

Advanced Digital Photography



By Amy Renfrey

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Meanings of Symbols



“Good tip”



“Amy’s recommendation”



“Technical explanation”



“Adobe Photoshop Usage”

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Photographers Excerpt- “Why Photography Matters”

Being a passionate Prince fan since I was 13, I jumped at the chance to photograph his drummer, John Blackwell, at a drum clinic in Melbourne. I knew only too well John’s signature beats and ability to capture an audience of thousands with one of his electrifying drum solos.

At the drum clinic John’s talent glowed from him like a beacon as he began to play. As I watched the keen drumming enthusiasts watching him in awe *I saw something else.*



“John Blackwell” © Amy Renfrey

Emerging from the musician I saw the man. The man meditated into a deep state of concentration. I could see him connecting to a deep part of himself as the music entered his mind and soul. I took several photos of him so I could capture his meditation as his soul was swept away with bliss.

So there I stood, feeling myself in awe of John. I felt in awe of his mediation and connection to something deep within him that resonated and manifested as a talented musician.

Amy Renfrey

Introduction

It's a common myth that the camera creates good photos. However there is not a lot of point in spending thousands on the latest DSLR camera, and all the equipment that goes with it, if you have absolutely no idea of how to use it. You can take the worst photo with the best



camera. You can also take really great shots with your point and shoot. It's the person who takes the photo, not the camera.

I took this shot of the tram with my small point and shoot camera in an auto setting. I used no fancy equipment and at the time I had no idea of photography like I do now.

Before I go on, let me explain that I can't tell you "black and white" methods of digital photography because digital photography does not work like that. There are many possible light, shutter and creative combinations that contribute to your photo turning out or not. One exposure setting doesn't work for *every* low light situation. Just as one setting, or composition, doesn't work for *all* high action, outdoor images. There are a large number of different light considerations for each individual situation. On saying that however, there are things that do work and can get you better images. A black and white answer is impossible to give you for certain photography situations, however, I can provide you with examples and suggestions of what works. With this ebook you'll become well versed in what is most likely to work.

What's really important is that you uphold an artistic approach to all your photography. Once this is achieved you can move to the next level.

What we consider a beautiful photo is one that is highly artistic. This involves your composition and lighting. However, to achieve a photograph that is sharp and crystal clear you will find you rely heavily on the lens.

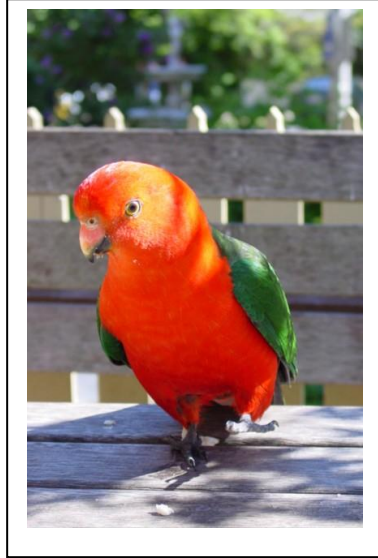
This is not a book about photo editing of your digital photos, it is about advanced photographic techniques. The main aim of this book is to accelerate your knowledge from enthusiast skills to semi/professional skills. The way to achieve this is to practice the things I say in this book.

As a digital photographer who also teaches, let me give you some helpful advice. That is: *you are an artist*. To be an artist you must know how to use your artistic tools properly. As a consequence this is a technical book written to enhance your artistic skills. It's written in an easy to understand way so you can understand what might be otherwise challenging.



Chapter 1

Understanding How To Read Light



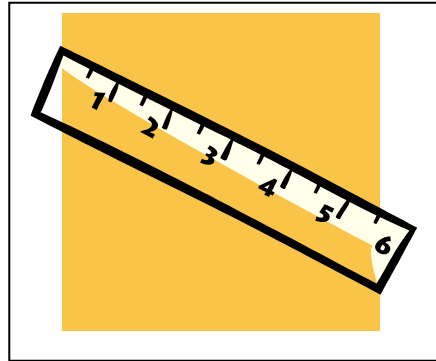
In order to understand how to get the best results in your photography it is imperative that you understand the basics of how to *read* light and interpret exposure. Learning how to read light is one of the most primary aspects of digital photography, creatively and technically. Once you start to understand light you will then be able to create ideal exposure. This process of creative development is about really grasping how the camera's ISO, exposure and shutter speed work more in depth, which we will talk about later on.

