

Photography

Henry Oakeley

ABSTRACT – A look at 50 years of personal photography, from Brownie Box to Canon digital single-lens reflex cameras, recording life, people, microscope slides and orchids in their habitats and in the studio to digitising old paintings, photos and herbarium specimens. Notes on photographic techniques and the use of ring flash, with comments on long-term conservation of digital images.

KEY WORDS: archival value, conservation, photography, ring flash, techniques

I discovered during my second Bachelor of Medicine degree (circa 1960) that my drawings of histology slides left much to be desired. I set the focus of my Kodak Retina 1B (35 mm film camera, with a viewfinder) to infinity; focused my eye out of the lab window; set the microscope to be in focus for my eye; rested the camera lens on the microscope eyepiece and took a photo. This gave me a perfectly acceptable image and the histology practical took about five minutes instead of two hours; I had photos of all the slides (which fortuitously were the same ones used in the exams) and revision could be accomplished in a chair at home. Photography became useful.

Hobbies were similarly enhanced by a camera. For potholing, an ex-army, metal, water-tight munitions box containing said camera, flash gun and flash bulbs (no electronic flash in those days), even magnesium ribbon and matches, was required. The result: colour slides of stalactites, stalagmites, helictites, rim-stone pools, ladder pitches disappearing into the dark accompanied by muddy friends. I took photos of flower arrangements for a budding florist, did portrait albums of girlfriends, and learnt the arts of developing and printing.

Cameras came and went. I had started with a 1910 Kodak Brownie Box, as used by my grandfather to take photos of his time in the Boer War (1899–1902) when a Brownie Box was the cutting edge of personal photography. His 700 photos still survive, carefully labelled with name, place and date, including one of his army boot captioned ‘Spion Kop during the action (taken under fire)’ (Fig 1). The minutiae of war, and life, are all worth recording. Perhaps photography is in the genes for I also have my great-grandfather and great-great-grandfather’s photo albums, dating back to the 1860s. Perhaps it is also a recording gene for I have the pre-photography albums of flower paintings by my great-great-grandmother (circa 1830–40). I recorded life at school, moving on to the Retina 1B until the mud of Swildon’s

Hole in Mendip finally overcame it. An early Bronica and an ancient Rolleicord followed, until Olympus introduced the OM1 single lens reflex 35 mm camera for £100 in the mid-1960s. Over the years I wore this out, and an OM10, an OM20 and no less than three OM4Ti models, collecting lenses on the way.

The writing appeared on the wall for film cameras in 2002 when digital photography started to take off. I bought a single lens reflex Olympus digital camera. The electronics were about as primitive as a 1980s computer; high resolution photos (*.tif images) took 45 seconds to download onto the 125K memory chip, and a further 45 seconds to upload onto the camera’s diminutive screen if one wished to review the image. There was a delay of one or two seconds between pressing the shutter release and the photo being taken, so action pictures were out of the question and portraits of flowers took unbearably long. One might think that the (glowing) reviews in the camera magazines might have mentioned it, but they did not. The images it took were beautiful, but life was too short to have to wait a minute and a half (and two seconds) between pictures. I converted to Canon, first a D60 and now a D5, single lens reflex (SLR) cameras with no regrets. I junked all my Olympus lenses and bought the Canon equivalents, buying a second-hand Canon EOS5 SLR film camera as well. I was astonished at the better quality and regretted all the years of struggling to compensate for the



Fig 1. Anglo-Boer War, Spion Kop, 25 January 1900. Grandfather's boot under fire.

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idiosyncrasies of the Olympus light metering, focusing, etc and even the quality of the images.

A camera records life. It records children growing up; holidays; weddings and birthdays. My hobby has always been plants, especially orchids, and I have photographed them all over the world, from the cloud forests of the Andes to the coastal plains of south-west Australia; from Cape Town to Japan and the Cotswolds. In my dining room, with a black velvet background, using 100 ASA Fuji Provia slide film, with my back to the east-facing window, I photographed orchids that I flowered and hybrids that I had bred. The technicalities came slowly; *force majeure* one had to learn. Slow-speed film had a finer grain, so 50-100 ASA gave sharper images than 1600 ASA. A tiny shutter aperture of f32, like a pinhole camera, gave a better depth of field than a wide-open aperture of f2.8; but f32 and a slow film speed meant long exposures. In bright sunlight the petals cast unpleasant shadows over the flower, so cloudy daylight with less light was necessary. If the shutter speed was less than 1/30th of a second a tripod was required to avoid camera shake. With slow speed film and f32, exposures were as long as 40 seconds so a cable release was needed and the photo had to be taken when a lorry was not pounding past, shaking the floorboards. Additionally, with such low light levels reaching the film, the reaction of the chemicals in the emulsion is slower, so a light meter reading suggesting an exposure of 10 seconds, had to be adjusted to 20 seconds, and 15 seconds required 40. Some films, such as Provia, coped with this reciprocity problem better than others; learning was gradual. Each photo (a front, a side, and so on, of the whole flower, then dissected views of petals, pollinia etc) would be taken five times with slightly different exposure times to ensure that at least one would be correct. To record a single flower for posterity a roll of 36 exposures would be used in one session and the film taken to the nearby photo lab for 60-minute processing to check the results.

