19 HANDS-ON SESSION: Overall Color Correction

Introduction to Levels, Hue/Saturation and Curves
for overall color correction and the fundimental steps
in creating a master image.

In Chapter 3: "Setting System and Photoshop Preferences," we showed you how to set your Photoshop preferences for doing high quality color correction. This Overall Color Correction chapter is done using those Color Settings and, specifically, the RGB working space set to Adobe RGB and the CMYK working space set as in Chapter 3. If you didn't already do so, go through Chapter 3 before doing this exercise or any of the other color correction exercises. Before you proceed, also read Chapter 14: "Color Spaces, Device Characterization and Color Management," Chapter 15: "Photoshop Color Preferences, Monitor, Scanner and Printer Calibration," Chapter 16: "Image Resolution, Scanning Film and Digital Cameras," and Chapter 17: "Steps to Create a Master Image." These chapters give you an overview of the entire reproduction process, show you how to calibrate your monitor and give you a further understanding of the Levels, Curves and Hue/Saturation tools you will be using here. You should calibrate your monitor before proceeding with this chapter.

INTRODUCTION TO LEVELS

Before you start actually color correcting the Banf Lake image, let's take a tour of the Levels tool and explain its different parts and functions. Levels contains two sets of controls, which can make the image lighter or darker as well as change its contrast: Input Levels and Output Levels. The Input controls on top include the histogram, the Input Levels numbers and three sliders. The Input Shadow slider, on the left, darkens shadows as you move it to the right. The Input Highlight slider, on the right, lightens highlights as you move it to the left. The Brightness slider, in the middle, adjusts the brightness of the image. The Output controls on the bottom of the Levels dialog contain the Output Levels numbers and two sliders. The Output Shadow slider, on the left, makes shadows lighter as you move it to the right. The Output Highlight slider, on the right, makes highlights darker or duller as you move it to the left. The names "Input" and "Output" are chosen by comparing what happens with the Levels Highlight and Shadow sliders to what happens in Curves when you move the end points of a straight

The initial uncorrected Banf Lake image. Notice the overall flatness of the image.

curve either along the horizontal (Input) axis or along the vertical (Output) axis. This might seem a bit obscure at this point, but maybe it will make more sense to you after you read the entire chapter.

STEP 1: **From the OverallColorCorrection folder on the CD, open the BanfLakeOrigScanRes.psd file into Photoshop**. If your RGB working space is not set to Adobe RGB, you will get the Embedded Profile Mismatch dialog. In that case, you should make the Use Embedded Profile choice to leave this file in the Adobe RGB space and work on it in that space. That way the Info palette numbers and Levels histrograms will look the same as in the book. **Type F to get Full Screen Mode and then press the Tab key to get all your palettes off the screen. Type C to get the Crop tool and use it to crop the black borders from around the edge of the image. Click and drag to draw a box around the entire outside of the image, then click on two of the diago-nal corner handles and drag them inward to remove the black borders from around the end of the original transparency. You'll notice that as you try to move the corner handle close to the corner, it will snap to the edge of the image. While holding the mouse button down on the corner handle, press the Control key and hold it. This will turn off the snapping to the picture edge and allow you to exactly place the corner handle to remove the black crud around the edge of the image without removing any extra info. When you have the corner handle where you want it, release the mouse button and the Control key. You can now zoom into any of the handles to check their exact location before cropping. To do the crop, press Return.** Use File/Save As BanfLakeResLayers.psd in Photoshop format on your hard disk; it is always good to save things in Photoshop format while you are working on them because it saves all your channels and layers.

STEP 2: **Bring up the Info palette from the Window menu. If you have loaded ArtistKeys, the predefined set of function keys explained in Chapter 3, press F9 to bring up the Info palette. Be sure to set up the Info palette's Options to show you both RGB and CMYK values.**

STEP 3: **Choose Image/Adjust/Levels and then click and drag the Levels title bar, at the top of its dialog box, to move the Levels dialog box out of the way as much as possible. You want to see as much of the image as you can while color correcting it. Use the Levels Overview diagram on this page as you review or learn the basic func-tions covered in steps 4 through 9. Make sure the Preview button is turned on.**
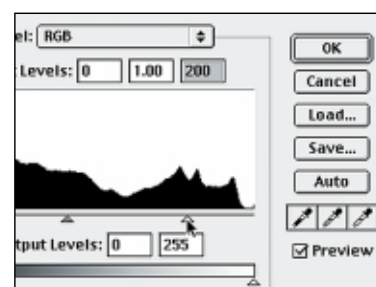
STEP 4: **Move the Input Highlight slider to the left and observe that the highlight areas in the clouds get brighter and the Input Levels number on the right decreases from 255. Move the slider until the number reads about 200. Let go of the slider and move the cursor over an area of the image where the clouds have turned completely white.** When you use any of the color correction tools, you automatically get the Eye-dropper tool when you move the cursor over an area of the image. The Info palette shows you two sets of values for this white area. The values to the left of the slash are the original values at the Eyedropper location when you first entered Levels, and the
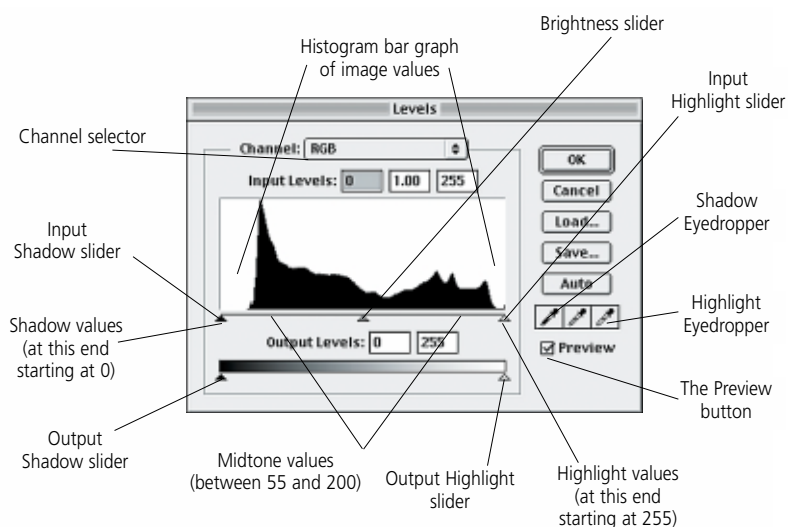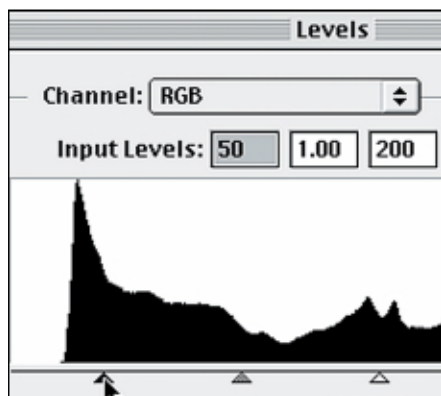

Study this Levels Overview diagram to learn the various controls of the Levels tool.
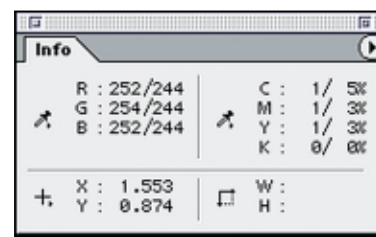
STEP 2: The Info palette with before values on the left of the slash and after values on the right.

