's how you shoot it that really matters

Mupe Bay is a magnificent and secluded part of Dorset's Jurassic Coast, made extra special by the fact it's only accessible on foot when the Lulworth Range Walks are open. The firing ranges which surround Mupe Bay are home to the British Army's Armoured Fighting Vehicle Gunnery School, all of which lie within an official Area of Outstanding Natural Beauty. That may seem incongruous, but actually the Ministry of Defence has proved a highly effective protector of this Site of Special Scientific Interest since 1940. While a few burnt out tanks co-exist with grazing sheep and spent ordnance pockmarks the landscape, the coast itself is scenic and untouched.

Although only two miles from the tourist hotspot of Lulworth Cove, Mupe Bay seems a world away. The reward for the hike is a spectacular view encompassing steep, sheer cliff faces and a bay curving gently round Warbarrow Bay and the Purbeck coastline stretching all the way to St Aldhelm's Head. It's a scene I have photographed many times, but I'd never really captured a picture which I truly thought did the location justice. At times I've had gorgeous light, sometimes moody skies, and occasionally churning seas, but never the three together. And so my mission was clear.

It's early afternoon as I stumble over the shingle of Lulworth Cove. There's 90 minutes to go until sunset, but the winter sun is low in the sky to the south west. This is the best time of the day, and year, to be shooting this scene, so I'm rushing, as usual.

I frame up my composition. This time the shapely and near perfectly circular sweep of the bay below is the main feature attracting me. Its curve leads the eye to the headland and triangular rock in the middle distance, then the cliffs beyond. What's more, waves are radiating out in the cove below, before breaking on the beach in a way which remind me of a physics lesson on diffraction. There's also an attractive cloud-draped sky above, and I can just about include the first-quarter moon in the top right-hand corner of the frame.

The sun is still obstinately hiding behind cloud. The cliffs in the distance are illuminated, but the cove below is in shade. I shoot anyway; more to assess my filtration and the degree of wave motion I'm capturing then in hope of nailing the definitive shot.

The sun appears and I shoot. The clarity of the winter sun side-lighting the scene is wonderful; I'll not need the de-hazer when I come to process this shoot later, but immediately one unforeseen problem becomes apparent; the line of the shadow of the cliffs, to my right, cuts across the cove below and disrupts the graceful compositional lines. No amount of post-production trickery will be able to hide that line.

As appealing as the setting and light is, this shoot is not working, at least not anymore – there's no getting around it unfortunately. But did it work earlier, before the shadow was a problem? I scroll back through what I've shot and come to the very first test capture. Maybe... I'm visualizing it now in black and white, all detail and texture. Why? I can't tell you, it's just a gut feeling.

It's rare that the first frames of an afternoon/evening shoot are the best. I tend to work on the basis that the lower the light the better, but this shoot proves that's not always the case.

With the cove below now in complete shadow, I pack up and plod over the ridge back to Lulworth. Below the headlands which form the entrance to Lulworth Cove are like jaws, and the sun is setting over Portland. A rainbow appears over Worbarrow Bay. Winter days with muddy boots on the Jurassic Coast; you can't beat them. 



DAVID NOTON

Pro travel & landscape photographer

DAVID IS AN AWARD-WINNING Canon photographer with more than 30 years' professional experience. During his career David has travelled to just about every corner of the globe. In 2012, Canon invited David into its Ambassador Program by designating him an Official Canon Explorer. Info and photos at www.davidnoton.com

**NEXT MONTH
MEXICO**

// I tend to work on the basis
that the lower the light the better,
but this shoot proves that's not
always the case //



David shows that sometimes a
shot is all about the texture and
feel it invokes in viewers

Lens	Canon EF 16-35mm f/2.8L III USM
Exposure	5 secs, f/11, ISO100

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New projects with video guides

Follow our Canon camera walkthrough guides and Photoshop editing videos

Welcome...

2020 IS the year to try out new techniques and if you've never tried your hand at shooting videos or movies before, then a time-lapse is a great way to start because Canon cameras make it so easy to do! See Peter's project on page 48. Maybe you'd like to try your hand at portraits or wildlife? Well we have two great techniques on pages 44 where you'll merge a portrait with smoke to make abstract art, or shoot and convert a wildlife shot to black and white to give it a high-end studio feel on page 50. If you get stuck indoors, why not try our still life project, page 54, where you can get cinematic results using a toy figurine, smoke and a little editing. Sharpen up your skills back at the computer with our editing techniques this month covering the new features in Elements 2020, how to sharpen your shots correctly in Lightroom Classic CC as well as how to tweak colours in Serif's ever popular Affinity Photo.



44 Abstract portraits
Create an abstract portrait by adding smoke in Photoshop CC



58 Get sharper shots
Sharpen your shots the right way in Lightroom Classic CC



48 Shoot a time-lapse
Set up your Canon camera to speed up time in a time-lapse movie



50 Black & white wildlife
Give your animal images the studio-look with a mono treatment



60 Perfect your colours
Use the Photo Persona in Affinity to correct colour casts



54 Create a toy story
Craft your own miniature filmset with a toy action figure



56 New in Elements 2020
Discover the new features of Photoshop Elements 2020

VIEW THE VIDEOS

WHENEVER you see this icon you'll find an accompanying video on our Video Disc. You'll also find these videos online – so you can view them on a tablet or computer without an optical drive. See the links on the project page.





THE MISSION

Construct a wispy smoke-filled portrait

Time needed
Two hours

Skill level
Intermediate

Kit needed

- Speedlite
- Incense stick
- Tripod
- Black backdrop
- Photoshop

DOWNLOAD PROJECT FILES
TO YOUR COMPUTER FROM:
[http://downloads.
photoplusmag.com/pp163.zip](http://downloads.photoplusmag.com/pp163.zip)

Up in smoke

James Paterson creates a striking smoky portrait effect with simple camera skills, lighting tricks, and Photoshop brushes

There are three parts to this fun smoky portrait project. The first two stages involve shooting the smoke and portrait. Capturing the first shot is easy, we just need to photograph a person side-on in profile against a clean, light backdrop. You may even already have an image that would be perfect (if you just want to test out your Photoshop skills, you can use the portrait we've supplied).

As for the smoke images, if you like you can skip this stage and use the smoke brushes we've supplied with project files – see download link below left. But it's more satisfying to make your own. All you need is a Speedlite and an incense stick or vape. Within a few minutes, you can capture a range of unique smoke images to use in your project.

Stage three is where we bring everything together in Photoshop. It might seem like a complicated

effect, but the good news is that, as long as we've done the first two stages right, then stage three is simpler than you might think. All we have to do is fill our portrait with the smoke. To do this we can make use of Photoshop's Brush command, which allows us to define our own using any image we like. As such we can turn our smoke images into brush tips for use, not just in this project, but also for any other smoky effects you might like to try. 

PROJECT 1

ON LOCATION PHOTOGRAPH SMOKE SHAPES

Set up an incense stick and a flash for alluring images of climbing smoke

01 INCENSE STICK

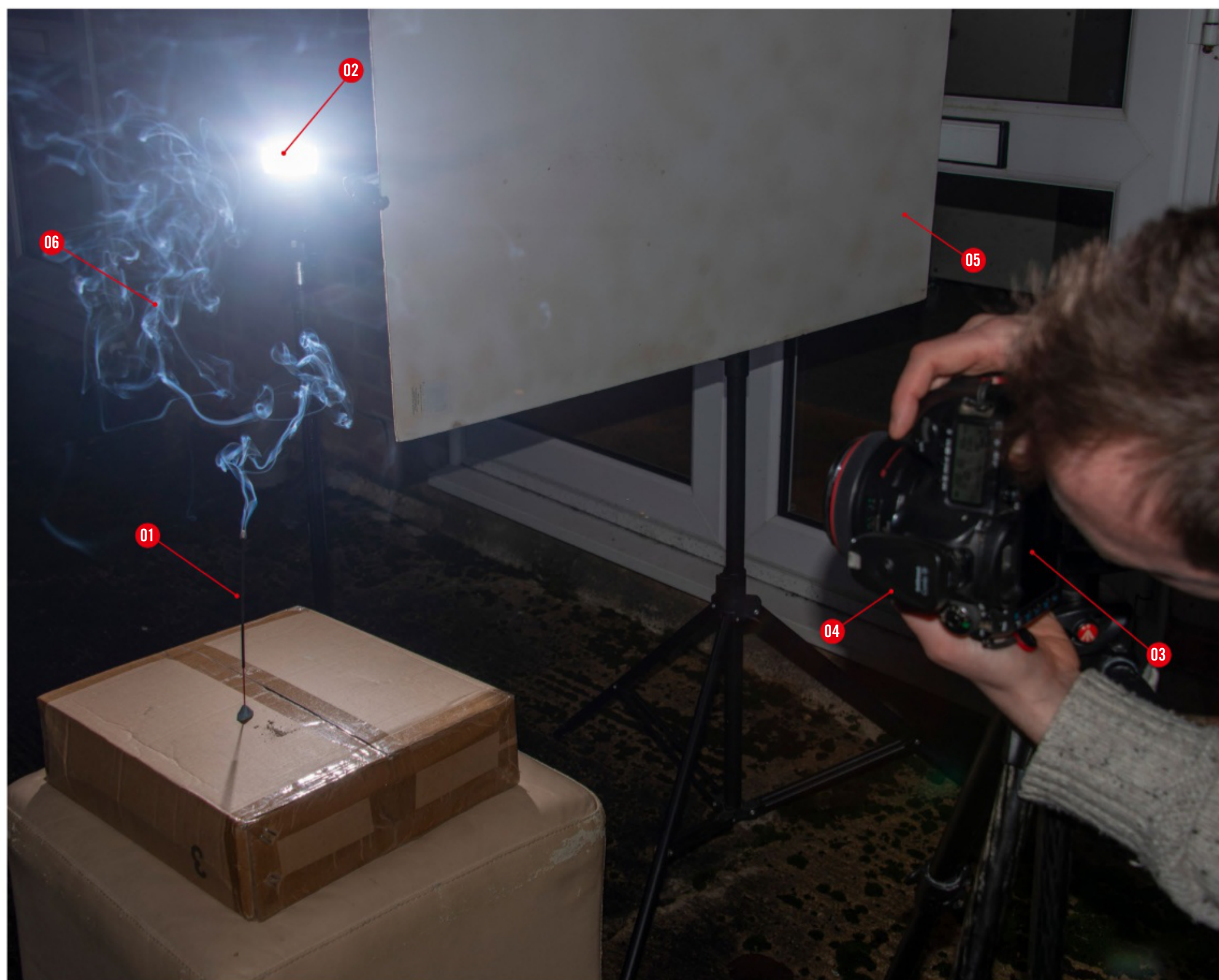
Set up an incense stick vertically using a piece of Blu-tack on a table. Place a dark backdrop behind the stick for the backdrop. Once lit, gently blow or fan the smoke to create interesting shapes. If you don't have an incense stick, you could try using matches or a vape.

02 FLASH LIGHT

Place a Speedlite behind the incense and off to one side. Angle the flash so that it's trained on the stick – we don't want the light spilling onto the backdrop. Set the flash to manual and begin by choosing 1/8 power. If the Speedlite has a zoom feature, set it to a wide angle for maximum spread.

03 CANON CAMERA

Set up the camera opposite the stick. A tripod isn't essential, but it frees up your hands. Focus on the incense stick, then set the lens to manual focus to lock it in place. As a starting point for your exposure, set the camera to Manual mode, ISO100, aperture f/8 and shutter speed 1/200 sec.



04 TRIGGER AND RECEIVER

We need to fire the flash remotely – a flash trigger and receiver will do the job. If you don't have one, you could use a sync cable, or you could set the Speedlite to optical slave mode and then use your camera's pop-up flash to set it off.

05 FLAG

By backlighting the smoke with the flash we can make it stand out. But any time a direct light is angled at the lens there's a danger it'll cause flare, so we need to flag the flash by placing a board between it and the camera to block off the light.

06 SMOKE SHAPES

After lighting the incense stick take a test shot to check the exposure of the smoke. If it's too bright or dark, adjust the manual flash power accordingly, or change the aperture to allow for more or less light. Take some shots as the smoke curls.

PROJECT 1

STEP BY STEP CAPTURING THE PORTRAIT

Photograph a person in profile against a light backdrop with a simple lighting

LIGHTING THE BACKDROP

A single off-camera flash lets you create all kinds of different portraiture looks — you can fire it from one side, above, below, or behind your subject and the angle of light will give you a multitude of looks. But as well as directing it at your subject, you can also train it on the background, like we've done. By lighting the backdrop we blow it out to create a high key look like this. Some of the light will spill back onto the subject, creating subtle backlighting that lifts the edge of the face.



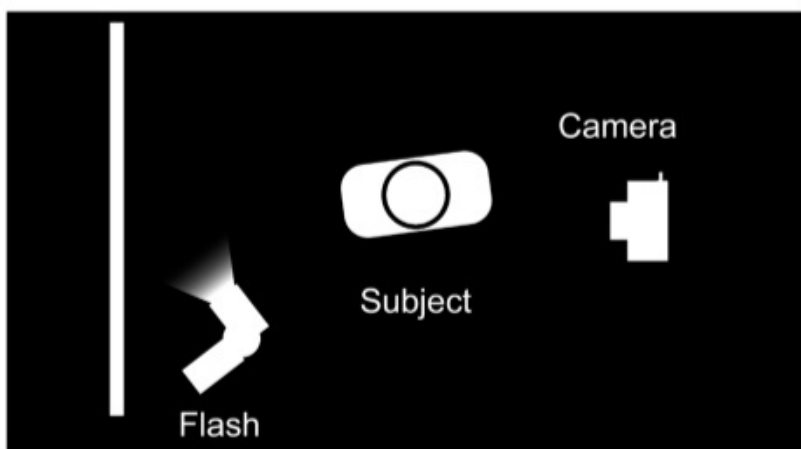
01 USE A LIGHT BACKDROP

Position your subject in front of a light backdrop for a high-key look. We've used a roll of paper, but a simple white wall will do, or a white board. This way, the background will be blown out. Later, we can invert the black backdrop of the smoke images to white so that it matches the background of our portrait here.



02 SIDE ON POSE

Ask your subject to stand in front of the bright backdrop. A side-on profile pose is ideal for this effect, but you could try other poses if you like, or experiment with different body shapes. When side-on like this, it's usually best practice to focus on the eye that is closest to the camera.



03 LIGHT THE BACKGROUND

We've used a single flash to light the portrait. By training it on the backdrop we can blow it out and backlight our subject. This way, the lighting on the subject will match the backlit smoke. You don't need a flash for this, you could just pose your subject in front of a window and shoot towards a bright sky.



04 CAMERA SETTINGS

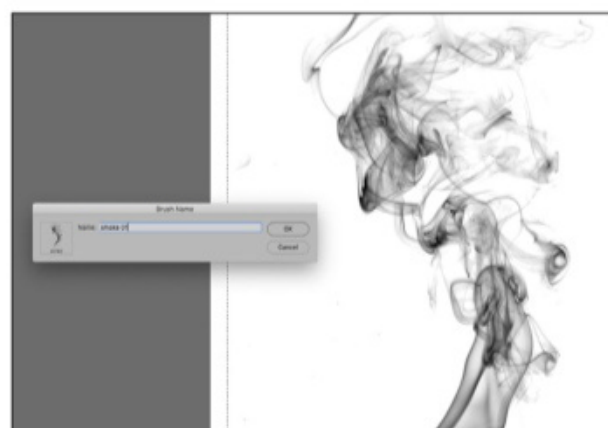
As we're using flash here, we set the camera to Manual mode and shutter speed to 1/200 sec, ISO100. Then, we can adjust the aperture and flash power to control the brightness of the subject. Here we settled on an aperture of f/4.5. Our backlit subject is slightly underexposed, which is ideal for our project.

STEP BY STEP CREATE PHOTOSHOP BRUSHES

Turn the smoke photos into handy brush tips in Photoshop



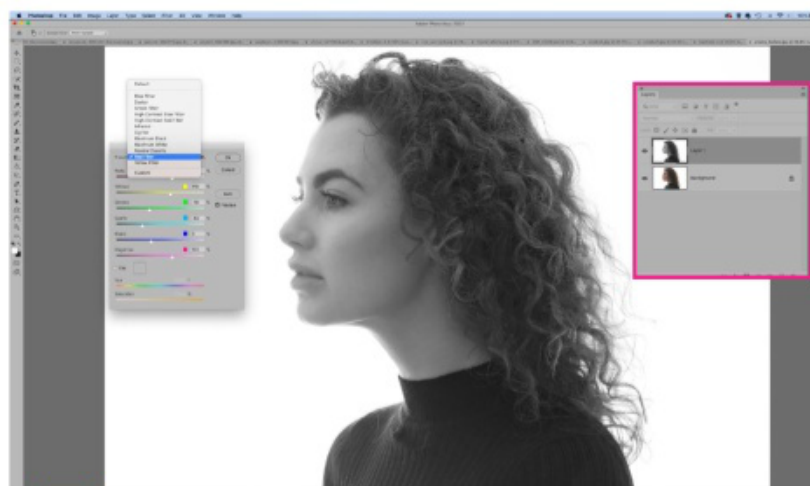
OPEN A smoke shot in Photoshop, go to Image> Adjustments>Desaturate (Cmd/Ctrl+Shift+U), then Image>Adjustments>Invert (Cmd/Ctrl+I). Next go to Image>Adjustments> Levels (Cmd/Ctrl+L), hold Alt and drag the white point inwards to ensure the backdrop is totally white.



GRAB THE Rectangular Marquee tool and drag a selection over the smoke. Go to Edit>Define Brush Preset. Give the brush a name and click OK. The new brush will be instantly selected when you grab the Brush tool, and you'll find the tip at the bottom of the list of brushes.

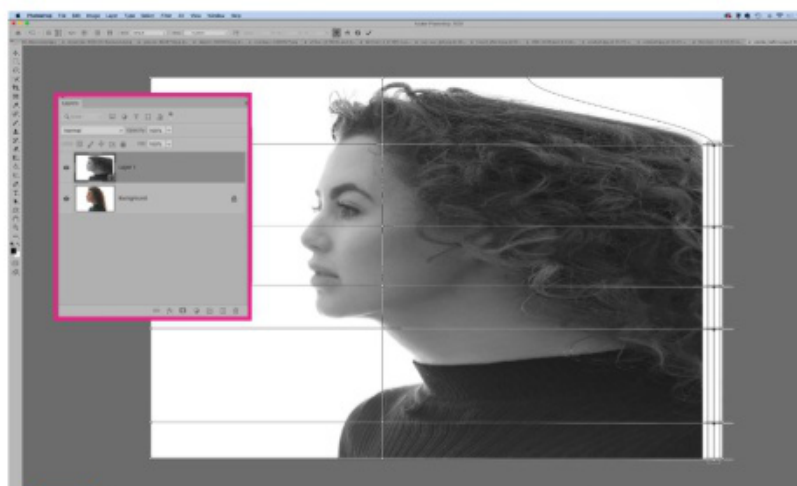
STEP BY STEP PUTTING IT ALL TOGETHER

Use your smoke brushes — or our free set — to send your portrait up in smoke



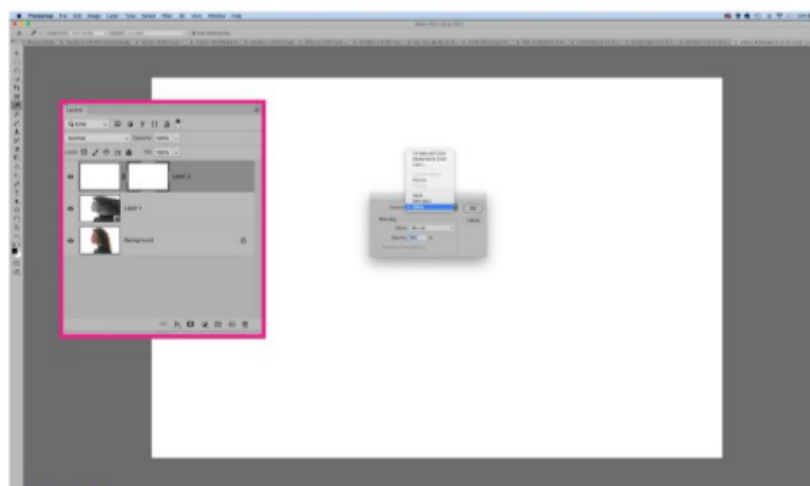
01 CONVERT TO MONO

Open the portrait into Photoshop. Duplicate the background layer with Cmd/Ctrl+J, then go to Image>Adjustments>Black and White. Use the controls to tweak the look. We've chosen the Red Filter preset from the dropdown to lift the skin.



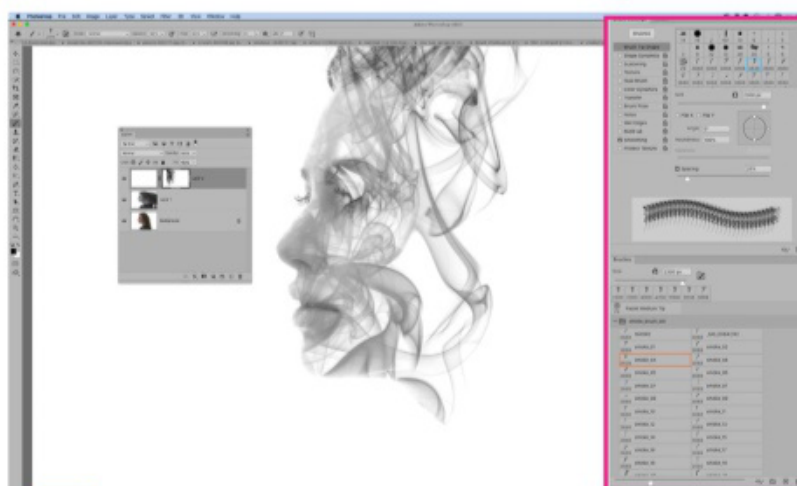
02 WARP THE HEAD

Go to Edit>Transform>Warp. Hold Alt and click a series of vertical points down the face, then click another point near the back of the head to add an extra column. Hold Shift and drag a box over the points over the back of the head, then drag them to the side to stretch it out.



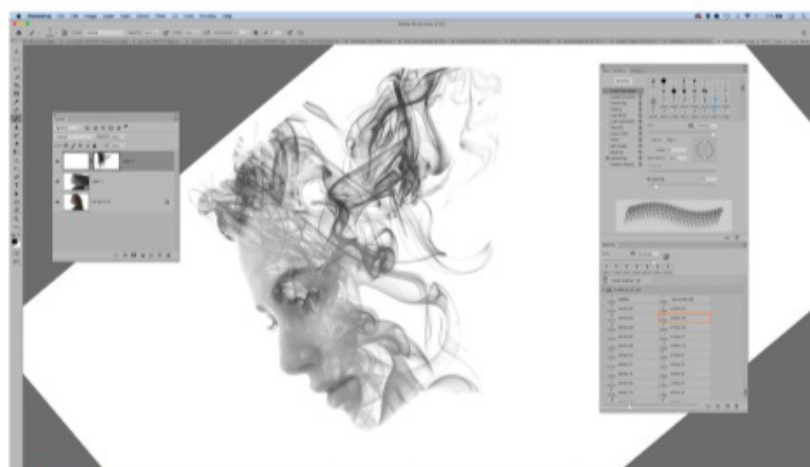
03 WHITE FILL LAYER

Go to the Layers panel (Window>Layers) and click the new layer icon, then go to Edit>Fill, set Contents: White and hit OK. Next, click the Add Layer mask icon. Now we can paint on the image while the mask is highlighted to gradually reveal the portrait.



04 PAINT A MASK

Grab the Brush tool from the toolbar and hit D then X to set the colour to black. Go to the Brush picker and choose one of your newly created smoke brushes (or load the smoke brushes supplied into Photoshop). Dab over the image to paint with the smoke brush tip.



05 BUILD IT UP

Continue dabbing over parts of the face with your smoke brushes to gradually reveal the face, making sure to leave plenty of gaps. You can change the rotation and angle of your brushes in the Brush Settings panel by rotating the circular control.



06 TONE THE IMAGE

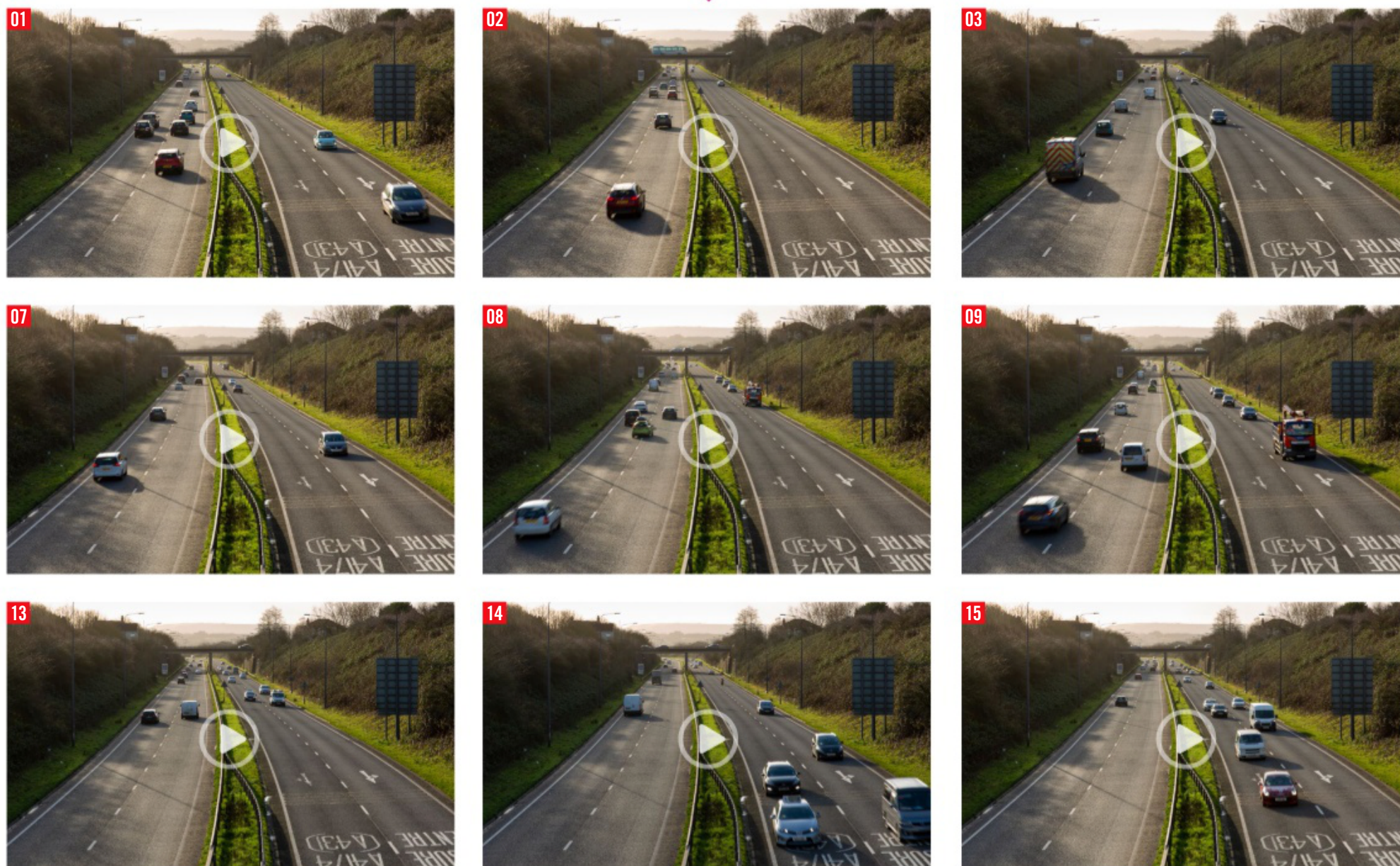
Keep painting to build up the effect. When happy, highlight the top layer and press Cmd/Ctrl+Shift+Alt+E to merge a new layer, then go to Filter>Camera Raw Filter for final toning. Click the Profile Browser and choose a profile, then use tonal tools to finish up.

ESSENTIAL BRUSH SHORTCUTS

When using the Brush tool, there are a few handy tricks that will speed things up. Firstly, the essential shortcuts you need to know are] and [bracket keys, which resize the brush tip for you. Alternatively, you can hold Ctrl+Alt (Mac) or Alt+right-click (Windows) and drag right or left to resize the brush tip (you can also drag up or down to change the hardness with circular tips). The number keys let you quickly change the brush opacity - hit 1 for 10%, 2 for 20% and so on, and hit 0 for 100%.

NEXT MONTH
MONOCHROME
SEASCAPES

PROJECT 2



THE MISSION

Discover how to shoot your very own time-lapse films

Time needed
1-2 hours

Skill level
Intermediate

Kit needed
• Tripod
• Latest Canon EOS camera

How time flies with time-lapse movies

Create time-lapse videos the simple way with **Peter Travers** as he uses the built-in movie mode on his Canon EOS DSLR to speed up time

I love how camera tech keeps making our lives easier! Time-lapse videos are a great example. Not long ago the only way to create time-lapses on our Canon camera was to take thousands of stills over several hours, using a remote control with an intervalometer to take the images at set intervals.

We'd then use Photoshop to edit and piece them all together in a painstakingly time-consuming process to create a video!

Thankfully the latest Canon cameras – from an EOS 80D or later – now have built in time-lapse movie modes to make the whole process a lot easier and quicker, as it stitches the images together in-camera to create a lovely, seamless time-lapse video.

Which is great, as it means you can create fantastic time-lapse videos that capture and speed up an event, or scene, to transform hours passing into mere seconds. In this case, we've decided to capture passing traffic on a busy dual carriageway.

If you're shooting in consistent lighting you could use Manual mode to fix the exposure, but as we were shooting in the changing sunlight late in the afternoon, we shot in Av mode – so our camera could adjust the shutter speed for the exposure as the light changed.

Read on to find out how to set up your time-lapse video. Keep in mind that the longer the interval time (eg 10 secs instead of 2 secs) the faster time moves in the video. We shot at intervals every 5 secs and created time-lapse videos between 15 and 30 secs. 



STEP BY STEP SHOOTING TIME-LAPSE VIDEOS

Discover how easy it is to make your very own time-lapse movies in camera



01 MOVIE MODE

First, select Av mode and set an aperture of around f/8 for good depth of field. We're using a Canon EOS 5D Mark IV, which has the time-lapse movie option. This can be accessed once you've switched to Movie mode by the Start/Stop button.



02 ENABLE TIME-LAPSE

Next, you'll want to look under the Menu in the red Shooting tab, go to Tab 5 and scroll down to the Time-lapse movie option. Once you press Enable you will be able to set up your time-lapse video and start creating these fun films!



03 TIME-LAPSE SETTINGS

The camera screen helpfully explains if you set your interval of images at XX seconds, and take XX no. of shots, it tells you the time required to take them, the resulting playback time of your time-lapse video, and even the card time left.



04 VIDEO LENGTH

Press the Info button to change settings, then use the touch-screen and joystick. We set intervals for every 5 secs for 350 shots. This meant the camera would shoot for 29 mins and 5 secs and create a 14 second time-lapse video. Press Set (OK).



05 TAKE A TEST SHOT

As the screen message advises, you can now take a test shot by pressing the shutter button. This is when you should get your camera on a tripod in position, check your composition and focusing, then take a test shot to check them.



06 START ROLLING!

Being in Av mode our exposure will adapt with changing lighting. When happy with your exposure, composition and focusing, press the start/stop button to begin the time-lapse recording. When done you can review the video on the camera screen.



THE MISSION

Capture animal portraits and convert them to black and white

Time needed
One hour

Skill level
Advanced

Kit needed
• Tripod
• Telephoto lens

Go mono with wildlife

Dan Mold uses natural light and Photoshop trickery to produce moody studio-quality mono animal portraits to give them a fine-art feel

This month I'm going to show you how to give your wildlife images a high-end studio look and you won't even need expensive flash heads, modifiers, or large studio spaces to pull it off. It's just as well really... animals aren't known for sitting still for any period of time, let alone in front of a camera in a studio!

Instead, we went to Slimbridge Wetland Centre in the UK, and made use of the harsh single light source from the sun to create deep shadows and bags of contrast.

Then it's just a case of using software to complete the low-key effect by converting the image to mono for moody fine-art photos.

Soft light is often favoured for people and pet portraits, but a harsh single light source, like from a single flash, or the sun, can help create low-key images with oodles of mood and atmosphere.

This can be amplified by shooting against a dark background and setting your metering mode to Spot metering to make the animal well exposed, but leaving the background dark. Just ensure the sun is out and not hidden behind any clouds as this

will diffuse the light and act like a massive softbox, making it impossible to get the low-key look.

The rest of the ruse is completed in post-production. We'll be using the Adobe Camera Raw plug-in built-in to Photoshop CC to work up the mono result. So you'll be learning how to capture amazing wildlife pictures in camera and how to edit them for maximum impact back at your computer, when you return home from your shoot.

The end result is a very convincing image that appears to have been photographed with flash in a studio environment. 

TOP KIT TIPS FOR SHOOTING WILDLIFE

Get set for astounding animal pictures from afar with the right gear

01 BRIGHT DIRECT LIGHT

Photograph your subject in direct sunlight to capture bright highlights and well-defined shadows. Look for dark backgrounds, shrouded in shadow as this will make the editing easier. Exactly how much negative exposure comp you use will vary depending on the light.

02 USE A LONG LENS

As is the case with most wildlife photography, you'll want to use a long lens. We used the Sigma 150-600mm f/5-6.3 DG OS HSM C. This super-telephoto zoom lens afforded us plenty of reach, so we could capture close-up portraits of our elusive, sometimes faraway, subjects.

03 WILDLIFE HIDE

A wildlife hide helps keep you hidden from the view of animals, however, animals at wildlife parks are generally more accustomed to seeing people around, so are less likely to be scared off. Hides also tend to be great for finding animals that you won't spot in your own garden.



04 CANON DSLR OR MIRRORLESS

While not essential, a Canon body with a high burst rate, or frames per second (fps), will allow you to take a series of shots in quick succession making it more likely that you'll get the precise moment you want to capture. Canon's 7D Mark II is a good choice as it can shoot at 10fps.

05 TRIPOD

A good tripod will take the weight of a large telephoto lens off your shoulders and allow you extra time to compose more carefully. They also have the added benefit of stabilizing your lens further, so the chances of camera-shake creeping into shots is reduced significantly.

06 WINDOWS

If you're taking photos from a safari bus or through a car window, you'll find yourself shooting through glass, which isn't ideal. You can make the most of the situation by placing your lens as close to the glass as possible, to reduce reflections. Also, try cleaning the windows beforehand.

PROJECT 3



STEP 1 GET YOUR FOCUS SETTINGS RIGHT

When you've attached your telephoto lens, such as a 70-300mm or 150-600mm, to the camera body it's time to set up the focusing. Sloths and tortoises aside, animals rarely stay still for long. AI Servo AF will allow you to keep up with any sudden movements. Set it to Single Point AF with the active AF point in the middle of the frame, or try using a group of AF points around the middle, if the animal is particularly difficult to track.

Now set the drive mode to Continuous High, so you can rattle off a quick burst of images if the animal is quite unpredictable in their movements. This will give you a better chance of capturing the moment you want.



STEP 2 DIAL IN THE RIGHT CAMERA SETTINGS

Shooting in Aperture Priority will allow you to use a negative exposure compensation value to help darken the shadows. We also found that the Spot Metering mode's ability to take a light meter reading for the subject made it a bit easier to shroud the background in dark shadows.

Tweak the ISO value until you get a rapid shutter speed of at least 1/1000 sec or faster, as this will be fast enough to remove any chance of camera-shake creeping in. Although image stabilization isn't much use at such fast shutter speeds, we turned IS on for those impromptu moments when it was required. For Canon lenses with IS modes you can simply set this to Mode 1.