With a digital SLR the result appears immediately – the Canon D5 takes photos with no shutter delay, and the image appears in one second. One can enlarge the image on the camera screen to check for sharpness, and if the exposure is incorrect it is easy to retake with appropriate adjustments. No longer are compensating filters required for different light sources; the modern digital camera will produce images that are the right colour in the blue light from the sun or electronic flash, or the yellow light from tungsten filament bulbs. It can even be adjusted to compensate for images taken with a mixture of lighting, so that white always appears white. The camera can be set to the equivalent of 1600 ASA film for low light conditions, and the sharpness is the same as when set to 100 ASA. The sensor is equally sensitive for long exposures as short ones, and no compensation is required. No longer is there the worry over the cost of film; the pictures are stored on memory chips which can take hundreds of photos and be used over and over again. In 2003 a one gigabyte memory card for a camera cost £350, now it is nearer £10.

A macro lens is used for close ups of the whole flower, with extension tubes – simple hollow tubes – between the lens and the camera for even closer work. Two sets of extension tubes

allow one to photograph a match head so that it occupies the whole frame. A Canon MP-E 65 mm zoom lens will get even closer but it weighs nearly a kilogram – and how often does one want to photograph half a match head?

Weight is an issue when orchid hunting at altitude, and while 100 mm macro lenses have advantages, 50 mm lenses are lighter and less expensive. A tripod for close-up work is heavy to carry and of not much use if the flower being photographed is blowing furiously in the wind. Here an electronic ring-flash is required (Fig 2). These are not cheap, containing as they do a huge amount of computing power. The ring of the flash unit fits round the end of the lens, the electronics clip onto the flash shoe on the top of the camera. I use a Canon ‘macro ring lite MR1 14-EX’ for close up work. Set the aperture to f32, set the shutter speed to 1/200ths of a second and the ‘film speed’ to 100 ASA or whatever you wish, and when the picture is taken the unit will produce a source of light for about 1/200ths of a second, negating any shaking hand or fluttering flower. When the camera records that sufficient light has emerged and been reflected from the flower onto the camera’s sensor, the flash stops, leaving a perfect exposure. When I started, a slide rule was needed to do the calculations. With care, I can photograph a tiny orchid flower moving in the wind, in a dark forest, with a handheld camera and



Fig 2. Canon EOS5D with ring flash.

everything is sharp and in focus (Fig 3). The inverse square law of illumination states that at double the distance from the light source the level of illumination will be only one quarter, and at four times the distance it will be only 1/16th. So, using ring flash, the flower is correctly exposed and the background – often rather untidy and distracting brambles – becomes underexposed and so black, producing a picture as neat as one used with a black velvet background.

The ring flash illuminates the flower from all sides, so there are none of the sharp shadows that are cast by sunlight or a single-bulb flash gun. The amount of light emitted from one side of the ring flash can be adjusted to create a little shadowing, or the flash can be held to the side of the camera. It is not only useful in the forest because in the studio (dining room), by altering the properties of the flash, one can get the same effect as subdued daylight in a fraction of a second, imitating the effect of the long exposures otherwise needed.

The archival value of photography is immense. Nearly all of the almost 1,000 medicinal plants in the garden of the Royal College of Physicians have been photographed, and these 6,000 photographs can be stored on a memory stick half the size of my little finger. The camera dates every photo, so there is a sequential record of the time of flowering year on year. No longer is a notebook required for recording the plant's name; one

methodically photographs the flower then the label; flower then label; and name the image on a computer later. I have recorded the 6,000 historic orchid paintings of the Royal Horticultural Society (now available to all on a CD); the portraits on the 19th century *carte de visites* of the Geological Society and nearly 2,000 herbarium sheets of tropical shrubs for Kew. I have copied and electronically cleaned off the dust; corrected the fading and removed the scratches on my grandfather's photos and my great-great-grandmother's paintings so if ever the originals were lost, the images would be preserved. Whether lecturing or publishing, where would we be without photography?

The value of photography to archives extends further; rare books and manuscripts need to be conserved as well as used, but use damages them. Making handwritten notes from books (not just rare ones) is time consuming, and errors of omission appear. Even the smallest pocket digital camera is capable of photographing pages while at a library desk. They can then be printed out or converted into a PDF file which can be read like a book at any time of the day or night, at home or on the train.

Conserving the photographic archive is a huge undertaking; my 50,000 35 mm slides fill a dozen filing cabinet drawers. My earliest Agfa colour transparencies have turned orange, but Kodak and Fuji films have lasted more than 40 years. Now everyone has a digital camera, they even have ones which can be used as phones. Photography has moved on from the Brownie Box but the images may not be as permanent as my great-great-grandfather's browning black and white images of a century and a half ago. I have a Braun slide scanner which scans and digitally corrects 50 slides at a time (five hours per batch); 2,000 slides for my monograph on a group of Latin American orchids took a week to do, but the quality was perfect. Slides can be archived electronically but conserving these digital images will be more urgent as I doubt that there will be a computer that will read 40-year-old digital photos in the year 2049 and probably not even in 10 years time. Let us hope that future technology for their conservation and use will be fit for the task.

Further information

www.oakeleybooks.com

www.rcplondon.ac.uk/garden

A garden journal entitled *A year in the medicinal garden of the Royal College of Physicians* will be published at the end of November, featuring a page-a-week perpetual diary and illustrated with 60 medicinal plants and their historic uses. Price £6 from the RCP reception or £8 including postage UK/£10 overseas (A5 format, 128 pages).

Visitors to the College may also purchase a set of 16 postcards of the medicinal plants from the RCP garden. These are also available from the author for £4 including postage.

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Fig 3. *Lepanthes pteropogon*. Orchid (4mm) in Andean Cloud Forest.