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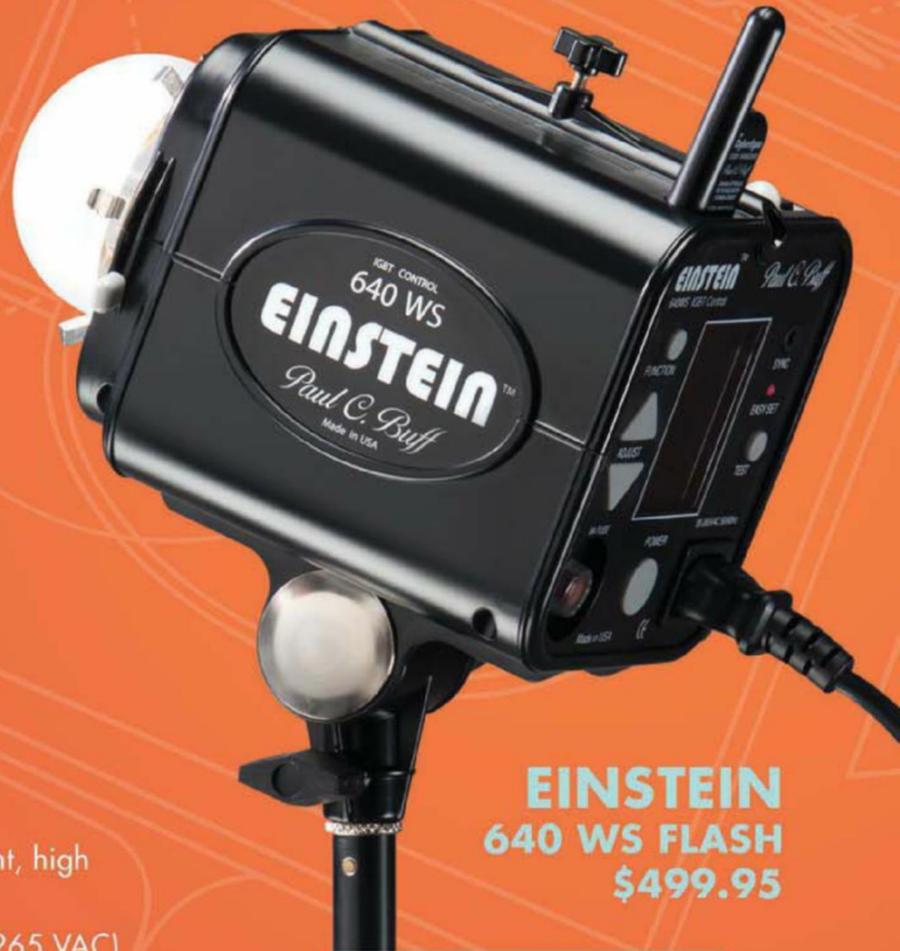


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© Tom Oldham

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CREATIVITY

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Capturing Namibia
by *Chuck Graham*

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© Tom Oldham

ON THE COVER

Photographer Tom Oldham has been a portrait shooter for 20 years. Part of why he was drawn to portraiture was his “fascination with faces and people.” Oldham captured our cover image of singer Janelle Monáe for *The Fly*, a UK music magazine, in 2013. Shot in a hotel suite in London, Oldham lit the set with Broncolor lighting and Photek Softlighters at f/11 and 1/125 second. During the shoot, Oldham was impressed with Monáe as she understood “exactly how to be and what the lights are doing.” She also viewed the monitor “with more scrutiny than the photo team!” Oldham noted that Monáe also has “the most flawless skin of any subject I’ve ever photographed.” Although the image has had a “light grade” in Photoshop, no retouch was actually required. To see more of Oldham’s powerful portraits, be sure to read our interview with him on page 78.



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EDITOR'S NOTES

GEAR OF THE YEAR

IT'S THAT TIME OF YEAR AGAIN where every photographer should consider being a bit careful with their wallets. Yes, most of the major new photo products announced early in the year have arrived in stores and are awaiting your credit cards. But before you splurge on a new camera, new lens, or new photo accessory, read our comprehensive guide to the best photo products of the year, starting on page 64. For this "Top Products of the Year" feature, we've once again teamed up with the Technical Image Press Association (TIPA) to choose our favorite gear in 40 imaging categories.

The TIPA Awards are renowned as the most influential photo and imaging product awards in the world and there were some excellent winning selections, including everything from the Nikon D5 as the Best Professional/Action DSLR, to the Pentax K-1 as the Best Full-Frame Expert DSLR, to the Canon EOS-1D X Mark II as the Best Photo/Video Professional Camera. Yes, it was a banner year for DSLRs but there were also a ton of great lenses (the Sigma 50-100mm f/1.8 DC HSM was the Best DSLR Telephoto Zoom while the Tamron SP 35mm f/1.8 Di VC USD was Best DSLR Prime Lens) and mirrorless cameras (the Fujifilm X-Pro2 was selected as Best Mirrorless CSC Expert while the Sony Alpha A7R II got Best Mirrorless CSC Professional) and printers (the Canon imagePROGRAF PRO-1000 was Best Photo Printer) and photo accessories (the Manfrotto 190 Go! Carbon Fiber was Best Tripod).

Along with our rundown of great photo products, several of our features focus on what photographers can do with these products to capture great images. On page 78, Jack Neubart interviews pro photographer Tom Oldham on how he's harnessing 100MP of power from the new Hasselblad H6D-100c to capture high-impact portraits. "Last year I had images enlarged to 60-foot high at the IMAX theatre in London," Oldham told Neubart. "They looked great having been generated on the Hasselblad 50c. Now imagine those same images with effectively half the enlargement!"

But you don't always need an expensive, high-resolution medium format camera to get a great shot. In Barry Tanenbaum's *Talking Pictures* column on page 16, he interviews Robert J. Gowdie, a photographer who captured a splendiferous, spur-of-the-moment image of his 3-month-old Havanese displaying some unbridled enthusiasm using just his iPhone 4. "I could have gone for the DSLR, but the iPhone was there, it was handy, and it just felt right for the spontaneity of the moment," Gowdie explained. Smart thinking.

Many great images these days are captured with devices that don't look like cameras at all. For instance, check out Joe Farace's *Geared Up* column on page 42 where he rounds up his favorite quadcopters and drones for aerial imaging. If you had told someone just a few years ago that photographers would be using gizmos that look like flying eggbeaters to capture spectacular bird's-eye photos and videos, they'd have thought you were nuts. Similarly, if someone had told you DSLRs in 2016 would be able to capture images in near total darkness using ISO settings as high as 3,280,000 (i.e., the Nikon D5) they probably would have thought you were crazy as well. In his *Technically Speaking* column on page 38, Seth Shostak explains what higher ISO shooting means to photographers and how high he thinks, realistically, cameras will be able to go.

All of which is to say that while this issue is devoted to all the great new shiny photo gear that's out there right now, it's really about what you can do with that gear to shoot great photos. So read on but try to keep your spending in check.

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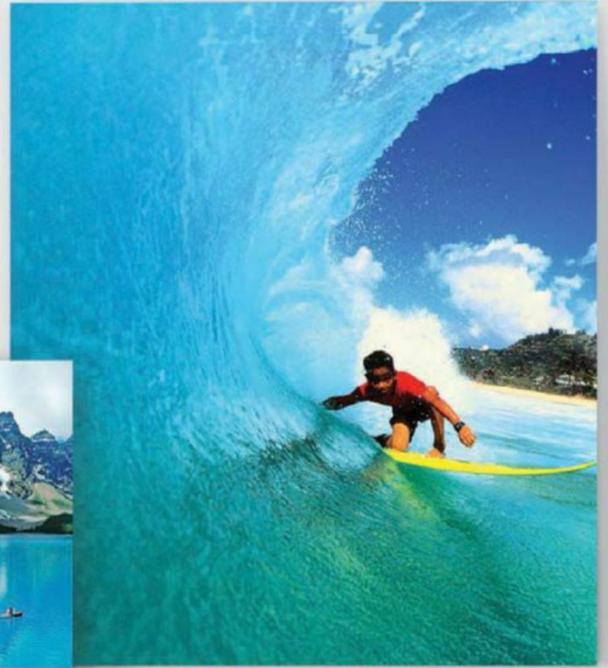




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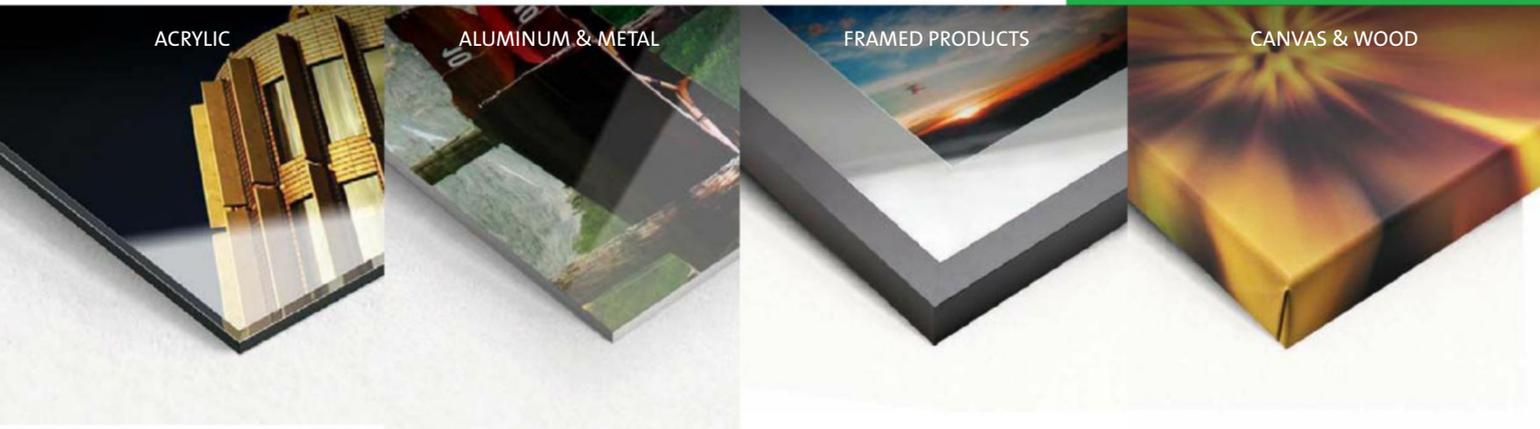
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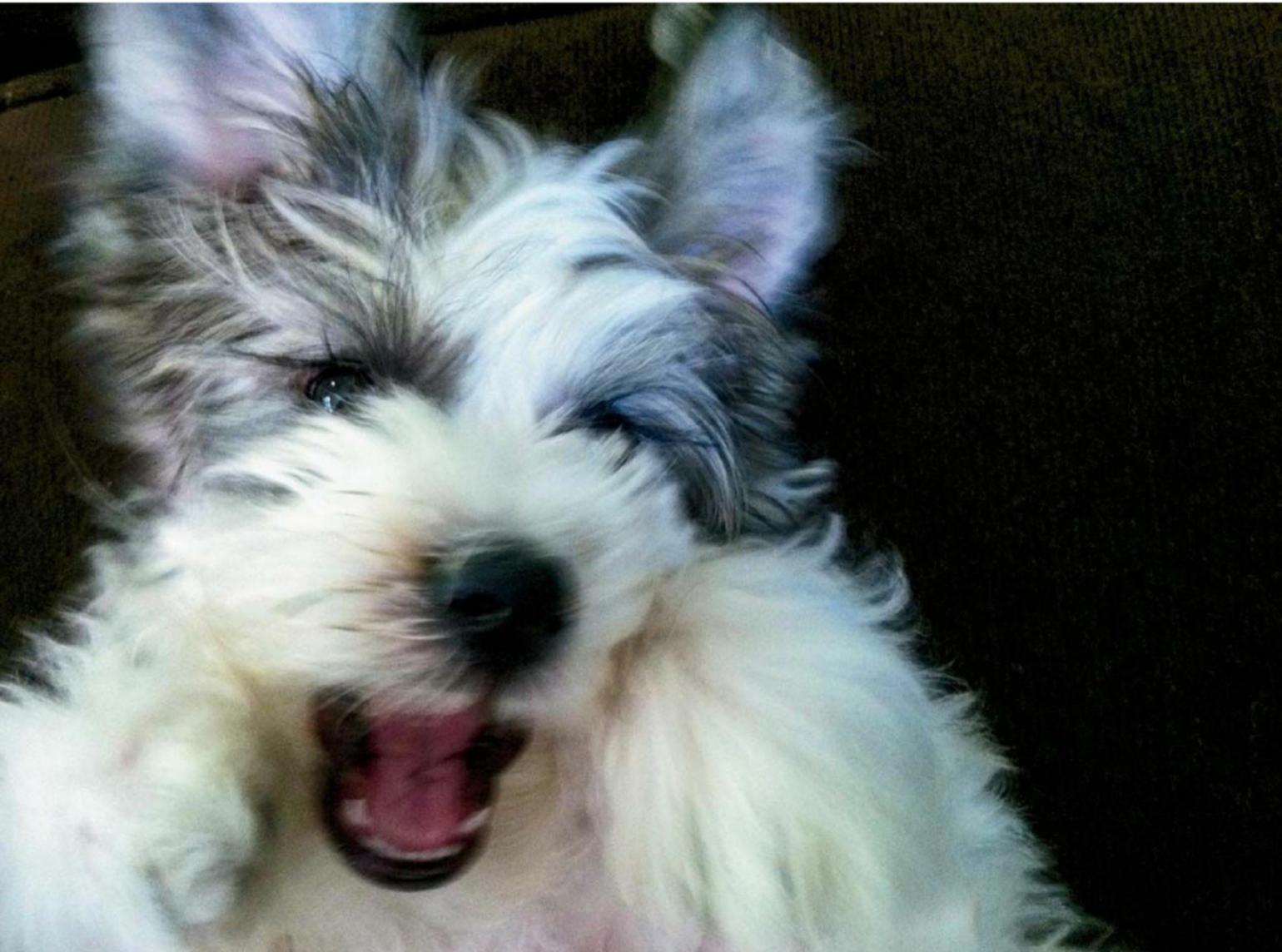


ANOTHER WORLD

This breathtaking photo by Jackie Tran may look like it was captured on another planet but it was actually taken from the northern shore of Iceland's Snæfellsnes peninsula. "It's about two miles from Grundarfjörður town," Tran told *Shutterbug*. "And the main mountain in the background of the photo is called Kirkjufell." He shot it with a Canon EOS 5D Mark III and an EF 24-105mm f/4L lens at 24mm. It was captured as a 20-second exposure at f/13, ISO 100. "I always use Adobe Lightroom for importing the pictures, it is a place where I primarily do lens correction, such as chromatic aberration, camera calibration, also white balance and minor tone curve adjustments," he explained. "Then I export the images and open them in Photoshop for the final touches." And what was the biggest challenge behind creating such a stunning image in such an exotic locale? "The biggest challenge I faced on this one was definitely the weather. Like always, it could be your best friend or worst enemy for landscape photography." You can see more of Tran's work at his website (jackietrananh.com), Instagram feed ([@jackietrananh](https://www.instagram.com/jackietrananh)), and 500px page ([500px.com/tat_jackietrananh](https://www.500px.com/tat_jackietrananh)).

© Jackie Tran





PUPPY LOVE

AN ENDEARING IMAGE MAKES THE CASE: THE BEST CAMERA IS THE ONE THAT'S WITH YOU *By Barry Tanenbaum*

A LITTLE BIT OF LUCK and a few snap decisions went into Robert J. Gowdie capturing in a still photo all the exuberance, energy, and playful nature of Alonzo, the 3-month-old Havanese puppy who had just come home to Gowdie's family.

The luck came in the form of a limitation: his iPhone 4 was incapable of shutter speed settings. The snap decisions: to take photographs, but not to walk into the other room to get his DSLR.

"He was a lot of fun, and very cute," Gowdie says of Alonzo. "He came to us groomed, with perfectly cut hair; he looked like a catalog picture."

At least until the puppy's playful nature took over. "As I'm playing with him on the

couch, I'm thinking, I've got to get some pictures. I could have gone for the DSLR, but the iPhone was there, it was handy, and it just felt right for the spontaneity of the moment. I thought, This is happening now, I'm going to photograph it now."

As a result Gowdie got far better than the razor-sharp image his DSLR would have produced. He caught the puppy's essence in a classic, joyous moment, and, as it turned out, he also captured a glimpse

of the family's future with their new member, as the Havanese breed is noted for its spirited personality, its energy, and its cuddly size. It's regarded as an ideal family pet.

"I got ten photos of him, and I didn't know I'd gotten this shot until afterwards," Gowdie says. He wasn't shooting and checking; the dog's energy was such that he just fired photo after photo. "I was just trying to keep him in the frame."

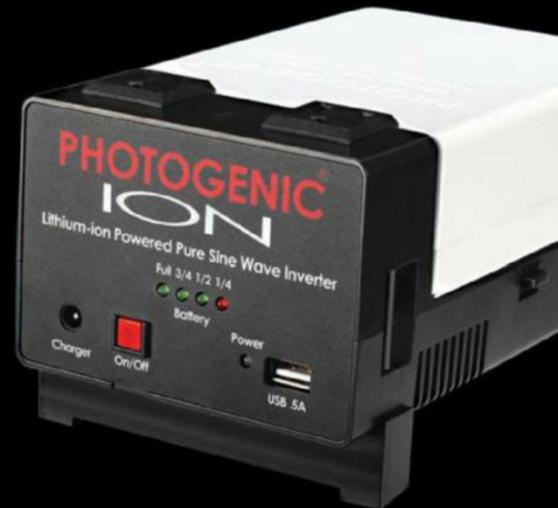
This photograph was taken in 2014, and Gowdie, an illustrator, painter, graphic designer, storyboard artist, and photographer, who now carries an iPhone 5c, reports that "Alonzo is still like that—energetic and enthusiastic. And I'm still taking pictures of him. But this one—this one is something special." ■

Tech Talk: iPhone 4, 3.9mm lens, 1/15 second, f/2.8, ISO 320, program exposure, pattern metering.



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TAKING IT TO THE STREETS

THE NEW OLYMPUS PEN-F PERFECT FOR URBAN PHOTOGRAPHY

PERHAPS SUSAN SONTAG DEFINED street or urban photography best:

“The photographer is an armed version of the solitary walker reconnoitering, stalking, cruising the urban inferno, the voyeuristic stroller who discovers the city as a landscape of voluptuous extremes.” (1977)

For Mike Boening, Olympus Trailblazer, street photography involves being inspired by the seemingly random, sometimes dramatic, sometimes mundane activity in large cities.

