Appendix

This appendix explains how to do some things in the procedure that may not be familiar to the casual Photoshop user. If information within this appendix is unclear then please let me know (George.Smyth@gmail.com) and I will work with you. The advantage of this is that I will update this document for the benefit of others who may have similar problems.

A1 – Add a Threshold Layer

First off, what is a layer? When first using Photoshop (version 4.0) I had no idea what layers were or what they did. Now I consider them to be an indispensable part of Photoshop, and anyone using the program needs to be able to utilize them.

When I was young our family owned a World Book encyclopedia. The "B" volume had an explanation of the word "body," and a drawing of a skeleton. Over the skeleton were a handful of clear Mylar pages, one had a drawing of the organs, another the muscles, and so on. The top sheet was the skin and covered everything. Each of these sheets could be thought of as a layer, and each layer has information.

This is exactly what a Photoshop layer is – information that covers the base image. With Photoshop, however, each layer can be made visible or invisible, and can either offer information or blend the information with the image below.

A threshold layer looks at the information below and converts the pixels to either black or white – no gray. I slider selects the point at which a gray pixel is made either black or white. Below is an example.

To the left is a picture of a log. There are black tones in the background, and white tones on the log and where the water is flowing. The rest of the tones are numerous variations of gray. By adding a threshold layer to this image, we can force these gray tones to either white or black.

To add a threshold layer go to

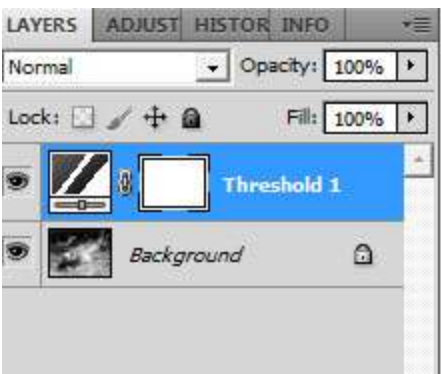- Layer =>
- New Adjustment Layer =>
- Threshold

Photoshop suggests a name for this layer, "Threshold 1", which is fine, so I click OK.

Gray tones have been made either black or white.

We need to see the threshold layer. There are a couple ways of doing this, but I believe that the most useful is to find it in the Layers panel. If it is not visible then to go:
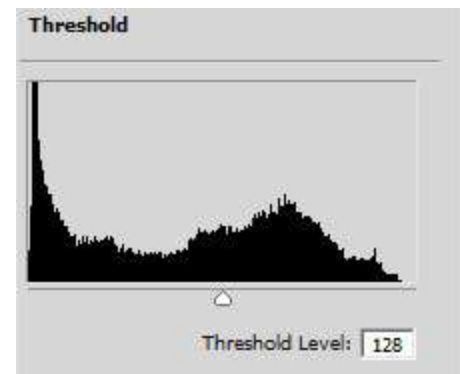
- Window =>
- Layers

Double-click the Threshold icon

in the top layer to display the threshold information.

The slider in the middle indicates that the midpoint of luminosity was chosen as the place where the decision is made to make a pixel white or black. Moving the slider one way or the other changes that point. Below the slider has been moved most of the way to the right so that nearly all pixels are black.
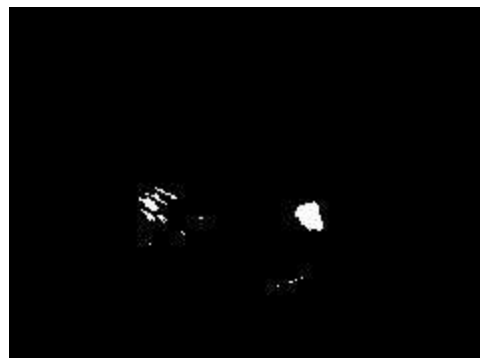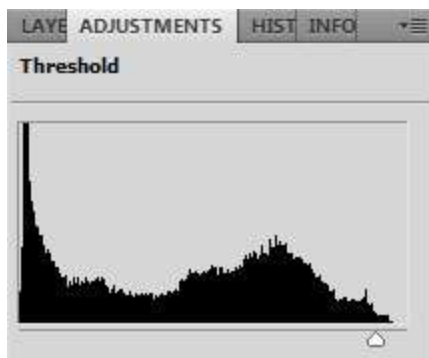
After selecting the Dropper tool and Shift-clicking in the light area, the lightest area of the image has now been identified. The Threshold layer can now either be deleted by clicking on the layer and pressing the Delete key, or simply hidden by clicking on the eyeball to the left of the layer.

