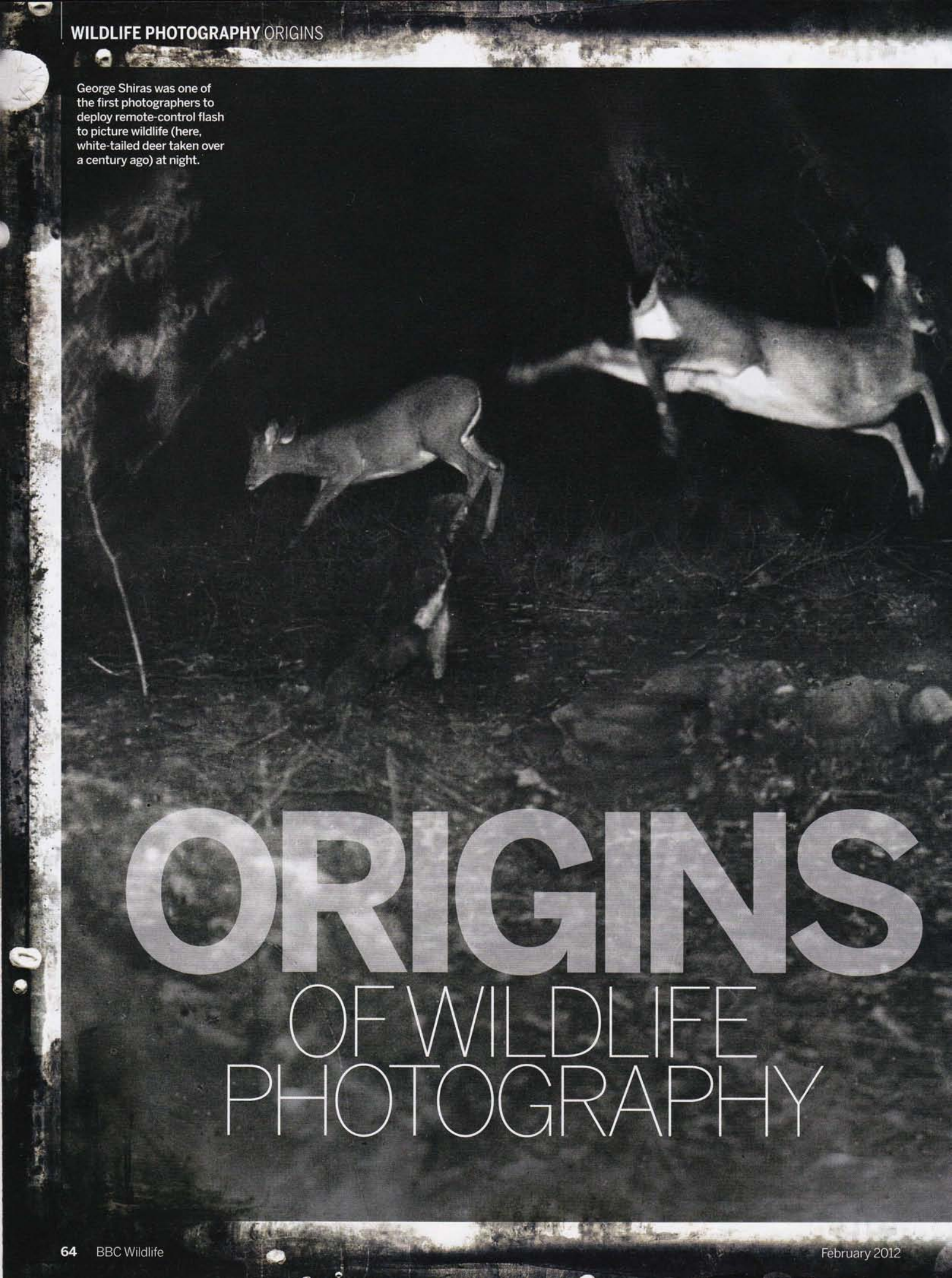
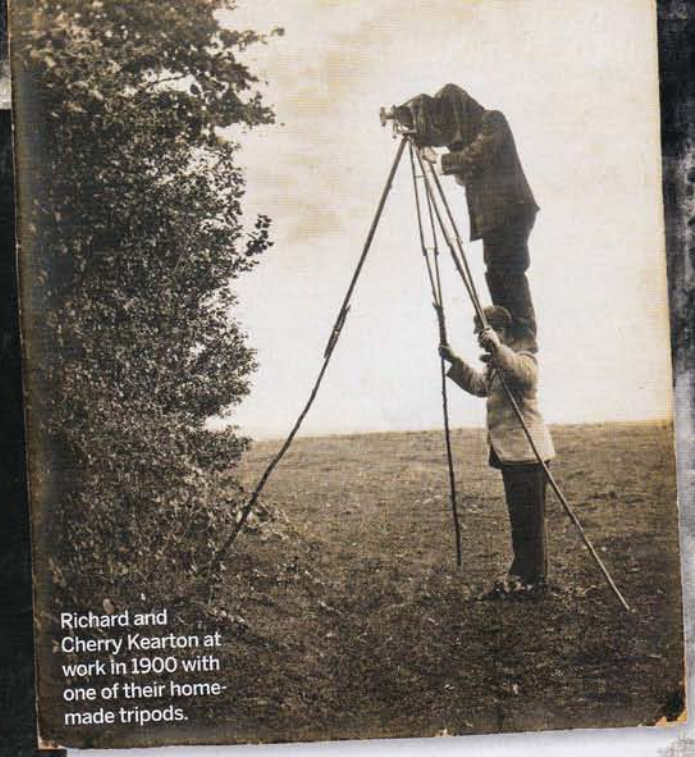


