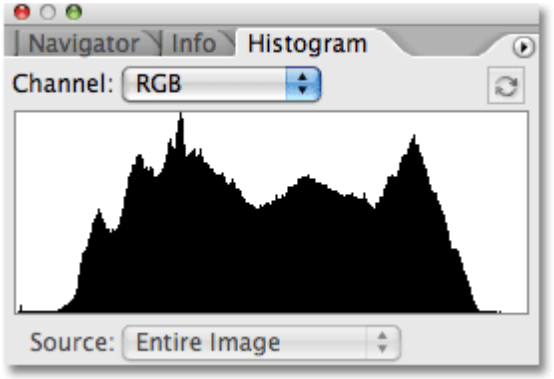
Photoshop Levels & Curves Tool

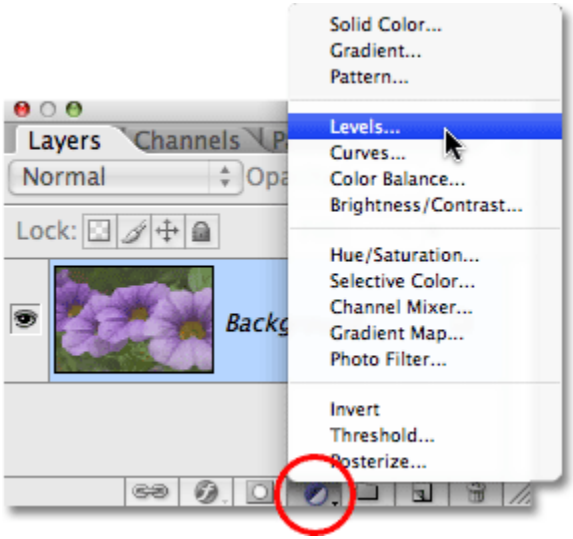
The original image.

A quick look at Photoshop's **Histogram** palette, which by default is grouped in with the Navigator and Info palettes (you can also select the Histogram palette from the **Window** menu if it's not appearing on your screen), shows us that there's definitely some room for improvement with the image. The main part of the histogram does not extend to either the far left (pure black) or far right (pure white), which tells us that we currently have no real shadows or highlights in the photo. Everything is bunched up in the midtones, resulting in a lack of overall image contrast:



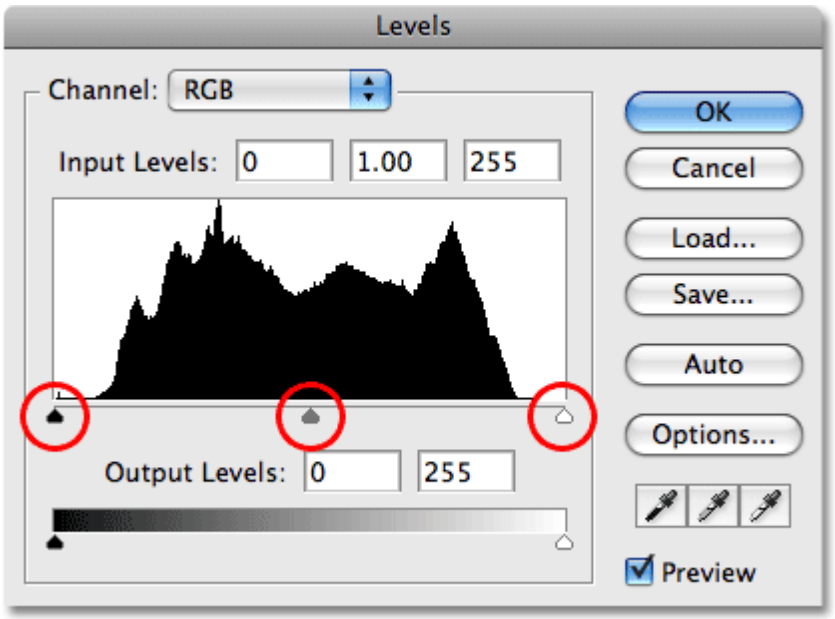
The Histogram palette showing no real shadows or highlights in the image.