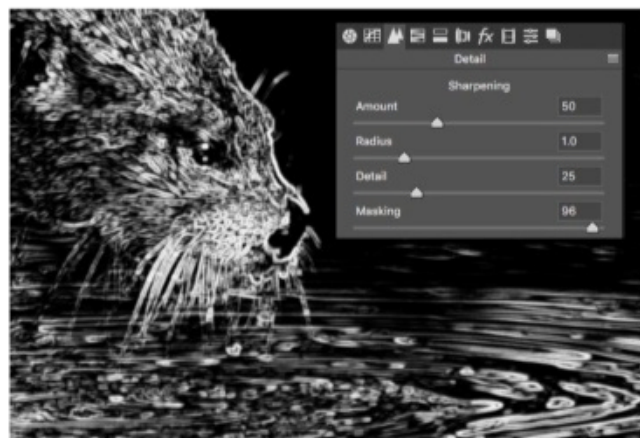
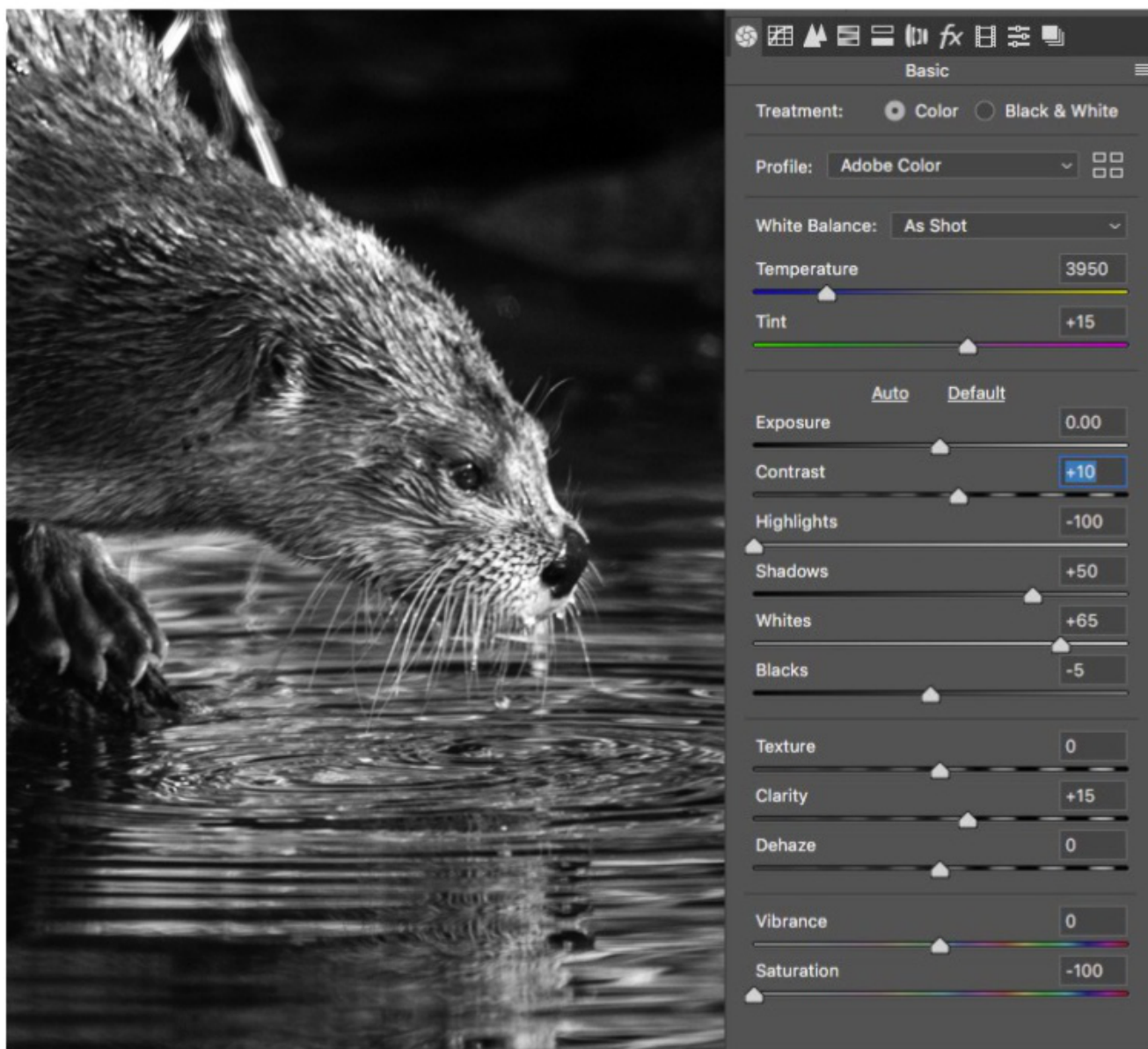


STEP 3 EDIT THE RAW FILE

The ideal Raw image will have a dark background and a strong light source hitting your subject's key features, predominantly from the same angle to create harsh shadows. Open your image into Photoshop CC's Adobe Camera Raw and click on the Lens Corrections tab. Make sure Remove Chromatic Aberration and Enable Profile Corrections are checked.

Now head back to the Basic panel and drag the Saturation slider all the way to -100, turning the image monochrome. Now you can boost the contrast by dragging Highlights to -100 and pushing up Shadows to +50. Then boost the Whites to around +65 and set Blacks to -5, you can also increase the Contrast slider a little. But note that these values will vary from image-to-image, but you'll want the highlights on your animal portrait to pop.

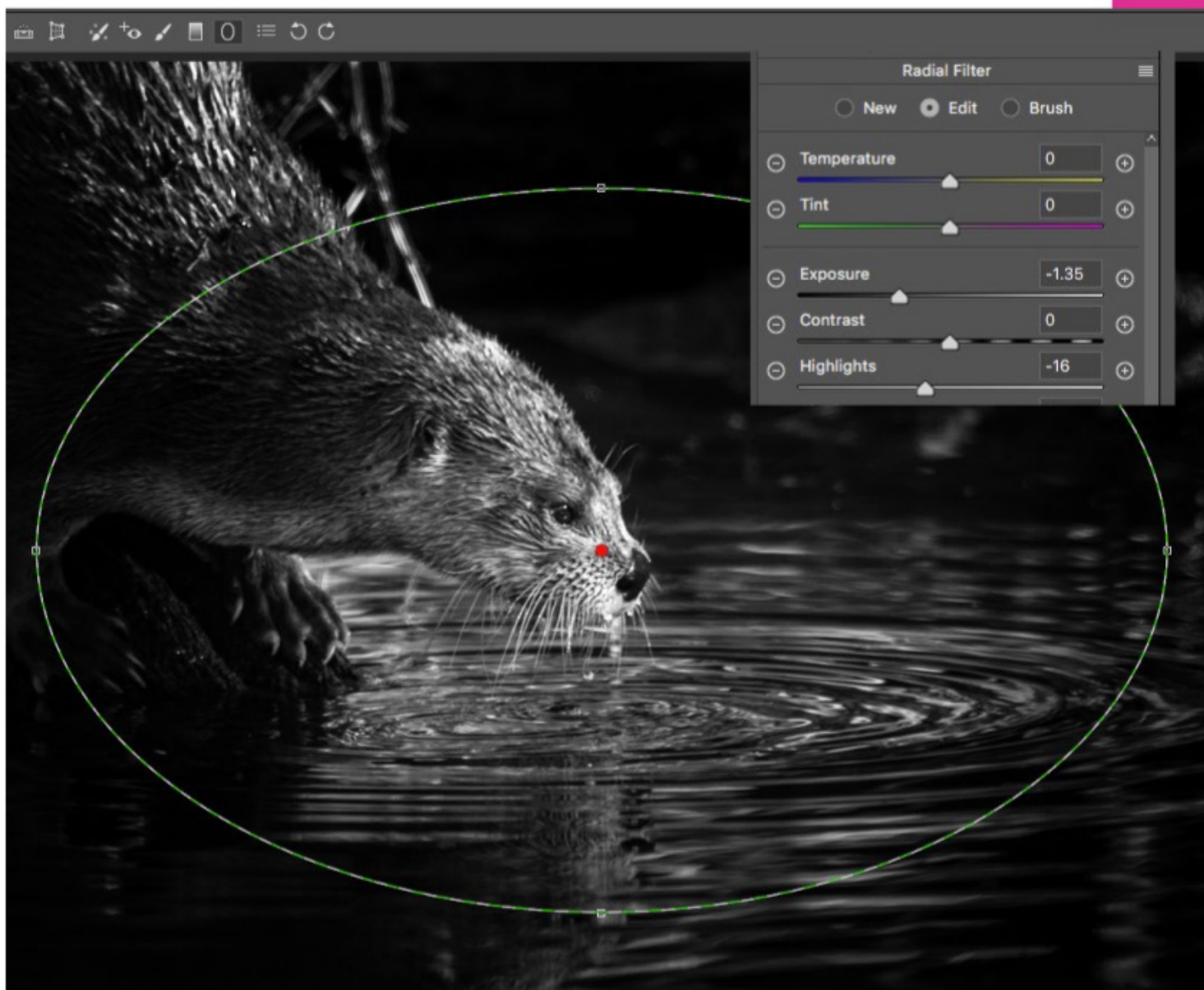
Next, increase the value of the Clarity slider to make the details more well-defined. Adjust the Exposure slider until your subject is well exposed but the background is dark. It can also be worth adjusting the Temperature and Tint sliders, usually used to tweak the White Balance, but can help you tune the contrast when working with mono images.



STEP 4 FINAL ADJUSTMENTS

To sharpen the fine details – a crucial part of black-and-white image editing – head over to the Detail panel and set the Sharpening Amount to 50, hold the Alt key and drag the Masking slider to the right – only the white parts of this preview will be sharpened, so drag it to a value until only your subject is shown in white to avoid sharpening any out of focus areas or background noise.

Finally, grab the Radial Filter Tool from the toolbox and drag this over the subject. Make sure the effect is set to Outside, then drag the Exposure and Highlight sliders to the left until the background is nice and dark, but the well-exposed animal stands out clearly. When you're finished editing the Raw file, hit Open Image to bring it into Photoshop CC.



THE MISSION

Create a cinematic movie-style image using continuous LED lights and an action figurine

Time needed
Two hours

Skill level
Advanced

Kit needed

- Tripod
- LED lights
- Smoke machine
- Shutter release cable

Create your own miniature filmset

Dan Mold captures a cinematic-style image using portable LED lights, a smoke machine and a plastic Iron Man action figure

Toy photographers are master illusionists. They suspend disbelief by making their subjects seem alive, or by fooling the viewer into thinking they're not looking at a pint-sized plaything. This niche genre of photography is becoming increasingly popular, especially on social media and here we'll show you how to create a photo with that same creative energy.

Manufacturers are making better figures than ever before and social media has provided photographers with a platform to reach the masses. Two of the biggest names in the toy photography game, Mitchel Wu

and Johnny Wu (no relation), have a combined following of over 130,000 on Instagram alone.

So how do you go about turning a plastic action figure into an epic cinematic still that'd make Michael Bay blush? The answer is light. We used four miniature LED lights from Lume Cube, including the company's latest release: the Lume Cube 2.0. Together with a black t-shirt, a dust sheet and a homemade base are all it takes to set up a miniature photo studio.

To create the cinematic atmosphere in our shot, we'll use a small smoke machines, which you can buy, with some models only £30. Or you could have a few incense sticks out of shot, or microwave a wet cotton wool pad to release steam. The addition of

smoke increases realism in the photo. It doesn't take long for a smoke machine to fill a room, so be sure to work in a well-ventilated area and take short breaks between shots to give the smoke time to clear.

To finish, we threw a pinch of fine stone granules at Iron Man as we pressed the shutter, and took a fast burst of pictures to increase the chances of getting the moment we're after.

Although toy figures are small you only need to use the long end of a kit lens for these images – such as 55mm on a Canon EF-S 18-55mm. Plus you don't need fast lenses as we're shooting around f/11 for good depth of field.

Read on and watch the video (link above) to get started. 

STEP BY STEP ACTION FIGURE PHOTOGRAPHY

Direct your own lights, camera and action by building a bespoke miniature filmset



01 STRIKE A POSE

Superheroes are known for their dramatic poses, and we couldn't think of anything more dramatic than the famed superhero landing. We used an action figure of Iron Man, which boasts good articulation, making it possible to set it in place.



02 HULK SMASH

Iron Man's suit is pretty tough and he's probably going to land with a thud. Use grey card to represent concrete, and draw cracks to show where he'll collide with the surface. Tiny squares of card can be stuck to it, representing broken bits of concrete.



03 USE THE RIGHT LIGHTS

Continuous lights are ideal for this sort of work as you'll want to take a series of images in quick succession, which isn't practical with a flash. We mounted two Lume Cube lights a Manfrotto mini tripod behind Iron Man to backlight him.

**QUICK TIP!**

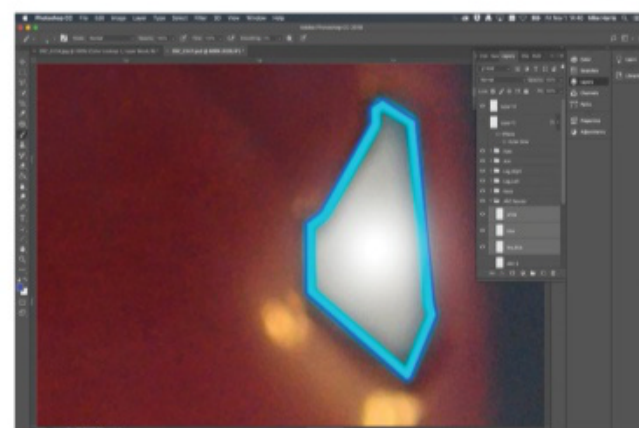
Be sure to wear eye protection when throwing particles at your figure, as these can easily fly into your eyes if you're not careful

**04 DIAL IN THE RIGHT SETTINGS**

Frame your image with a tripod and focus on the face of your toy with One Shot AF, then switch to MF to lock it. Make sure you're on a fast continuous burst, then in Av mode set the aperture to around f/11, ISO to 1600 or higher, until you get a shutter speed of around 1/1000 sec.

**05 INJECT ATMOSPHERE**

The nozzle of the smoke machine should be placed about six inches away from the figure. A quick burst of smoke from our machine was all it took to cover the background. Then throw a pinch of small stone granules at the figure as your take the shot to add action.

**06 FINISH IT OFF IN PHOTOSHOP**

Make parts of Iron Man's suit look like they're glowing by painting over them with a soft white Brush Tool, then paint a much finer outline around each area with a blue colour. Finally, blend the colours by going to Filter>Blur>Gaussian Blur and setting the Blur Radius to 10px and hit OK.

BEFORE



AFTER



THE MISSION

Start using Adobe Elements 2020 and get the most out of it's new features

Time needed
 15 minutes

Skill level
 Beginner

Kit needed
 Photoshop Elements 2020

DOWNLOAD PROJECT FILES
 TO YOUR COMPUTER FROM:
<http://downloads.photoplusmag.com/pp163.zip>

New in Elements 2020

Discover the new features in Elements 2020! **Dan Mold** runs through the best new upgrades, including a helpful and quick way to retouch portraits

Photoshop Elements is the budget version of Adobe's Photoshop CC. It shares many of the features of its bigger sibling, but more importantly can be brought outright. It retails at around £75, so could be the better option for you if you don't like the idea of a subscription.

Adobe release a new version each year with new and improved features, so we'll be looking at what's changed in the most current Elements 2020, allowing you to unlock its full potential.

Targeted towards beginners and enthusiasts, Elements has a Guided mode that shows you how to make specific tweaks, there's also the Expert mode which unlocks features such as Layers, Layer Masks and Adjustment Layers – all powerful features borrowed from Photoshop CC. And all make it possible to merge images to create impressive composite photographs.

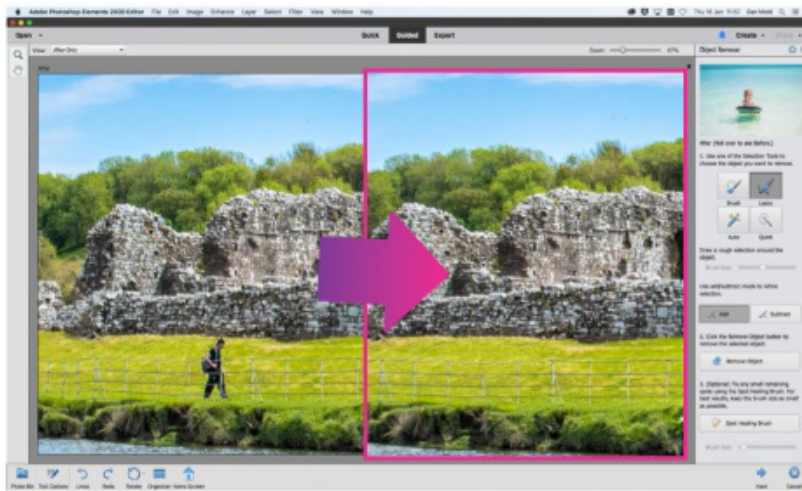
Many of the new additions harness Adobe Photoshop's Sensei Artificial Intelligence technology, to make powerful brand-new edits, such as skin smoothing,

selecting a subject automatically or colourizing an old black and white film photo with a single click. When you import your images into the Elements Organiser, Adobe's Sensei AI will also scan through your pictures and apply some quick edits to them automatically, these are called Auto Creations (see Step 5 on the right for more information), and they make it even quicker to get started and see great results.

Take a look at our favourite six new features and don't forget to watch the accompanying video to see them in use too. 

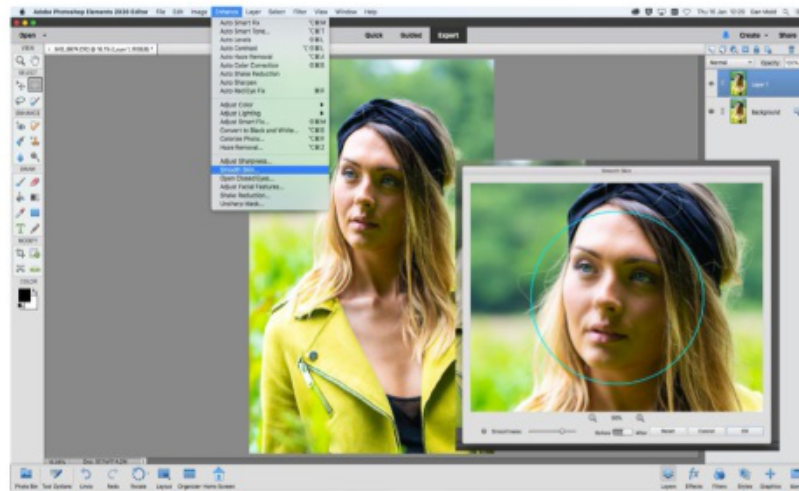
STEP BY STEP NEW FEATURES IN ELEMENTS 2020

We explain the top six new features added to Adobe's brilliant budget image editor



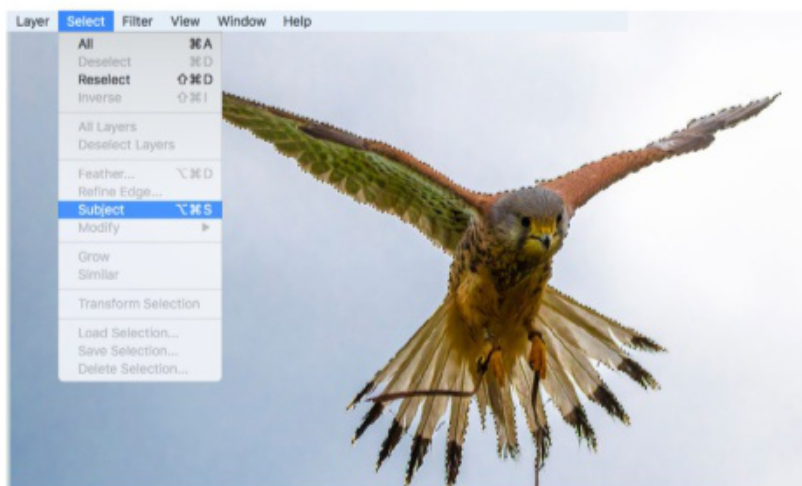
01 OBJECT REMOVAL GUIDED EDIT

Open an image into Elements 2020 and go to the Guided mode, then, in the Basics tab, click on Object Removal to start. Then Brush or Lasso over the offending item and use the Add and Subtract buttons to fine-tune your selection and hit Remove Object.



02 SMOOTH SKIN

While working on a portrait click Enhance>Smooth Skin for a fast way to retouch. You'll see the face selected with a blue circle, then drag the Smoothness slider to the right until the skin of your model is smoothed to your liking. Click OK to apply.



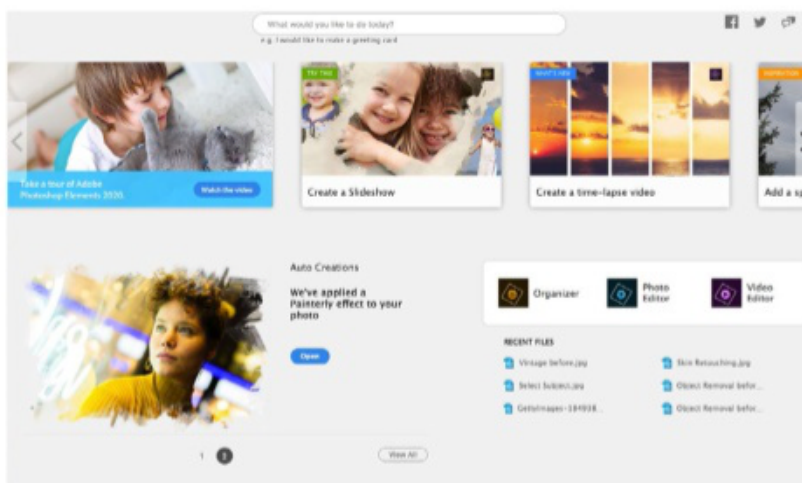
03 SELECT SUBJECTS THE EASY WAY

For an easy way to select a subject go to Select>Subject and it will automatically select it. Though you may want to tidy it up with the Polygonal Lasso Tool, using the Shift and Alt keys to add and subtract from your selection.



04 AUTOMATICALLY COLOURIZE OLD PHOTOS

To restore old black and white images to colour, go to Enhance>Colorize Photo. For best results go into Manual mode and select the areas you want to work on, then click on them with the Droplet Tool and add the colour you want to see in that area.



05 AUTO CREATIONS

Photoshop Elements will automatically apply and suggest edits to pictures that you've imported into the Organizer and you're presented with these when you open up the Home screen. Click Open to bring it into Elements so you can continue to work on it.



06 NEW PATTERN BRUSH GUIDED EDIT

Go to Guided Mode>Fun Edits>Pattern Brush, then choose one of the patterns you like the look of on the right and start to paint over your shot, use the '[' and ']' keys to resize. To remove a pattern hit Ctrl/Cmd+Z or use the Pattern Eraser Tool.

QUICK TIP!

Zoom in quickly by pressing Ctrl/Cmd+Plus a few times so that you can see the edits you're making more clearly



PHOTOSHOP ON A BUDGET

Photoshop Elements 2020 is the latest stand-alone image editor from Adobe, that shares many of the features of Photoshop CC such as Layers, but can be brought outright for around £75 - useful if you're not a fan of the subscription model.

BEFORE



AFTER

THE MISSION

Improve your post-production workflow with these sharpening tips and tricks

Time needed
 15 minutes

Skill level
 Beginner

Kit needed
 • Lightroom
 • Photoshop

The sharp end

James Paterson explains why sharpening should bookend your Lightroom workflow while showing you how to use some essential tools

Sharpening is an essential part of image-editing, but it often leads to confusion over what tools to use, when to sharpen and how much to apply. As such, it can be helpful to think of sharpening as part of a wider workflow, as we'll do in this tutorial. Along the way we'll perform initial sharpening and noise reduction in Lightroom, then take our image into Photoshop for retouching to remove the distracting leaf. Then we'll round-trip back to Lightroom

for final sharpening. As such, our workflow involves two distinct sharpening stages, one at the beginning and another at the end.

The first stage is often called Capture sharpening. This involves general sharpening to correct for inherent softness in the image, or to crisp up important details. It's best done in Lightroom's Detail panel (or in the near-identical panel in Photoshop's Camera Raw). Capture sharpening can sometimes amplify image noise, especially in high-ISO images. So this is also a good time to apply noise reduction if the image

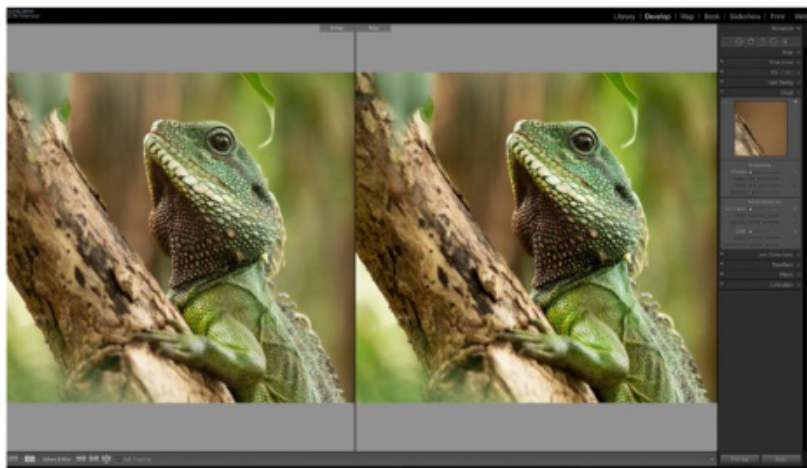
requires it. We'll do so here with the Adjustment Brush, which lets us paint in noise reduction selectively to the areas in the photo that need it most.

As well as one of the first things we'll do to our image, sharpening is also often one of the last. This is called Output sharpening, and this time the aim is to optimize the detail with a specific output and resolution in mind – whether that be a print size or for viewing on-screen. We'll use the Output Sharpening controls within Lightroom's Export Dialog to make this a simple task. 

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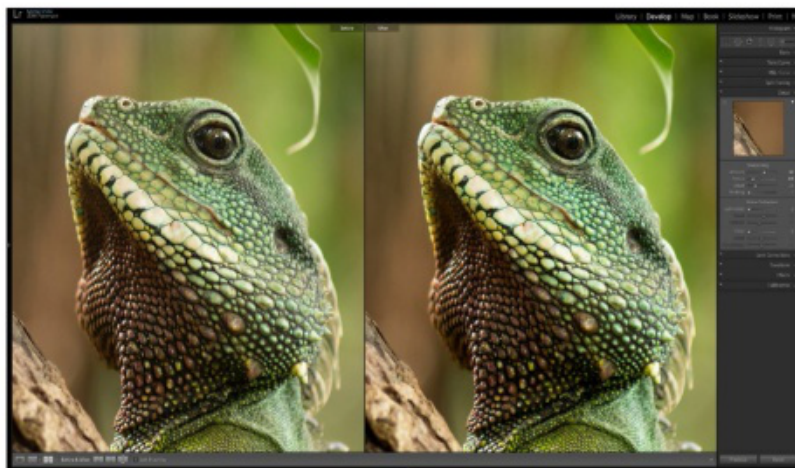
STEP BY STEP SHARPEN UP WORKFLOWS

Understand sharpening workflow and learn how to round-trip images with Lightroom and Photoshop



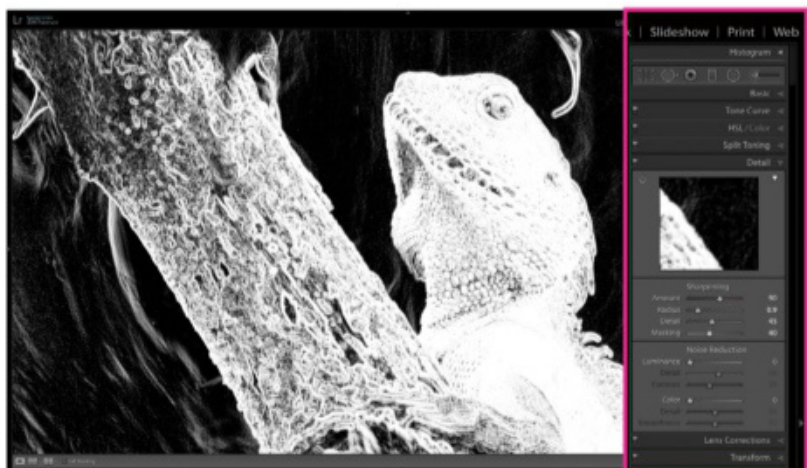
01 PREPARE THE VIEW

Get the shot into Lightroom Classic, then go to the Develop Module. After making some tweaks in the Basic panel, go to the Detail panel. Click the Before/After view at bottom left, then zoom in close to the image. A 100% view is best for judging sharpening.



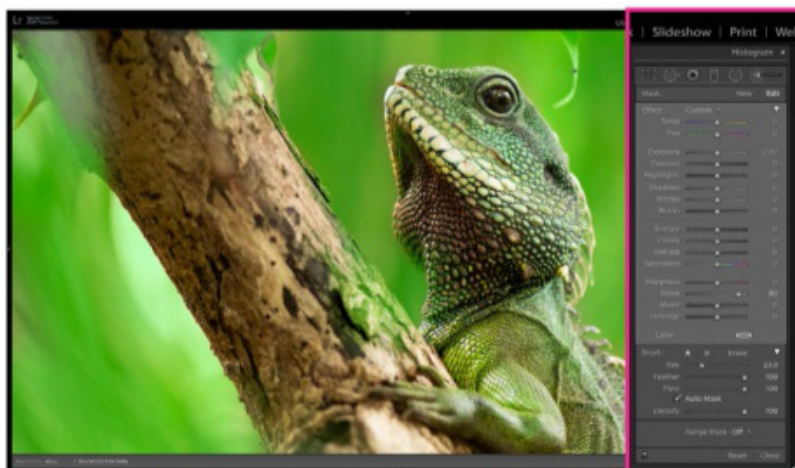
02 APPLY CAPTURE SHARPENING

Begin in the Detail panel by upping the Sharpening Amount. Next, Adjust the Radius, which sets the distance from edges in which the sharpening occurs. A low radius is usually better for high-frequency detail like the lizard skin. We've set Amount 90, Radius 0.9.



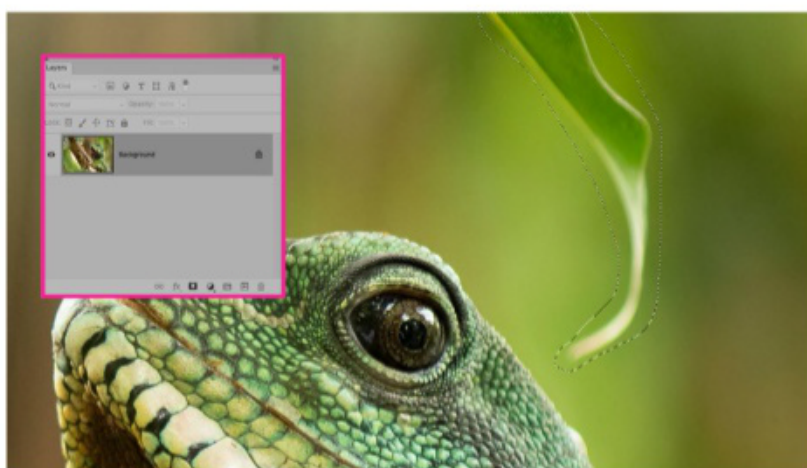
03 SET DETAIL AND MASKING

The Sharpening Detail slider controls how much fine edges are sharpened. High amounts can amplify noise. Masking lets us correct this. Hold Alt and drag Masking for a black and white view. Softer bits show in black as you drag and are masked from sharpening.



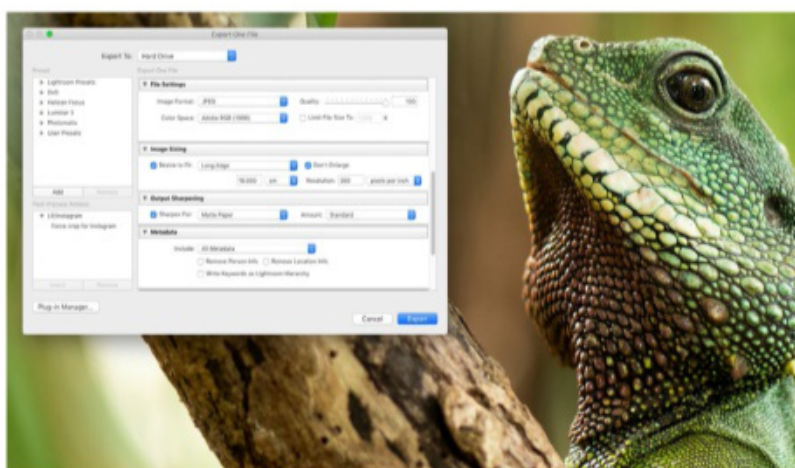
04 FIX THE NOISE

We could reduce noise using the sliders in the Detail panel, but we only want to correct the softer areas, so selective adjustments may be better. Get the Adjustment Brush, check Auto Mask, set Noise to 80 and paint the blurred areas to reduce noise.



05 ROUND-TRIP WITH PHOTOSHOP

Next, take the image into Photoshop for retouching. Right-click the shot and 'Edit in Photoshop', choose 'Edit a Copy with Lightroom Adjustments', hit OK. In Photoshop, use the Patch tool to remove the leaf by the lizard's head, close the image to go to Lightroom.



06 FINAL OUTPUT SHARPENING

Finally, export the image for a print size and use Output Sharpening. Go File>Export, set Image Format to JPEG. In Image Sizing check Resize to fit: Long Edge, set 18cm at 300 pixels per inch. In Output Sharpening pick Sharpen for Matte Paper, Amount Standard and hit OK.

CREATIVE SHARPENING

As well as Capture Sharpening (which happens at the start of a workflow) and Output Sharpening (which occurs at the end) you might also want to try Creative Sharpening. This is an optional third stage in the sharpening workflow that happens between the other two. This is where we can use selective tools to crisp up the details in the image that matter most. We could, for example, use Lightroom's Adjustment Brush to add extra sharpening to the eyes and skin of the lizard here. You could also use the Sharpen tool in Photoshop, or apply sharpening locally using a combination of sharpening filters and layer masks.

QUICK TIP!

Try using the + and - keys to change the sharpening sliders, as this gives you greater scope to judge fine increments

NEXT MONTH
DODGE & BURN
LANDSCAPES



AFTER



BEFORE

THE MISSION

Use the White Balance, Colour Balance and Curves tools in Affinity to boost colours

Time needed
10 minutes

Skill level
Beginner

Kit needed
Affinity Photo

Fix colours with Affinity Photo

James Paterson corrects unsightly colour casts and shows you how to boost your photos with a range of Affinity Photo tools

Affinity Photo by Serif offers a wide array of colour correcting tools. We're going to look at some of the best options, from white balance adjustments to powerful selective colour tweaks. Along the way we'll encounter many of the most useful colour tools and settings in Affinity Photo. Whether you have a photo with a colour cast, a portrait with unnatural skin tones, or a colour temperature mismatch, these techniques described are sure to help.

We'll use Adjustment Layers to make a series of colour tweaks here. These allow us to make our changes on separate layers, so we can always go back and tweak things later if need be.

At first we'll use the White Balance command. This lets us correct the yellow cast in our original photo by using a colour picker to source a neutral point in the image. But if things still don't look right we can go on to tweak things manually. While doing so, it can be helpful to boost saturation to eye-popping levels

to get an exaggerated idea of the colour shifts in the image.

From here we can go on to tweak the balance of colour using the Colour Balance command, which lets us fine-tune colour shifts in either the shadows, midtones or highlights. Finally, we can selectively boost colours, either by targeting specific ranges in the image (as we've done here to boost the reds), or by using masks in combination with Adjustment Layers to isolate and alter specific portions of the image.

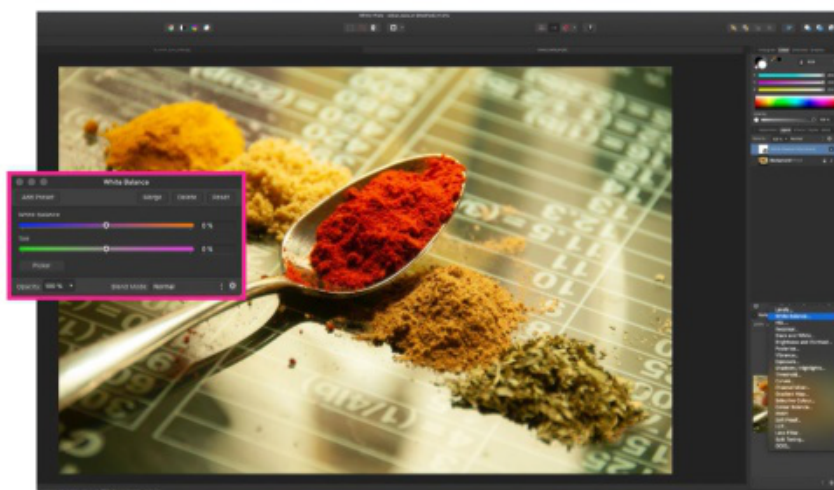
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STEP BY STEP COLOUR CORRECTION SKILLS

Fix white balance and correct unsightly colour shifts with ease in Affinity Photo

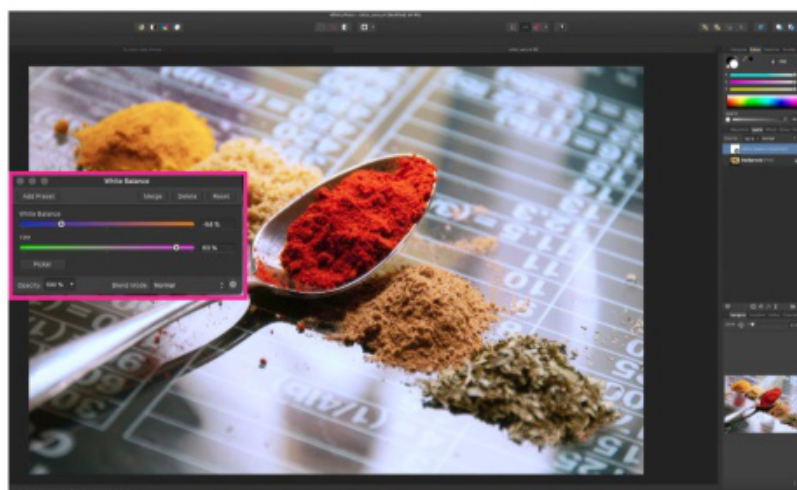
QUICK TIP!

When seeking a neutral point to click on with the white balance tool, look for white or grey surfaces in the image



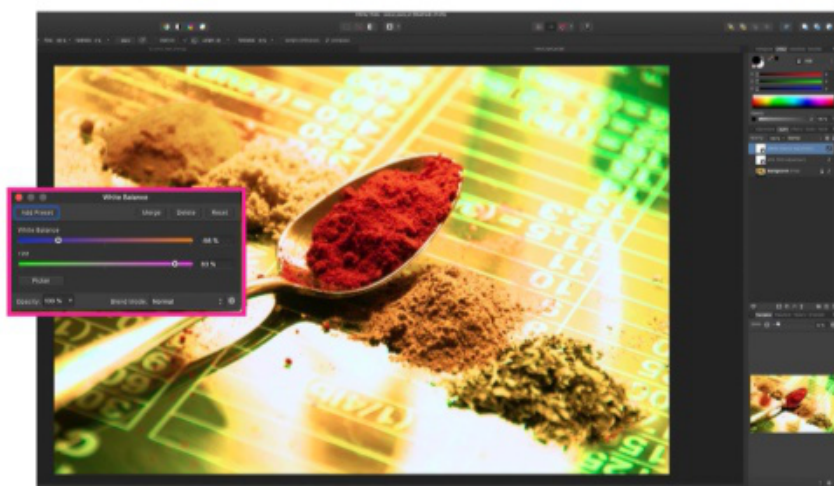
01 SET THE WHITE BALANCE

Open the image into Affinity. If it's a Raw image use the White Balance controls in the Develop Persona (see box). For JPEGs like this, head to the Layers panel in the Photo Persona. Click the Adjustment Layer icon at the bottom and choose White Balance.



