

METERING FOR A BETTER PHOTOGRAPH

By Janet Steyer

2-8-15

INTRODUCTION

This program is geared toward the photographer who has a camera with manual controls. Most of this information is based on the controls on my camera equipment, so it will not be exactly the same for other makes and models of cameras, and you may need to improvise or modify these instructions when you apply them to your own equipment.

For those of you who don't have manual settings on their camera, there is not much you can do to control the exposure since the camera sets the shutter speed and aperture automatically. You may have the option to point your camera to an area in the scene which represents 18% gray, depress the shutter button half way, recompose your image, and take the photograph. This may be referred to as AE LOCK in your manual. AE stands for auto exposure. I will explain 18% gray later on.

METERS

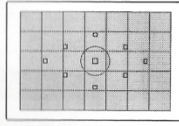
First, I want to talk about the different kinds of meters. There are two types of light meters, incident meters and reflective meters.

1. An incident meter measures the light falling on the subject. You point the meter toward the light source when you make your reading. Incident meters are used mainly with strobe lighting in a studio setting to balance the main light with the fill light and other kicker lights to create a lighting ratio or pleasing highlights and shadows in portraiture or tabletop photography.
2. A reflective meter measures the light reflected from the subject. You point the meter toward the subject. Most modern cameras have a built-in reflective metering system.

The age of your camera may determine how your reflective meter works. Newer cameras offer as many as 4 different kinds of reflective meter. Read your manual to find out what options you have. If you're in the market for a new camera, this is a feature you should consider before you buy. My camera offers all four.

THE CAMERA'S METER

1. Evaluative, zone, or matrix

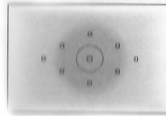


This is an all-around metering mode suited for portraits & evenly backlit subjects. The camera sets the exposure automatically to suit the scene.

1. The evaluative meter, also called a zone or matrix is the default meter in many cameras. It is an all-around metering system suited for portraits and evenly backlit subjects. The camera sets the exposure automatically to suit the scene. It does complicated calculations to give even weight to the entire scene from center to corners.

THE CAMERA'S METER

2. Center-weighted average

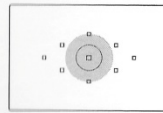


The metering is weighted at the center and then averaged for the entire scene.

2. The center-weighted averaging meter does exactly like it says and gives the center more attention, but averages in the edges of the photograph to a lesser degree.

THE CAMERA'S METER

3. Partial (approx. 9% of view)



Effective when the background is much brighter than the subject due to backlighting, etc. Partial metering covers about 9% of the viewfinder area at the center.

3. The partial meter is effective when the background is much brighter than the subject due to backlighting, etc. A partial meter will cover about 9% of the viewfinder area at the center.

THE CAMERA'S METER

4. Spot (approx. 4% of view)



This is for metering a specific part of the subject or scene. The metering is weighted at the center covering about 3.8% of the viewfinder area.

4. The spot meter is for metering a specific part of the subject or scene. The metering is weighted at the center, covering approximately 3.8% of the viewfinder area.

DYNAMIC RANGE

Before I discuss any more about meters, I would like to explain dynamic range. Simply, dynamic range is the range from the blackest black to the whitest white.

The dynamic range in nature is very broad. In nature the human eye can see a dynamic range from 1,000-2,000 shades and tonalities.

The dynamic range for film is around 1-250, and the dynamic range for digital capture is 0-255. The blackest black is represented by "0", the whitest white is represented by "255", and middle gray is represented by "128". When we output to paper, that dynamic range grows even smaller to about 0-15 at the most. What this means is that what you see is NOT what you get!!

CAMERA METERING SCALE

Most cameras with manual controls have a metering scale that appears as "-2...-1...0...+1...+2" in the viewfinder. These numbers represent full stops. When you set the aperture and shutter speed on the camera, an indicator will slide across the scale.



Notice, when I changed the shutter speed from 1/8sec to 1/15sec, the indicator moved down one stop from +2 to +1.



When I changed the shutter speed to 1/30 sec, the indicator moved to “0”.

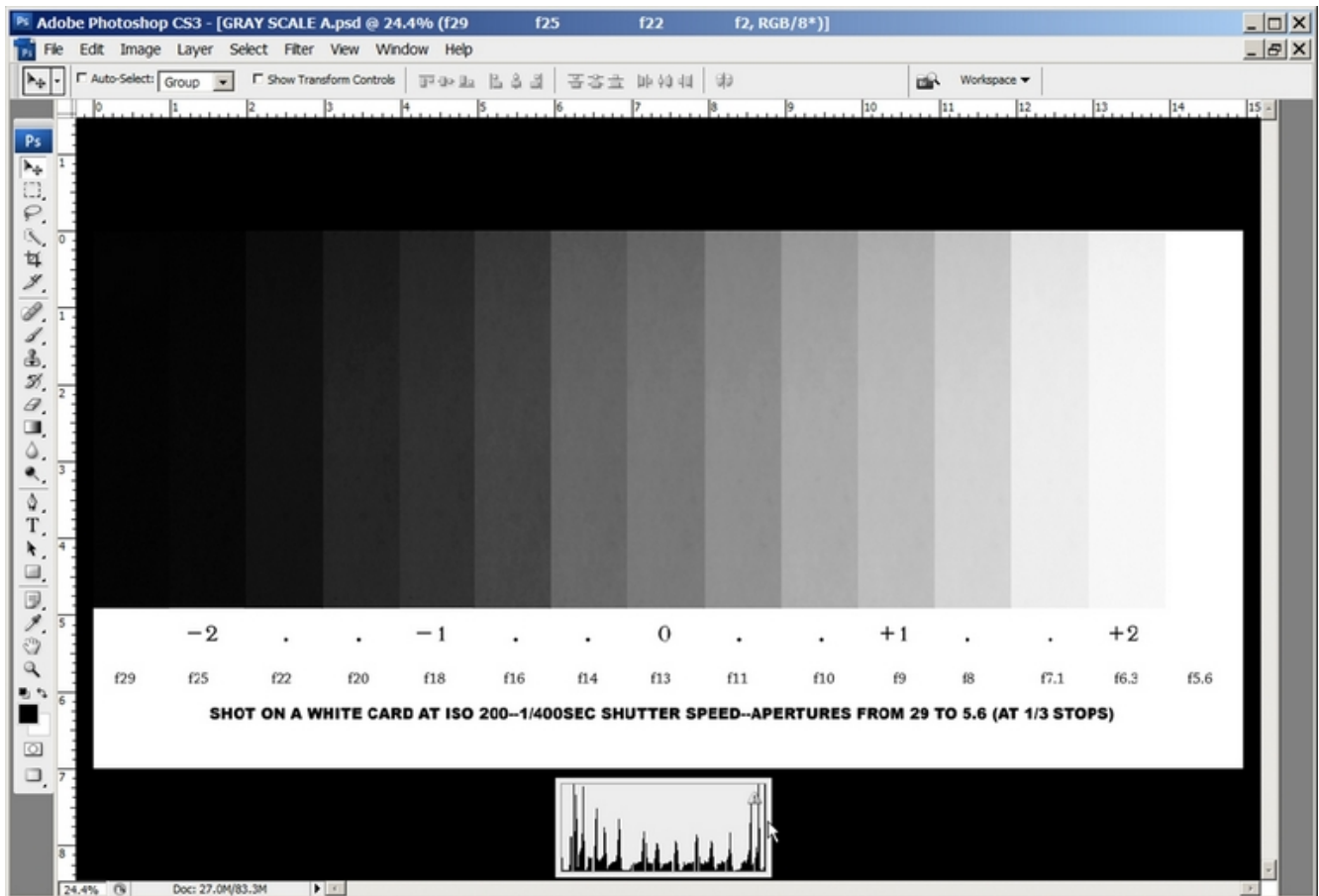


And, one more adjustment to 1/60sec repositions the indicator to -1. If I left the shutter speed alone and reset the aperture, the indicator would move in the same fashion.

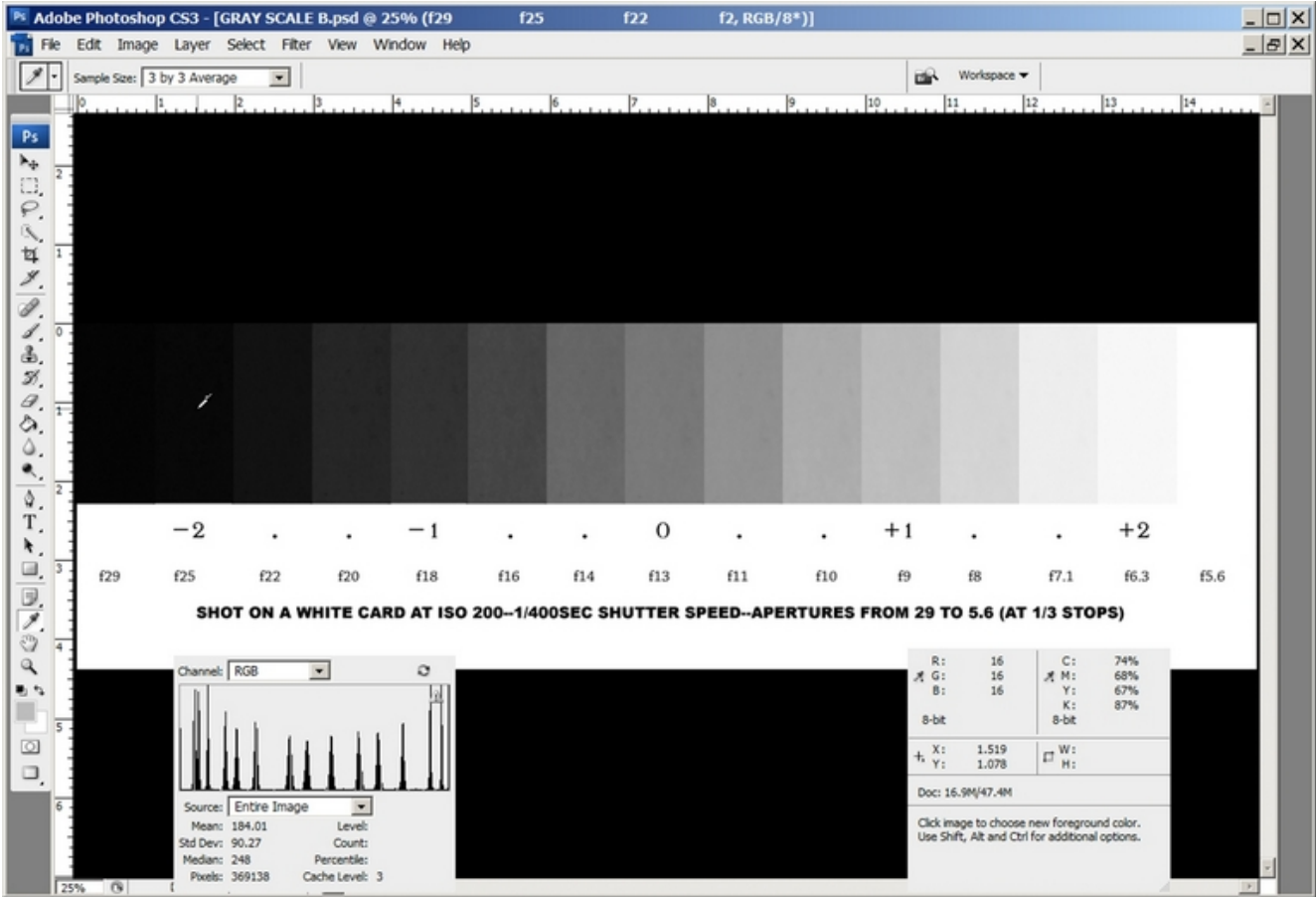


GRAYSCALE

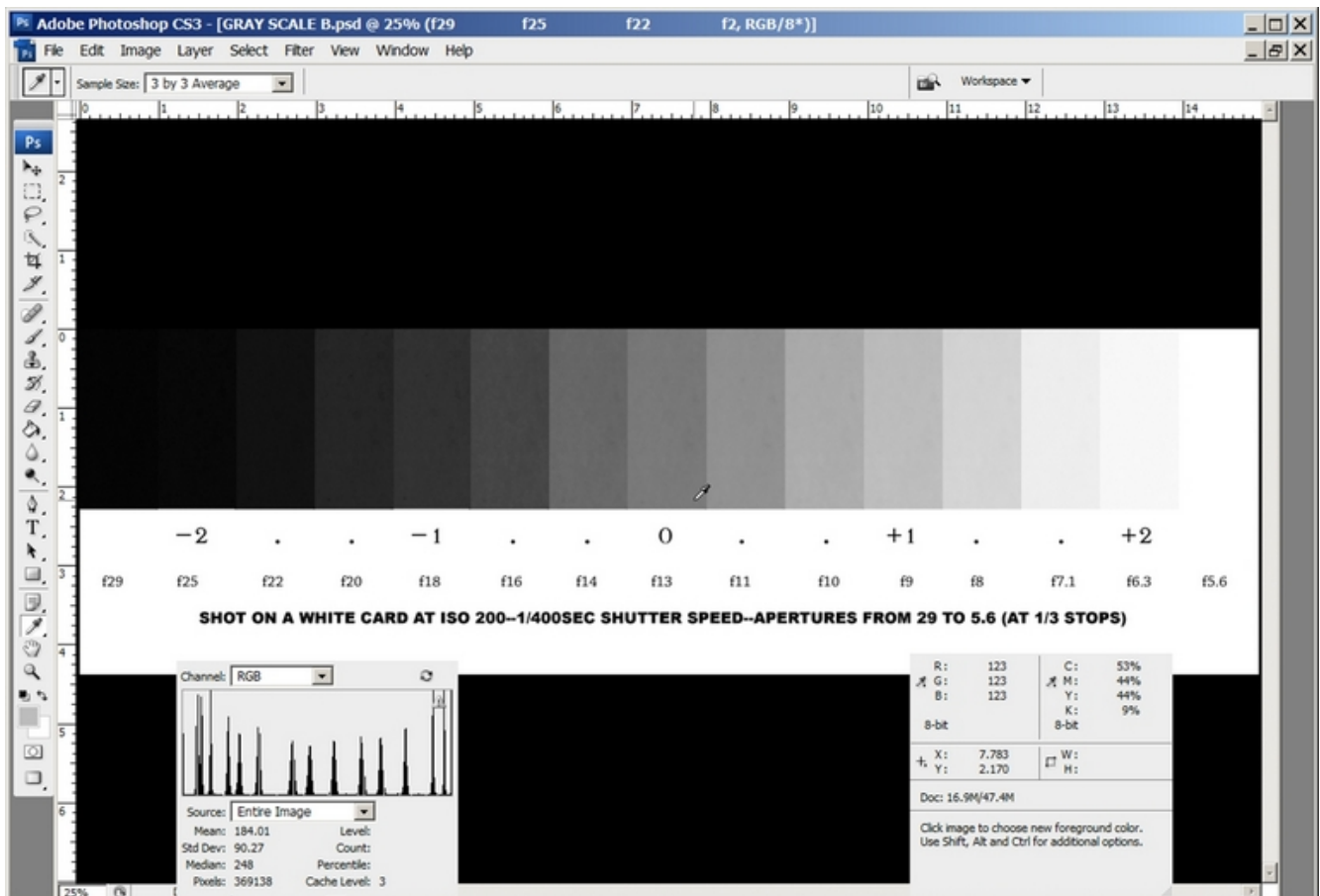
I created a grayscale by setting my camera at ISO 400 and 1/400 sec. I was not that precise with the lighting so this scale is not a perfect representation, but I hope it will suffice for demonstration purposes. I placed a white mat board between two fluorescent lights rated at 5000K, and shot the white card 15 times at 1/3 stops from f29 to f5.6. I then assembled a strip from each shot into a grayscale to represent black to white. The “-2...-1...0...+1...+2” on the scale represents the metering scale in my camera. This grayscale is representation of the dynamic range you would see in a photographic print.