“When I step onto the streets of a Detroit, New York, Chicago, or other large city, I become immersed in the people and their interaction with the urban environment. Some people might liken it to photojournalism, but I view it as less structured. I don’t have a preconceived story to tell when I photograph. It’s all about discovery.”

Boening has been a street photography practitioner for decades. Along the way, he’s become devoted to Olympus equipment.

“I am passionate about photography and love the world of technology. When the two combine, as they do with Olympus, it has an amazing effect on my creativity.”

In 2015 Olympus selected Boening to work with the soon-to-be released PEN-F for three months in as many street-shooting scenarios as possible. He

roamed the streets of New York, Chicago, San Francisco, and his hometown Detroit, shooting over 5,000 images.

“This truly is a magnificent image maker. It is by far the most amazing street camera I have ever used. I shoot with my PEN-F about 80 percent of the time. My favorite walk-around lens is the M.Zuiko Digital 17mm f/1.8 Prime Lens with the M.Zuiko Digital 12mm f/2.0 Prime Lens a close second.”

The mirrorless Micro Four Thirds PEN-F features a 20-Megapixel Live MOS sensor in an iconic rangefinder-style camera body, along with powerful 5-Axis Image Stabilization, the shortest lag time of any compact camera system, and the new Monochrome and Color Profile Control that enhances a photographer’s freedom of expression.

With a body weighing in at less than a pound and dimensions of 4.9x2.8x1.5 inches, the PEN-F is the perfect camera for the streets or any other form of photography requiring rapid reaction and unobtrusiveness. Despite its size, the PEN-F packs a 3-inch flip viewfinder.

According to Boening, the advantages of Micro Four Thirds equipment center on size and weight.

“I love the ability to walk all day without even noticing I’m carrying gear. In the past, after a couple hours of lugging



Mike Boening portrait.

© Jamie MacDonald

around large DSLR equipment, I would get tired and that affected my creativity. I also think the technology in these cameras is amazing and cutting edge while DSLRs have been ‘stuck in the mud’ for some years.”

As an example, Boening cites the Olympus Live Composite Mode. Olympus was the first to introduce this feature—an automated extension of its multiple exposure mode—that allows photographers to take a sequence of exposures to build an image by adding only the brightest areas from each exposure to create a final Raw image. He says it’s ideal for star trails, car-light trails, fireworks, lightning, flowing water, aurorae, and producing creative imagery with light painting.

Boening includes the Live Composition Mode and the new Monochrome and Color Profile in his workshops and biweekly video podcast, “Mirrorless Minutes,” in which he and fellow Olympus Trailblazer Jamie MacDonald talk about the world of mirrorless photography and interview guest photographers. The podcast appears on YouTube on Wednesdays, 8 p.m. EST.

Boening has the following tips for aspiring street photographers:

- Consider my motto: “Shoot light and shoot often.”
- Get out of your comfort zone, get into the streets and witness real life.
- Keep your finger on the shutter and always be ready to shoot.
- Slow down, watch your surroundings, and look for those decisive photographic moments.
- Get comfortable talking to strangers.
- Take a class on street photography, read blogs or books written by famous street photographers. ■

For more information about the new Olympus PEN-F, visit www.getolympus.com. To see more of Mike Boening’s photography, visit www.mikeboening.com.



CHICAGO NIGHT
Taken with the PEN-F and M.Zuiko Digital ED 12mm f/2.0 Prime Lens in Color Mode Profile #3 using the Olympus Live Composite feature. The exposure was 20 seconds with a new highlight layer every one second.

© Mike Boening

MYTH:
Mirrorless cameras
are slow to autofocus.



Image shot with the Olympus OM-D E-M1 and an M.Zuiko ED 40-150mm f2.8 PRO lens with MC-14 teleconverter by Olympus Visionary John Sterling Ruth.



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Get Power. Get Portable. Get Olympus.

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*As of February 5, 2015, on interchangeable lens cameras. According to Olympus comparison test based on CIPA standards, when used with M.Zuiko Digital ED 12-40mm f2.8 PRO lens at telephoto end, Single AF Target (single point at center), and IS off.



CAPTURING NAMIBIA

TIPS FOR PHOTOGRAPHING THIS STUNNING, ISOLATED LANDSCAPE IN SOUTHWEST AFRICA *By Chuck Graham*

NAMIBIA, LOCATED IN SOUTHWEST AFRICA along the Atlantic Ocean, is one of the least populated countries in the world, second only to Mongolia. Its diversified, arid, and stark landscapes of desert, sand dunes, rugged coastline, mountains, and salt pans provide a home for some of the last nomadic tribes in Africa, and offer a unique blend of desert flora and fauna. For photographers, Namibia is the ideal destination in Africa to travel overland on a self-drive excursion to find the many photographic possibilities this desert country has to offer.



A visit to the Namib-Naukluft National Park isn't complete unless you float over the sand dunes.

Namibia is twice the size of California, but with only two million people. Nearly half of Namibia is now under conservation management, the most in the world. Its 50,000-square-kilometer super park, Namib-Naukluft National Park, stretching for 1,000 miles from Angola to South Africa, is the third largest national park in Africa. This is one of Namibia's most versatile conservation areas.

Further south, Namibia's newly proclaimed Sperrgebiet National Park at 26,000 kilometers was inaugurated by the Namibian government in 2008. The park protects the ecology of the globally important Succulent Karoo. Home to 2,439 endemic plants, conservationists around the world have classified this area as one of the planet's top 34 biodiversity hotspots.

Regardless of where your travels take you across Namibia, you'll never be disappointed with the broad diversity of photographic opportunities in this land of endless openness.

The opportunist black-backed jackal is always at the ready when food is nearby.

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Dead Vlei has a ghostly presence to it with its dead camel thorn trees.

NAMIB-NAUKLUFT NATIONAL PARK

The great sand dunes of Namibia are arguably its most stunning natural wonder. The oldest desert in the world also boasts the highest sand dunes in the world. The tallest dunes are 1,000-feet tall, found in Sossusvlei's monumentally mountainous dunes, and are sought by photographers from around the world. With their warm hues ranging from pale apricot to brick orange and deep red, the dunes are an impressively colorful desertscape in Namibia's harsh, arid environment.

Also in this region is Dead Vlei, which means "Dead Valley." Surrounded by sheer walls of sand, the only shade this mud-cracked pan offers is the ghostly camel thorn trees that have been standing dead for 500 years in the valley.

As magnificent as the dunes are, nothing accentuates their mass better than the amazing wildlife that has adapted to the desert habitat. Antelope such as the nimble springbok and majestic gemsbok are commonly seen browsing at the base of the dunes. The gemsbok is especially impressive because it never has to drink water. Its digestive tract is able to extract enough moisture from the vegetation it eats.

A trip in the Namib-Naukluft National

Park isn't complete without an early morning hot-air balloon ride over the mystical dunes. Floating 1,500 feet above the desert floor, this lofty perch offers a completely different perspective for the travel photographer and the vastness of the desert. Besides long shadows retreating across the deep troughs of the pink and orange dunes, there's one other natural wonder that is difficult to ignore on the desert floor. Over the years, numerous theories ranging from the mundane to supernatural have swirled around the "fairy circles" found on the desert floor. However, it's now assumed the sand termite is the creator of the many circles ringing the desert's sweeping plain.

SKELETON COAST

A lonely, desolate, and barren stretch of coast, the Skeleton Coast name originally derived from the graveyard of whale and seal bones that once littered the shoreline during the whaling era in the 1800s. Now that those marine mammals are protected, today most of the Skeleton Coast is a flotsam of wave-battered hulls and splintered masts of shipwrecks that have run aground in dense fog and stormy seas on hidden reefs and dense sandbars and been snagged by offshore rocks. More than a thousand such vessels of various sizes are

strewn along the coast, notably the *Eduard Bohlen*, *Otavi*, *Dunedin Star*, and *Tong Taw*.

The Skeleton Coast is also an excellent habitat for thousands of Cape fur seals that haul out along the entire stretch of rugged coastline. The best, most accessible place to photograph these raucous fur seals is at Cape Cross, where a boardwalk overlooking the massive rookery of 100,000 fur seals is the perfect platform to watch and photograph the ever-present drama that never wanes. Don't be surprised if the boardwalk is occupied, too! Cape Cross is home to the world's largest colony of breeding Cape fur seals.

There's lots of squabbling within the rookeries; hungry pups nursing, fur seals bodysurfing the pounding shorebreak, and occasionally brown hyenas and black-backed jackals hunting unsuspecting pups on the periphery of the rookery.

DAMARALAND

Located in the north-central region of Namibia, Damaraland is loaded with photographic possibilities. Unique wildlife abounds. Elaborate Bushmen rock art and petroglyphs, thousands of years old, reveal stories of the hunt and fertility that are painted and engraved in hidden canyons and clusters of red rock piled throughout Damaraland.

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Grazing the high plateaus of Damaraland, two Hartmann's mountain zebras soak in the last of the sunset.



Himba women performing a traditional dance.



Leopards blend in well in the Southern African desert.

The Etendeka Plateau in the foothills of the Grootberg massif is set among ancient lava flows of northern Damaraland. The craggy basalt has been slowly eroded over millennia, leaving scattered boulders lying upon dramatic flat-topped mountains. Atop those mountains are sweeping grasslands where the rare Hartmann's mountain zebra still thrives. There are

also herds of gemsbok, southern ground squirrels, flocks of colorful Lilian's lovebirds, and pairs of kori bustards. Sunset is an optimum time to photograph on the plateau.

The spring-fed reddish brown rock of Twyfelfontein has been inhabited for 6,000 years, first by hunter-gatherers and later by Khoikhoi herders. Both ethnic groups used it as a place of worship and a site to conduct shamanist rituals. During their rituals at least 2,500 rock carvings have been created, as well as a few rock paintings. Displaying one of the largest concentrations of rock petroglyphs in Africa, UNESCO approved Twyfelfontein as Namibia's first World Heritage Site in 2007. The best time to photograph here is in the morning and late afternoon.

Damaraland is the southernmost territory of the semi-nomadic pastoral Himba people. The Himba wear little

clothing, but the women are famous for covering themselves with otjize, a mixture of butterfat and red ochre. It acts as a lotion and a sunscreen to protect their ebony skin against the sun. This unique blend gives their skin a beautiful reddish tint. This symbolizes the Himba's idea of earth's rich red color and the blood that symbolizes life. It also serves as a convenient bug repellent.

ETOSHA NATIONAL PARK

Deemed a national park in March 1907, Etosha is Africa's oldest national park. Situated in northern Namibia, the massive 75-mile-long Etosha Pan is a great place for photographers to sit and wait for processions of wildlife to travel across the pan to several watering holes located along its periphery.

Endless drama unfolds around these watering holes where zebras, wildebeest, springbok, steenbok, and ostriches congregate while predators such as lions lie in wait. There are a couple of watering holes situated below the bluffs and overlooking the salt pan, convenient stages for photographers to anticipate the action before it transpires. Bring a pair of binoculars to scan the tall grasses for predators. You'll also want a beanbag to steady a long lens. As afternoon winds pick up velocity, watch out for dust devils swirling across the Etosha Pan.

There are more watering holes situated in the maze of the scrubby woodland habitat adjacent to the extensive pan. A map can be attained at the visitor's center detailing each watering hole. Patience is a key element photographing in Etosha, while allowing the wildlife to come to you. Expect guinea fowl, scaly-feathered finches, warthogs, zebras, giraffes, greater kudu, elephants, and predators like lions, hyenas, and possibly cheetahs lying low in the shade of the acacia woodland habitat. Eventually everything has to come for a drink.

Drive slowly on all the roads, not only for your own safety, but for the safety of the wildlife. You might miss something as well. The main road leading from the front gate to the visitor's center can produce black-backed jackals, bat-eared foxes, and dik-dik, so always keep your camera at the ready. ■

To find out more about Namibia, go to namibiatourism.com.na. Rhino Africa, rhinoafrica.com, handled all my land arrangements for a three-week overland trip across Namibia. There wasn't anything they couldn't handle.

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© Giovanni Mikel

NOT SO MENACING

"I noticed this tiny jumping spider in my bathroom one day on one of our white hand towels," Giovanni Mikel said. "I don't normally like spiders but this little guy was surprisingly friendly and didn't mind the camera at all." It was shot with a Nikon D5200 and a Tokina 100mm macro lens at 100mm, ISO 640, f/11, 1/25 second.

CLOSE-UP AND MACRO PHOTOGRAPHY



© Gerald Swede

SHUTTERBUG READERS WERE READY for their close-ups with this month's *Picture This!* assignment. Macro photography has long been a favorite of readers and we were looking for your best close-up shots. While there are many classic macro subjects to capture, including flowers, plant life, and insects, we asked you to push yourself and show us some close-ups we've never seen before. You delivered. The key to great macro photography is to get the points of interest in an image as sharp as can be to draw the viewer into these tiny photographic scenes. Our seven favorite images for this assignment thought small but went big for maximum impact with macro photography.

BRYCE STUMP

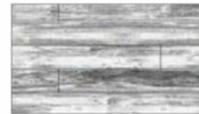
Gerald Swede shot this old tree stump in Bryce Canyon with a Nikon D300 and a Nikkor 16-85mm VR zoom lens set at 68mm, f/9, 1/100 second, ISO 250.



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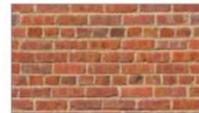
VINTAGE FLORAL
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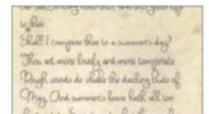
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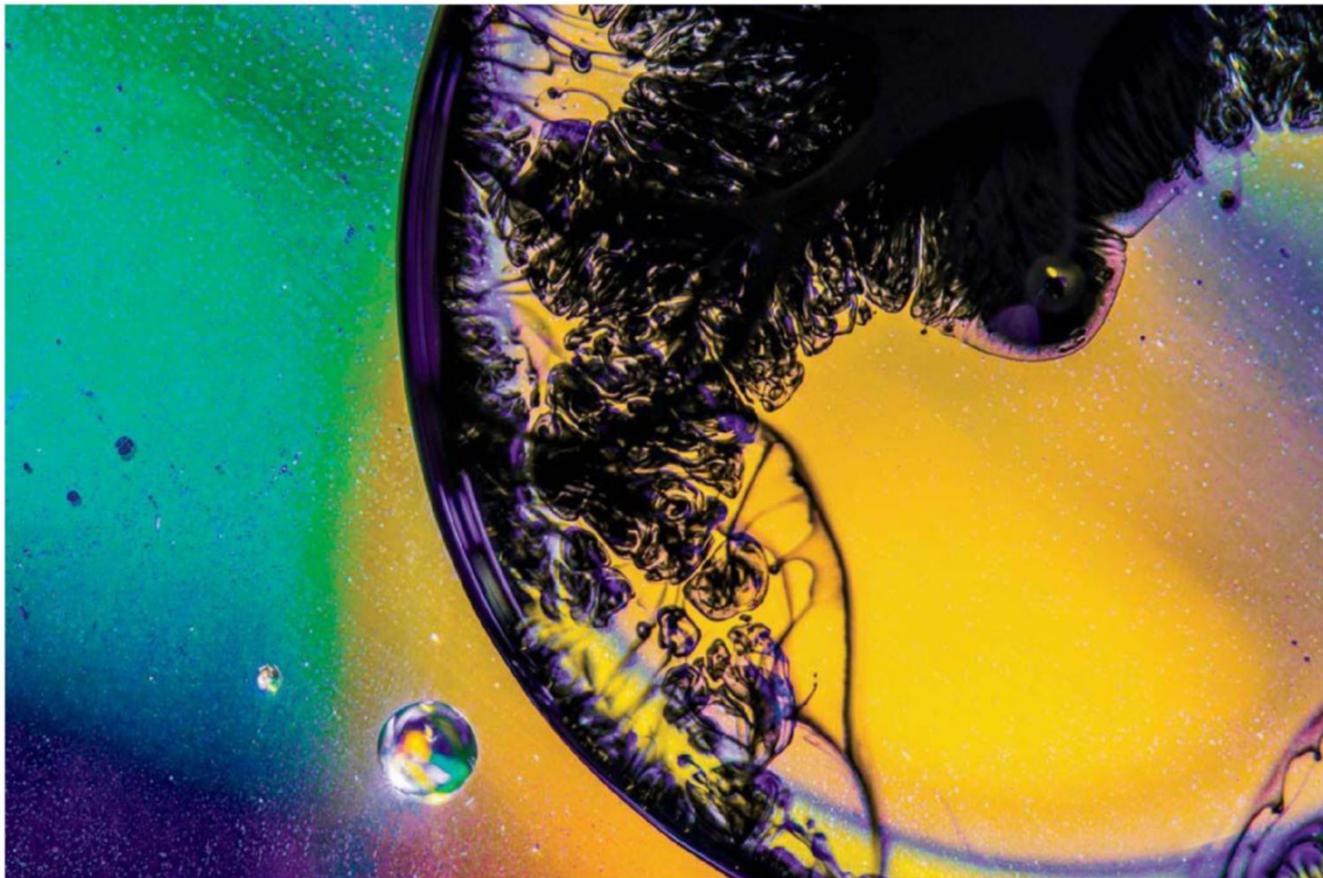


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© Chad Byerly

ENIGMA

"I wanted to create an image that had multiple layers to it but did not want to use Photoshop to make the layers," Chad Byerly explained. "This is an image of a drop of oil on a glass panel with a colorful scarf below and out of focus. The black swirls are from a drop of ink added to the oil drop." It was captured with a Nikon D800E and a Micro-Nikkor 105mm lens on a Gitzo ball head and a Manfrotto tripod. The camera was fired using a Nikon cable release and the flash is an off-camera SB-800 Speedlight on the ground lighting the scarf.