I talked about light in my first ebook "*Digital Photography Success*" but now you are ready to move up to the next level. The 'next level' is really about understanding more technical aspects to enhance the creative process. And this involves becoming familiar with professional terms and meanings, and being comfortable with them. It's impossible to help you understand more advanced levels of digital photography without teaching you the equipment. The first place to begin when understanding how to read light is learning about Dynamic Range and Light Range.

Light Range

A light range is an easy thing to remember. It's as simple as it sounds; it is a range of light. In that range are 'values'. Values are segments or 'parts' of light within a range. And digital cameras record a certain range of light values.

Think of a 1 meter ruler. That ruler (your range) has lots of bits of smaller measurements called centimeters (values). The range you are working with has a lot of values that make up that range. In other words, the ruler which is 1 meter is made up of 100 centimeters. Your ruler is the range of light and the centimeters are the values of light.



On your traditional (film) camera, you can take a photo at a few f stops, for example f2.8 to f 22. *That's* a light range. Usually modern digital cameras can get around 5 f stops that make up their light range. Your digital camera is only able to record a limited range of light values (lets say 70 centimeters instead of 100 centimeters to use the visual example of the ruler.)

The downside to this is that the subjects we shoot with lots of light and with high contrasting subjects require more of a light range (more f stops) than what is on the digital camera's ability. More f stops mean more flexibility in your shooting and exposure.

Dynamic Range

Dynamic range is a little different to Light Range. The Dynamic Range of a digital camera really measures the range of levels of brightness in a digital camera. A digital camera can take both dim and intense brightness which is determined by its dynamic



range. You could describe Dynamic as a range of a digital camera sensor as the largest possible signal and divide that by the smallest possible signal it can make. The biggest possible signal is relative to the maximum capacity of the [pixel](#). Digital Cameras with a big dynamic range are capable enough to grab shadow detail and highlight detail at the same time. Dynamic range is really the ratio between the highest and lowest measurable light intensities (white and black).

The reason this is important is because we don't often see real black or white. We only see shades of light that reflect back certain intensity of light. This can get complicated especially when you are trying to match up an external device with your camera such as a printer or monitor. It can be a challenge trying to match up the exact light intensity information between your camera and the actual prints of your photos for example. Therefore understanding Dynamic range is really important when you are matching lightness intensity between your digital camera and your scanner or printer for example.

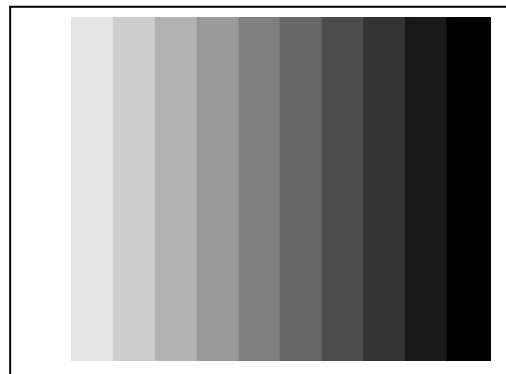
Because the Dynamic Range of your digital camera is really the ratio of largest light intensity that can be readable, to the lowest light intensity, the best way to measure dynamic range is by f-stops.

F-stops and Dynamic Range

To help you understand dynamic range properly I would like to first introduce you to ‘f stops’. No doubt you either have heard of, or know what an F stop is. You may know an F stop as something that you adjust to let more light in or keep light out. If this is what you know, then you are basically right. Each F stop is halving or doubling the amount of light going into your camera. An F Stop simply means a measurement, in number form, of how much light gets in.

Even though our digital cameras and film cameras only “see” 5 F stops, we only actually see about 10 stops, ourselves. This is the case for our naked eye - from the lowest light you can see, to the very brightest light your eyes can stand. Think of the digital camera as being able to see about half the light that you can. This is also why indoor photography always looks darker in your photos than it does with our eyes. But we will go into great detail about F stops and exposures later on.

Levels of Light Between Complete White & Complete Black



Dynamic range will then lead us to understanding many other aspects of light and digital photography. For example you may have heard of a digital image having 256 definite yet subtle levels of brightness between complete white and complete black.