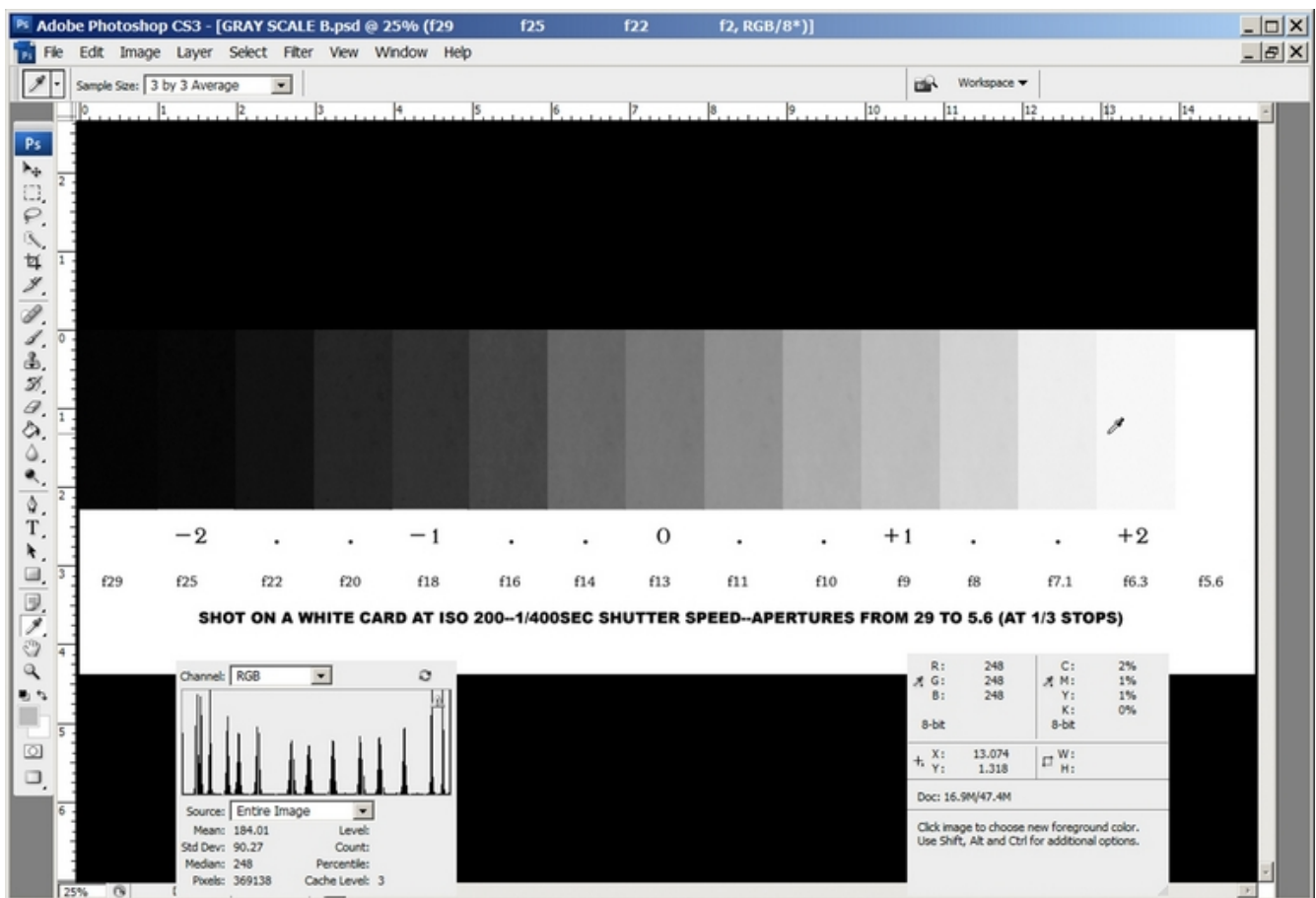
Here is the same grayscale with a color sampler on -2. The info palette shows 16 the digital dynamic range.



This slide shows the same grayscale with the color sampler on "0". The info palette displays 123 on the digital dynamic range.



The last slide demonstrates a 248 on the dynamic scale for +2.



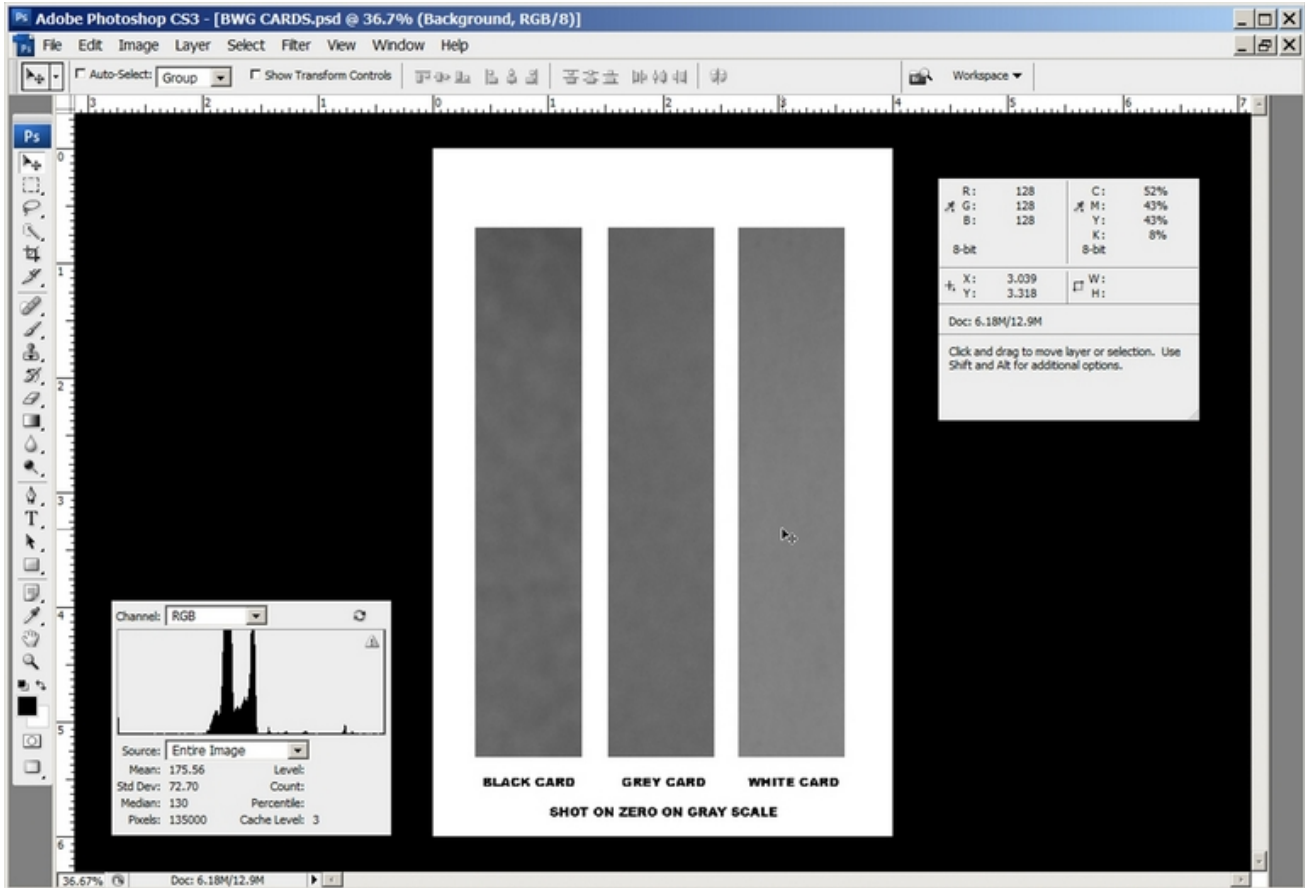
THE CONSTANT

I learned about black and white photography in Germany. My mentor's name was Herr Werner Ritter. He was what I like to call a reluctant Nazi. His father was German, but his mother was French and he lived most of his young life in France. He could easily have fought for the French Resistance, but late in the 1930's while visiting his father's family in Germany, he was scripted into the German Luftwaffe where he spent the war years flying reconnaissance and shooting aerial photography. Anyway, he ran his darkroom like a Nazi. Everything had to be just so. I learned from him that there always needs to be a "constant", something that always stays the same. Herr Ritter taught me that when developing prints in his darkroom, you should always develop fiber-based papers for 1 ½ minutes. That's how long it takes for the paper to fully develop. If you pull the print too soon without regard to the developing time, you can never reproduce the print the same way every time, but if you give the full 1 ½ minutes, then you can check each print in daylight, and judge if it is too light or too dark. If it is too light or too dark, then you should change your enlarger settings to get the exposure you want. The "constant" allows you to get consistent results over time.

18% GRAY

There is a "constant" in every metering system, and that "constant" is a middle gray tone which is called 18% gray. There's a little man inside every light meter that is working like a chicken to give you a meter reading that will represent the subject as 18% gray. I don't care what the subject is, when you set your aperture and shutter speed so that it registers on the "0" on the camera's metering scale, the camera will render that subject 18% gray. If it is easier, you could think of it as middle or medium gray.

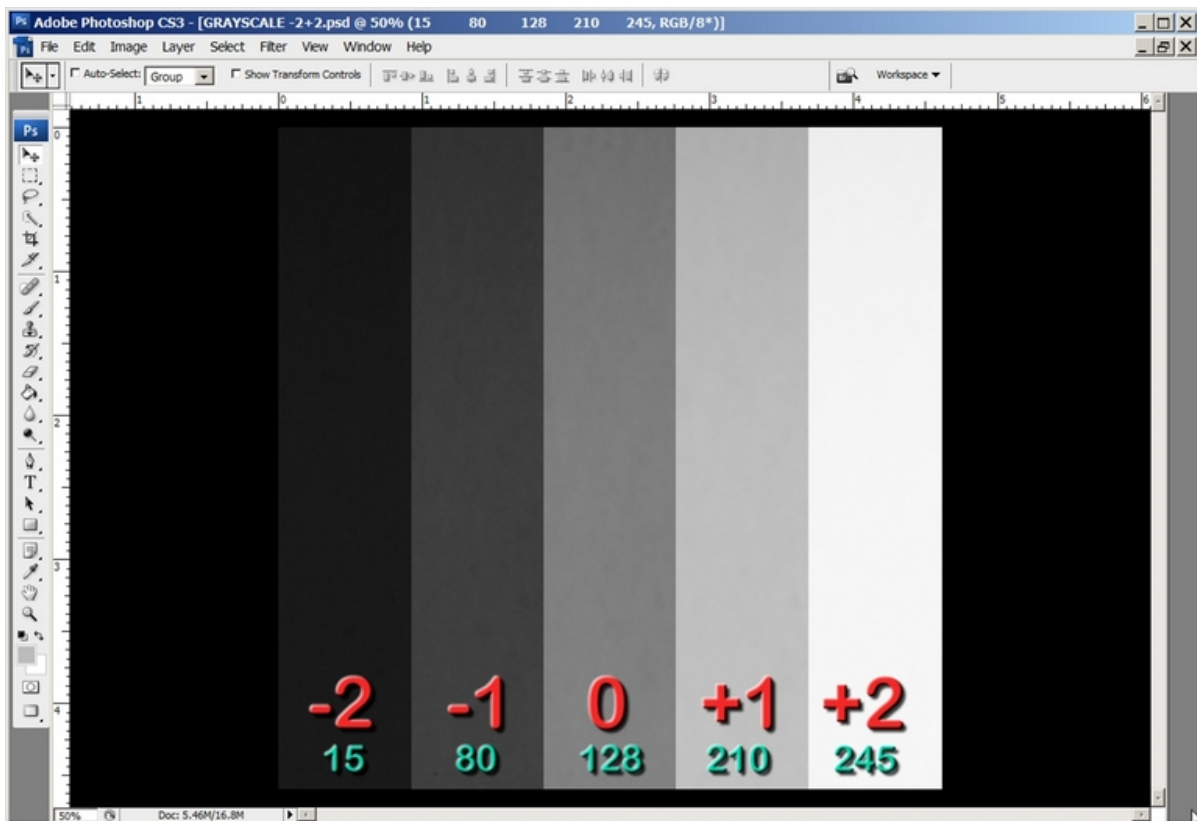
I shot 3 cards, one black, one gray, and one white, with the meter scale of my camera set to "0". The strip on the left is the black card, the middle strip is the gray card, and the strip on the right is the white card. The results were 3 strips of similar gray tones.



REMEMBER I AM IN MANUAL MODE. I personally prefer to set the camera to a spot meter. If I point the camera to something in the scene that I think should be rendered 18% gray, like green grass or something that is medium blue like the sky, or medium red like red rocks, I will zoom in on that area, set the aperture and shutter speed so that my metering scale in the camera is at "0" and shoot the photo. I will also bracket at this point, just to be sure.

Metering is a subjective thing and there is no absolute right or wrong to the exposure of a photograph. My goal is to have as much detail in the photograph without blown out highlights and block up shadows. On a sunny day, the dynamic range, from the blackest black to the whitest white, may be wider than the camera can capture, so if you are shooting for 18% gray, your shadow areas may go darker than you would like, but also, your highlights in the clouds or foaming water may get

blown out. You need to decide, before you shoot, what area in the photograph is most important to you, then meter for that area and let everything else fall where it will.

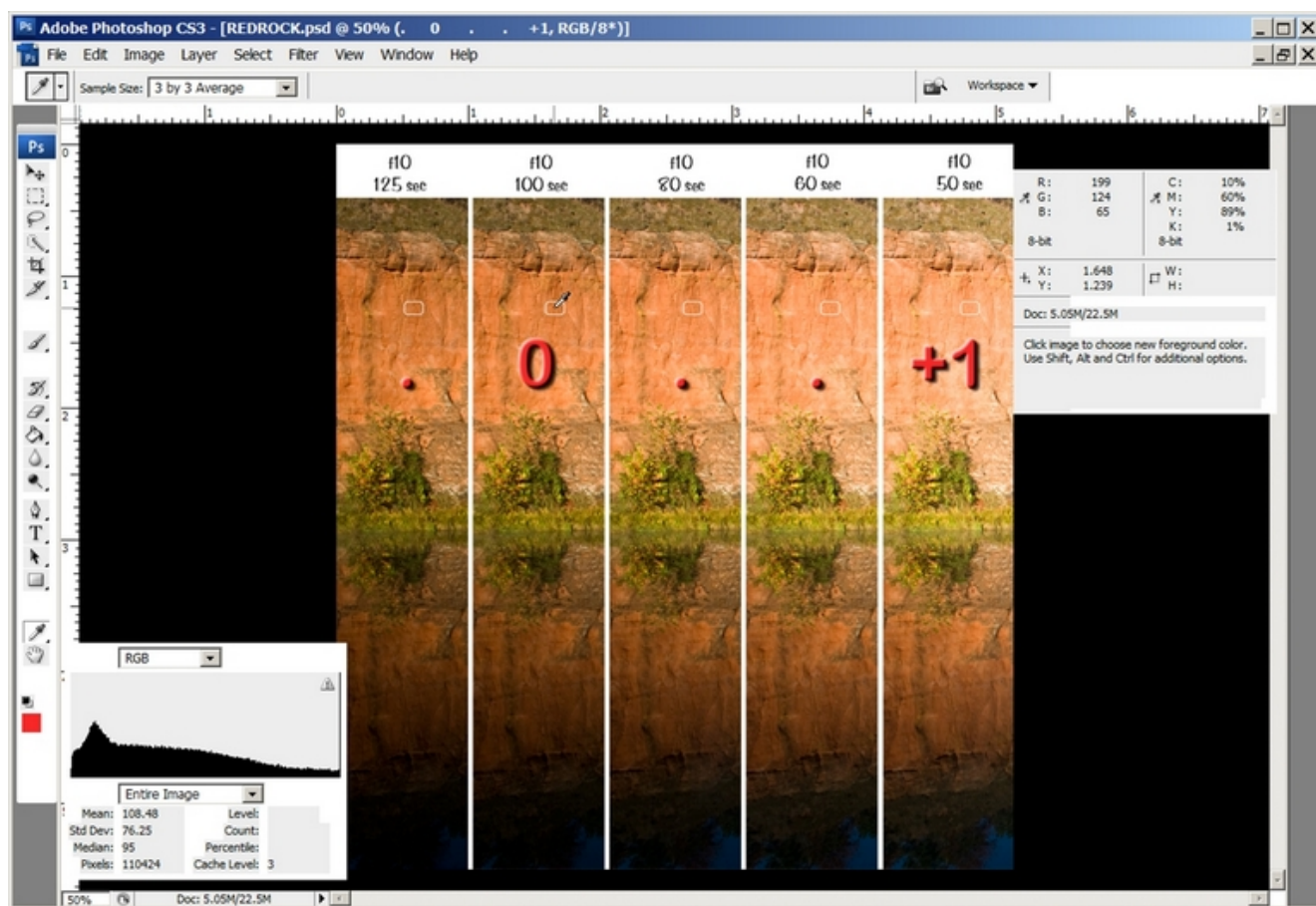


I ALWAYS KEEP THIS 5-STOP GRAYSCALE IN MY MIND BEFORE I METER EVERY PHOTOGRAPH I SHOOT.