Let's quickly improve the tonal range of the image using Photoshop's Levels adjustment. When we're done, we'll see how to make the exact same changes and more with Curves. First, I'll bring up a Levels adjustment layer by clicking on the **New Adjustment Layer** icon at the bottom of the **Layers** palette and selecting **Levels** from the list of adjustment layers that appears. As always, we're using adjustment layers rather than Photoshop's standard image adjustments because adjustment layers allow us to work flexibly and non-destructively on our images:



Click on the New Adjustment Layer icon in the Layers palette and choose Levels from the list.

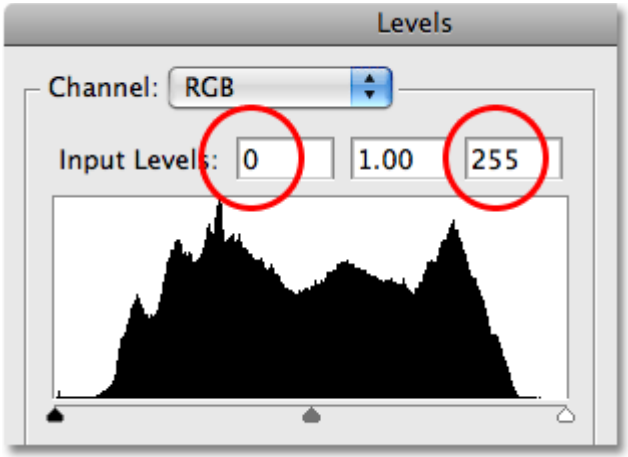
This brings up the Levels dialog box. As we looked at previously in the Levels tutorial, the Levels adjustment allows us to make three basic changes to improve overall image tone. We can brighten the **highlights** by setting a new white point, we can darken the **shadows** by setting a new black point, and we can lighten or darken the **midtones** in the image. The Levels dialog box makes these changes easy because it contains the exact same histogram that we saw a moment ago in the Histogram palette, and all we need to do to make adjustments to the image is drag the white point, black point and midtone sliders directly below the histogram:



The black point (left), white point (right) and midtone (middle) sliders below the histogram in Levels make it easy to fix the overall image tone.

The Levels dialog box also contains a handy black-to-white gradient below the histogram, making it easy to see exactly where the tonal range of the image falls. The higher the spike in the histogram directly above a certain brightness level in the gradient, the more pixels we have in the image at that brightness level compared with the number of pixels at other brightness levels. If no part of the histogram appears over a brightness level in the gradient, we know that we currently have no pixels in the image at that brightness level.

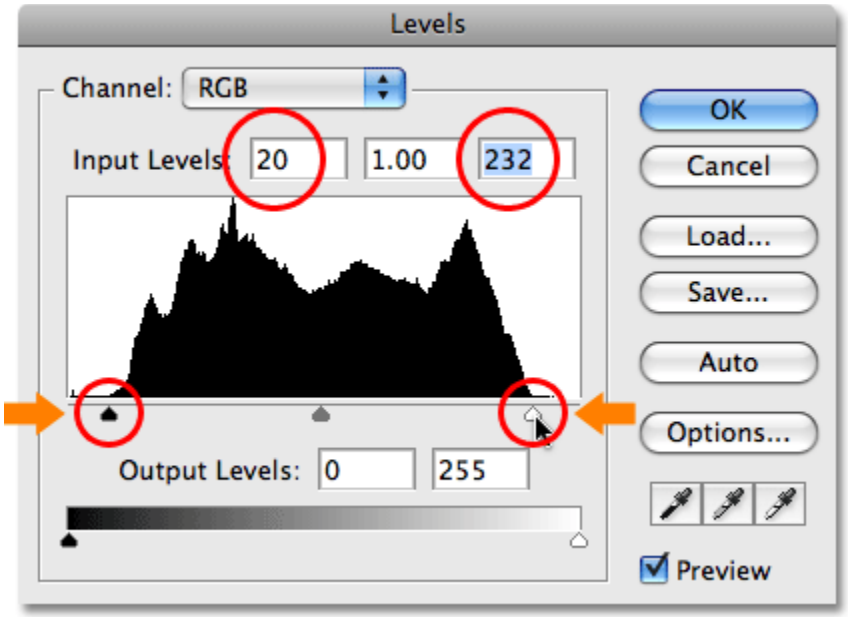
If you look directly above the histogram, you'll see three input boxes. These boxes show us the current black, white and midtone levels. The box on the left, with a default value of **0**, shows us the current black point level. The box on the right, with a default value of **255**, shows us the current white point level:



The current black, white and midpoint levels are listed directly above the histogram.