When you take into consideration ‘neutral grey’, (a *tone* between white and black) you’ll understand that this is the point that all exposure metering

measures. This means that we commonly gauge how much light is in our photo by the tones in between complete black and complete white.

And by understanding that there are 256 'segments' of light between white and black, we can then see that if we halved this and found an exact middle point, the number would be 128. This is exactly half way between complete white and complete black. In a nutshell it's the middle point between the highest range of brightness and the lowest range of brightness (darkness). Think of it as the mid way point of shades of grey.

How Light & Dynamic Range Works in Your Photography

If you take an 'average' digital photo, the light from the subjects will be exposed at the middle point of your camera's dynamic range.

For example a photo of a white sheet on a bright summer's day will be getting close to 256 on your dynamic range 'scale'. A photo of a dark object at dusk will register closer to the zero scale.

The reason for this is because if the subjects in your photo are exposed to either extreme brightness or extreme darkness the camera sensor will be unable to photograph anything. If there's *too much* darkness the camera can't get enough light to imprint anything. On the other extreme, if the camera experiences an over saturation of brightness and no detail an image is not imprinted either.

Digital images that are registered as being too close to zero and too close to 256 have really no hope of being turned into photos.

F Stop Settings Explained

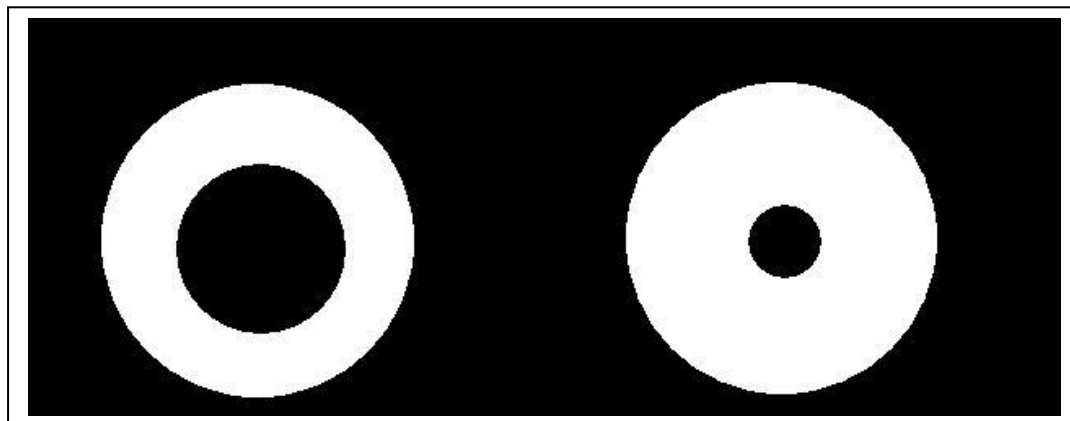
F stop is a numerical measurement of Dynamic Range. F stop simply pertains to how much light exposure the digital camera is getting.



Picture by *Scott Baqgett*

You may remember in “Digital Photography Success” how I explained what aperture meant. To reiterate; aperture is the size of the lens opening that lets the light in.

The smaller the opening the less light comes in. The larger the opening the more light comes in. Think of aperture as a pupil that dilates when it's dark and becomes smaller when it's light.



Small Aperture
(Small F Stop Number)

(Large F Stop Number)

L
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Each measurement of how open or how closed an aperture is was given a name. That name is an F Stop. The total aperture of the lens is called a *range* of f stops.

And just to make matters confusing F Stops are opposite to how far the lens is opening. For example to let in a lot of light and make the aperture larger, it might be an F Stop of 4 (F 4).

On the other hand, if you want to close light out, the aperture might shrink to a small circle, only letting a small amount of light in, therefore it might be as F Stop of 22 (F 22.)

Keep in mind the lower the number, the wider the aperture, the wider the aperture, the more light comes in. For example, an f stop of 2 or lower means the lens opens up real wide to let lots of light in. You'd use these low settings for night time photography to get as much light in as possible.

And if you were photographing something very bright, such as a landscape on a bright summer's day, you'd possibly set the F stop at f 16 or f 22 for example so it doesn't overexpose the photo. I'll explain more in my f stop scale diagram in a moment.