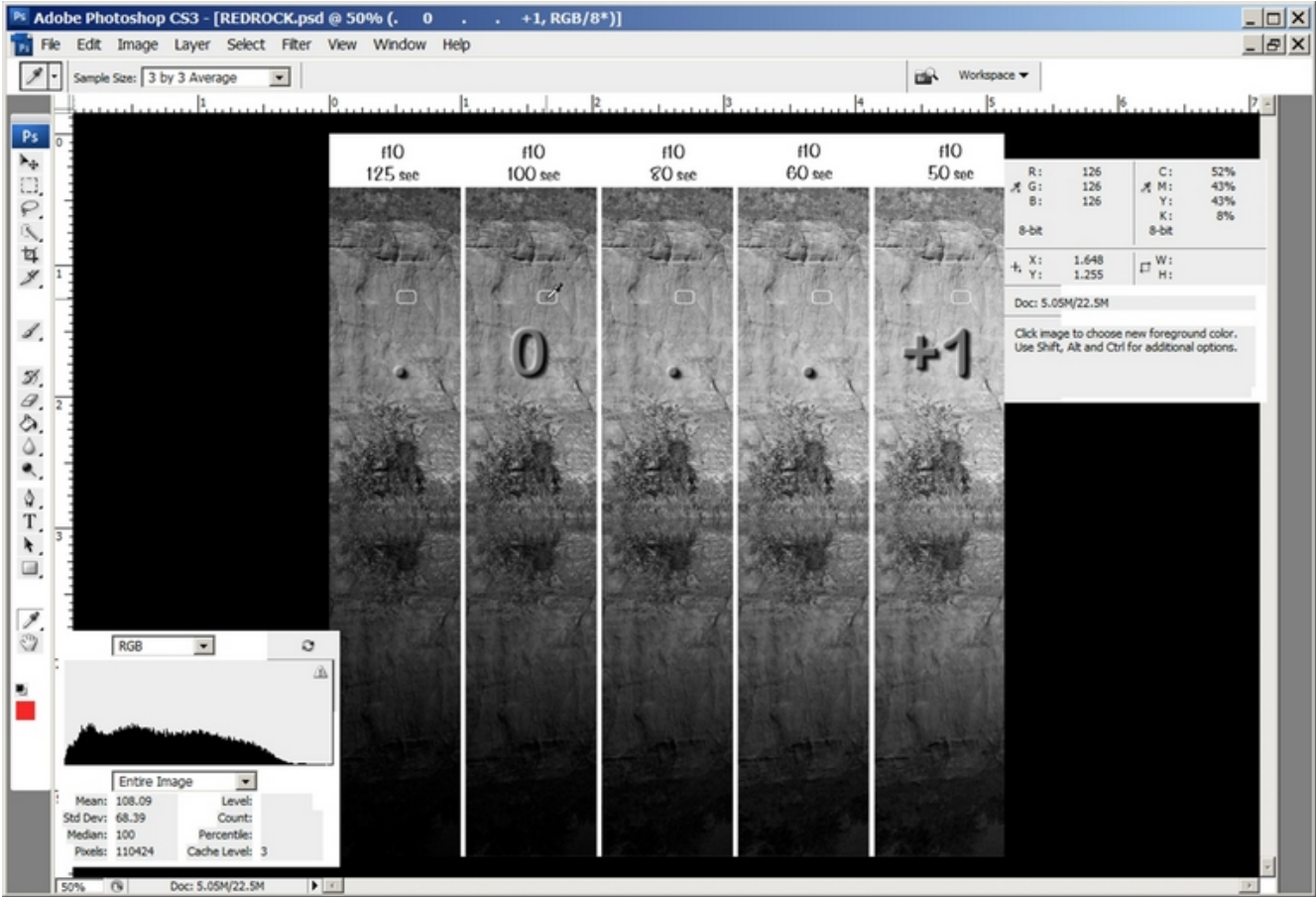
REDROCK CANYON #1

We went to Red Rock Canyon with the Club last October. I sat in my chair, camera ready, waiting for the sun to fully light the rocks and foliage. While I was waiting, I determined that the cliff was the most important part of the scene and selected a spot on the red rock cliff where I wanted to meter. I mentally placed that spot on "0" on the -2 thru +2 grayscale. When I thought the time was right, I metered on the spot I had chosen, and then I shot a series of images of the scene. Sometimes after I meter, I point the camera to other parts of the scene, without changing the aperture or shutter speed, to see where those areas fall on the camera's metering scale. If those areas are blowing out or blocking up, I may rethink my original exposure.

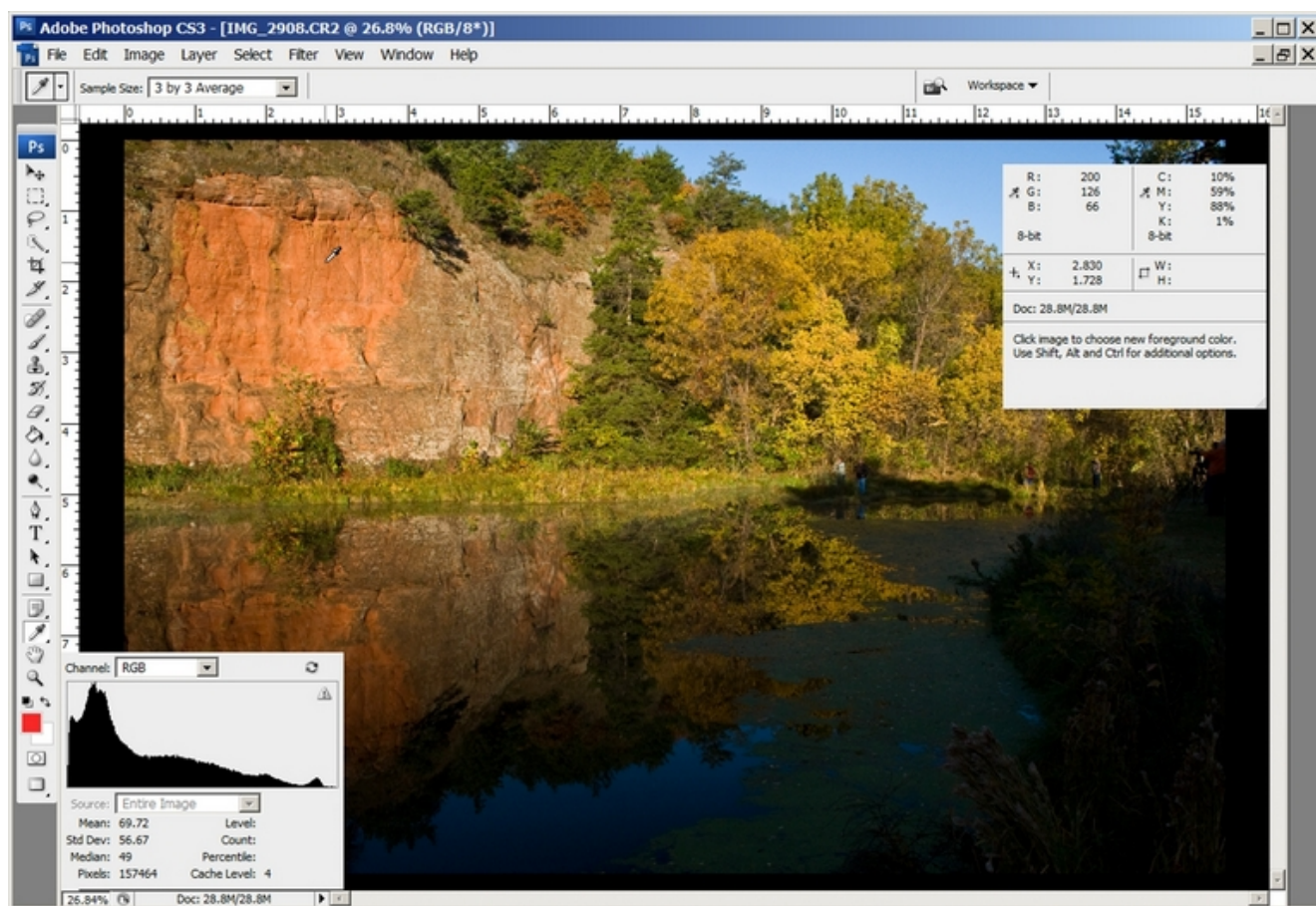
Here is a sequence of 5 exposures from 1/3rd stop under “0” to +1. I cropped into the part of the photo on which I metered. The color sampler in the “0” strip shows the green channel as 124 in the info palette.



I also put a black & white layer on it so you could see it desaturated and the info palette shows 126 on the digital dynamic scale.

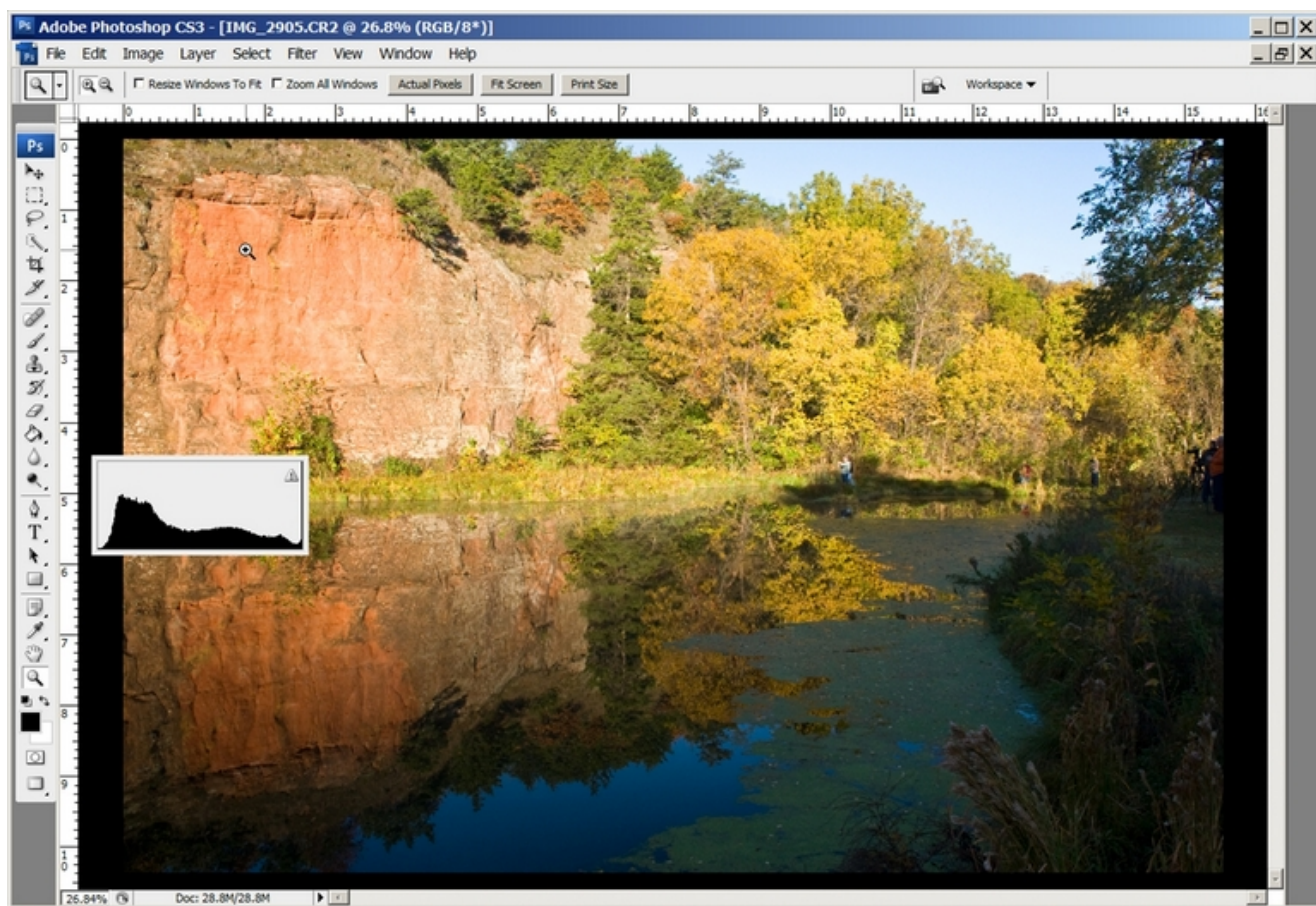


I selected the photo taken at "0". I have added a little contrast and saturated the colors some in the Photoshop Bridge, but the exposure and brightness controls have not been altered. There has been no photoshopping done.

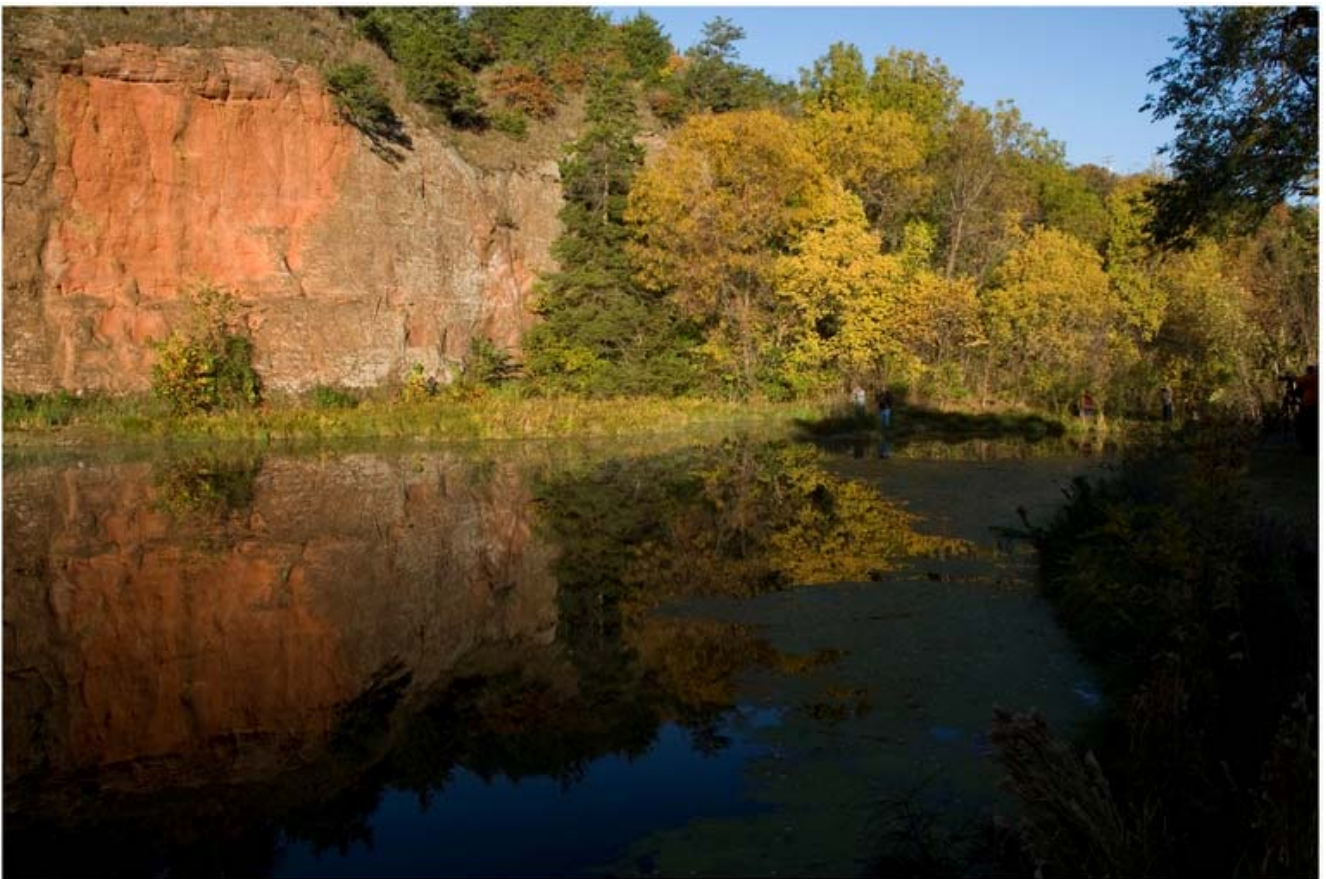


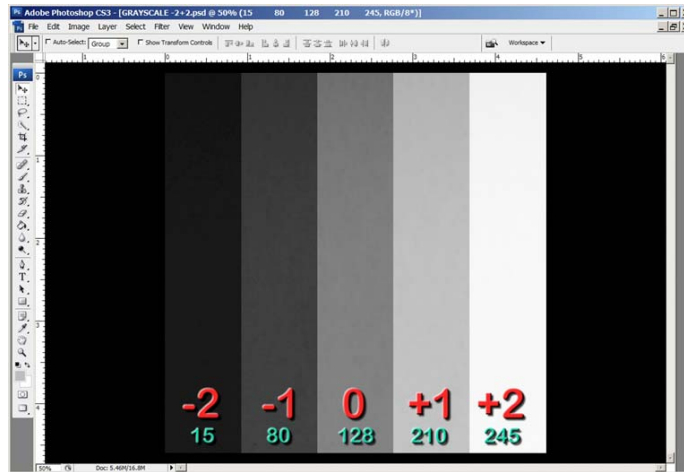
The histogram shows the shadow areas and the pond to be very dark but those dark areas in the foreground are not as important as the cliff and foliage.