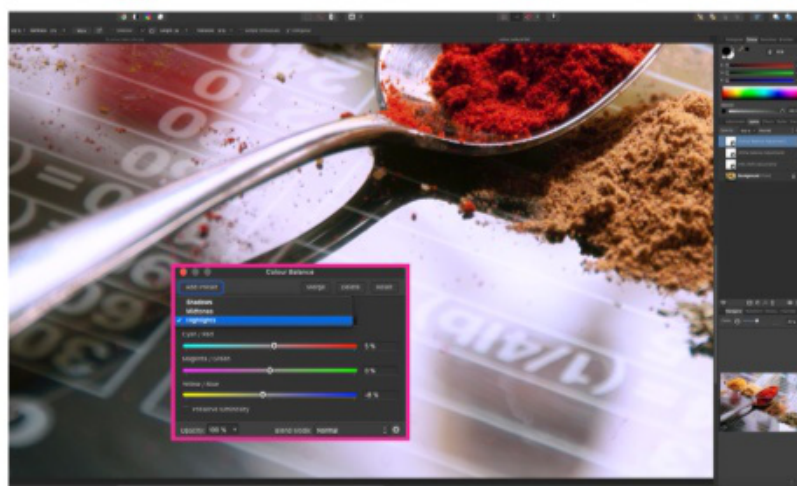
02 CLICK ON A NEUTRAL

Go to the White Balance dialogue and click on 'Picker', then click over an area that should be neutral, like the edge of the grey spoon. If it isn't right, keep clicking over different areas to try to find a neutral spot to sample from, or try tweaking the sliders manually.



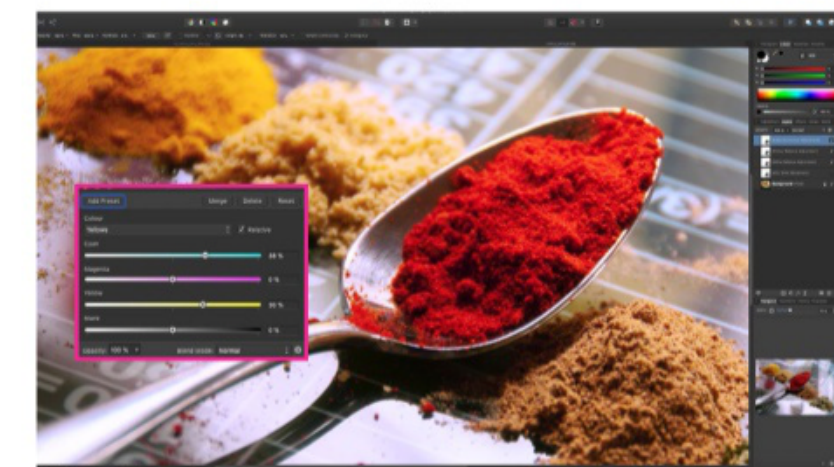
03 COLOUR JUDGING TRICK

When adjusting white balance a temporary saturation boost can help you judge things. Highlight the bottom layer, then add an HSL Adjustment Layer. Set Saturation to 100%. Double-click the White Balance layer and tweak the sliders to remove the colour cast.



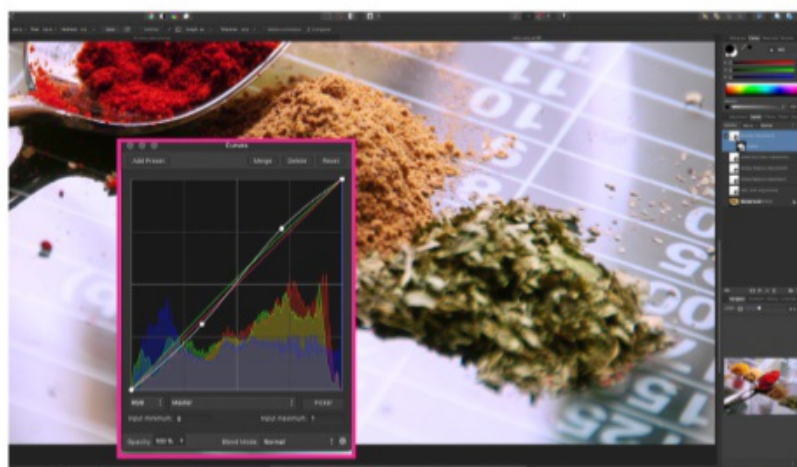
04 TWEAK HIGHLIGHT COLOUR

Turn off the HSL layer. The highlights look blue, so let's tweak them with a Colour Balance adjustment. Click the Adjustment Layer icon and pick Colour Balance. Set Tonal Range: Highlights, then drag Cyan/Red to the right and Yellow/Blue to the left to warm the highlights.



05 ENHANCE THE REDS

Next, we can use a Selective Colour Adjustment Layer to boost the reds. After adding the layer, choose Reds in the colour dropdown then increase Magenta to boost the reds in the spices. Then target Yellows and increase Cyan and Yellow as shown.



06 SELECTIVE CONTRAST BOOSTS

Add a Curves Adjustment Layer and drag an S-shaped curve line as shown to boost contrast. Hold Alt and click the Layer mask icon in the Layers panel to hide the effect. Grab the Brush tool and paint white over the green herbs to reveal the change in contrast.

RAW COLOUR FIXES

One of the big advantages to shooting in Raw is the option this gives you to adjust the white balance and colour space after the fact. This is because Raws hold far more colour information than their JPEG counterparts. So we are able to tweak the temperature and tint sliders in the Affinity Develop Persona – or click on a neutral point in the image with the White Balance tool – with exactly the same results as if we'd set the white balance in-camera before taking the photo. By contrast, attempting to tweak white balance in a JPEG after the fact can often lead to unnatural colour shifts.

NEXT MONTH HOW TO MASK DULL SKIES

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Download and register by 30 April 2020

1 Enter skylum.com/photoplus-luminar into your web browser. Don't type it into Google or another search engine: Google won't show it.

2 On the web page simply enter your email address. No other info is required, but make sure you download the correct version of the software (macOS or Windows).

3 Once the software has downloaded, double-click the installer and follow the on-screen installation instructions. On its first launch the app will only ask for the email to activate it as a trial version. After the app is launched, you can fully activate the software by using the key you received via email in the main menu. Go to Luminar 3 > Activate > and enter the key.

4 Luminar 3 has many powerful features, but it's also easy for beginners. Skylum Software offers many helpful instructional videos.



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Having problems installing the software? Please contact the Skylum Luminar support team at <https://skylum.com/support>

SKYLUM LUMINAR 3 EXPLORE THE INTERFACE

01 MINI-LIBRARY

Get quick access to recent photos while you're editing. Hover over a thumbnail to see ratings and labels.

02 VIEW TOOLS

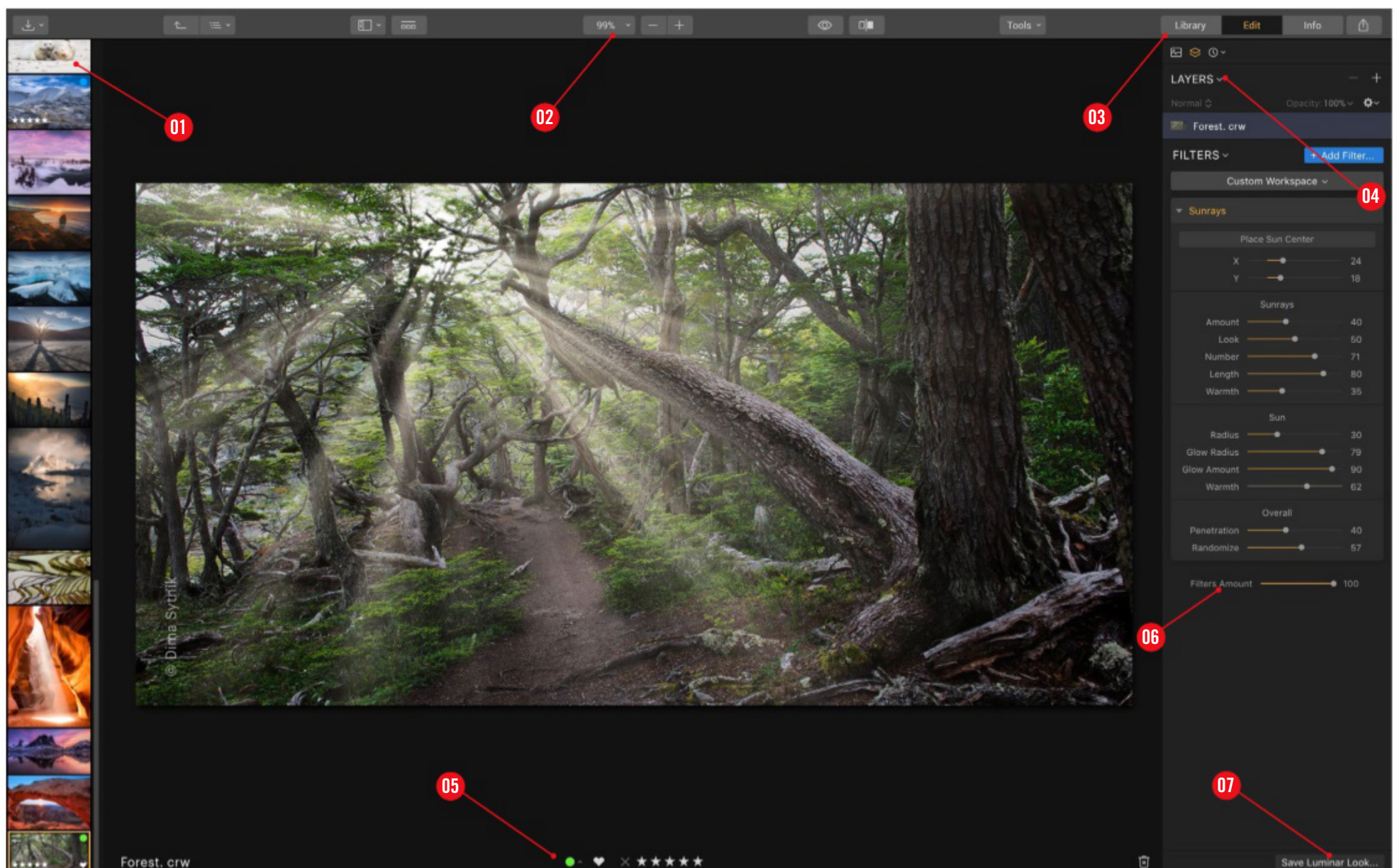
Zoom in to take a closer look at your editing, or apply the before and after screen to see how your works changes.

03 LIBRARY

Click this button to access the main Library, which shows thumbnails of every photo in your collection.

04 LAYERS

A Layers system enables you to apply effects on top of each other and apply blending modes easily.



05 LABELS

Quickly label your favourite photos for quick discovery later. Give it a rating, choose a colour tag or Like it.

06 FILTERS

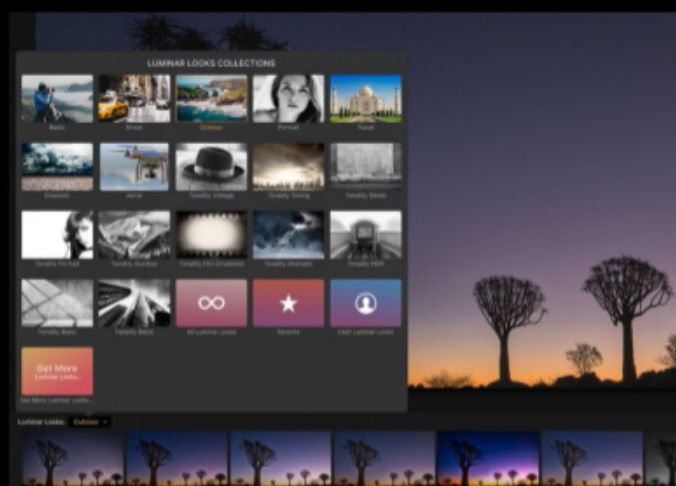
Choose from 50 filters that give you access to all sorts of controls, like adding sun rays to your photo. Customize the effect with sliders, and change the overall strength of the filter effect with the Amount slider. It's all under your control.

07 SAVE A LOOK

If you're really happy with an effect combo you've made, you can save it as a Look to re-use on any other photo.

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Bear in mind that Luminar 4 is available now. Version 4 features a streamlined new interface that simplifies working with Luminar's filters and workspaces. Skylum has also applied its considerable know-how in artificial intelligence to the update, most notably its AI Sky Replacement tool, AI Structure feature and new portrait enhancement tools. The tech can recognize different objects in a scene and apply the right kind of enhancement. Upgrade to version 4 for just £68/\$74. www.skylum.com/luminar





STORY BEHIND THE SHOT

PORTRAIT OF LENA

This image was the cover of Susan's seminal 1976 book, *Carnival Strippers*...

Lena was one of many strippers she photographed over several years after first encountering the girls' shows of the country fairs touring America's north east states. Taken in Vermont, 1973, Lena was standing on a bally box to draw punters into the show tent behind her. Recalling the moment, Susan recently told the BBC: "I had no idea who she was – just the flaunting of herself was so striking." It was one of the first photos from the project: "I wanted to know more. I ended up spending three years following the girls' shows. It's basically a striptease of three women to a 45 record. It's like a pop up show." As well as making black and white portraits of the girls on stage, Susan gained their confidence to photograph them relaxing backstage. The work formed the basis for the portfolio that gained her entry to the prestigious Magnum photo agency.

SUSAN MEISELAS

A Magnum photographer since 1976, Susan Meiselas rose to prominence with her coverage of the revolution in Nicaragua. She tells Keith Wilson about the joy of revisiting her archive and how she applies her immersive style to projects

IKE MANY of my generation, I first became aware of the work of Susan Meiselas through her powerful images from Nicaragua, during the late 1970s, when the Sandinista revolutionaries toppled

the military dictatorship of President Anastasio Somoza.

As well as her close proximity to the fighting, what made Susan's pictures captivating was the beautiful colour palette of her Kodachromes, depicting revolutionaries hurling Molotov cocktails and masked fighters posing against vivid street murals. There was a poetic quality to her war images that seemed unique for the time. Her fellow American journalists and photographers certainly thought so: in 1979 she was awarded the Robert Capa Gold Medal for 'outstanding courage and reporting' by the New York-based Overseas Press Club. Forty years have elapsed since that accolade, so I feel compelled to ask Susan what she's up to now, as she prepares for a Spring visit to the UK. "I just came in on a redeye from Sundance and I'm just a little bit bleary,

01 LENA ON THE BALLY BOX

In the 1970s, the 'girls tent' was a staple attraction for men in the country shows of New England. Susan was in her early 20s when she made this portrait of Lena, a stripper, at Essex Junction

Susan Meiselas / Magnum Photos

02 SANDINISTA FIGHTERS

The colourful and varied choices of bandanas and hats do little to disguise the youth of these fighters, some of whom pose openly and proudly for Susan's camera during the infamous Sandinista uprising that overthrew Nicaragua's government in 1979

03 REBEL MASK

Many of the Sandinista rebels adopted these traditional native Indian dance masks in an effort to conceal their identity while fighting during the Nicaraguan revolution of 1979

but I'm definitely all in one piece," she replies. Sundance is America's largest independent film festival, held every January in Utah, and it's intriguing to hear that contemporary films continue to provide inspiration for this renowned master of the documentary even to this very day...

You have such a rich canon of documentary work, but can you bring me up to speed with what you're immersing yourself in now?

I'm in the midst of preparing for a couple of shows right now. That involves a process of revisiting my archive and rethinking some of the work that was around some of the more, let's say iconic, or classic pieces I've produced.

For example, *Carnival Strippers*; I did a few projects in the 1970s related to women in that period that didn't all evolve into a book or an exhibition. We are going to bring them into an exhibition at the Milwaukee Art Museum in April. I'm also working on a community-based project where I work.

Where is that exactly?

I live in Little Italy (Manhattan). I've lived there for 46 years and I'm working with some of my neighbours putting together a book called *Tar Beach*, which features photographs shot anonymously by families celebrating on the rooftops.

// I was excluded as a woman from entering the tent and seeing the full display of what a girls' show was all about //



That sounds fun!

It is. They're wonderful. This is the neighbourhood that Martin Scorsese grew up in, so he's written an intro and we're trying to finish that book at the moment. So, I haven't been actively shooting, what I'm trying to do more of is go back and recontextualize my work.

When you're revisiting a part of your archive it must bring back some forgotten stories?

Yes, there's another archive project which is less focused on women: in 1980-81, I also went to Buenos Aires and did some work on 'the disappeared,' and one of the photographs I shot there was of something called the Museum of Terrorism. That was built by the army and I'm trying to research the context in which that museum was created. So, sometimes it's finding the photograph – in that case it's almost a single photograph – to recontextualize; sometimes it's a body of work or thinking around a set of shots. There's lots that can engage me.

Going back to *Carnival Strippers*, which was one of your earliest bodies of work, what was it that drew you to that topic?

Well, I wasn't looking for the strippers, but when I found them it was fascinating and it drew me in. Partly because I was excluded as a woman from entering the tent and seeing the full display of what a girls' show was all about. I could participate in the fairgrounds like any viewer and I progressively found my way into the dressing room and backstage to document the full process of the girls' working lives. It was at a time where the issue of women being seen as objects and how they considered themselves, in contrast to how they were seen. These were all critical and current issues, especially for a young woman such as myself at the time.

Going from *Carnival Strippers* to covering the revolution in Nicaragua seems like a shift, can you explain how that happened?



Susan Meiselas / Magnum Photos



Susan Meiselas / Magnum Photos

I didn't go literally right from *Carnival Strippers* to Nicaragua, but there was nothing else that represented a book form or an iconic series in the same way. Of course, there were lots of smaller projects that I did in that period. I published *Carnival Strippers* in 1976 and it was the portfolio I brought to Magnum.

When I joined Magnum, I was in a very different kind of culture than I had been exposed to, which opened up different opportunities, so I think I responded. I didn't know that Nicaragua would lead to another dozen years in Latin America when I first went. In that in-between period I did projects, smaller projects, some of which were never seen publicly, except in little bits in the book I did, *Mediations* (2018). I think when you start looking back at your life you see how those in-between points can start to become very interesting.

Good point, that's because it's all like a link in a chain, isn't it?
Exactly. That's a perfect way to describe

it. Then there are gaps; some things hold you longer, some take you back, and some change the path you're on. I would certainly say that Nicaragua was (one) that changed my path. I was doing very local documentary work in the 1970s and the shift point when I got to Nicaragua is when I began to work in Latin America... First in Central America and then further south in Argentina, Chile, Colombia. As such, my world continued to expand in that general direction.

It has taken a hold of you. Do you still feel this 'obsession for return'? A lovely phrase that you've used in the past?
Perhaps. I think it's just more and more interesting. The photograph that I was just describing to you, the Museum of Terrorism in Buenos Aires, right now I'm focused on that and I'm trying to gather information that the general public doesn't know anything about. That's a motivation, to uncover the truth of who created this museum and what was its

purpose, because it wasn't public, it was a military museum.

Only the military could have access to it. That sounds sinister...
It is a little sinister and a little intriguing. It was a dark period in Argentina.

Going back to when you joined Magnum, there were few female Magnum members at that time...
I didn't actually perceive it that way at all and I don't know what you mean by few. From my view, there was something like 22 members, between 22 and 25 in 1976, who were full members. There were already something like five women involved. They didn't all stay, but at that moment you already had Eve Arnold, Inge Morath, Marilyn Silverstone, Abby Heyman, Mary Ellen Mark and myself. That's six women in a group of 20 or 25, which is a pretty good. It's a healthy perspective, considering everyone now is talking about this issue, but I think Magnum brought women in very early.



Susan Meiselas / Magnum Photos

04 OUT OF THE SHADOWS

The shadows of bus passengers, hands on heads, are cast against a wall along a highway in El Salvador as they undergo a search by soldiers, 1980

05 TIA IN THE GARDEN

In 2015-16, Susan worked in the UK documenting refuges and shelters for women fleeing domestic abuse in the Black Country

Lens Canon EF 24-105mm f/4L IS USM

Exposure 1/30 sec, f/5, ISO800

06 MS. OLYMPIA BODYBUILDERS

The representation of women is a theme that Susan has followed in many of her projects, including her series on female bodybuilders, shot in New York, 1988



Susan Meiselas / Magnum Photos

Was everyone treated like an equal? I was wondering who you gravitated to, in terms of seeking a mentor or someone you could learn from...

You know, there were people who encouraged me; there were people who helped me to imagine what going out into the world in a different way might be. People like Burk Uzzle helping me pack my bags on my first trip to Cuba; Gilles Peress giving me an idea of what daily life

might be like when covering a pre-conflict environment like Nicaragua at the time. Sharing the work, you know, people looking at the photographs, colleagues like Alex Webb and, eventually, Eugene Richards. We were all close back then. There are lots of ways that you are listening into and looking at the work of people who have come before you. It's not like going to school and studying photographic history formally, which I never did. It's a lived history.

Yes, you had no formal training...

I took a class in photography one semester and that certainly gave me a starting point, but not the way that I see young people today studying for multiple years. I was influenced by what I was seeing around me – I was right on the cusp. There was barely any work being shown on the walls in New York, not to mention London in that period. I came to London in 1979, or 80, and there was a very strong culture with camera work at the



centrepiece, so if you're alert you look for leads; you look for people doing interesting things.

Of course, the other thing that's different about the current era is the technology...

Sure. Everyone nowadays can use their iPhone and shoot photographs, upload them and have an identity and a profile, a following, all of that.

How do you embrace things like social media?

For the most part I don't use social media. I was talking to my assistant today and people would encourage you to. For me it's just a distraction to what I'm more interested in doing. In this instance that is looking at transforming the world into exhibition, book or even filmic form. That's more interesting to me than Instagram, or creating a constant flow of traffic following me. I'm not really interested in that dynamic, which is what excites this younger generation. I understand their excitement, it's just that with it coming to me at this time of my life, it seems much less relevant or urgent.

Less urgent, definitely!

And very distracting to be quite frank.

I'm still someone who walks. I don't walk around with the camera every day, but I'm using my eyes and mind all the time when I read or see what's around me. I want that to be my initial impulse, to generate my response.

When you walk around with a camera, are you shooting digitally, or are you keeping to film?

Digital for the most part. The last project was in the UK, which was literally diving into a shelter for women fleeing, for the most part, from domestic abuse. I'm more attracted to a deeper connection than I am to street photography, although I take pictures here and there, or see moments in that way, but it's not my vocabulary in the same way that immersive work is more my approach.

What cameras do you tend to use these days?

When I'm really wanting to shoot a profile of someone, or portrait series, then I use the Canon EOS 5D Mark III. I've been in the Canon system for a long time. I wish I had a Leica Monochrom camera! I'd love to be shooting black and white digital, but not converting, really seeing it that way and going back to the early roots that I absolutely enjoyed.

I don't walk around with the camera every day, but I'm using my eyes and mind all the time when I read or see what's around me

Do you still shoot film?

Not as much as I would like to. I was shooting mainly colour two-and-a-quarter film (6x6cm) and in the last six to eight years it was so difficult (to find), and so expensive to get it processed, it no longer made sense. I loved working with colour film – first Kodachrome and then colour negative.

I did a whole project with colour negative, Pandora's Box, so finding the right film for a particular project felt right for a long time. In that cusp of analogue and digital, initially the digital didn't have good enough quality, so I stayed with analogue. I also loved Polaroid for a long time and we've mostly lost that now too, so we are constantly forced to adapt to what's possible and what's economical.



You once said that when anyone asks what lens do you use, you reply ‘it’s not what lens you use, it’s what lens you think you are’. (Laughs) I definitely think of that! I like that a lot, that idea. I’m somewhere between a 28mm and a 35mm by nature. It’s just where I stand and where I like to be in the presence of others. At this distance I can also connect and engage with others.

// I think I am somewhere between a 28mm and a 35mm by nature. It’s just where I stand and where I like to be //

I’m hearing a lot more from experienced Canon professional photographers that they prefer prime lenses to zooms. Is that the case for you?

I go back and forth on that. In the last few years I’ve been working on a project in a factory that hasn’t come to completion yet and it made most sense to be working with a zoom, because of the limited access when you’re in certain types of landscape. You can’t move your body to the subject.

In that kind of setting a zoom makes it more possible to capture what you’re looking at and with some variation. Sometimes I’m shooting with just one camera and a zoom, sometimes I’m shooting with two cameras with prime lenses. I’m no longer doing what I did in Central America – shooting with two cameras with black and white, versus colour film, which is where it all started.

That couldn’t have been easy?

Well, you sort of start pulling the wrong camera up at the critical moment. The shots I have in black and white I wish I had in colour, and that probably works in reverse as well!

Are there other photographers’ work, or other artistic forms, that inspire you?

When you say artistic forms, I just came back from a week at Sundance and documentary film is very close to my heart. I think if things had worked out differently I may have pursued it more actively. I did work in collaboration on a few films, but the narrative of film still interests me a lot. I mean, I’ve moved a little bit towards narrativity in the ways that augmented realities can complement the still photograph, so I’ve brought sound consistently in different periods to different projects. That’s not through



Susan Meiselas / Magnum Photos

SUSAN MEISELAS

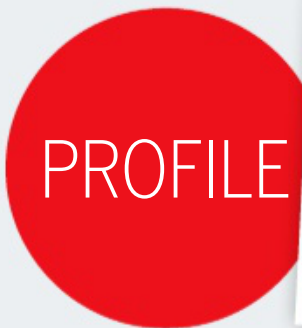


Susan Meiselas / Magnum Photos

07 PICTURING THE PAST
Taken in the Iraqi city of Arbil, 1991, Susan's photo shows Jamal Keder Osman with a picture he carries of himself as a Peshmerga fighter from the 1963 rebellion, which sought to establish an independent Kurdish state in northern Iraq

08 RITU'S ROOM
Room 12 at the Ruby House in Wolverhampton. It may look stark and austere, but it was a haven for the abused woman who sought shelter within these walls

Lens	Canon EF 24mm f/1.4L USM
Exposure	1/60 sec, f/7.1, ISO3200



SUSAN MEISELAS

Documentary photographer

Born in Baltimore in 1948, Susan Meiselas embarked on her life in photography after gaining an MA in visual education from Harvard. After her entry to Magnum and the publication of her first book, *Carnival Strippers*, Meiselas travelled to Nicaragua to document the insurrection led by the Frente Sandinista de Liberación Nacional, which toppled the country's military regime in 1979. Her coverage of this conflict and others in Latin America in the following years resulted in many books, exhibitions and awards. Meiselas has also co-directed two films: *Living at Risk: the Story of a Nicaraguan Family* (1986) and *Pictures from a Revolution* (1991). Her photo books include *Nicaragua: June 1978-July 1979* (1981), *In the Shadow of History* (1997), and *Mediations* (2018). She has had solo exhibitions of her work in Paris, London, Madrid, Amsterdam, Chicago and New York.
www.susanmeiselas.com

Next issue: Matthew Maran, award-winning landscape & wildlife photographer

seeing someone else doing it, it's more feeling what's absent, or more what I want to complement the photograph.

What about books and magazines?
I know what the first books that really drew me in. Strangely, I don't have strong associations when *Life* magazine was active, I don't remember that being central to my experience, which is surprising actually. I mean, people have asked me, 'did you identify with Margaret Bourke White?' and I didn't at all. But when photography entered my life and I saw both Danny Lyon's work, *The Bikeriders*, and Larry Clark's *Tulsa*, those two early books from 1968-70, were definitely quite different to what I was seeing with Gary Winogrand or Lee Friedlander, Diane Arbus; those were the favourite people who had pictures on walls at that time. Danny and Larry Clark had books, it was even before they had

pictures on walls, but I could see the books and book making become the form that I was most interested in.

You've had an amazing career, what's the best piece of advice you'd give to someone starting out in their early 20s like you were?
I think the word 'career' doesn't seem appropriate, because I don't think I was looking to have a career. Maybe there's something in simply just allowing yourself to have your own curiosities and follow your instincts as to what to look at, and what to come to know, and to let your passion lead you. 📷

Susan Meiselas will be speaking on the Super Stage at The Photography Show at the NEC, Birmingham, Sat 14 March. The show is on from 14-17 March 2020. Book your tickets now at www.photographyshow.com

PHOTOSTORIES

Photo essays from PhotoPlus readers and professional photographers alike

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01

PROJECT INFO



NAME: Jan Van Der Walt

LOCATION: South Africa

MISSION: Create stunning car shots for an automotive magazine with entry-level kit

KIT: Canon EOS 1100D, Canon EF-S 18-55mm f/3.5-5.6 III, Canon EF-S 55-250mm f/4-5.6 IS II

www.janvanderwalt.myportfolio.com

Fast & furious

Jan Van Der Walt pushed his entry-level Canon 1100D DSLR to the limit to achieve amazing high-octane automotive pictures

Back in 2016 I lost my job and had to find a way to make some money. It seemed like a good opportunity to get into photography full-time, but my camera was a 40D which was pretty old at the time. I bought it back in 2008 at the annual Canon Roadshow in South Africa. I'll never forget the moment one of the speakers told us, "folks, don't be scared to push these

cameras!" It stuck with me when I switched to a Canon EOS 1100D, still an entry-level camera, but I was dying to see just how far it could be pushed and how capable it really was.

So, in 2016 I started doing a few corporate functions and portraits to make some money on the side, and in 2017 the car photography bug bit me when I went to the Kyalami Grand Prix Circuit for a track day. The little 1100D performed really well being



shoved in the deep end and having to cope with me, tirelessly smashing away at the shutter button.

From that point on I wanted to be an automotive photographer, full-time, and was able to land a job doing precisely that for *HotRods* magazine in South Africa. I was still using the Canon EOS 1100D as it performed really well – it's done multiple cover photos! I even shot some b-roll video footage for a local TV show called the *Rod Shop*.

So many people are amazed when they hear which camera I've used to take my photos – even owners of the 1100D have been amazed. I wanted

to write in and tell *PhotoPlus* readers that, in order to make good and even great photos, you need to learn photography and focus less on what camera you have – it's not about having the most expensive kit. Canon makes ace cameras and lenses even at the budget end.

As my trusted 1100D is showing its age and, as a result of the 'abuse' I've put it through, I will be upgrading to the new 90D. But if you take one thing away from this story it's that people should take the time to focus on photography skills rather than gear, don't be discouraged if all you can afford is entry-level gear, make it work for you! 

01 1967 FORD MUSTANG FASTBACK

This turned out to be a cover image and was shot in the afternoon

Lens	Canon EF-S 55-250mm f/4-5.6 IS II	Exposure	1/20 sec, f/22, ISO100
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02 1969 FORD MUSTANG BOSS 408

I shot more than 100 images while driving at slow speeds to get this frame

Lens	Canon EF-S 18-55mm f/3.5-5.6 III	Exposure	1/30 sec, f/18, ISO100
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03 2017 NISSAN GTR

Taken at the Phakisa racetrack near Welkom, South Africa

Lens	Canon EF-S 55-250mm f/4-5.6 IS II	Exposure	1/160 sec, f/10, ISO100
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04 1957 VOLKSWAGEN BEETLE

This was taken for a private client who has this wonderful car

Lens	Canon EF-S 18-55mm f/3.5-5.6 III	Exposure	1/30 sec, f/22, ISO100
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PhotoPlus FEEDBACK

What a great series of shots that show off what Canon's cameras can achieve when pushed. It goes to show that with the right settings and vision you can get top-notch, cover-worthy pictures.

We think Jan has outgrown his kit and should consider a body with a better AF tracking system, which he admits isn't the best on his 1100D. A top-end APS-C Canon DSLR like the 7D Mark II would give him a better performance and we'd still consider this to be budget, when compared to higher cost of full-frame systems.

PROJECT INFO



NAME: Patrick van Vlaenderen

LOCATION: Belgium and France

MISSION: Take a series of images based around the theme of black and white

KIT: Canon EOS 6D, Canon EOS 5D Mark II, Canon EF 24-105mm f/4L IS USM, Samyang 14mm f/2.8 ED AS IF UMC, Manfrotto MK 190XPRO tripod

www.patvanvlaenderen.wixsite.com/fotomaker

01

Back in black (and white)

Patrick set out to shoot a series of landscapes devoid of colour to concentrate instead on pure tone and composition

In 2018 I set out to photograph industrial buildings and landscapes in black and white and it's since become a genre I've fallen in love with.

The main reason that I prefer working with the monochrome medium is that

the viewer won't be distracted by bright colours or objects that you don't want them to be – the focus goes solely on the composition. I also prefer long exposures, compared to totally pin-sharp images taken with a fast shutter speed. A long shutter allows me to add movement and drama to the image – it feels like I'm getting more creative. It also gives me the chance to show the viewer something they can't see with the naked eye. Long exposures work fantastically with black and white imagery, as they have an almost ethereal quality to them.

Based in Belgium, I shoot my landscapes all around Europe, though these examples are from my home and my visits to France and the Czech Republic.

I captured the sunset image at the Belgian coast after I was inspired from a vlog by Gary Gough on YouTube, where he exposed the sky and foreground separately and merged the two images together. This is what I did with the photo, *Black Sunset*, to create the different levels of motion in the water and the clouds in the sky for an interesting contrast.

My image *Ghost Forest* was from a trip to the Czech Republic that was challenging due to the freezing-cold conditions. To create the 'ghostly' blur in the trees I used a technique called, 'intentional camera movement' (also called ICM), where I panned upwards as I took the shot with a slow shutter speed of 1/20 sec,

02



which was enough to create the vertical blur you can see here. The snow looks sharp over the top of this because I added it in Photoshop. For colder climates there's no substitute for warm clothing and having plenty of spare batteries with you.

The groins in my image *Ghost Water* were a great find from my time in Brittany, France. I wanted to use my technique of going mono and use a long exposure to make the wooden posts stand out as the motion of the sea water was blurred around them in a long two minute exposure.

The image of the cooling towers was shot in Northern France at the nuclear power station of Cattenom. I'd often seen them as my family drove by on past holidays, and I'd always wanted to stop and take a photo. There was quite a lot of preparation for this shot, as I only had a small window of time to work with. Finding the right spot to shoot from was also a problem. I used Google Maps to get the coordinates and then The Photographer's Ephemeris app to help me work out what times it would look best and also the angle of the sun. 📷

A long shutter allows me to add movement and drama to the image. It feels like I'm getting more creative

01 BLACK SUNSET

A piece of the Belgian coastline called De Haan. Patrick captured this with a long exposure

Lens	Canon EF 24-105mm f/4L IS USM	Exposure	20 secs, f/20, ISO50
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02 GHOST FOREST

Patrick used intentional camera movement to blur the trees and added snow digitally in post-production

Lens	Samyang 14mm f/2.8 ED AS IF UMC	Exposure	1/20 sec, f/4.5, ISO2500
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03 GHOST WATER

Taken in Brittany, I used a 10-stop ND filter to achieve a shutter speed close to one minute long

Lens	Canon EF 24-105mm f/4L IS USM	Exposure	50 secs, f/18, ISO50
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04 THE SILOS

Plumes of steam coming out of the Cattenom nuclear power plant in Northern France

Lens	Canon EF 24-105mm f/4L IS USM	Exposure	80 secs, f/22, ISO50
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PhotoPlus FEEDBACK

By challenging himself to work to a black-and-white theme, Patrick has come up with a brilliant handful of moody, atmospheric shots that have a very ethereal, other-worldly feel to them.

If we were being picky we'd suggest spending a little longer on the edit, taking the time to clean up lens distortions, odd flaring and dust spots will really make him become a perfectionist and take his photography the top of his game.

MYKIT

Professional photographers reveal their top six tools of the trade they couldn't shoot without



For most images I'll merge together anywhere between 80 and 150 images



WHAT DO I DO?

Marco Jongsma

Investing in specialist kit Marco has found his calling with super close-up macro photography and he's here to explain how he takes amazingly detailed close-ups

often get my subjects from an insect collector, or find them in the window box.

With warm weather you can also find them on leaves in the park.

I first clean them and make sure they're free of dust, which can take up to an hour, using air and brushes. I then place the subject in a white semi-transparent tube that I can direct my flash lights towards.

To get super close I use my Canon MP-E 65mm f/2.8 1-5x macro lens, which gives me a reproduction ratio of 5:1, that's

five times larger than real life! I mount my camera to a rail so I can focus on the front of the insect, take a shot, then move it closer and closer until I have focused on every part. I then merge the images into Helicon focus stacking software to get a perfectly sharp image.

For most images I'll merge together anywhere between 80 and 150 images, so I use Cognisys Macro Rail and Cognisys Stack Shot Controller to move the camera in minute increments towards the insect. I then take the stacked image into Photoshop and remove

any blemishes like dust, which become more noticeable when shooting them close up. This process from start to finish can take between five and seven hours for a single image!

With focus stacking, photos are merged by software into one photo. First, different shots must be made with the focus shifting slowly. The 'edge detection' or Fourier analysis tech is used to select the sharpest parts per recording. A manual correction can be made on this. All sharp parts are then merged into the new result.