A2 – Photoshop Layers

The concept of layers confounded me when I initially learned to use Photoshop. I was able to do so many things I had not before (this was 1997), so I discarded them. Layers had only become available the previous version and at the time the Internet had not developed to offer the information it has today. But little by little I started to understand what was going on until I had that "Ah-ha" moment.

When growing up our family owned the World Book Encyclopedia. In the "B" volume when one got to the entry for "body," the book offered a page that showed a skeleton. The previous page was acetate and showed the muscles, so when that page was placed over the skeleton one could see how the muscles fit with the skeleton. The page before that showed the organs, and there were several other similar pages on acetate.

When I thought of this, I finally understood the concept of layers. A layer acts exactly like those acetate pages, each one offering its own information, which then changes the whole of the image. Changing the information on a layer can be done independently of any of the other information either on the base or the other layers.

I would argue that layers are the most important feature of Photoshop. Layers allow changes to be made to an image without affecting the image itself. These are referred to as non-destructive layers, which mean that the pixels that form the original image are not touched. In a worst case situation, one only needs to remove the layers (or hide them) to return to the original image. This is the ultimate in "undo," and had saved me more times than I am willing to admit.

A3 – The Curve Adjustment Layer

Curves allow for the alteration of luminosity in the image to a fine degree, and for the photographer is almost certainly the most important tool to understand. For this reason, I will offer a number of images within this explanation.

Below is a detail from one of my street scenes. I measured the amount of back in the three points noted.

99%   14%   65%
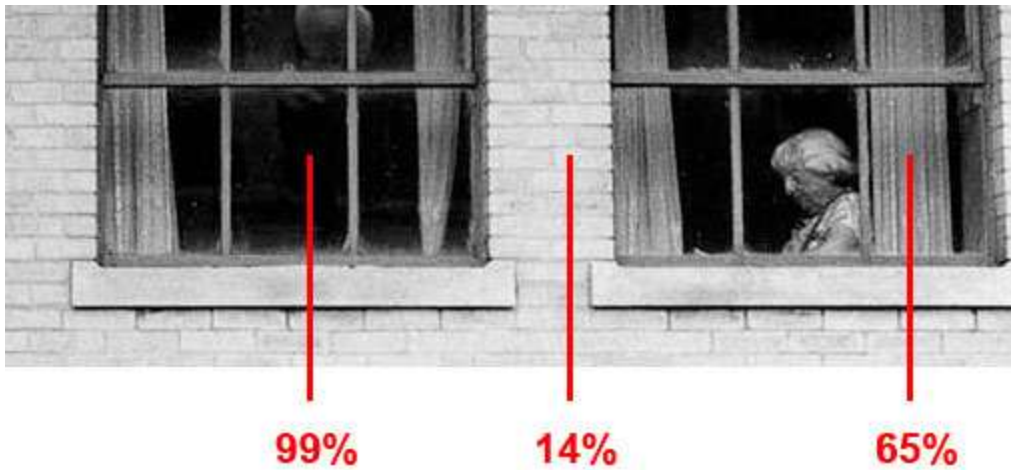
To the left is the display when the Curves window is opened (Layer -> New Adjustment Layer -> Curves).