Photoshop divides the maximum tonal range of an image into 256 different brightness levels, with pure black being 0 and gradually increasing in brightness until you reach pure white at 255. By dragging the black and white point sliders below the histogram, we can change which brightness values become pure black or white. This stretches the current tonal range of the image, basically pulling the darkest areas to pure black and pushing the lightest areas to pure white, improving the photo's overall appearance. I'm going to set a new black point by clicking on the **black point slider** and dragging it in to the left edge of the histogram. Then I'll set a new white point by clicking on the **white point slider** and dragging it in to the right edge of

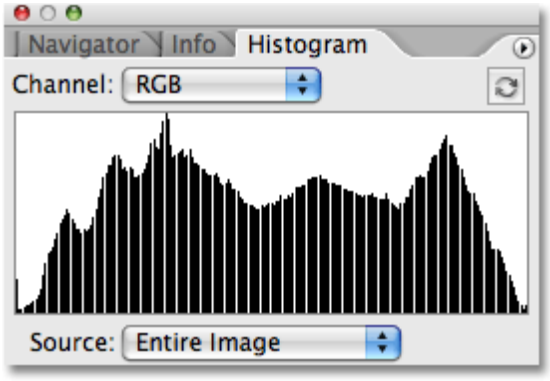
the histogram. If we look again at the input boxes above the histogram, we can see that the values for the black point and white point have now changed, with the black point having increased from 0 to 20 and the white point now lowered from 255 down to 232:



Drag the black and white points to the left and right edges of the histogram to darken the shadows and brighten the highlights.

What this means is that any areas in the image that were originally at a brightness level of 20 (a dark gray) have been pulled down to pure black. Any areas that were originally at a brightness level of 232 (a light gray) have been pushed up to pure white. The rest of the brightness values in the image have also shifted accordingly as the entire tonal range of the image is stretched to the full 0-255 range.

If we look in the Histogram palette, we can see what's happened. The histogram now extends all the way from the far left to the far right, which means we now have a full range of tonal values from pure black to pure white. The only downside is that by stretching the tonal information, we've lost some image detail, represented by a comb-like pattern of white vertical bars in the histogram. Each white vertical bar means that we no longer have any pixels in the image at that brightness level, but that's okay since we haven't lost enough detail for there to be any visible problems in the image itself:

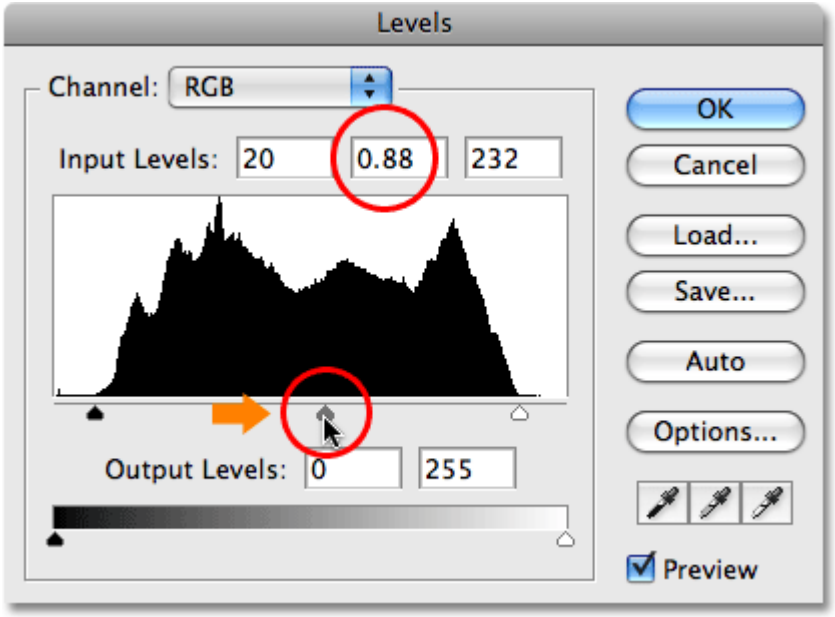


The histogram now extends from the far left to the far right, indicating improved image tone.