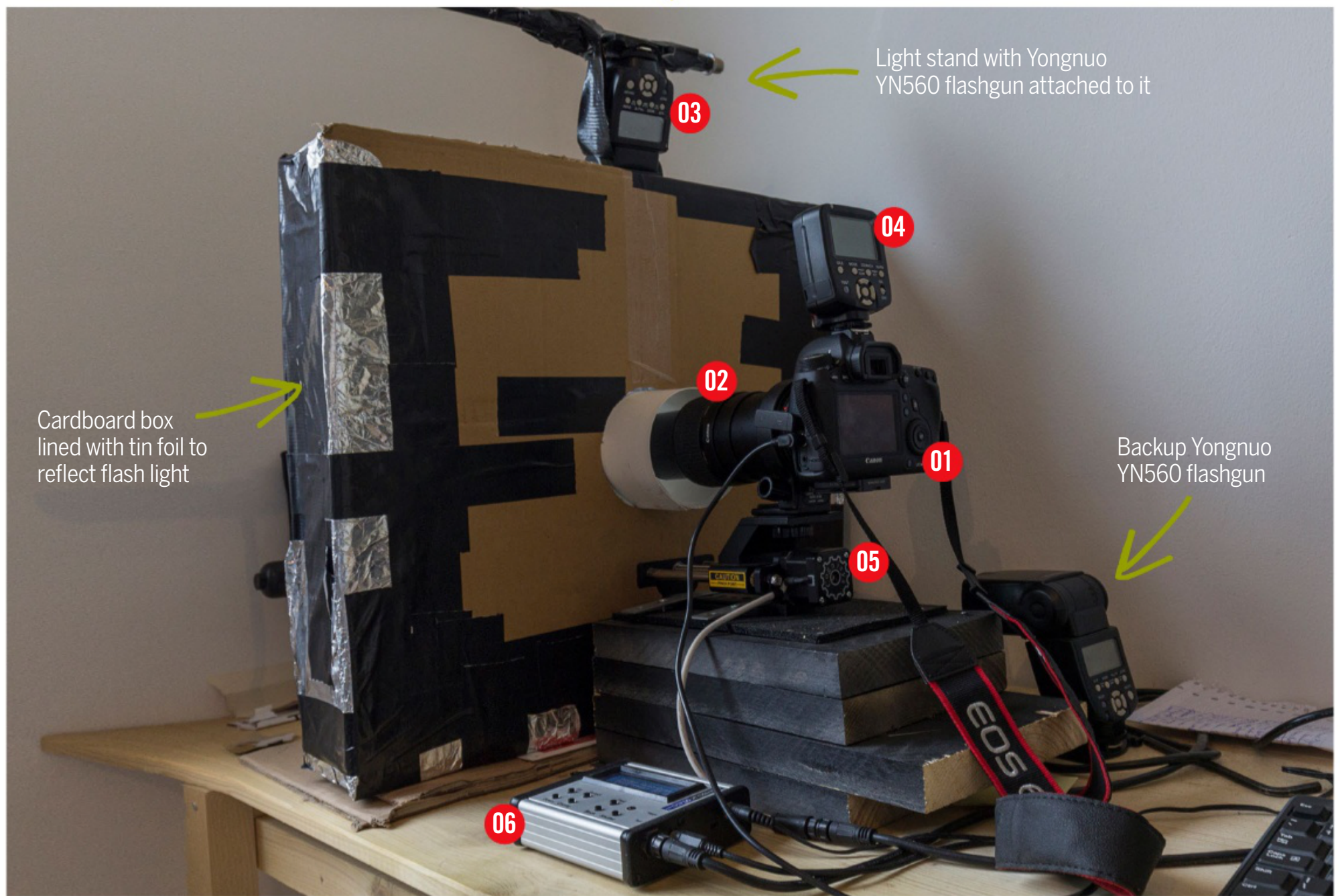


Marco Jongsma

Instagram: @marcojongsma

I'M 32 and live in a small fishing village, Lemmer, in the Netherlands. In my daily life I work in a laboratory at a concrete factory. When I'm done working I like to explore nature – I relax and recharge myself. I'm inspired by the insects and was curious how they looked up close – you obviously can't clearly see these details with the naked eye. This is how my hobby came about for making insect portraits and their details. I want to show people the beauty of these creatures and the beautiful work of our creator.

IN MARCO'S BAG



01 **Canon EOS 6D** WEB: www.canon.co.uk

CANON'S EOS 6D Mark I may be an older DSLR, but it still delivers incredible image quality, especially when using low ISO values and flash as I do in my home setup. It's a full-frame DSLR too, so if I use a reproduction ratio of 1:1, my insects will be captured at 'life-size' – the same size as if they were laid across the imaging sensor. The 20.2Mp resolution is also quite manageable, which is handy, as I sometimes have to merge up to 150 different images together in post.

02 **Canon EF MP-E 65mm f/2.8 1-5x Macro** WEB: www.canon.co.uk

THIS is an amazing lens that enables super-close focusing from 1:1 (life-size), to a whopping 5:1 which will capture your subject five times larger than life-size. It's difficult to get handheld results, or even sharp results at this microscopic magnification. To fix this, I pair it with a macro rail, that helps take lots of images as I move the lens closer to the bug, rendering each detail sharp.

03 **Yongnuo YN560 flashgun** WEB: www.ebay.co.uk

I PLACE the insects on a plastic white tube, inside of a cardboard box lined with tinfoil. Inside this box I have three Yongnuo YN560 flashguns directed towards the tube, which is semi-transparent, allowing the flashlight to come through. Diffusing it makes the spread of light more soft and even. I choose these flashguns as they're affordable – I can buy three or four of these 'guns' for the price of an official Canon Speedlite.

04 **Yongnuo YN560-TX II flash trigger** WEB: www.ebay.co.uk

MY SETUP has been fine-tuned to deliver the consistent results from years of experience taking these images. Even slight adjustments make a difference, so I want to touch my flashguns as little as possible. That's why I use this YN560-TX II flash trigger controller, as it allows me to change the power of each Yongnuo flashgun in my setup without physically touching each strobe.

05 **Cognisys Macro Rail** WEB: www.cognisys-inc.com

THIS is a macro rail with 100mm of travel, though you can get an extended 200mm version too. It works in conjunction with the StackShot Controller, so you don't have to manually adjust the rail by hand, you just dial in the settings on the controller and it will automatically move forward and take each image. It's a specialist piece of kit, but its high level of accuracy makes it essential for this kind of macro work.

06 **Cognisys StackShot Controller** WEB: www.cognisys-inc.com

THE StackShot Controller is the interface used to communicate with the Cognisys Macro Rail and plugs directly into my 6D's remote control port. It allows me to dial in the distance I want it to travel, how much distance it should travel between shots and also whether or not it should stop moving when taking an exposure. This can be a handy setting if you need to add extra time for your flashguns to recharge.



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CANON SCHOOL

*Your ultimate photographic reference guide
to the complete Canon EOS DSLR system*

CANON EOS SOLUTIONS

PAGE 80

**How to get that vintage
Hollywood look in DPP**



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PhotoPlus EXPERT

BRIAN WORLEY

CAMERA EXPERT

Brian has unrivalled EOS camera knowledge after working for Canon for over 15 years. He now works as a freelance photographer and photo tutor in Oxfordshire.



DIGITAL EOS ESSENTIALS

PAGE 82

**Control colour for
creativity or corrections**



WITH
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MARCUS HAWKINS

PHOTO EXPERT

Marcus has more than 30 years of photography experience. A former editor of our sister publication *Digital Camera*, he has written about photography for Canon and Jessops, and uses a Canon EOS 5D Mk IV.



EOS S.O.S

PAGE 88

**Brian answers all of your
tricky Canon questions**

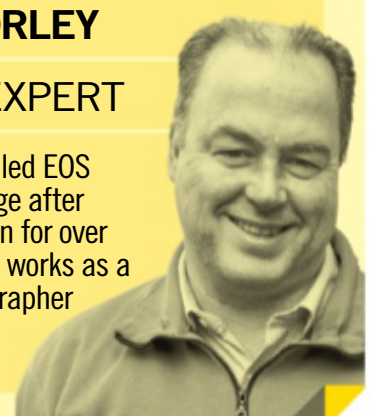


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Brian has unrivalled EOS camera knowledge after working for Canon for over 15 years. He now works as a freelance photographer and photo tutor in Oxfordshire.



CANON EOS SOLUTIONS

Introducing a new regular series where we go in-depth into Canon's free imaging software

PhotoPlus EXPERT

BRIAN WORLEY

CANON PRO

Brian is a freelance photographer and photo tutor, based in Oxfordshire. He has unrivalled EOS DSLR knowledge, after working for Canon for over 15 years, and is the perfect man to help you master Canon's software.



Hollywood movie style in DPP

Create the vintage black and white feel synonymous with old Hollywood movies

In this tutorial you'll learn how to create vintage style black-and-white photos using the tools in DPP. For the authentic look you'll need to apply some of the ways of the skilled darkroom workers to finalize your photos.

Choosing the Monochrome Picture Style is one part of the

process, but also consider *how* your photo is taken. In this example a small LED light was used to light the model. Being a small light, it creates hard edged shadows, and these are further enhanced by positioning the light close to the model, for rapid fall off.

This is the same style of light that was used in the vintage photos. If the light

looks too hard a small diffuser in front of the light will be a little more forgiving on skin texture. Old style make up helps with the authenticity, so ask your model to bring a darker shade of lipstick and eyeliner than normal.

Watch the exposure, since you need to keep all the tones in the frame within the range your camera can capture.

If you can still see detail in the white towels then you have a good starting point. Make sure to switch off highlight tone priority in your camera since you want an even spread of tones and plenty of detail in the shadows. This photo was taken in a shower, but any kind of background would work as long as it doesn't scream modernity.

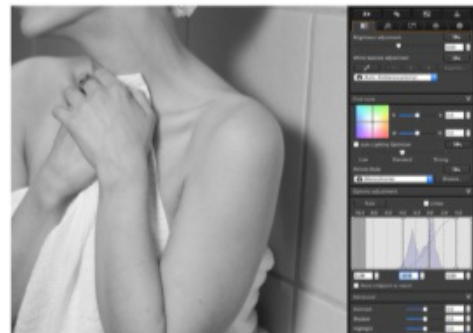
STEP BY STEP CLASSY HOLLYWOOD PORTRAIT LOOKS

In Canon's DPP, alter tonal ranges and contrast levels to craft an impactful, vintage, portrait



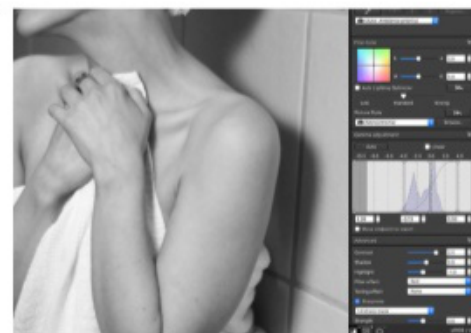
01 MAKE MONO PHOTOS

If you took the photo in colour, like here, you'll need to convert to black and white. Change the Picture Style for instant black and white. Just like the camera settings, the Monochrome Picture Style lets you simulate coloured filters with the Filter effect dropdown.



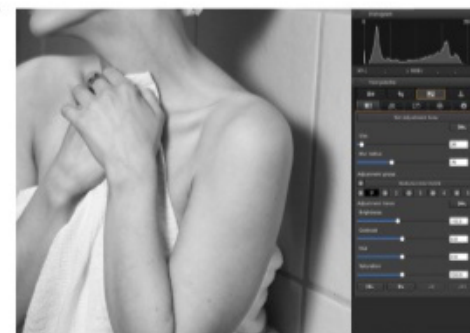
02 TONAL RANGES

Turn on the highlight and shadow warnings, so you can see the effect of adjustments. You want solid blacks in the shot, this is done by adjusting the gamma. Drag the left vertical line towards the middle to deepen shadows. I moved the central slider to brighten the mid-tones.



03 ENHANCE CONTRAST

Increasing the contrast control adjusts the shape of the gamma curve, making blacks deeper and whites brighter. Here it pulled back the highlights to retain detail after adjustments. I set the highlight and shadow warning threshold to 253 and 2 when doing this adjustment.



04 ADJUSTMENTS

Click on the Adjust specific areas tab in the tool palette to access the tools to adjust brightness and contrast in photos. You can have several adjustment areas. We used two, one to reduce the brightness of the towels, a second to create a vignette around the edge of the shot.

**MONOCHROME
TECHNIQUES**

When making monochrome images, you need to control contrast, and for this the gamma adjustment is the most efficient way to do so. Use the highlight and shadow warnings as your guide to ensure you don't push the image too far, whilst maintaining the deep blacks and bright highlights in the image.



DIGITAL EOS ESSENTIALS

In this edition of Digital EOS Essentials we explain all you need to know about working with colour in your Canon

PhotoPlus EXPERT

MARCUS HAWKINS

PHOTO EXPERT

Marcus has been passionate about photography for more than 25 years. A former editor of our sister publication *Digital Camera*, he has written about photography and cameras for a wide range of clients, including Canon and Jessops, and uses a Canon EOS 5D Mk III.



Take control of colour

Discover which Canon camera features enable you to get more vivid, or subtle, results

There are a number of different EOS functions that give you control over the way in which colours are rendered in your shots. The one that has by far the biggest impact is **white balance**. If this is incorrectly set, the entire colour palette of the image or video you're shooting will look wrong. We've covered white balance (WB) in Digital EOS Essentials, but it's worth us taking a look again as it's a key control to get to grips with.

White balance can be used either correctively or creatively. It's designed to help neutralize colour casts so that colours appear natural. If the camera didn't have a white balance function, then objects would take on the hue and tint of the light source. For instance, a white wall lit by a

warm, yellow household bulb would look yellow in a photo. That same white wall, photographed in cool blue shade would then appear blue. You can leave the camera to try and figure things out for itself, but the Auto white balance setting doesn't always get things right. Manually setting a preset that matches the light source, or making your own custom white balance setting, can help to correct most colour casts.

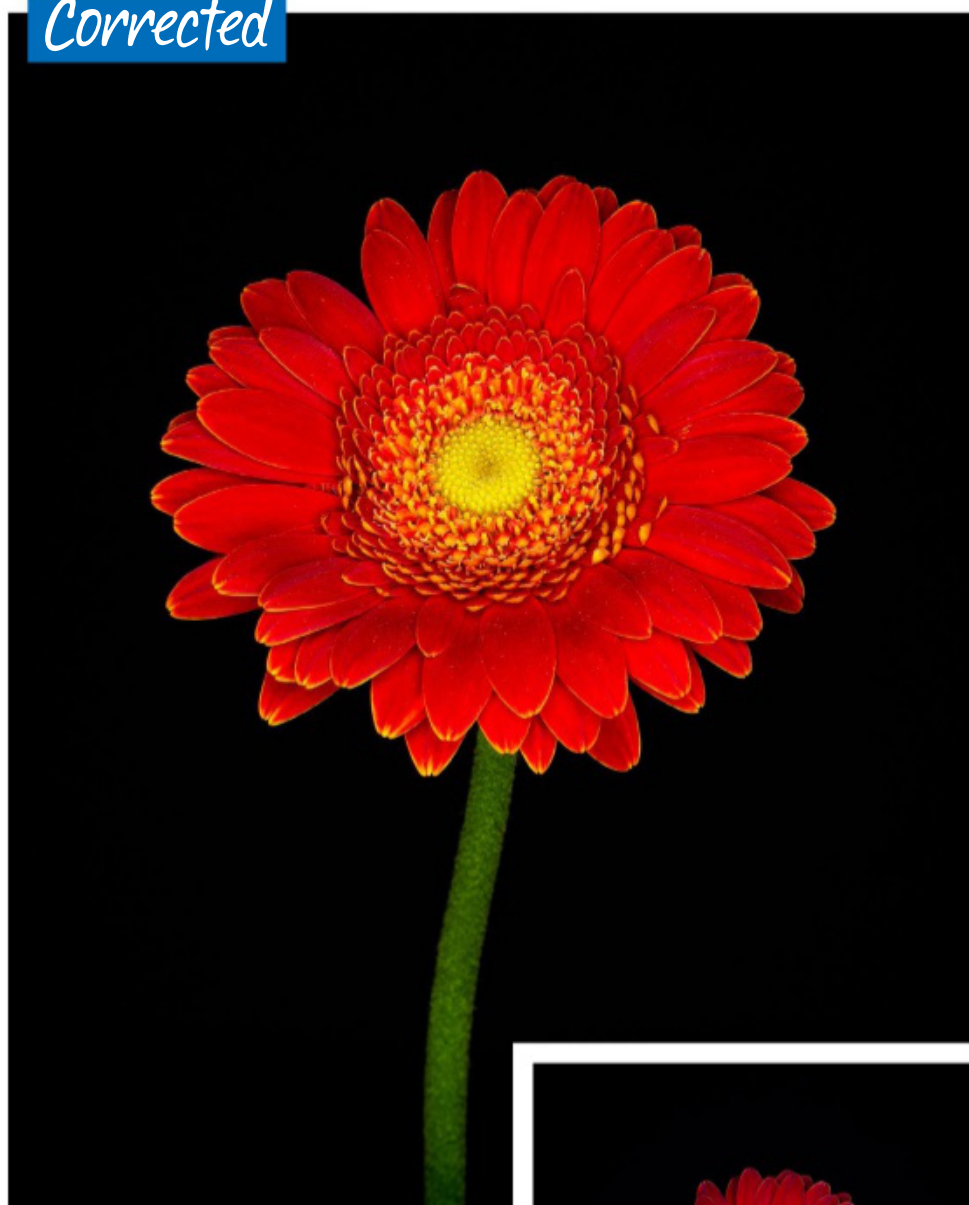
You can also use this function creatively by intentionally setting an incorrect white balance to exaggerate a colour cast slightly and enhance the mood. To boost a sunset, for example, you can set one of the presets that is designed to warm up an image taken in cool blue light conditions, such as Cloudy or Shade.

Colour correcting flash

YOU CAN only set one WB colour temp for an image, which can be a problem when dealing with mixed lights. So, if you set the WB to match the green tint of a fluorescent light source, the camera basically adds the equivalent of a magenta filter to cancel out the green. Meaning if you activate the flash, the white light from the flash will be tinted magenta!

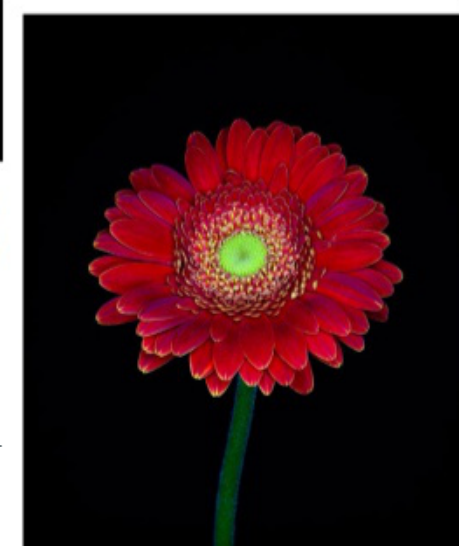
You can get around this by adding a colour correction gel or filter to the flash that matches the primary light source. In this example, adding a green filter will ensure the light blends in with the fluorescent light. If you're shooting under tungsten light or candlelight, then a warm orange filter will ensure the flash light doesn't look too blue, and so on.

Corrected



Auto White Balance

Here, the Auto WB setting has tried to reduce the warmth of the red flower shot under warm light, giving a cool result that needs to be corrected



PICTURE STYLES

Adjusting the saturation

How to edit a Picture Style to pump up the colour, or tone it down

It might seem odd that an EOS camera has no colour setting available in the menu. Rather than give you lots of individual picture characteristics to tweak, Canon groups the most used picture correction options together as Picture Style profiles. Each Picture Style offers a different blend of saturation, sharpness, colour

tone and contrast, and although some are labelled according to the type of image they might suit you can apply any of them to any image or movie clip.

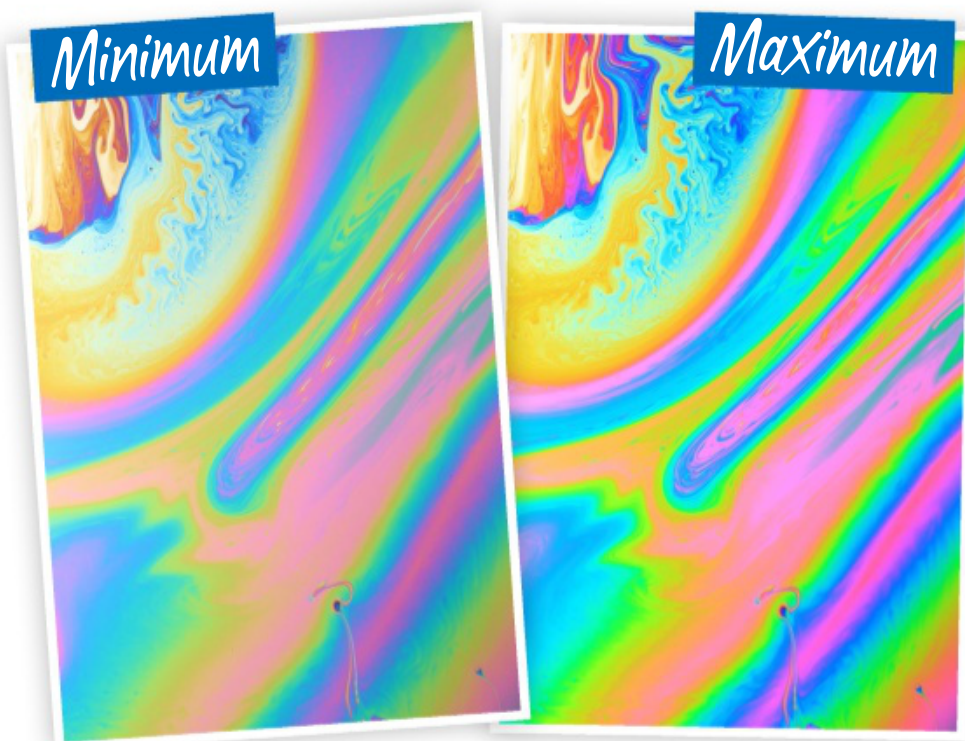
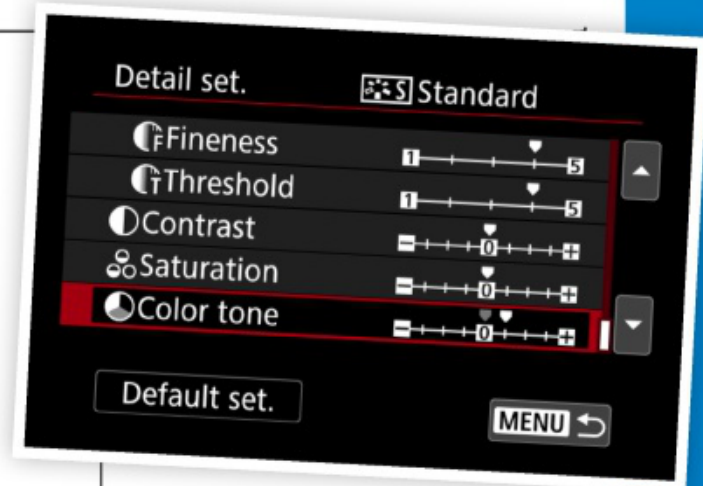
You are able to alter the colours by adjusting the parameters of a Picture Style. Not only can you adjust the level of saturation for either bolder or subtler results, you can bias the colour tone towards red or

yellow – although this option is designed to help fine-tune skin tones.

To tweak these parameters, you'll need to dip into the Picture Style sub-menu, which you can access through the red Shooting menu or the Quick Control screen. The EOS 7D Mark II, 5D Mark IV and 5DS/R also have a button on the left of the body that takes you to the

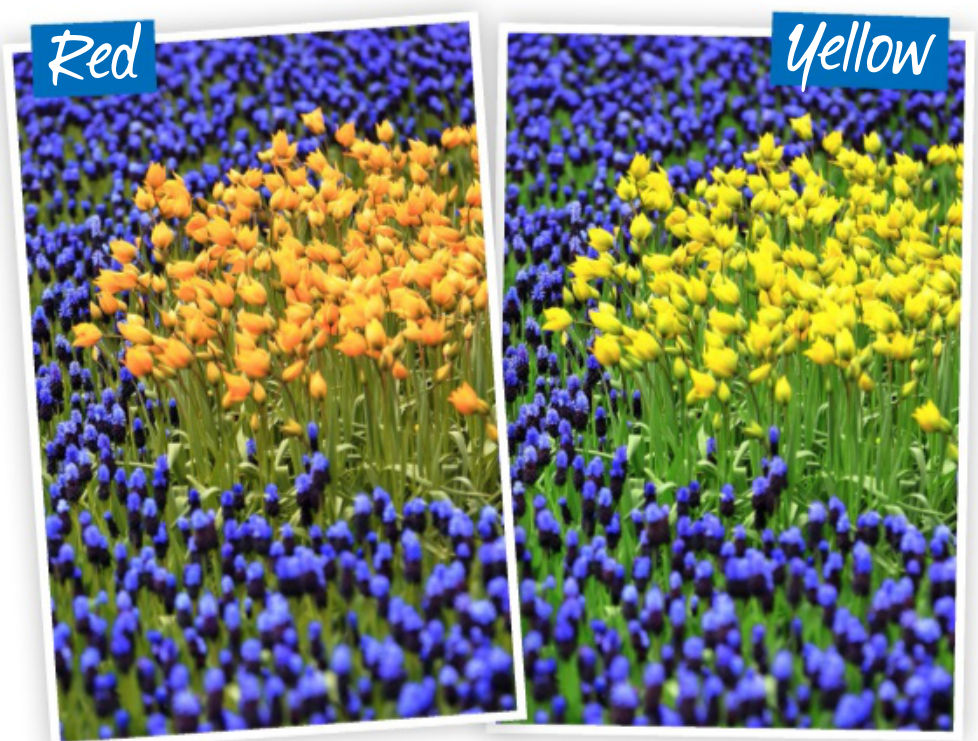
Picture Style menu, but many other cameras allow you to add the function to one of their customizable buttons via the Custom Functions menu.

In addition to modifying Picture Styles, you can register your favourite setups under the three 'User Def.' slots.



Changing the saturation

BOTH OF these shots were taken using the Landscape Picture Style preset, but with the saturation parameter taken to each extreme. The min setting shows more subtle shifts in gradation, but looks a bit pasty, whereas the max setting will give a much bolder presentation straight out of the camera.



Shifting the colour tone

THE COLOUR tone slider is also effective at boosting sunset shots or giving images of flowers a different feel. Adjustments are usually better made in small increments, but here I've taken the sliders to the extreme red ('minus') and yellow ('positive') settings to show the effect.

What is a colour space?

How your choice of colour space determines the range of colours you can see

A colour space dictates the specific range of colours that can be reproduced, and it's a way of ensuring that these colours can be presented consistently across different screens, printers, internet browsers, software programs and more. If there wasn't any consistency, if each

of these devices used a different space, then your pictures would look different depending on how it was being viewed.

The most widely used colour space is sRGB. This is the colour space your images are recorded in by default when you shoot JPEGs, and it's supported by most devices. EOS cameras also give you the

option of switching to Adobe RGB – you can find this option in the red Shooting menu. Adobe RGB is a larger colour space, so it gives you a wider range of colours to work with. But bigger doesn't mean better; not all devices and software can display Adobe



RGB files correctly, so pictures can end up looking muddy and flat in an sRGB environment or when printed out.

Accurate colours in movies

Choose the Neutral Picture Style if you plan to process your video clips

You'll often hear the term 'colour grading' or simply 'grading' mentioned when filmmakers are talking about the post-production of movies. This is essentially fancy filmmaking parlance for colour correction. It's the same thing that you might do with a photo, and usually involves adjusting the white balance, saturation, contrast and other picture parameters, fine-tuning the colour palette to enhance the mood and achieve a distinctive look, then making sure all the clips match so there's a seamless transition from one shot to the next.

If you want to carry out a similar process with your own

videos then it'll be easier to do this using a file that's had the least amount of processing applied in-camera – or none at all. Unless you're shooting on a top-end Canon, such as the EOS-1D X Mark III, however, you will be unable to record movies in a Raw format. Instead, clips are more like moving JPEGs, with the Picture Style, WB and other processing parameters applied to each frame of the movie before it's saved.

In order to get a 'flat' base image to work from, try setting

the Neutral Picture Style. This gives you subdued colours and low levels of contrast that allows more delicate details to be captured and gives more scope for colour adjustments later. You can also download a 'Video Camera X Series Look' Picture Style from <https://global.canon/en/imaging/picturestyle/>, which gives you a look that's closer to Canon's X Series of pro camcorders.



Pre plan your colours

If you're going to share clips straight from the camera, choose your preferred Picture Style, such as Landscape shown here above



The Neutral Picture Style (right) serves up a dull, flat result, but a cleaner base for colour tweaks



How ISO affects colours

Stick to lower sensitivities for the best picture quality

PICTURE NOISE is the well-known trade-off of raising a camera's ISO setting so that you can take a picture in low light. But did you know that colour also suffers as you raise the sensitivity? You'll be hard-pressed to spot any changes if you stick to relatively low settings, but once you enter the camera's upper range of ISO sensitivities, colours will become weaker and you'll eventually see colour shifts in the image. To be fair,

though, you're more likely to notice the noise first, but it's relatively easy to do something about this; correcting colours takes more time.

As always, if you're shooting a Raw file then you get a bit more headroom for making corrections when you process the image later. But if you're shooting a JPEG or a movie, then it's another reason to stick with lower ISO settings as often as you logically can.

ISO400



ISO102,400



MAKING RAW TWEAKS

Fine-tuning colours in Raw

Use the HSL controls to change Hue, Saturation and Lightness

With Raw files, you can correct the colours – or manipulate them – when you work up an image in Raw processing software. As well as making global colour adjustments that affect the whole picture, such as increasing or decreasing the saturation, or tweaking the white balance, you can make selective adjustments to specific colours.

For example, any Raw processor worth its salt will include a tool for fine-tuning the Hue, Saturation and Lightness (HSL) of individual colours. In Canon's Digital Photo Professional, you'll find this under 'Color adjustment' in the tools palette.

I use HSL regularly, increasing the lightness of orange a little for portraits of people with pale skin in order to lift the skin tones, for example, or increasing the lightness of yellow and green to help separate elements in a landscape shot.

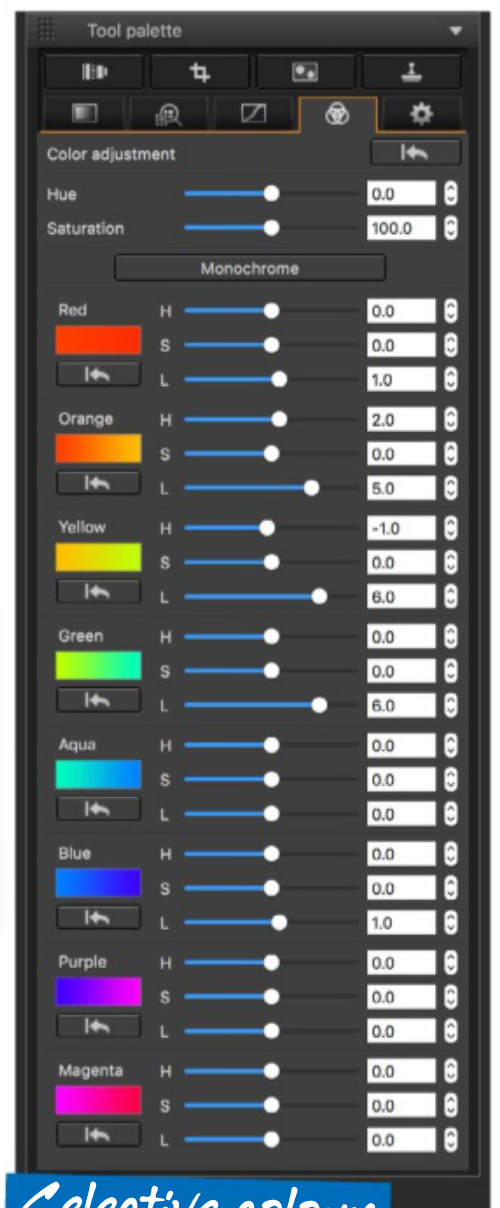
HSL adjustments – or the H and L elements, at least – are also useful when working on black and white images, as they can help to add contrast where there perhaps is none when the colour is removed.



You won't be able to do this in Digital Photo Professional if the Picture Style is set to Monochrome. Instead, select a colour Picture Style, click 'Monochrome' at the top of the 'Color adjustment' palette, and

then adjust the Hue and Lightness sliders.

One thing to consider is that although these adjustments target specific colours, they do so across the whole image. So you need to make sure you're



Selective colour

Here, I've used Digital Photo Professional's Colour adjustment palette to lighten the orange, yellow and green of this image and give it more pop

not altering the colour of an object in another part of the shot that you hadn't intended to change. For more selective changes, you can use the adjustment brush for targeted WB and saturation changes.

School tip RGB histogram display

Check that your colours aren't too dark or too bright

IF COLOUR is a vital ingredient to the success of a shot, it's worth switching the camera's histogram display from 'Brightness' to 'RGB' – you can do this in the blue Playback menu. This way, you'll be able to check the colour channels that make up the image – Red, Green and Blue – are being exposed correctly. If any of them are against the right of the graph then

that colour will be oversaturated in some areas – you may need to alter the WB, reduce the exposure or choose a less punchy Picture Style.

Remember, the histogram is based on a JPEG using the current settings – if you shoot a Raw then you'll have more image data to work with and you may be able to fix the over-saturation in post.



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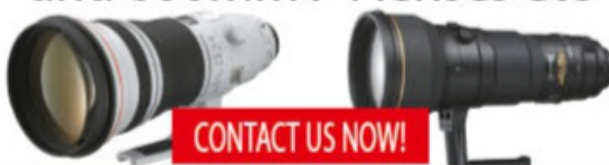
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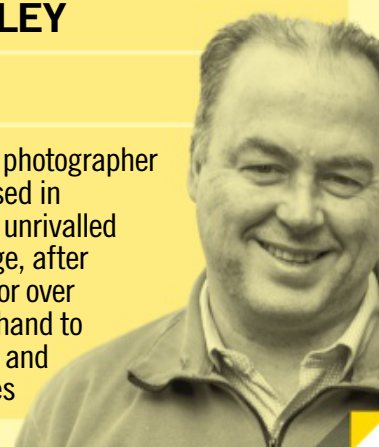
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BRIAN WORLEY

CANON PRO

Brian is a freelance photographer and photo tutor, based in Oxfordshire. He has unrivalled EOS DSLR knowledge, after working for Canon for over 15 years, and is on hand to answer all your EOS and photographic queries



Less powerful LED lights need to be positioned very close to the subject, however, pictures may end up less sharp than with flash

Is there a disadvantage to using an LED light instead of a Speedlite for portraits?

Nick Hadley, Syresham

BRIAN SAYS... LED lights are good and often used for video, so why not portraits? LEDs give out less light than a Speedlite, so this means you need to raise the ISO and maybe slow the shutter for a correct exposure. The benefit of always on LED is that it's easy to see how the light looks on your subject. It's when you want to use larger softboxes that an LEDs lack of power becomes evident. Also, LEDs can result in slightly blurred shots if subjects move. The Speedlite delivers its burst of light in fractions of seconds, so packs more power and freezes subject's movements.



When shooting through thick glass, it's essential to reduce the reflections on the glass by shooting straight through it, not at an angle

How do you get good photos in a zoo, when there's glass or wire mesh?

Ollie Jordan, Wilmslow

BRIAN SAYS... I've often found that larger safari style parks present cleaner backgrounds and better photographic opportunities.

If you do have to shoot through wire, you need to get your lens as close to the wire as possible, and the animal as far from the wire as you can. Then use as wide a aperture as your lens blurs out the close wire mesh. If you have a lens hood it can reduce the chance of scratching the front element on your lens.

Shooting through glass can be challenging,

Holding the lens hood against the wire mesh and opening the aperture fully can almost eliminate the wires

as you need to avoid reflections and hope that the glass is clean. Pressing a lens hood against the glass can work to avoid reflections from your side, and help to keep the camera perpendicular to the glass, avoiding distortion. A polarizing filter will also be good for reducing reflections.



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Setting the camera for faster shutter speeds suitable for the lens being used ensures sharper action shots

Break the resolution rules

The old rules for shake-free photos are challenged by high-resolution cameras

Ever since I read my first book on photography there's been one rule for sharper photos that always holds true – keep everything still. For the times you hand-hold the camera, the rule is to use the reciprocal of the focal length to avoid the chance of camera shake. So, if you use a 100mm lens, then you'll need 1/100 sec shutter speed, and for a 500mm lens 1/500 sec.

But with the advent of hi-res digital sensors and larger screens we've stopped judging the sharpness of a 10x15cm print. My 24-inch monitor is 50cm wide and there's 1920 pixels in those 50cm. Zoom in to 1:1 on a 24Mp image and it's like looking at a print that's 1x1.5ms. It's no surprise that you see more faults looking at digital images at full-size on a monitor.

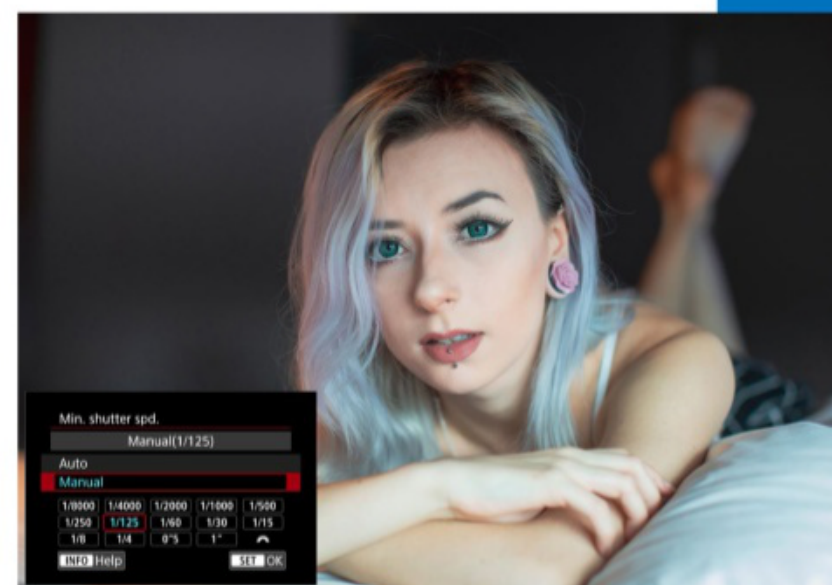
When the first EOS-1D was updated to the EOS-1D Mark II and the resolution jumped from 4.1Mp to 8.2Mp, many pro

sports photographers found they needed to use faster shutter speeds to achieve the same level of sharpness. Fast forward to the 24Mp and 30Mp cameras commonly in use and you should realize that the old rules might have stopped being as effective.