STEP 4: Move the Input Highlight slider to the left so the right Input Level reads about 200.

Introduction to Levels

STEP 5: Move the Input Shadow slider to the right so the left Input Level reads about 50.
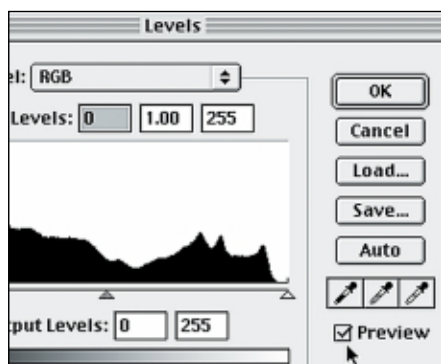
STEP 6: Leave the Preview checkbox checked in Levels and other color correction tools to see your changes as you make them. To see the image as it looked before this round of changes, uncheck the Preview button. When you are working in an adjustment layer and you are entering the Levels dialog for this layer for a 2nd or 3rd time, having Preview checked shows you the changes since the last time you entered Levels and unchecking shows you how the image looked with your previous set of Levels adjustments. To see the image without this Levels adjustment layer altogether, turn off the Eye icon for this layer in the Layers palette.

STEPS 6 AND 7: A Color Sampler shows up at the bottom of the Info palette. It will always show you the before and after values at that location even when the cursor is inside the Levels dialog.

values to the right of the slash show you what your levels changes have done to the digital values at the Eyedropper location. You can now see that moving the Input Highlight slider to the left makes the highlights brighter, but it also causes you to lose detail in the highlights if you move it too far. The original RGB numerical values that were in the range of 220 to 240 have now all changed to 255, which is pure white and prints with no color or detail—and you don't want that.

STEP 5: **Move the Input Shadow slider to the right until the Input Levels number on the left goes from 0 to about 50 and the shadow areas of the image darken. Move the Eyedropper over a dark area and measure the changes in the Info palette.** The RGB values originally in the range of 0 to 50 have all moved to 0 and have become totally black.

STEP 6: **Move the cursor to the title bar at the top of the Levels dialog box. You'll notice that when you click down on it with the Preview checkbox unchecked, nothing happens.** In previous Mac versions of Photoshop, when you clicked on the title bar and held the mouse button down, the image returned to the way it looked before you changed anything in Levels. To do this, Photoshop used a feature available on the Mac and not on most PCs called Video LUT_Animation. Photoshop 6 no longer supports Video LUT Animation on either platform, so now you always have to have the Preview checkbox checked to see the changes in the image as they happen in Levels or any color correction tool. To see the image the way it looked before any changes were made in the current invocation of Levels, or any tool, uncheck the Preview checkbox.

Now, hold down the Option key and click the Cancel/Reset button. The Cancel button changes to Reset, and clicking it restores the levels to their starting values when you entered Levels this time. All your changes are removed, but you don't leave Levels. Calculating the Levels histogram can take a long time when you're working on large files, and this Reset feature saves time when you want to start over.

Notice that the values in the Info palette disappear when you move the cursor back into the Levels dialog box. Move the cursor out over the image, while holding the Shift key down, and click on the image area. Notice that a new set of numbers appears at the bottom of the Info palette. This is called a Color Sampler, and the Info palette will always show the values at this location no matter where the cursor is located, even if the cursor is inside the Levels dialog. When you want to precisely set the digital values at a certain location, Shift-click there to create a Color Sampler; then go back into the Levels dialog and move the controls until you get those values at that location. Using the Color Samplers lets you remember the values at a particular location and see how a change in Levels modifies those values.

STEP 7: **Choose Window/Show Color to bring up the Color palette. Use the Eyedropper tool to click a midtone value in the Banf Lake image; clicking in the lake itself will work great. When you press down on the mouse button, the values in the Color palette change. Now Shift-click the lake. This creates another Color Sampler at the bottom of the Info palette that will always show you the values at that location. Now move the cursor back into Levels; notice that these values in the Color palette and Color Sampler don't go away, even when you're in the dialog box. Press down on the Input Brightness slider, the middle one, and move it to the left; the image gets brighter and the numbers in the Color palette and Color Sampler get smaller. Move the slider to the right, and the image gets darker, while the numbers in the Color palette and Color Sampler get larger. Also, observe that the middle number (the**

gamma) in the Input Levels numbers boxes is changing. When you move the Brightness slider to the left, the gamma goes above 1.0, and when you move it to the right, the gamma goes below 1.0. If the Input Levels numbers read 0, 1.0, 255, you know you haven't changed the Input Levels. When you click another area of the image, the Color palette's values will change to show you the reading at that new location. The Color Sampler you created before will not move or change, however. If you Shift-click in a new location, a new Color Sampler, up to four per image, will be created at that location. To move an existing Color Sampler, you need to Shift-click on top of the old sampler location and drag it to a new location. **Hold the Option key down and click on the Reset button, formerly the Cancel button, to move the Input values back to 0, 1.0 and 255.**
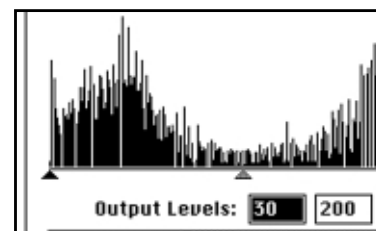
STEP 8: **Move the Output Highlight slider to the left until the Output Levels number on the right reaches 200. Then measure the brightest cloud values; notice that values originally in the 200 to 220 range have all dropped below 200.** You changed the Output Levels number from 255 to 200, and the difference of 55, or close to it, has been subtracted from all these highlight values, darkening and dulling your highlights.

STEP 9: **Move the Output Shadow slider to the right. Notice how doing that makes the shadows lighter and duller.** If you measure the changes with the Eyedropper and Info palette, you will notice that moving this slider increases the shadow's numerical values (which makes the shadows lighter).