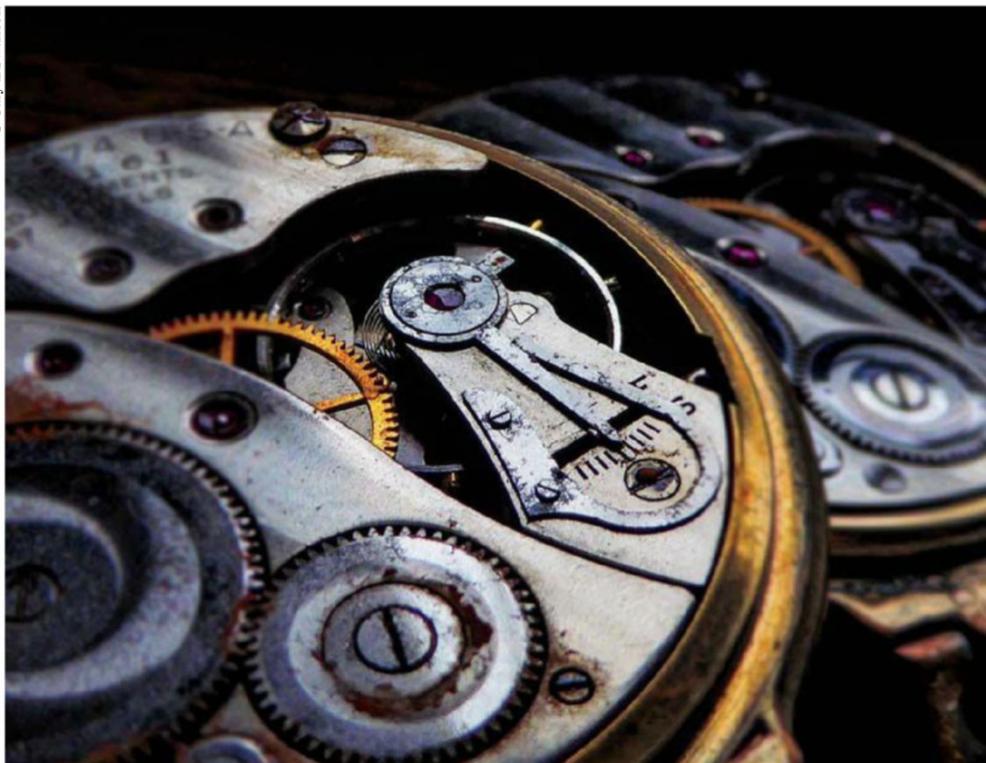


© Gary E. Swanson

© Allan Carrano

EYE OF THE OWL

"The owl was in the Callaway Gardens (Pine Mountain, Georgia) Birds of Prey program," Allan Carrano noted. "It flew unbelievably low over the audience, with its tail feathers actually brushing the top of my head during flight. After landing on its perch, my physical closeness and a telephoto lens provided this close-up." He shot it with a Nikon D5100 and a Nikkor 200-500mm f/5.6 VR lens at 500mm, f/5.6, ISO 200, 1/500 second.



POCKET WATCH

Gary Swanson shot this intricate close-up in natural lighting with a black backdrop using his Panasonic Lumix camera's macro setting.

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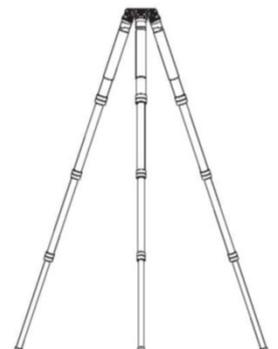
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© Alissa Rosenberg

DON'T FALL BEHIND THE EIGHT BALL

"This photograph is from a Water Drop series that I am creating," Alissa Rosenberg explained. "This is purely macro photography. I used a single flash setup to freeze the motion of the waterdrops and I experimented with different backdrops and objects to capture the water refraction. This photograph utilized everyday colored pencils and the backdrop was a photo of an eight ball. I used a macro lens and the Nikon D7100."



© Lorenzo Cassina

EMERALD-BLUE

Lorenzo Cassina captured this captivating pattern and colors from a beautiful peacock feather using a Nikon D80 and a Nikkor 28-80mm lens at f/18, ISO 200, 1/2 second.

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LOW-LIGHT NOIR

For our next assignment, we want you to go all dark and moody and share images that recall classic “film noir” movies. For those readers who skipped Cinema Appreciation class, film noir is a French term used to describe stylish Hollywood crime dramas from the 1940s and '50s. But we don't need crime scenes (necessarily). Here's what you should shoot for: gritty, high-contrast images, preferably in black and white, captured in low-light conditions. Of course, color photos are fine, too, but make them shadowy and mysterious: think Edward Hopper, not Walt Disney. Film grain effects or even digital noise are encouraged, just as long as it suits the subject. ■

SHOWGIRL

I shot this image with the Sony A7S II, a full-frame, mirrorless camera that I have dubbed “the master of the dark arts” for its impressive low-light-shooting prowess. It was captured at ISO 64,000, a sensor sensitivity level that would have been unheard of in a camera not long ago. The woman in the image is a model but with her elaborate feather array and sunny but sad expression, she struck me as a tragic showgirl who, in my imagination, was wrapped up in a tumultuous affair with a gangster. I shot the image in color at f/8, 1/400 second, but later converted it to black and white with Nik Silver Efex Pro to give it a dramatic, noir-ish look.



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Julie Newell Photography



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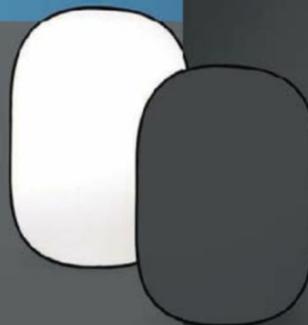
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GOT QUESTIONS ABOUT PHOTOGRAPHY? PROFESSIONAL PHOTOGRAPHER AND PHOTOSHOP EXPERT SCOTT KELBY HAS GOT ANSWERS.

By Scott Kelby

Q I have a lens with built-in image stabilization—is there ever a reason to turn it off?

A Absolutely! The idea behind image stabilization is to help you keep your camera steady in low-light situations where you wind up with a shutter speed that is slower than most folks can hand-hold steadily. A special motor inside the lens searches for movement and when it encounters it, it tries to offset that motion so you get a sharp shot even in low light. So, when does this work against you? When you're on a tripod and there's zero movement. That's because the motor keeps searching for movement while you're on a tripod and that little bit of movement inside the lens when it's on a tripod can cause (you guessed it) a little bit of blur. So, when you're on a tripod, switch off the IS (Image Stabilization) or VR (Vibration Reduction) for sharper shots.

Q What can I do to give my outdoor portraits a more professional look?

A Two things will probably help: (1) Shoot with a long zoom lens (zoomed in tight, between 150-200mm) and use a wide-open f/stop (f/2.8, f/4, or f/5.6) for more flattering portraits (thanks to the lens compression) with a soft out-of-focus background. That out-of-focus background helps separate your subject from the background and simplify the portrait. (2) Buy a one-stop diffuser; I use a Westcott 30" White Diffuser (\$19.90). Put it between the sun and your subject to soften, spread, and diffuse the light. It takes that harsh sunlight and makes it soft and beautiful. You won't believe what a difference this \$20 investment will make in the look of your outdoor portraits.

Q If you had one piece of advice for a beginner photographer, what would it be?

A For now, ignore all the settings on your camera, except for these three things: shutter speed, aperture, and ISO. Focus on just learning how those three settings work together and skip everything else for now. Those three settings are what actually make a photo, just like the brake pedal, gas pedal, and steering wheel are the only three things

you need to drive a car. All the other stuff, like the radio, air conditioning, power seats, is just fluff. It makes the experience nicer, but they're not essential for driving a car, just like all the menus and buttons and knobs on your camera aren't essential for taking pictures. Focus on learning just those three settings and you'll be well on your way.

Q My copy of Lightroom has been acting weird. Do I need to reinstall it from scratch?

A You might, but I'd first try replacing the Preferences. It's likely that your Preferences file has somehow become corrupt, so I would start by installing a fresh set of Preferences. Here's how: First quit Lightroom. Now hold Shift-Option-Delete (Mac) or just Shift-Alt (Windows) and restart Lightroom while holding those keys down. A dialog will appear asking if you want to replace Lightroom's Preferences. Click Reset Preferences and chances are your problem will be gone. If that doesn't do the trick, then yes, it's time to Uninstall and then do a reinstall. Be sure to use the Uninstaller utility that installed with your copy of Lightroom.

Q I've heard that if you shoot in JPEG you can't change the white balance after the fact. Why is that?

A Well, that's just not true. It's one of those urban myths that's been going around for years. Here's why I think the myth exists: When you shoot in Raw, and open your image in a Raw processor like Lightroom or Camera Raw, there's a pop-up menu of white balance presets you can choose from. It's the same list of presets you could have chosen in camera (like Daylight, Shade, Cloudy, and so on). However, when you shoot in JPEG, it ap-

plies the white balance you chose in camera, so when you go to this preset pop-up menu, those presets (Daylight, Shade, etc.) aren't available—just "Auto." However, that doesn't mean you can't change the white balance for JPEG images—I do it all the time. The White Balance Temperature and Tint sliders still work, as does the White Balance eyedropper tool in Lightroom and Camera Raw, so you can change the white balance any time using either of those tools.

Q I'm using a flash with a softbox for my location portraits but the light still looks a bit harsh to me. I was expecting the light to be nice and soft. Is there something I'm missing?

A You're on the right track by using a softbox with your flash, but there's one more technique you need to add to get that next level of softness and that is to feather the softbox. Here's what feathering does: The area in the center of your softbox will be the brightest and harshest because that's directly where the flash is aiming. So, if you aim your softbox directly at your subject with them in the center, that's the harshest light. The closer you get to the edges, the softer the light gets, so instead of aiming directly center on to your subject, aim the softbox almost past your subject, so just the edge of the light hits them. Sometimes you have to turn the power of the flash up a little bit, but it's worth it because the light is softer and more flattering toward the edges of the softbox. Also, the closer you move the softbox to your subject, the softer the light will be, so combine those two techniques: (1) moving it in close and (2) feathering the light so the center of the light doesn't hit your subject directly, and you'll get softer, creamier light. ■

Scott Kelby is a photographer, Photoshop Guy, award-winning author of more than 50 books, and CEO of KelbyOne, an online education community dedicated to helping photographers take the kinds of images they've always dreamed of. You can learn more about Scott at his daily blog (scottkelby.com), or follow him on Twitter: @scottkelby.

Editor's Note: Ask a Pro is a Q&A column from professional photographer, writer, and educator Scott Kelby. Scott is here to answer all your photography-related questions, so if you have something you'd like to know, e-mail him at editorial@shutterbug.com (with "For Scott Kelby" as the subject line) and your query could be featured in the next edition of Ask a Pro.



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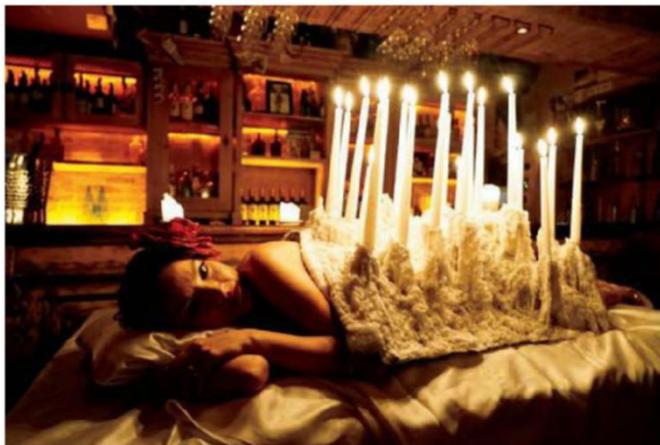
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HOW HIGH WILL ISOS GO?

CAMERAS BREAK THE NOISE BARRIER WITH ULTRA-SENSITIVE CHIPS

By Seth Shostak



© Dan Hawlik

This relatively low noise image was captured with the Sony A7S II in extreme low light at ISO 12,800.

REMEMBER WHEN PAUL SIMON crooned, “Mama, don’t take my Kodachrome away”? That classic film may have given you nice bright colors, but only on sunny days. In its early incarnations, Kodachrome’s film speed—its sensitivity—was 10, or slower than Homer Simpson.

Sensitivity is not just a social nicety. In photography, higher values allow you to get closer to every shutterbug’s dream: anything you can see, you can snap, no matter how much available light there is.

Changing the ISO as casually as you change f/stops is one of the many benefits of digital photography. And with every iteration of camera models, it seems the highest available ISO goes up and extreme low-light images look even better. Nikon’s D5 DSLR has a staggering maximum ISO in expanded mode of 3,280,000. It’s the current sensitivity champ and, I note, is more than 18 stops faster than the old Kodachrome. However, I also note that at ISO 3,280,000, the noise is acceptable only to the uncritical.

But really, what’s the ceiling on ISO ratings? Is there any limit at all? Will you eventually be able to shoot action photos of black cats cavorting in coal mines without a carbide lamp?

Here’s one path to an answer. Sensitivity depends on the performance of your camera’s sensor and the size of the pixels. Bigger pixels mean more sensitivity. Usually, the ratio of signal to

noise in a pixel scales as its area. In other words, if you double the dimensions of a sensor’s individual pixels—making each twice as wide and twice as high—the sensitivity will double. Unfortunately, this will also halve the resolution in both dimensions. Instead of 7360x4912 pixels

(Nikon D800), you’d have 3680x2456. A 36-megapixel camera becomes a nine-megapixel camera, and the amount of detail in the photos would drop by four as, no doubt, would sales.

Speed demons might think to go for a camera with a bigger imaging sensor. The chip in the Hasselblad H5D-200c is 44x33mm, which, when compared to a full-frame DSLR, is 70 percent greater area. That could, in principle, offer a 70 percent gain in sensitivity. But people who choose a larger format aren’t interested in a potential 2/3-stop boost in the maximum ISO. If they’re going to manhandle a bigger camera, they want the greater detail that the format can provide. They want more pixels.

So in the real world, a shift to substantially fatter pixels is not going to happen. Image quality dictates that small is beautiful.

Well then, what about the performance of the pixels themselves? Can they be made more sensitive, even at a given size?

Not a lot. CMOS chips are already more than 50 percent efficient—which is to say that the majority of the light hitting them produces a response. There’s also the influence of the camera electronics used to read out the pixels, and of course there will always be noise in this circuitry. But even if the electronics were perfect, you’d still be limited by the inherent performance of the sensor.

As an important aside, the very high efficiency of solid-state sensors is why digital imaging swept away film in all low-light applications (such as astronomy). Film emulsions were seldom more than 5 percent efficient. That is, typically only one in 20 light quanta (photons) that struck the film actually *did* anything! Fast films could be fast because they had large grains—the analog equivalent of bigger pixels.

OK, so here’s my rough-and-ready calculation of the maximum usable ISO you can ever expect. Think about the fastest film emulsion that anyone would dare to use for good-quality photos. I reckon that would be something like Kodak T-Max P3200. Not great image quality, but still acceptable. Film was 5 percent efficient, and eventually improved chips might approach 100 percent. That’s a factor of 20 improvement which, when multiplied by the film speed of P3200, results in a maximum, practical digital ISO of 64,000, give or take a factor of two.

There you go: 64,000. You may object that’s less than claimed for the Nikon D5, and of course it is. But remember: The D5’s staggering Hail Mary ISO is an extended mode option, akin to the 233 mph top speed of a BMW M6. It makes for nice ad copy, but you’re not going to use it. The *non-extended* ISO range for the Nikon D5 tops out at 102,400.

Bottom line: We’re nearing the limit of what’s possible in sensitivity without resorting to bigger cameras with bigger chips. Don’t throw away your carbide lamp. ■

Seth Shostak is an astronomer at the SETI Institute who thinks photography is one of humanity’s greatest inventions. His photos have been used in countless magazines and newspapers, and he occasionally tries to impress folks by noting that he built his first darkroom at age 11. You can find him on both Facebook and Twitter.

Editor’s Note: *Technically Speaking* is a new column by astronomer Seth Shostak that explores and explains the science of photography.



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TOOLS / THE GOODS

➔ BARE BACKER

Leica's gone back to the future with the M-D rangefinder. The Leica M-D (Typ 262) is the first full production model in the digital M line that has no rear LCD monitor. Instead, the stripped down but classic-looking Leica M-D has an ISO sensitivity dial on back. (A few years ago Leica did release the M Edition 60, which also had an ISO dial instead of a rear screen, but that model was limited to 600 units.) The 24-megapixel M-D is loaded with other digital amenities to complement its functional form factor, including Leica's fast Maestro processor and the ability to capture Raw images in Adobe's DNG format for quick editing. Other than that though, the M-D is pretty minimal, even ditching Leica's classic red dot logo from the front plate to create a discreet design. There's also an extremely quiet shutter and cocking system that can shoot at 2 frames per second (fps) in single exposure mode. In continuous mode, the M-D can shoot at up to 3 fps to help capture candid moments.



Leica M-D (Typ 262)
\$5,995
leica-camera.com



Pictar
\$90 (available in December 2016)
mymiggo.com

➔ SURE GRIP

There are tons of grips and cases for smartphones out there but nothing quite like Pictar. The Pictar camera grip is an ergonomic device that lets iPhone users take mobile photography to a whole new level thanks to an array of SLR-like external controls. Pictar, which slides over your iPhone, includes five user-programmable wheels and an ergonomic grip for one-handed shooting. The grip communicates with the iPhone via a dedicated camera app

that unlocks some key imaging features previously inaccessible to iPhone users. In one of the more clever concepts with this device, Pictar uses "high-frequency dual tone sounds" to control camera functions and settings. Each physical control is assigned a specific tone, and when you turn a dial, press a button, or twist a wheel, Pictar emits a sound which—when detected by the app—generates a corresponding action. The high-frequency

dual tone (18,500-20,000kHz) is inaudible to the human ear and increases battery life when compared to Bluetooth connectivity. Other key features include a useful exposure compensation dial, a customizable "smart wheel," a standard 1/4-inch tripod mount on the bottom of the device, and a cold shoe on top. Pictar will initially be only compatible for iPhones 4 to 6, but support for other models will be forthcoming.

Impossible I-1
\$299
us.impossible-project.com



➔ IMPOSSIBLE CAMERA

It seemed improbable but the long-awaited instant film camera from The Impossible Project is finally a reality. This reimagined Polaroid-style instant camera uses Impossible's new I-type film as well as standard 600-type film. The I-1 features a built-in ring flash for diffused light that's perfect for portraits. Used alone, it functions as a simple point-and-shoot instant camera, but when paired with an iPhone and an app, the creative possibilities emerge. When coupled to your iPhone, you can experiment with light painting and double exposure, as well as access additional controls such as aperture, shutter priority, and manual modes. The Impossible team acquired some of Polaroid's assets back in 2008 and embarked on a project to modernize the business and sell their own instant film. Along the way, they have repeatedly hinted that a new camera was in the works. It has finally arrived.