George Shiras was one of the first photographers to deploy remote-control flash to picture wildlife (here, white-tailed deer taken over a century ago) at night.

ORIGINS OF WILDLIFE PHOTOGRAPHY



Richard and Cherry Kearton at work in 1900 with one of their home-made tripods.

Deer: George Shiras/National Geographic Stock; quagga: The Natural History Museum, London; C & R Kearton: Royal Photographic Society/SSPL/Getty

Once upon a time, photographers dressed up as rocks and risked explosive equipment in their quest to take better pictures of animals. MARK CARWARDINE reflects on a century of innovation and derring-do.

THE EXPERT

MARK CARWARDINE hopes that one day he will take a wildlife photo that's still talked about 100 years later.

Remote cameras capture images of elusive snow leopards; high-speed electronic flash freezes every feather of a hummingbird in midair; creative blur reveals sprinting cheetahs as we've never seen them before. We are so used to seeing amazing wildlife photographs that it's hard to imagine what it must have been like for the pioneers. Back then, even taking a simple portrait was a major undertaking.

At the end of the 19th century, a photographic safari was often a full-blown expedition, with a team of porters manhandling enormous brass-bound cameras, heavy lenses, sensitised glass plates, plate-holders, hefty tripods, a portable darkroom and developing chemicals in glass containers. Not to mention tents, guns (for protection and to provide a supply of fresh meat), cooking pots and a mountain of other gear sufficient to last a year or more.

Even in their wildest dreams, those trailblazers couldn't have imagined how easy photographers have it today. None of their images would win our competitions, but those founding fathers (and they *were* mainly men) were remarkable for their time. They enthralled a wide-eyed public that had never before seen photos of wild animals.

CHALLENGES AND BREAKTHROUGHS

The genesis of photography as we now know it was in 1826, when Joseph Nicéphore Niépce produced the first permanent photograph on a metal plate coated with bitumen. Wildlife photography was born a little later, in the early 1860s, when a handful of people began taking pictures of domestic and zoo animals.

Some images from this period – such as the poignant photo of London Zoo's last quagga, taken by an unknown photographer in the early 1870s – are widely reproduced to this day. The oldest surviving portrait of a wild animal is probably one of a white stork on its nest in Strasbourg, photographed in 1870 by an American, Charles A Hewins.