SETTING THE HIGHLIGHT AND SHADOW VALUES

Step 10: Steps 4 through 9 show you the basic functions of the different parts of the Levels tool. It is important to use those functions in the right order and to take careful measurements of your progress using the Info palette, Color Samplers and Color palette. We will start out working with the Highlight and Shadow Eyedroppers to set the highlights and shadows on this image—a very important step in this process. All reproduction or printing processes, including sheet-fed presses, web presses, newspaper presses, digital printers and film recorders, have certain end points to their reproduction process defined by the highlights and shadows. Many newspaper presses can't show detail for shadow values that are more than 85% to 90% black, and some newspapers are even worse. Sheet-fed presses, on the other hand, can sometimes show detail in areas with more than 95% black. In a digital file, these percentages are represented by numerical values ranging from 0 (100% black) to 255 (white, or 0% black).

When you color correct an image, you don't want that image to contain areas that the output medium you are using can't reproduce. Setting the highlight and shadow values correctly for your output device ensures that this won't happen. You also want the white parts of your image to print as white (not with a color cast of yellow, cyan or magenta) and the black parts of your image to print as black (not dark gray with a green cast). You can ensure this by setting your highlights and shadows correctly. When you set the highlight, you are setting the brightest point in the image that is a neutral color, white, and that still has a dot pattern or some ink (doesn't print as pure white paper). The highlight would be the brightest part of Zone IX in the Zone System. Any point brighter than the highlight will print as totally empty paper with no dots or ink. When you set the shadow, you are setting the darkest point in the image that is a neutral color, black, and that still has a dot pattern. The shadow

STEP 8: Moving the Output Highlight and Shadow sliders and looking at the Output Levels numbers.

would be the darkest part of Zone I in the Zone System. Any point darker than the shadow will print as totally black ink with no white holes to give detail.

STEP 11: **To start the actual color correction of this image, Option-Shift-click on any Color Sampler points you set to remove them from the Info palette. Press the Cancel button to leave the Levels tool. Close the Color palette and choose Window/Show Navigator to bring up the Navigator palette. Move it mostly off the screen on the right side, but leave enough of it so you can see your zoom factor number in the bottom left of this palette. All you need on the screen is this small piece of the Navigator and the Info palette in the bottom right corner.** The image we are working on here was scanned at 16-bits per color channel, using an Imacon Flextight scanner. The original scan was over 200 megs in size and scanned at over 5700 dpi. I have resampled down the file so it would fit on the CD and be a good size for this book. If you are starting out with a 16-bits per channel scan, you will have to choose Image/Adjust/Levels to get into the Levels dialog for the first color correction step. Photoshop does not support Layers with files that are more than 8-bits per channel. Doing this example with an 8-bit per channel image, you would want to get into a Levels adjustment layer using Layer/New Adjustment Layer/Levels. **Choose Image/Adjust/Levels to start your Overall Color Correction.**

Photoshop allows you to decide where you want it to set the highlight. The highlight should be the brightest neutral point that still has detail. **Double-click the Highlight Eyedropper button, the rightmost Eyedropper inside the Levels dialog, and make sure that the CMYK values in the Color Picker are 5, 3, 3, 0 and the RGB values 244, 244, 244.** If you are using a different RGB workspace, you may have slightly different RGB values here. These are the neutral values you would want your highlight to have for a sheet-fed press on coated paper, and they also work for most other purposes including the LightJet 5000 and most Epson printers. Due to the impurities in printing press inks, you get a neutral color by having more cyan than magenta or yellow. Because this is a highlight, there is no black. Click the OK button if you need to change any of the values.

STEP 12: **Now double-click the Shadow Eyedropper and make sure the shadow values are 74, 65, 64, 92 in CMYK and 8, 8, 8 in RGB.** If you have different values than these, compare your settings to those in chapters 3 and 15. As discussed in chapters 3 and 15, the shadow preference values should be somewhere between 2, 2, 2 and 8, 8, 8 depending on how dark you want your shadows to be. Click the OK button if you needed to change any of the values.

Setting the Highlight

Step 13: Next, you use the Highlight Eyedropper to click on a highlight, which should be the brightest white area in this image. You want the highlight to be a neutral white area—the last possible place where you can see a little texture. The RGB values in the Info palette should be in the 240 to 255 range and the CMYK values in the 0 to 10 range. If you have specular highlights (the sun reflected off a chrome bumper, for example), these will not have detail and should have values of 255. You're looking for something just a hair less intense than that. **Move the Levels dialog box out of the way so you can see the entire clouds and snow area. To find the correct place for setting the highlight, with the Levels Preview checkbox checked, hold down the Option key and move the Input Highlight slider to the left. The whole image area first turns black and then, as you move the slider to the left, brighter and eventually white areas appear. The first white area that appears in the snow on top**

of the mountains at the left is the area you should set as the highlight. Remember where that location is in the window. Now move the Input Highlight slider back to 255 because you were only using it to locate the brightest point.

Zoom into the area of the snow on top of the mountain until you are zoomed in about 400%. Click the Highlight Eyedropper in the Levels dialog box. Now move this Eyedropper up to that bright place in the snow, and move it around in the area while looking at the RGB values in the Info palette for the highest set of numbers. When you find those numbers (I chose 255, 255, 25), Shift-click once to set a Color Sampler at the spot where you want to set your highlight. Now move the cursor back on top of the circle where you set the Color Sampler and, when the cursor dissappears, click without the Shift key to set your highlight value at that point. When the cursor disappears, you have the
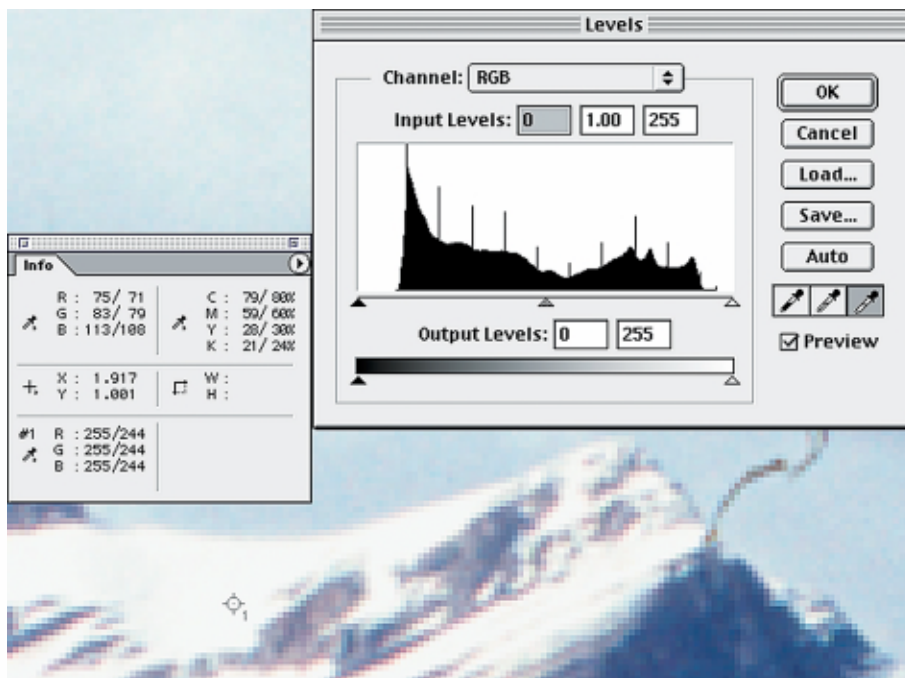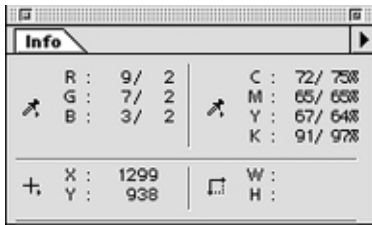