➔ LEGENDARY LENS

German optical company Meyer-Optik Görlitz is celebrating the 100th anniversary of its acclaimed Trioplan line by relaunching the legendary 50mm Trioplan "Soap Bubble" lens, so named for its unique bokeh characteristics. The new 50mm f/2.9 Trioplan features premium build quality, modern coatings, and a 1:4 reproduction ratio for macro photography. Meyer-Optik Görlitz was founded in 1896, and their current mission is to "make the best art lens on the market" using superior design, engineering, and materials. The new 50mm f/2.9 offers the same soap bubble bokeh of its predecessor and utilizes a moveable front element to increase the reproduction ratio to 1:4 for close focusing to under 12 inches. The Trioplan 50mm f/2.9 will be available in mounts for Canon EF, Nikon F, Sony E, Fuji X, Micro Four Thirds, M42, Leica M, Leica L, and Pentax K.

Trioplan f2.9/50
\$1,299 (available in January 2017)
meyer-optik-goerlitz.com





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EYES IN THE SKY

MY FAVORITE QUADCOPTERS AND DRONES FOR AERIAL PHOTOGRAPHY

By Joe Farace

“Flying may not be all plain sailing, but the fun of it is worth the price.”—Amelia Earhart

BECAUSE OF THE “this is why we can’t have nice things” antics of several idiots flying drones, the Federal Aviation Administration (FAA) now requires every drone (and RC aircraft) weighing more than 0.55 pounds to register their craft and have an identification label. Pilots are also required to carry Flight ID. Recently, the FAA updated the rules for commercial unmanned aircraft, doubling operational ceilings and streamlining the online application process. The new policy allows small UAS (Unmanned Aircraft Systems) to fly up to 400 feet except in restricted airspace and areas where the agency prohibits unmanned aircraft operations.

To register, you must be 13 years old or older or have someone who is of age register the drone. You’ll receive a unique registration number—no, you can’t have NCC-1701—that will apply to any UAS you own and you must mark the drone with the number. After registration, a certificate containing the FAA registration number, issue and expiration dates, and name of the certificate holder will be sent to your e-mail address. It only costs \$5, but failure to register can result in civil penalties up to \$27,500. Criminal penalties

include fines of up to \$250,000 and/or imprisonment up to three years. Spend the five bucks and live with it.

Now that I’ve gotten all that legal stuff out of the way, here are my favorite drones and quadcopters for aerial photography.

HEAVY LIFTER

The magnesium unibody Phantom 4 (\$1,399) weighs three pounds, with battery, but DJI is clearly the 800-pound gorilla in the quadcopter world. Looking more like a mortarboard with propellers than an

aircraft, the Phantom 4 offers 28 minutes of flying time. Its camera has an f/2.8 lens with a 94-degree angle of view using nine elements, including an aspherical element. It will take 12-megapixel stills in either DNG Raw or JPEG, with single shot, HDR, burst, and time-lapse modes available. The camera shoots 4K video at 24/25 fps and UHD 4K up to 30 fps and features Cine-D and D-Log modes for increased

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dynamic range. To keep footage stable in high winds, a gimbal supports both sides of the camera. You can watch a live video feed on your smartphone and adjust camera settings as well as stream the flight live on YouTube. The Phantom 4 has a GPS-based navigation system and its Vision Positioning System uses dual downward-facing cameras and dual ultrasonic sensors for situations where GPS is unavailable and the quadcopter is close to the ground. A small camera above each leg detects obstacles in the flight path, turning on Active Obstacle Avoidance, allowing the aircraft to attempt (DJI's words) to fly around or over obstacles, instead of braking. In Sport Mode, the quadcopter can reach 44.7 mph, so let's hope your reflexes are up to flying it that fast but its Active Braking feature acts like disc brakes for the drone. And the Phantom 4 automatically logs the details of every flight, just in case.

Who's It For: If you want a quadcopter, you want a DJI—if it's in your budget.

Why I Like It: It has a Beginner mode that prevents you from exceeding your flying skills. Think an SLR's Green mode.

AFFORDABLE FUN

Just in case you were wondering, vis-à-vis FAA registration, Hubsan's H107D X4 Quadcopter with FPV Camera (\$129) weighs 1.5 ounces. A FPV (First-Person View) camera captures 720x240 resolution SD video. It transmits wirelessly on 5.8GHz and lets you record video on a microSD card up to 16GB stored in a slot that's built into the transmitter. The X4 has a four-channel, 2.4GHz transmitter with an up to 328-foot range, depending on conditions. Its 4.3-inch LCD screen lets you monitor real-time video from the camera while displaying flight telemetry. The quadcopter has a six-axis flight control system with an adjustable sensitivity 3.7v, 380 mAh lithium-polymer battery with USB charging; charging takes approximately 30 minutes.



Who's It For: Quadcopter shoppers on a budget.

Why I Like It: The Hubsan looks cool, especially in stealthy black, and is affordable for the average photographer who wants to take flight.

IF UNIQUE IS WHAT YOU SEEK

Yuneec's Typhoon Q500 4K (\$999) is designed for serious photography and video, incorporating a three-axis gimbal-stabilized camera with UHD 4K video recording at 30 fps, 1080p video recording at up to 120 fps, and 12-megapixel still capture. The camera has a 130-degree lens saving onto a 128GB microSD card. It's bundled with the ST10+ Personal Ground Station, a 10-channel, 2.4GHz transmitter with a 5.8GHz video receiver in one handheld unit. There are RC-style joysticks to pilot the quadcopter and a built-in Android mobile device with a 5.5-inch screen lets you view an FPV video image from the camera along with telemetry. You can add a free mobile app that offers control over resolution, white balance, ISO, and shutter speed. Two 5400



mAh batteries provide up to 25 minutes of flying time each per charge, depending on wind resistance. The Q500's Smart Mode uses GPS to establish a 26-foot safe circle, meaning the aircraft will move in the same direction the stick is pressed relative to the pilot, regardless of which way its nose is pointing. In Home Mode, the Typhoon automatically lands within a 10-foot circle of where it took off.

Who's It For: It may not be the 800-pound gorilla (aka DJI) but is perfect for the demanding UAS pilot.

Why I Like It: The Typhoon has a determined and more choppery—think *Airwolf*—look than the more timidly designed DJI Phantom.

WHEN PIGS FLY

I love my UDI Discovery quadcopter (it was a birthday gift from Mary) but the pace of innovation in inexpensive drones is fast—they're toys after all. The most inexpensive—and good—one as I write this



is the Air Hogs RC Helix X4 Stunt (\$64). However, if you want to shoot video, you'll need their Helix Video Drone that sells for \$109. The Helix Video Drone has a built-in 60 fps video and still camera and the piggies even toss in a 4GB memory card. Expect about 10 minutes of flying time, which is *de rigueur* if not optimistic for most small drones. The Air Hogs have an extruded foam exoframe that protects the propellers from bumps and crashes and is covered in a bedliner-style finish that says badass. The hogs say it's easy to fly and it looks like it with its four ducted fans. Caveat: All small quadcopters are wind sensitive so when flying outdoors (yes, some people fly them indoors) be aware of gusts and where it can toss your drone.

Who's It For: Quadcopter shoppers looking for a bargain.

Why I Like It: Don't you love that name? Air Hogs! I'd call mine Arnold Ziffel.

COWBOY BEBOP

The Parrot Bebop Drone 2 (\$549) is noteworthy for its 14-megapixel (4096x3072) camera that can also capture 1080p video. The drone is controlled by an Android or iOS mobile device running their FreeFlight 3 app. The app provides real-time preview from the camera and you can record a low-resolution feed directly on your device. For high-res recording it has 8GB of built-in memory. The optional (\$399) Skycontroller extends the Bebop Drone 2's Wi-Fi range to 1.2



Samy's Camera

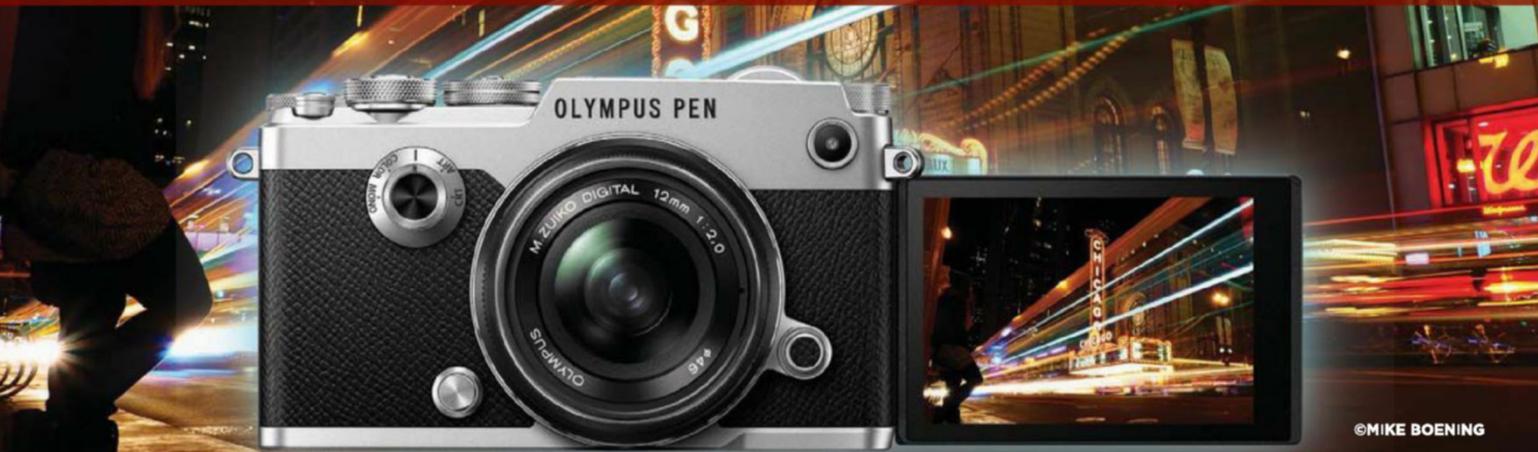
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miles and features a control pad as well as a tablet holder. Its lithium-polymer battery has a capacity of 2700 mAh, producing 25-minute flight times. The drone has flexible six-inch props that yield improved flight performance of 52.5 ft/s horizontal and 19.7 ft/s vertical top speeds. Seven sensors keep the Bebop Drone 2 flying steady, allowing it to compensate for pilot inputs and counteract some, I'm guessing, wind conditions. Built-in GPS assists flight stabilization, providing positional data with "possible" automatic return home and landing.

Who's It For: Pilots looking for a mid-level drone that can shoot great-looking photographs.

Why I Like It: Moderately priced with a really good camera.

FLYING SELFIES

The Hexo+ (\$999) is a drone and an app designed to create video footage of yourself, no piloting required. The chopper doesn't come with a camera; instead it has a GoPro-compatible mount. The average flight time for a Hexo+ carrying a GoPro is between 10 to 15 minutes. Hexo uses your

phone's GPS position together with data from its other sensors (accelerometer, gyroscope, barometer, and magnetometer)

to know where you are and how you move. They've created algorithms that let the Hexacopter follow and anticipate your trajectory and speed. If you lose the GPS signal, or your smartphone's battery runs out, or the drone's battery dies, there are built-in safety features to "safely" land the drone.

Who's It For: BYO photographers who want video of them riding their mountain bikes and other action-oriented outdoor activities.

Why I Like It: Out of my budget for what it does but you gotta admire the concept.

NO COMIC BOOK HERO

The Blade 180 QX HD Quadcopter is an



affordable (\$149) quadcopter with great styling with a detachable camera that captures 720p video and 1.3-megapixel (remember the price point) photos, recording them to microSD memory cards up to 32GB. It's powered by a 500 mAh lithium-polymer flight battery that should deliver from five- to 10-minute flight times per battery. Tip: With any drone you should keep extra (and charged) batteries handy. The Blade copter has three flight modes: Stability Low Angle Mode for beginners, Stability High Angle Mode once you start to get the hang of it, and Agility Mode that gives you the most maneuverability. Blade warns, "This mode should only be used by experienced pilots." Think of it as what happens when you turn off the



stability modes on a performance car when you're on a track. In addition to the provided RTF (Ready-To-Fly) controller, the 180 QX supports many BNF (Bind-N-Fly) compatible transmitters.

Who's It For: Someone getting started in drone photography and wants something just a little bit better than a starter drone without breaking their piggy bank.

Why I Like It: Awesome style with

ARCA-SWISS monoball® Z



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Z sp single pan
Z dp double pan



ARCA-SWISS INC
Phone: 480 755-3364

E-mail: rod.klukas@arca-swiss.com

"If you like aerobatics, you can perform flips and 360-degree rolls with the U842 Falcon quadcopter with the press of a controller button."



orange accents that should make it easy to find after the (expected) crash landings.

FLYING FALCON

UDI makes a wide line of affordable quadcopters from the no kidding (\$24) U839 Nano to their top-of-the-line U842 Falcon quadcopter (\$99). Tricked out in black with orange blades up front, the Falcon has a 720p resolution camera as well as single shot photo mode. It features a quad-rotor design with detachable propeller guards for protection against (inevitable) "light collisions." To pilot the U842, there's a four-channel, 2.4GHz transmitter with a low-voltage alarm warning you to land the quadcopter when the battery is about to expire. If you like aerobatics, you can perform flips and 360-degree rolls with the press of a controller button. In addition to its six-axis gyroscope, the copter sports a high-speed mode for advanced pilots or to compensate for windy conditions and a low-speed mode that's ideal for beginners. The package includes a 1000 mAh flight battery good for eight minutes of flight time, a USB battery charger, a 2GB microSD card, a USB card reader, and a screwdriver.

Who's It For: Anyone looking for something just a notch up from a basic drone and one that's easy and fun to fly.

Why I Like It: I fly an older UDI Discovery but this affordable chopper is on my list when it's time to replace because of its upgraded features. ■

Joe Farace flies a UDI Discovery, his second quadcopter, and you can see video clips from some of his recent flights (and crashes) on Vimeo.com. Information about the gear he uses to create images for Shutterbug and his personal photography can be found at joeFarace.com and mirrorlessphototips.com. Just click the "Gear" button.



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CANON EOS 80D

CANON MAKES A CASE FOR THE MIDRANGE WITH ITS LATEST APS-C DSLR *By Joe Farace*

THE EOS 80D IS THE LATEST iteration of Canon's APS-C-chipped DSLRs that began with the introduction of the (no kidding) three-megapixel EOS D30 in 2000. I've owned and shot with every camera in this series through the 60D. I so dearly loved my Canon 50D, now converted to infrared-only operation, that I couldn't imagine anything better, at least until I got the 60D. What happened to the 70D? I guess I must have missed that one. No matter, I was eager to put the new EOS 80D to work because of the specs and features it offered.



FEATURES

The Canon EOS 80D body (\$1,199) has an APS-C-sized 24.2-megapixel CMOS sensor with 45 all cross-type autofocus points, compared to 19 in the EOS 70D. Most Canon updates include an image processor upgrade and the 80D's DIGIC 6 processor is supposed to improve image quality and has a native ISO range from 100 to 16,000 that's expandable to 25,600 for stills and video. Its buffer depth lets you capture 110 JPEGs or 25 Raw files in continuous mode at up to 7 frames per second (fps). The viewfinder has 100 percent coverage with a three-inch touchscreen LCD screen that flips out and swivels, making it useful for down low or Hail Mary shots.

The Canon 80D's Dual Pixel CMOS autofocus has a new sensor where all of the pixels simultaneously perform still imaging and phase-detection autofocus during Live View or video shooting. In real-world use, it was as fast as you would want or expect. There's the inevitable built-in Wi-Fi and NFC connectivity for transfer of images and video to mobile devices via the *free* Canon Camera Connect app or backed up to the Canon Connect Station CS100 (\$259).

The Canon 80D's HDR mode offers creative filter effects, such as Natural, Art Standard, Art Bold, Art Vivid, and Art Embossed. Other filters include Grainy Black and White, Soft Focus, Fisheye Effect, Toy Camera Effect, Miniature Effect, and Water Painting Effect. There's the venerable—some hate them, I love 'em—Picture Style settings of Standard, Portrait, Landscape, Fine Detail, Neutral, Faithful, Monochrome, and three User Defined modes that can be filled with downloads from the Picture Style Special Site.

HANDLING

There is a tendency, by manufacturers, to keep adding features to DSLRs to fill more checkbox marks in camera comparison charts. These changes occur, I feel, at the expense of greater usability. Bigger screens, for example, while desirable, often make the camera bigger or force physical controls closer together, something that decreases the overall human engineering, especially for those shooters with normal or smaller-sized hands.

Regular readers know one of my favorite places to test new cameras is to photograph the gazebo at O'Brien Park in Parker, Colorado, and I went there near the end of a snowy spring day. For this shot, the EF-S 18-135mm f/3.5-5.6 IS USM lens was set at 19mm. As I shot the light began to grow muddy, so I made this shot using the 3 EV setting for the camera's Art Standard HDR mode, which then assembles three images in camera to produce the result you see here. Nominal exposure was 1/500 second at f/5 and ISO 400.

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I made this image while doing cold weather testing of the EOS 80D at 17 Mile Farm near Parker, Colorado. Temperatures were only in the low 30s and while that's not cold by Colorado standards it might be a chilly temp where you live. The camera and EF-S 18-135mm f/3.5-5.6 IS USM lens (at 18mm) performed without a hitch. Shot in Landscape Picture Style with an exposure of 1/640 second at f/14 and ISO 400.



I made two different portraits of my wife Mary at different locations and under different lighting conditions at McCabe Meadows Park near Parker, Colorado. The image (at left) was made in the shade of a large tree. I just popped up the built-in flash, put the camera in Program mode and this is what I got. Exposure was 1/250 second at f/9 and ISO 400. For the photograph of Mary on the pedestrian bridge (at right) the exposure was 1/250 second at f/11 and ISO 400.

So the shape and ergonomics of the Canon EOS 80D suffers, if only slightly, from adding more capabilities. It's a trade-off. To Canon's credit, the 60D, 70D, and 80D have their on-off controls in the same place on the camera's back, something that hasn't always been across the board in EOS cameras. For reasons I don't understand—my friend Cliff says it's because he always uses his SLR on a tripod—some people like big cameras. I don't.

VIDEO

Canon, more than any other camera company, doubled down on video and there's no doubt some TV, especially reality shows, and even some movies are shot using Canon DSLRs. A little while ago I made an informal survey of *Shutterbug* readers that showed when push comes to shove, most of them, myself included, use their smartphones for video, rather than a DSLR.

