Getting Started

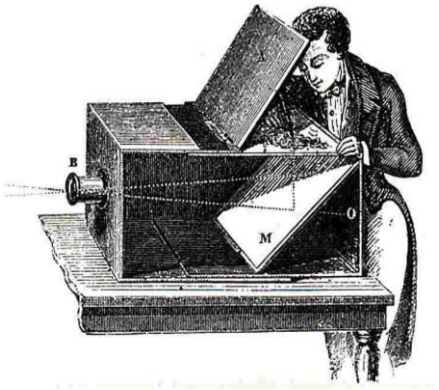
Steve Wells

History

People have been making images since the Stone Age. While photography may be only 150 years old, it is in a long tradition: from Lascaux to Tate Modern.

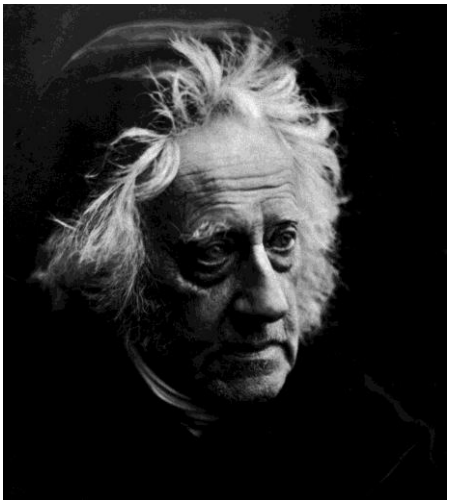
Cave Painting at Lascaux

As the industrial age dawned and machines seemed to be capable of doing everything, it wasn't long before someone wondered whether it would be possible to make a machine to take the effort out of drawing and painting. After all, learning to draw and paint took so much time and effort. All you really want to do is to press a button or turn a wheel, sit back and wait for a masterpiece to be delivered.



Portable Camera Obscura

Our word "Camera" comes from the latin phrase "Camera Obscura" which means "Darkened Room". If you are in a darkened room and make a small hole to let in the light, an image of the world outside will be projected onto the wall of the room. Pin a sheet of paper to the wall and all you have to do is to draw over the projected image. Now replace the room with a small, portable box with an outside screen so that you can see the image. The device still cannot record the image automatically, but is a step on the way to the modern camera.

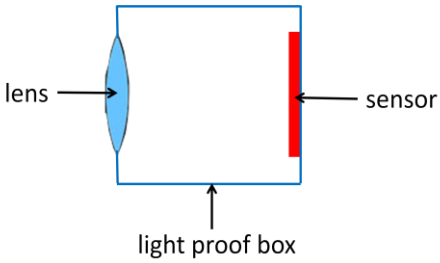


Sir John Herschel photographed by Julia Margaret Cameron in 1867

The next step was the development of the first photographic processes. These appeared in the middle of the nineteenth century. While these early processes were poor by modern standards, they were astounding at the time.

What is a Camera?

Despite what some modern cameras look like, a camera is very simple. It is a box with a lens at one end to gather light and some kind of sensor at the other to record the image formed by the light. The human eye is very similar so cameras are often compared with the eye.

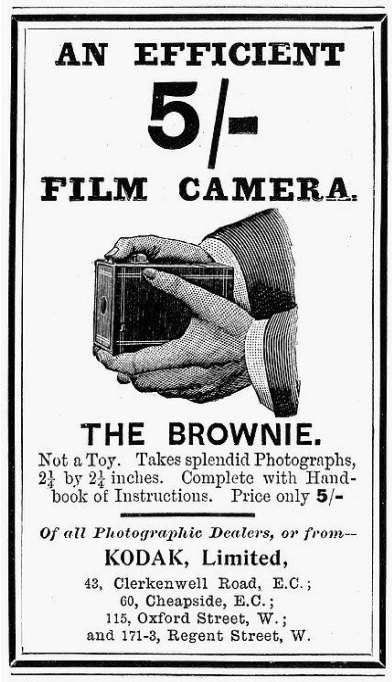


A simple camera

Early Cameras

Early cameras were made of wood and brass and were extremely heavy. When Julia Margaret Cameron wanted to move her camera she had to call the gardener to help. Early photographs were taken on glass plates and the photographic processes required the photographer to be within reach of a darkroom.

In the 1880s, roll film was invented. This was lighter and less prone to breakage than glass plates. Developments in processing meant that it was no longer necessary to be near a darkroom. By the end of the nineteenth century photography had moved into the world of ordinary people. The Box Brownie at a price of five shillings appeared in 1900.


AN EFFICIENT
5/-
FILM CAMERA.

THE BROWNIE.
Not a Toy. Takes splendid Photographs, 2¼ by 2¼ inches. Complete with Hand-book of Instructions. Price only 5/-

Of all Photographic Dealers, or from—
KODAK, Limited,
43, Clerkenwell Road, E.C.;
60, Cheapside, E.C.;
115, Oxford Street, W.;
and 171-3, Regent Street, W.

The Box Brownie appeared in 1900.