With the current crop of cameras, solid tripods or faster shutter speeds are needed to freeze miniscule movements of subjects. I've been using the reciprocal of twice the focal length as my guideline for years. For portraits I do my utmost to use a minimum of 1/100 sec regardless of the lens.

If you use Program or Aperture Priority with Auto ISO, your camera will do its best to achieve the traditional hand-holding speeds for your lens by raising ISO. The more advanced models include custom settings to select 1, 2 or 3-stops faster shutter speeds than the rule would dictate. You can even set a fixed minimum speed too. From the

EOS 80D, EOS RP and higher models this capability is found in the ISO Speed settings, and if you use Auto ISO with Program or Aperture Priority I suggest you go and update the usage of this rule for sharper shots.



Manual min shutter speed delivers sharper portraits with a shutter speed of 1/125 sec



Taken at ISO10,000 with multi-shot noise reduction, this JPEG has very little noise, but has lost some of the finer details

“I’d like to see less noise in night-time shots at higher ISOs, do noise reduction settings really make a difference?”

Jessica Earnshaw, Denbigh

BRIAN SAYS... Most cameras have five options for high ISO noise reduction, Disable, Low, Standard, High and Multi-shot. The more noise reduction you select the more you compromise detail in your shots. Multi-shot noise reduction can only be used when shooting JPEGs and static subjects. It takes a series of four separate shots, then averages out the noise to create a reduced noise file. If you shoot in Raw, however, you could process the photo with different noise settings to see which is best for you. Most image editing software includes tools for reducing the noise in pictures. Typically they smooth the image, sacrificing some fine detail while clearing the noise.

“I’ve seen recommendations to block the viewfinder when doing long exposure shots, why?”

Chip Beaudette, Georgia, USA

BRIAN SAYS... When the mirror on a DSLR raises it moves out of the optical path, but is rarely a 100 per cent light seal for light entering the viewfinder. With long exposures this additional light entering the mirror box can affect the exposure. This is more so at night where you might be using a torch behind the camera to see what is happening. For this reason most cameras have a small rubber eyepiece cover on the factory supplied strap. All you have to do is remove the eye-cup and fit the cover when doing long exposures. EOS-1D models have a viewfinder blind in the eyepiece, there’s a small lever to close the blind.



What is the point of using ISO12,800 or more?

Jane Nickleby, Lancaster

BRIAN SAYS... Noise may be less important than being able to get a sharp shot. I’ve recently taken a set of birds in flight shots in dim, overcast conditions, where ISO10,000 allowed me to use a 1/2000 sec shutter speed for sharp shots.

My EOS R shows f/00 when I use my Samyang RF 14mm, is this a camera or lens problem?

Tim Martin, Kingston

BRIAN SAYS... There are two versions of the Samyang RF 14mm. One is manual focus and you set the aperture on the lens. The other, more expensive, has contacts on the back to talk with the camera – here the AF and aperture are controlled by the camera. I think you have the manual one.

Can you trigger studio lights with slave cells using the EOS 250D?

Harry Grellman, Leicester

BRIAN SAYS... The EOS 250D built-in flash uses E-TTL flash metering, this means the camera uses a pre-flash before the picture is taken. This can trigger the studio lights before the shutter opens, there’s no way to avoid this with the built-in flash. You need a Speedlite that can be set to manual power to avoid the pre-flash.



Cameras can change the number of shots taken with auto exposure bracketting

“Is it possible for my EOS 90D to use more than three shots for HDR photos?”

Billy Carter, Garsington

BRIAN SAYS... There are two ways to create HDRs with the EOS 90D. You can use the camera’s HDR function that creates a single JPEG from three exposures, but that’s fixed to just three photos. Or you can use the auto exposure bracketting to take the shots, then combine them in software. Choose this method if you need more than three frames. You can choose, five or seven shots for auto exposure bracketting.



Choose quick AF for accurate focus on the EOS 6D when shooting in low light with Live View

“What’s the best way to focus in low light with an EOS 6D using Live View?”

Rob Young, Aylesbury

BRIAN SAYS... When you use Live View there’s a choice of AF methods, using either the image sensor or the camera’s regular AF sensor. The sensor is less reliable in low light, especially if the subject is out of focus. If this is the case, use Quick AF. Half-press the shutter, the mirror drops, AF is carried out and the mirror raises to resume Live View. If you then press the shutter all the way down the photo is taken.



At night, without mid-toned subjects, it's best to take Evaluative metering as a starting point and bracket your exposures from there

I read that lots of pros use Spot metering, but I find it inconsistent, especially at night. Which metering pattern is the best for night photos?

Louise Garner, Slough

BRIAN SAYS... I'm a fan of the default Evaluative metering pattern on EOS cameras, but there are times when it is not ideal. There are also some unexpected consequences that occur when choosing Spot, Partial or Centre-weighted. If you use One-Shot AF, and focus with the shutter button, your exposure is locked when the focus locks. The camera doesn't automatically lock exposure when using any of the other three metering patterns. Since the EOS 6D Mark II, several mid-range and advanced cameras have a custom function to enable auto exposure lock with any metering pattern.

If you use Spot or Partial, you need to pay attention to where the camera meters the exposure from, it's always in the centre of the frame except EOS-1D series models where it can be linked to the active AF point.

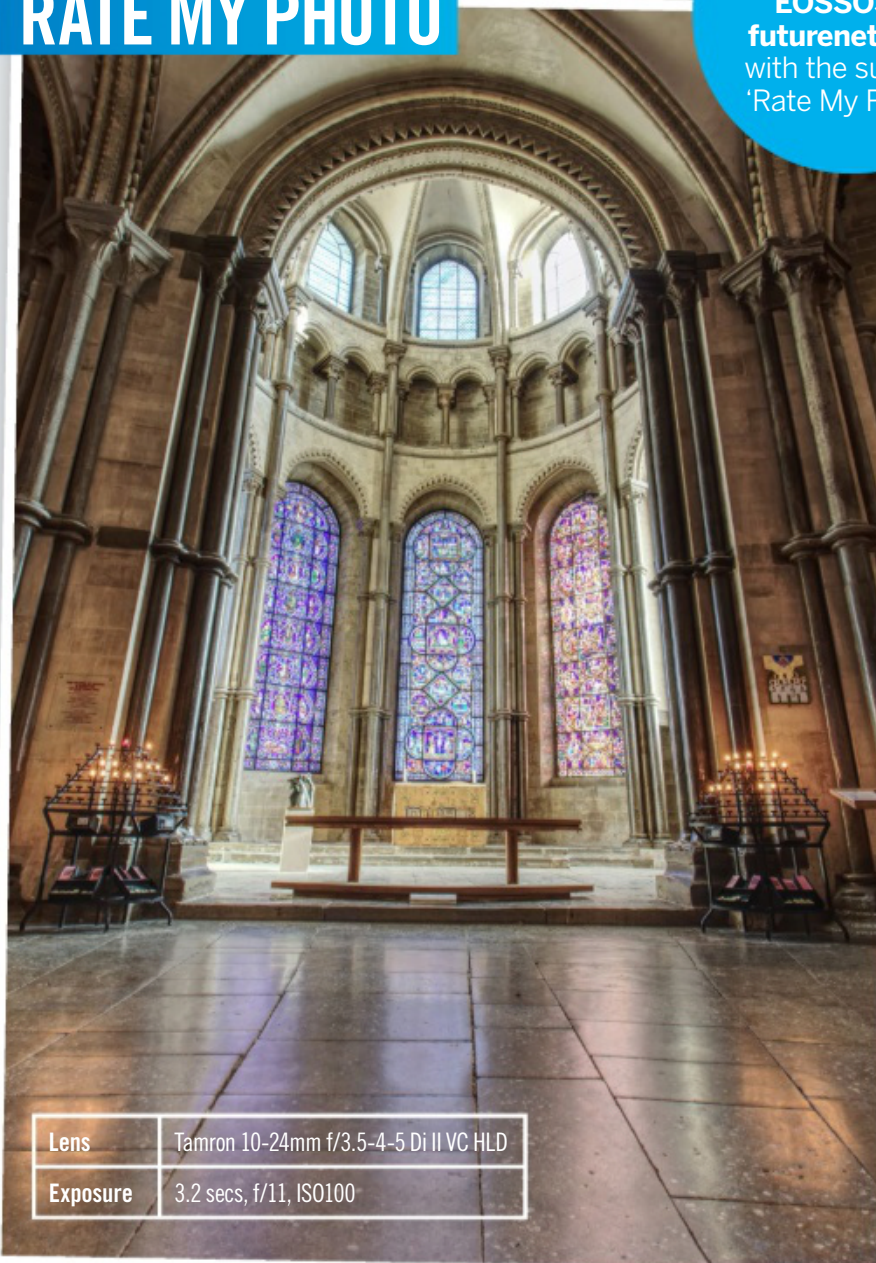
At night, the challenge with spot and partial is choosing an appropriate area to meter from, and even then you may need exposure comp and the

AE-lock button a lot. If you photograph people, Caucasian skin tones are often suitable places to meter from. For buildings and landscapes you may need to try Evaluative metering to establish a reference point, and then bracket the exposure from there to achieve ideal exposures. Shoot in Live View with the histogram displayed, or check the histogram on a test shot is another possibility. Choose manual exposure and take note of the exposure indicator in the viewfinder or on the LCD as the camera will still meter for you as a guide.



EOS R face detection AF links with metering, so this shot required no exposure comp despite much of the frame being dark

RATE MY PHOTO



Lens	Tamron 10-24mm f/3.5-4.5 Di II VC HLD
Exposure	3.2 secs, f/11, ISO100

Canterbury Cathedral

ANDREW ROBERTS, KENT SAYS...

This is one of my first attempts of HDR photography, taken inside Canterbury Cathedral in Kent. I recently got back in to photography after a 20 year break, and now use a laptop with Affinity Photo to edit images. I used Manual mode, Live View and changed the exposure settings for the three shots that went in to my HDR. This meant I could select the time for each exposure in between people walking by. Affinity Photo created the HDR image, and I cloned out a bit of rope too.

BRIAN SAYS... A great shot of the stained glass window, and you were right to try an

HDR to combine the inside and outside exposures. It was a good idea to manually bracket the shots when the frame was clear. The wide angle lens has accentuated the distortion, making verticals converge, and adding a bend to the flagstone floor – it makes me feel like I'm viewing from floor level. A slight perspective correction to widen the top would be one solution, and also shoot from a higher position.

I like how you've kept the colours quite natural feeling, and your sympathetic HDR processing has created a good shot that doesn't scream HDR, just a well-balanced exposure.

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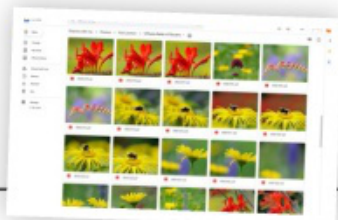
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G E A R

*The latest Canon cameras and photo gear tested.
Independent advice to help you buy smarter*



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Welcome...

PHOTOGRAPHY can be an expensive business, but we prove you don't have to spend a fortune to get a decent telephoto zoom. Canon's back with a new mid-range DSLR, the 850D, and we test its latest stargazing camera, the EOS Ra. For clouds of a different kind, this month's Mini Test is on cloud storage providers – which should you be trusting your images to?

HOW WE TEST



Lens tests are carried out with Imatest suite, with specially designed charts and data analysis to test lens performance



We test cameras in laboratory conditions using DxO Analyzer hardware and software to check dynamic range and image noise

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PAGE 100 CANON EOS Ra TESTED



TESTS & AWARDS

WHEN WE test Canon EOS cameras, lenses, photo gear and services in *PhotoPlus*, we tell it like it is. We're 100 per cent independent and we use our in-depth lab tests to find out how kit really performs and compares. Here are our main awards...



Buy for the best combination of quality and value



Only the best of the best win our coveted award



CANON EOS 850D / Rebel T8i

Canon's popular triple D line for enthusiast DSLR camera users gets an upgrade for 2020 with some new mod cons

Say hello to the new **Canon EOS 850D / Rebel T8i**, the new beginner/enthusiast DSLR, a lightweight, versatile and connected 24-megapixel machine, powered by Canon's latest speedy tech, and with 4K movie capability.

The Canon EOS 850D / Rebel T8i is the successor to the one-off Canon EOS 77D (like an EOS 750D / Rebel T6i, but with small top LCD plate), and EOS 800D / Rebel T7i, both launched back in early 2017.

Canon sticks with the same size 24.1-megapixel Dual Pixel CMOS APS-C sensor as we've seen in the Canon EOS 250D / Rebel SL3 and actually a fraction less megapixels than the older Canon EOS 800D / Rebel T7i. It also retains the same 45-point autofocus system, all

cross-type AF points for better and faster autofocus accuracy.

Spec upgrades

Equipped with some minor if not major spec upgrades, which include stepping up from 6fps (frames-per-second) to 7fps for an improved

Canon sticks with its favoured 24Mp sensor size for the APS-C EOS 850D enthusiast camera

The EOS 850D continues Canon's design and build standards with ergonomic buttons

continuous burst mode, and gaining the newer DIGIC 8 processor (based around the same tech as seen in the pocket-powered EOS 250D). Both mods work together for a faster shooting experience for action photography.

Inherited from Canon's professional range, the EOS 850D has an Intelligent Tracking (iTR) automatic focus (AF), made possible by the 220,000 Pixel RGB+IR metering sensor, matching its bigger brother EOS 90D.

By exchanging high-resolution exposure data with the AF sensor, the iTR automatic focus provides some very high speed accuracy, ideal for capturing fast-moving action sport and elusive wildlife subjects. This makes automatic face tracking through the optical viewfinder now possible.

All seeing eye

What's encouraging is the EOS 850D gets new Eye Detection AF with tracking in Live View, that aims to create natural-looking portraits with sharp eyes. Plus the usual AF options in Live View, as in the EOS 800D, will be present: Face Detection and Tracking AF, FlexiZone-Multi, and FlexiZone-Single.





For low-light shooting scenarios, from sunrise to sunset, the camera lets you shoot up to ISO25,600 – which is expandable to 51,200 – to help you capture subjects and scenes with the option for faster shutter speeds in darker conditions, such as indoors. Although we imagine you'll get better, noise-free images shooting at ISO3200 and below.

KEY SPECS

SENSOR	24.1 megapixel dual pixel CMOS APS-C
IMAGE PROCESSOR	DIGIC 8
AF POINTS	45 AF point system
MAX IMAGE SIZE	220,000 Pixel RGB+IR Metering Sensor with Flicker Detection (same as 90D)
VIDEO	4K (contrast AF) 24p/25p
ISO RANGE	100-51200
MAX BURST RATE	7fps continuous shooting rate
LCD	3-inch 1040K Vari-Angle touchscreen LCD
WEIGHT	515g (with battery and card)
DIMENSIONS	131x103x76mm
PRE-ORDER	https://store.canon.co.uk
PRICE	£819.99
ON SALE	April 2020

When capturing stills in Live View using the 3-inch 1040K Vari-Angle touchscreen LCD, you have ultimate control when selecting your focal point from 143 points in automatic mode or 3975 points in manual selection, thanks to the Dual Pixel CMOS AF.

The Remote Live View function gives you extended control, including remote shutter release and the ability to view from your smartphone, useful if you need to move away from the camera. The Canon EOS 850D can record in Full HD up to 60p, stunning 4K up to 25p (like the EOS 250D), and expands on its predecessor's options for movie capture, with a

FEATURES

01 With its 24.1Mp Dual Pixel CMOS APS-C sensor and 4K movie capability, the EOS 850D is the perfect all-rounder for photography enthusiasts.

02 The 24.1Mp provides ample resolution for cropping when you've shot distant subjects such as birds in flight.

03 Shoot in Raw for max image data, or choose C-Raw for a smaller file size that almost doubles the continuous shooting buffer from 40 images to 75.

04 You can plug in an external mic via the 3.5mm jack for better quality sound when recording HD videos

05 The mode dial on the 850D has the familiar M, AV, Tv, P, A+ shooting modes, with Scene modes tucked away.



The 850D gets a new AF-ON button at the rear – ideal for back button focusing

more detailed setup for time-lapse movies and automatic scene selection. To counteract the jittery shake associated with handheld movie shooting, the EOS 850D features 5-Axis Movie Digital IS, for smooth, controlled videos.

With Wi-Fi and Bluetooth connectivity, you can quickly connect the Canon EOS 850D to your Apple or Android mobile device through the Canon Camera Connect app, to edit and share high-quality images. Content can then be downloaded to a smart device and posted on social media or shared with friends and family.

Improved handling

The ergonomic design features top and rear dials for dual control of both shutter speed and aperture. To improve handling the EOS 850D gets a Quick control dial for changing settings faster, plus a new AF-ON button on the rear we usually only see in high-spec larger camera bodies like the EOS 7D Mark II or EOS 5D Mark IV.

Size and weight of the EOS 850D are 131x103x76mm and 515g (with battery and card), compared to the EOS 800D's 131x100x76mm and 532g – so nothing in it. 📷

THE EARLY VERDICT

The Canon EOS 850D is a well-equipped all-rounder for photography enthusiasts

All in all, the EOS 850D is a strong little all-rounder for photography enthusiasts looking to upgrade and unleash their creativity. It might not have massive upgrades in terms of the numbers, but as a combined package, it's a powerful little DSLR with more than enough punch for most amateurs. The new AF-ON button

should prove useful for setting up back button focusing for more independent focusing, rather than half-pressing the shutter button to focus and meter subjects.

The Canon EOS 850D/Rebel T8i is available to pre-order from Canon's online store and will go on sale from April 2020, with an RSP of £819.99/€989.99.



CANON RF 24-105mm F4-7.1 IS STM

A new smaller, lighter and cheaper travel lens for the EOS RP

Canon has launched the new Canon RF 24-105mm f/4-7.1 IS STM, a smaller, lighter and affordable kit lens ideally suited to the Canon EOS RP mirrorless camera for a compact travel setup.

With its wide focal range the RF 24-105mm F4-7.1 IS STM is a versatile lens equipped to capture a range of different scenes and subjects in high quality, making it a useful all-rounder lens.

Weighing just 395g and 89x77mm, the RF 24-105mm F4-7.1 IS STM is small and light – compared to the RF 24-105mm F4L IS USM that's chunkier at 700g and 84x107mm (understandably so as it has a constant f/4 aperture).

With the RF 24-105mm F4-7.1 IS STM strapped to the EOS RP it's

combined weight of just 880g (the EOS RP weighs 485g including memory card and battery).

Although smaller, Canon UK says it's still a sturdy and well-built lens.

Like us, you're probably wondering about the new f/4-7.1 aperture range. Obviously the narrower apertures enable Canon to keep the lens glass and physical size down, but is this at the cost of image quality and focusing?

We asked Canon UK about this new tactic, and they explained that with the EOS R mirrorless camera range's advanced AF system, plus the ability to shoot at higher ISOs now without so much fear of noise, shooting at f/7.1 isn't the problem it once was when struggling with slow focusing and slow shutter speeds. We'll reserve judgement until we've had a chance to fully

With its narrower apertures through the zoom range from f/4 to f/7.1, it's enabled Canon to keep the size and price down

test the lens at f/7.1 and 105mm in challenging lighting conditions and when targeting active subjects.

To give enthusiasts the option for better close-up photographs, the lens gets a new Canon-developed 0.5x Center Focus Macro mode. This provides high magnification at 24mm with a 13cm minimum focus distance, so subjects in the centre of the frame are pin-sharp and detailed, while the edges of the image fade away into an attractive blur – we can't wait to try this out in the field!

Its STM (Stepping Motor) autofocus provides fast AF performance for stills, as well as smooth, quiet AF performance during video capture, with a five-stop Image Stabilization (IS) for shake-free shots.

It has the same high-speed camera-to-lens communication as all lenses in the RF line-up, with a large rear element and Canon's Super Spectra Coating for high optical performance across the frame, with promised minimal ghosting and flare.

The Canon RF 24-105mm F4-7.1 IS STM is available from April with an RSP of £459.99/€549.99.

CANON EOS R5

Pro mirrorless with 8K video, 20fps and IBIS!

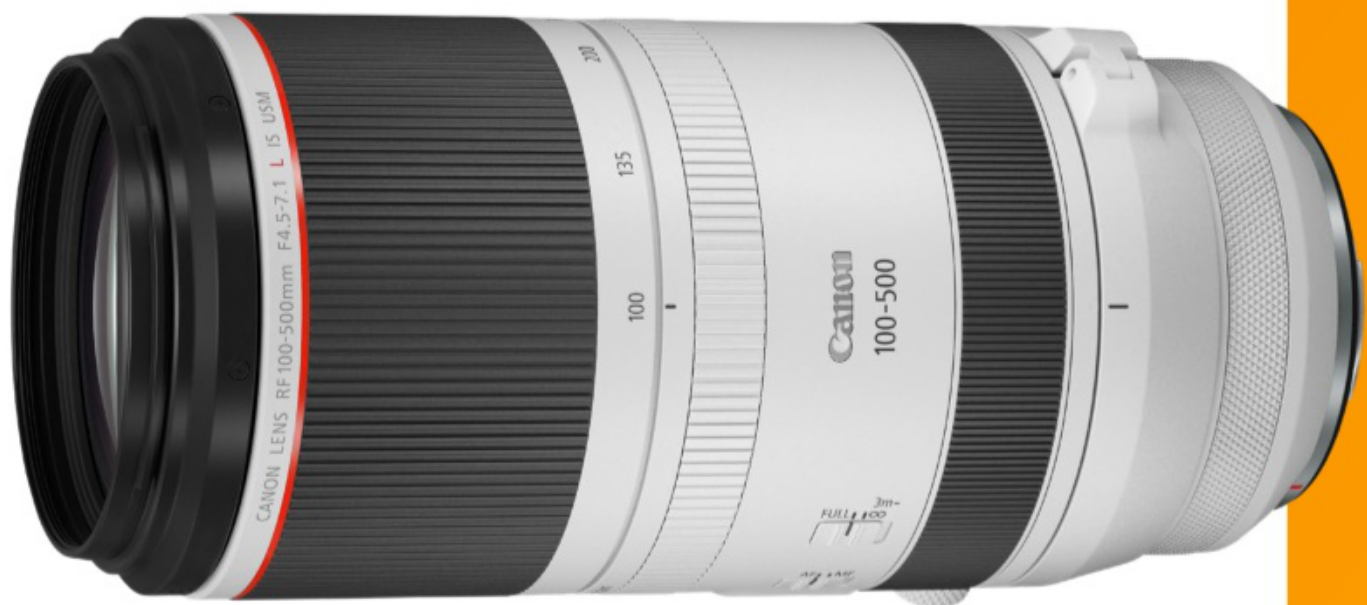
CANON has announced development of the new mirrorless EOS R5. This guns-blazing professional camera will boast 8K video, 20 frames per second continuous shooting, dual card slots and Canon's first ever in-body image stabilization (IBIS) system. Time will tell, but we believe the R5 will have a 45-megapixel sensor – making this a formidable tool for high-end action, stills and video. Canon says the IBIS is, “a newly Canon-developed, in-camera image stabilization system – which works in combination with the lens stabilisation system, making sure that whatever the situation stills and video content captured is shake-free.” The EOS R5 will officially be capable of shooting continuously at 12fps using the mechanical shutter and 20fps electronically. Pricing and launch dates TBC.



CANON 100-500mm TELEPHOTO ZOOM + RF EXTENDERS

2020 will see a total of nine new RF lenses!

IN CANON'S commitment to the EOS R mirrorless system and RF Mount, it has also announced the development of the RF 100-500mm F4.5-7.1L IS USM, Extender RF 1.4x and Extender RF 2x, plus Canon will release five more RF lenses this year!



CANON'S NEW IMAGE.CANON

New free cloud service to transfer and store your images

Canon Europe has announced the new image.canon, a free service to enable photographers and videographers to transfer their files directly from their Canon cameras to devices and web services. Replacing the old Canon Image Gateway from mid-March, it will be available from early April 2020, and this service will also include free cloud storage automatically from compatible Canon cameras.

Wi-Fi enabled Canon cameras will be able to transfer files in their original quality to a central hub, to then seamlessly transfer to devices and web services including Google Drive, Flickr and YouTube, with Adobe and Google compatibility planned for June 2020.

Also, image.canon enables auto background transfer of your images when the camera is connected to the internet. However, only Canon cameras

released in 2020 will do this – which currently means the Canon EOS-1D X Mark III and new EOS 850D.

Designed with convenience in mind, image.canon will also have dedicated PC software that will allow photographers to quickly download their shots from this hub. Canon users will also be able to easily sort images and experience hassle-free sharing direct to their social media channels or email contacts. 

Cloud storage

Six of the best online storage solutions for image backup and easy worldwide access

WITH ever-rising camera megapixel counts and high bitrate, high definition video, it's all too easy to drown in data. You could splash out on a larger hard drive (HD) for your computer to store all your media, but this won't solve potential fears like HD failure.

One answer is to upload all of your photos to an online cloud storage solution, where it's safely backed up, and, if you're lucky, grouped and arranged for you.

That's the dream. In practice, however, choosing a good cloud storage platform

doesn't mean the end of photo editing, sorting, or physical backup. But some platforms do now involve some semblance of automation, with geotags and metadata used to group together photos by location, date taken, who's in them (using facial recognition), and the camera or device with which they were originally taken.

While free cloud storage services are available, most only provide a severely restricted storage capacity. But if you pay a monthly, or annual subscription, you get to use the best features and access to more useful storage options and capacities.

FIVE THINGS TO LOOK OUT FOR

Cloud storage options can seem incredibly similar, but there are little extras that make some stand out...

01 What capacity

Most providers offer at least 1GB free storage, but realistically you'll need at least 100GB if you're looking for a longer-term storage solution.

02 Desktop software

Cloud storage can also be supported by desktop applications that enable you to easily monitor your storage and change options.

03 Automatic uploads

Most services offer automatic uploads, so when you add images to folder on your hard drive, it'll automatically back up to the cloud – very handy if you don't have the time or patience to do it yourself.

04 Payment plans

Some providers offer tempting monthly prices, but look closer as they may actually be charged as a single, large, annual fee. Always read the small print and use payment methods that work for you.

05 Virtual computing

The cloud isn't just about storage. The likes of Apple, Google and Microsoft also integrate online productivity software into their cloud services, meaning that you get a little more bang for your buck. Just make sure that you check these are actually of any use to you.

Apple iCloud Drive



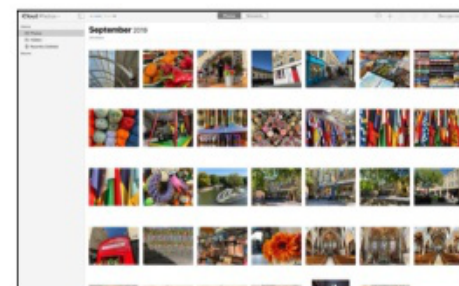
From £0.79/\$0.99 per month www.icloud.com



APPLE'S ICLOUD is the most logical cloud storage choice if you're on a iPhone or Mac user, such is its seamless device integration. As with Microsoft Windows and OneDrive, iCloud is part of the Mac Finder app, making for super-easy file backup and sharing across devices.

The connection is so slick that selected folders on your Mac's internal HD will auto upload to iCloud; if you delete a file from your device, it'll also be deleted from the cloud. Apple also includes access to web versions of apps like Pages and Numbers.

The Photos app is available across all Apple devices, as well as through a browser. It enables you to access, organize, download and share your images in one of the most streamlined interfaces out there.



You get 5GB for free when you sign up, although that can quickly get used up. Priced tiers start at just £0.79/\$0.99 a month for 50GB of storage, while 200GB is £2.49/\$2.99 a month, and 2TB is £6.99/\$9.99.

PhotoPlusVERDICT

PROS: Competitive pricing; useful cloud-based office apps

CONS: Not designed for integration with PCs or Android devices

WE SAY: A beautiful solution, but only if you're an Apple user

iDrive IDrive®

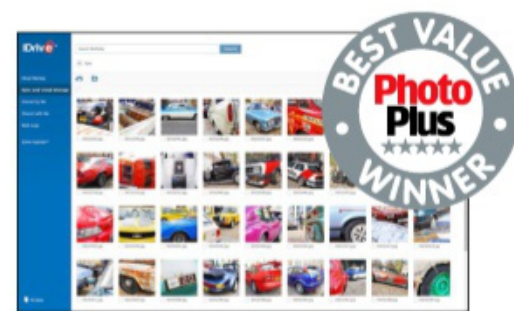
From \$69.50 annually www.idrive.com



THIS FAST, easy-to-use cloud storage solution offers continuous syncing of your files, even those on Network Attached Storage. There's 5GB of free storage, while an annual \$69.50 buys you 2TB, and 5TB can be had for a very competitive price tag of \$99.50.

The web interface supports sharing files by email, Facebook and Twitter. Cautious or click-happy users will be pleased to hear that files deleted from your computer are not automatically deleted from the cloud, so there's less danger of removing something important by accident. Up to 30 previous versions of all files backed to your account are retained.

For photos, there's a neat facial recognition feature that helps you to automatically organize images, as well as



syncing them across all of your linked up devices.

iDrive also offers iDrive Express, which sends you a physical HD drive if you lose all your data, allowing for swift restoration of your backed up files. That also applies to the introduced disk backup feature.

PhotoPlusVERDICT

PROS: Supports internal, external and NAS drives; simple interface

CONS: Annual payments; no cheaper capacity under 2TB

WE SAY: Top cloud storage that's well-priced if you need 5TB

Dropbox

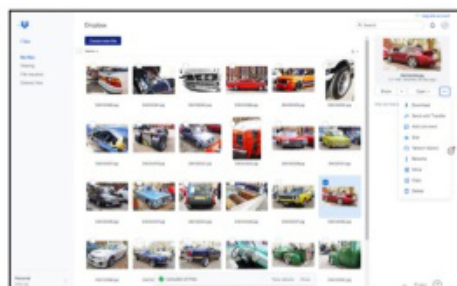


From £95.88/\$119.88 annually www.dropbox.com



DROPBOX HAS been the go-to cloud storage choice for years. You get a paltry 2GB for free, so you'll need to step up to the 2TB Plus plan at £7.99/\$9.99 a month, although this is charged annually at an up-front cost of £95.88/\$119.88. This also gets you extras like easy file sending and 30-day file recovery. A 3TB Professional plan is also available, but it's geared towards small businesses, and isn't great value for most photographers.

The interface lets you drag and drop the files you want to store online into a Dropbox folder on your machine. These are stored in the cloud automatically, mirroring what's on your device. If you delete a photo from your computer, it can be set to delete from the cloud. Using the mobile app for iOS and Android is easy.



Although Dropbox doesn't offer a dedicated imaging application like iCloud Photos, the simple folder structure design will appeal to those who like to have full control over the way their files are stored and organized.

PhotoPlusVERDICT

PROS: Extensive organization options; lots of extra features

CONS: 2TB plan costs more than equivalent iDrive and iCloud plans

WE SAY: A versatile option, but it's aimed more at productivity

Google Drive

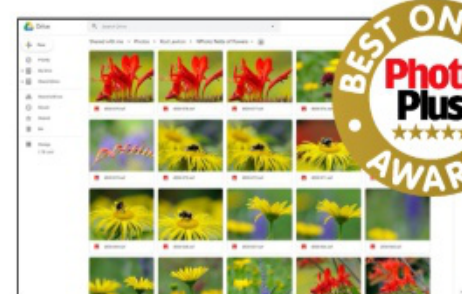


From £1.59/\$1.99 per month www.drive.google.com



GOOGLE Drive enables you to store any file type, and has a pay scale depending on the services and storage you want. You get a 15GB for free. 100GB currently costs £1.59/\$1.99 per month, 200GB is £2.49/\$2.99 per month, and 2TB is £7.99/\$9.99 per month. There are 10, 20 and 30TB options, but they're expensive. An added bonus is, like Apple and Microsoft, Drive isn't just about storage: it's integrated with Google's cloud-based apps, which rival Microsoft's Word, Excel and PowerPoint.

The Google empire also has Google Photos. This app is designed to store and organize images. You get unlimited storage for images up to 16MP resolution: the theory here is to provide extended storage of phone photos, rather than a service for



backing up your high-res images. As such, Raw image support is limited. Google's image recognition algorithms automatically scan uploaded images and categorize them by the subject content for easy searching.

PhotoPlusVERDICT

PROS: Lots of options, with numerous payment options

CONS: Better for Android than iOS, where iCloud is still superior

WE SAY: Cloud storage that covers every base

Microsoft OneDrive



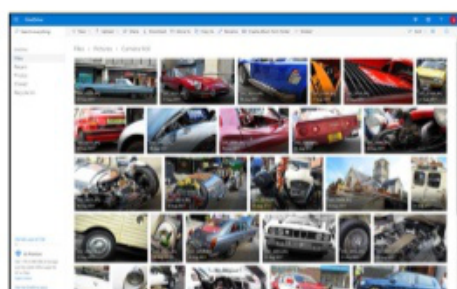
From £1.99/\$1.99 per month www.onedrive.live.com



AS A MICROSOFT product, OneDrive cloud storage is deeply integrated into Windows 10. It can be accessed from the operating system, much like a physical hard drive or SSD, making for an effortless cloud backup solution.

There's also a macOS app to enable a similar experience when using a Mac, though perhaps inevitably it's not as slick as the iCloud ecosystem. OneDrive can also be used on iOS and Android mobile devices.

The photos section is just one part of OneDrive, and it boasts clever features. There's extensive Raw file support, as well as the ability to automatically recognize the content of your images and tag them, making it easy to search for images by content or theme. One Drive offers 5GB of storage for free, while 100GB will set you back a fairly accessible



£1.99/\$1.99 a month. £59.99/\$69.99 will buy you a year's subscription to the Office 365 Personal plan, which gives you 1TB of storage, along with a useful file recovery service and access to online versions of Microsoft Word, Excel and PowerPoint.

PhotoPlusVERDICT

PROS: Good integration for Win 10 PCs; Microsoft Office web apps

CONS: No competition for iCloud on Apple devices

WE SAY: Capable cloud storage, but pricing and capacity isn't great

pCloud

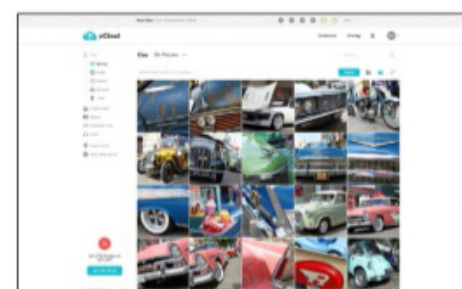


From £47.88/\$47.88 annually www.pcloud.com



THIS RELATIVE newcomer to the cloud storage scene is making waves, and it's easy to see why. pCloud is one of a few cloud storage companies to offer a one-off, lifetime payment option. If you can stomach parting with £350, you get 2TB of storage for life, plus benefits like 2TB of download bandwidth for sharing images and videos. (Uploading is unlimited.)

Alternatively, £175/\$175 will buy you a lifetime's 500GB of storage and the same again in linking/streaming bandwidth. pCloud also offers annual subscription plans, with the same 500GB/2TB storage options priced at £47.88/\$47.88 and £95.88/\$95.88 per year respectively, which works out at £3.99/\$3.99 and £7.99/\$7.99 a month. You can access your files from a PC, a Mac, mobile devices



or the web, with pCloud storage appearing as a local drive on a PC or Mac for ultimate ease of access and backup. What's more, for an extra \$3.99 a month, you can upgrade to pCloud Crypto, so each stored file can be encrypted and password protected.

PhotoPlusVERDICT

PROS: Easy to use; excellent PC, Mac and mobile device integration

CONS: 2TB plan costs more than Google Drive when paid annually

WE SAY: Ultimately Google Drive is slightly better value



CANON EOS Ra

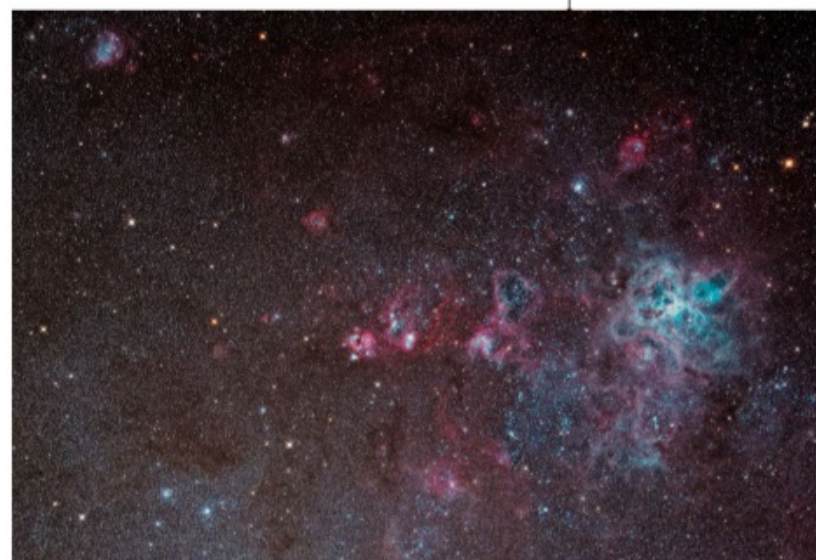
The Canon EOS Ra is the astro version of the Canon EOS R with a couple of vital tweaks for keen astrophotographers

The Canon EOS Ra is not the first camera modified specifically for astrophotography. Occasionally, camera makers do produce 'astro' versions of their leading cameras, and the EOS R is a good candidate, thanks to its vari-angle screen, mirrorless Live View operation and – for those that have the budget – some of those super-fast RF lenses.