Nevertheless...the EOS 80D shoots 1080p HD video up to 60 fps in MP4 format and in either ALL-I or IPB compression with optional embedded time code. The 80D camera offers HDR and Time-Lapse modes along with “creative filters” like Fantasy, Old Movie, Memory, Dramatic Monochrome, and Miniature. Custom settings let you speed up or slow down focusing speeds. Because of the EU rules I've written about in the past, video clips (please don't call 'em “movies”) are limited to 29 minutes, 59 seconds. The 80D includes a headphone jack and a built-in stereo mic with manual level adjustment. For better sound—and you need this if you're even semi-serious about video—Canon offers the optional (\$244) Directional Microphone DM-E1. It can rotated up and down 90 to 120 degrees, comes with a windscreen to limit peripheral noise, and uses a lithium cell battery as a built-in power supply.

PERFORMANCE & IMAGE QUALITY

Despite my quibbles about the Canon 80D's overall handling, another common denominator in newer EOS D-series cameras is an increase in performance speed and functionality. Bigger isn't always better but in all of the departments that count, such as autofocus and low-light performance, the EOS 80D is a much better performer than its predecessors. (In fact, it made my beloved 60D seem like an antique.) While working in window light, dim light, or at night and shooting with the EF-S 18-135mm f/3.5-5.6 IS USM lens, the 80D never faltered, never stuttered. It just worked.



Nascent apple blossoms shot with the EF-S 18-135mm f/3.5-5.6 IS USM lens at 135mm. Because of the light breeze I cranked up the shutter speed to freeze the branches that were moving with the wind. Exposure was 1/1000 second at f/5.6 and ISO 400. The reflections in the background are from cars driving on the road behind the tree, which explains why they are not completely round.

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Zooming in on the area near the *Stargate*-like sculpture, you can see noise on the left (ISO 16,000) and while the right-hand side (ISO 25,600) clearly shows more amplified noise with colored pixels on the neutral bricks, it is—to my mind—inconsequential. Your, as the EPA says, mileage may vary. Unless you're noise phobic, if you need to make images in unavailable light, crank up the ISO setting to "H" and go for it.

Clouds were rolling in over the Rockies late in the day when I made these shots at the PACE Center in Parker, Colorado. With the muddy light on the building, exposures were the same 1/8000 second at f/8 with the ISO at left 16,000 and at right 25,600. Even full screen on my 5K iMac the differences between the two sides were so slight, I had to go bigger.

Canon's screens are always a little brighter than the captured image anyway, so that's not a good solution for me. You may have other workarounds.

Compared to my EOS 60D, even the JPEG image files I shot with the Canon 80D when viewed on my 5K iMac were simply beautiful to look at. The DxO score (love 'em or hate 'em) for the 60D was 66, the 70D was 68, and the 80D has not been tested as we go to press. Just by my comparing images on a high-res screen, the 80D blows its predecessors out of the water. Neutral color has long been a forte for Canon EOS cameras, including consistently delivering natural skin tones, which is why so many wedding photographers seem to like Canons. Straight-out-of-the-camera image files from the 80D uphold that tradition of delivering lovely skin tones; see my portrait of Mary, especially in natural light.

CONCLUSION

Am I going to add a Canon EOS 80D to my gear bag? It's tempting. The combination of 24 megapixels and 45 AF focus points are a major improvement over my EOS 60D's 18 megapixels and nine (count 'em) focusing points. And while the 80D lacks the overall ease of handling and, dare I say it, panache of previous models in this series, image quality is impressive and the color off this chip, even in Auto White Balance, is beautiful. The 60D's high ISO of 6400 seems quaint compared to the 80D's 16,000 (or 25,600) and the price tag is just a hundred bucks more, which means in real-world terms the 80D actually costs less than my 60D when I purchased it new. Right now, an EOS 80D is not in my budget but I added it to a note I was writing Santa. If you're a Canon shooter and it's in your budget, I would advise you to go for it.

The Canon EOS 80D has a list price of \$1,199. For more information, visit usa.canon.com. ■

Joe Farace has been shooting Canon EOS film then digital SLRs since the 1990s. If you would like to see what specific Canon gear can be found in his actual gear closet (and he does have one), visit joeFarace.com or joeFaraceBlogs.com and click on "Gear."

We're having a late spring here and the snowy and rainy weather has put a damper on local motorsports activity so I couldn't give the camera's 7 fps burst mode a proper test. But shooting quickie tests of cars driving up and down Colorado 83 at speeds up to and (mostly) over 55 mph, the camera delivered sharply focused images.

The Guide Number of the Canon 80D's pop-up flash is 39.4 and while that sounds kind of puny, in practice it proved to be useful as fill when making outdoor portraits. Autoexposure worked perfectly with the flash correctly balancing daylight with flash, although if you find this isn't true after a test shot you can menu dive to adjust flash by plus or minus three stops in either 1/3- or 1/2-stop increments.

I shot the portraits included in this review at ISO 400 to get a bigger bang for the buck with the small flash. The lens focal length for both shots was at 135mm, my favorite focal length for outdoor portraits, which to make the full-length shot of my wife, Mary, on a pedestrian bridge in the park required me to back up pretty far.

The lens will close focus to 1.28 feet, which when used at the 135mm focal length with the EOS 80D produces an effective focal length of 216mm. This lets you get surprisingly close as can be seen by the photographs of the small blossoms starting to burst from an apple tree. Depth of field at these distances and settings, as you can see in the illustration, is extremely shallow, which may be a good thing or not depending on what you're photographing.

The EOS 80D menus and submenus are more complex than previous Canon DSLRs in this series but are more understandable than the everything-but-the-kitchen-sink approach used by Olympus. More troubling is actually viewing the menus. On a bright Colorado day menus are difficult to read—even in the shade. When doing cold weather testing at the 17 Mile Farm in Parker, Colorado, with snow on the ground it was difficult to see the highlighted menu item, even when blocking the screen with my body to create shade. While you can always increase screen brightness, that creates a bigger problem because, in my experience,

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NIKON D500

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Edited by George Schaub



The Nikon D500 is a digital SLR with an APS-C-sized sensor (20MP), very fast AF system, and many very handy features. Some elements of the high-end system D5 were transferred to this prosumer camera.

COMMENTS ON IMAGE QUALITY

Color: The automatic white balance system of the D500 worked very well. The gray patterns of the test chart are reproduced very precisely and are located exactly in the center of our result chart. Most nuances show a little drift into the bluish and therefore cooler color areas; the brighter patterns are shifted into the yellow area. All colors look very natural and are only a little oversaturated. Only the red nuances are boosted by a higher yellow rate. Nevertheless, the differentiation of red nuances is very good. The fabric of the red T-shirt in the portrait shot is clearly structured with a nice differentiation of darker and brighter red nuances. Skin tones look very good.

Editor's Note: Look for our Field Review of the Nikon D500 with real-world test images on Shutterbug.com.

THE NIKON D500 IS THE "LITTLE SISTER" of the company's flagship D5 professional DSLR system. The prosumer/enthusiast-focused Nikon D500 is the long-awaited successor to both the D300, which was shipped in 2007, and the upgraded D300S from 2009. The new camera offers an APS-C-sized sensor with a little more than 20MP in resolution. (The D300/D300S had a 12.3MP chip.)

CAMERA BUILD, LAYOUT & PERFORMANCE

As an enthusiast-level DSLR system, the Nikon D500 offers a large and bright optical viewfinder. This viewfinder covers a field of view of 98 percent, which can be a little irritating when composing your picture. On the other hand, the camera has an excellent LCD screen. The monitor is very large (3.2 inches) and has a very high resolution (2.36 million RGB dots). It is touch sensitive, but just like the D5, the D500 offers only a few functions that can be controlled on the screen. Nevertheless, it is very helpful when reviewing images, especially when the user wants to zoom in on details.

While the Nikon D500 is somewhat large and heavy, it is very convenient and handy. The large grip on its right-hand side offers very stable handling. Because it is a mid-range system, the camera doesn't offer an additional shutter release button and parameter dials for vertical compositions, as does the D5. Nikon offers the multi-battery power pack "MB-D17" as

an option that does have those additional function buttons/elements.

The camera offers a Wi-Fi module and the brand-new "SnapBridge" technology for direct communication with smart devices like phones or tablets. In addition, it allows for use of the optional WLAN adapter WT-7A for more functions and higher data rates.

The D500 uses the Nikon's brand-new AF focus system: The "Multi-CAM 20K" has 153 autofocus (AF) areas, including 99 cross-type sensors. This system offers an extremely high AF speed. Fast-moving objects are detected very precisely, which will be most welcome to sports and action photographers. The AF system is highly configurable but still easy to manage.

For high burst rates the camera works well with high-speed XQD cards and offers an additional card slot for SD/SDHC/SDXC media. The XQD card is also necessary for recording videos, because the Nikon D500 is able to record 4K video with very high bit rates.



The Nikon D500 offers function buttons on the left-hand side of the top to change image quality settings, white balance, exposure metering, and exposure modes. A large status display (illuminated) shows all exposure settings and additional parameters.



The new Nikon camera has a large LCD screen (3.2 inches) with high resolution (2.36 million RGB dots). The screen is touch sensitive. The camera offers an eight-way control field, many function buttons, setup dials, and a small joystick on its back for fast menu navigation and image setup.

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Sharpness: The resolution test results of the D500 are excellent: The camera reproduced the test chart with 3,608 of 3,712 lines per picture height and also showed very crisp and clean reproductions of our test scenes. The camera showed a little higher “overshot” effects which means a little more filtering and optimization done by the Nikon image processor (compared to other APS-C cameras). These effects are nearly invisible in images produced.

Noise: The new Nikon D500 showed a very good performance in our noise tests. Because it’s a camera with an APS-C-sized

sensor it shows luminance noise on a little higher level than its full-frame colleagues, like the D5, but the level is still very low. Images taken at ISO 100 to ISO 12,800 keep under the 1.0 percent line. Even at the highest (nominal) ISO speed of ISO 51,200 it is really low. Color noise stays on a very low level, too. Up to ISO 3200 the images have a very clean look. At ISO 6400 color noise gets visible, but is on an acceptable level up to ISO 12,800. Images taken with ISO 25,600 and higher will only show a little color noise, noticeable artifacts created by the combination of color noise

and anti-noise filtering.

The camera offers additional ISO speed modes up to the very extreme setting of ISO 1,640,000. In these extreme speeds the color noise effects are really extreme. Details and contrast lines are totally blurred.

The camera also showed an excellent result in the dynamic range test. At ISO 100 it reproduced the Stouffer 4110 chart with 12 f/stops! It keeps a high dynamic range level when using higher ISO speed settings (about 10-11 f/stops up to ISO 6400).

COMMENTS ON VIDEO FUNCTION AND QUALITY

The Nikon D500 offers high-resolution videos up to 4K movies with 3840x2160 pixels (UHD TV). In this mode it can record up to 30/25 full frames in progressive mode, while it can take up to 60/50 frames in Full HD mode (NTSC and PAL settings). In addition, it offers a 24p mode for Blu-ray-compatible video recording.

The camera uses H.264 compression for its video scenes and uses Apple’s QuickTime MOV format as the container file format. All current video editing software or media player software like VLC player are able to edit or present these movie scenes.

For recording video you have to use the LCD screen with live preview as the viewfinder. The camera has a live preview switch on its back that can be used in photo and video mode. In video mode the camera will show the movie with an aspect ratio of 16:9, for example, and additional overlay elements for video recording. A very small additional shutter button on the top (marked with a red dot) will then start video recording.

The camera offers fully manual control in video mode. Just like in photo mode, the photographer can choose P, S, A, and M mode video. ISO speed can also be selected manually, even up to ISO 51,200.

Manual control is also offered for sound recording. The camera has a built-in stereo microphone and two audio interfaces on its left-hand side: A 3.5mm jack for an external microphone and an earphone jack allows for checking sound quality—very helpful when using manual sound level control.

The Nikon D500 performed excellently in our video tests. The resolution results are extremely high. In 4K mode the camera reproduced the test chart with 2,160 of 2,166 lines, which is a new “high score result” and even better than the



For fast data transfer, the Nikon D500 has a USB 3.0 interface. In addition, it offers an HDMI port for image and video presentation in high resolution and microphone/earphone interfaces for higher sound quality when recording 4K video.



The LCD screen of the Nikon D500 can be flipped up- and downward. The camera has a sealed body; the interfaces on the left-hand side of the body are covered by very massive rubber caps.

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 AF, 105/2,8 AFS VR, 135/2 AF DC, 180/2,8 AF ED, 200/4 Micro AF,
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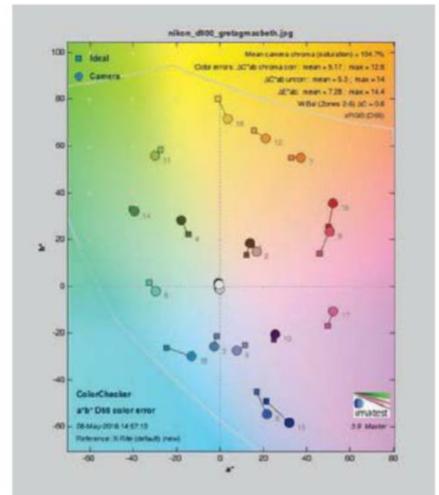
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The reproduction of the test box is richly detailed with very natural-looking colors.



The automatic white balance system of the D500 worked very well. The gray patterns of the test chart are reproduced very precisely and are located exactly in the center of our result chart.



The Nikon D500 captured the portrait scene with nicely reproduced red nuances and an excellent reproduction of the skin tone of our model. Fine details like eyelashes are looking very crisp.

results of the Panasonic GH4. The same goes for Full HD mode. In this mode the D500 reproduced the chart with 1,037 of 1,080 lines.

Color reproduction in video mode is also very good. Just like in photo mode, the white balance did a marvelous job. All gray patterns are located exactly in the center of the result chart. Some blue nuances are boosted, but nearly all colors show only minor aberrations to the given values.

Up to ISO 3200, image noise is very low and videos have a clear and clean look. At higher ISO speed settings the color noise artifacts become visible and annoying. The dynamic range results are excellent. The D500 reproduced the Stouffer chart with up to 10.6 f/stops, which is very high for video recording. ■

The Nikon D500 has a list price of \$1,999 (body only). For more information, visit nikonusa.com.

SCORECARD

PROS

- > Very fast AF system
- > Very high-resolution results
- > Excellent dynamic range
- > Fast high-speed burst mode
- > Integrated Wi-Fi
- > High-resolution swivel LCD (touch sensitive)
- > 4K video

CONS

- > Swivel monitor isn't fully articulated
- > Somewhat large and heavy camera build
- > Viewfinder only offers 98 percent coverage

LAB REVIEW is where we publish web-exclusive lab reports on cameras. To read more Lab Reviews, please go to the *Shutterbug* homepage at Shutterbug.com and click on the Reviews tab on the top navigation bar. New photo gear reports are published frequently, so check Reviews for more equipment evaluations.

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TOP PRODUCTS OF THE YEAR

WE TEAM UP WITH TIPA TO PICK THE BEST PHOTO GEAR OF 2016 IN 40 IMAGING CATEGORIES

By George Schaub

THE TECHNICAL IMAGE PRESS ASSOCIATION (TIPA) member magazines recently convened for their General Assembly to vote for the best photo and imaging products launched by the industry in the last 12 months. The voting took place during the General Assembly that was held in spring 2016 in San Francisco, California.

TIPA membership is comprised of editors and representatives from leading

photo and imaging magazines from 15 countries on five continents, and also has a cooperative partnership with the CJPC (Camera Journal Press Club), representing 11 top photography magazines in Japan.

The TIPA Awards are renowned as the most influential photo and imaging product awards from around the world. All products and their advertising media bearing the TIPA Awards logo indicate that these have passed evaluations by TIPA's

Technical Committee and magazine editors. A TIPA Award endorsement is the highest accolade for any photo and imaging product.

Shutterbug was represented at the General Assembly by Editor-at-Large George Schaub, a member of the Technical Committee within the group.

For more information about the TIPA organization, visit tipa.com.



⬆️ DSLR ENTRY LEVEL

Sony Alpha A68

The Sony A68 has a 24-megapixel APS-C Exmor CMOS sensor with an ISO 100 to 25,600 range. Its "4D Focus" system uses a 79-point dedicated phase-detection AF sensor with 15 cross points. It can deliver accurate focus in light as low as -2 EV, plus constant AF tracking at 8 frames per second. For video fans, the Sony A68 can record Full HD in XAVC-S format with a bit rate up to 50Mbps and continuous autofocus with accurate focus tracking. Other attractive features include SteadyShot Inside image stabilization, an OLED Tru-Finder with 100 percent frame coverage, and an articulating 2.7-inch LCD monitor.



⬆️ APS-C DSLR EXPERT

Nikon D500

This Nikon DX-format camera features a 20.9-megapixel CMOS sensor teamed with the company's Expeed 5 processor. The ISO range is 100 to 51,200, expandable to 50 to 1,640,000. The D500 can deliver up to 10 frames per second shooting with AF and AE, with an enhanced buffer for up to 79 shots of uncompressed Raw (NEF) images. Along with stills, the D500 can deliver 4K UHD video at up to 30p and Full HD at various user-selectable frame rates. For viewing and shooting ease there is a tilting 3.2-inch, 2,359K-dot touchscreen LCD. The camera can record on both XQD and SD card slots and is compatible with Nikon's SnapBridge image transfer and sharing feature.



➤ FULL-FRAME DSLR EXPERT

Pentax K-1

Pentax has entered the full-frame sensor field with the weatherproof and dust-sealed K-1. The 36.4-megapixel CMOS sensor has a "simulated" anti-aliasing filter achieved through minute sensor vibrations; this motion sensor also supports Ricoh's Pixel Shift Resolution system. The K-1 features five-axis sensor shift image stabilization, a near 100 percent optical viewfinder, and a 33-point AF system with 25 cross points. The rear LCD, a 3.2-inch, 1.04-million-dot LCD, is highly flexible and allows for vertical, horizontal, and diagonal movement. Current Pentax lens owners (APS-C) can utilize all their lenses via the K-1's Crop mode; Auto mode will detect the lens mounted and set the crop accordingly.



➤ DSLR PROFESSIONAL/ACTION

Nikon D5

Nikon's Expeed 5 processor in the D5 delivers low noise and high-speed processing required for 4K UHD video and high still framing rates: the camera can shoot up to 12 frames per second with full AE and AF with an extended buffer that can capture up to 200 frames of 14-bit lossless Raw (NEF) files. Utilizing Nikon's first dedicated AF processor, the Multi-CAM 20K AF sensor module has 153 AF points, including 99 cross-type sensors. The D5 can also record 4K time-lapse videos in camera and allow the user to grab 8-megapixel photos from videos. The camera has a "native" ISO range of 100 to 102,400 and its AF system can work in near darkness (EV-4).