From the histogram we can see a large amount of information in the shadows, a large amount of information in the highlights, and no information at the very top end of the highlights.

The simplest manipulation of curves would be to make the entire image either lighter or darker. To do the latter it is just a matter of clicking on the adjustment point in the upper right of the graph and pull it down.

99%   69%   84%
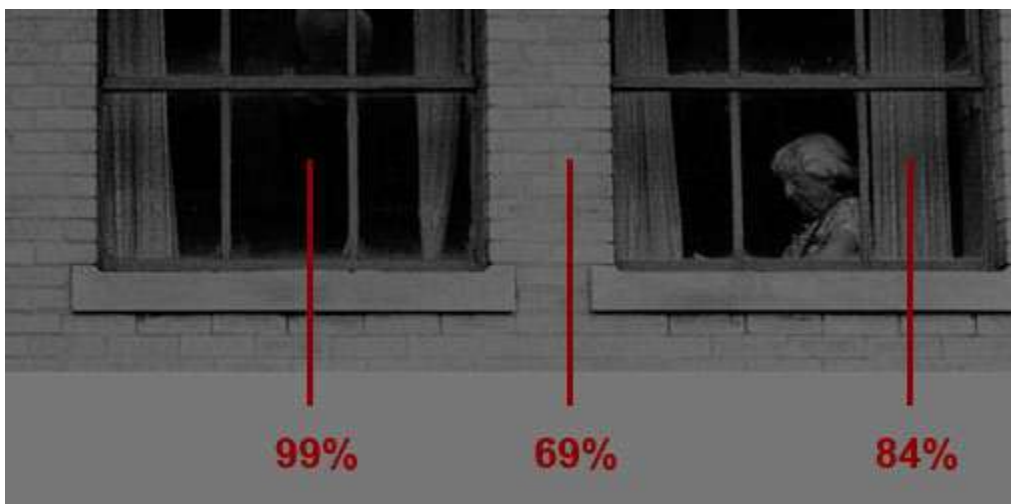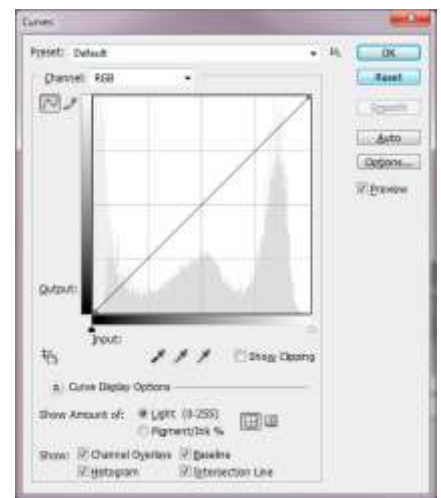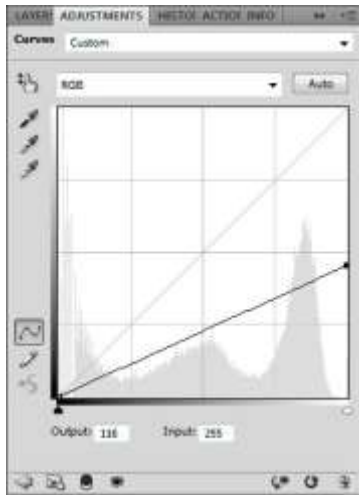
After doing this I measured each point again and we can see that the black content has significantly increased.

To the right is the curve window showing that I returned the adjustment point to its original position and moved the lower left adjustment point up.