From the outside, the EOS Ra is indistinguishable from a regular Canon EOS R (apart from the badge) and the differences are all on the inside. All camera sensors have infra-red filters to restrict the spectrum of light captured by the sensor to visible wavelengths, but the filter on the EOS Ra's sensor has been specially modified to transmit four times as much HA (Hydrogen Alpha) light. This extended red sensitivity means the EOS Ra can

capture the characteristic reddish colour of nebulae, for example, and will reveal a larger number of celestial objects for much richer photographs of the night sky.

That's pretty much all you need to do to a regular camera to adapt it for astrophotography, but Canon has added another tweak – the ability to



The Canon team captured this starry galaxy image on the EOS Ra demonstrating the clear clarity and vivid colours

The key difference between the EOS Ra and the EOS R (apart from the badge) is the customized infra-red filtration on the sensor

zoom in to a full 30x magnification in Live View to check for pinpoint focus accuracy. The EOS Ra's AF system is sensitive down to an impressive -6EV, which should be more than enough with a very dark sky, and if you're going to commit to long exposures you're going to want to be sure of the focus.

SPECIFICATIONS

SENSOR 30.3Mp full-frame CMOS 36x24mm

IMAGE PROCESSOR DIGIC 8

AF POINTS 5655 Dual Pixel AF positions

ISO RANGE 100 to 40,000 (exp. 50 to 102,400)

MAX IMAGE SIZE 6720 x 4480 pixels

METERING MODES Evaluative, Partial, Spot, Centre-weighted

VIDEO 4K UHD at 29.97p, 25p, 24p, 23.98p

VIEWFINDER EVF, 3.69m dots 100% coverage

MEMORY CARD SD / SDHC / SDXC

LCD 3.15-in fully articulating touchscreen, 2.1m dots

MAX BURST 8fps

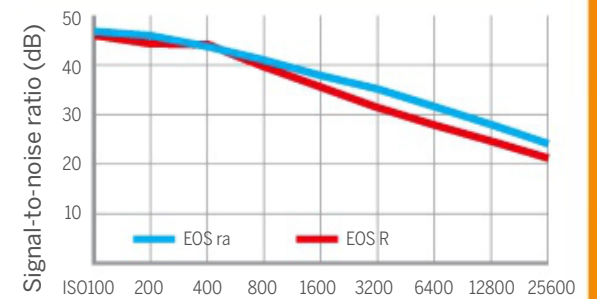
CONNECTIVITY Wi-Fi, Bluetooth, NFC

SIZE 136x98x84mm (body only)

WEIGHT 580g (body only; 660g with battery and card)

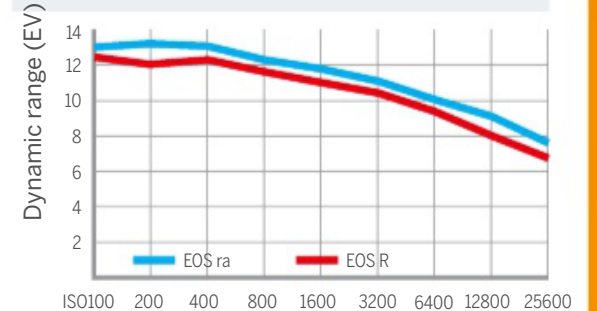
EOS Ra vs EOS R

RAW* SIGNAL-TO-NOISE RATIO



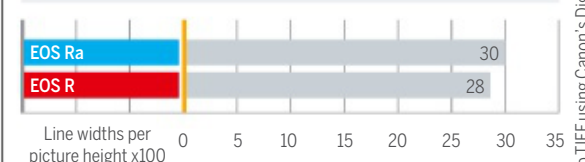
Our signal to noise test measures clarity, specifically the ratio of the image 'data' you want capture, versus the image noise you don't want, but will be visible when shooting at higher ISOs. The higher the score the better

RAW* DYNAMIC RANGE



Canon's sensor and processing tweaks for the EOS Ra have noticeably improved dynamic range. It manages to record around 1 stop of extra dynamic over the standard EOS R range right across the ISO sensitivity range

RAW* RESOLUTION (AT ISO200)



It's no surprise that the 30Mp EOS Ra manages to resolve excellent fine detail, plus the EOS Ra scores are identical to the regular EOS R in this test

Interestingly, Canon says you can use the EOS Ra for regular photography too, but warns that its extended infra-red sensitivity can lead to some colors looking strange compared to what we see with the naked eye.

Key features

Apart from its astrophotography adaptations, the EOS Ra is essentially the same as the EOS R. It has a full-frame 30.3Mp CMOS sensor and a phase-detection AF system with 5655 focus positions covering 88% of the frame horizontally and 100% vertically.

The EOS Ra does not have in-body image stabilisation (IBIS), unlike rival full-frame mirrorless cameras. That's an issue for the regular EOS R, but not for this

variant, which is almost certainly going to be used on a tripod or an equatorial mount.

We have complained about the heavy 4K video crop in the past, but this will only affect astrophotography if you need an ultra-wide view of the sky. The 1.7x crop means that your RF and EF lenses won't be nearly as wide

The AF system is sensitive down to an impressive -6EV, more than enough for very dark skies

Shot on the EOS Ra with RF 85mm F1.2L USM lens at f/1.8, 30 secs, ISO1600



The EOS Ra has impressive high ISO noise control and noise only really becomes an issue at values of 3200 and higher



(a 24mm lens becomes 40.8mm equivalent and so on).

Canon's new RF lens mount has allowed Canon's engineers to produce optics with larger rear elements and better performance, such as the superb RF 85mm F1.2L USM. Fast lenses like this, and the amazing RF 28-70mm F2L, will be well suited to astrophotography.

The 30Mp sensor in the EOS R has drawn some criticism for its lower resolution compared to rivals, but it does still offer a good compromise between resolution and low noise levels, with an ISO range of ISO100 to 40,000 (expandable to 50 to 102,400).

The Canon Ra – like the R – is an EOS mirrorless body with an RF lens mount

When the EOS Ra is on a tripod and aiming up at the night sky, you can angle the screen to make it easier to see what it is you're shooting

Build and handling

We do like the EOS Ra's magnesium alloy body, which feels both wieldy and robust. This compact size does mean that larger lenses like the RF 50mm F1.2L USM and particularly the RF 28-70mm F2L USM start to be unbalanced, but this doesn't make any difference for tripod use, – what you'll be using, mostly.

The Control ring you get on RF lenses is especially useful. This can be programmed to adjust aperture, shutter, white balance or ISO and can be found easily by touch in the dark (just don't change the focus by accident).

The unique M-Fn Bar on this camera is controversial, but we actually quite like it. You can set it up so that a touch, tap or swipe will manipulate the ISO, enabling you to control the entire exposure triangle without taking our eye away from the EVF – endlessly helpful.

This EVF is one of the best we've used; it's big, responsive and crystal clear. Better still, the rear screen can be fully articulated, which makes things much easier if the camera just happens to be mounted at an awkward height on a telescope adapter and or tripod.

// We do like the EOS Ra's magnesium alloy body, which feels both wieldy and robust //





THE VERDICT

The Ra boldly goes where no mirrorless camera has gone before

The Canon EOS Ra is physically identical to the regular EOS R, so we found the same combination of handling likes and dislikes. But this camera is designed for a specialized field, and some of these quirks hardly matter here. The lens Control ring is a plus point, being easier to find in darkness than buttons and dials; the cropped 4K video is much less important; and the lack of in-body image stabilization doesn't matter in a camera that's going to be used on a tripod. What makes the EOS Ra unique compared to regular cameras is its sensor's extended infra-red sensitivity and increased 30x magnification for pinpoint focus. 



Performance

First tests of the specialist EOS Ra astro-cam are rather impressive! It's ISO performance means we were happy shooting even at ISO6400 for usable images, while the vari-angle screen really helps when the Ra is pointing up at the stars.

Canon pro photographers like Fergus Kennedy and passionate astrophotographer Matteo La Torre have been using the EOS Ra with various RF lenses and telescopes with great success, getting astro pictures with wonderful clarity. 

Shot on the EOS Ra with an adaptor and EF 300mm f/2.8L IS II USM at 120 secs, f/2.8, ISO1600



With a 30x magnification it's possible to focus and examine images for detail and sharpness with much more accuracy

PhotoPlus VERDICT

PROS: Extended spectral sensitivity, 30x magnification in Live View, super-fast RF lenses, vari-angle screen

CONS: 30Mp is average today, cropped 4K video, single SD card slot

WE SAY: The fact is, this is one of only a handful of off-the-shelf cameras specially adapted for astrophotography, so it doesn't have a lot of competition. And while we have misgivings about some aspects of the regular EOS R's design and

handling, they are much less important in this field, and the camera's strengths start to shine through. There is a 20-25% price premium for the EOS Ra version over the standard camera, but that doesn't seem a lot for a specialized conversion of this kind.

FEATURES

★★★★★

BUILD & HANDLING

★★★★★

PERFORMANCE

★★★★★

VALUE

★★★★★

OVERALL

★★★★★

THE CONTENDERS



**Canon EF-M
55-200mm
f/4.5-6.3 IS STM**
£249/\$349



**Canon EF-S
55-250mm
f/4-5.6 IS STM**
£299/\$299



**Canon EF
70-200mm
f/4L USM**
£589/\$599



**Canon EF
70-300mm
f/4-5.6 IS II USM**
£449/\$499



**Canon EF
70-300mm
f/4-5.6L IS USM**
£1199/\$1349



**Sigma 100-400mm
f/5-6.3 DG
OS HSM | C**
£679/\$609



**Tamron SP
70-300mm f/4-5.6
Di VC USD**
£329/\$449



**Tamron 100-400mm
f/4.5-6.3
Di VC USD**
£699/\$799



BUDGET TELE ZOOMS

Boost your telephoto range without decimating your bank balance. Here are all the best options for your Canon camera

Buy a Canon DSLR or mirrorless camera with a standard zoom lens, as featured in last month's Super Test, and you'll enjoy everything from a wide viewing angle, to short telephoto reach. Unfortunately, the emphasis is generally on the word 'short' and you'll often need a longer focal length to cover the distance when shooting sport, wildlife, and in any other scenario where you can't get as close to the subject as you might like.

It's no surprise then that a budget telephoto zoom is usually the first extra lens that most buy. A favourite for full-frames is the 70-300mm zoom, but this also makes a great choice for APS-C cameras, on which it gives a mighty 112-480mm 'effective' zoom range, thanks to the 1.6x crop factor. For full-frame and APS-C formats, further bonuses of this lens include a compact build, often combined with fast autofocus (AF) performance and impressive image quality. The only real downside is that the widest available aperture can shrink to f/5.6 at the long end of the zoom.

Other choices include telephoto zooms that are specifically designed for APS-C format mirrorless and SLR cameras, which tend to be even lighter and more compact. Current favourites are the Canon EF-M 55-200mm and EF-S 55-250mm. At the other end of the scale, Sigma and Tamron both offer 100-400mm telephoto zooms, which are well-priced yet stretch into super-tele territory, especially when mounted on an APS-C camera.

CANON EF-M 55-200mm f/4.5-6.3 IS STM £249/\$349

Tiny for a telephoto, this smartly turned-out lens certainly won't weigh you down

Although it lacks the retractable design of Canon's EF-M 11-22mm and 15-45mm lenses, this telephoto of the trio is nevertheless compact and lightweight, at just 61x87mm and 260g. As with the EF-S 55-250mm lens for DSLRs, this lens for mirrorless cameras has a plastic mounting plate, but that's no bad thing, as it helps to keep the weight off and is still robust.

Typical of EF-M lenses, the design is very clean-cut. There are no physical switches on the barrel, choices for auto/manual focusing and stabilization on/off being catered to with in-camera menus. These systems are taken care of by a fast yet virtually silent stepping motor for AF, and an optical stabilizer unit with a 3.5-stop rating, complete with auto panning detection. During panning, stabilization is only applied in the vertical or horizontal plane, depending on camera orientation and the direction of movement.

The zoom ring works with ace smoothness and, while the inner barrel extends at longer zoom settings, it doesn't rotate during

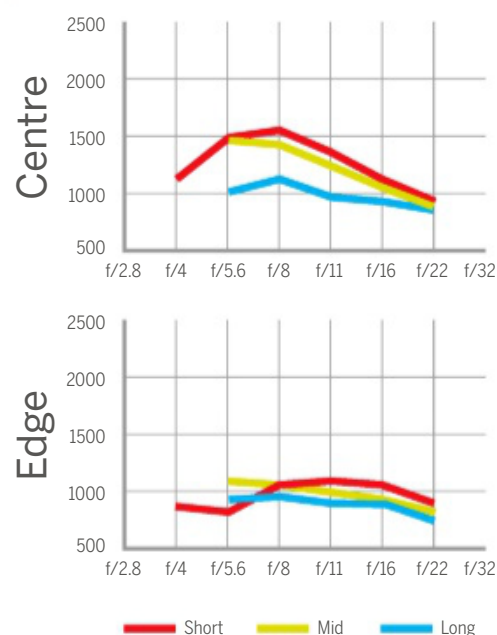
focusing. The manual focus ring is positioned at the front of the lens and its electronic coupling enables smooth, precise adjustments.

Performance

For a lens that only stretches to a focal length of 200mm, the f/4.5-6.3 aperture rating might seem slow, but that's a key factor in the diminutive build. Handling and balance are excellent on an EOS M, AF is quick and accurate, stabilization is effective and image quality is convincing overall, with good sharpness and contrast, along with well-controlled colour fringing and distortions.



SHARPNESS



FEATURES

- 01** The optional ET-54B cylindrical hood costs £13/\$23.
- 02** There are 17 optical elements in this small lens, including a UD (Ultra-low Dispersion) element.
- 03** The lens is available in silver or black.
- 04** The zoom range is equivalent to 88-320mm in full-frame terms.
- 05** Durable yet lightweight, the plastic mounting plate isn't weather-sealed.

VERDICT

FEATURES

★★★★★

BUILD & HANDLING

★★★★★

PERFORMANCE

★★★★★

VALUE

★★★★★

OVERALL

★★★★★

HOW WE TEST

We combine real-world results with lab testing to arrive at our overall ratings



To test real-world performance, we use lenses in all sorts of lighting conditions, for indoor and outdoor shooting scenarios. We check for good build quality, handling, smooth and precise operation of all controls, and we test the speed and the accuracy of autofocus.

We typically test full-frame compatible EF lenses on a range of full-frame and APS-C format bodies, whereas EF-S lenses that are designed specifically for APS-C format bodies are only tested on cameras like the EOS 90D and 7D Mark II. EF-M and RF

lenses are tested on respective EOS M and EOS R type mirrorless bodies. In-camera corrections for chromatic aberrations and peripheral illumination are disabled throughout all testing, to better reveal the true performance of each of the lenses on test.

We also run a full range of lab tests under controlled conditions, using the Imatest Master and DxO Analyser suites. Photos of test charts are taken across the range of apertures and zoom settings, then analysed for sharpness, distortion and chromatic aberrations (colour fringing).

CANON EF-S 55-250mm f/4-5.6 IS STM

£299/\$299

A marked improvement over the previous version of this EF-S lens for APS-C format DSLRs

Designed for APS-C format DSLRs, this and other EF-S lenses can also be used on APS-C format and full-frame bodies, via the respective EOS mount adapters. Larger and heavier than the EF-M 55-200mm lens on test, this one has more traditional DSLR-type styling, with physical switches for AF/M focusing modes and stabilization on/off, as well as chunkier rubberized grips for the zoom and focus rings.

Although nearly 50 per cent heavier than the EF-M 55-200mm, the EF-S adds an extra 50mm in telephoto length, with an overall zoom that's equivalent to 88-400mm in full-frame terms. It also has a faster aperture rating, shrinking to f/5.6, rather than f/6.3, at the long end. Similarities between the two lenses include fast and virtually silent stepping motor-driven autofocus and 3.5-stop image stabilization.

Compared with the previous edition of the EF-S 55-250mm, the new version has a more complex optical path with three extra elements, including the addition of a UD (Ultra-low Dispersion)

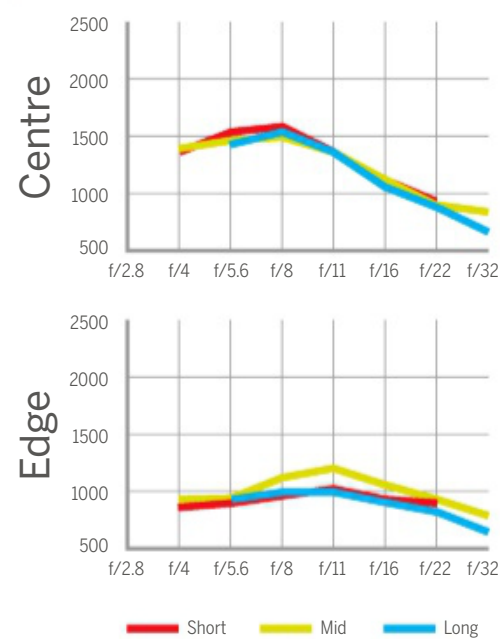
element. This aims to reduce chromatic aberrations while boosting sharpness and contrast. The basic electric AF motor of the previous edition was much inferior.

Performance

Levels of centre-sharpness are a bit mediocre throughout the zoom, but sharpness holds up well towards the edges and corners of the frame. There's little in the way of colour fringing, and distortions are pretty low as well. Overall, this lens is a solid performer for APS-C format DSLRs, but we'd still go for one of the full-frame compatible lenses on test, for enhanced performance.



SHARPNESS



FEATURES

- 01 For this lens, the optional ET-63 cylindrical hood is around £13/\$23.
- 02 Super Spectra coatings are applied to reduce ghosting and flare.
- 03 This one has physical switches for AF/M focusing and stabilization on/off.
- 04 The 3.5-stop image stabilizer comes complete with auto panning detection.
- 05 The plastic mounting plate keeps weight to a minimum.

VERDICT

FEATURES

★★★★★

BUILD & HANDLING

★★★★★

PERFORMANCE

★★★★★

VALUE

★★★★★

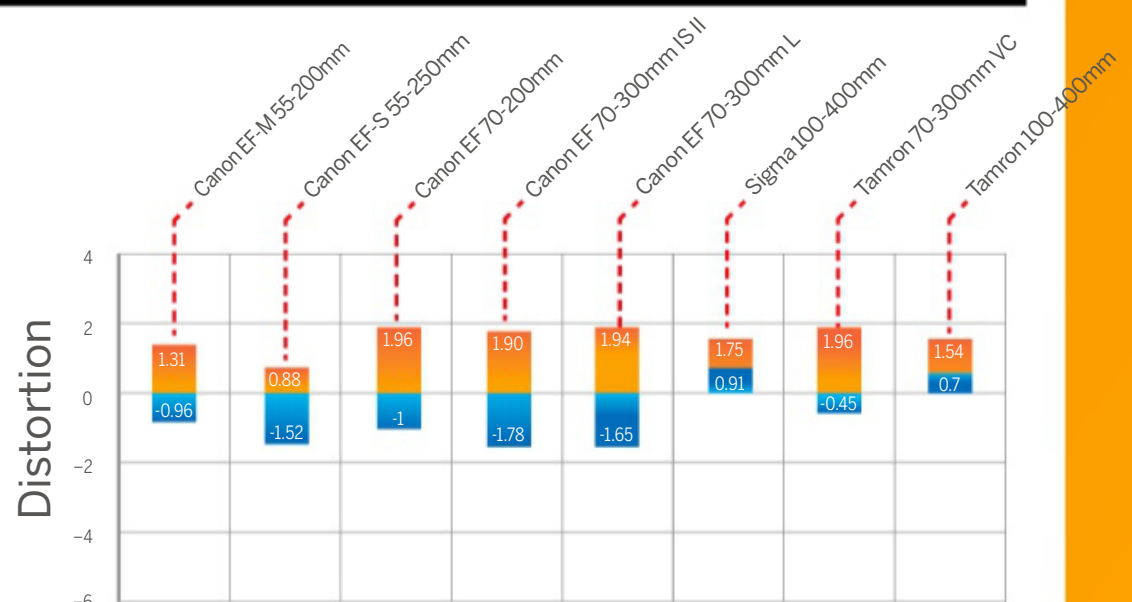
OVERALL

★★★★★

DISTORTION

Distortions are low overall, and not much to worry about

With most budget telephoto zooms you can expect a little barrel distortion at the short end of the zoom range, negligible distortion at mid-zoom settings, and minor pincushion at the long end. Most of the lenses in this test group follow a very similar path in these respects. The two main exceptions are the Sigma and Tamron 100-400mm lenses. With their longer range of focal lengths, these two lenses exhibit minor pincushion even at their shortest zoom setting, getting slightly worse as you extend through the zoom range.



Negative results show barrel distortion, positive indicates pincushion

CANON EF 70-200mm f/4L USM

£589/\$599

Something of a classic, it's one of Canon's oldest constant-aperture telephoto zooms

Bucking the trend, this lens is the only one here to feature a constant-aperture, in which the widest aperture of f/4 remains throughout the entire zoom. It's therefore at least one whole f-stop faster than any other lens on test, at least at the long end. Whereas the stabilized version (considerably more expensive) is now in its second generation, this one remains unchanged since its launch back in 1999.

The lens is finished in Canon's trademark off-white, frequently used in large L-series lenses to reduce heat build-up under the sun. AF is courtesy of a traditional ring-type ultrasonic system and, typical of 70-200mm constant-aperture zooms, both of the zoom and focus mechanisms are fully internal. The upshot is that the lens doesn't extend in length at any zoom or focus setting, although it's comparatively long to pack away, at 172mm. Unlike most L-series lenses, it doesn't feature weather-seals but does come with a hood.

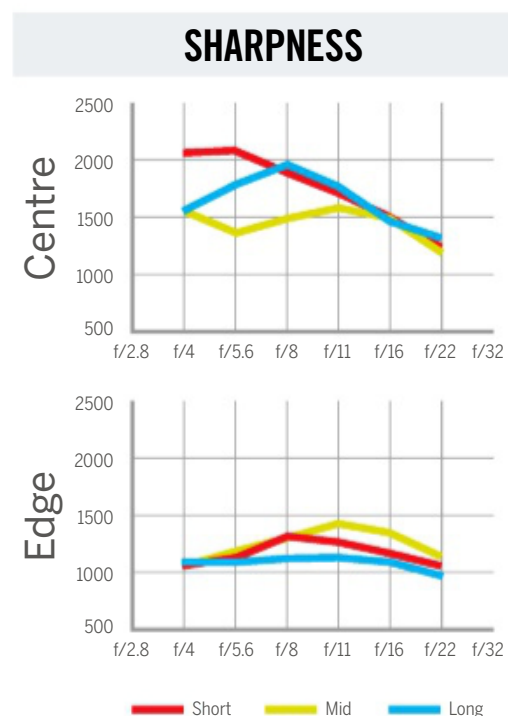
High-quality glass includes fluorite and UD elements. The eight-blade diaphragm is fairly



well-rounded and Super Spectra coatings are applied. The glaring omission in this lens is that it has no image stabilization, but a tripod mounting ring is available as an optional extra.

Performance

Sharpness was exceptional at the short end of the zoom, but average at the long end, and lacklustre at mid-zoom. Levels of colour fringing and distortions are also average. In real-world telephoto shooting, the lack of image stabilization can degrade sharpness. All in all, the lens is less appealing than most newer competitors.



FEATURES

- 01 Unlike Canon's non L-series lenses on test, this one is supplied with a hood.
- 02 The optional Tripod mount ring A II is pricey at £150/\$150.
- 03 The lack of image stabilization can be a real deal-breaker.
- 04 Unlike most budget telephoto zooms, this lens is compatible with tele-converters.
- 05 The metal mounting plate lacks the weather-seal ring of most L-series lenses.

VERDICT

FEATURES

★★★★★

BUILD & HANDLING

★★★★★

PERFORMANCE

★★★★★

VALUE

★★★★★

OVERALL

★★★★★

A LONG STRETCH

Here's how the range of popular focal lengths works out in practice

At either end of their zoom ranges, the competing lenses in our telephoto super test stretch from as little as 55mm to as much as 400mm. This series of shots shows how much reach you'll get at the most popular minimum and maximum focals. They're all taken on an APS-C format body, so the 1.6x crop factor comes into play (see over the page for more).



55mm



70mm

CANON EF 70-300mm f/4-5.6 IS II USM

£449/\$499

An ideal blend of lightweight build and solid full-frame performance, at a keen price

The Mark II edition of this lens could barely be any more different to its predecessor. As well as a redesigned and upgraded optical path featuring new specialized UD elements, the exterior has a more modern look and feel and the internals are overhauled. The old version of this lens contained a dated AF system that was audible and sluggish in operation. The front element also rotated during focusing, which impaired handling and made the use of filters like circular polarizers and ND grads a chore.

The new lens features a revolutionary Nano USM AF system, which is incredibly rapid for stills, while enabling smooth focus transitions as a stepping motor system for video capture, as well as being almost completely silent in operation. Focusing is now fully internal, so there's no more rotation of the front element.

The manual focus ring is electronically coupled and there's no focus distance scale. However, the lens features a digital info display, with alternative modes for focal length, focus distance and

severity of camera shake. You can cycle through these by pressing the Mode button. The image stabilizer also gets a revamp, boasting four-stop effectiveness and excellent auto panning detection.

Performance

As advertised, AF performance is blazing fast and accurate. Overall performance and image quality are impressive, the only exception being that corner-sharpness is poor at the short end of the zoom range. It's a great option for APS-C format and full-frame DSLRs, as well as for EOS R full-frame mirrorless cameras via a mount adapter.



FEATURES

- 01** The ET-74B costs £80/\$45, but good cheap copies are available.
- 02** There are switches for AF/M focusing, IS on/off, display mode and zoom lock.
- 03** Aperture control is based on a nine-blade diaphragm.
- 04** You can cycle through three display modes.
- 05** The mounting plate is metal, but doesn't feature a weather-seal ring.

VERDICT

FEATURES

★★★★★

BUILD & HANDLING

★★★★★

PERFORMANCE

★★★★★

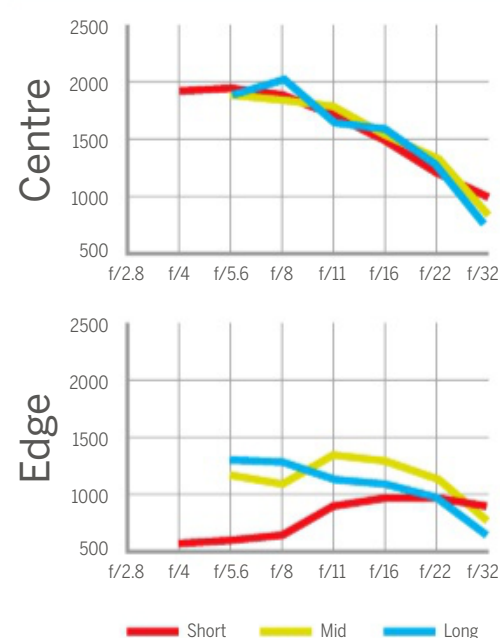
VALUE

★★★★★

OVERALL

★★★★★

SHARPNESS



200mm



300mm



400mm

CANON EF 70-300mm f/4-5.6L IS USM £1199/\$1349

This lens brings a touch of luxury to the time-honoured 70-300mm format

Stretching back to the days of 35mm film SLRs, 70-300mm lenses have always been a popular choice. Something of a novelty, this L-series lens elevates the 70-300mm zoom to a loftier position. Indeed, compared with Canon's latest super-high-spec EF 70-200mm f/4L IS II USM lens, it's almost as expensive in the UK and even pricier in the USA.

At its core, the 70-300mm L-series lens has the same variable f/4-5.6 aperture rating as most other direct competitors. It also features an extending inner barrel, so the physical length of the lens grows as you sweep through the zoom range. As such, handling characteristics are almost the same. Up-market optical highlights include dual UD elements, plus Super Spectra and fluorine coatings. The four-stop image stabilizer has physically switchable static and panning modes. The lens feels robust and is quite heavy for a 70-300mm zoom, at 1050g. It comes complete with a hood and a full set of weather-seals, while a tripod mount ring is available as an optional extra. The off-white paint

job further signals the lens's aspirations to Canon's upper echelon of telephoto optics.

Performance

Corner-sharpness at the short end of the zoom range is noticeably better than in Canon's more budget-oriented 70-300mm IS II USM lens on test, but centre-sharpness is slightly less impressive towards the long end. There's also no improvement in control over colour fringing, distortions nor ghosting and flare, while AF is less ultra-fast and more audible. Overall, the L-series lens struggles to justify its price tag.



FEATURES

- 01 As well as Super Spectra coatings, there's a fluorine coating on the front element.
- 02 The extending black inner barrel feels a little down-market.
- 03 An optional tripod mount ring 'C (WII)' costs around £145/\$150.
- 04 There's a physical focus distance scale.
- 05 Weather-seals are fitted throughout, including a rubber ring around the mounting plate.

VERDICT

FEATURES

★★★★★

BUILD & HANDLING

★★★★★

PERFORMANCE

★★★★★

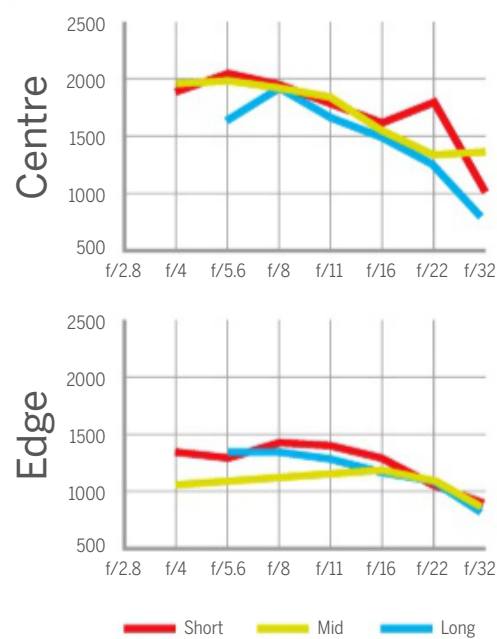
VALUE

★★★★★

OVERALL

★★★★★

SHARPNESS



THE X FACTOR

Shooting with an APS-C camera boosts reach

Thanks to smaller image sensors, APS-C format cameras have a 'crop factor' that boosts the effective focal length by 1.6x, compared with full-frames. You could therefore use a 70-300mm or 100-400mm tele zoom designed for a full-frame body on your APS-C format camera and get an effective zoom range of 112-480mm or 160-640mm. That takes you into super-tele territory, without the need to use a huge, heavy, and expensive lens.

300mm full-frame



300mm APS-C



Mount a telephoto lens on a Canon APS-C camera and you'll get this much extra reach

SIGMA 100-400mm f/5-6.3 DG OS HSM | C

£679/\$609

Sigma upgrades and upsizes its telephoto offering for the budget market sector

In days gone by, Sigma and Tamron were renowned for their third-party 70-300mm zooms, which delivered good performance while heavily undercutting the cost of own-brand alternatives. They also dabbled in smaller tele zooms for Canon APS-C formats, but they've fallen by the wayside. As part of its 'Global Vision' line-up, Sigma has reinvented the budget tele zoom in the shape of this 100-400mm Contemporary lens, while Tamron followed hot on its heels.

This lens measures 86x182mm and weighs 1160g, making it shorter, but marginally heavier, than the competing Tamron. That said, it's just 100g heavier than the Canon 70-300mm L-series on test. The Sigma is the only one of the three for which there's no optional tripod mounting ring.

The optical path includes four SLD (Special Low Dispersion) elements, AF is of the fast yet whisper-quiet ring-type ultrasonic variety, and the four-stop image stabilizer has a switchable panning mode, for panning in any orientation. Dual-mode switchable

AF can give priority to AF or manual override, there's a short/long AF range limiter switch, and two switchable 'custom' modes, which you can set up using Sigma's optional USB Dock.

Performance

Levels of sharpness were a little uninspiring during our tests but, in real-world shooting, the Sigma proved sharp in the 100-300mm section of its zoom, and didn't drop off much at 400mm. The wealth of switchable modes and customizable options also boosts real-world handling and performance.



FEATURES

- 01 The hood has a groove which acts as a finger grip.
- 02 The zoom and focus rings operate with smooth precision.
- 03 A physical focus distance scale is mounted beneath a viewing panel.
- 04 Dual custom modes enable changes to the stabilization effect, AF speed and AF limiter distance.
- 05 There's no optional tripod mount ring, but the lens does have weather-seals.

VERDICT

FEATURES

★★★★★

BUILD & HANDLING

★★★★★

PERFORMANCE

★★★★★

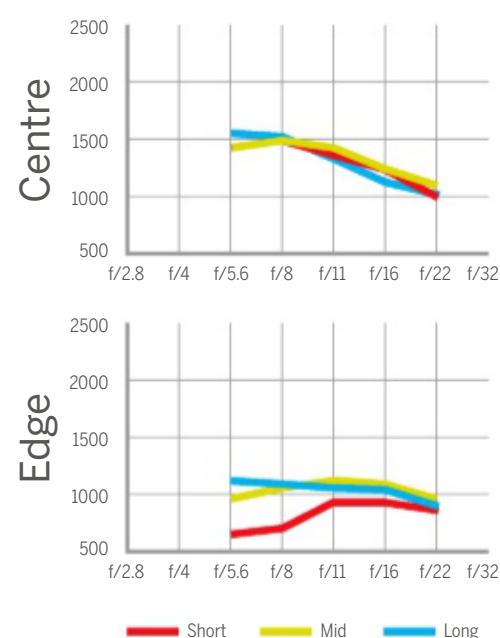
VALUE

★★★★★

OVERALL

★★★★★

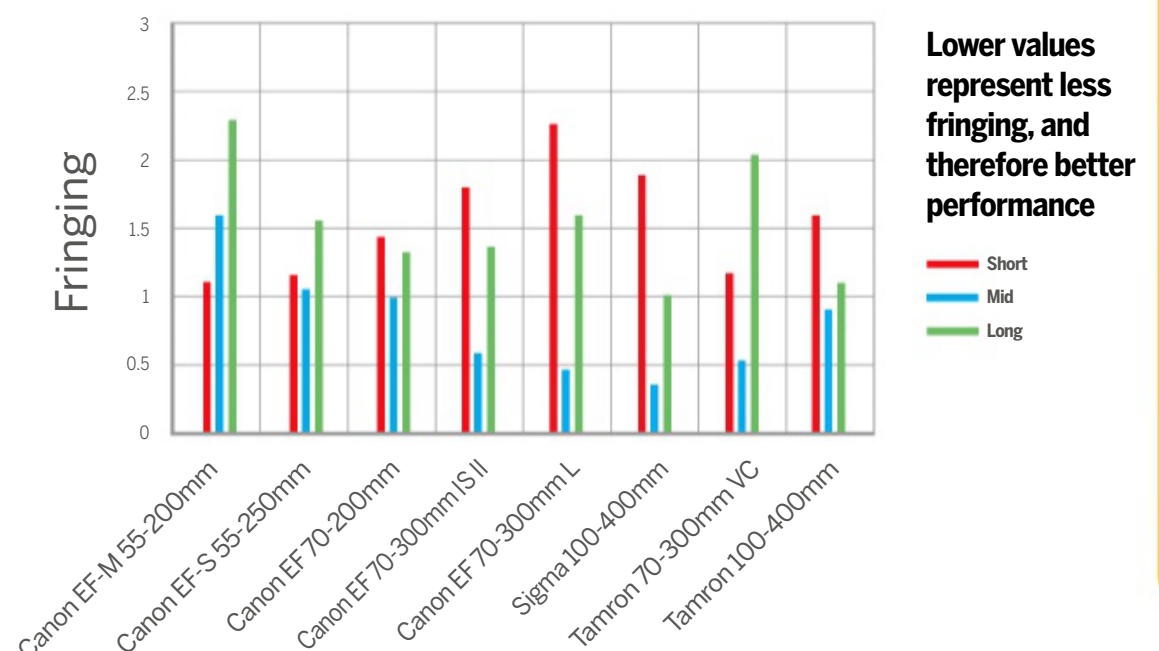
SHARPNESS



COLOUR FRINGING

Fringing is often more noticeable at the short end

For most of the lenses in this group, lateral aberration is more noticeable at the short end of the zoom, especially towards the corners of the frame. This can often be seen as coloured fringes around high-contrast transitions, like dark tree branches against a bright sky. Fringing often dies away at mid-zoom and returns to a lesser extent, towards the long end of the zoom. With some lenses, like the Canon EF-S 55-250mm and Tamron 70-300mm, fringing is slightly worse at the long end rather than the short end.



TAMRON SP 70-300mm f/4-5.6 DI VC USD

£329/\$449

The latest and greatest of Tamron's line of 70-300mm telephoto zooms

Unlike Sigma, Tamron still markets its superlatively inexpensive non-stabilized 70-300mm zoom, but the Di VC USD edition is better in every way. For starters, it has a more exotic optical path that features LD (Low Dispersion) and XLD (eXtra Low Dispersion) elements, and a much better AF system that's based on a ring-type ultrasonic actuator, rather than a basic electric motor.

Unlike in the earlier lens, focusing is internal, so the front element doesn't rotate. Build quality is superior, but lacks the weather-seals built into most of Tamron's recent lenses. And finally, it boasts the addition of image stabilization, or VC (Vibration Compensation) as Tamron calls it.

Launched at the beginning of the last decade, this was the first Tamron lens to feature ring-type ultrasonic AF, or USD (Ultrasonic Silent Drive). It comes with the usual full-time manual override, via a mechanically coupled focus ring, and a focus distance scale beneath a viewing panel. The stabilization is also proprietary, based on a system in which driving

coils electromagnetically control the stabilizing lens group via three steel balls. It gives roughly a four-stop benefit for static shooting but, in our tests, proved less effective when panning. Unlike competing 'budget' class Canon lenses, the Tamron is supplied with a petal shaped hood.