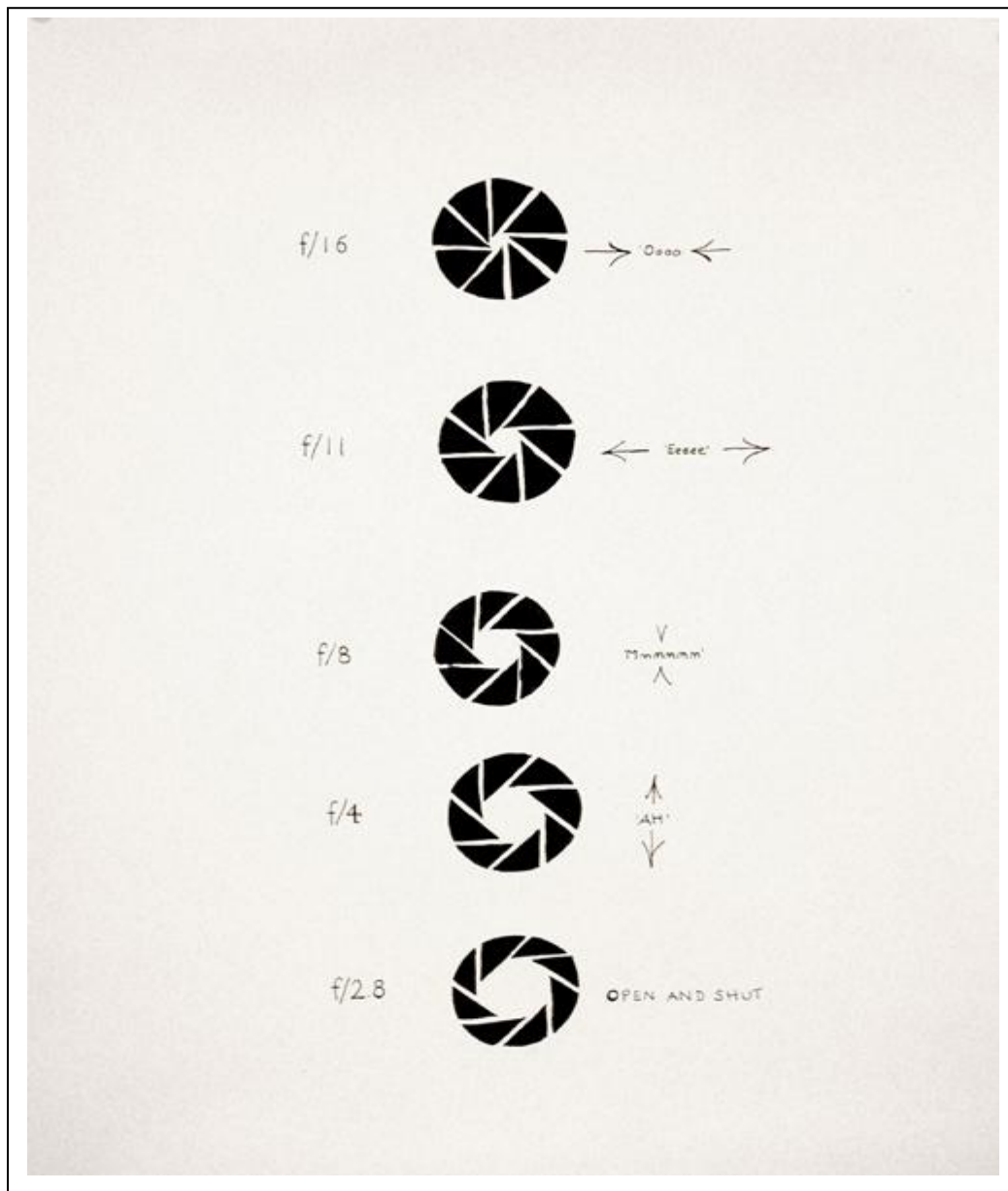


The smaller the opening, the greater the depth of field.



It is a very good idea, if you are still learning with your digital photography, to take notice of the F stop your auto setting sits at when you take photos.

To further clarify this lets have a look at this diagram to see how the shutter in the camera relates to the aperture/F-Stop.



Picture courtesy of www.rebecca-h.net

The above diagram is of a standard camera; F 2.8 being the largest aperture setting and F16 being the smallest aperture setting. You can see the workings at each stage. The higher the number the less light gets in. The lower the aperture setting the more light gets in.