The photo taken at +1 has a better histogram and the shadow areas have good detail, but the cliff, which I think is the most important area, is not well exposed. If I had used an evaluative or center-weighted averaging meter, I think this scene would have been overexposed.



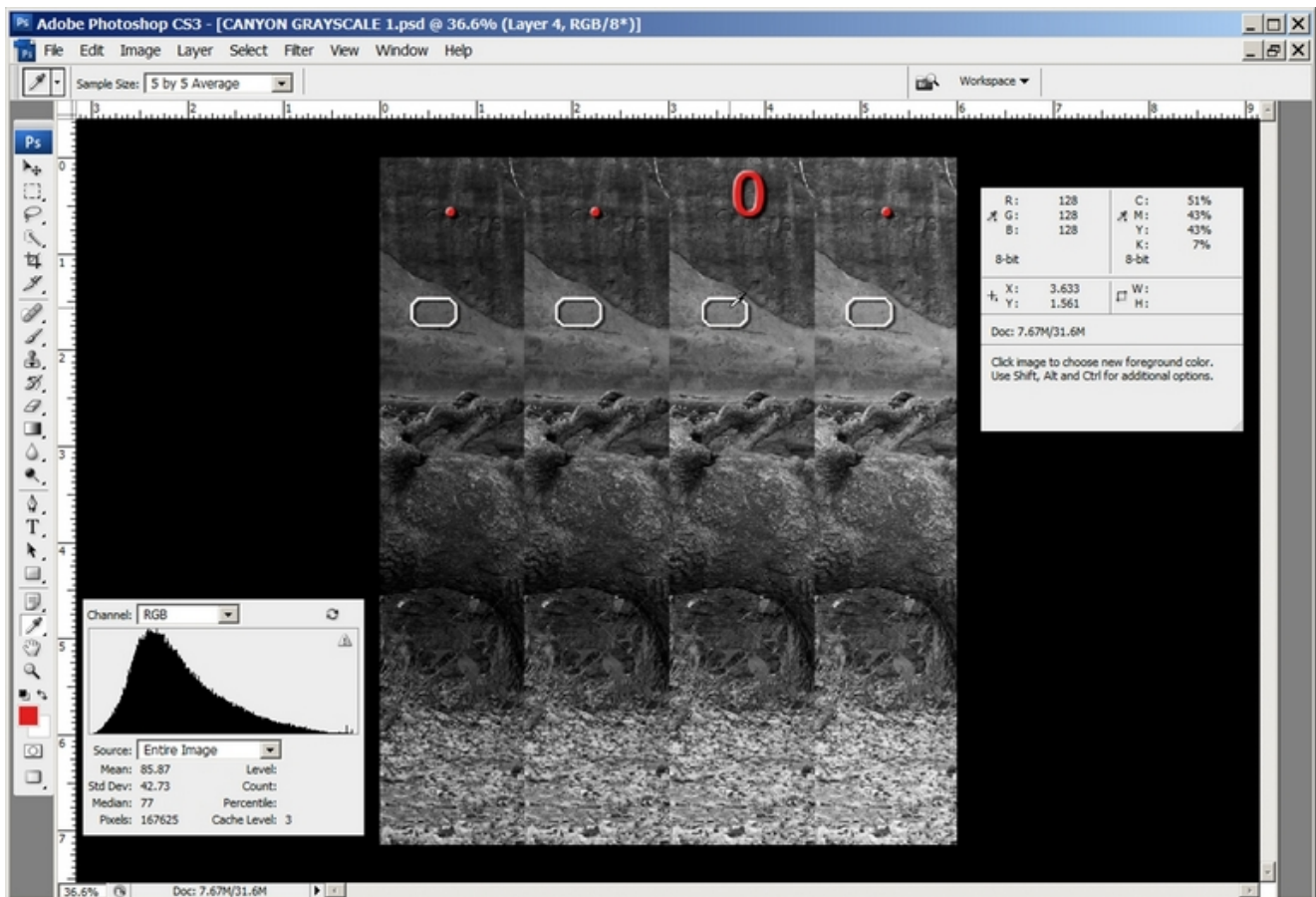
Here is the final image shot at "0".





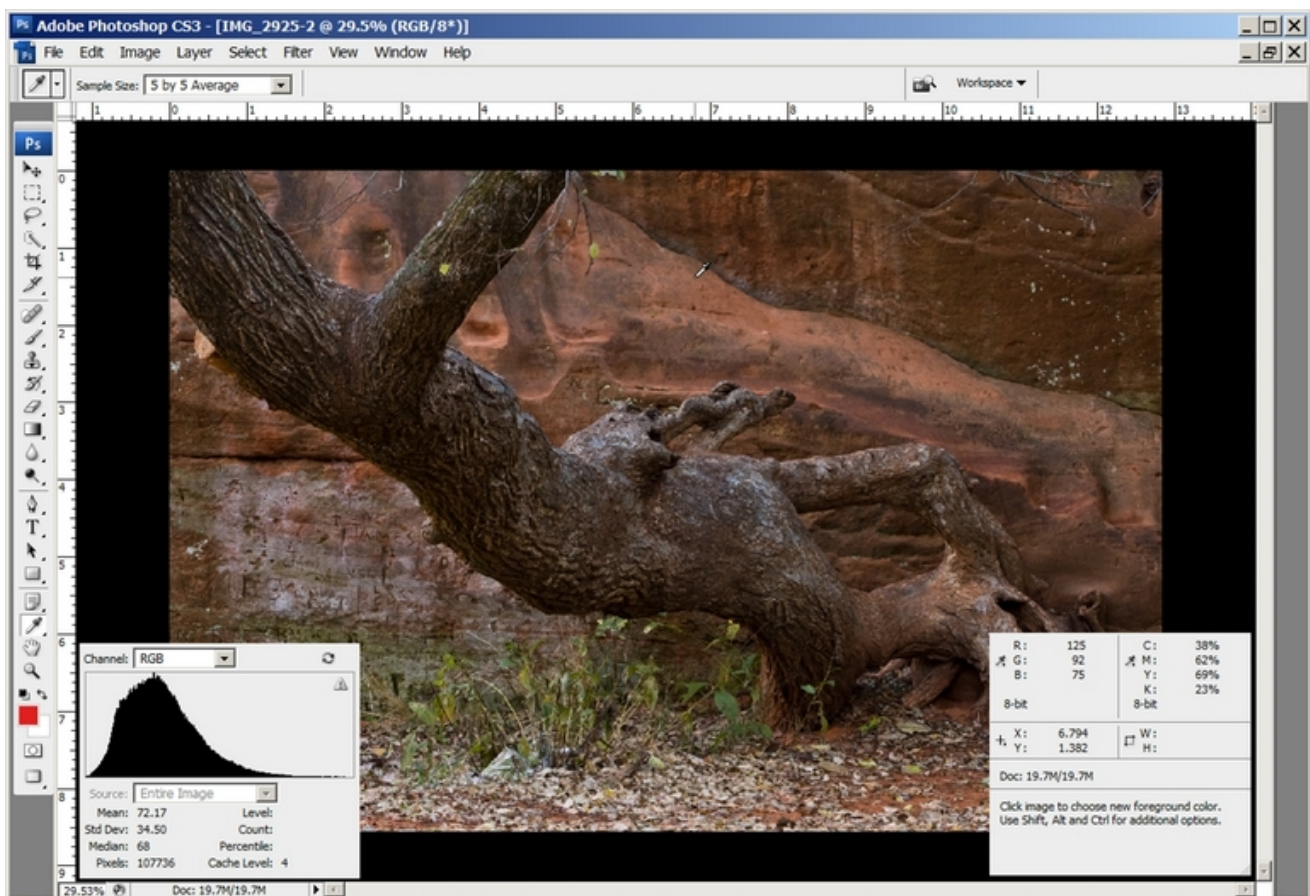
REDROCK CANYON #2

I have another photograph shot at Red Rock Canyon. This scene of a gnarly tree against a rock background was in total shadow. Just like before, I selected a place in the rocks where I thought should be 18% gray, and then I adjusted the aperture and shutter speed so that my meter read “0” again.



The color sampler positioned in the “0” exposure exhibits 128 on the digital dynamic scale.

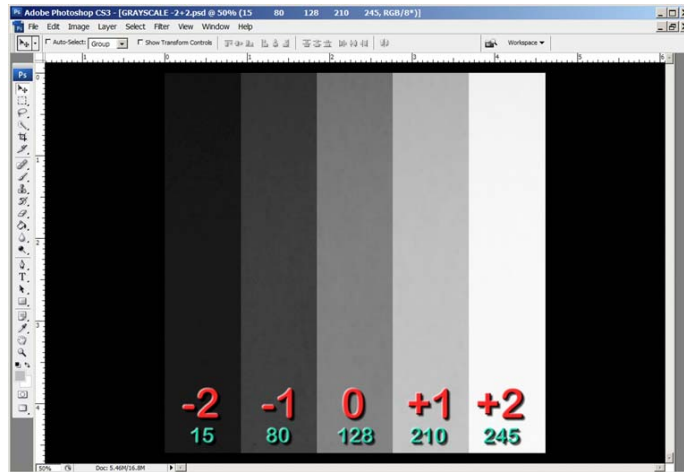
Again, the histogram displays darker image. Notice the color sampler again. It indicates 125 in the red channel. This scene contains few areas that would fall above "0" on the grayscale, so the evaluative and averaging meters would over-expose this image.



Here is the final image shot at “0”.



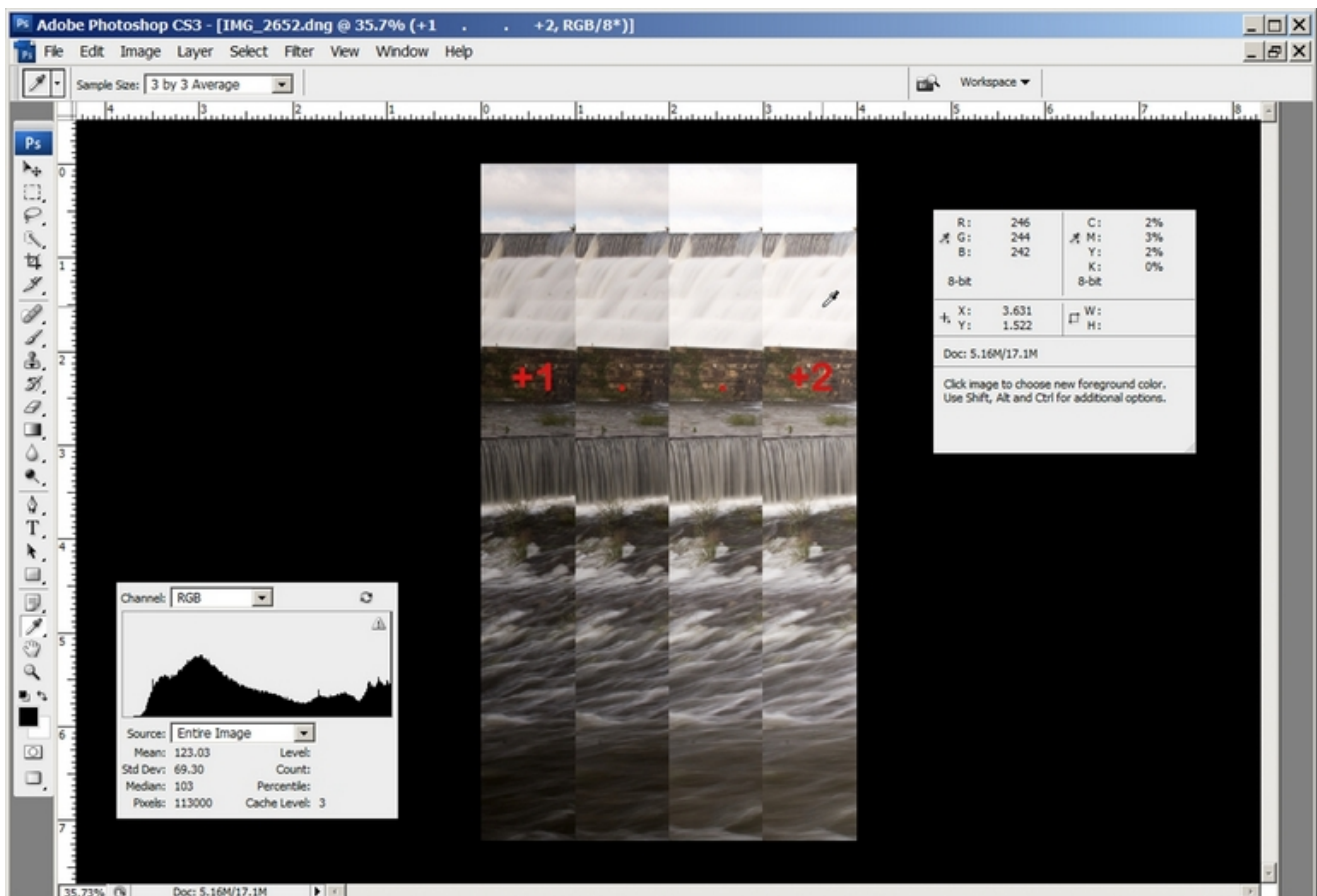
Not all scenes have a clear cut place to meter for 18% gray or middle gray, so what do I do? I decide what the most important area of the scene is and decide where I want that area to fall on the dynamic grayscale.