Performance

Overall performance and image quality are respectable for such a budget-friendly telephoto zoom. It's certainly not as sharp as Canon's latest 70-300mm, throughout the zoom range, but the Tamron is capable of exceptional results.



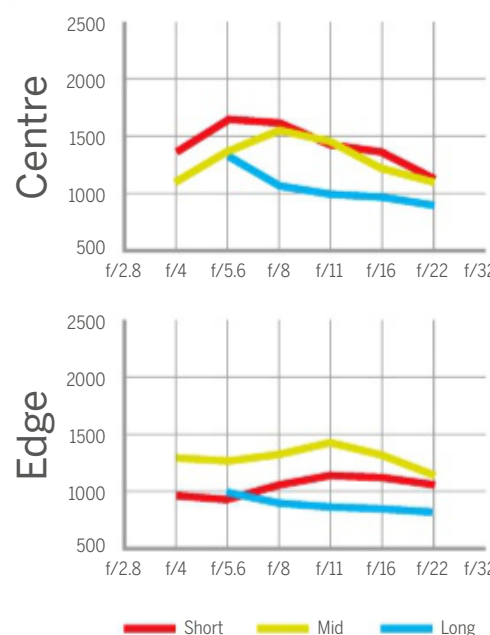
FEATURES

- 01 Supplied with a high-quality petal shaped hood.
- 02 The large zoom ring is positioned at the front of the lens.
- 03 Switches enable selection of AF/M focusing and the VC system to be turned on and off.
- 04 The focus ring at the rear is mechanically coupled, enabling full-time manual override.
- 05 Unlike most recent Tamrons, this one lacks weather-seals.

VERDICT

FEATURES ★★★★★
BUILD & HANDLING ★★★★★
PERFORMANCE ★★★★★
VALUE ★★★★★
OVERALL ★★★★★

SHARPNESS



STEADY AS YOU GO

Stabilization is worth its weight in gold for handheld telephoto shooting



Especially on APS-C cameras, where the tele power of these lenses is effectively boosted by more than 50 per cent, it can be hard to avoid camera-shake with handheld shooting. The rule of thumb is that you'll need a shutter speed of at least the reciprocal of the 'effective' focal length, for sharp shots. Shooting with a 300mm lens on an APS-C body (480mm effective), you'd need a minimum shutter speeds of about 1/500th of a second. Image stabilization typically enables you to shoot at shutter speeds of 3.5 to 4-stops slower.

All of the Canon lenses on test that feature image stabilization have auto panning detection, whereas it's a switchable option in the Sigma and Tamron 100-400mm

TAMRON 100-400mm f/4.5-6.3 DI VC USD **£699/\$799**

If you feel that bigger is better, this will be the preferable option from Tamron's two offerings

A third heavier and larger than Tamron's 70-300mm lens on test, this lens goes toe-to-toe with Sigma's 100-400mm.

It's almost identical in terms of zoom and aperture, but the Tamron focuses closer at 1.5m, with a slightly larger 0.28x max magnification ratio. Both lenses have ring-type ultrasonic AF systems and four-stop stabilizers, with switchable panning modes.

Whereas the Sigma has a three-position AF limiter switch for locking out the short or long end of the range, the Tamron has a single 'Limit' position on the AF/MF focus mode switch. When engaged, this can limit the AF range on one side of the current focus distance position or the other. As with the Sigma, an optional USB docking station is available, this time in the shape of Tamron's TAP-in Console. Again, firmware updates and fine-tuning for AF accuracy can be applied, but the Tamron lacks extra Custom modes available via a physical switch on the lens barrel.

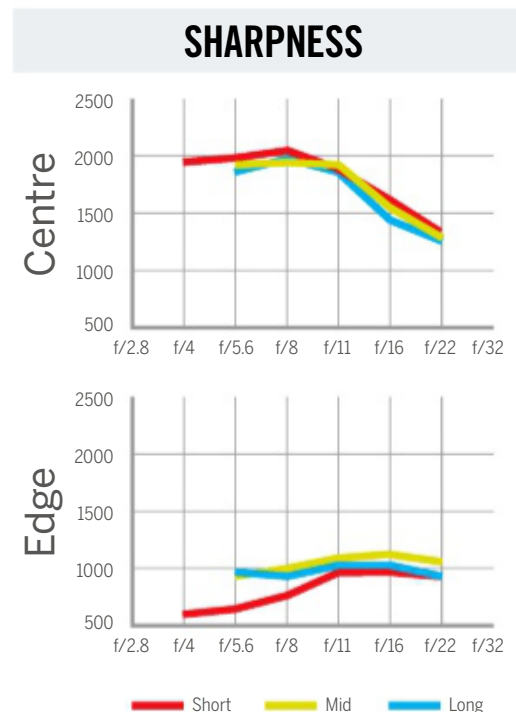
Build quality feels sturdy and robust, and the Tamron features weather-seals and a fluorine



coating on its front element. The optical path includes an LD (Low Dispersion) element and nano-structure coatings to minimize ghosting and flare. Unlike with the Sigma, an optional tripod mount ring is available for this lens, which improves balance when using a tripod or monopod.

Performance

Solid performance in all areas ranges from fast AF and effective stabilization to impressive centre-sharpness throughout the zoom range, even when shooting wide-open. But corner-sharpness drops off a bit at the short end.



FEATURES

- 01** A fluorine coating is applied to the front element to repel grease and moisture.
- 02** The outer barrel is made from magnesium alloy.
- 03** Switches are on hand for dual-mode stabilization, AF/MF with a Limit option, and zoom lock.
- 04** The optional tripod mounting ring costs around £109/\$129.
- 05** There are weather-seals here, including a rubber ring on the mounting plate.

VERDICT

FEATURES

★★★★★

BUILD & HANDLING

★★★★★

PERFORMANCE

★★★★★

VALUE

★★★★★

OVERALL

★★★★★

EOS R SYSTEM OPTIONS

There's now a telephoto lens for EOS R series cameras but it's hardly a budget option

A part from the general-purpose RF 24-240mm f/4L IS USM 'superzoom' (£845/\$899), there's currently only one tele zoom lens for EOS R cameras. It comes in the compact shape of the Canon RF 70-200mm F2.8L IS USM which, at 89.9x146mm and 1070g is small and light for a 70-200mm f/2.8. It's also rare for this class of lens in featuring an extending inner barrel, rather than having a fixed physical length. Even so, it's no 'budget option', with a hefty price tag of £2699/\$2699.

For EOS R and EOS RPs, where you're likely to be looking for compact and reasonably priced lenses that are a good physical and financial match for the camera, one of the full-frame compatible lenses here would be a good fit, along with an EF-EOS R adapter.



It's remarkably compact and lightweight for 70-200mm f/2.8 lens but the new RF zoom has a heavyweight price tag

COMPARISON TABLE

								
	CANON EF-M 55-200mm f/4.5-6.3 IS STM	CANON EF-S 55-250mm f/4-5.6 IS STM	CANON EF 70-200mm f/4L USM	CANON EF 70-300mm f/4-5.6 IS II USM	CANON EF 70-300mm f/4-5.6L IS USM	SIGMA 100-400mm f/5-6.3 DG OS HSM I C	TAMRON SP 70-300mm f/4-5.6 DI VC USD	TAMRON 100-400mm f/4.5-6.3 DI VC USD
	www.canon.co.uk	www.canon.co.uk	www.canon.co.uk	www.canon.co.uk	www.canon.co.uk	www.sigma-imaging-uk.com	www.tamron.co.uk	www.tamron.co.uk
Full-frame compatible	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Effective focal length (APS-C)	88-320mm	88-400mm	112-320mm	112-480mm	112-480mm	160-640mm	112-480mm	160-640mm
Elements/Groups	17 / 11	15 / 12	16 / 13	17 / 12	19 / 14	21 / 15	17 / 12	17 / 11
Diaphragm blades	7 blades	7 blades	8 blades	9 blades	8 blades	9 blades	9 blades	9 blades
Autofocus type	Stepping motor	Stepping motor	Ultrasonic (ring type)	Ultrasonic (nano)	Ultrasonic (ring-type)	Ultrasonic (ring-type)	Ultrasonic (ring-type)	Ultrasonic (ring-type)
Internal zoom/focus	No/Yes	No/Yes	Yes/Yes	No/Yes	No/Yes	No/Yes	No/Yes	No/Yes
Front element rotates	No	No	No	No	No	No	No	No
Image stabilizer	3.5 stops	3.5 stops	None	4 stops	4 stops	4 stops	4 stops	4 stops
AF manual override	Electronic coupling	Electronic coupling	Yes	Electronic coupling	Yes	Yes	Yes	Yes
Minimum focus distance	1.0m	0.85m	1.2m	1.2m	1.2m	1.6m	1.5m	1.5m
Max magnification factor	0.21x	0.29x	0.21x	0.25x	0.21x	0.26x	0.25x	0.28x
Focus distance scale	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Filter size	52mm	58mm	67mm	67mm	67mm	67mm	62mm	67mm
Mounting plate	Plastic	Plastic	Metal	Metal	Metal (weather-sealed)	Metal (weather-sealed)	Metal	Metal (weather-sealed)
Supplied accessories	None	None	Hood, soft case	None	Hood	Hood	Hood	Hood, pouch
Dimensions (Dia x Length)	61x87mm	70x111mm	76x172mm	80x146mm	89x143mm	86x182mm	82x143mm	86x199mm
Supplied accessories	260g	375g	705g	710g	1050g	1160g	765g	1115g
Target price	£249/\$349	£299/\$299	£589/\$599	£449/\$499	£1199/\$1349	£679/\$609	£329/\$449	£699/\$799
FEATURES	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
BUILD & HANDLING	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
PERFORMANCE	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
VALUE	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
OVERALL	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

THE WINNER IS... CANON EF 70-300mm f/4-5.6 IS II USM

Rich in thrills but a compact, lightweight and affordable telephoto zoom lens

When choosing a 'budget tele zoom', the price is an important consideration. Canon's latest 70-300mm is affordable, well built, delivers ultra-fast AF, highly effective IS and excellent image quality, while also being compact and light to carry. It's our top choice for APS-Cs and

full-frames, as well as for EOS R and RP cameras via an EOS mount adapter. If you've traded up from an APS-C format DSLR to a full-frame, you may feel short-changed in tele reach, now that you no longer have the 1.6x crop factor to boost the focal length. In this case, the Sigma or Tamron

100-400mm might feel a better fit, despite being pricier to buy and heavier. There's little to choose between the two, in overall performance and image quality, despite the Tamron delivering better lab results for sharpness. We prefer the extra operating and custom modes of the Sigma.



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BUYERS' GUIDE

With prices ranging from a couple of hundred to a few thousand, Canon has an EOS camera to suit everyone, from the complete beginner to most demanding pro...

What to look for

Canon EOS cameras

Canon splits its EOS DSLR lineup into entry-level, enthusiast and professional ranges; the 4000D is the most basic, the 800D and 77D for intermediates, the 80D and full-frame 6D Mk II for more advanced enthusiasts, while the 7D, full-frame 5D and 1D lines have pro-level features. With more expensive models, expect greater handling, more robust build quality (weather-sealing and magnesium-alloy shells), more advanced features, and full-frame rather than APS-C image sensors.

We also now have the full-frame EOS R cameras for mirrorless fans, the EOS RP as an 'entry-level' and more affordable option, with the EOS R for more serious photographers. Plus not forgetting Canon's compact system APS-C EOS M camera range.



DSLR CAMERAS

PRICES QUOTED ARE BODY-ONLY UNLESS STATED

CANON EOS 4000D



CANON has stripped everything down to its bare essentials for the 4000D, and it's a great if basic DSLR for beginners, and at only £329 (body), it's the cheapest new 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. ★★☆☆☆

TESTED IN ISSUE 140 PRICE: £250/\$N/A

Sensor	18Mp APS-C CMOS
Viewfinder	Pentamirror, 0.8x, 95%
ISO	100-6400 (12,800 exp)
AF	9-point (1 cross-type)
LCD	2.7-in, 230k-dot
Max burst (buffer)	3fps
Memory card	SD/SDHC/SDXC

CANON EOS 2000D (REBEL T7)



THE 2000D is a better-spec Canon camera than the 4000D, but comes with a step up at its RRP current price. It's arguably worth the extra, but that puts it in a difficult spot, where another step up in outlay will get you an EOS 200D, which is a far better overall DSLR camera. ★★☆☆☆

TESTED IN ISSUE 149 PRICE: £290/\$360

Sensor	24.1Mp APS-C CMOS
Viewfinder	Pentamirror, 0.8x, 95%
ISO	100-6400 (12,800 exp)
AF	9-point (1 cross-type)
LCD	3-in, 920k-dots
Max burst (buffer)	3fps
Memory card	SD/SDHC/SDXC

CANON EOS 250D (REBEL SL3)



THE new EOS 250D/Rebel SL3 is not Canon's cheapest entry-level DSLR, but we think it's the best budget/beginner DSLR with the perfect blend of power and value. This is the body that will take people from snapping on their smartphones, to getting into the hobby. ★★★★★

TESTED IN ISSUE 156 PRICE: £519/\$600

Sensor	24.1Mp APS-C CMOS
Viewfinder	Pentamirror, 0.87x, 95%
ISO	100-25600 (51,200 exp)
AF	9-point (1 cross-type)
LCD	3-in vari-angle touch screen, 1040k
Max burst (buffer)	5fps
Memory card	SD/SDHC/SDXC

CANON EOS 800D (REBEL T7i)



CANON has shoehorned much of the tech of the enthusiast-level 80D into a beginner body. The 800D inherits its bigger brother's 24Mp Dual Pixel sensor for superior Live View autofocus, uses the same 45-point module for viewfinder autofocus, and better its ISO performance. ★★★★★

TESTED IN ISSUE 149 PRICE: £579/\$899

Sensor	24.2Mp, APS-C (6000x4000 pixels)
Viewfinder	Pentamirror, 0.82x, 95%
ISO	100-25600 (51,200 exp)
AF	45-point (all cross-type)
LCD	3-in vari-angle touch-screen, 1040k
Max burst (buffer)	6fps (27 Raw/Unlimited JPEG)
Memory card	SD/SDHC/SDXC

CANON EOS 77D



THE key specs are identical to the 800D, but the extra top-plate LCD gives at-a-glance access to vital shooting info, while a rear control wheel makes dialing in exposure settings much quicker, promoting it to Canon's 'enthusiast' range. Super image quality – even at high ISOs. ★★★★★

TESTED IN ISSUE 156 PRICE: £700/\$800

Sensor	24.2Mp, APS-C (6000x4000 pixels)
Viewfinder	Pentamirror, 0.82x, 95%
ISO	100-25,600 (51,200 exp)
AF	45-point (all cross-type)
LCD	3-in vari-angle touch-screen, 1040k
Max burst (buffer)	6fps (27 Raw/Unlimited JPEG)
Memory card	SD/SDHC/SDXC

CANON EOS 90D



THE Canon 90D is a heavyweight replacement for the 80D, and this decathlete crop-camera comes with a new 32.5Mp sensor, super-quick 10fps continuous shooting and 4K video, plus improved handling. This camera is an ideal APS-C camera upgrade for enthusiasts and beyond. ★★★★★

TESTED IN ISSUE 159 PRICE: £1209/\$1200

Sensor	32.5Mp, APS-C (6960x4640 pixels)
Viewfinder	Pentaprism, 0.95x, 100%
ISO	100-25,600 (51,200 exp)
AF	45-point (all cross-type)
LCD	3-in vari-angle touch-screen, 1040k
Max burst (buffer)	10fps (25 Raw/58 JPEG)
Memory card	SD/SDHC/SDXC

CANON EOS 7D Mk II



HERE'S the king of action-packed APS-C format cameras. A long-overdue revamp of the original 7D, it has 65-point AF with advanced tracking, 10fps continuous drive, dual DIGIC 6 processors and GPS, all wrapped up in a tough, weather-sealed magnesium alloy shell. ★★★★★

TESTED IN ISSUE 159 PRICE: £1350/\$1649

Sensor	20.2Mp, APS-C (5472x3648 pixels)
Viewfinder	Pentaprism, 1.0x, 100%
ISO	100-16,000 (51,200 exp)
AF	65-point (all cross-type)
LCD	3-in, 1040k dots
Max burst (buffer)	10fps (31 Raw/Unlimited JPEG)
Memory card	CompactFlash + SD/SDHC/SDXC

CANON EOS 6D Mk II



THE world's smallest full-frame DSLR – with a vari-angle touchscreen LCD – gets a major upgrade over the original 6D with improved speed and performance rather than outright image quality. It's a great all-rounder now thanks to an improved AF system and burst rate. ★★★★★

TESTED IN ISSUE 156 PRICE: £1349/\$1600

Sensor	26.2Mp, full-frame (6240x4160 pixels)
Viewfinder	Optical pentaprism, 98%
ISO	100-40,000 (50-102,400 exp)
AF	45-point (all cross-type)
LCD	3-in vari-angle touch-screen, 1040k
Max burst (buffer)	6.5fps (21 Raw/150 JPEG)
Memory card	SD/SDHC/SDXC

CANON EOS 5D Mk IV



A SUPERB all-rounder, the pro-level weather-sealed full-frame 5D Mk IV combines a stunning hi-res 30Mp sensor with a swift 7fps frame rate. Its impressive specs list includes 4K video, a touchscreen LCD, Wi-Fi and NFC connectivity, and GPS to automatically geotag images. ★★★★★

TESTED IN ISSUE 156 PRICE: £2800/\$3100

Sensor	30.4Mp, full-frame (6720x4480 pixels)
Viewfinder	Pentaprism, 0.71x, 100%
ISO	100-32,000 (50-102,400 exp)
AF	61-point (41 cross-type, 5 dual-cross)
LCD	3.2-in touch-screen, 1620k dots
Max burst (buffer)	7fps (21 Raw/Unlimited JPEG)
Memory card	CompactFlash + SD/SDHC/SDXC

CANON EOS 5DS (5DS R)



THE world's first 50Mp full-frame DSLR delivers huge and amazingly detailed hi-res images. The higher-cost 5DS R adds a 'low-pass cancellation filter' for marginally sharper shots. As expected with such a high-res sensor, max ISO and drive rate are lower than with the 5D Mk IV. ★★★★★

TESTED IN ISSUE 148 PRICES: £2349/\$3700 (£2500/\$3899)

Sensor	50.6Mp, full-frame (8688x5792 pixels)
Viewfinder	Pentaprism, 0.71x, 100%
ISO	100-6400 (50-12,800 exp)
AF	61-point (41 cross-type, 5 dual-cross)
LCD	3.2-in, 1040k dots
Max burst (buffer)	5fps (14 Raw/510 JPEG)
Memory card	CompactFlash + SD/SDHC/SDXC

CANON EOS-1D X MARK II



CANON'S Mark II flagship full-frame pro-level EOS boasts ultra-fast 14fps shooting (16fps in Live View) and super-high ISO, along with sublime handling. It sports 4K video, body build quality is rock-solid, yet its 20Mp image resolution is relatively modest when compared to the 50Mp 5DS/R. ★★★★★

TESTED IN ISSUE 148 PRICE: £4800/\$6000

Sensor	20.2Mp, full-frame (5472x3648 pixels)
Viewfinder	Pentaprism, 0.76x, 100%
ISO	100-51,200 (50-40,9600 exp)
AF	61-point (41 cross-type, 5 dual-cross)
LCD	3.2-in, 1620k dots
Max burst (buffer)	14-16fps (170 Raw/Unlimited JPEG)
Memory card	CompactFlash + CFast

MIRRORLESS CAMERAS

PRICES QUOTED ARE BODY-ONLY UNLESS STATED

CANON EOS M200

TESTED IN ISSUE 160 PRICE with 15-45mm kit lens: **£499/\$549**



CANON'S EOS M200 is aimed at attracting Instagramers and smartphone upgraders to Canon's mirrorless M range, and has an appealing spec list including its 24Mp sensor and plenty of easy-to-use features for beginners. It shoots 4K video to seal the deal. ★★★★★

Sensor	24.1Mp APS-C CMOS
Viewfinder	No
ISO	100-25,600 (51,200 exp)
AF	143-point AF
LCD	3-in tilting touchscreen, 1040k dots
Max burst (buffer)	6.1 fps
Memory card	SD/SDHC/SDXC and UHS-1

CANON EOS M50

TESTED IN ISSUE 156 PRICE: **£490/\$800**



THE M50 produces the same quality and performance as the more expensive M5. Its features probably won't tempt any Canon DSLR users to the mirrorless camp, but for new users looking for a smaller body and trying to get into photography, it's a marvellous route inside the Canon system. ★★★★★

Sensor	24.2Mp, APS-C CMOS
Viewfinder	OLED EVF, 2,360k dots
ISO	100-25,600
AF	143/99-point (1 cross-type)
LCD	3-in vari-angle touch-screen, 1040k
Max burst (buffer)	10fps, 7.4fps with autofocus
Memory card	SD/SDHC/SDXC and UHS-1

CANON EOS M6 MARK II

PRICE: **£869/\$849**



THE EOS M6 Mark II is Canon's new compact, yet powerful mirrorless camera designed to deliver sharp images for amateurs always on the move. It has the same 32.5Mp APS-C sensor as the new Canon EOS 90D DSLR, but it's able to shoot in 14fps blasts, and even 30fps Raw image bursts with electronic shutter, plus 'uncropped' 4K video.

Sensor	32.5Mp APS-C CMOS
Viewfinder	No
ISO	100-25,600
AF	143/99-point
LCD	3-in tilting touchscreen, 1040k dots
Max burst (buffer)	14fps (23 Raws, 54 JPEGs)
Memory card	SD/SDHC/SDXC and UHS-1

CANON EOS M5

TESTED IN ISSUE 156 PRICE: **£599/\$679**



AS Canon's flagship mirrorless M camera for enthusiasts, the EOS M5 really opens up the DSLR vs CSC debate. It 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. ★★★★★

Sensor	24.2Mp APS-C CMOS
Viewfinder	OLED EVF, 2.36 million dots
ISO	100-25,600
AF	49-point AF
LCD	3.2-in tilting touchscreen, 1620k dots
Max burst (buffer)	9fps
Memory card	SD/SDHC/SDXC and UHS-1

CANON EOS RP

TESTED IN ISSUE 156 PRICE: **£1399/\$1299**



CANON is catering to crop-sensor CSC M or EOS DSLR users looking for a full-frame upgrade that won't break the bank. The EOS RP is strong spec package that's notably smaller, lighter and cheaper than almost all its rivals, and ideal as an 'entry-level' full-frame camera. ★★★★★

Sensor	26.2Mp, full-frame CMOS
Viewfinder	0.39-in EVF, 2.36 million dots
ISO	100-40,000 (50-102,400 exp)
AF	4779 Dual Pixel AF positions
LCD	3-in vari-angle touch-screen, 1040k
Max burst (buffer)	5fps (50 Raw/Unlimited JPEG)
Memory card	SD/SDHC/SDXC and UHS-II

CANON EOS R

TESTED IN ISSUE 156 PRICE: **£2149/\$2300**



THE full-frame mirrorless Canon EOS R boasts the new RF mount and fully articulated Dual Pixel AF touchscreen with 5655 AF points. Equivalent in many specs to the EOS 5D Mark IV, it's an attractive way for those looking to experience mirrorless photography. ★★★★★

Sensor	30.3Mp full-frame CMOS
Electronic viewfinder	0.5-in EVF, 3.69million dots
ISO	100-40,000 (50-102,400 exp)
AF	5655 Dual Pixel AF points
LCD	3.2-in fully articulating touchscreen
Max burst (buffer)	Approx. 8fps (47 Raw, 100JPEG)
Memory card	1x SD/SDHC/SDXC and UHS-II

APS-C EOS M

FULL-FRAME EOS R

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PhotoPlus

BUYERS' GUIDE

With more than 150 lenses for Canon EOS cameras, picking the best for the job can be a minefield. Here's the lowdown

Choosing lenses

Key factors to watch out for



THE MAIN factors to consider in a lens are its focal length, maximum aperture, and whether or not it's full-frame compatible. We've categorized lenses by focal length range – from wide-angle to telephoto. The larger a lens's maximum aperture, the 'faster' it's considered to be – allowing you to control depth of field more, and offering better options in low light. Zooms are more flexible than primes, but tend not to have such fast maximum apertures. Full-frame lenses will also work with 'crop-sensor' EOS DSLRs, but crop-sensor lenses aren't compatible with full-frame cameras.

KEY: ● BEST VALUE AWARD ● BEST ON TEST AWARD

WIDE-ANGLE ZOOMS

WIDE-ANGLE ZOOMS	Price	Full-frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
Canon EF 8-15mm f/4L Fisheye USM	£1120/\$1250	Yes	1.9x	No	f/4	540g	0.15m	0.34x	None	7	90	★★★★★	
Canon EF-S 10-18mm f/4.5-5.6 IS STM	£239/\$279	No	1.8x	Yes	f/4.5-5.6	240g	0.22m	0.15x	67mm	7	143	★★★★★	●
Canon EF-S 10-22mm f/3.5-4.5 USM	£500/\$650	No	2.2x	No	f/3.5-4.5	385g	0.24m	0.17x	77mm	6	131	★★★★★	
Canon EF 11-24mm f/4L USM	£2700/\$2800	Yes	2.2x	No	f/4	1180g	0.28m	0.16x	None	9	131	★★★★★	
Canon RF 15-35mm F2.8L IS USM	£2330/\$2300	Yes	2.3x	Yes	f/2.8	840	0.28m	0.21x	82mm	9	159	★★★★★	
Canon EF 16-35mm f/2.8L III USM	£1849/\$1899	Yes	2.2x	No	f/2.8	790g	0.28m	0.22x	82mm	9	155	★★★★★	
Canon EF 16-35mm f/4L IS USM	£950/\$1000	Yes	2.2x	Yes	f/4	615g	0.28m	0.23x	77mm	9	143	★★★★★	●
Canon EF 17-40mm f/4L USM	£720/\$750	Yes	2.4x	No	f/4	500g	0.28m	0.24x	77mm	7	113	★★★★★	
Sigma 8-16mm f/4.5-5.6 DC HSM	£600/\$800	No	2.0x	No	f/4.5-5.6	555g	0.24m	0.13x	None	7	143	★★★★★	
Sigma 10-20mm f/3.5 EX DC HSM	£330/\$400	No	2.0x	No	f/3.5	520g	0.24m	0.15x	82mm	7	143	★★★★★	
Sigma 12-24mm f/4 DG HSM A	£1400/\$1600	Yes	2.0x	No	f/4	1150g	0.24m	0.2x	None	9	143	★★★★★	
Sigma 14-24mm f/2.8 DG HSM A	£1169/\$1299	Yes	0.19x	No	f/2.8	1150g	0.26m	0.19x	None	9	155	★★★★★	
Sigma 24-35mm f/2 DG HSM A	£760/\$900	Yes	1.5x	No	f/2	940g	0.28m	0.23x	77mm	7	113	★★★★★	
Tamron 10-24mm f/3.5-4.5 Di II VC HLD	£450/\$500	No	0.19x	Yes	f/3.5-4.5	440g	0.24m	0.19x	77mm	7	143	★★★★★	●
Tamron SP 15-30mm f/2.8 Di VC USD	£930/\$1100	Yes	2.0x	Yes	f/2.8	1100g	0.28m	0.2x	None	9	143	★★★★★	
Tamron SP 15-30mm f/2.8 Di VC USD G2	£1279/\$1299	Yes	2.0x	Yes	f/2.8	1110g	0.28m	0.2x	None	9	155	★★★★★	
Tokina 11-16mm f/2.8 AT-X PRO DX II	£480/\$500	No	1.8x	No	f/2.8	560g	0.28m	0.12x	77mm	9	87	★★★★	
Tokina 11-20mm f/2.8 AT-X PRO DX	£529/\$469	No	1.43x	No	f/2.8	560g	0.28m	0.12x	82mm	9	155	★★★★★	
Tokina 12-28mm f/4 AT-X Pro DX	£450/\$400	No	2.3x	No	f/4	530g	0.25m	0.2x	82mm	9	116	★★★★★	
Tokina 16-28mm f/2.8 FF	£699/\$699	Yes	1.8x	No	f/2.8	940g	0.28m	0.19x	82mm	9	154	★★★★★	
Tokina 17-35mm f/4 AT-X PRO FX	£570/\$450	Yes	2.1x	No	f/4	600g	0.28m	0.21x	82mm	9			

TELEPHOTO ZOOMS

TELEPHOTO ZOOMS	Price	Full-frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
Canon EF-S 55-250mm f/4-5.6 IS STM	£270/\$300	No	4.5x	Yes	f/4-5.6	375g	0.85m	0.29x	58mm	7	137	★★★★★	
Canon EF 70-200mm f/2.8L IS III USM	£2099/\$2099	Yes	2.9x	Yes	f/2.8	1480g	1.2m	0.21x	77mm	8	151	★★★★★	
Canon EF 70-200mm f/2.8L USM	£1330/\$1250	Yes	2.9x	No	f/2.8	1310g	1.5m	0.16x	77mm	8	64	★★★★★	
Canon EF 70-200mm f/4L IS II USM	£1299/\$1299	Yes	2.9x	Yes	f/4	780g	1.0m	0.27x	72mm	9	151	★★★★★	
Canon EF 70-200mm f/4L IS USM	£899/\$1099	Yes	2.9x	Yes	f/4	760g	1.2m	0.21x	72mm	8	151	★★★★★	
Canon EF 70-200mm f/4L USM	£670/\$650	Yes	2.9x	No	f/4	705g	1.2m	0.21x	67mm	8	123	★★★★★	
Canon EF 70-300mm f/4-5.6 IS USM	£400/\$650	Yes	4.3x	Yes	f/4-5.6	630g	1.5m	0.26x	58mm	8	123	★★★★	
Canon EF 70-300mm f/4-5.6 IS II USM	£425/\$500	Yes	4.3x	Yes	f/4-5.6	710g	1.2m	0.25x	67mm	9	137	★★★★★	
Canon EF 70-300mm f/4-5.6L IS USM	£1030/\$1350	Yes	4.3x	Yes	f/4-5.6	1050g	1.2m	0.21x	67mm	8	117	★★★★★	
Canon EF 70-300mm f/4.5-5.6 DO IS USM	£1380/\$1400	Yes	4.3x	Yes	f/4.5-5.6	720g	1.4m	0.19x	58mm	6	90	★★★★	
Canon EF 75-300mm f/4-5.6 III	£210/\$200	Yes	4.0x	No	f/4-5.6	480g	1.5m	0.25x	58mm	7	15	★★★★	
Canon EF 75-300mm f/4-5.6 III USM	£260/\$190	Yes	4.0x	No	f/4-5.6	480g	1.5m	0.25x	58mm	7	70	★★★★	
Canon EF 100-400mm f/4.5-5.6L IS II USM	£1950/\$2050	Yes	4.0x	Yes	f/4.5-5.6	1640g	0.98m	0.31x	77mm	9	152	★★★★★	
Canon EF 200-400mm f/4L IS USM Extender 1.4x	£11,000/\$11,000	Yes	2.8x	Yes	f/4	3620g	2.0m	0.15x	52mm	9	152	★★★★★	
Sigma 50-100mm f/1.8 DC HSM A	£949/\$1099	No	2.0x	None	f/1.8	1490g	0.95m	0.15x	82mm	9	151	★★★★★	
Sigma 50-500mm f/4.5-6.3 DG OS HSM	£1160/\$1660	Yes	10.0x	Yes	f/4.5-6.3	1970g	0.5-1.8m	0.32x	95mm	9	130	★★★★★	
Sigma 60-600mm f/4.5-6.3 DG OS HSM Sport	£1899/\$1999	Yes	10.0x	Yes	f/4.5-6.3	2700g	0.6-2.6m	0.3x	105mm	9	152	★★★★★	
Sigma 70-200mm f/2.8 EX DG OS HSM	£900/\$1300	Yes	2.9x	Yes	f/2.8	1430g	1.4m	0.13x	77mm	9	137	★★★★★	●
Sigma 70-200mm f/2.8 DG OS HSM S	£1349/\$1499	Yes	2.9x	Yes	f/2.8	1805g	1.2m	0.21x	82mm	11	151	★★★★★	●
Sigma 70-300mm f/4-5.6 DG Macro	£130/\$140	Yes	4.3x	No	f/4-5.6	545g	0.95m	0.5x	58mm	9	123	★★★★	
Sigma APO 70-300mm f/4-5.6 DG Macro	£180/\$180	Yes	4.3x	No	f/4-5.6	550g	0.95m	0.5x	58mm	9	137	★★★★	
Sigma 100-400mm f/5-6.3 DG OS HSM C	£689/\$699	Yes	4x	Yes	f/5-6.3	1160g	1.6m	0.26x	67mm	9	152	★★★★★	
Sigma 120-300mm f/2.8 DG OS HSM S	£2700/\$3400	Yes	2.5x	Yes	f/2.8	3390g	1.5-2.5m	0.12x	105mm	9	151	★★★★★	
Sigma 150-600mm f/5-6.3 DG OS HSM C	£790/\$1000	Yes	4.0x	Yes	f/5-6.3	1930g	2.8m	0.2x	95mm	9	152	★★★★★	●
Sigma 150-600mm f/5-6.3 DG OS HSM S	£1330/\$1800	Yes	4.0x	Yes	f/5-6.3	2860g	2.6m	0.2x	105mm	9	152	★★★★★	●
Sigma 300-800mm f/5.6 EX DG HSM	£6500/\$6800	Yes	2.7x	No	f/5.6	5880g	6.0m	0.14x	46mm	9			
Tamron SP AF 70-200mm f/2.8 Di LD (IF) Macro	£630/\$770	Yes	2.9x	No	f/2.8	1320g	0.95m	0.32x	77mm	9	137	★★★★★	
Tamron SP 70-200mm f/2.8 Di VC USD G2	£1289/\$1299	Yes	2.9x	Yes	f/2.8	1500g	0.95m	0.16x	77mm	9	151	★★★★★	●
Tamron 70-210mm f/4 DI VC USD	£599/\$699	Yes	2.9x	Yes	f/4	860g	0.95m	0.32x	67mm	9	151	★★★★★	
Tamron AF 70-300mm f/4-5.6 Di LD Macro	£130/\$145	Yes	4.3x	No	f/4-5.6	458g	0.95m	0.5x	62mm	9	137	★★★★	
Tamron SP AF 70-300mm f/4-5.6 Di VC USD	£330/\$450	Yes	4.3x	Yes	f/4-5.6	765g	1.5m	0.25x	62mm	9	137	★★★★★	●
Tamron 100-400mm f/4.5-6.3 Di VC USD	£750/\$700	Yes	4x	Yes	f/4-5.6	1135g	1.5m	0.28x	67mm	9	152	★★★★★	
Tamron SP 150-600mm f/5-6.3 Di VC USD	£830/\$870	Yes	4.0x	Yes	f/5-6.3	1951g	2.7m	0.2x	95mm	9	130	★★★★★	
Tamron SP 150-600mm f/5-6.3 Di VC USD G2	£1129/\$1299	Yes	4.0x	Yes	f/5-6.3	2010g	2.2m	0.26x	95mm	9	152	★★★★★	

BUYERS' GUIDE LENSES

KEY: ● BEST VALUE AWARD ● BEST ON TEST AWARD

STANDARD ZOOMS														
	Price	Full-frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards	
Canon EF-S 15-85mm f/3.5-5.6 IS USM	£690/\$799	No	5.7x	Yes	f/3.5-5.6	575g	0.35m	0.21x	72mm	7	142	★★★★★		
Canon EF-S 17-55mm f/2.8 IS USM	£790/\$549	No	3.2x	Yes	f/2.8	645g	0.35m	0.17x	77mm	7	142	★★★★★		
Canon EF-S 18-55mm f/3.5-5.6 IS II	£170/\$200	No	3.1x	Yes	f/3.5-5.6	200g	0.25m	0.34x	58mm	6	110	★★★★		
Canon EF-S 18-55mm f/3.5-5.6 IS STM	£214/\$106	No	3.1x	Yes	f/3.5-5.6	205g	0.25m	0.36x	58mm	7	162	★★★★★		
Canon EF 24-70mm f/2.8L II USM	£1740/\$1599	Yes	2.9x	No	f/2.8	805g	0.38m	0.21x	82mm	9	162	★★★★★		
Canon RF 24-70mm F2.8L IS USM	£2329/\$2299	Yes	2.9x	Yes	f/2.8	900g	0.21x	0.30x	82mm	9	162	★★★★★		
Canon EF 24-70mm f/4L IS USM	£800/\$849	Yes	2.9x	Yes	f/4	600g	0.38m	0.7x	77mm	9	162	★★★★★		
Canon RF 28-70mm F2L USM	£2500/\$3200	Yes	2.9x	No	f/2	1430g	0.39m	0.18x	95mm	9				
Canon EF 24-105mm f/3.5-5.6 IS STM	£579/\$599	Yes	4.4x	Yes	f/3.5-5.6	525g	0.4m	0.3x	77mm	7	162	★★★★★		
Canon EF 24-105mm f/4L IS II USM	£998/\$1099	Yes	4.4x	Yes	f/4	795g	0.45m	0.24x	77mm	10	127	★★★★★		
Canon RF 24-105mm F4L IS USM	£1119/\$1099	Yes	4.4x	No	f/1.2	700g	0.40m	0.19x	77mm	9	162	★★★★★		
Sigma 17-50mm f/2.8 EX DC OS HSM	£330/\$370	No	2.9x	Yes	f/2.8	565g	0.28m	0.2x	77mm	7	127	★★★★★		
Sigma 17-70mm f/2.8-4 DC Macro OS HSM C	£350/\$500	No	4.1x	Yes	f/2.8-4	465g	0.22m	0.36x	72mm	7	142	★★★★★		
Sigma 18-35mm f/1.8 DC HSM A	£650/\$800	No	1.9x	No	f/1.8	810g	0.28m	0.23x	72mm	9	90	★★★★★		
Sigma 24-70mm f/2.8 DG OS HSM A	£1200/\$1200	Yes	2.9x	Yes	f/2.8	1,020g	0.38m	0.2x	82mm	9	142	★★★★★		
Sigma 24-105mm f/4 DG OS HSM A	£600/\$900	Yes	4.4x	Yes	f/4	885g	0.45m	0.22x	82mm	9	127	★★★★★		
Tamron SP AF 17-50mm f/2.8 XR Di II VC	£420/\$650	No	2.9x	Yes	f/2.8	570g	0.29m	0.21x	72mm	7	142	★★★★★		
Tamron SP AF 24-70mm f/2.8 Di VC USD G2	£1250/\$1200	Yes	2.9x	Yes	f/2.8	905g	0.38m	0.2x	82mm	9	142	★★★★★		
Tamron SP AF 28-75mm f/2.8 XR Di	£450/\$500	Yes	2.7x	No	f/2.8	510g	0.33m	0.26x	67mm	7	57	★★★★		