Your Lens & Your F Stop

So why do some cameras have the maximum aperture at F2.8 and others at F4? Well, that's because not all digital cameras are equal. This includes the aperture that the lens has. Some high end digital cameras have a very large dynamic range and therefore will have a larger range of F Stops. Why? Because of the lens.

Take for example a standard point and shoot. It might have a maximum aperture of F 5.6. That means the lens of that camera will only open to F 5.6. Yet a top of the range digital camera might have a maximum aperture of F 1.8. That means the top of the range digital camera has a lens that opens wider than the ordinary point and shoot.

For example:

1. Maximum aperture of a digital camera: F 2.8. This means that the maximum aperture set for that particular lens is F 2.8. You can't open the lens any wider.
2. Aperture range (range of F stops) of a digital camera from F 2.8 to F 22 means that is the range the aperture can be adjusted down to 2.8 and up to 22. You can't make the lens aperture any smaller than F 22.
3. If you see something like this: F 2.8 (w) to 3.5 (t) for example it generally means the aperture will open up to a maximum of F Stop of 2.8 (F 2.8) for the wide-angle lens usage and an F Stop of 3.5 (F3.5) of a telephoto lens.




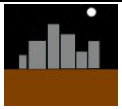
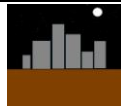





Each camera has its own unique factors, so check out what your manual says!

How Do You Know What Aperture Range Your Camera's Lens Has?

On an average digital camera there are 5 F stops between the smallest aperture (F.22) and the widest aperture (F 2.8). If you have a lens on your camera that sets an aperture reading of F 5.6, closing it by one stop would mean the aperture changes to F 8. Opening the aperture up by one F stop would mean your camera sets at F.4. Remember an F stop is just a term that's used to describe the aperture setting.

The F Stop Scale

An easy Diagram to help you remember this is:

F 1.8	F 2.8	F4	F 5.6	F8	F11	F16	F22
							
F 1.8	F 2.8	F 4	F8	F 8	F11	F 16	F22
Really Large Aperture	Really Large Aperture	Large Aperture	Medium to Large Aperture	Medium To large Aperture	Medium Aperture	Medium to Small Aperture	Small Aperture
Used for letting as much light in as possible such as night time.	Used for letting as much light in, in dark scenes such as night time or semi dark.	Used for letting a <i>lot</i> of light in, in very low light situations such as night or very dim light.	Used for days where sun may not be out, or darker areas of a scene.	Used for Overcast days, scenes that isn't sunny and bright.	Used for scenes that has good light, such as a sunny-overcast day.	"Sunny 16" is where this term was born. A standard aperture setting for sunny days.	Used for really bright situations such as shooting something white in the middle of a summer's day.

These are very basic diagrams, and much will also depend on your shutter speeds, but for now, it's a good guide to use to you can get started. (I'll talk about shutter speeds and how aperture and shutter speeds work together soon.)

These exposures are a general guide; not a hard and fast rule. You may have heard "the sunny 16" at times in photography. This really means that if it's

a sunny day, set your aperture to F16 for perfectly exposed photos. This is just a medium range guide and not something to take as gospel because I've taken some great shots on F22 and F11 for sunny days.

It depends on...

What effect you want
What you are trying to achieve artistically
What shutter speeds you have
And what lenses you have

Learning F Stop

One great way to feel comfortable with F stop is to buy a small note pad and a pen and take notes as you take photos. I did this to begin with. I bought a small note pad that fit into my back jeans pocket, a pen and each time I took a photo I would stop and write down the aperture and shutter speed. I did this so I could later reflect on what worked at what setting and what didn't. This was a great way to really get me thinking about the photographs I was creating, instead of snapping away and hoping for the best and becoming disappointed.

Each time you want to take your photo hold the camera up to the scene and notice the exposure display at the back. Write down the settings. Now change the aperture manually and see what happens to the image. (Just the aperture *only*, not the shutter speed. We will get into shutter speed later.) Move one F stop lower and then one higher and see how the aperture affects the light greatly.