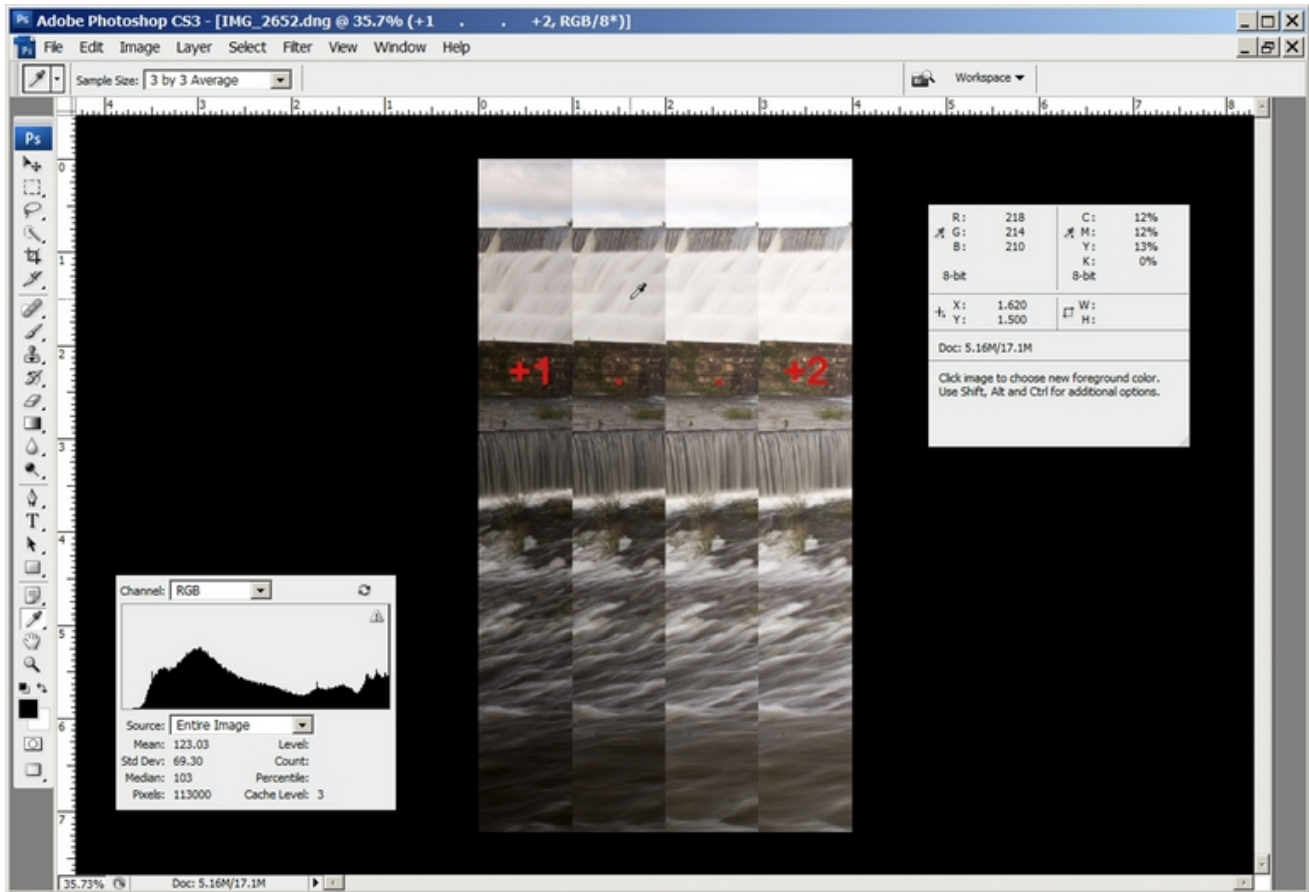
OKMULGEE LAKE SPILLWAY #3

Bill & I spent a morning at the Okmulgee Lake spillway in early October. Before shooting the spillway, I decided I wanted the exposure of the water to fall somewhere between +1 and +2. I figured +2 would probably not have enough detail for me, but I wanted to make sure.

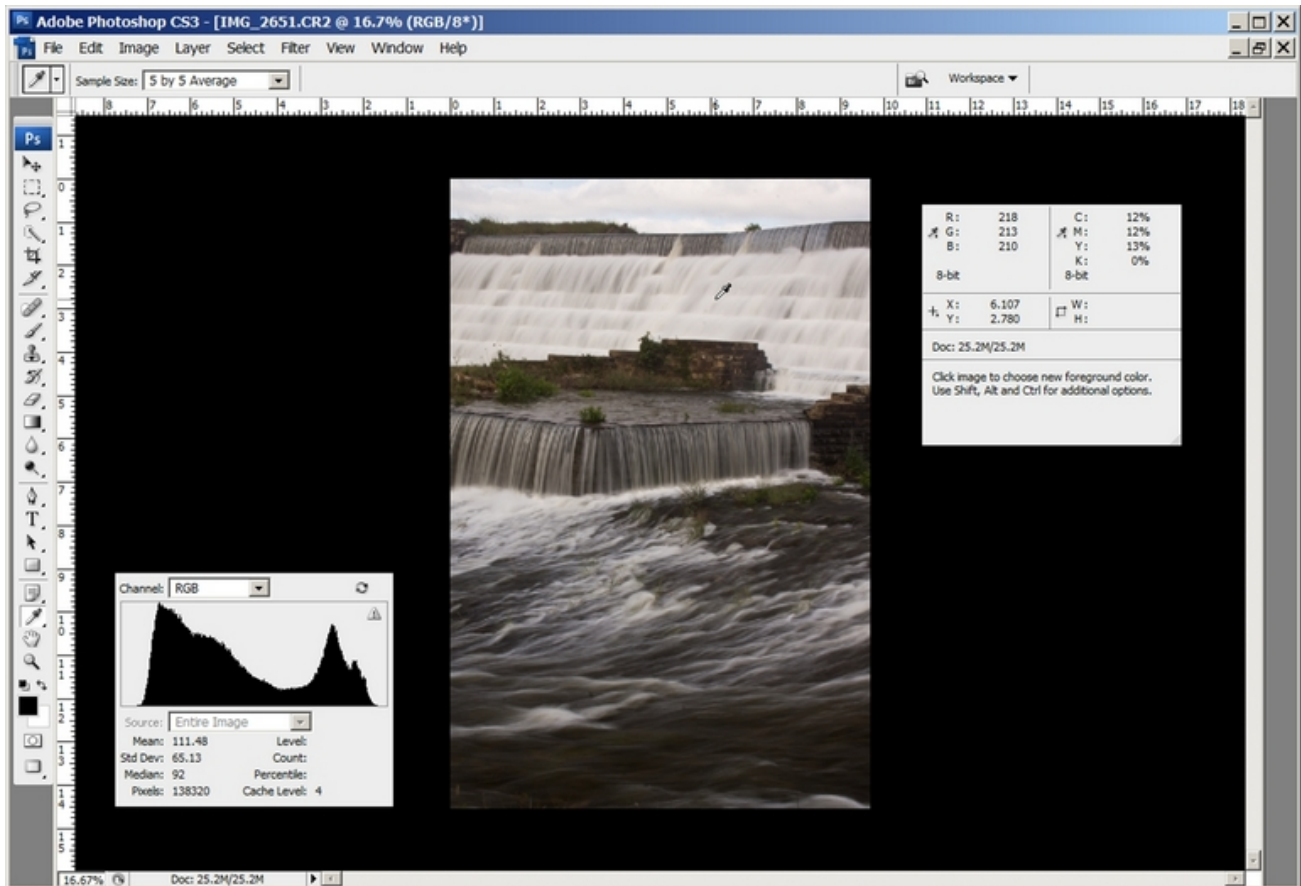
Here is a series of strips from the shots I took. The +2 exposure is clearly blown out and the exposure under +2 doesn't have good detail in the clouds.



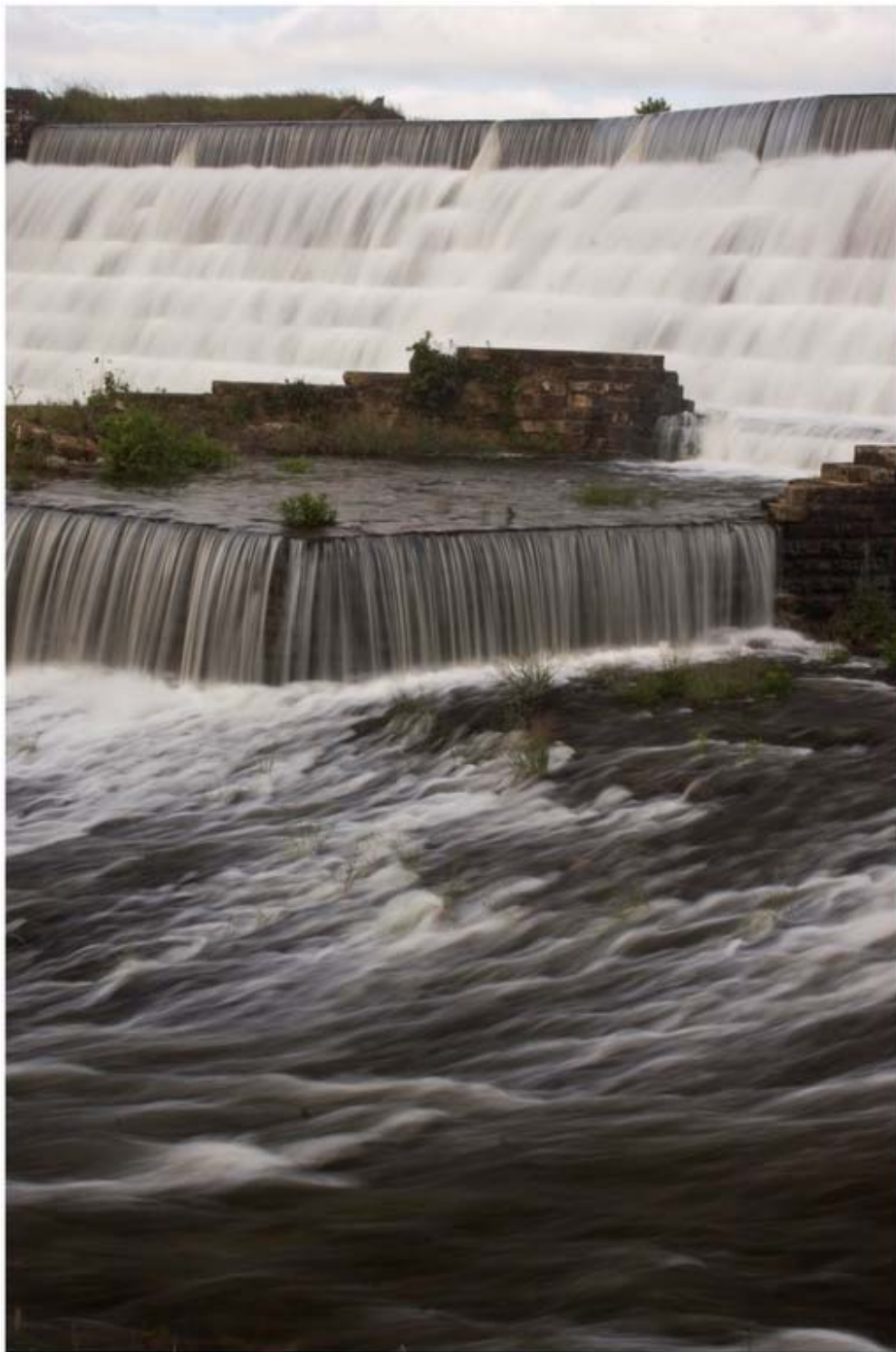
I chose the +1&1/3rd exposure (which was f32@1/4sec.) as the one I wanted to use.



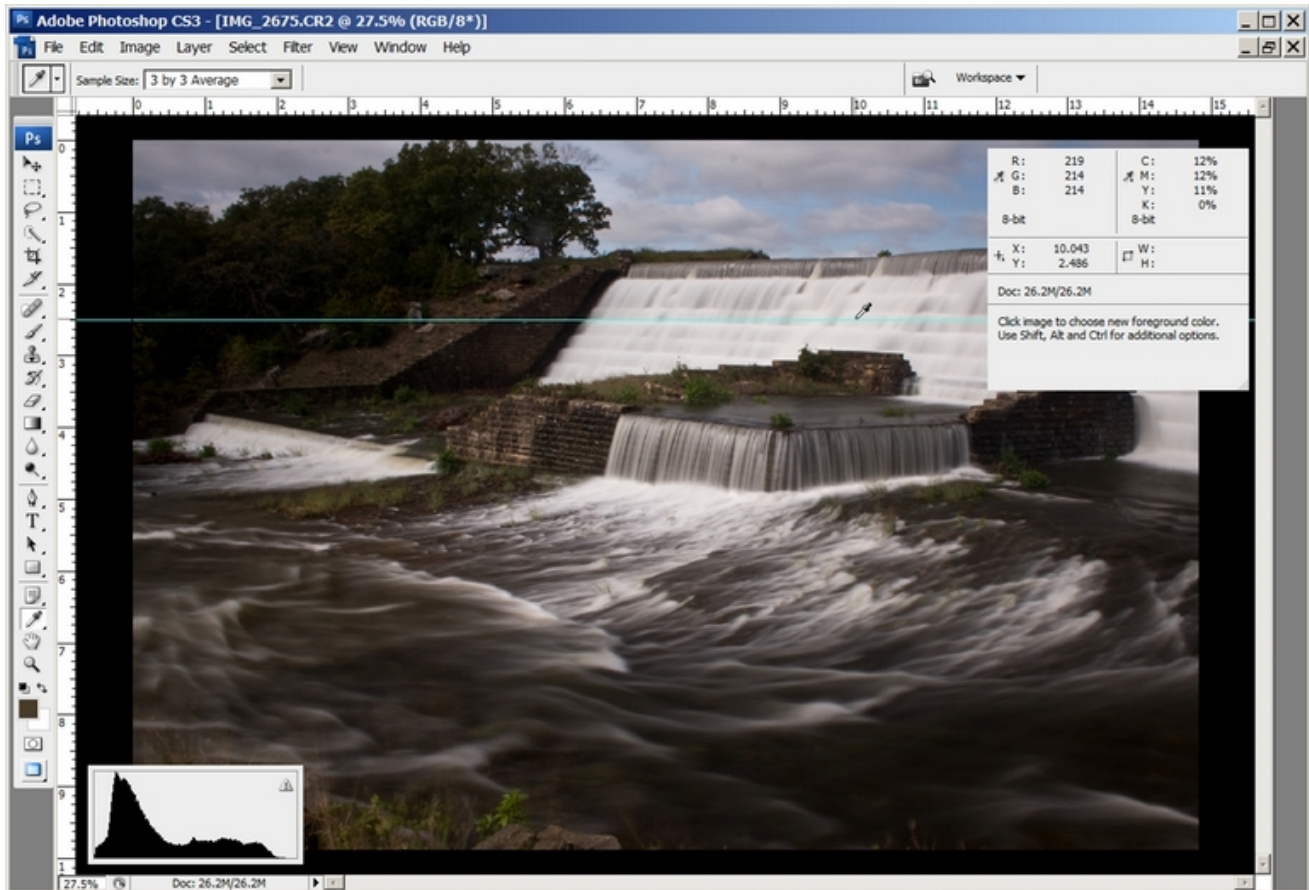
The histogram looks good to me. It doesn't show any blown out highlights or blocked up shadows.



Here is the final image shot at “0”.



I wasn't really paying a lot of attention to composition on this shot. I got what I think is a better photo about fifteen minutes later using a 5x's neutral density filter.



The exposure was f22@5sec. I didn't get a series of different shots to show you. However, this sample's info palette shows you similar exposure numbers as the previous photo. The histogram here is weighted towards the dark end also. I probably have some blocked up shadows, but the water was my subject and it has good details. I can adjust exposure in the shadows later. I think the darkness in the trees and the darkness in the foreground creates nice drama.

Here is the final shot.