STANDARD ZOOMS

SUPERZOOMS														
Canon EF-S 18-135mm f/3.5-5.6 IS STM	£429/\$449	No	7.5x	Yes	f/3.5-5.6	480g	0.39m	0.28x	67mm	7	153	★★★★★		
Canon EF-S 18-135mm f/3.5-5.6 IS USM	£449/\$339	No	7.5x	Yes	f/3.5-5.6	515g	0.39m	0.28x	67mm	7	162	★★★★★		
Canon EF-S 18-200mm f/3.5-5.6 IS	£470/\$700	No	11.1x	Yes	f/3.5-5.6	595g	0.45m	0.24x	72mm	6	128	★★★★★		
Canon RF 24-240mm F4-6.3 IS USM	£899/\$1150	Yes		Yes	f/4-6.3	750g	0.5m	0.26x	72mm	7	159	★★★★★		
Canon EF 28-300mm f/3.5-5.6L IS USM	£2289/\$2450	Yes	10.7x	Yes	f/3.5-5.6	1760g	0.7m	0.30x	77mm	8	153	★★★★★		
Sigma 18-200mm f/3.5-6.3 DC Macro OS HSM C	£279/\$400	No	11.1x	Yes	f/3.5-6.3	430g	0.39m	0.33x	62mm	7	153	★★★★★		
Sigma 18-250mm f/3.5-6.3 DC Macro OS HSM	£350/\$350	No	13.9x	Yes	f/3.5-6.3	470g	0.35m	0.34x	62mm	7	92	★★★★★		
Sigma 18-300mm f/3.5-6.3 DC Macro OS HSM C	£370/\$399	No	16.7x	Yes	f/3.5-6.3	585g	0.39m	0.33x	72mm	7	153	★★★★★		
Tamron 16-300mm f/3.5-6.3 Di II VC PZD Macro	£499/\$629	No	18.8x	Yes	f/3.5-6.3	540g	0.39m	0.34x	67mm	7	153	★★★★★		
Tamron 18-200mm f/3.5-6.3 Di II VC	£199/\$199	No	11.1x	Yes	f/3.5-6.3	400g	0.49m	0.25x	62mm	7	153	★★★★★		
Tamron AF 18-270mm f/3.5-6.3 Di II VC PZD	£300/\$450	No	15x	Yes	f/3.5-6.3	450g	0.49m	0.26x	62mm	7	128	★★★★★		
Tamron 18-400mm f/3.5-6.3 Di II VC HLD	£650/\$650	No	22.2x	Yes	f/3.5-6.3	710g	0.45m	0.34x	72mm	7	153	★★★★★		

SUPERZOOMS

WIDE-ANGLE PRIMES														
Canon EF 14mm f/2.8L II USM	£2000/\$2100	Yes	None	No	f/2.8	645g	0.2m	0.15x	None	6				
Canon TS-E 17mm f/4L (tilt & shift)	£2000/\$2150	Yes	None	No	f/4	820g	0.25m	0.14x	77mm	8	90	★★★★★		
Canon EF 20mm f/2.8 USM	£450/\$540	Yes	None	No	f/2.8	405g	0.25m	0.14x	72mm	5	114	★★★★★		
Canon EF-M 22mm f/2 STM	£195/\$230	No	None	No	f/2	105g	0.15m	0.21x	43mm	7	158	★★★★★		
Canon EF 24mm f/1.4L II USM	£1500/\$1550	Yes	None	No	f/1.4	650g	0.25m	0.17x	77mm	8				
Canon EF 24mm f/2.8 IS USM	£519/\$550	Yes	None	Yes	f/2.8	280g	0.2m	0.23x	58mm	7	158	★★★★★		
Canon EF-S 24mm f/2.8 STM	£155/\$130	No	None	No	f/2.8	125g	0.16m	0.27x	52mm	7	158	★★★★★		
Canon TS-E 24mm f/3.5L II (tilt & shift)	£1690/\$1900	Yes	None	No	f/3.5	780g	0.21m	0.34x	82mm	8				
Canon EF 28mm f/1.8 USM	£420/\$510	Yes	None	No	f/1.8	310g	0.25m	0.18x	58mm	7	67	★★★★		
Canon EF 28mm f/2.8 IS USM	£390/\$500	Yes	None	Yes	f/2.8	260g	0.23m	0.2x	58mm	7	114	★★★★★		
Canon EF 35mm f/1.4L II USM	£1650/\$1650	Yes	None	No	f/1.4	760g	0.28m	0.21x	72mm	9	141	★★★★★		
Canon RF 35mm F1.8 IS Macro STM	£495/\$450	Yes	None	Yes	f/1.8	305g	0.17m	0.5x	52mm	9	158	★★★★★		
Canon EF 35mm f/2 IS USM	£520/\$550	Yes	None	Yes	f/2	335g	0.24m	0.24x	67mm	8	158	★★★★★		
Irix 11mm f/4 Blackstone	£609/\$650	Yes	None	No	f/4	790g	0.28m	0.13	None	9				
Irix 15mm f/2.4 Blackstone	£599/\$675	Yes	None	No	f/2.4	685g	0.25m	0.11x	95mm	9	155	★★★★★		
Peleng 8mm f/3.5 Fisheye	£250/\$215	Yes	None	No	f/3.5	400g	0.22m	0.13x	None					
Peleng 17mm f/2.8 Fisheye	£290/\$290	Yes	None	No	f/2.8	630g	0.3m	N/S	None					
Samyang 8mm f/3.5 IF MC CSII DH Circular	£240/\$260	No	None	No	f/3.5	435g	0.3m	N/S	None	6				
Samyang 10mm f/2.8 ED AS NCS CS	£379/\$399	No	None	No	f/2.8	590g	0.25m	N/S	None	6	155	★★★★★		
Samyang 12mm f/2.8 ED AS NCS Diagonal	£360/\$470	Yes	None	No	f/2.8	530g	0.2m	N/S	None	7				
Samyang XP 14mm f/2.4	£899/\$999	Yes	None	No	f/2.4	791g	0.27m	0.08x	None	9	155	★★★★★		
Samyang 16mm f/2 ED AS UMC CS	£330/\$360	No	None	No	f/2	590g	0.2m	N/S	77mm	8				
Samyang 24mm f/1.4 ED AS UMC	£480/\$470	Yes	None	No	f/1.4	680g	0.25m	N/S	77mm	8				
Samyang T-S 24mm f/3.5 ED AS UMC (tilt & shift)	£680/\$760	Yes	None	No	f/3.5	680g	0.2m	N/S	82mm	8	90	★★★★★		
Samyang 35mm f/1.4 AS UMC AE	£489/\$499	Yes	None	No	f/1.4	660g	0.3m	N/S	77mm	8	158	★★★★★		
Sigma 4.5mm f/2.8 EX DC HSM Circular Fisheye	£700/\$900	No	None	No	f/2.8	470g	0.14m	0.17x	None	6	87	★★★★★		
Sigma 8mm f/3.5 EX DG Circular Fisheye	£700/\$900	Yes	None	No	f/3.5	400g	0.14m	0.22x	None	6	87	★★★★★		
Sigma 10mm f/2.8 EX DC HSM Diagonal Fisheye	£600/\$600	No	None	No	f/2.8	475g	0.14m	0.11x	None	7	87	★★★★★		
Sigma 14mm f/1.8 DG HSM A	£1299/\$1399	Yes	None	No	f/1.8	1170g	0.27m	0.19x	None	9	155	★★★★★		
Sigma 15mm f/2.8 EX DG Diagonal Fisheye	£600/\$610	Yes	None	No	f/2.8	370g	0.15m	0.26x	None	7	44	★★★★★		
Sigma 16mm f/1.4 DC DN C	£449/\$400	Yes	None	No	f/1.4	405g	0.25m	0.1x	67mm	9	161	★★★★★		
Sigma 20mm f/1.4 DG HSM A	£700/\$900	Yes	None	No	f/1.4	950g	0.28m	0.14x	77mm	9	114	★★★★★		
Sigma 24mm f/1.4 DG HSM A	£650/\$850	Yes	None	No	f/1.4	665g	0.25m	0.19x	77mm	9	114	★★★★★		
Sigma 30mm f/1.4 DC DN C	£329/\$339	Yes	None	No	f/1.4	270g	0.3m	0.14x	52mm	9	161	★★★★★		
Sigma 35mm f/1.4 DG HSM A	£650/\$700	Yes	None	No	f/1.4	665g	0.3m	0.19x	67mm	9	158	★★★★★		
Sigma 56mm f/1.4 DC DN C	£339/\$479	Yes	None	No	f/1.4	280g	0.5m	0.14x	55mm	9	161	★★★★★		
Tamron SP 35mm f/1.8 Di VC USD	£700/\$600	Yes	None	Yes	f/1.8	480g	0.2m	0.4x	67mm	9	158	★★★★★		
Zeiss Milvus 15mm f/2.8 ZE	£2330/\$2700	Yes	None	No	f/2.8	947g	0.25m	0.11x	95mm	9				
Zeiss Distagon T* 18mm f/3.5 ZE	£1090/\$1395	Yes	None	No	f/3.5	510g	0.3m	0.08x	82mm	9	44	★★★★★		
Zeiss Milvus 21mm f/2.8 ZE	£1400/\$1850	Yes	None	No	f/2.8	851g	0.22m	0.2x	82mm	9				
Zeiss Distagon T* 25mm f/2 ZE	£1270/\$1700	Yes	None	No	f/2	600g	0.25m	0.17x	67mm	9				
Zeiss Distagon T* 28mm f/2 ZE	£980/\$1285	Yes	None	No	f/2	580g	0.24m	0.21x	58mm	9				
Zeiss Otus 28mm f/1.4 ZE	£3500/\$5000	Yes	None	No	f/1.4	1350g	0.3m	0.2x	95mm	9				
Zeiss Milvus 35mm f/2 ZE	£935/\$1120	Yes	None	No	f/2	702g	0.3m	0.19x	58mm	9	141	★★★★★		

WIDE-ANGLE PRIMES

PhotoPlus

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Contacts

- Canon

www.canon.co.uk
- Peleng

www.digitaltoyshop.co.uk
- Samyang

www.samyang-lens.co.uk
- Schneider

www.linhofstudio.com
- Sigma

www.sigma-imaging-uk.com
- Tamron

www.tamron.co.uk
- Tokina

www.tokinalens.com
- Voigtlander

www.robertwhite.co.uk
- Zeiss

www.zeiss.co.uk

KEY: ● BEST VALUE AWARD ● BEST ON TEST AWARD

STANDARD PRIMES	Price	Full-frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
Canon EF 40mm f/2.8 STM	£200/\$180	Yes	None	No	f/2.8	130g	0.3m	0.18x	52mm	7	141	★★★★★	
Canon TS-E 45mm f/2.8 (tilt & shift)	£1200/\$1400	Yes	None	No	f/2.8	645g	0.4m	0.16x	72mm	8			
Canon EF 50mm f/1.2L USM	£1370/\$1350	Yes	None	No	f/1.2	580g	0.45m	0.15x	72mm	8	103	★★★★★	
Canon EF 50mm f/1.4 USM	£385/\$350	Yes	None	No	f/1.4	290g	0.45m	0.15x	58mm	8	146	★★★★	
Canon EF 50mm f/1.8 STM	£120/\$125	Yes	None	No	f/1.8	160g	0.35m	0.21x	49mm	7	146	★★★★★	●
Canon RF 50mm F1.2L USM	£2349/\$2299	Yes	None	No	f/1.2	950g	0.40m	0.15x	77mm	10	146	★★★★★	
Samyang 50mm f/1.4 AS UMC	£310/\$350	Yes	None	No	f/1.4	575g	0.45m	N/S	77mm	8			
Sigma 30mm f/1.4 DC HSM A	£360/\$500	No	None	No	f/1.4	435g	0.3m	0.15x	62mm	9	146	★★★★★	●
Sigma 50mm f/1.4 DG HSM A	£600/\$950	Yes	None	No	f/1.4	815g	0.4m	0.18x	77mm	9	140	★★★★★	●
Tamron SP 45mm f/1.8 Di VC USD	£480/\$400	Yes	None	Yes	f/1.8	540g	0.29m	0.29x	67mm	9	146	★★★★★	
Tokina Opera 50mm f/1.4 FF	£879/\$949	Yes	None	No	f/1.4	950g	0.4m	0.18x	72mm	9	148	★★★★★	
Zeiss Milvus 50mm f/1.4 ZF.2	£1000/\$1200	Yes	None	No	f/1.4	922g	0.45m	0.15x	67mm	9	146	★★★★★	
Zeiss Planar T* 50mm f/1.4 ZE	£560/\$725	Yes	None	No	f/1.4	380g	0.45m	0.15x	58mm	9			
Zeiss Otus 55mm f/1.4	£2700/\$3990	Yes	None	No	f/1.4	1030g	0.5m	0.15x	77mm	9			

TELEPHOTO PRIMES	Price	Full-frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
Canon EF 85mm f/1.2L II USM	£1849/\$1899	Yes	None	No	f/1.2	1025g	0.95m	0.11x	72mm	8	159	★★★★★	
Canon EF 85mm f/1.4L IS USM	£1379/\$1599	Yes	None	Yes	f/1.4	950g	0.85m	0.12x	77mm	9	159	★★★★★	●
Canon EF 85mm f/1.8 USM	£365/\$369	Yes	None	No	f/1.8	425g	0.85m	0.13x	58mm	8	159	★★★★★	
Canon TS-E 90mm f/2.8 (tilt & shift)	£1240/\$1400	Yes	None	No	f/2.8	565g	0.5m	0.29x	58mm	8			
Canon EF 100mm f/2 USM	£410/\$500	Yes	None	No	f/2	460g	0.9m	0.14x	58mm	8	46	★★★★★	
Canon EF 135mm f/2L USM	£940/\$1000	Yes	None	No	f/2	750g	0.9m	0.19x	72mm	8			
Canon EF 200mm f/2L IS USM	£5400/\$5700	Yes	None	Yes	f/2	2520g	1.9m	0.12x	52mm	8	98	★★★★★	
Canon EF 200mm f/2.8L II USM	£700/\$750	Yes	None	No	f/2.8	765g	1.5m	0.16x	72mm	8	98	★★★★★	
Canon EF 300mm f/2.8L IS II USM	£5800/\$6100	Yes	None	Yes	f/2.8	2400g	2.0m	0.18x	52mm	9	54	★★★★★	
Canon EF 300mm f/4L IS USM	£1140/\$1350	Yes	None	Yes	f/4	1190g	1.5m	0.24x	77mm	8	117	★★★★★	
Canon EF 400mm f/2.8L IS II USM	£9900/\$10,000	Yes	None	Yes	f/2.8	3850g	2.7m	0.17x	52mm	9	54	★★★★★	
Canon EF 400mm f/4 DO IS II USM	£7000/\$6900	Yes	None	Yes	f/4	2100g	3.3m	0.13x	52mm	9			
Canon EF 400mm f/5.6L USM	£1180/\$1180	Yes	None	No	f/5.6	1250g	3.5m	0.12x	77mm	8	117	★★★★	
Canon EF 500mm f/4L IS II USM	£8400/\$9000	Yes	None	Yes	f/4	3190g	3.7m	0.15x	52mm	9			
Canon EF 600mm f/4L IS II USM	£11,350/\$11,500	Yes	None	Yes	f/4	3920g	4.5m	0.15x	52mm	9			
Canon EF 800mm f/5.6L IS USM	£11,900/\$13,000	Yes	None	Yes	f/5.6	4500g	6.0m	0.14x	52mm	8			
Samyang MF 85mm f/1.4 RF	£319/\$379	Yes	None	No	f/1.4	730g	1.1m	0.09x	72mm	8	159	★★★★★	●
Samyang AF 85mm f/1.4 EF	£599/\$699	Yes	None	No	f/1.4	485g	0.9m	0.11x	77mm	9	159	★★★★★	
Samyang 135mm f/2 ED UMC	£370/\$530	Yes	None	No	f/2	830g	0.8m	N/S	77mm	9			
Samyang 500mm MC IF f/6.3 Mirror	£125/\$150	Yes	None	No	f/6.3	705g	2.0m	N/S	95mm	0			
Samyang 800mm MC IF f/8 Mirror	£170/\$190	Yes	None	No	f/8	870g	3.5m	N/S	30mm	0			
Sigma 85mm f/1.4 DG HSM A	£899/\$1199	Yes	None	No	f/1.4	TBA	0.85m	0.12x	86mm	9	159	★★★★★	
Sigma APO 300mm f/2.8 EX DG HSM	£2600/\$3400	Yes	None	No	f/2.8	2400g	2.5m	0.13x	46mm	9	98	★★★★★	
Sigma APO 500mm f/4.5 EX DG HSM	£3600/\$4400	Yes	None	No	f/4.5	3150g	4.0m	0.13x	46mm	9			
Sigma 500mm f/4 DG OS HSM S	£5000/\$6000	Yes	None	Yes	f/4	TBA	3.5m	0.15x	46mm	9	9		
Sigma APO 800mm f/5.6 EX DG HSM	£5000/\$6600	Yes	None	No	f/5.6	4.9kg	7.0m	0.11x	46mm	9	21	★★★★★	
Tamron SP 85mm f/1.8 Di VC USD	£750/\$750	Yes	None	Yes	f/1.8	700g	0.8m	0.14x	67mm	9	159	★★★★★	
Zeiss Milvus 85mm f/1.4 ZE	£1380/\$1800	Yes	None	No	f/1.4	1280g	0.8m	0.14x	77mm	9			
Zeiss Milvus 135mm f/2 ZE	£1900/\$2200	Yes	None	No	f/2	1123g	0.8m	0.28x	77mm	9			

MACRO	Price	Full-frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
Canon EF-S 60mm f/2.8 Macro USM	£380/\$400	No	None	No	f/2.8	335g	0.20m	1.0x	52mm	7	138	★★★★	
Canon MP-E65mm f/2.8 1-5x Macro	£980/\$1050	Yes	None	No	f/2.8	710g	0.24m	5.0x	58mm	6	50	★★★★★	
Canon EF 100mm f/2.8 Macro USM	£420/\$600	Yes	None	No	f/2.8	600g	0.31m	1.0x	58mm	8	138	★★★★★	
Canon EF 100mm f/2.8L Macro IS USM	£800/\$800	Yes	None	Yes	f/2.8	625g	0.3m	1.0x	67mm	9	138	★★★★★	
Canon EF 180mm f/3.5L Macro USM	£1330/\$1400	Yes	None	No	f/3.5	1090g	0.48m	1.0x	72mm	8	69	★★★★★	
Sigma 70mm f/2.8 DG macro Art	£449/\$469	Yes	None	No	f/2.8	515g	0.26m	1.0x	49mm	9	156	★★★★★	
Sigma 105mm f/1.4 DG HSM Art	£1499/\$1599	Yes	None	No	f/1.4	1645g	1.0m	0.12x	105mm	9	144	★★★★★	
Sigma Macro 105mm f/2.8 EX DG OS HSM	£360/\$570	Yes	None	Yes	f/2.8	725g	0.31m	1.0x	62mm	9	138	★★★★★	●
Sigma APO Macro 150mm f/2.8 EX DG OS HSM	£780/\$1100	Yes	None	Yes	f/2.8	1150g	0.38m	1.0x	72mm	9	138	★★★★★	
Sigma APO Macro 180mm f/2.8 EX DG OS HSM	£1250/\$1700	Yes	None	Yes	f/2.8	1640g	0.47m	1.0x	86mm	9	102	★★★★★	
Tamron SP AF 60mm f/2 Di II LD (IF) Macro	£350/\$525	No	None	No	f/2	350g	0.23m	1.0x	55mm	7	138	★★★★	
Tamron SP AF 90mm f/2.8 Di Macro	£350/\$500	Yes	None	No	f/2.8	400g	0.29m	1.0x	55mm	9	102	★★★★	
Tamron SP AF 90mm f/2.8 Di VC USD Macro	£580/\$650	Yes	None	Yes	f/2.8	610g	0.3m	1.0x	62mm	9	138	★★★★★	●
Tamron SP AF 180mm f/3.5 Di Macro	£800/\$740	Yes	None	No	f/3.5	985g	0.47m	1.0x	72mm	7	69	★★★★	
Tokina 100mm f/2.8 AT-X PRO Macro	£350/\$410	Yes	None	No	f/2.8	540g	0.3m	1.0x	55mm	9	118	★★★★★	
Zeiss Makro Planar T* 50mm f/2 ZE	£950/\$1285	Yes	None	No	f/2	570g	0.24m	0.5x	67mm	9			
Zeiss Milvus Makro Planar 100mm f/2 ZE	£1300/\$1840	Yes	None	No	f/2	843g	0.44m	0.5x	67mm	9	50	★★★★★	

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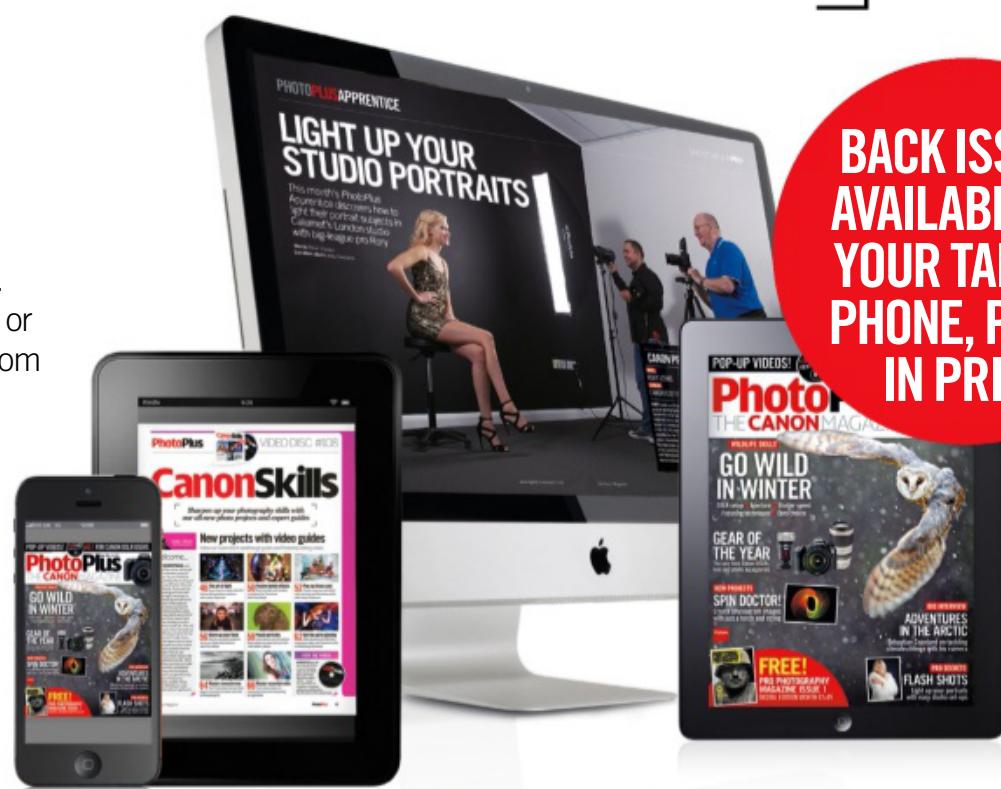
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LAST MONTH



Issue 162 March 2020

20 CANON TIPS FOR 2020 Keep the wind in your sails as we push further into 2020! Learn 20 techniques that will help you shoot your best photos yet ● Pro portrait photographer Alastair Batchelor takes a new Apprentice under his wing to shoot heavenly neon lit portraits ● In sickness and health – pro wedding photographer Lyndsey Goddard talks the biggest day of people's lives ● We test 10 Canon standard zoom lenses to see if upgrades are worth it ● Take a look in the bag of a professional astrophotographer ● New creative photo projects with videos in Canon Skills to help expand your photographic repertoire



Issue 161 February 2020

WINTER LANDSCAPES FOR 2020 Take advantage of the year's toughest season and venture outdoors to take incredible landscape shots ● Set up a home studio for delightful floral photos with flash ● Fashion photographer, Wanda Martin, talks about her inspirations and close encounters with bad boys of ballet ● Which flashgun is the quickest on the draw? Find out in our Super Test



Issue 160 January 2020

TAME WINTER WILDLIFE Ensure your photos of all that nature has to offer in winter are pin-sharp with these tips and tricks ● 53 great gear-related gifts that you can buy for Christmas and beyond ● We roll out the red carpet and reveal the winners of our Canon Gear of the Year ● Up-and-coming photography star, Michel D'Oultremont, talks passion and the magic of nature photography

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Issue 159 December 2019

MASTER YOUR CANON

Take better landscape shots with our guide to lens filters ● Our Apprentice heads to the kitchen and learns how to shoot foodie photos with a Canon pro ● Take to the depths of volcanos for a chat with pro photographer Ulla Lohmann ● Prepare for close ups as we test fast 85mm portrait lenses in our Super Test ● We find out how the EOS 90D compares with the two crop-sensor DSLRs it's replacing



Issue 158 November 2019

THE ULTIMATE GUIDE TO EXPOSURE

Get the most out of your exposures with our all essential Canon skills guide ● Intense high-speed motorsport photography for our Apprentice ● Simon Annand talks about his intimate photos backstage at the theatre ● The Canon EOS 90D gets a full test in our tech lab ● We test which lenses should be accompanying you on your street photography quest



Issue 157 October 2019

TRAVEL PHOTO TECHNIQUES

Understand what it takes to take amazing travel shots while still having a great holiday ● Head to the coast with another Canon pro in the Apprentice ● We get an exciting preview of Canon's upcoming EOS 90D DSLR ● The best of the best lighting kits go head to head in this month's Super Test ● Wildlife Canon pro Ellie Rothnie tells her story of passion and admiration



Issue 156 September 2019

THE ESSENTIAL LANDSCAPE PHOTOGRAPHY GUIDE

Improve every type of landscape photo with these 23 fantastic tips and tricks ● Another Canon pro teaches a budding Apprentice, this time on how to improve their portrait photography ● Pro Ilvy Njiokiktjien explains her work in South Africa ● Canon EOS DSLRs vs EOS mirrorless, get the lowdown in our Super Test



Issue 155 August 2019

MASTER YOUR CANON LENS

Learn how to get the most out of all the lenses in your arsenal ● David Noton details his exploits on the island of Corsica ● We pick the best lenses for astrophotography in our Super Test ● We forget focal length and dive inside some fun lenses for this month's Mini Test ● Pro sports photographer Dave Rogers talks about his expansive sports photographic career



Issue 154 July 2019

OUR BEST-EVER CANON OUTDOOR PHOTOGRAPHY GUIDE

Get creative outside in the lovely sunny weather with our best outdoor photography guide yet ● Another Canon pro teaches our Apprentice, this time they're shooting ancient castles in the endlessly beautiful South Wales ● We put travel tripods to the test to see which one you should be taking around the world and back



Issue 153 June 2019

10 ESSENTIAL CANON TECHNIQUES

Ten of the best tips to help you shoot your best ever images ● Improve your landscape compositions with these cheeky photography hacks ● Summery portraits that would make mother nature herself jealous – join our Apprentice with another Canon pro ● Eight superzooms go head to head to uncover which should be your most prized summer shooter



Issue 152 May 2019

PHOTO SKILLS FOR WILDLIFE

Learn how to photograph animals in their natural habitat in our big guide ● We do like to be beside the seaside – shoot gorgeous harbours with our Apprentice and Canon pro ● The astounding story of nature photojournalist Christian Ziegler in our exclusive interview ● Magical Canon related camera skills to keep you busy and creative, with free videos



Issue 151 Spring 2019

MASTER YOUR CANON SKILLS THIS SPRING

Capture the majesty of Spring with your Canon camera ● Get up close to take some amazing macro shots of tiny creatures in the studio with our Apprentice ● David Noton shoots some of in Portugal for his column this issue ● We test continuous lighting to help you get the most from your video shoots ● Eight of the fastest telephoto zooms are tested to the max



Issue 150 April 2019

TAKE CONTROL OF YOUR CAMERA FOR BETTER LANDSCAPES

Use long exposures, Manual mode, creative compositions, the light and important camera settings to improve your scenic shots ● We dive deeply into a conversation with famous underwater photographer, Ali Khalifa Bin Thalith ● Get some inside tips on how to take great interior shots with our Canon pro and PhotoPlus Apprentice

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- Create fun portraits using four different umbrellas!
- Comparing studio lighting diffusers
- Spring clean your kit
- Adobe CC, Photoshop Elements and Affinity Photo



PLUS ALL THIS...

- The *PhotoPlus* Apprentice: how to take amazing city shots at night
- The Interview: Matthew Maran, award-winning travel, landscape and wildlife photographer
- Big Canon camera test: the new EOS-1D X Mark III pro DSLR

ISSUE 164 ON SALE 31 MARCH 2020

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Canon PRO EOS 80D	BG-E14	LP-E6N	CBC-E6	LC-E6E	HL-E6	AC-E6N	RC-6	HTC-100	Angle Finder C	Eyecup EB	Focusing Screen	Camera Strap E2	RS-60E3	PC-E1
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Canon PRO EOS 7D MkII	BG-E16	LP-E6N	CBC-E6	HL-E6	LC-E6E	RS-80N3	RC-6	HTC-100	IFC-500U	Angle Finder C	Anti-Fog Eyecup EG	Eyecup EG	Camera Strap E2	PC-E1
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SpyderCheckr £89



PIXMA iP8750
Photo Inkjet Printer
£199

Free
camera
set-up
service^swex.co.uk/setup

Memory Cards



SanDisk Extreme Pro:
170MB/s UHS-I SD
64GB £36.95
128GB £64.95
256GB £149

SanDisk Extreme Pro:
300MB/s UHS-II SD
32GB £69
64GB £129
128GB £249

SanDisk Extreme Pro:
160MB/s CF
32GB £49.99
64GB £94
128GB £159

SONY



G Series UHS-II 299 MB/Sec
32GB £69
64GB £129
128GB £249

M Series UHS-II 260 MB/Sec
32GB £39
64GB £59
128GB £104



Wacom Cintiq Pro is the ultimate pen-on-screen experience for the next generation of artists, designers and illustrators. The new larger screens set a whole new standard with breakthrough levels of performance and precision.

Cintiq16 Creative £469
Cintiq Pro32 Pen Touch £2699

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Photo Bags & Rucksacks



Flipside:
300 AW II £84
400 AW II £109



ProTactic BP:
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450 AW II £189



Manfrotto
Imagine More

The Manfrotto Advanced² is part of Manfrotto's brand-new line



Advanced²:
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Fast £134
Travel £142



Anvil Slim
Professional
Backpack



Anvil:
Anvil Slim £119
Anvil Super £134
Anvil Pro £126

Billingham

Hadley Pro Original
Canvas Khaki/Tan



Available in Khaki, Black, Sage.
Digital £129
Pro 2020 £240
Pro Original £199
Hadley One £265

Tripods & Heads

We sell Tripod accessories including Plates and Spiked Feet on our website



Manfrotto
Imagine More

055 Series:
MT055XPRO3 £144
MK055XPRO3
+ XPRO Ball Head with
200PL Plate £299
MT055CXPRO3
Carbon Fibre £299
MT055CXPRO4
Carbon Fibre £299

MT190XPRO3
• 160cm Max Height
• 9cm Min Height



MT190XPRO3 £139
MT190XPRO4 £159
MT190CXPRO3
Carbon Fibre £255
MT190CXPRO4
Carbon Fibre £269
MK190XPRO4
+ XPRO 3-Way Head .. £235



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Ideal for use
with lenses up
to 600mm



Gimbal Heads:
GH2 £239
GH2C Carbon Fibre £334
GH5C £379



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Focus on forever

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• 10cm Min Height



Systematic Series 5:
GT5563GS £999
GT5543XLS £929
GT5543LS £769
GT5533LS £729
GT5533S £699

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to trade upwww.wex.co.uk

JOBY

Gorillapod Kit 1K
• Flexi-Tripod legs
• 21cm Closed Length
• 1Kg Max Load



Gorillapod:
Gorillapod 500 £27.95
Gorillapod Kit 1K £39
Gorillapod Kit 3K £62.95
Gorillapod Kit 5K £129

Lens Filters



Pro1 Digital UV Filters:
43mm £44
52mm £27
55mm £28
58mm £28
62mm £32
67mm £38
72mm £42
77mm £47
82mm £52
REVO SMC Filters:
37mm £39

43mm £44
46mm £46
49mm £49
52mm £44
55mm £49
58mm £59
62mm £66
67mm £69
72mm £79
77mm £89
82mm £99

LEE Filters



Long Exposure
Filters:
Big Stopper 10x £89
Little Stopper
6x £89



LEE100 System:
Holder £79.95
Polariser £209
Long Exposure
kit £309
Landscape kit £148
Deluxe kit £585

Lighting & Accessories



ST-E3-RT
Speedlite
Transmitter
£239



Lumimuse 8
LED Light
£74.95



L308x
Plus III Set
£255



3m Heavy Duty
Background
Stand
£159



Bowens XMS500
Flash Head
£599



D-Lite RX 4/4
Softbox Set
£7250



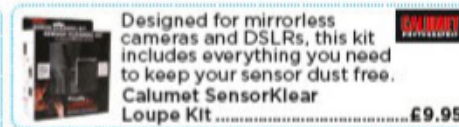
Ezybox
Speed-Lite 2
£54



Urban
Collapsible
Background
£174



Lastolite
Speed-Lite 2
£54



Designed for mirrorless cameras and DSLRs, this kit includes everything you need to keep your sensor dust free.
Calumet SensorKlear
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FOCUSPOINT

We'd love to hear your thoughts on the magazine and all things photographic! Email us at photoplus@futurenet.com

Letter of the Month

I'm a member of a small local camera club here in Lisburn (Northern Ireland), where we have monthly competitions on various topics. For the January topic title of 'All Things Round' I eventually decided to put my own twist on something simple and dust off Photoshop. I employed my limited skills for lighting, composition and post-processing and remarkably (in my opinion) the result wasn't crap. Delighted in my final image, I submitted my image. What could possibly take the shine of my effort... Sitting down with my copy of *PhotoPlus* (issue 162) and what do I see? A tutorial on how to achieve 'MY' Genetically Modified Fruit image! There goes my kudos for artistic originality. Anyhow, I'm glad to see that after reading the article, I'm still very happy with my own image. All in all quite amusing!

Colm McMullan, Hillsborough, NI



Many thanks for the entertaining email. Great minds think alike, eh! We like your version of the 'Genetically Modified Fruit' image, well done Colm.

Send us your letters and images to photoplus@futurenet.com

THIS MONTH'S PRIZE!

Each issue, every letter printed wins an Experience Seminars EOS training DVD. More info at www.eostrainingacademy.co.uk



The month in numbers

25 tips

Learn how to take beautiful family portraits from tiny newborns to active toddlers and older children. 25 top tips – on page 26

91

seconds for the long exposure starry sky Shot of the Day by our Apprentice – turn to page 16

8

New Canon EOS 850D APS-C camera is equipped with a faster DIGIC 8 processor – more on page 94

DigitalCameraWorld.com The best from our brilliant website



DSLR vs mirrorless cameras in 2020: which type is best for you?

The debate about DSLR vs mirrorless cameras continues and each type has its fans – so what are the pros and cons? For more info and advice go to DigitalCameraWorld.com via our quick link bit.ly/dslr_mirrorless



Photography tips for beginners: the first 12 things to learn with your camera

Whether you're a beginner, or know a thing or two, these expert photography tips will help you to improve your skills. For more information go to DigitalCameraWorld.com via our quick link bit.ly/dcw_beginners



Canon EOS M6 Mark II review

There's been a coup: the Canon EOS M6 Mk II is the new EOS M mini mirrorless flagship – it's perfect for photographers and vloggers alike. For more great camera and kit tests go to DigitalCameraWorld.com via our quick link bit.ly/eosm6mk2



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Canon EOS 5D Mark IV



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EOS 5D Mk IV
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£4,298
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12 months 0% finance available when purchasing the EOS 5D Mark IV. Minimum 10% Deposit, 0% APR. Learn more in store or at our website.

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Previously £1,399

EOS RP
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Previously £2,329

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*Previous price: £1,349.00

EF 85mm f/1.4 IS USM

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£1,269.00
*Previous price: £1,369.00

EOS R Body Only

SAVE £250*
£1,899.00
*Previous price: £2,149.00

RF 15-35mm f/2.8 L IS USM

SAVE £100*
£2,229.00
*Previous price: £2,329.00

Canon EOS R5

Canon has announced the development of the EOS R5, a professional full frame mirrorless camera offering photographers & filmmakers high resolution stills and 8K video.

Register your interest to be one of the first to find out more information when we know it at www.parkcameras.com/EOS-R5

RF 24-105mm f/4-7.1 IS STM

NEW!
£459.00
Expected April 2020! See website.

EOS 850D + 18-55mm IS STM

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