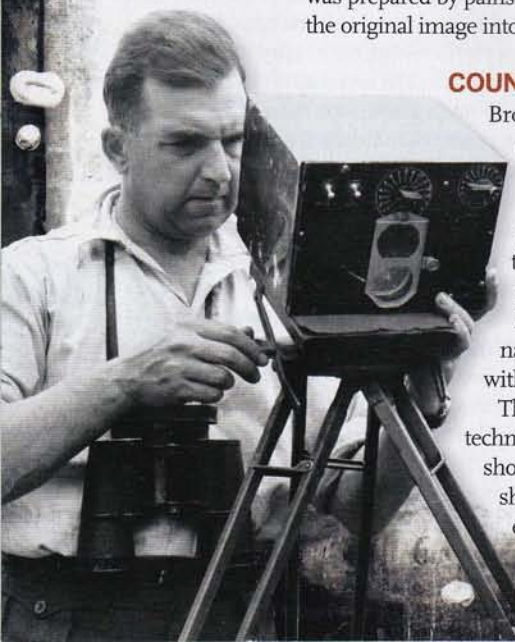
One of the greatest challenges at this time was the heavy, unwieldy equipment, which made wildlife photography an essentially static endeavour. This is why most people ▶

This 1870s photo is one of the last known images of the quagga. It was already extinct in the wild.

This perfectly composed barn owl photo, from 1936, is one of the most famous images taken by celebrated bird photographer Eric Hosking (*below*).

concentrated on photographing birds at or near the nest. In the mid-1890s, RB Lodge and his young assistant, Oliver Pike, used to push a 12 x 10-inch plate camera around the English countryside in a wheelbarrow. But Pike became so frustrated with all the pushing that he developed his own 'Bird-Land Camera', which was portable enough to be used for stalking as well as from static hides.

By now, wildlife photographs were already appearing in books and journals. Initially, though, what readers saw was not the actual photo but the print of a wood engraving. This was prepared by painstakingly translating all of the tones of the original image into delicately engraved lines on wood.



COUNTERFEIT CATTLE

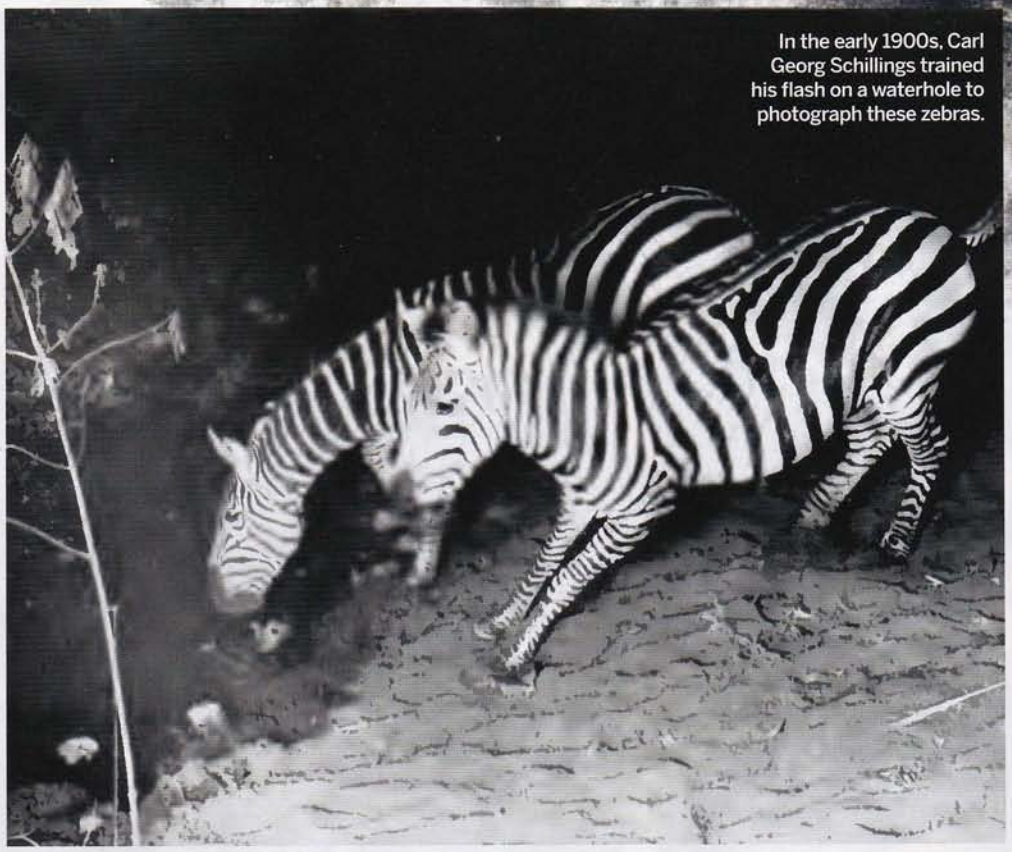
Brothers Richard and Cherry Kearton were perhaps the best known of the early pioneers. In 1895, inspired by their bird-loving grandfather and amateur-naturalist father, who took them birdwatching on the Yorkshire moors, they produced *British Birds' Nests*. It was a landmark – the first natural-history title illustrated entirely with photos instead of artwork.