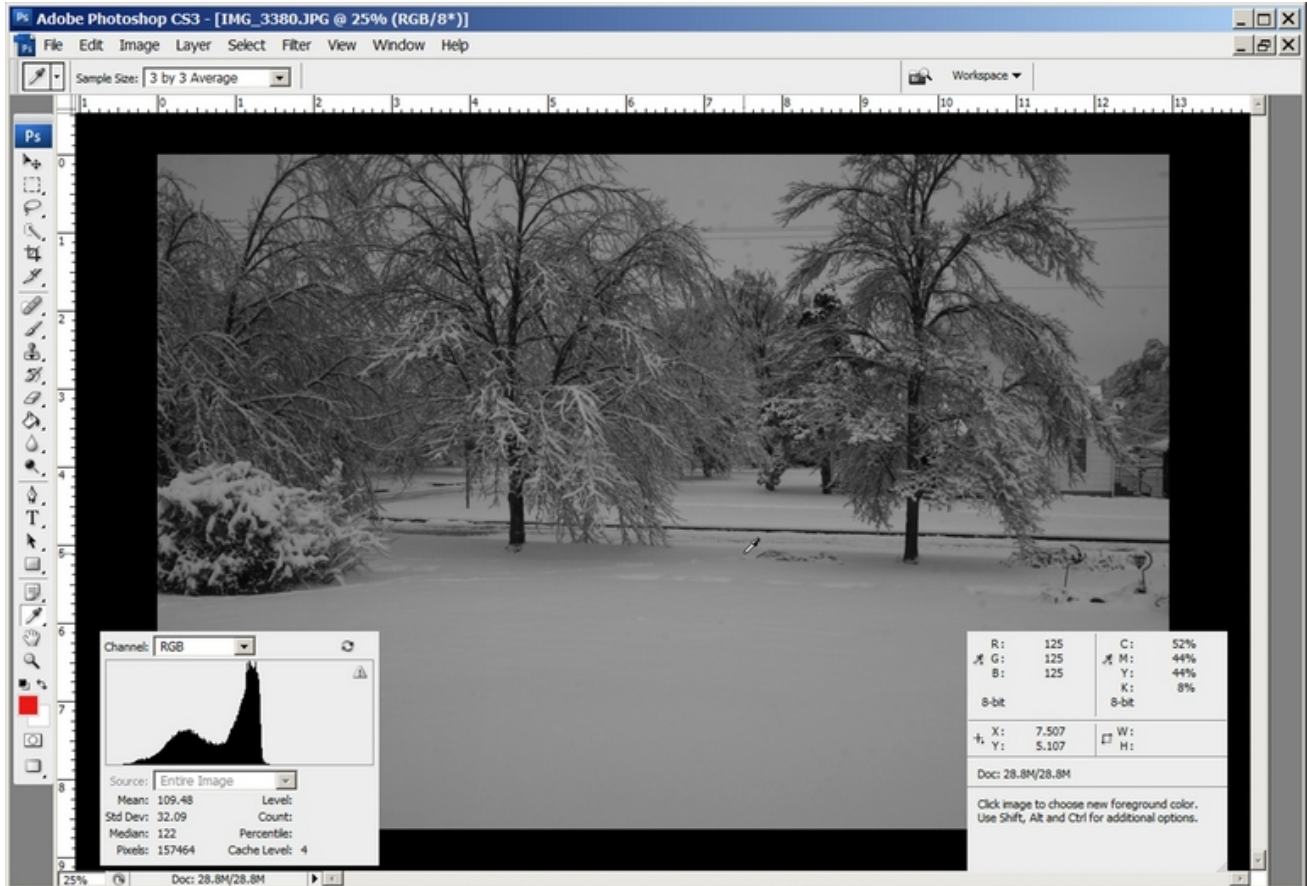
This is the kind of shot that works really well in black and white.



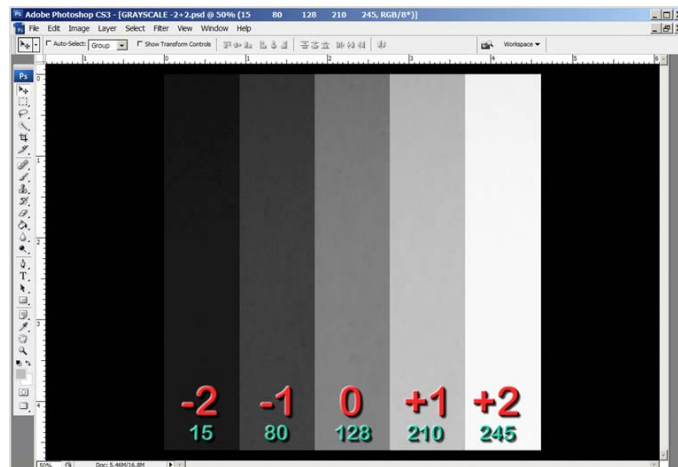
SNOW #4

The only good thing about the storm we just had is that I was able to shoot SNOW.

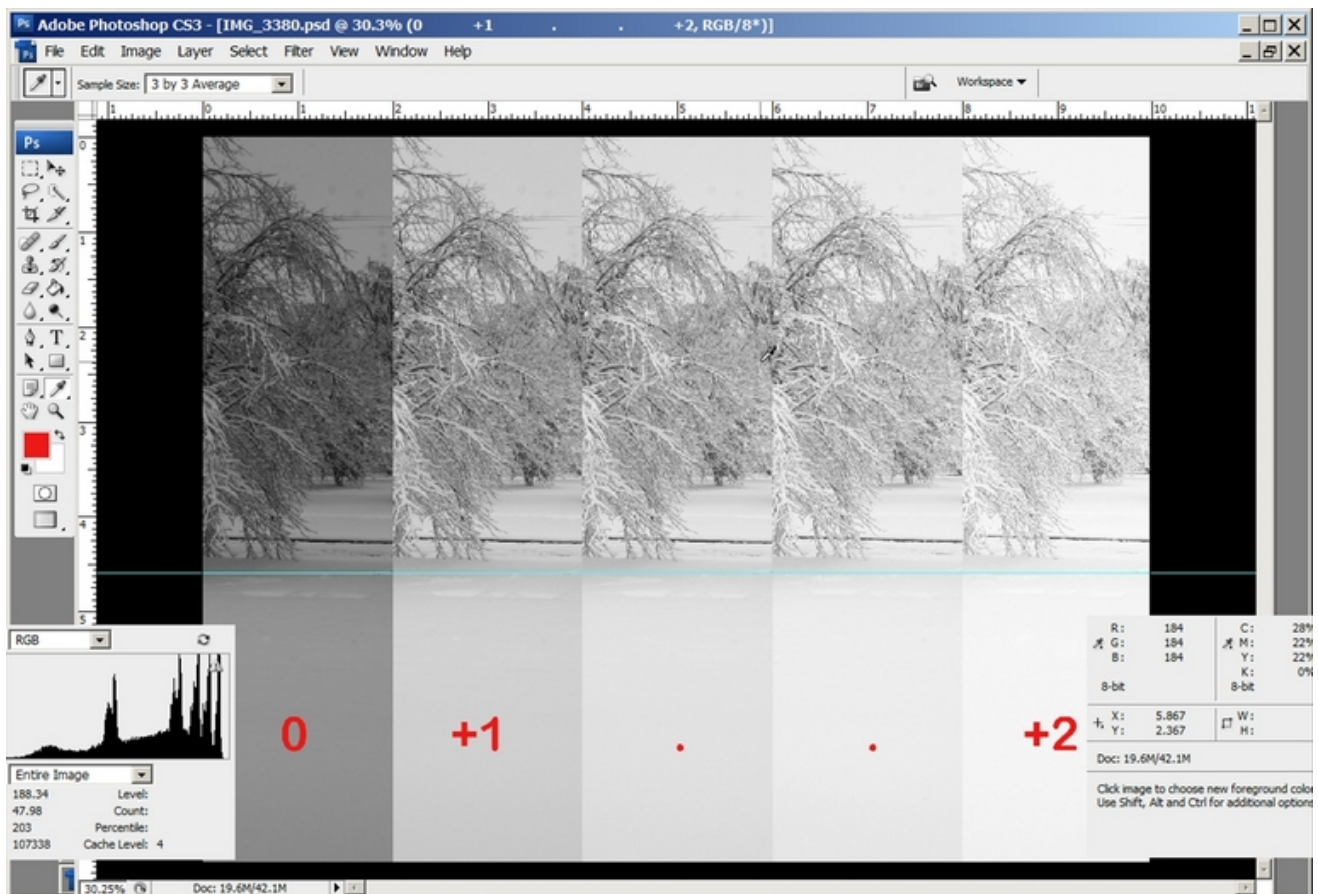
If you shoot snow on automatic or program, the little man inside your meter who's working like a chicken to produce 18% gray is going to give you this. I shot this with my metering scale set to "0" just so you could see this.



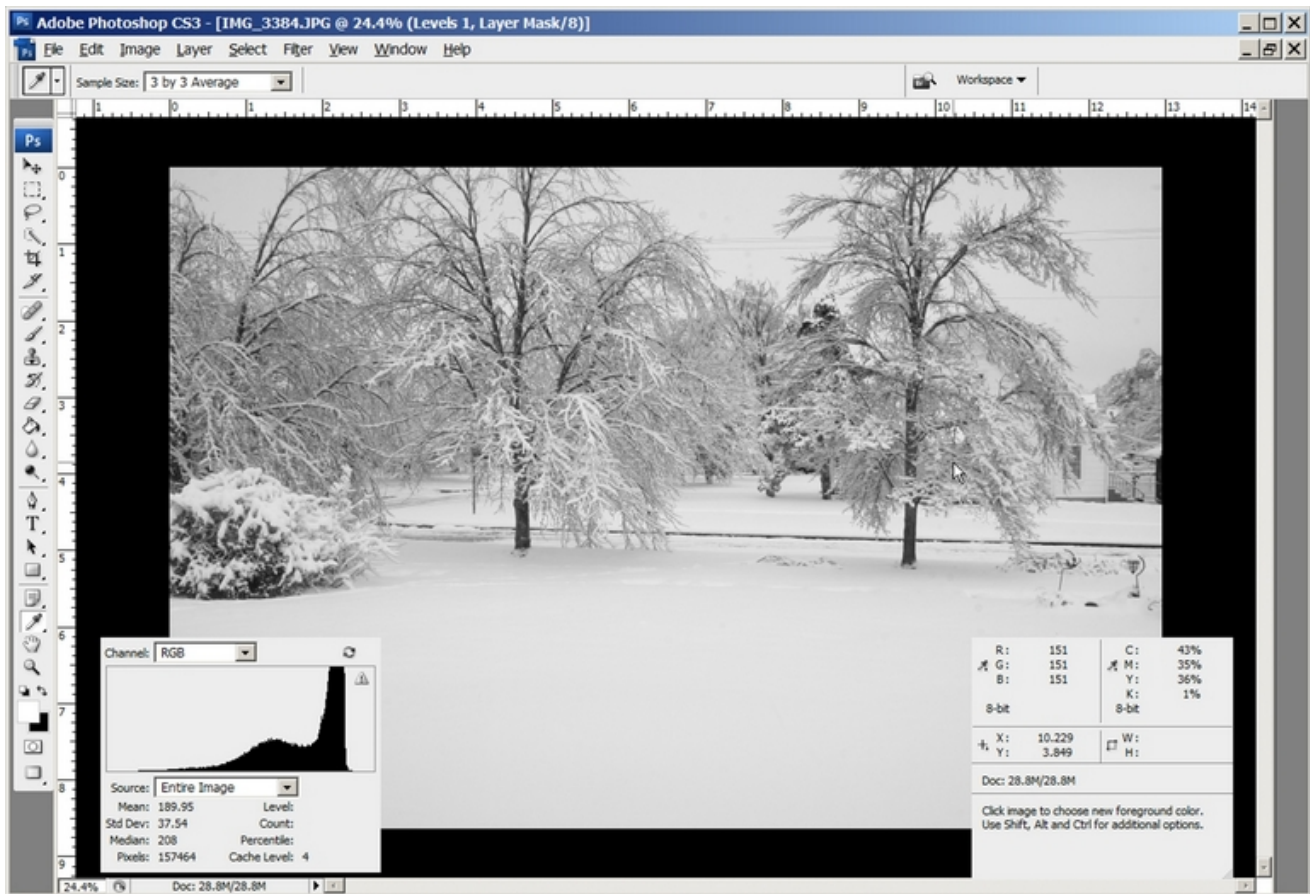
Just like white water, I wanted the snow to fall somewhere between +1 and +2.



Again, I chose the exposure that fell at $+1\frac{1}{3}$ rds.



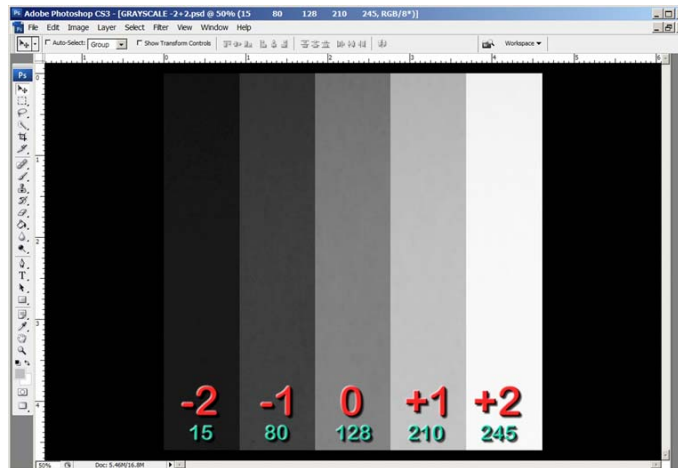
The histogram is where I think it should be. I think any lighter and I might start losing detail. After all, it was a cloudy day.



Here is the final shot at +1&1/3rd .