In fact, not only are there no visible problems in the image, we've managed to improve its overall tone and contrast quite a bit simply by setting new black and white points in the Levels dialog box. The colors have also become more saturated:

With the shadows darkened and the highlights brightened, the overall image tone has improved.

The Levels command also allows us to lighten or darken the middle brightness levels in the image by dragging the **midtone slider**. Dragging the midtone slider towards the left will lighten the midtones, while dragging the slider towards the right will darken them. Technically, the middle slider is known as the **gamma** slider, and if you look in the middle input box above the histogram, you'll see that by default, it shows a value of **1.00**, whereas you may have expected it to show a value of 127 or 128 (directly between black at 0 and white at 255). That's because it's telling us the current gamma value rather than the middle brightness value. Don't let the terminology confuse you, though. Gamma is just a strange sounding word meaning the overall brightness of an image. All you need to know is that no matter what you prefer to call it, the middle slider in the Levels dialog box lightens or darkens the midtones. I'm going to darken my midtones just a little to add a bit more contrast to the image by dragging the slider towards the right, lowering the gamma value from 1.00 down to 0.88:



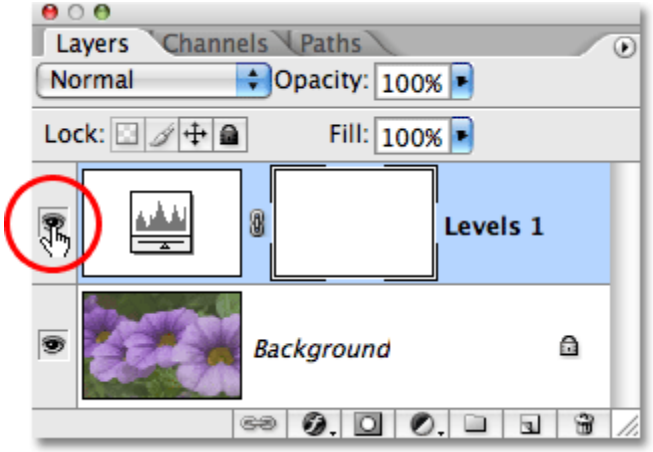
The midtone, or "gamma" slider, lightens or darkens the middle brightness values in the image.

To help make it easier to see just how much of an improvement we've been able to make with the three sliders in the Levels dialog box, here's a "before and after" view of the photo. The left half shows the original, unedited image, while the right half shows the adjusted version:

A "before and after" view of the original (left) and corrected (right) versions of the image.

Now that we've seen how easy it is to correct overall image tone problems with Levels, let's see how we can make the exact same corrections and more using Photoshop's Curves command!

Before we begin our look at Curves, I'm going to reset my image back to its original state by temporarily turning off my Levels adjustment layer. To do that, I simply need to click on the **Layer Visibility** icon (the "eyeball" icon) on the far left of the adjustment layer in the Layers palette:



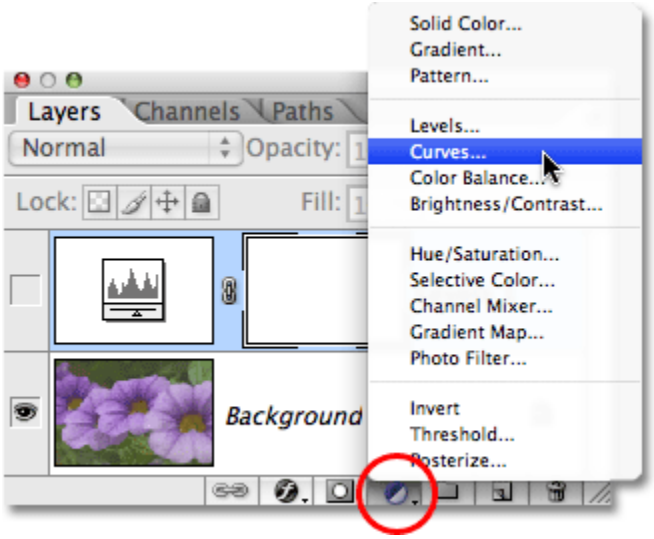
Use the Layer Visibility icon to temporarily hide layers in the document.