The Keartons devised a number of new techniques to obtain their revealing wildlife shots. They would stand on one another's shoulders, for example, and employ exceptionally tall tripods to glimpse

Early tower hides were ramshackle affairs, but they proved to be an effective tool.

Eric Hosking/David Hosking/FLPA x3

Carr Getty Images; cartoon: 19th era/Alamy; zebra: Carl Georg Schillings/Doubleday, Page & Company, 1905/Cornell University Library



In the early 1900s, Carl Georg Schillings trained his flash on a waterhole to photograph these zebras.

George Eastman: Library of Congress/Science Faction/Getty Images; camera & autochrome: SSPL/Getty Images

THE KEARTONS ALSO BUILT A LIFE-SIZE 'BULLOCK' TO GET CLOSE-UPS OF LOCAL BIRDS. UNFORTUNATELY, ONE DAY THE BOGUS BOVINE TOPPLED OVER.

Early wildlife photographers were a target for satirists.

"YOU WOULD PHOTOGRAPH *ME*, WOULD YOU?"

It's hardly *Big Cat Diary*, but motor cars revolutionised photo safaris in the 1930s.

inside birds' nests. But their main innovation was their use of hides. The brothers designed a variety of ingenious artificial rocks and tree trunks, erected stone shelters and covered tents with grass and heather.

Most famously, the Keartons also built a life-size 'bullock' to get close-ups of local birds. Unfortunately, one day Richard became so dizzy after squinting through a small peephole for hours (it's uncertain exactly where the opening was) that he lost his balance and the bogus bovine toppled over. Cherry came to the rescue an hour later, but not before taking a photo of his brother's predicament – surely one of the funniest images of a wildlife photographer at work.

The Keartons soon realised that their complex hides were unnecessary, replacing them with simple square versions like those still in use today. They went on to publish many successful nature books showcasing their ground-breaking pictures, including *Wildlife Across the World*, which featured an introduction by US president Theodore Roosevelt.

FLASHES, FAKES AND AUTOMOBILES

By the end of the 19th century, there were no fewer than 256 photographic clubs and an estimated four million camera-owners in Britain. There were so many wildlife photographers (still mostly men), shooting such a range of subjects in the wildest corners of the country, that a Zoological Photographic Club was established.

At around this time, Carl Georg Schillings embarked on an ambitious project to create a pictorial record of the wildlife of East Africa. He wrestled with massive, clumsy ▶

Snapshots FROM HISTORY

1861 Scottish physicist James Clerk-Maxwell takes the first colour photo.

1870 Charles A Hewins takes the first photograph of a truly wild animal – a European white stork at the nest.

1877 Eadweard Muybridge uses a photo sequence to prove that a galloping horse's four hooves all leave the ground at once.

1884 American businessman George Eastman invents photographic film. It is no longer necessary to lug around heavy boxes of plates and chemicals.