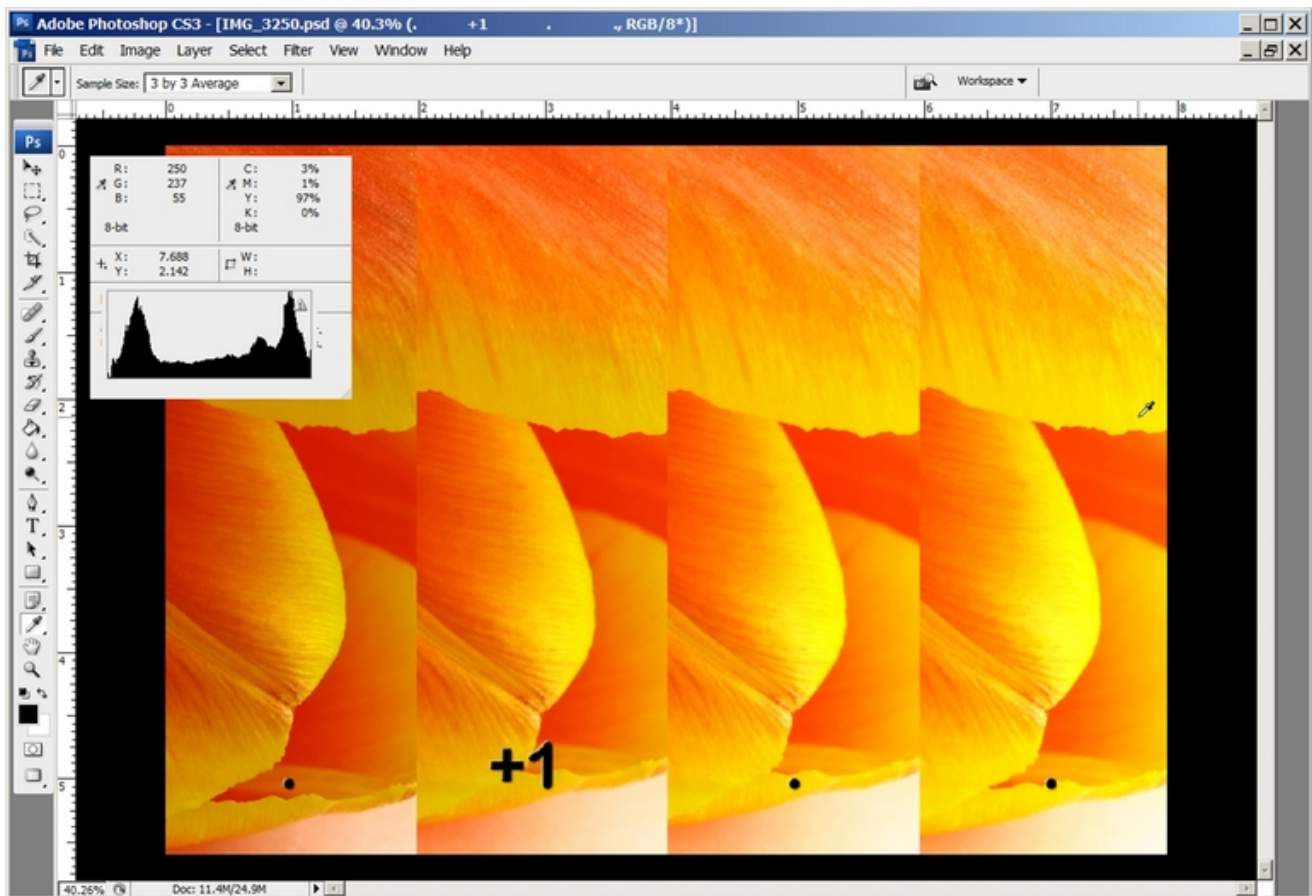


TULIP #5

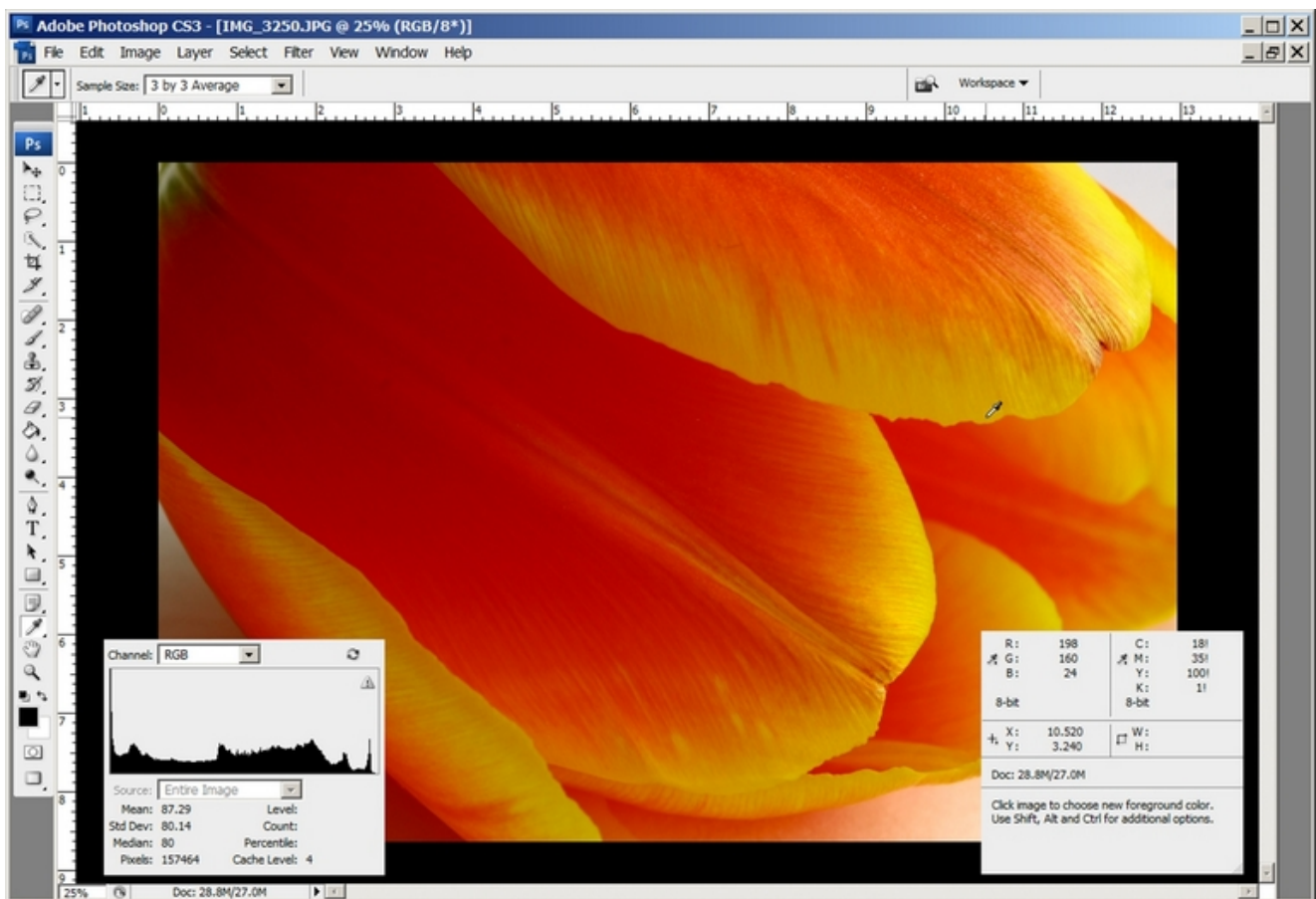


I LOVE FLOWERS!!! I had a hard time finding these particular tulips, but I wanted them specifically because of the yellow trimmed petals.

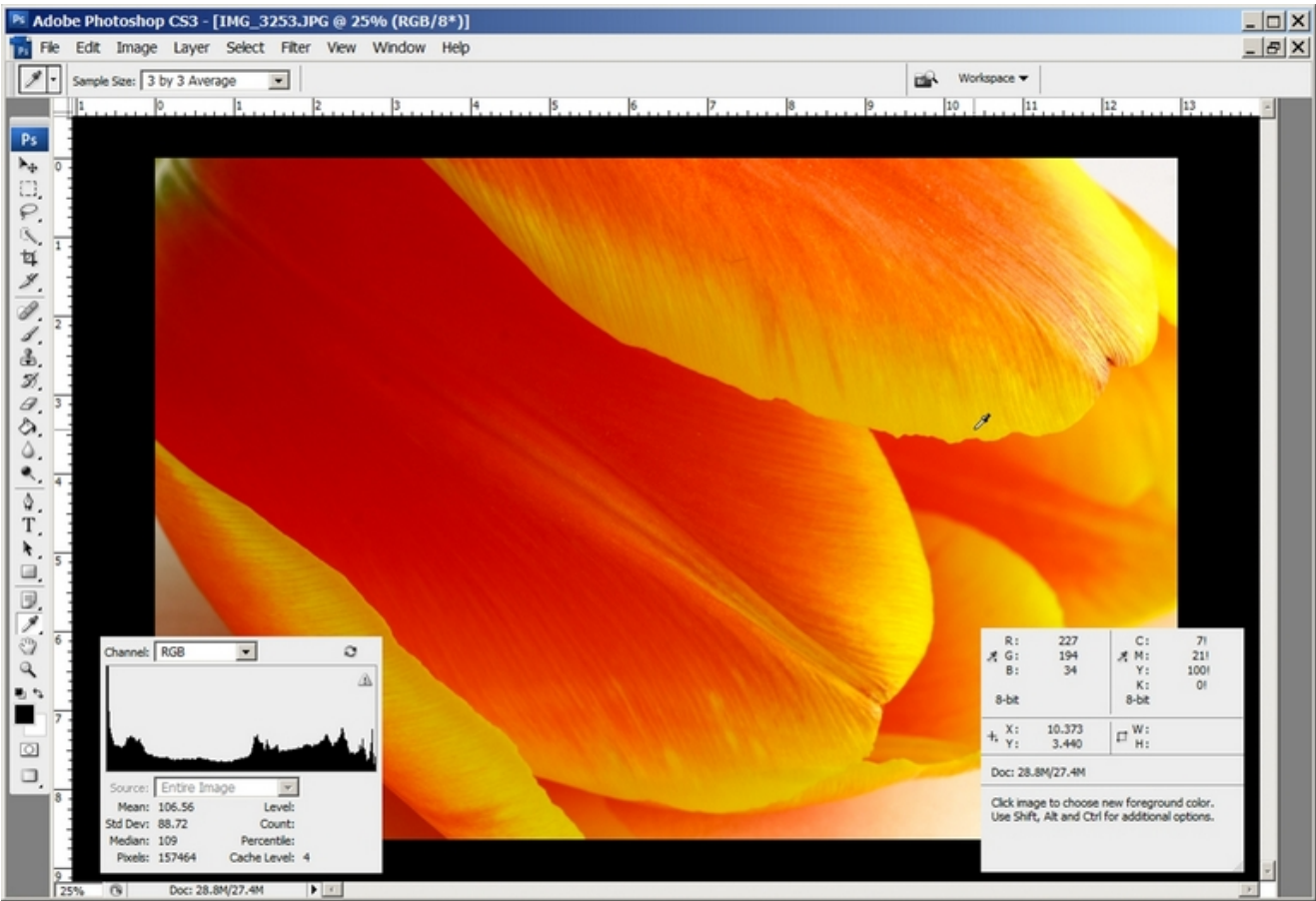
I thought the yellow trim should fall right on +1. I shot from $+2/3^{\text{rds}}$ to $+1\&2/3^{\text{rds}}$.



The exposure at $+2/3^{\text{rds}}$ looks okay, but yellow trim is lackluster.



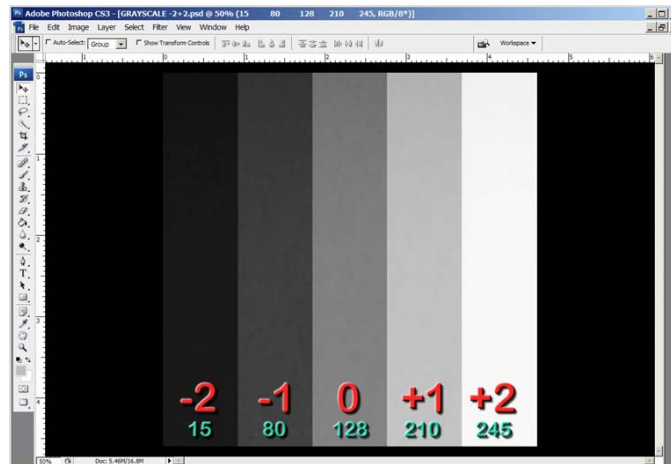
The exposure at +1 really shows a difference. I think an evaluative meter would have over exposed the tulip. The histograms on both photos are very similar, but I like the lighter exposure because the yellow really pops to me.



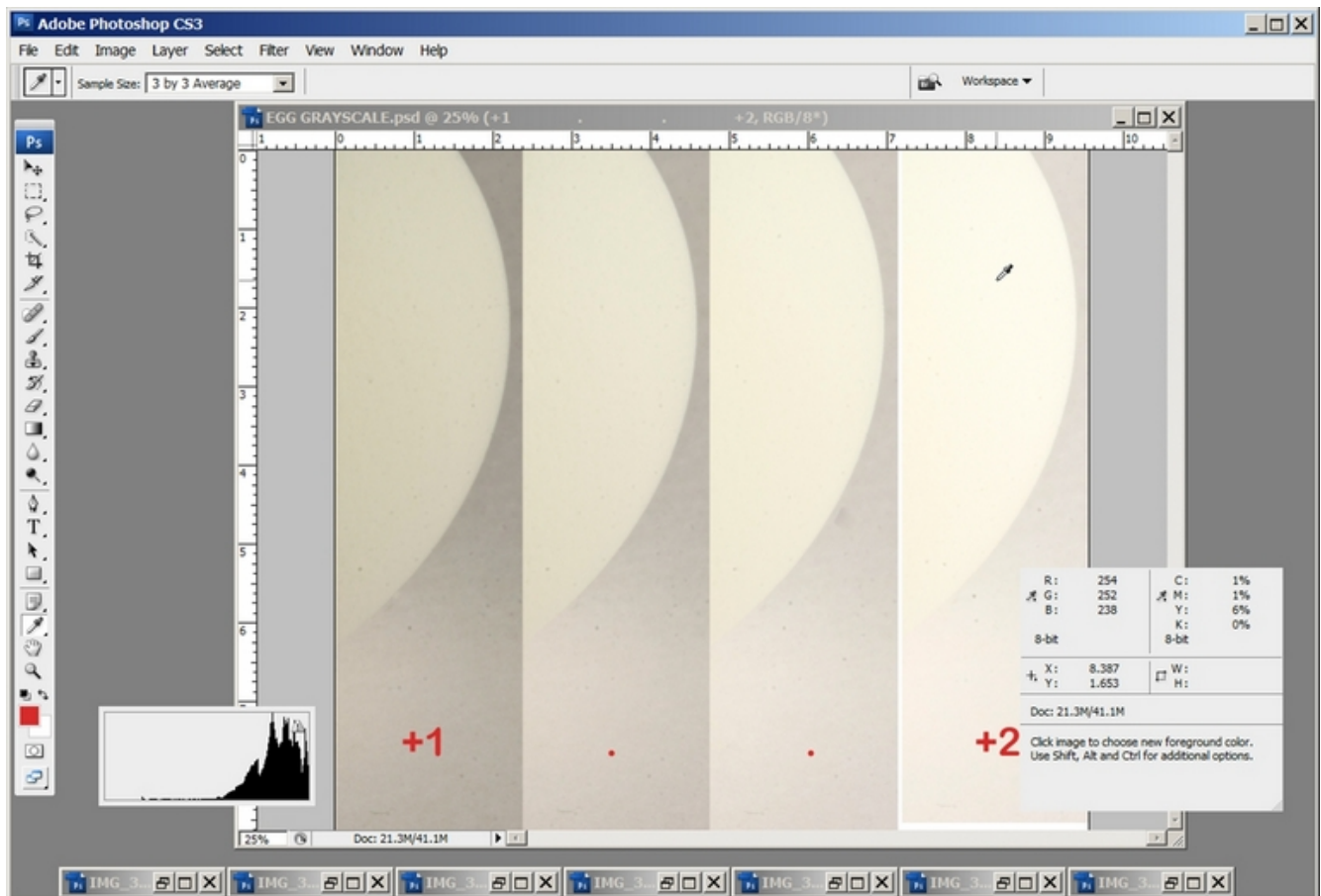
Here is the final shot on +1.