53%   9%   31%
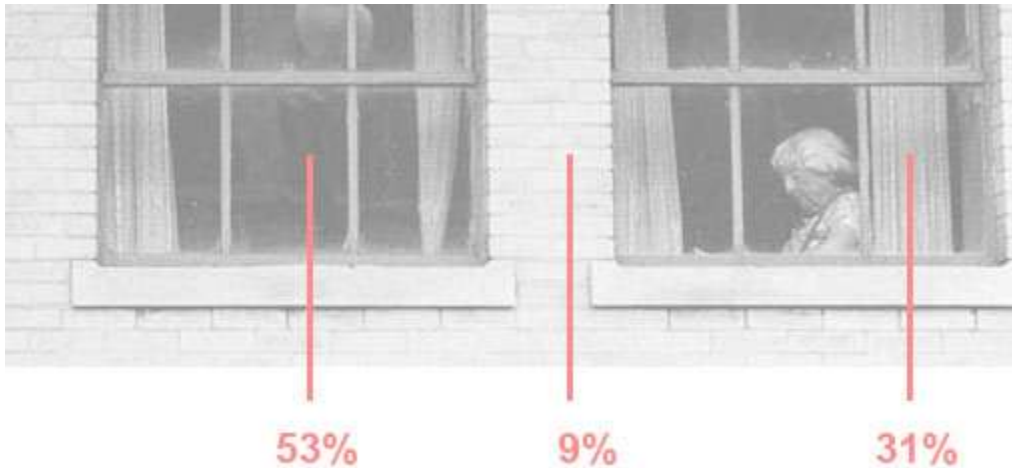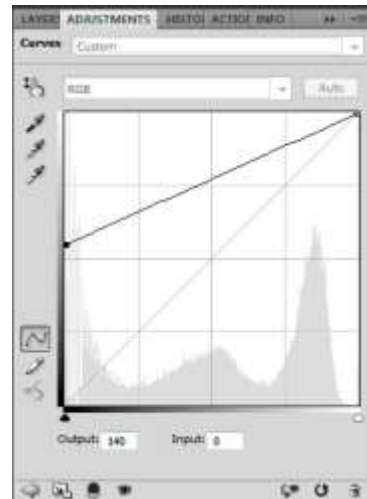
Again, the points were measured, showing the percentage of black dramatically increased.

Chances are that the results of these images are unacceptable, so I return the adjustment points to their original position.

Looking at the light version above, I see that there is some detail within the lower part of the window on the left that is not visible in the original image. Also, I might want to de-emphasize the ledges below the windows. To do the former, I want to keep the black point where it is, but raise the values of the shadow areas in general, and to do the latter I would want to do the opposite, which would be to keep the highlight high point where it is but lower the overall values a bit.

99%   20%   59%
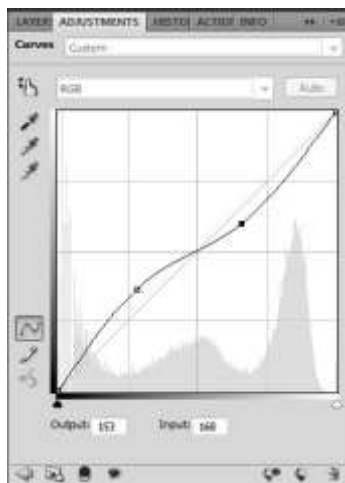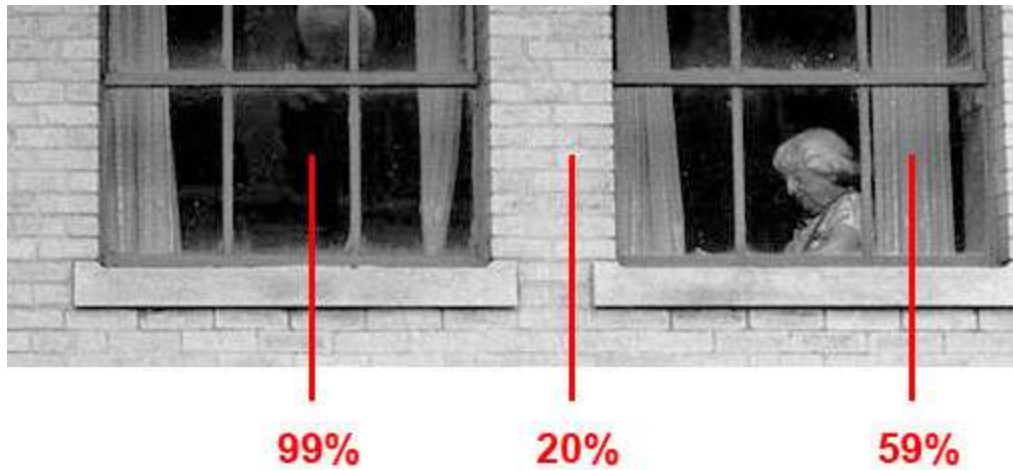
This is performed by clicking along the lower portion of the curve and dragging it up, then clicking along the upper portion of the curve and dragging it down. This raises the shadow values and lowers the highlight values, basically lowering contrast to the image.