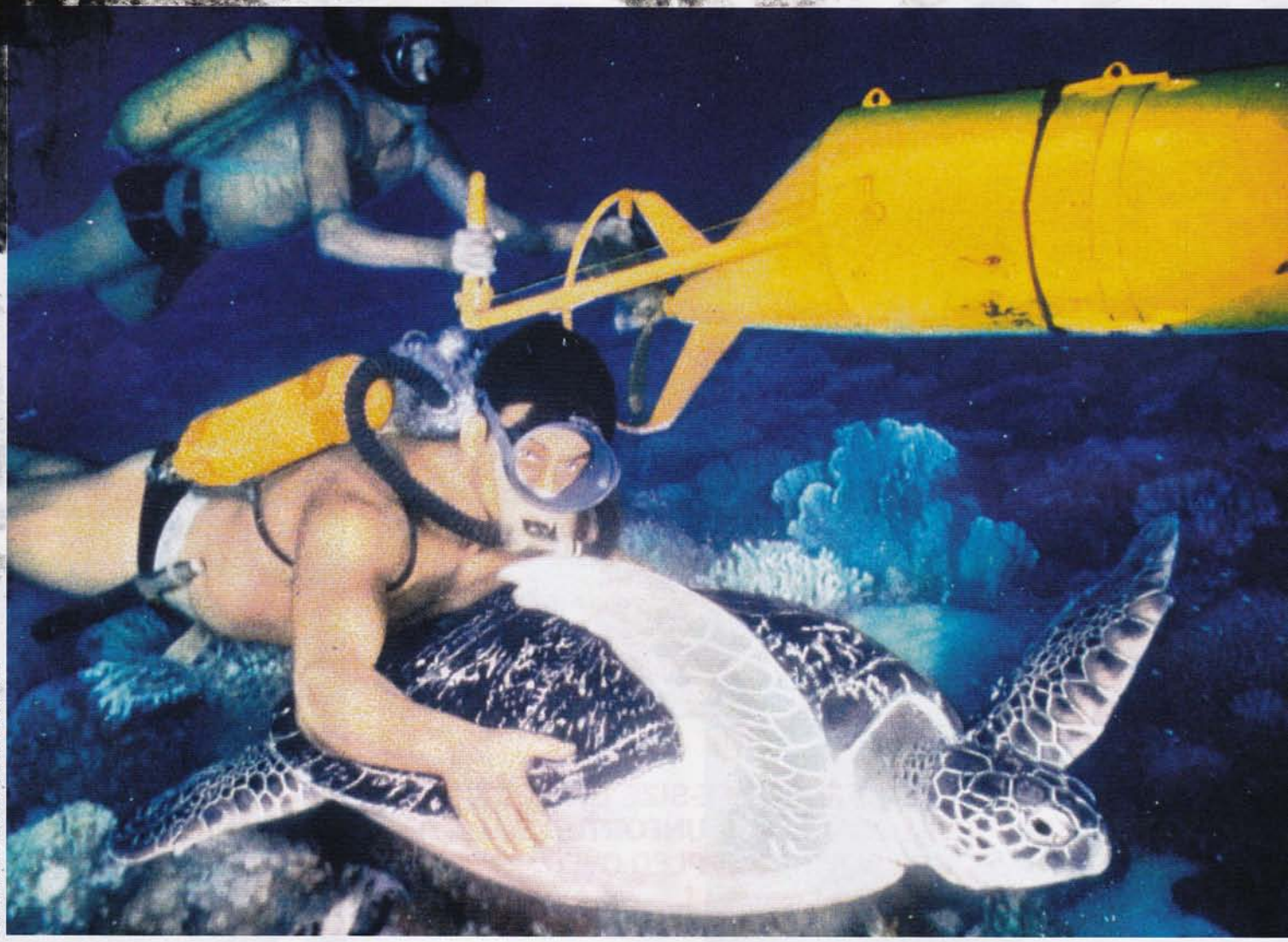
1888 Eastman's Kodak camera goes on sale. Its advertising slogan proudly declares: "You press the button, we do the rest."

1895 The Kearton brothers publish *British Birds' Nests*, the first wildlife book illustrated entirely with photographs.

1899 Zoological Photographic Club is founded in London.

1900 In East Africa, Carl Georg Schillings takes the first flash photographs of wildlife. They appear in *Flashlights in the Jungle*, published in 1905.

1907 The first commercial colour film, Autochrome, goes on sale. It is manufactured by the Lumière brothers in France.



Divers: Photos 12/Alamy; camera: Paul Springett/Alamy

In the 1960s, Jacques-Yves Cousteau (*above*, foreground) began to document the undersea realm on film, and created a prototype for the Nikonos (*below*), a submersible 35mm camera.

telephoto lenses (which were incredibly difficult to focus) and dabbled in flash photography. He had to mix the magnesium flash powder in a mortar immediately before taking each picture, itself a very risky operation. The subsequent explosion sometimes set fire to the hide, or even to his cameras.