EGG #6

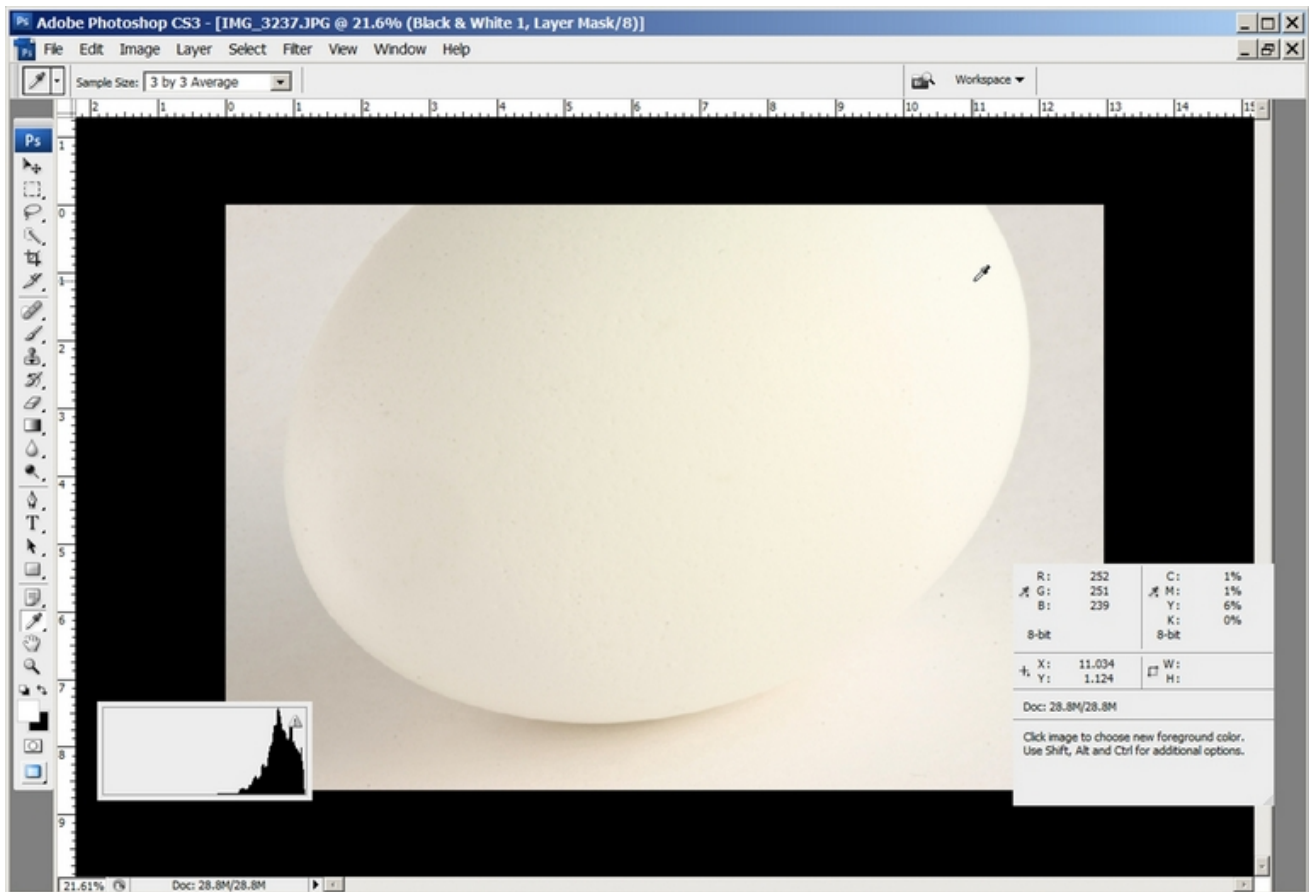


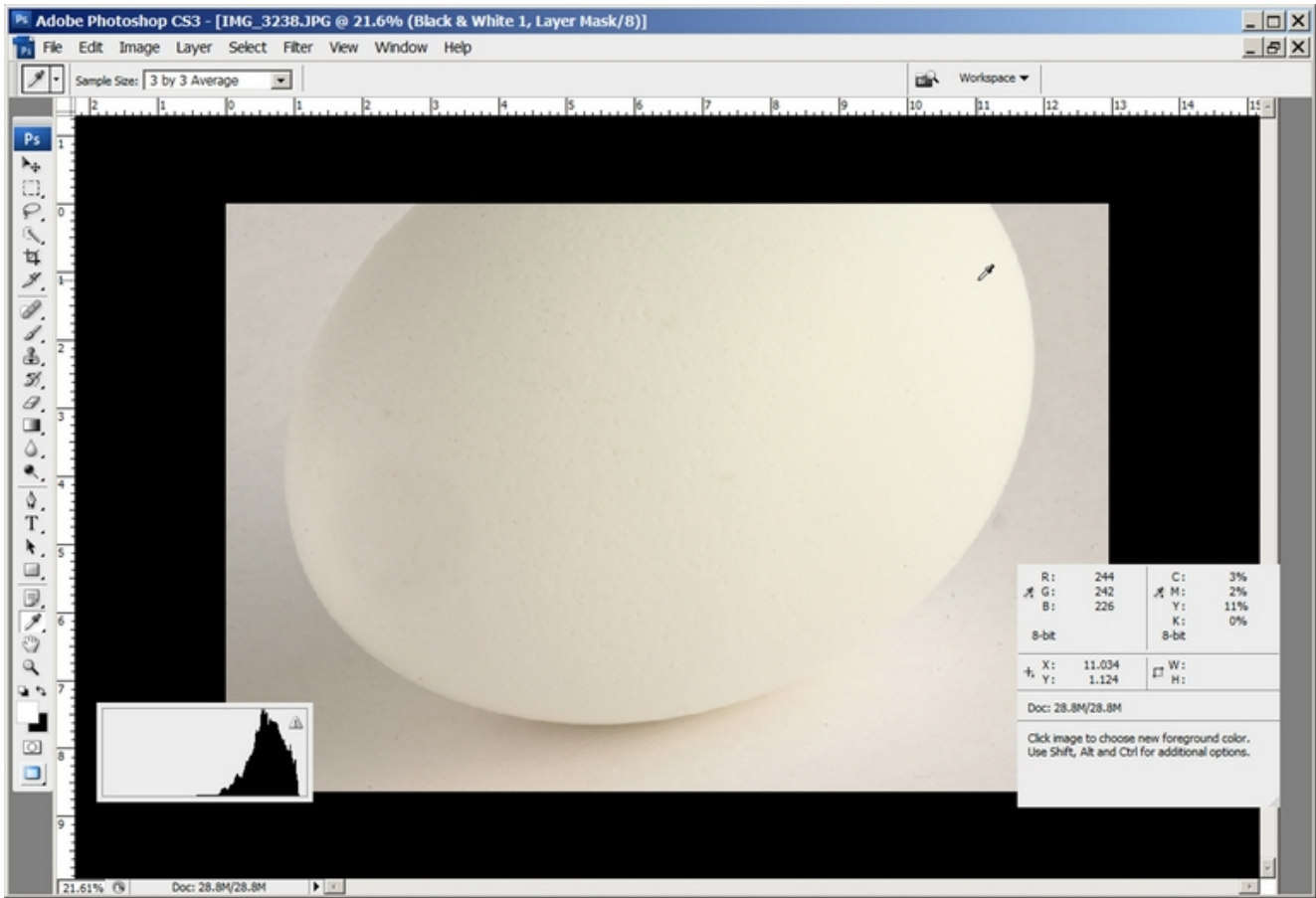
One of my favorite subjects is eggs. Exposure speaking, it's like snow and white water. I shot an egg on a white background for a nice high key mood. I expected the exposure to be between +1 and +2, and I metered on the highlight of the egg.

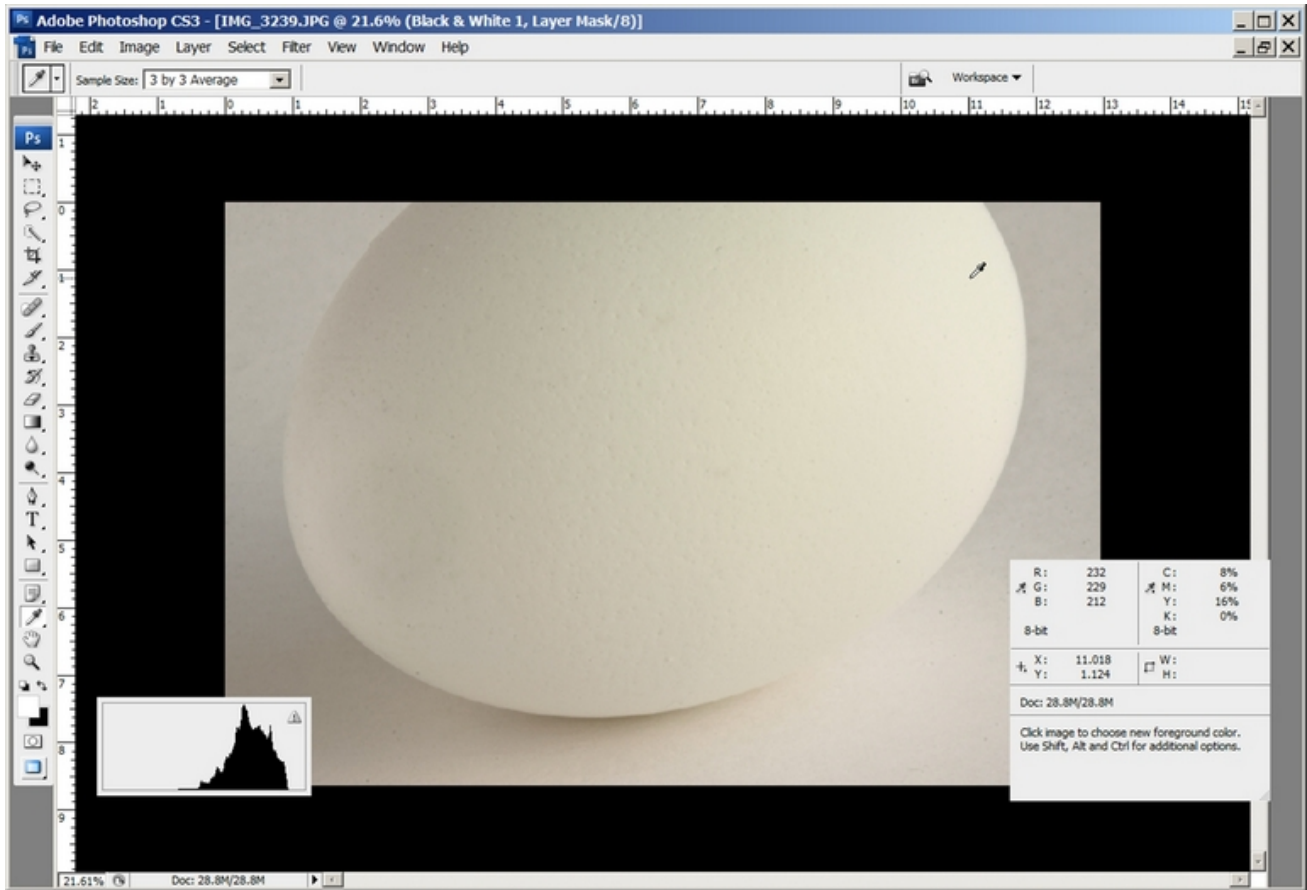


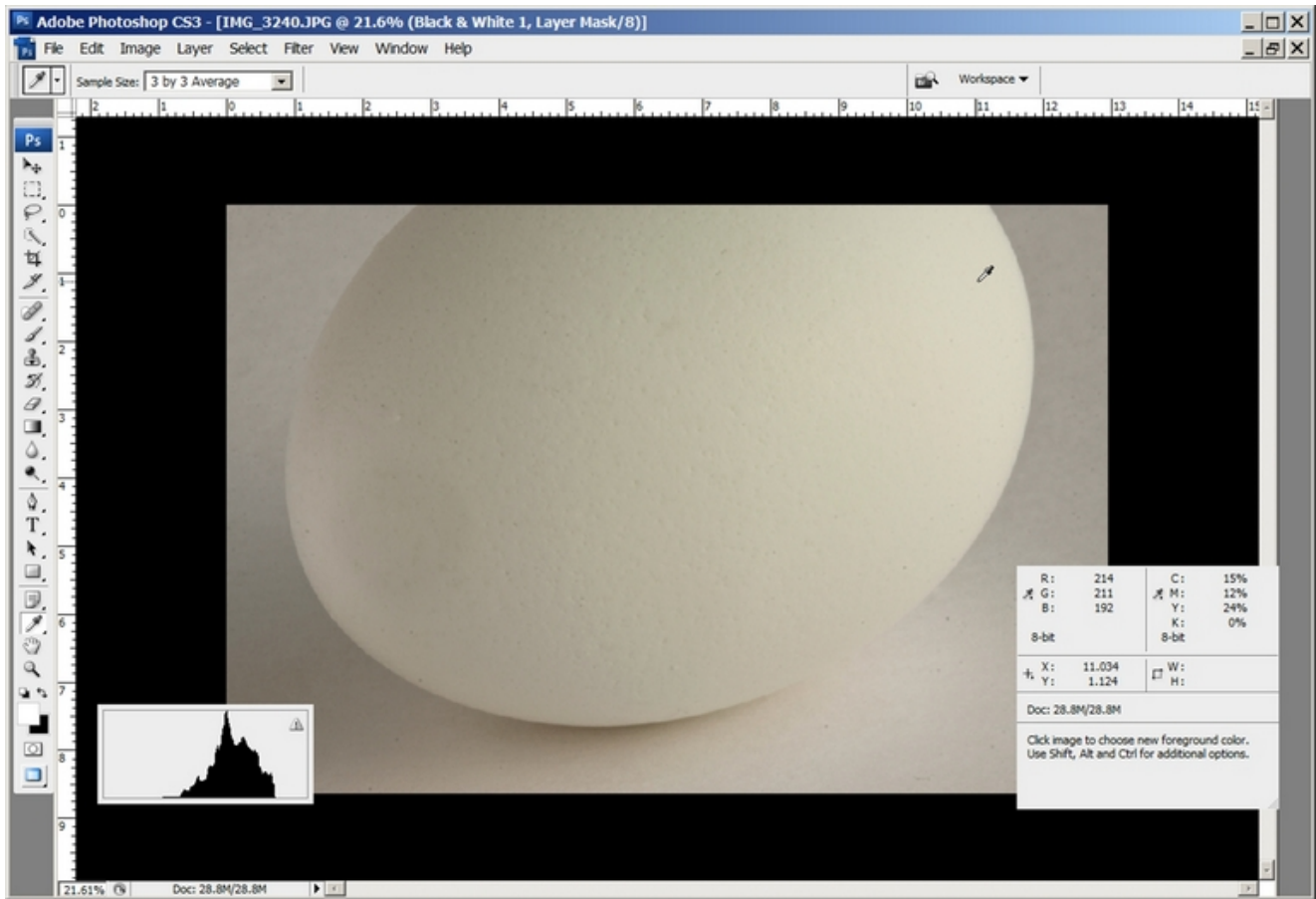
These sample strips don't really show you much, so I'll display the entire image of all the exposures.

As we scroll through, notice the color picker which is set at the lightest area where I metered.

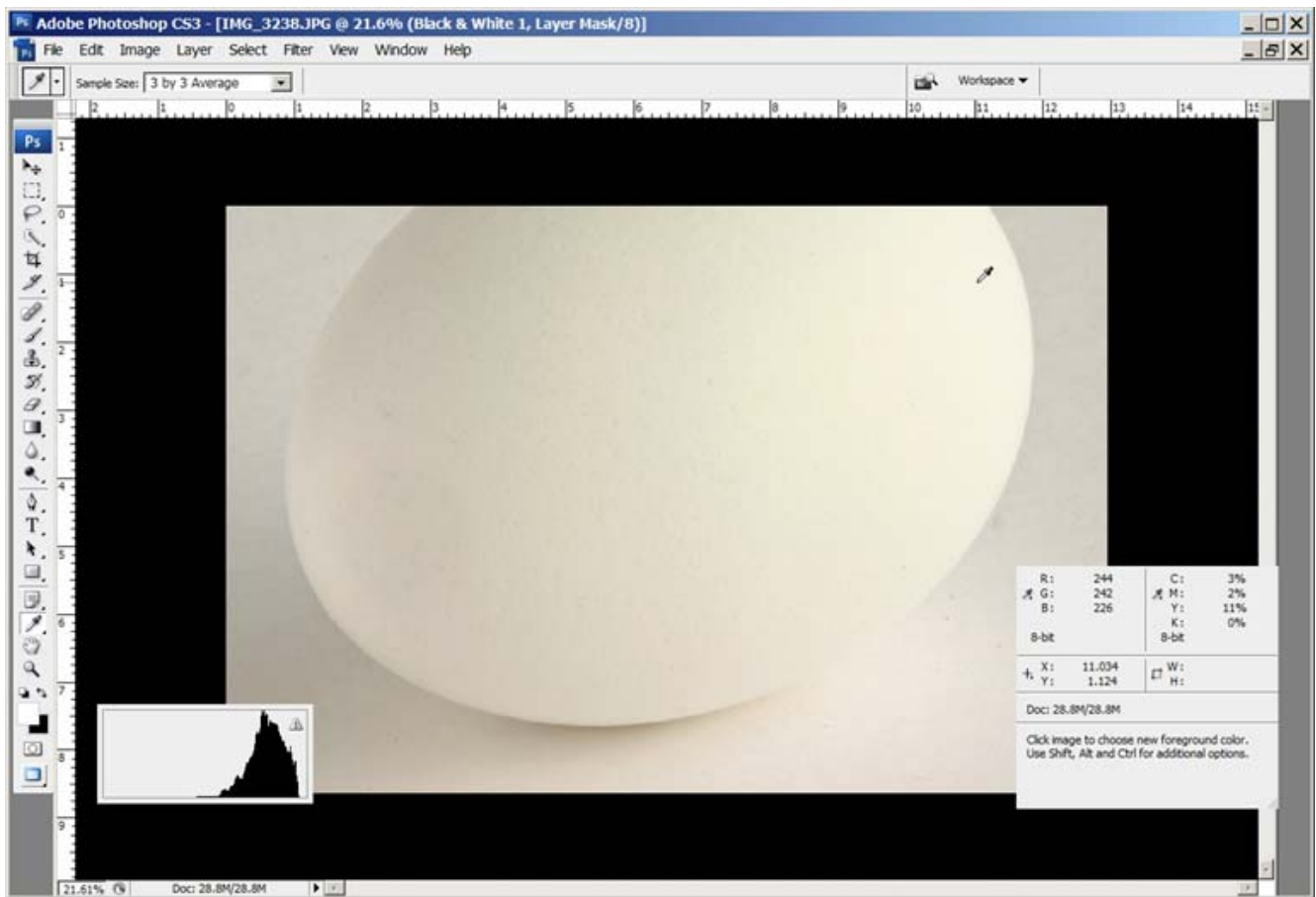








The one I selected for the final photograph was the image shot +1 $\frac{2}{3}$ rds because it was the lightest one that I could see the dimpling in the shell.



The right side of the histogram is not slammed up against the edge, but has pulled away letting me know that I should have details in the lightest areas of the subject.

Here is the final image.



CONCLUSION

All the meters have their functions, but I like the control that the partial or spot meter gives me. With the spot meter, I can place a particular area of the photograph where I want it on the dynamic grayscale.

1. Remember the meter's "constant". "0" on the camera's metering scale should render 18% gray.
2. Remember that -2 represents black with very little detail and +2 represents white with very little detail, and that -1 and +1 are somewhere in between.
3. Keep the 5 tone grayscale in mind when you meter.
4. Select an important area of your composition.
5. Decide where on the -2 thru +2 metering scale you want to place that area.
6. Set the aperture and shutter speed so the metering scale represents your selection.
7. Look at other areas in the scene to compare how they correspond to your selected area.
8. Take the shot.
9. Bracket.