These pictures and their exposure changes are examples of what happens when you change the aperture of your digital camera. This is how I monitored my settings, particularly my F stop settings, in the beginning:

“Lake Louise, Canada”

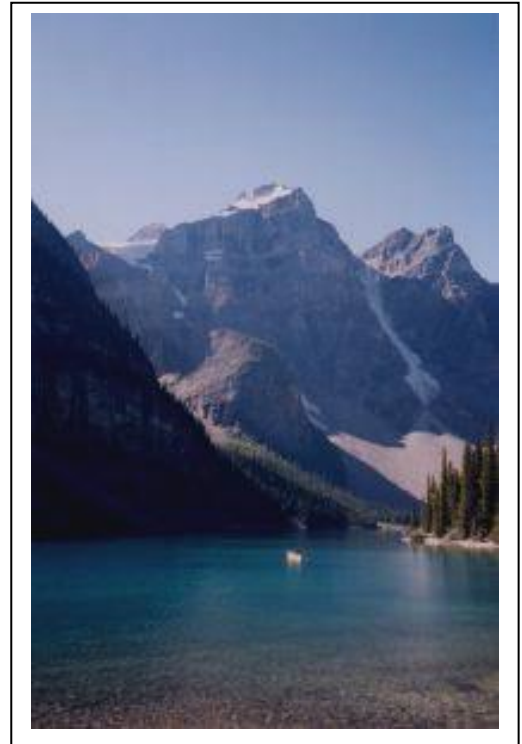
Pic 1, **F stop: F22**

Shutter: 1/500

Conditions; Sunny afternoon with shadows.

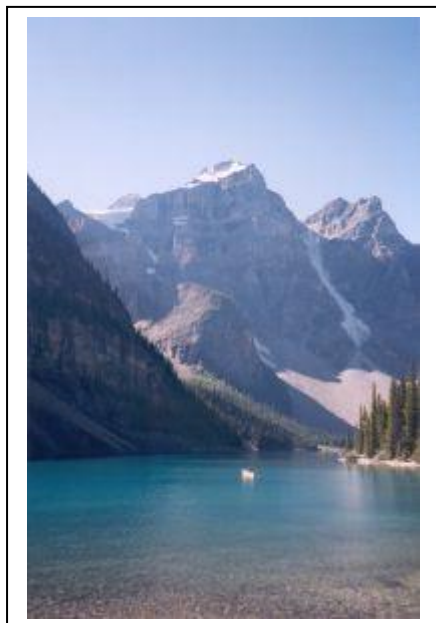
Results: needs more light.

I would look and see if the aperture gave me the exposure I wanted. If it didn't I'd simply move an F stop to change it. If it was too dark I would have to open it up a bit more to let light in.



For example if the exposure was sitting at F 11 and the result was just a little on the dark side, I'd then proceed to move one F Stop up to F16.

Remember the lower the F stop number the more light you have on the sensor. As you can see the picture above was too dark, which meant my F stop was too high and the camera was not getting enough light. So I moved down by one F stop to increase the light getting in to the camera.



Going down an F stop means you are opening the cameras “eye” and letting more light in. So I'd try again. Let's take this example:

“Lake Louise, Canada”

Pic 2, **F stop: F 16**

Shutter: 1/500

Conditions; as above.

Results: Good

Now what about opening the aperture even more? This means going down an F stop to let even more light in.

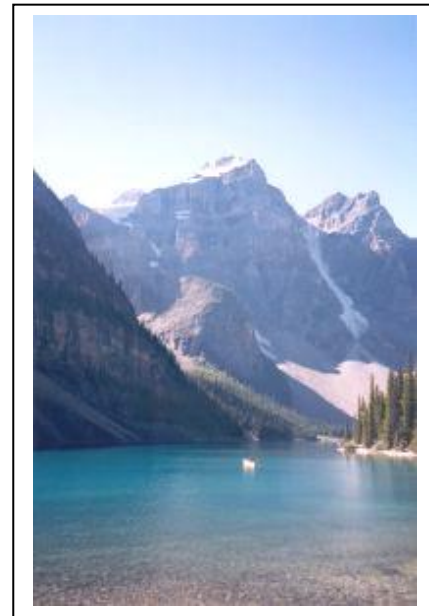
“Lake Louise, Canada”

Pic 3, **F stop: F 11**

Shutter: 1/500

Conditions; as above.

Results: Too bright.”



Let's look at them side by side to see the difference...



Your F stop can change your image significantly, as you can see above. It's a very basic way to get familiar and comfortable with F stop settings. It's very effective because you can see directly as its taking place. It actually makes you think about your photography. It helps you become comfortable with switching the camera to manual and having more control.