Cameras Today

For most of the twentieth century film was still used. The cameras had more electronics but were essentially the same as the original roll film cameras.

The first digital camera went on sale in 1996. It only took a few years for film to be replaced by digital technology.

A modern camera

Photographers with dedicated cameras are rapidly becoming the exception. For most people, a camera phone is the standard. There are technical reasons why for some purposes a dedicated camera is best. However, when you want to take a photograph, **the best camera is the one you have with you**. An expensive camera with lots of accessories is no use if you left it at home. So, today, the standard camera for most people is the phone. Not only do people carry it at all times, but its communication capability means that images can be posted to the internet in seconds.

Modern cameras will handle most of the technical issues: old-timers will complain that there is no skill left. But there are still a few things which you should keep an eye on. This means getting to understand the controls on your camera. This may seem daunting but, just take them one at a time and concentrate on three key areas:

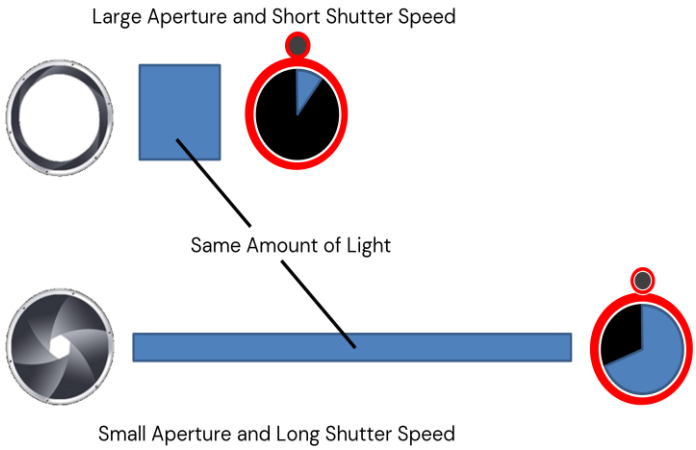
- **Exposure**:
  How much light do you need to take a picture?
- **Focus**:
  Is the picture sharp or blurred? (and **Depth of Field)**
- **Camera Shake**:
  Is the picture blurred because you moved the camera?

Some modern cameras have many controls on the top…… and yet more on the back!
DON'T PANIC!!

Exposure

The Exposure is the amount of light reaching the camera sensor. If the exposure is wrong, the picture will look too light or dark. The amount of light is controlled by the **aperture** (a window which lets in light.) and the **shutter** (a timer for how long the window is left open.) So, the amount of light can be adjusted by altering the size of the window and changing the time for which it is open.

You might use a small aperture and a long shutter speed or a large aperture and a short shutter speed to get the same exposure: the same amount of light.



Different Apertures and Shutter Speeds

Closely linked to exposure is **ISO**. This is where you tell the camera how much light it needs to capture. If you are taking pictures at night you would set a high ISO. This tells the camera to capture less light but then to boost the signal. High ISO values tend to produce lower quality images but if you want the picture, maybe you have to accept a drop in quality.

Your camera uses the ISO which you have set and its light meter to select a suitable combination of aperture and shutter speed to give you a correctly exposed picture.

For historical reasons, apertures are described by a sequence of numbers called **f/numbers**:

1.4 2 2.8 4 5.6 8 11 22

Don't worry about where these numbers come from. If you are interested you can find out about that later.

There are two important things to be aware of now:

- A large f/number means a smaller window. So, f/8 is a smaller window than f/2.
- As you move from one f/number to another you are doubling or halving the size (actually the area) of the window.

The Shutter is described in term of **Shutter Speed**. This is not a speed like the speed of a fast car. It is the time that the window is left open to gather light. These times are typically fractions of a second. The numbers used are a short hand: “15” means a fifteenth, “500” means a five-hundredth.

A typical sequence is:

15 30 60 125 250 500 1000

As with apertures, these times double or halve as you move from one speed to another. (Yes, I know that 125 is not twice 60, but those are the numbers which get used: historical reasons again!)

Focus and Depth of Field

Your camera probably focuses automatically.

In focus and out of focus

But what is the camera focussing on? Do you and the camera agree about the subject? There is often a marker in the viewfinder which shows where the camera is trying to focus. If this is pointing at something in the background then the background will be in focus: your subject will be blurred. There will usually be some way to move the focus point: A set of arrows, perhaps. Make sure the focus point is over the subject.

Focus point

Depth of field describes the range of distances which are acceptably in focus in front of and behind the thing you are actually focussed on.

You can control the depth of field with the aperture. A small aperture (large f/number) will give more depth of field: More things in front of and behind the subject will be acceptably in focus.

Since you have a choice of combinations of shutter speed and aperture which give the same exposure, you can choose an aperture which gives the depth of field which you want.

Large depth of field (left) and shallow depth of field (right)

However, you should be aware that cameras with small sensors always produce a large Depth of Field. So, in that case, effective control of depth of field may not be available.