The nice thing about curves is that you can click and drag as many points as you wish to achieve the exactness of change you wish.

(Beyond the scope of this explanation is the fact that were I to actually do this, I do not like the loss of contrast in the woman's face since the tonalities are so close to one another, but there is a very simple means of excluding this curve change to that area.)

Our purpose is to map the difference between the tonality response the monitor has to offer and the photographic paper has to offer. That said, you could certainly add a curves adjustment layer to the original image if you felt that it needed improvement.

A4 – RGB Mode

RGB is the abbreviation for red, green, blue. Monitors use a combination of these three colors to display information. There are other modes, such as the self-descriptive grayscale and CMYK, which is the abbreviation for cyan, magenta, yellow, and black, and is used by professional prints shops. However, since we will be working in RGB mode our only concern is that we need to make sure that Photoshop is currently using this mode.
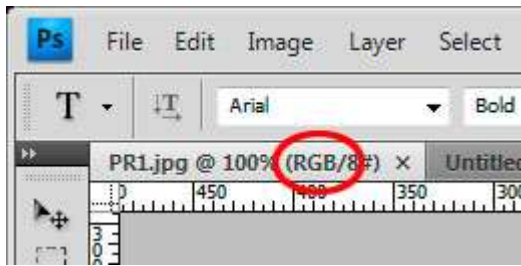
The easiest way to ensure the correct mode is to simply examine the information within the tab of the image, as can be seen on the left. If this value is not RGB then it can be changed via Image -> Mode RGB Color.

A5 – Save and Load a Curve
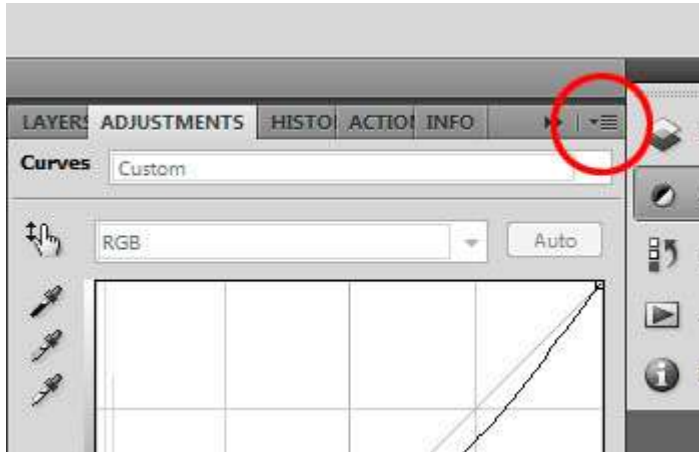
It would be a shame if one thought that the process of determining the proper curve to be used had to be performed each time. Once a curve has been created it makes sense to save it for later use. This is easily done by clicking the option link in the curve adjustment layer window. The second and third options are Save Curves Preset and Load Curves Preset, so simply select the Save option and save the file with a descriptive name. For a filename I include the paper I am using. When a new paper is to be used, it is a good idea to load a previous curve as a starting point, as it could happen that the new paper has a similar response to another paper that has already been calibrated.