STEP 13: The before and after values for the highlight. Notice how the totally white snow was replaced by the 244, 244, 244 values by clicking using the Hightlight Eyedropper. You can increase the brightness of these 244, 244, 244 values, and thus the snow, by going into each of the Red, Green and Blue channels and moving the Output Highlight sliders back to the right. After moving the Output Highlight sliders back to the right all the way, moving the Input Highlight sliders to the left will make the image even brighter.

Color Sampler and the location for setting your highlight lined up exactly. The numbers to the right of the slash in the Info palette at your #1 Color Sampler location should now display 244, 244, 244 for RGB at that exact spot where you clicked. By setting the highlight here you have actually lowered the brightness of this snow to a value that will still have a dot when printing on a press and will actually get some ink dots when printing with a digital printer. If you wanted this snow to be a specular highlight, you could adjust this value to 255. As we go through this example, you can watch this Color Sampler location and you may notice the values get a bit higher than 244, 244, 244. You will be able to decide if this snow prints as pure white paper at 255, 255, 255 or still has a bit of detail by printing a smidge darker.

Now go to the Preview checkbox and turn off Preview. When Preview is off, you see the original image. When Preview is on, you see the image after the highlight change. Notice that this process of setting the highlight has darkened the image somewhat. As we go through the color correction process, click the Preview on and off from time to time to see what has happened to the image. **Turn Preview on again for now.**

Setting the highlight actually moves the highlight sliders in each of the Red, Green and Blue channels, which in turn moves the highlight part of the histogram in the Levels Channel RGB display to the left or to the right. **Press Command-Z once to undo and then Command-Z again to redo this change while watching the RGB histogram and the white color or the sky. See the differences? Use the Channel pop-up menu at the top of Levels to look at each of the Red, Green and Blue channel histograms. The Output Highlight slider in each of them should have changed to 244 or thereabouts. Clicking on the snow with the Highlight Eyedropper caused each of these Red, Green and Blue sliders to move. To change your Color Sampler highlight value to other than 244, 244, 244, you could just manually move any of these Red,**

STEP 14: The before and after values for the shadow. Notice that the shadow CMYK values to the right are not the same as the 95, 85, 83, 95 default values you entered, but you should get exactly 2, 2, 2, or very close to it, in RGB.

Green or Blue Output Hightlight Eyedroppers. Move the Channel pop-up back to RGB, which you can also do by using Command-~.

Setting the Shadow

STEP 14: Now we are going to use the Shadow Eyedropper to click a shadow. The shadow should be the darkest neutral area where you still want a little detail or you may want your shadows totally black. This depends on the image you are working on, where you click with the Shadow Eyedropper and the actual numerical values you use for your shadow. When looking for a location to set your shadows, the RGB values in the Info palette should normally be in the 1 to 10 range, but they may be higher than this for a particular scan like they are with this image. **Move the Levels dialog box to the top of the screen and zoom out so you can see the entire bottom half of the image. To find the correct area for setting the shadow, hold the Option key down while moving the Input Shadow slider to the right. The whole image area first turns white, and then as you move the slider to the right, black areas appear. The first black area to appear, in the upper tree to the lower left, is the place where you should set the shadow. Now move the Input Shadow slider back to 0 because you were only using it to locate the darkest point. Click on the Shadow Eyedropper, the leftmost Eyedropper, in the Levels dialog box to select it. Now move this Eyedropper up to that darkest place, and then move it around in the area while watching the RGB values in the Info palette. You might want to zoom in to that particular area to around 400% before you pick the darkest spot. When you find the right spot, Shift-click there first to place a Color Sampler, then click once again without the Shift key in exactly the same location. You know that you are exactly on top of the Color Sampler when the cursor disappears.** The numbers for the #2 Color Sampler in the Info palette should now display 8, 8, 8 (or very close to it) for that exact spot where you clicked. The location you click will get a value of 8, 8, 8, or whatever preference value you have set for Shadow Eyedropper. If the point you click for the shadow is the darkest point in the image, then you won't lose any shadow detail that wasn't already in your scan, even if you set this to 0, 0, 0. On the other hand, if you click at a place that wasn't the darkest place in your image, you may end up removing some of the shadow detail from the scan. Be careful where you click to set your highlight and shadow values. **Now you can turn the Preview checkbox on and off to see the changes made to this image so far. Leave it on when you are done.**
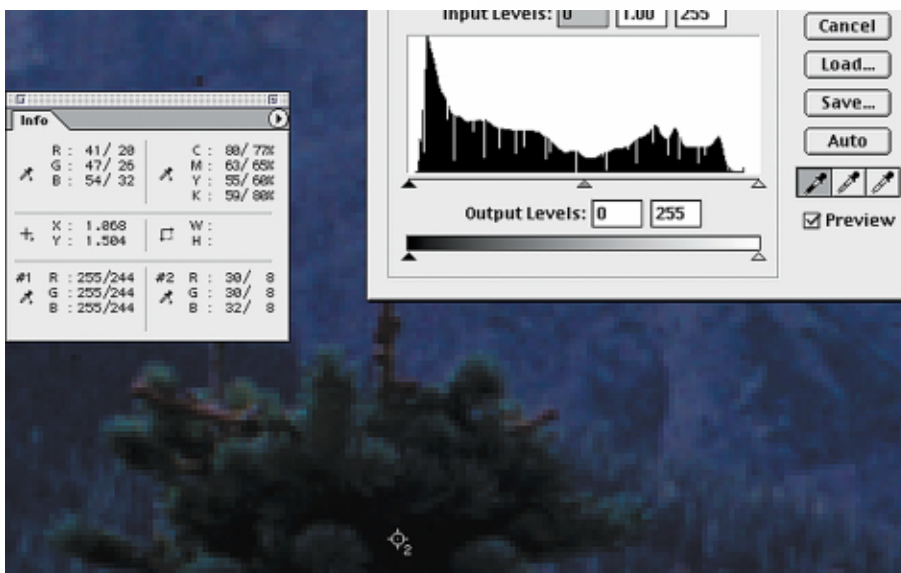
STEP 14: Setting the shadow in the dark area at the top of the tree. As you can see with the #2 Color Sampler, the initial values at this point were 30, 30, 32 but after we set the shadow that changed them to 8, 8, 8. Right after clicking on your Color Sampler point with the Shadow Eyedropper, use Command-Z to toggle back and forth between having the new shadow value set and right before that. As you do that, notice how the shadow part of the RGB histogram on the left moves back and forth as each of the Red, Green and Blue shadow values are changed when you click with the Eyedropper.