➤ DSLR PROFESSIONAL/HIGH RES

Canon EOS 5DS/EOS 5DS R

Rivaling the resolution of "medium format" digital cameras, the impressive 50.6-megapixel full-frame CMOS sensor of the Canon EOS 5DS and EOS 5DS R (with low-pass cancellation filter) can deliver 5 frames per second full-resolution still images, and Full HD 1080p videos at 30 fps. They feature Dual "DIGIC 6" image processors and a newly developed Mirror Vibration Control System that utilizes a miniature motor and cams rather than conventional springs, with a time-release lag setting to further suppress camera shake. The cameras have a 3.2-inch, 1.04-million-dot, approximately 100 percent coverage ClearView II LCD and a 150,000 pixel RGB-IR metering sensor. AF performance is enhanced with a 61-point high-density reticular AF sensor and Canon's iTR that utilizes information provided by the metering sensor.



➤ PHOTO/VIDEO PROFESSIONAL CAMERA

Canon EOS-1D X Mark II

With a newly developed 20.2-megapixel 35mm full-frame Canon CMOS sensor, the EOS-1D X Mark II offers continuous shooting speeds of up to 14 frames per second and up to 16 fps in Live View mode. The Dual "DIGIC 6+" processors offer high-speed transfer for up to 170 Raw images and unlimited JPEGs per burst. The camera is also capable of shooting 4K 60p and Full HD 120p video with Dual Pixel CMOS AF. Using the optional wireless transmitter, the camera supports the new high-speed IEEE 802.11ac standard. Focusing speed and accuracy has been enhanced with an improved 61-point viewfinder AF and an improved AI Servo II+ predictive AF algorithm for better accuracy.



ENTRY LEVEL DSLR LENS

Tamron 18-200mm f/3.5-6.3 Di II VC
 When entry-level photographers start to look beyond their kit lens, or purchase a lens with their camera body, they will be excited to own a lens that offers a wide range of focal length options, and the Tamron 18-200mm fits the bill. Constructed with 16 elements in 14 groups, this lens for APS-C-format cameras yields a 35mm equivalent of 28-310mm. It is compact: it has an average of 3.8 inches in its various mounts and is said to be the world's lightest (14.1 ounces) in its class. Vibration reduction helps users get steady pictures, particularly at the longer focal length ranges.



DSLR TELEPHOTO ZOOM LENS

Sigma 50-100mm f/1.8 DC HSM | Art
 This constant aperture APS-C zoom lens offers an effective focal length of 75-150mm. It is constructed with three FLD ("F" Low Dispersion) and one SLD (Special Low Dispersion) elements (21 elements in 15 groups in total) and contains an updated (slimmer) Hyper Sonic Motor for accurate and fast AF performance. The lens has a nine-blade, rounded diaphragm and has a close-focusing distance of approximately 3.3 feet. As with all Sigma SGV lenses, each lens unit is individually tested prior to shipping and works with the Sigma USB Dock to allow firmware updates and focus calibration in the future.



DSLR WIDE ANGLE ZOOM LENS

Sigma 24-35mm f/2 DG HSM | Art
 Having the distinction of being the world's first full-frame f/2 (constant aperture) zoom lens, the Sigma 24-35mm f/2 DG HSM | Art is constructed with 18 elements in 13 groups, has a nine-blade, rounded diaphragm, premium FLD ("F" Low Dispersion) glass elements and seven SLD (Special Low Dispersion) glass elements, of which two are aspherical lenses. The minimum aperture is f/16 and the close-focusing distance is 11 inches. An updated AF algorithm delivers smooth, accurate, and fast AF plus the Super Multi-Layer Coating controls flare and ghosting. Filter diameter is 82mm, yet the lens is surprisingly compact at 3.4x4.8 inches.



DSLR PRIME LENS

Tamron SP 35mm f/1.8 Di VC USD
 At approximately 3.14 inches long and between 1 and 1.05 pounds in weight (depending on camera system), the full-frame Tamron SP 35mm f/1.8 is constructed with 10 elements in nine groups. It utilizes two molded glass aspherical elements with one LD (Low Dispersion) and one XLD (eXtra Low Dispersion) element, which greatly reduces chromatic aberration. The lens has excellent resolution from corner to corner, no vignetting even at full aperture, a minimum focusing distance of about eight inches, and Tamron's VC (Vibration Compensation) system (except on the Sony mount version). Full-time manual focus override is always available, a great aid when doing close-ups.



PROFESSIONAL DSLR LENS

Sigma 20mm f/1.4 DG HSM | Art
 The full-frame Sigma 20mm f/1.4 lens was designed to bring out the full potential of high megapixel DSLRs. It incorporates two FLD ("F" Low Dispersion) glass elements and five SLD (Special Low Dispersion) glass elements (15 elements in 11 groups). The design minimizes transverse and axial chromatic aberration and, with Super Multi-Layer Coating, diminishes the effect of strong backlighting. It has an optimized AF algorithm for accurate and smooth AF functioning, and incorporates Thermally Stable Composite compound material that adds to its extreme temperature performance. The lens has a nine-blade, rounded diaphragm, and a brass bayonet mount for long-term performance.



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➔ **MEDIUM FORMAT CAMERA**

Phase One XF 100MP

The Phase One XF 100MP is a “full-frame” medium format CMOS sensor camera. (Note: Full frame in medium format is 2.5x larger than “full frame” in a DSLR.) It features 16-bit color depth and an unparalleled 15 stops of dynamic range, plus delivers an ISO range of 50 to 12,800 with no significant loss of image quality at the extremes. The system allows for up to 60-second exposures in full 100-megapixel resolution and Electronic First Curtain Shutter technology, which greatly reduces any adverse vibration effects on high-resolution images; it is automatically activated when shooting in Vibration Delay or Mirror Up modes.



➔ **MIRRORLESS CSC ENTRY LEVEL**

Fujifilm X-T10

With many of the features of higher-end X-series cameras, the X-T10 is a viable option for hobbyists and creative photographers who want to become involved in quality imaging and extensive lens offerings at an affordable price. The X-T10 has a 16-megapixel X-Trans CMOS II APS-C-sized sensor and Fujifilm’s EXR Processor II inside its magnesium alloy body. Native ISO is 200 to 6400, expandable to 100/51,200. Viewing options include a 2.36-million-dot OLED EVF and a tilting three-inch, 920K-dot LCD. The camera can record Full HD videos and has a built-in stereo microphone, plus Wi-Fi connectivity and the option for remote control operation from a smartphone or tablet.

➔ **MIRRORLESS CSC ADVANCED**

Olympus OM-D E-M10 Mark II

This Olympus Micro Four Thirds camera features a 16-megapixel Live MOS sensor and a TruePic VII processor with ISO sensitivity up to 25,600. The camera can deliver full-res framing rates of 8.5 per second that take advantage of its 81-point “FAST” AF system. Viewing is via a 2.36-million-dot OLED EVF with 100 percent field of view and a 120 frames per second refresh rate. Other attractive features include Full HD video capability at 60 fps, an AF targeting pad that can be traced on the rear touchscreen, a simulated optical finder that delivers a high dynamic range image, in-body five-axis image stabilization, and a three-inch tilting and touchscreen LCD.



➔ **MIRRORLESS CSC EXPERT**

Fujifilm X-Pro2

This rangefinder-style camera features an Advanced Hybrid Multi Viewfinder that allows users to instantly switch between optical and electronic finders. The camera has a new 24.3-megapixel X-Trans CMOS III sensor that teams with a new X-Processor Pro to deliver an ISO range up to 12,800, extendable to ISO 100 and 25,600/51,200. The X-Pro2 has a splash- and dust-resistant body with more than 61 points of weather sealing. The camera delivers Full HD video 1080p at 60 frames per second with a bit rate of 36Mbps plus various other framing rates for special effects and worldwide compatibility. For stills, phase-detection AF and predictive AF aid in delivering continuous shooting up to 8 fps.



➔ **MIRRORLESS CSC PROFESSIONAL**

Sony Alpha A7R II

The Sony A7R II has a 42-megapixel full-frame Exmor R CMOS sensor housed inside a full magnesium alloy body. It features a hybrid AF system with 399 on-sensor phase-detection points and 25 contrast-detection points that allow still shooting at up to 5 frames per second at full AF. The A7R II can deliver 4K video with in-camera processing and recording and Full HD (1080p) video in either NTSC or PAL at 60p/30p/24p or 50p/25p using the high bit rate XAVC S format. It offers fully customizable color and gamma controls, including the same S-Log2 and S-Log3 Gamma curves found in high-end Sony cinema cameras. The ISO range is 100 to 25,600, with extendable ranges to ISO 50 to 102,400.



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↑ CSC ENTRY LEVEL LENS

Panasonic Lumix G 25mm f/1.7 ASPH
The Panasonic Lumix G 25mm f/1.7 is a fast Micro Four Thirds lens (50mm equivalent) that supports high-speed digital signal exchange at 240 frames per second and works smoothly with the Lumix G's contrast-detection AF system and DFD (Depth From Defocus) technology. It offers a close-focusing distance of 9.8 inches and has seven aperture blades plus uses two aspherical lenses and an Ultra-High Refractive Index lens. The lens joins the family of impressive f/1.7 primes from the company that includes 20mm, 15mm, and 42.5mm focal lengths.



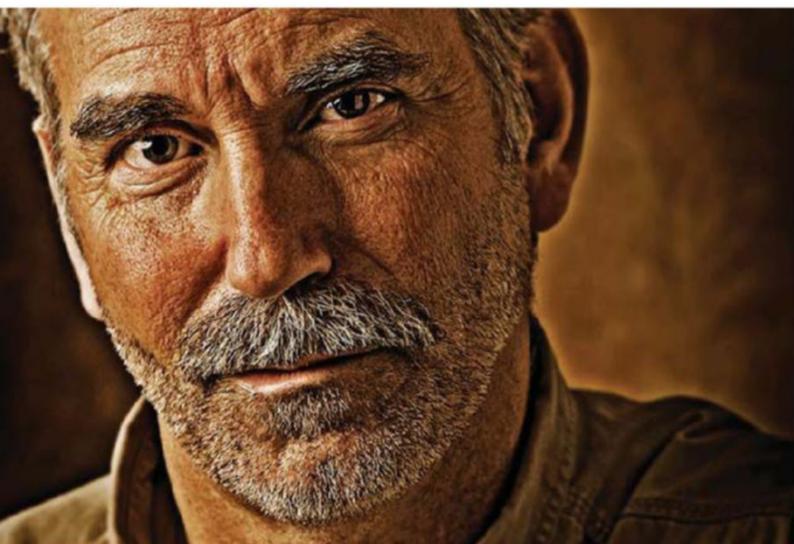
↑ CSC TELEPHOTO ZOOM LENS

Fujinon XF100-400mm f/4.5-5.6 R LM OIS WR
Yielding an equivalent 152-609mm focal length range, this lens is constructed with 21 elements in 14 groups and includes five ED lenses and one Super ED lens. It is water and dust resistant; a fluorine coating has been added for further protection in outdoor shooting conditions. The Fujinon XF100-400mm is designed for handheld shooting with a five-stop image stabilization system and twin linear motors for fast AF. It features a rounded nine-blade aperture and is compatible with the XF1.4X TC WR teleconverter.



↑ CSC WIDE ANGLE ZOOM LENS

Olympus M.Zuiko Digital ED 7-14mm f/2.8 PRO
The Olympus ED 7-14mm PRO (35mm equivalent: 14-28mm) is a lightweight lens (under 19 ounces) constructed with three Super ED lenses, one ED lens, and two EDA (aspherical) lenses to minimize peripheral chromatic aberration. This constant aperture zoom is weather sealed in 11 areas, which allows its use in rain, in snow, and at the beach. The lens has an L-Fn button with 27 assignable functions and a Manual Focus Clutch with a built-in Hyper Focal Scale. Those who enjoy close-up photography will enjoy the slightly less than eight-inch close-focusing capability and the creative freedom an f/2.8 aperture affords.



MIKE MOATS: Professional Nature Photographer

Mike Moats is an award winning, professional nature photographer from Sterling Heights, Michigan. He started shooting as a hobby in 2001 and it quickly grew into a full time business. To date he has had articles and images published in Outdoor Photographer Magazine, Natures Best Magazine, PC Photo Magazine, Nature Photographer Magazine, Photolife, Whisper In The Woods, Michigan Game Finder, NANPA's Expressions Books, Pure Michigan book, and Fujifilms Newsletter (Cable Release).

Mike loves traveling across the country teaching various macro workshops, and he also teaches macro through e-books and online courses. To learn more about macro workshops please visit the links below.

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↑ Alta Pro Tripods

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~ Mike Moats



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⬆ **CSC PRIME LENS**

Sony FE 85mm f/1.4 GM

The full-frame Sony FE 85mm f/1.4 GM lens has a new XA (extreme aspherical) element plus three ED elements that can provide a fascinating combination of extremely high resolution of focused areas with a pleasing, soft bokeh in the background. The lens has a circular aperture with 11 blades plus Sony's Nano AR coating, to reduce ghosting and flare. It contains a ring drive SSM (Super Sonic Wave Motor) to drive focusing and two position sensors for enhanced focus control. Constructed with 11 elements in eight groups, the lens is dust and moisture resistant.



⬆ **EASY COMPACT CAMERA**

Canon PowerShot ELPH 360 HS

Canon continues to offer pocketable yet full-featured compacts that offer many more options and higher photo quality than camera phones. The PowerShot ELPH 360 HS sports a three-inch LCD and a 12x optical zoom lens with a built-in optical Image Stabilizer. Keeping connected is easy with a dedicated Wi-Fi button and NFC. The 20.2-megapixel CMOS sensor and DIGIC 4+ image processor deliver excellent quality even in low light. It captures 1080p Full HD video with the ability to create a "highlight reel" in camera.



⬆ **EXPERT COMPACT CAMERA**

Canon PowerShot G5 X

The G5 X is a 20.2-megapixel camera with a one-inch High Sensitivity CMOS sensor and DIGIC 6 processor that can deliver nearly 6 frames per second still images and Full HD video. The integral 24-100mm lens (equivalent) has a maximum aperture of f/1.8 that drops to only f/2.8 at the telephoto setting, a nine-blade aperture, and close focusing of two inches. The camera's EVF has 2.36 million dots and 100 percent coverage, with a refresh rate of up to 120 fps. A built-in eye sensor switches from the EVF to the touchscreen on the three-inch Vari-angle LCD. The camera's hot shoe is compatible with all Speedlite flashes in the EOS system.

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↑ FULL-FRAME COMPACT CAMERA

Sony Cyber-shot RX1R II

Sharing the same 42.2-megapixel sensor and Bionz X image processor with Sony's A7R II, the RX1R II has an integral Zeiss Sonnar T* 35mm f/2 lens. The sensor has an impressive 399 phase-detection AF points that work in conjunction with 25 contrast AF points to achieve fast and efficient focus. The camera has the world's first optical variable low-pass filter that can be set to off, standard, or high, with low-pass filter bracketing also available. Viewing is via a four-glass element EVF or a tiltable three-inch, 1.2-million-dot LCD. The camera can deliver Full HD video with a choice of various framing rates.



↑ SUPERZOOM CAMERA

Panasonic Lumix DMC-FZ300

With an integral 25-600mm Leica DC Vario-Elmarit lens and splashproof and dustproof construction, the Panasonic FZ300 becomes the ideal traveling companion for enthusiast photographers. The FZ300 offers a 12.1-megapixel 1:2.3-inch High Sensitivity MOS sensor and a powerful image stabilization system for both stills and HD video recording. There are numerous still and video shooting and creative modes, including 4K video recording and Raw still modes. The FZ300 sports a large 1,440K-dot OLED Live Viewfinder as well as a tiltable rear screen and features Panasonic's Depth From Defocus (DFD) and AF technology that yields AF speeds up to 0.09 seconds and burst shooting with AFC up to 6 frames per second.



↑ RUGGED CAMERA

Olympus Stylus Tough TG-870

Appealing to photographers who want to make images and videos under the most challenging conditions, the Olympus Stylus Tough TG-870 can be submerged up to 50 feet, withstand drops up to nearly 7 feet, and function in temperatures as low as 14 degrees F. A 180-degree tilting monitor means images can be made with virtually any point of view. The 16-megapixel BSI CMOS sensor and TruePic VII processor handles stills as well as Full HD 1080/60p video, plus there is built-in Wi-Fi and an upgraded GPS feature that can position in under 10 seconds. The TG-870 has numerous exciting shooting modes, including Nighttime Live Composite, Sportcam, TimeLapse Movie, and Sport Burst modes.



↑ PREMIUM CAMERA

Leica SL

This L-mount Leica has the classic form and ergonomics associated with the brand and a weather-resistant body made from two blocks of solid aluminum. It offers a 24-megapixel full-frame CMOS sensor (with no low-pass filter) coupled with Leica's engine from the Maestro II series and delivers an impressive ISO 50 to 50,000 range. The camera can shoot full-resolution images at a rate of 11 frames per second and has a 2GB buffer that allows for up to 33 DNG or unlimited JPEG bursts. Viewing is enhanced via a 4.4-megapixel EVF and a 2.95-inch LED touchscreen finder. It can also capture UHD 4K video at 30 and 25 fps and DCI 4K recording at 24 fps in Super35 mode.



↑ CAMCORDER

Panasonic HC-WXF991

Panasonic's 4K Ultra HD Camcorder has an integral Leica Dicomar 20x optical zoom lens (4K 16:9—30.8-626mm equivalent; still image 3:2—34.5-690.3mm) with five-axis Hybrid Optical Stabilization. It features 4K Cinema in-camera editing and effects, including Dolly Zoom, Slow/Quick Motion, and 4K Post Cropping, plus can deliver 4K Photo stills from video frames. It also offers in-camera downsampling for 1080p Full HD displays and built-in Wi-Fi links up to three mobile devices to capture multiple scenes simultaneously with the Wireless Multi Camera function. The camcorder's exclusive HDR mode helps handle high-contrast conditions. Viewing is through a 1.5-million-dot EVF or a three-inch LCD monitor.



↑ PHOTO PRINTER

Canon imagePROGRAF PRO-1000

Combining the ease of desktop use and a 17-inch wide cut sheet printer with many features from Canon's higher-end pro printer models, the imagePROGRAF PRO-1000 uses 11-color (plus Chroma Optimizer) Lucia Pro inks. Inks are delivered via a Fine print head with a tubular ink delivery system that results in faster print speeds and enables stable high-quality printing. There is a newly formulated Photo Black ink and both Photo and Matte Black have their own channels so no ink swap is needed when changing papers. The vacuum paper feeding system keeps paper flat during printing, thus more accurate ink placement regardless of paper weight and type.