Schillings nearly gave up on many occasions, but did enjoy some remarkable successes. Take, for example, this elated entry in his diary: "Almost exactly at midnight my flashlight apparatus gave me a really hard-to-get nature document: the picture of a magnificent leopard."

The early 1900s also saw the first acknowledged example of 'animal fakery' – a term coined by Roosevelt – when an unnamed photographer tied a woodlark to the top of a small tree and tried to pass his pictures off as authentic. Apparently, his peers were disgusted and scandalised.

During the 1920s and 1930s, wildlife photography was to receive a welcome boost, but this time the innovation had nothing to do with photographic paraphernalia. Mass-produced motor cars meant that people could abandon their tough safaris on horseback and foot. African expeditions, in particular, became much safer as there was less risk of having to shoot an irate rhino, elephant or buffalo. And, since none of the big game feared vehicles, they could be approached more closely.

THE MODERN ERA

No history would be complete without a mention of one of the true greats: Eric Hosking. His 60-year career is significant because it marks the start of recognisably modern wildlife photography. Hosking was the first to resort to tower hides, in the 1930s, and to use electronic flash for bird photography, in 1946; he also made a decent living from his photos.

One of Hosking's most momentous decisions was his switch to the 35mm system (see box, *opposite*) in 1963. Much smaller, tougher and more user-friendly than anything that had gone before, 35mm cameras heralded a new dawn in wildlife photography. They were highly portable, ideal for capturing action and panning with moving subjects, and when modified could even be taken underwater. It's no coincidence that the early 1960s also saw the launch of the magazine you are reading now, and the world's leading wildlife photography contest. The rest, as they say, is history. ▶

SCHILLINGS HAD TO MIX MAGNESIUM FLASH POWDER IN A MORTAR. THE EXPLOSION SOMETIMES SET FIRE TO THE HIDE, OR EVEN HIS CAMERAS.

35: A MAGIC NUMBER

More than any other design of camera, the 35mm SLR has shaped the evolution of wildlife photography.

Advertisements for 35mm cameras, such as this one for a Leica model from 1937, emphasised their speed of use.

The standardisation of 35mm film for motion-picture use in 1909 led to the development of stills cameras based on the same format. The first successful model was the Leica A, which went on sale in 1925.

These cameras were more compact and cost-effective than those that used glass plates, and exposures could be made much more rapidly with them. In time, they were to transform wildlife photography – a technically problematic genre that frequently involves capturing fast-moving, distant, dangerous or shy animals in less than ideal light.

There were many incremental improvements to the 35mm camera system, explains Colin Harding, curator of photographic technology at the National Media Museum. "Longer-focus telephoto lenses meant that photographers didn't need to get so close to their often-reluctant subjects, and the introduction of SLRs during the mid-1930s brought easily interchangeable lenses. Meanwhile, since the 1880s exposure times had also been falling dramatically – from several seconds to a fraction of a second – as 'wet' plates were replaced by dry plates and film."

Camera manufacturers continued to adapt and enhance 35mm cameras throughout the 20th century. The first 35mm SLR with a pentaprism viewfinder was launched in 1949, ensuring that what you saw before pressing the shutter was what you got on film. In 1959 came the Nikon F, a 'system' SLR that had interchangeable components.

"From the mid-1960s onwards, increasing automation led to big strides in 35mm cameras," says Michael Pritchard, director-general of the Royal Photographic Society. "Autofocus and auto-wind on were key advances. And photographic emulsions improved, becoming ever more sensitive."

Today, of course, 35mm film is practically obsolete. Kodak produced its last roll of Kodachrome in 2009. Photography has gone wholeheartedly digital – the new revolution.

Sarah Baxter, travel writer and photographer

David Attenborough congratulates Mr Dowdeswell, winner of the 1965 Wildlife Photographer of the Year competition.