Setting the Overall Brightness of the Image

STEP 15: As you look at this image, notice that it's pretty dark at this point. **Move the Input Brightness slider to the right until the middle Input Levels number reads about 1.44.** This opens up the image and makes it even a bit flat looking. If you think back to our discussion

of the Zone System, you can equate the initial location of the Brightness slider with Zone V, the middle gray values. Moving the slider to the left moves Zone V down toward Zone III or IV, depending on how far you move it. What was a Zone IV value now becomes a Zone V value; lighter, and possibly a bit flatter. This effect is similar to the one you would get by setting the original camera exposure at Zone IV or lower, except moving the Brightness slider by a zone or two wouldn't change Zones I and IX as much. Notice that the RGB values for your #2 Color Sampler have changed to be around a value of 15 instead of 8. If you leave them here, this will make your shadows look washed out. Since the shadows in this image don't have much detail anyhow, it is better to make sure they are black than have them end up a muddy gray. **Go into each of the Red, Green and Blue channels and move the Input Shadow slider to the right until that channel has a value of around 6 to 8. Try to match the value, within 1 point anyhow, to get a neutral shadow. Once you click in the Input Shadow slider and move it a bit, the leftmost Input number is highlighted. At this point you can use the up and down arrows in the lower right of your keyboard to nudge the number up or down by a single digit.** This nudging works with all number entries in Photoshop and is often more accurate and less tedious than using the slider with the mouse button down.

CORRECTING FOR COLOR CASTS

STEP 16: **All adjustments so far have been done with the Levels Channel selector set to RGB (Command-~). You can now use the Channel selector in Red (Command-1), Green (Command-2) and Blue (Command-3) modes to control the color balance of the image and to correct for color casts. You can switch between channels by clicking the pop-up menu and dragging up or down, or by using the key combinations Command-~ through Command-3.** The Red channel controls red and its complement, cyan; the Green channel controls green and its complement, magenta; and the Blue channel controls blue and its complement, yellow. Try to commit this set of complementary colors to memory. To learn more about the complementary colors, refer to the RGB/CMYK table at the end of Chapter 12: "Color Correction Tools." This image has a slightly blue color balance, which makes it seem a little cold. **Use the Channel selector or Command-3 to move to the Blue channel. Move the Input Brightness slider far to the right until the middle Input Levels number reads about .5 and notice how yellow the image is. Now move the same slider far to the left to about 1.5. Notice how blue the image is.** You can use this middle slider to control the color balance of the midtones. Remember that when the Brightness value reads 1.0 for any channel, that is the position where you haven't made any changes. **Move this slider back to the right until it reads about .94 and notice the subtle differences in the color.** You have added yellow to remove the blue cast in this image.

STEP 17: **Press Command-2 to switch to the Green channel. As you move the middle slider to the left, you add green, and as you move it to the right, you add magenta. Move this middle brightness channel to about 1.04 to add a little green to the entire image and improve the look of the trees.** Now when you turn the Preview checkbox on and off, you are seeing the difference all the Levels changes have made in this image.

If you press Command-1, you can use the middle slider to move between red and cyan. I didn't change this one. You may make these adjustments differently depending on your preferences for color and your monitor. So long as you have calibrated your monitor and your output devices, you should be able to obtain results
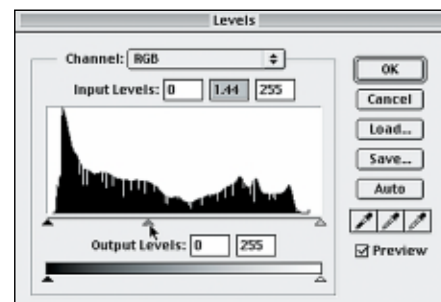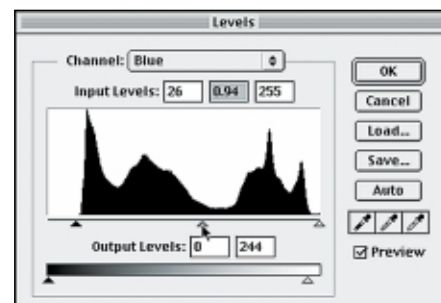

STEP 15: Move the Input Brightness slider to the left to about 1.44 to open up this image.
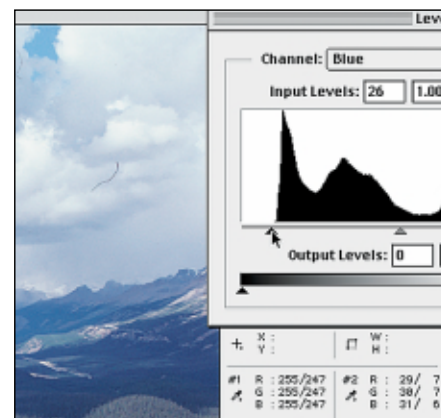
STEP 15: Here we are moving the Red, Green and Blue Input Shadow sliders to the right to darken and re-neutralize the shadows.
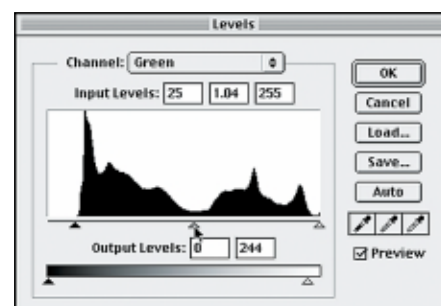
STEP 16: Here we are adjusting the color cast by moving the Green Brightness slider to 1.04 which adds green to the midones of the entire image

STEP 16: Here we are adjusting the color cast by moving the Blue Brightness slider to .94 which adds yellow to the mitones of the entire image.