With the effects of the Levels adjustment now hidden, my image returns to its original, unedited state:

The original image once again.

To access the Curves adjustment, I'll once again click on the **New Adjustment Layer** icon at the bottom of the Layers

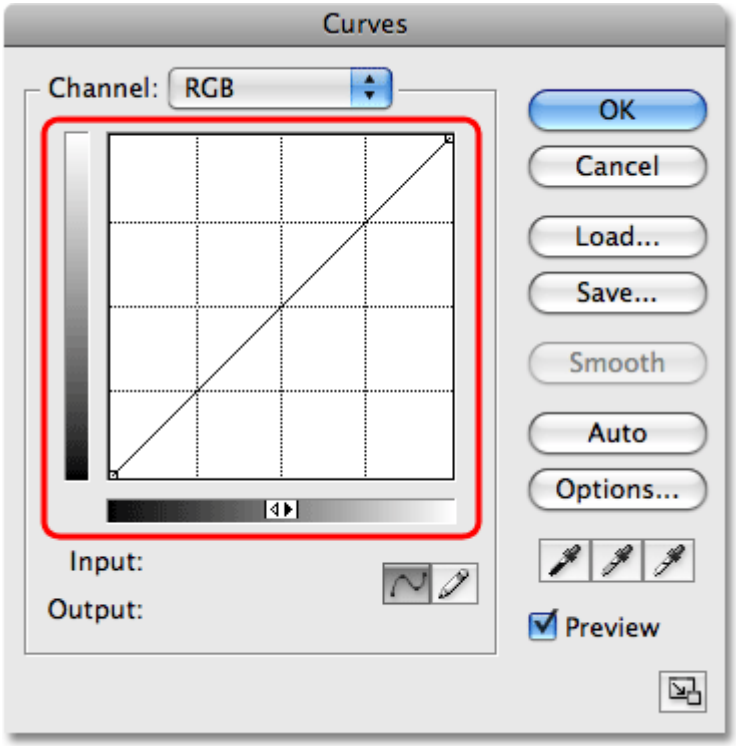
palette, and this time, I'll select **Curves** from the list of adjustment layers that appears:



Click on the New Adjustment Layer icon in the Layers palette and choose Curves from the list.

This brings up the Curves dialog box. Again, I'm using Photoshop CS2 here since we're only looking at the basics of how Curves works. The Curves dialog box has a few additional features in Photoshop CS3 and higher which we'll save for another tutorial.

The Levels and Curves commands are actually very similar in that they both allow us to adjust the shadows, highlights and midtones of an image, but you'd be forgiven for not seeing any similarity between them just by looking at their dialog boxes. Levels seems fairly straightforward with its histogram, gradient bar and sliders, whereas Curves looks like something you'd find in a science lab. It may be called Curves, but where are they? There are no curves to be found anywhere! Instead, we see a 4x4 grid with a diagonal line running through it from the bottom left corner to the top right corner. The only similarity with Levels seems to be that there is a black-to-white gradient bar running along the bottom of the grid, but there's also a second gradient bar running up and down along the left side of the grid:



The Curves dialog box appears at first to be nothing like the Levels adjustment.

With no curves to be found, why is it called Curves? The reason has nothing to do with what you start with and everything to do with what you end up with. Curves is all about taking that straight diagonal line running through the grid and reshaping it into a curve! At first, the line is straight because we haven't yet made any changes. As we bend the line to create a curve (or curves), we make adjustments to the various brightness levels in the image