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TRIX-2500

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➔ INKJET PHOTO PAPER

Ilford Galerie Prestige Gold Fibre Gloss 310gsm
 Made expressly to match the look and feel of traditional fiber-based darkroom paper, Ilford Galerie Gold Fibre Gloss offers an ideal surface and look for black-and-white images as well as reproducing a wide gamut for color images. The paper range is available in both roll and cut sheet and is made with 100 percent cotton rag and no optical brighteners, yet has a crisp white and deep black response. The 310gsm weight means a durable surface that is perfect for framing and presentation portfolio prints. The "Baryta-like" surface is akin to a subtle gloss look, and while the paper can be used in dye and pigment ink printers, the latter will certainly deliver both the best quality and longevity the paper can offer.



AFFINITY PHOTO

➔ IMAGING SOFTWARE

Serif Affinity Photo
 Affinity Photo is an affordable, non-subscription-based software that offers just about every option enthusiast photographers could need for image processing and creative effects. The software includes comprehensive Raw file format editing, numerous color space options, compatibility with the most common file formats, and live previews as effects are applied. Other options include photo stitching, new alpha selections, black point selection, advanced lens corrections, and more, including a large range of high-end filters such as lighting, blurs, shadows, and tilt. Indeed, Affinity offers many of the most used tools found in more expensive and even pro-level image-editing software.



➔ TRIPOD

Manfrotto 190 Go! Carbon Fiber
 There is no question that tripods both enhance still and video images as well as open up many more shooting possibilities, yet their weight and size often discourage photographers from carrying them. Manfrotto has responded with an emphatic Go! with their new 190 Go! Carbon, a full-featured tripod that is light and collapses down to a very portable size. When fully extended the tripod can achieve a maximum height of 57 inches yet it can be collapsed down to a bit over 18.7 inches. The new model weighs just 2.9 pounds and features twist-lock legs, a 90-degree center column that can be used for horizontal and macro work, and a low shooting height of 2.76 inches. The tripod can support up to 15.43 pounds.



➔ PROFESSIONAL FLASH SYSTEM

Phottix Indra360 TTL Flash System
 Designed for both studio and location work, the Phottix Indra360 TTL (360 Ws) has a built-in Phottix Odin Flash Trigger/Receiver for up to 330-foot radio coverage and 39-foot indoor optical coverage with Canon and Nikon systems. The unit's smaller lithium-ion battery makes for an ideal setup for wedding and event photographers who generally have to move about with some ease during the job. It also comes in handy when doing daylight off-camera fill and lighting of other ambient lighting situations due to its high-speed sync capability. The unit offers eight stops of power adjustment, from full power to 1/128th with TTL exposure levels adjustable in +/-3 EVs.



➔ STORAGE MEDIA

Toshiba TransferJet SDHC Card
 The ability to transfer images wirelessly from camera to other devices has numerous manifestations, some of which require fairly complicated procedures. The new Toshiba Class 10 SDHC card features a TransferJet system that allows any camera to become a wireless transmitting device. TransferJet is a close proximity, wireless transfer technology that offers a safe and simple connection with a high data throughput. Touching two TransferJet devices together automatically initiates transfer. TransferJet adapters are available for USB, micro USB, and Lightning ports to allow compatibility with numerous devices.



➔ PORTABLE FLASH

Nissin i60A
 The Nissin i60A is a shoe-mount flash that can be used with Canon, Nikon, Sony, and Fujifilm cameras. The flash has an integral 2.4GHz radio receiver that is compatible with the Nissin Air System and Air 1 radio Commander unit. The i60A has a Guide Number of 196 (ISO 100, 200mm lens) and can be zoomed to optimize coverage in a 24-200mm range. The back of the unit has a colorful LCD display and two control dials; the flash can be battery powered with a high voltage power pack port connection. The i60A also has a TTL Optic Wireless Slave Mode as well as settings for eight channels in A/B/C groups.



PHOTO MONITOR

BenQ SW2700PT

BenQ's SW2700PT 27-inch monitor is aimed specifically at photographers who want IPS technology and 99 percent Adobe RGB color space coverage, as well as a brightness level that exceeds 380 lux and high contrast for rendering deep blacks with uniformity across the panel. The monitor's other remarkable assets include inputs and outputs such as Display Port, DVI, and HDMI, with USB 3.0 ports, an SD card reader, and a unique OSD controller. The BenQ SW2700PT can be hardware color calibrated, which is essential for serious photo retouchers and graphic designers alike. Last but not least, a detachable hood underlines the professional attributes of this affordable but, in essence, high-end monitor.



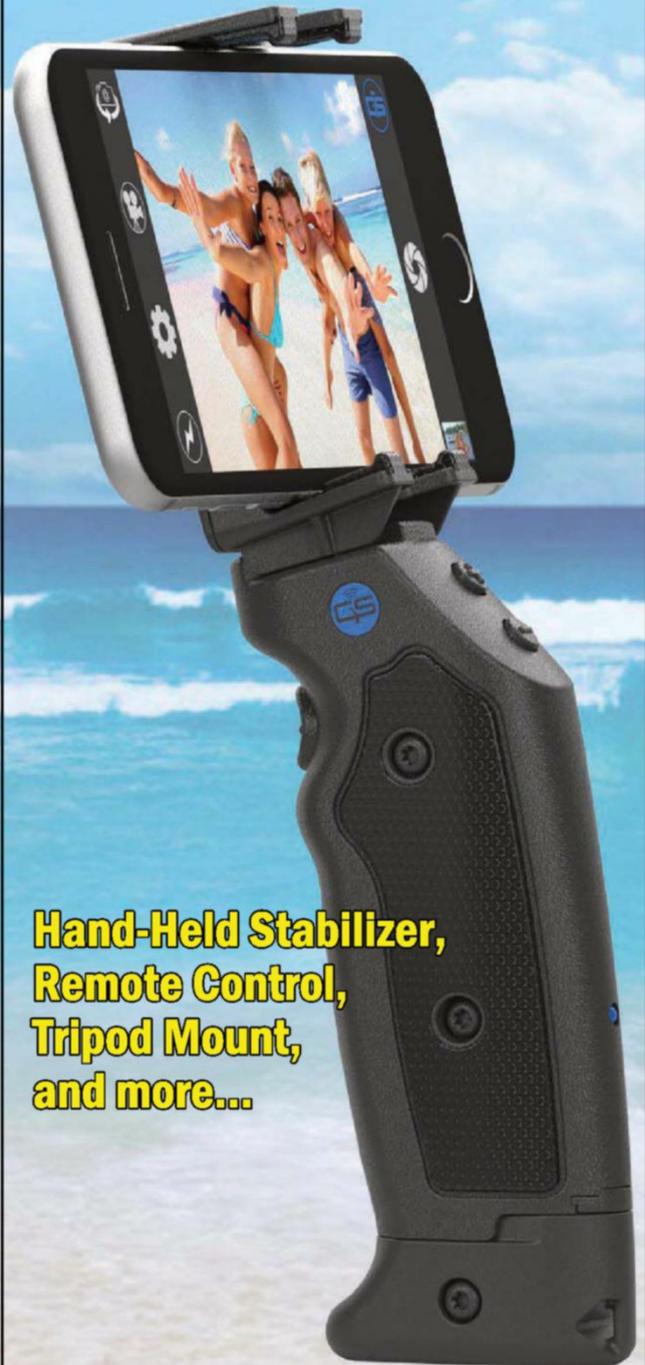
MOBILE IMAGING DEVICE

DxO One

Using an iPhone as a viewfinder and connecting the small, lightweight (3.8 ounces; 2.65x1.9x1 inches) DxO One camera via the Lightning port results in a portable imaging solution that delivers superior image quality while retaining all the connectivity features of the smartphone itself. Quality image results begin with the unit's one-inch type BSI-CMOS sensor, which offers high dynamic range and superior low-light capability. The 32mm (equivalent) f/1.8 aspherical lens has six elements and a six-blade aperture. The option also exists to capture images without the iPhone and to save them on the DxO One's internal microSD card.

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↑ CAMERA DRONE

Yuneec Typhoon Q500 4K

The Typhoon Q500 4K comes with a "Personal Ground Station" remote control featuring 2.4GHz RC (10 Channels) and 5.8GHz Wi-Fi transmission. Combined with a built-in 5.5-inch touchscreen display, it offers a wide feature set to control the drone. The setup includes an integrated three-axis precision CGO3 4K gimbal camera that delivers 4K/30 frames per second as well as 1080p/120 fps slow-motion capability. The unit can also deliver 12MB stills. A clever "Watch Me" mode can be set up to follow the photographer in action when he or she is on the go. The ProAction SteadyGrip included in the setup plus the unit's app for mobile devices allows for handheld use of the camera on the ground.



↑ ACTIONCAM

Sony HDR-AS50

The Sony HDR-AS50 is a durable and highly portable POV video camera that weighs a mere two ounces and measures only 0.96x1.87x3.37 inches. It is supplied with an underwater housing that can be used down to almost 197 feet and can be linked with a new Live View Remote with full camera command functionality that can be mounted virtually anywhere, including as wristwear. The camera features SteadyShot image stabilization, a must for action shooting, 4K Time-Lapse Capture, enhanced Full HD video capture, a built-in stereo microphone, and a Zeiss Tessar lens. To add to the excitement the angle of view can be varied between "Wide" and "Narrow" in two levels, plus zoom mode allows the user to zoom while shooting.

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IMAGING INNOVATION

Nikon SnapBridge

Easy and fast camera connectivity has been a goal for many years that has all too often eluded manufacturers. SnapBridge offers a seamless, one-time setup and an energy-efficient Bluetooth Low Energy powered connection. Once installed, SnapBridge enables the continuous and immediate transfer of images from the camera to up to five paired mobile devices as they are captured; this does not preclude mobile connectivity during transfer. Images are transferred to smart devices as 2-megapixel (Full HD) images in JPEG format with the ability to include two types of embedded information, including copyright. In addition, the app's remote shooting function can be used as a viewfinder and, in certain cameras, a control panel for settings.

DESIGN

Ricoh Theta S

The slim and wearable design of the Ricoh Theta S matches its unique image capture system. The Theta S has a 14-megapixel 1:2.3-inch sensor/processor that delivers stills or videos with a 360-degree spherical look. It can record Full HD videos for up to 25 minutes and offers manual control of shutter speeds for settings up to 60 seconds. Its built-in memory can store up to 8GB of images. The camera allows easy sharing with incorporated Wi-Fi and can also be used for live streaming. ■



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A NEW MEDIUM

TOM OLDHAM SHOOTS 100MP MEDIUM FORMAT FOR A FRESH TAKE ON PORTRAITURE *By Jack Neubart*

TOM OLDHAM HAS BEEN SHOOTING PORTRAITS for 20 years and is today widely known for his expertise in medium format photography, notably with Hasselblad camera systems. He began his freelance career at the age of 29, having worked as a technician at the Plymouth College of Art for a few years after completing his studies there. He honed his craft by contributing to various music magazines in the United Kingdom. He even launched his own lifestyle magazine, in collaboration with a friend, and that thrust him into the limelight as a freelance lens for hire.

When he embarked on this freelancing journey, in an age when analog photography dominated, he found himself working first with Canon EOS, then Nikon manual SLRs. He'd even shot with Hasselblad early on, in his college days. A taste for medium format would linger, although he took a circuitous route getting there. First he had to make the switch to digital, which he did in 2003, to the Canon EOS 10D, and later to Nikon DSLRs.

THE MOVE TO HASSELBLAD
Why switch to medium format, specifically Hasselblad?

Tom Oldham: I had always been a fan of Hasselblad and had been hugely respectful of its legendary status as *the* go-to medium format camera. Then one day, after shooting for a week on a high-end DSLR, I had a real epiphany. I thought, "How can I separate my aesthetic from everyone else's? Probably by not using the same kit as everyone else," I reasoned. I'd decided to take the leap and buy a Hasselblad kit and not look back. Then I kept getting asked why my pictures looked different, which justified the whole expense to me instantly. In this wonderful digital democracy, where everyone can access

AMANDA FRÄNDEN

Hasselblad gave Tom Oldham carte blanche to shoot this H6D promotional campaign, so he chose to focus on CrossFit athletes, "an emerging sport that hasn't been widely documented. My thinking behind this was, if I'm putting my name to it, I really want to ensure this camera system can work in every circumstance I can throw at it, within practical limits." Oldham lit the athlete with two lights in the gym at Crossfit Solid, Stockholm. Technical info: Hasselblad H6D-50c; ISO 200, f/8, 1/750 second.

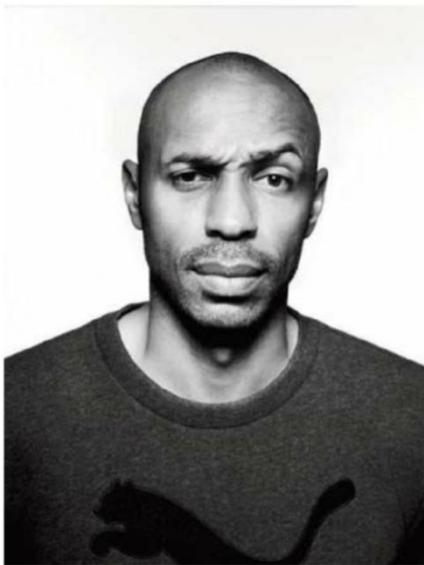
a Raw file of reasonable quality, this is what it takes to separate yourself from the crowd. And quality always prevails, I believe.

Now that we have a 100MP version of the H6D, how do you feel that will change photography and how do you personally feel about shooting with that much resolution?

It's hard to say what it will change as such, though doubling the standard level of quality is a beautiful thing. We can all enjoy seeing a huge leap in the quality of our output. Last year I had images enlarged to 60-feet high at the IMAX theatre in London. They looked great having been generated on the Hasselblad 50c. Now imagine those same images with effectively half the enlargement! It has

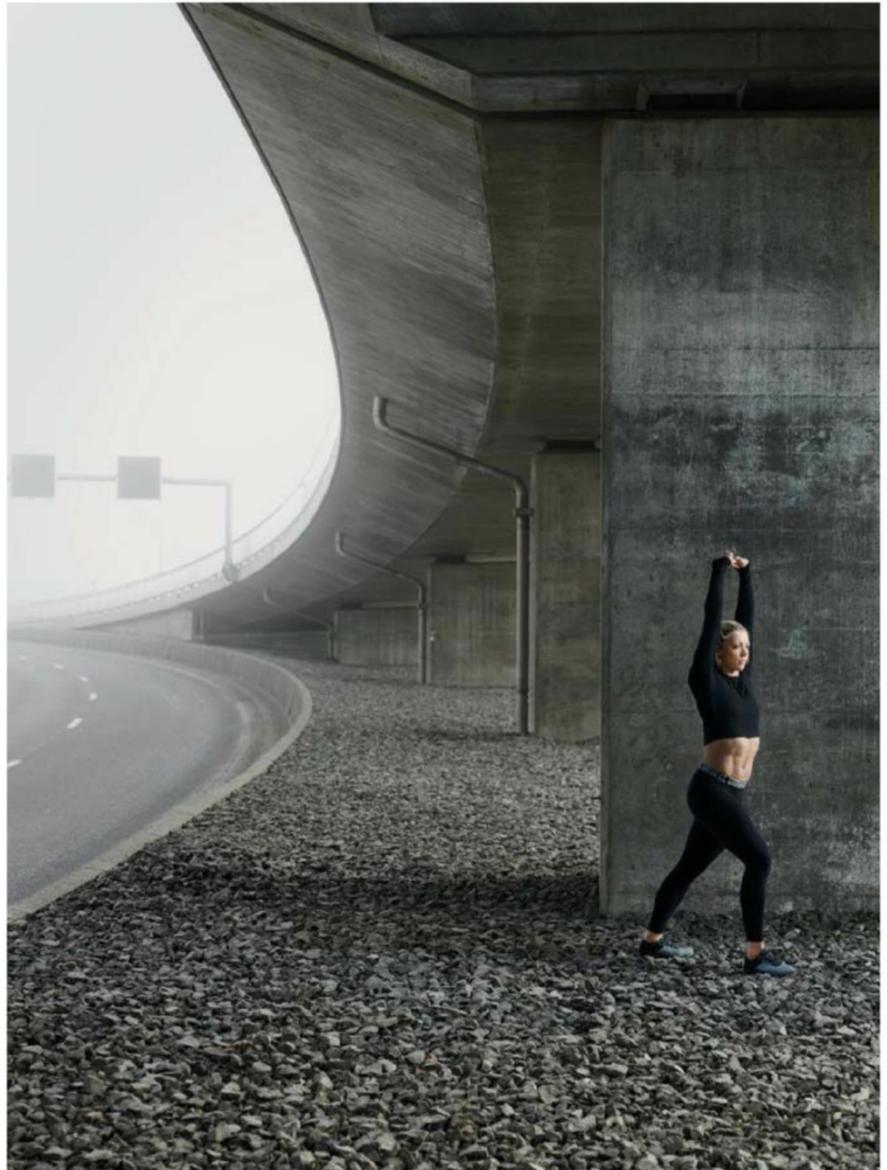


NICK CAVE (FOR MOJO MAGAZINE)
"In a situation like this, you don't need the person to do anything other than to do 'their thing,' which in Nick Cave's case is his darkness." As befitting this talented individual's persona, Oldham lit him dramatically. The setting was a live music venue in London, the famous Hammersmith Odeon. Technical info: Hasselblad H5D-50; ISO 100, f/12, 1/200 second.



THIERRY HENRY (FOR SHORTLIST MAGAZINE)
"I shot this portrait of the French footballer (soccer player) in a Central London hotel. Knowing we were pressed for time, I said, give me ten poses, ten frames, and we're done. He complied, and we were out of there. Obviously, I had the lights set up in advance, with a beauty dish on his face and two lights on the background." Technical info: Hasselblad H5D-50c; ISO 100, f/13, 1/350 second.

to be good, especially when coupled with the Hasselblad glass and other in-camera refinements of the new H6D series. I see this new system as a game changer for the industry. And while it happily shoots at 100MP, it also does so securely, to two ports simultaneously or via USB-3 Type C, which is very stable and superfast. The outstanding quality of this camera for



AMANDA FRÄNDEN
"We got an early start, about 7 a.m., with our athlete stretching just before a run." Supplementing the surrounding daylight was a diffused head through a scrim. Technical info: Hasselblad H6D-50c; ISO 200, f/4, 1/350 second.

me extends to every aspect: ergonomics, speed, incredibly detailed files, and usability via the touchscreen. It has been so well designed and engineered for fast use and ease of workflow. You can now just shoot without worry—it's become a conduit to your creativity.