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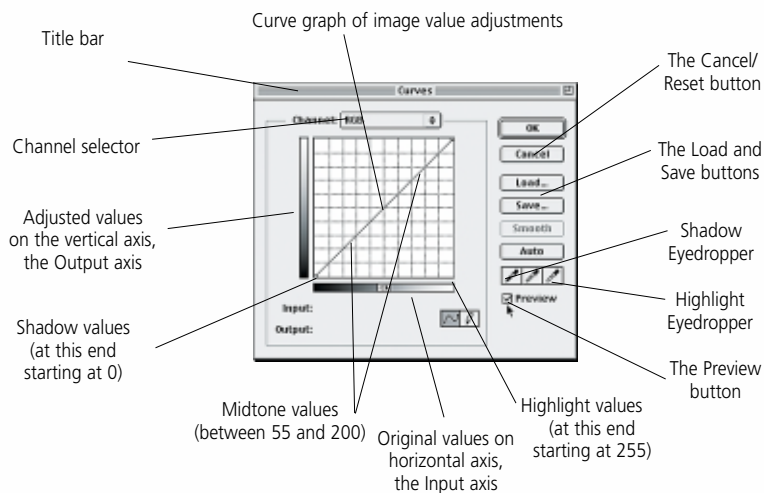**STEP 17:** Here we see the Banf Lake image after making all the initial Levels adjustments.

that you like. Whenever you make major cast changes to any particular channel, go back to RGB (Command-~) and then double-check your overall Brightness adjustments. **Since we are working with a 16-bit per channel image, and we can't automatically save our changes in an adjustment layer before leaving Levels, click on the Save button to save these changes in a file named BanfInitialLevelsChanges. Now click the OK button to complete all the changes you have made in Levels.**

At this point, choose File/Save As and save this as BanfLakeAfterLevels48bits.psd in case you want to revert to this version of the image later. Now choose Image/Mode/8 Bits/Channel to convert this image to 8 bits per color channel for a total of 24 bits. We wanted to do this initial adjustment in 48 bits then convert to 24 bits so we have the best quality histogram in 24-bit mode. If we had done the Levels adjustment after the conversion to 24 bits, we'd now have some gaps in our histogram. We could actually do the next two Curves and Hue/Saturation steps in 48-bit color as well, but that wouldn't give us as much flexibility later if we wanted to redo any of those steps. We'll go ahead and do Curves and Hue/Saturation in 24-bit color using adjustment layers so we can tweak them as many times as we want. If you are going to do 48-bit scans, your initial Levels adjustment at the least, should also be done in 16-bit per channel mode as we have just done. **Choose File/Save As to save the 24-bit version of this file as BanfLakeLayers.psd.**

INTRODUCTION TO CURVES

This section shows you how to adjust specific color ranges using Curves. Before you start making further adjustments to the Banf Lake image, take a moment to examine the Curves tool and its different parts and functions.

Curves is a graph of input and output values with the input values at the bottom of the graph on the horizontal axis and the output values to the left side of the graph on the vertical axis. When you use Curves, the input values are the original unadjusted values before you invoked Curves. The output values are the adjusted values and depend on the shape of the curve graph.
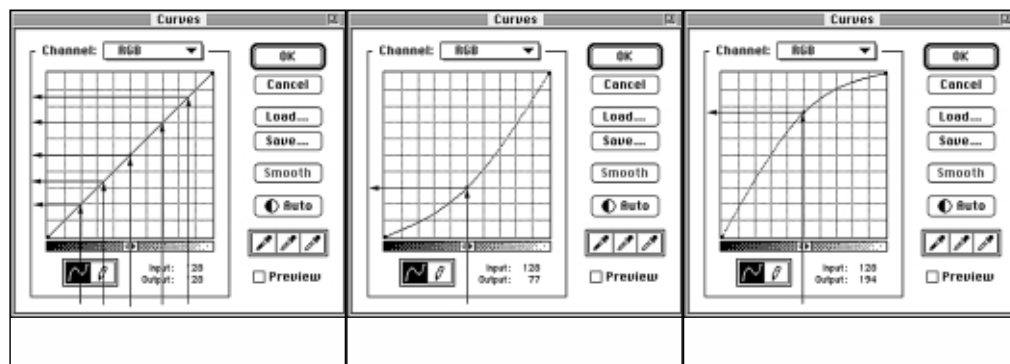
In Levels, the histogram is a picture of the actual data that makes up the particular image. In Curves, you see a graph of how this curve would modify any image, but you don't actually see the data that is part of the image. That is why I recommend using Levels first, after you do a scan, because you can see how the scan worked by looking at the histogram and then use Levels to create

Title bar
Curve graph of image value adjustments
Channel selector
Adjusted values on the vertical axis, the Output axis
Shadow values (at this end starting at 0)
Midtone values (between 55 and 200)
Original values on horizontal axis, the Input axis
Highlight values (at this end starting at 255)
The Cancel/Reset button
The Load and Save buttons
Shadow Eyedropper
Highlight Eyedropper
The Preview button

Study this diagram of the Photoshop 6 Curves dialog to learn the controls of the Curves tool.

To understand the curve graphs, look at these three diagrams. Along the horizontal axis are the original values, called Input, with 0 (black) on the left side and 255 (white) on the right side. On the vertical axis of the curve, to the left side, are the modified values, called Output, with 0 (black) on the bottom and 255 (white) at the top. Imagine that the original values are light rays that travel straight up from the bottom of the diagram. When they hit the curve graph, they make an immediate left and exit the diagram on the left side. When the curve is the straight default curve, the values go out the same as they come in, as you can see by the leftmost curve above. When the curve is dragged downward, like the middle curve, a value that comes in at 128 hits the curve sooner so it will go out at 77. Because lower values represent darker numbers, pulling the curve down makes the image darker. When the curve is dragged upward, as in the right curve, the input value of 128 doesn't hit the curve until it gets to 194, and that is the brighter output value.

the best possible histogram from the scan you started with. Many of the controls in Curves are the same as those in Levels, but with Curves you don't see a picture of the data in this particular image. Both tools provide an OK button, which you press when you want the changes to become permanent, and a Cancel button, which you press when you want to leave the tool without any changes taking effect. If you hold the Option key down and then press Reset, you stay in the tool, all changes are undone and the curve goes back to the default straight curve. Both Levels and Curves also have Load and Save buttons that you can use to load or save settings to the disk.

If you particularly like a curve that corrected one image, you can click Save to save it, go into Curves while working on another image and click Load to run those saved settings on the other image. Curves, also like Levels, has Highlight and Shadow Eyedropper tools to set the highlight and shadow the same way you do in Levels. In fact, Curves uses the same preference values for the highlight and shadow numbers as you set in Levels. These preferences are systemwide. The curve graph is just a picture of what happens to all the values from 0 to 255. To move the curve, you click it and drag it to a new position. When you let go, Photoshop leaves a point along the curve graph, a point that causes the entire curve to move. To get rid of a point, click and drag it outside of the Curves window. When you do this, the curve bounces back to where it would be without that point. Let's experiment a bit now with Curves before you make final adjustments to the Banf Lake image.