Interfoto/Alamy; Kodachrome: Eric Hosking/David Hosking/FLPA; WPY 1965 presentation: TopFoto

Snapshots FROM HISTORY

1925 The Leica A becomes the first successful 35mm film camera.

1936 Kodachrome 35mm colour transparency (slide) film goes on sale. Kodak's first colour negative (print) film arrives several years later.

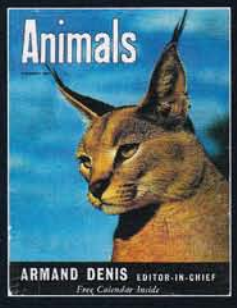
1937 A female tawny owl attacks Eric Hosking, who was photographing her nest. Eric loses his left eye, but continues taking wildlife photos until his death in 1991, aged 81.

1957 Russell A Kirsch produces the first digital photograph, after scanning an image of his son into a computer. In 2003, *Life* magazine declares it to be one of the '100 Photographs That Changed The World'.

1960 Jacques-Yves Cousteau develops the Calypso, the first self-contained 35mm underwater camera. His design is bought by Nikon and sold under the Nikonos name.

1963 The Topcon RE-Super is the first camera with TTL (through-the-lens) exposure metering.

1963 *Animals* magazine launches in January, championing the best in wildlife photography. In 1983, the title becomes *BBC Wildlife*.



1965 *Animals* magazine launches the Wildlife Photographer of the Year competition. In its first year, it attracts 600 entries.

Today, artistry and technical flair are considered to be equally important as wildlife photographers push the boundaries of their craft.

Egret: Bence Mate/naturepl.com; Sandra: Claudia Muller

WILD WOMEN

So far, wildlife photography has been dominated by men. But why?

Compared to other genres, wildlife photography is very, well, *male*. Clearly, it's physically challenging, and there's an issue of personal safety – a woman working on location needs to be careful. But is it also inherently macho?

"With men, it's a kind of competition," says Sandra Bartocha, who specialises in photographing natural landscapes and plants. "The harder it gets, the heavier the backpack is, the longer the lens and the greater the adventures, the better the pictures. Women do photography more for themselves, to express their views."

"Men tend to be more aggressive and pushy in the field," adds Africa-based wildlife photographer Angie Scott, "and many women find that hard to handle. Also, some guys can be patronising; I try to ignore it. You earn respect by proving you're up to the challenge."

There's a lifestyle issue, too. "Though there are lots of women who'd like to work in this business, the practicalities are often too much to deal with," admits Angie. "Having a family is unusual for a professional female wildlife photographer – and for many women that's a problem."

Sarah Baxter

Sandra Bartocha is that rare breed: an award-winning female wildlife photographer.

WHAT NOW? THE NEXT 100 YEARS

Mark Carwardine reflects on wildlife photography in 2012, and wonders how it might develop over the coming century.

Wildlife photography has changed more over the past decade than during the whole of the previous century. And it's all due to digital. To appreciate the scale of the transformation, one has only to look at Wildlife Photographer of the Year. The competition first accepted digital images in 2004, and was 100 per cent digital by 2009 – in just six years the industry had changed beyond recognition.

Digital has countless advantages over film. There's no need to carry around umpteen rolls of Kodachrome; you can take many more pictures, so can afford to experiment and take risks; and you can adapt your shooting – and learn from mistakes – while in the field.

Where the digital revolution will take us next is anybody's guess. Technology is advancing in leaps and bounds: cameras that print, project pictures onto a screen, upload to websites such as Facebook and take 3D images are either already with us or just around the corner. Some experts even predict that the camera itself will disappear, leaving only a lens with a chip and a screen on the back. The concept of taking still images might go, too: we may be able to shoot digital video of such high quality that we simply pick our favourite frames from thousands.

SOME PREDICT THAT THE CAMERA ITSELF WILL DISAPPEAR, LEAVING A LENS WITH A CHIP AND A SCREEN ON THE BACK.

THE PHOTOGRAPHER RULES

Ultimately, though, it doesn't matter whether you have the latest DSLR or stick with a trusty plate camera. One thing your kit can never do is decide where to point the lens, what to include in the frame and when to release the shutter. That will always be down to you, the photographer – and that's a good thing.