A FASCINATION WITH PEOPLE What got you started shooting portraits?

A fascination with faces and people. It's quite addictive and can never be turned off. I was shooting a lot of music—parties, gigs, raves, then bands, but the hours were killing me. It's not exactly the healthiest environment to constantly find yourself in. So, since it seemed the next logical step and a way to change my lifestyle

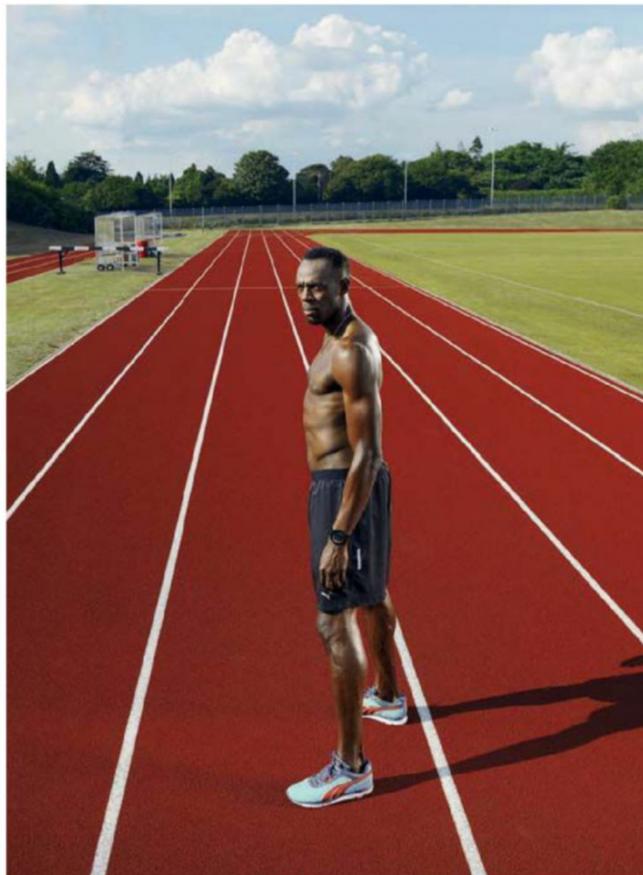
and ensure a more enduring career, I moved into portraiture. I will never tire of meeting and shooting interesting people. The people I meet inspire me to keep pushing my work to its limits, because I really love what I do. You have to, or else the highs and lows would be intolerable.

Does medium format define the way you shoot and how you approach your subject?

It doesn't define it as such but it does slow down and make the whole process more deliberate. Nailing the quality and tone of your lighting becomes really important, and I always try to get this right in camera—despite having 15 stops of latitude (dynamic range) at my disposal on the 100MP.



GINGER BAKER (FOR MOJO MAGAZINE)
 "Ginger Baker was the drummer with the band Cream. Beyond that, I'll let the picture speak for itself. This was just a case of capturing all of that texture in his skin, which is a reflection on his life." Oldham shot this in Baker's home office, in South East England, using one light. Technical info: Hasselblad H5D-50c; ISO 100, f/11, 1/125 second.



USAIN BOLT (FOR PUMA)
 This portrait was shot at the athlete's training ground at Brunel University in West London. "He's absolutely brilliant to shoot. He's the coolest guy in the world." Lighting came from a silver Sunbounce from the right and another light from the left. Technical info: Hasselblad H5D-50c; ISO 200, f/11, 1/250 second.

How would you define your lighting style for portraiture?

I tend to light soft and process hard, meaning, with added punch. And I am always looking for detail in my shadows. You can reduce shadow intensity if needed, but you can't always find it if it's not there. Again, the latitude in this new H6D will help with that even further, though you still have to set the tone of that lighting just right because that's hard, and

WHAT'S IN OLDHAM'S GEAR BAG

- Two Hasselblad camera bodies: H6D-100c and H5D-50c
- Prime lenses for portraits: 50mm, 80mm, 100mm, and 120mm
- Two Broncolor Move packs and four heads and stands
- Two Photek Softlighters



HIS FAVORITE GEAR
 "Obviously my Hasselblad is my favorite camera," Oldham says. "Formerly the H5D-50c and now the new H6D-100c (100MP), for all the reasons outlined above."

therefore expensive, to correct afterwards, during retouching.

REMOVING NOISE AND CLUTTER

What defines your creative vision?
 Mine is a very clean and straightforward proposition, with as much visual noise and clutter removed as possible so the viewer can enjoy a very true interpretation of the portrait. It might involve a quirk, or an alternative view outside the norm, but it tells the story of that person, on that day, in that place, with me.

Who influenced your creative vision?

Every single image I ever see has some sort of impact on me, whether I'm dismissing it as poorly executed or celebrating it as a job well done. All photographers have to be very outward looking, I think. There's so much wonder to drink in. A friend e-mailed today telling me he was jealous and inspired by what I do. I knew what he meant, as I have that all the time with other photographers. All the big names inspire me, but then some kid on Instagram will blow me away with their high-intensity awesomeness, too. There

are great eyes everywhere and everyone shares everything so willingly.

How do you define your shooting style?

Fast and loose. I have a good sense of when the subject has had enough and I prefer not to push too far past that. One, because I'm a nice guy and you never know when they'll be in front of you again. And two, it becomes contrived when they're forcing it, which is especially relevant with musicians. I'm not a meticulous planner. In fact, so much of my work is walking into cold locations and framing up shots and then lighting it on the hoof. It's far more fun this way and always has a greater sense of accomplishment afterwards. With musicians I prefer to always have an idea and technique in mind, as you can't rely on them to always be up for it.

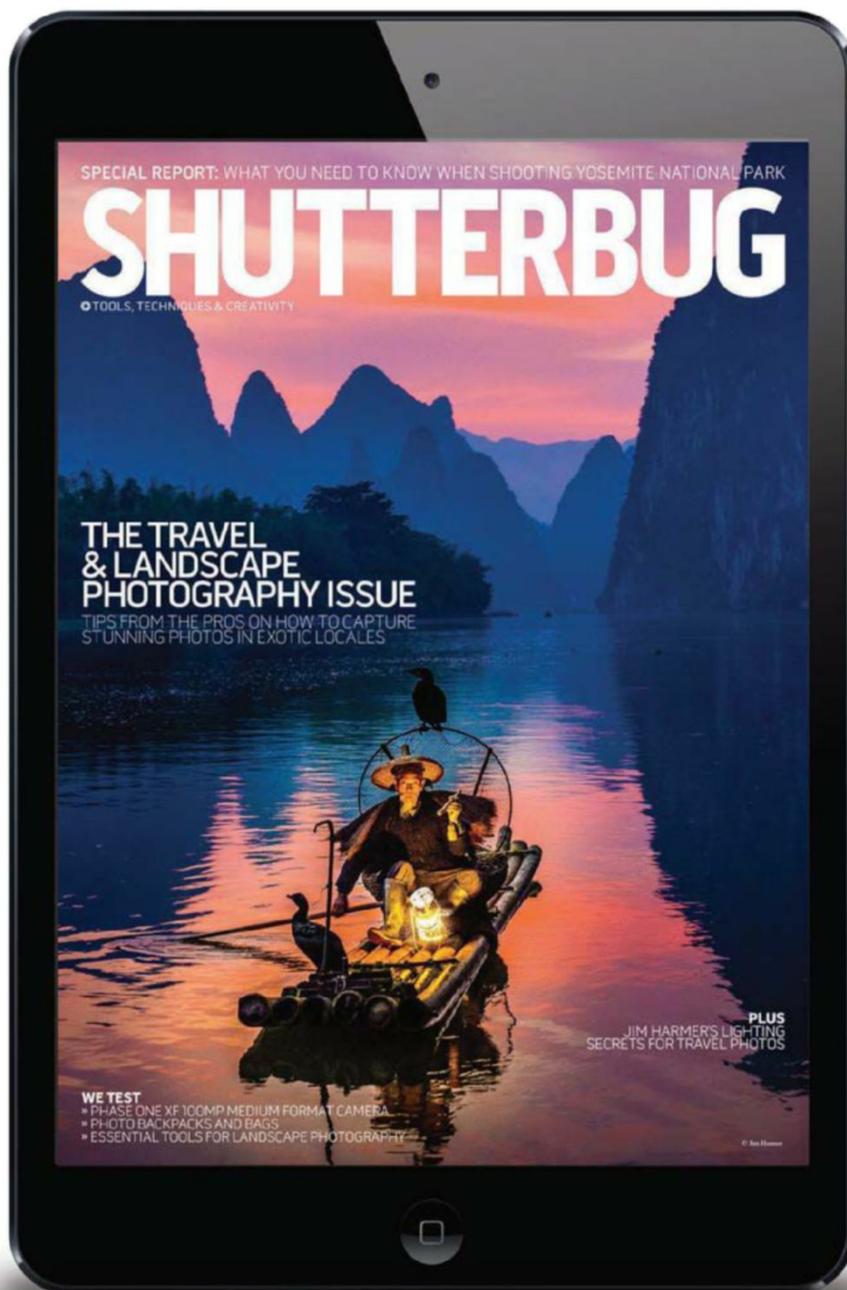
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Tom Oldham is based in London, England. To see more of his work, visit tomoldham.com or via Instagram/Twitter: @tommyphoto.

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TIPS & TECHNIQUES

From the Pros

1 Clean Sensor Verification

To verify that your camera sensor is reasonably clean, shoot a blank wall at the smallest lens opening while the lens is out of focus. Any black spots visible at 100 percent on your monitor are dust particles.

2 Speedlight Best Practices

Consider bringing a backup flash and rotating it with your main flash to help prevent its flashtube from overheating. A secondary benefit is that you'll also have batteries with a fuller charge for faster recycling and extended shooting time.

3 Before Plugging-In

For shoots requiring electricity, be sure to bring extension cords, adapters and a simple circuit tester. The tester will let you know if an outlet is properly wired and grounded—and thereby help you avoid damaging an expensive flash pack or other gear.

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Manfrotto Aluminum Tripod
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Patent # 6,454,228 B1 & 5,934,628



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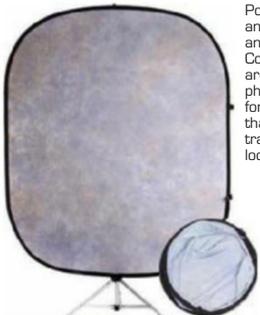
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Collapsible Backgrounds Reversible, Solid & Retro | Starting at \$149



Portable, compact, and simple to set up and take down, Savage Collapsible Backgrounds are an ideal choice for photographers looking for a versatile backdrop that easily makes the transition from studio to location.

- Perfect for On-Location Photography
- Sized to 5'x6' & Collapses to 26"
- Carry Bag Included



- Royal Tone CB100-KIT
- Lakeside CB102-KIT
- Monsoon CB104-KIT
- Indigo Nights CB106-KIT
- Spring Essence CB108-KIT
- Earth Tone CB110-KIT
- Blk/Wht CB112-KIT
- Dark/Lt Gray CB114-KIT
- Chroma Grn/Blue CB116-KIT
- Cream/Whit CB118-KIT
- Lt Pink/Whit CB120-KIT
- Lt Blue/Whit CB122-KIT
- Lt Green/Whit CB124-KIT
- Lt Purple/Whit CB126-KIT
- Matador Red/Whit CB128-KIT
- Navy Blue/Whit CB130-KIT
- Teal/Whit CB132-KIT
- Antique Blk RCB200-KIT
- Retro Blk/Whit RCB202-KIT
- Retro Blue RCB204-KIT
- Retro Green RCB206-KIT
- Retro Purple RCB208-KIT

All collapsible kits include a 5' x 6' background, carry bag and 8' aluminum stand.



Muslin Backgrounds | Starting at \$55



Solid Muslin	White 10'x12' SD0112	Black 10'x12' SD2012	Gray 10'x12' SD1212	Chroma Green 10'x12' SD4612
	10'x24' SD0124	10'x24' SD2024	10'x24' SD1224	10'x24' SD4624
Crushed Muslin	Sedona Red 10'x12' CM0112	Blue Winter 10'x12' CM0212	Mocha Bisque 10'x12' CM0312	Gray Skies 10'x12' CM0412
	10'x24' CM0124	10'x24' CM0224	10'x24' CM0324	10'x24' CM0424
Washed Muslin	Sky Blue 10'x12' WD5012	Light Gray 10'x12' WD5112	Forest Green 10'x12' WD5212	Brown 10'x12' WD5312
	10'x24' WD5024	10'x24' WD5124	10'x24' WD5224	10'x24' WD5324
Hand Painted Muslin	Venus 10'x10' 406026-1010	Verona 10'x10' 406018-1010	Petra 10'x10' 406010-1010	Olympia 10'x10' 406004-1010
	10'x20' 406026-1020	10'x20' 406018-1020	10'x20' 406010-1020	10'x20' 406004-1020
Retro Muslin	Retro Red 10'x12' RET0112	Retro Pink 10'x12' RET0113	Baby Blue 10'x12' RET0114	Antique Brown 10'x12' RET0115
				Antique Black 10'x12' RET0116

- Sewn on all sides for ultimate durability & superior visual appeal
- Machine washable • 100% cotton
- Seamless construction • Easy to clean

Kits

All muslin kits include a 10'x10' or 10'x12' background, and 10'x10' wide x 8'10" high, portable Porta-Stand.

- 10'x20' Muslin IGs
- Venus 62037-2820
- Verona 62037-1820
- Petra 62037-1020
- Olympia 62037-0420
- Milano 62037-0020
- Bogata 62037-2420



- 10'x12' Solid Kits
- White 01PAS-12
- Black 20PAS-12
- Green 46PAS-12
- Gray 12PAS-12
- Blk/Whit 0120PAS-12
- Blk/Whit/Grn 011220PAS-12
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Vinyl Backgrounds | Starting at \$87



Savage Vinyl Backgrounds provide an ultra-smooth background and have a unique matte finish that eliminates glare. Vinyl stands up extremely well to wear, resists scuffs and is very easy to clean.

- Durable glare-free, matte finish material
- Moisture-resistant, easily cleaned finish
- Sturdy core prevents wrinkles and sagging

Pure White	5'x7' V01-0507	Matte Black	5'x7' V20-0507	Chroma Green	5'x7' V46-0507	Pure White	5'x7' V70-0507
	8'x10' V01-0810		8'x10' V20-0810		8'x10' V46-0810		8'x10' V70-0810
	8'x20' V01-0820		8'x20' V20-0820		8'x20' V46-0820		8'x20' V70-0820
	9'x10' V01-0910		9'x10' V20-0910		9'x10' V46-0910		9'x10' V70-0910
	9'x20' V01-0920		9'x20' V20-0920		9'x20' V46-0920		9'x20' V70-0920
10'x10' V01-1010	10'x10' V20-1010	10'x10' V46-1010	10'x10' V70-1010				
10'x20' V01-1020	10'x20' V20-1020	10'x20' V46-1020	10'x20' V70-1020				

Kits

All Vinyl kits include a 5' x 12' Background, and Porta-Stand (10' 6" wide, 8' 10" high)

- White 62037-0512
- Black 62037-2012
- Green 62037-4612
- Gray 62037-7012



Green Screen Photo & Video Kits | Starting at \$65

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- Green Screen Wizard (PC/Mac)
- Removable hanging hooks

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Digital Photography Kit

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- 720 Digital Backgrounds
- Green Screen Wizard (PC/Mac)
- 8' Aluminum stand

DPK100



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VID1012



Premium Video Kit

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- Sony Movie Studio Platinum 12 software (PC)
- Portable Background Stand

VID1024-PAS



Mat, Mount & Presentation Board



TruBlack Presentation Board

A neutral deep board is significantly "blacker" than standard presentation board. Other presentation board tends to have gray or blue tones. TruBlack is made with a solid black core middle and lined on both sides with deep black. 4ply/40pt thickness.

8" x 10"	200 Qty	#414001
11" x 14"	100 Qty	#414002
16" x 20"	100 Qty	#414004



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8" x 10"	200 Qty	#30050
11" x 14"	100 Qty	#30052
16" x 20"	100 Qty	#30054



Mat Boards Black/White Cut Size

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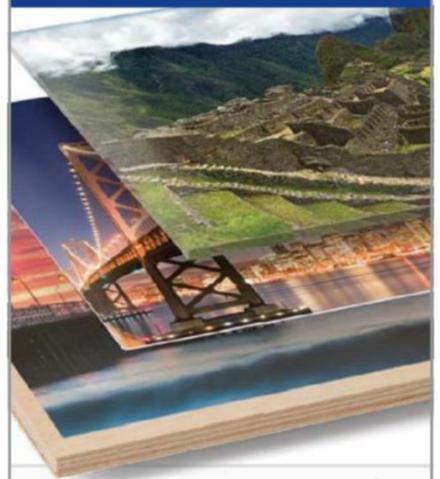


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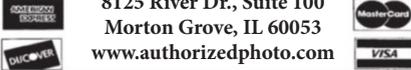
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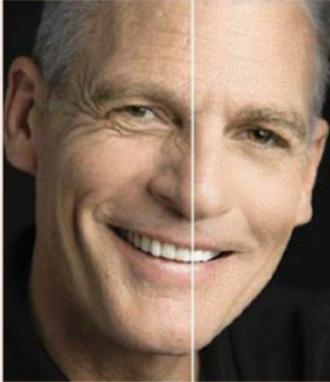
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CREATIVITY / FINAL SHOT

LANDING PAD

While *Shutterbug* reader Robert Dunham dreams of shooting the vast landscapes in Montana, he has found "great wonder and satisfaction in shooting macro" at his North Carolina home. He combines his two favorite pastimes, gardening and photography, by "taking a bunch of gear to the garden and splitting time between the spade and the camera." That gear typically includes his Nikon D800 or D300 along with a Micro-Nikkor 105mm f/2.8 lens and a Nissin MF18 Macro ringlight. The day Dunham captured this amazing shot of a translucent katydid nymph started like any other. He had his Nikon D800, macro lens, and ringlight at the ready. "I was all set up at f/36 to max my depth of field (at the expense of needing an ISO of 1600)," Dunham said. "I walked the garden paths and scanned for whatever scene appeared to me next (there are usually several stories unfolding at once) when I spotted this tiny katydid nymph landing on a tansy flower." Not knowing how long the creature might stay on the flower, Dunham quickly found his position and framed the shot. While he acknowledges that it was probably "somewhat accidental" that he captured the nice pastel green out-of-focus background, he will "gladly take full credit for that too." To see more of Dunham's work, visit dunhamartphoto.com.

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