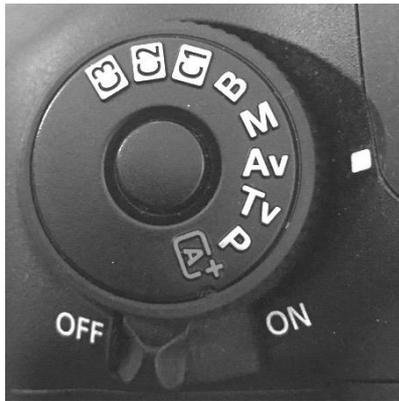# Aperture

The third factor that affects exposure time is something called aperture. The aperture is an opening behind the lens that can be made wider or more narrow which, of course affects the amount of light let into the camera. In Shutter Priority mode and Full Auto mode it's the camera that changes the aperture. But it's possible to control the aperture manually as well.

Aperture Priority Mode

If you change your camera to Aperture Priority mode then you can control the aperture and the camera will alter the shutter speed for you. On a Canon camera Aperture Priority mode is labelled **Av** ... whereas on Nikon and Sony it is simply **A**. When set to this mode there should be a dial (usually the same one that you used to alter the shutter speed in Shutter Priority mode) which you can rotate to give you different aperture sizes.

A wide aperture will let a lot of light in so the camera will reduce the shutter speed, and vice versa.

What is an f-stop?

We saw with shutter speeds and ISO values that they alter the exposure by whole or parts of a **stop**. Apertures are also called stops and they relate directly to ISO and shutter speeds. Different lenses may have different ranges of apertures ... but here are some common ones:

f/1.4	f/2	f/2.8	f/4	f/5.6	f/8	f/11	f/16	f/22

These apertures differ by whole stops and lenses will also have fractions of a stop in between. The numbers appear to be quite random because they relate to a doubling or halving of the *area* of aperture that is open to let light pass.

The Pinhole Camera
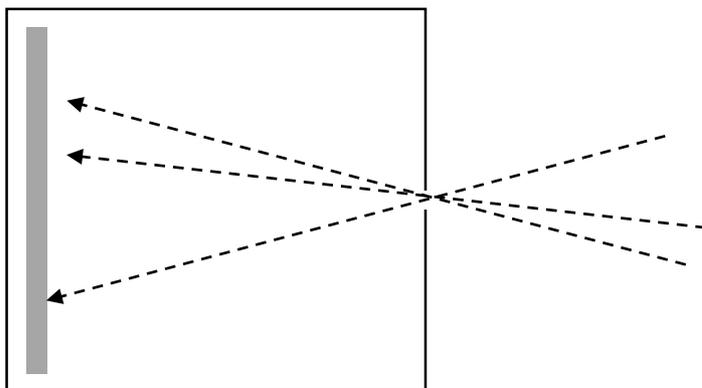
A very simple form of camera is the pinhole camera. It uses a minute hole to focus the light instead of a lens.

It doesn't let a lot of light in so exposure times need to be long however, there is one feature that this primitive camera has: if the hole (or aperture) is small enough then everything in the image will be in focus.

Depth of Field

The f-stop values in the table above can be rather confusing. In fact the larger number, f/22, relates to a very small aperture and the value f/1.4 refers to a large, wide open aperture.

When the aperture in your lens is very small your camera will behave more like a pinhole camera. It lets much less light in and the exposure time will be longer ... but, a lot of your picture will be in focus. This is called a long depth of field. Conversely, a large aperture has a much shorter depth of field.

I took this picture of a puffin on Skomer Island using a wide aperture (f/2.8) it meant that I could use a fast shutter speed (1/640) in order to freeze any motion and it has also given the picture a short depth of field. Hopefully you will be able to see that both the bird and the ground that it's standing on is in sharp focus but the cliffs behind it are blurry and quite unfocussed. The ISO value for this image was 100 as it was quite a sunny day.
An easy way to remember depth of field is to think of swimming pool depths. A value of f/22 is the deep end and f/1.4 is the shallow end.

Shallow Depth of Field effects work best with long lenses (or when your zoom lens is extended). If you have a short focal length, wide-angle lens then it is more difficult to achieve the blurred, out-of-focus backgrounds even if you are using a wide aperture.

Bokeh

This comes from a Japanese word and it simply refers to out of focus points of light but it can be used in creative photography.
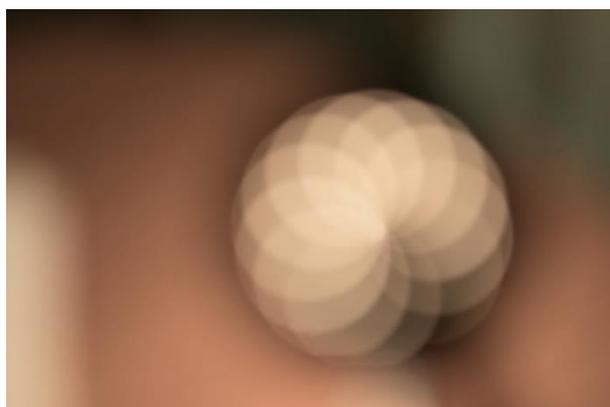
The picture here shows the bokeh created on the back of a desk lamp when the ring of holes behind the bulb were shot out of focus. I quite like how the bokeh overlap to make an image similar to the petals of a flower.

Bokeh looks particularly attractive in a short depth of field picture. The subject is in focus but points of light in the background can make a pleasing pattern.

The shape of the aperture in the lens can affect the shape of the bokeh produced in the image. So some may appear circular whereas others may look hexagonal ... or some other shape.