STEP 18: Using the same image you saved at the end of Step 17, choose Image/Adjust/Curves (Command-M) and look at the Curves dialog box. If the Curves graph area is divided into only four sections, both horizontally and vertically (the default), you can get a more precise grid. Move the cursor to the middle area of the Curves graph, and Option-click in this center area. Now the Curves graph will have 10 sections in each direction. Option-clicking again will get you back to 4 sections in each direction. To get a bigger Curve window, where you can enter more points with greater precision, click in the box at the top-right area of the Title bar, the middle right box in Windows. Clicking in this area again will go back to the smaller curve diagram. Make sure that the Preview button is on so you can see your changes as you work with Curves.


By clicking on the arrows in the middle, you can make the horizontal axis have shadows on the left or the right. Leave the shadows on the left, like on the bottom here, for working with this book.

STEP 19: Now click in the middle of the curve and move the mouse up and down, left and right, and notice how the curve shape changes. Also notice the corresponding changes to the image. Try all the curves

By default in Curves, the horizontal axis shows the shadows on the left. The grayscale on this axis is a hint at this, which is easy to remember because Levels does the same thing. Some curve diagrams show the shadows on the right. If you click the arrow in the middle of the grayscale, you can flip this curve to put shadows on the right. Doing this turns everything else in the curve adjustment into a mirror image of what it was. Therefore, we recommend leaving shadows on the left. When you set the shadows on the right, the Input and Output values read as percentages between 0% and 100%. If you are more comfortable reading percentage values than the 0..255 values, you can make your Curves tool work this way. Just remember, though, that if you flip your curve orientation, the curves in this book will be opposite to yours.
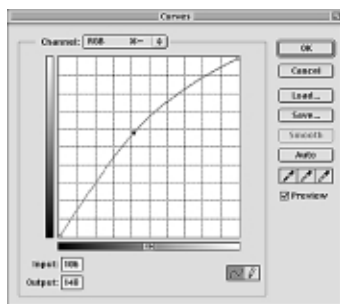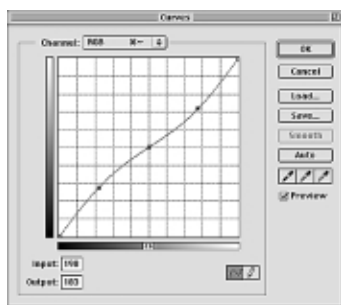
STEP 19: This curve makes the image lighter and brighter. To do this in Levels, move the Input Brightness/ Contrast slider to the left.
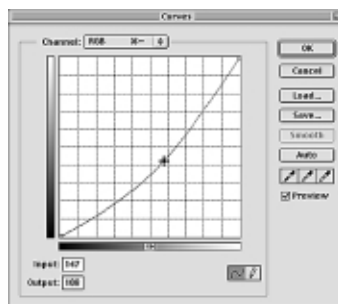
This curve makes the image darker. To do this in Levels, move the Input Brightness/Contrast slider to the right.
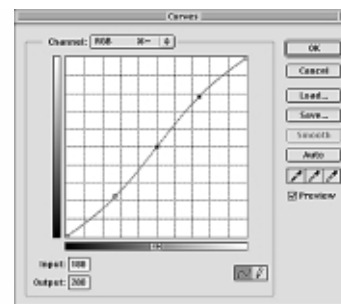
This S-curve makes the midtones more contrasty and the shadows and highlights less contrasty. You can't do exactly the same thing in Levels.

STEP 19: This backward S-curve makes the midtones flatter and increases contrast in the highlights and shadows. You can't do this exactly in Levels.
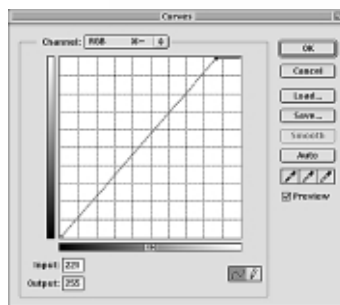
This curve makes the highlights brighter. This is similar to when you move the Input Highlight slider in Levels to the left.
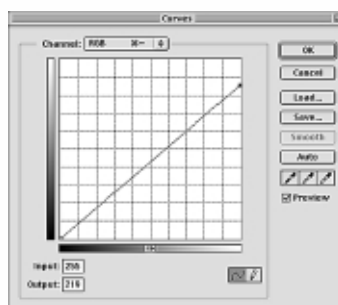
This curve makes the highlights duller. This is similar to when you move the Output Highlight slider in Levels to the left.

in the diagrams above and on the previous page. Option-Cancel between each one to reset the curve to the original, straight diagonal. Make sure you understand why each curve changes the image the way it does. Remember that each input value has to turn instantly to the left and become an output value as soon as it meets the curve. Trace some values for each of these examples, and I think you will understand how the curve graphs work. You need to understand these curve graphs because they come up all over the place in Photoshop (in Curves, Duotones, Custom CMYK, and Transfer functions), as well as in many books and other applications dealing with color.

CHANGING CONTRAST WITH CURVES

STEP 20: **Use Window/Show Layers (F10) to bring up your Layers palette. Choose Layer/New Adjustment Layer/Curves to add a Curves adjustment layer to your image. The New Curves dialog will come up and you should name this layer Overall Contrast and press OK to bring up the Curves dialog. For this curve, you will want the curve diagram with 4 section dividers. If you currently have a graph that is divided into 10 sections, Option-click in the middle of the curve graph until you get only 4. Click once on each of the 3 intersections along the diagonal line, across the curve, which will place a point on each of those points. Move the bottom point down and to the right, the top point up and to the left and leave the middle point where it was.** This will create an S shape curve that will make the image more contrasty. The values we used for the bottom point were Input of 66 and Output of 55 and the values for the top point were Input of 185 and Output of 195. After clicking on any point, you can either drag to move the point, type in a new value for Input or Output, or you can use the up and down arrows on your keyboard to move any point up or down in value. **If you don't like the way the image looks with these values, move the points around until you get what you like.** The bottom point has more control over the shadow areas, the top point the highlights and the middle point controls the midtones. If you move the middle point up and to the left, the
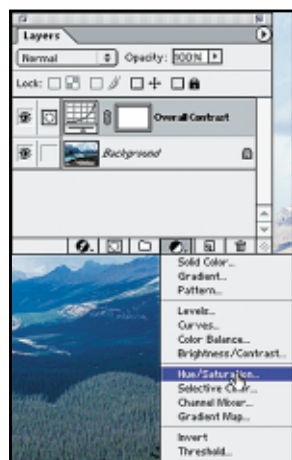
midtones will become lighter. Moving it down and to the right darkens the midtones. If any location in the image actually appears on the curve, click on that point in the image and hold the mouse button down; you will see a circle on the curve showing the values relating to that point. You could now move that part of the curve and the contrast of that point, and similar ones, will change. With Curves you have a lot of control! **Press Return (OK) when you are happy with the contrast of the image.** Since you did this curve as an adjustment layer, notice that the Layers palette now contains the Overall Contrast curve on top of the Background layer.
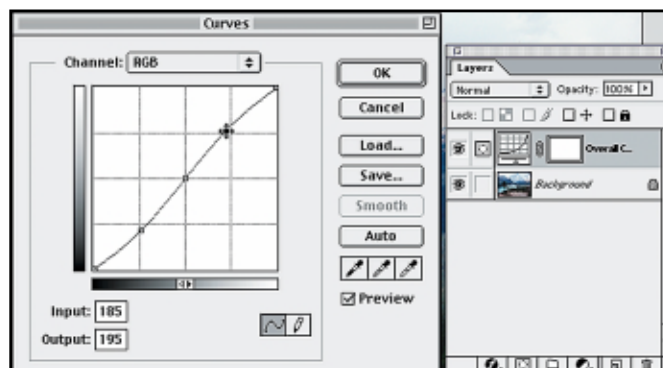