Camera Shake

Despite the technology available in cameras today, it is still possible to fail to hold the camera steady while taking the picture. In low light the shutter speed is likely to be long. Rest the camera on something steady. If you can't do that, hold the camera close to your body with your elbows tucked in. If your camera has a viewfinder you can press the camera against your face. Clearly you can't do this if your camera does not have a viewfinder or you are using a phone.

There are other options:

- A **beanbag** is light to carry and allows the camera to be held securely on a support such as a wall.
- A **tripod** is (usually) solid and secure but is heavy to carry around.
- A **monopod** is like a tripod but with only one leg. It is lighter but not quite as secure. If you are using a heavy lens, a monopod is an effective way to support the weight of the lens.

If all else fails, just increase the ISO to force the shutter speed down to something you can hold and accept the possible decrease in quality.

Composition

You can't get round the fact that some pictures look better than others. There are technicalities such as exposure to get right. Then there is the issue of where to put things in relation to each other and to the picture frame. Since a photograph is flat, you have to create an illusion of depth, and you need to work out what to do with those parts of the image which are out of focus.

A photograph has a frame, edges and corners. You need to look at the world in terms of how objects fit into that frame, looking at how the light falls on those objects, at their shapes, their textures and their colours. It means imagining the flat surface of a photograph and contriving clues to indicate the depth which human eye can see but the camera cannot see. A simple way to create depth is to place one thing in front of another.

Creating Depth:
placing one thing in front of another

Photographers talk about having a "Good Eye". This means being able to look at the world as if you were a camera. A photographer with a "Good Eye" will create the image in her mind before picking up the camera. There is a sense in which the photographer uses the camera simply to record the image already created.

Photography starts by seeing like a camera…
…not by picking up a camera

First, remember the name "photography". The word means "**drawing with light**". So, for a moment, forget the subject of your photograph: forget your new car, your granddaughter or your girlfriend/boyfriend in her/his new swimsuit. Look at the light. Is it coming from in front of you, from behind or from one side? How is it falling on your subject? Could the image be improved by changing the light? If you want examples of bad lighting, look at interminable family snapshots posted to social media.

Second, think about the **viewpoint**. Could you take your picture from a different angle to show things differently: maybe lie on the ground or stand on a table? Could a change of viewpoint alter the direction from which the light is falling on the subject? If the background is cluttered and distracting, could a change of viewpoint provide a simpler background?

Viewpoint: Looking Up at Trees

Third, **where should the subject be placed**: in the centre, or to one side? There is no hard and fast rule. One approach which often works is the "Rule of Thirds". This suggests that you should place the subject a third in from one side and a third down from the top or up from the bottom. Imagine the picture with two horizontal lines dividing the image into three, and two

more vertical lines also dividing the picture into three. You picture now looks like a noughts and crosses board. The idea is to put the subject where the lines cross.

Rule of Thirds

Finally, take a look round the edge of the image. It is easy to get seduced by the subject but take a look for **distractions at the edge**:

- Is there too much space round the subject?
- What are other people doing?
- Is there something bright red which you have not have noticed before?
- Is there a telegraph pole (or lamppost or flagpole) growing out of the subject's head?
- Is the subject falling out of the picture? A common problem with family snapshots is that the photographer is so concerned with the face of the person in the picture that they place the head in the centre of the frame. The result is an expanse of empty sky at the top of the picture but, at the bottom, the feet are cut off.

Lots of Sky and no Feet

Clutter: What is the Subject?

What happened to the Feet?

Pole Growing out of Head

Things to Photograph

This may seem a silly question. After all, if you have bought a camera you presumably had some idea of the pictures you want to take: members of the family, perhaps, or records of holidays.

If it is holidays, what is it about your holidays that you want to capture? What impression do you want to leave with someone looking at the pictures?

A Holiday in Venice

In the days of film the number of pictures on a roll was limited. There was no place for frivolous pictures. It used to be said that a typical film of summer holiday snaps would have Christmas on both ends. These days, digital memory cards are virtually endless. You can afford to take lots of pictures. So, have your camera ready and, if something catches your eye, take a picture (or several).

This does not mean that you should be completely spontaneous. There is a place for planning. If you are photographing a building, plan to get a general shot as well as details. If the building has a function, ask "what picture would illustrate the function?" If it was a mill, for example, you might show grindstones and bags of flour as well as the building as a whole.

Showing Your Pictures

Every one of your pictures is, of course, a prize-winner. You will want to show off all your pictures to your family and friends. Sadly, in reality, not every picture is likely to be a winner and if you show them all you will leave your audience yawning.

Select the best and delete the rest.

The downside of modern memory cards is that you will have hundreds of photographs. Many will be near duplicates. You should be critical and keep only the best. If your friends only see the best, they really might think you are a great photographer.

The days of slide shows are long gone. The most likely display format, today, is a computer or phone screen. Prints are pretty well dead as is the traditional photo album. Photo books are replacing them. Most images are shared on social media: circulated automatically world-wide.

Apart from that, you can get photographs made into almost any format: coffee mugs, beer mats, Christmas decorations, jigsaws. Why not make your own Christmas cards?

… and Finally

Photography is fun. Showing your pictures to friends and members of your family should be fun. Don't get too serious!