STEP 20: Here you see the Overall Contrast curve that we have added as an adjustment layer on top of the *Background* layer in the Layers palette. After choosing OK and closing this Curves dialog, you can go back to it and even change it as many times as you want to by double-clicking on the little curve graph which is the leftmost layer thumbnail for this Curves adjustment layer. When you change an adjustment layer, you are not permanently modifying the values in the background layer as you did in the first adjustment that you did with Levels where you didn't use an adjustment layer. Adjustment layers also keep track of your changes for you.

ENHANCING COLOR WITH HUE/SATURATION

STEP 21: Now you are going to create another Adjustment layer of type Hue/Saturation. **Choose Layer/New Adjustment Layer/ Hue/Saturation or use the pop-up menu at the bottom of the Layers palette, as illustrated to the left, to create a new Hue/ Saturation adjustment layer.** Using the Master selection in the Edit pop-up menu at the top, the Hue/Saturation tool allows you to adjust the hue balance and color saturation of the entire image. Using this tool, you can add contrast and drama to an image without losing shadow detail. **In Master, move the Saturation slider to +20 to increase the saturation of all colors and move the Hue slider to the right to +2 to make all the colors a bit more magenta.** When you saturate all the colors, mainly the midtones change; the highlights and shadows remain the same. You can verify this by looking at the values in your highlight and shadow Color Samplers in the Info palette.
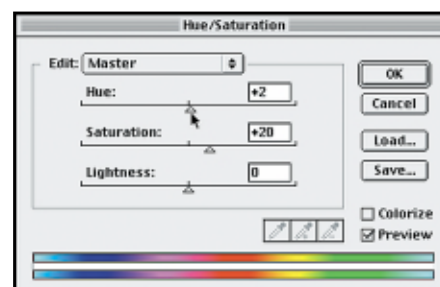
Now change the Edit pop-up to Greens and saturate the greens even more by an additional +7. When Greens is selected, only parts of the image that contain green will change in color. **Now move the Green Hue slider to the right to +5, which should make the lake and clouds look more bluish.** The color of the lake in this image may seem a bit strange, but this lake in the Canadian Rockies is filled with water from a melted glacier and it actually does have this unusual color. When the Edit menu is not in Master mode, you can use the Eyedropper tools at the bottom to fine-tune the definition of that particular color. The colored bars at the bottom of the dialog show you all the colors with the darker gray slider in the middle, showing you what the current definition is of Green, for example. This darker gray bar represents the range of colors you will be changing here with the lighter gray bars on either side showing you colors that will be modified in a lessser way as the effect of the change tapers off. If you first click in the Eyedropper plus tool, and then click and drag over an area of the image with that tool, that area's colors will be added to the definition of the greens that will be changed. Removing some greens from the colors to be modified can be done by clicking and dragging over the colors you want to remove. **Try working with the Eyedropper tools here, by clicking**
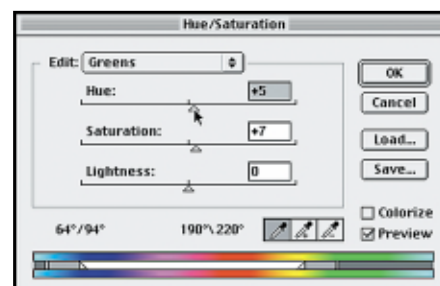

STEP 21: Another way to create a new adjustment layer is to click on the circular icon at the bottom of the Layers palette. This brings up a menu showing each type of adjustment layer. Choosing one this way brings you directly into the Hue/Saturation dialog so if you want to give this layer a custom name, like Overall Hue/Sat, then you will have to later Option-click on its layer thumbnail which is how you rename an existing layer.


STEP 21: We added 20 to the saturation in Master, which will saturate all the colors. We also moved the Hue to the right by 2 which makes the colors a bit warmer and more magenta. Notice that if you move the Hue to the left, the image looks more green.

STEP 21: After adjusting Master, we switched the Edit menu to Greens and saturated them even more by moving the Saturation up to +7. We also moved the Hue slider to the right by 5 which puts more blue into the lake and the clouds.

Enhancing Color with Hue/Saturation
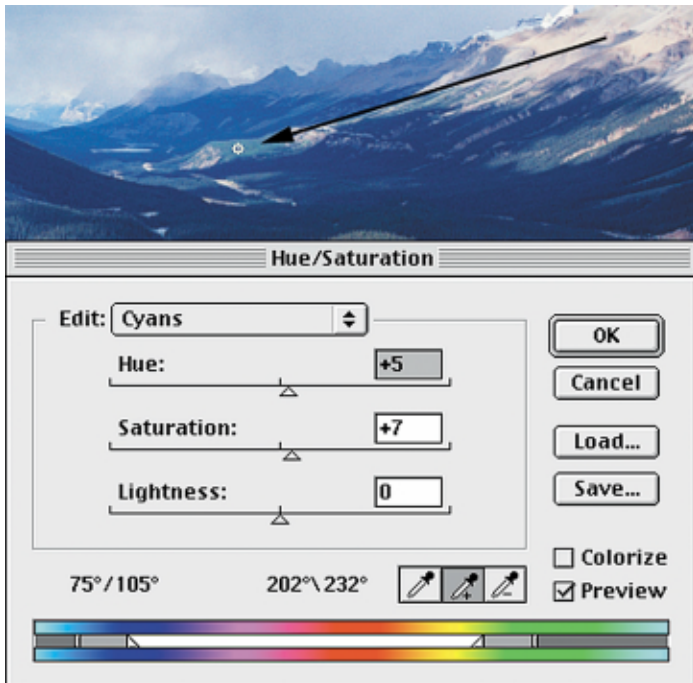
STEP 21: Here I'd initially chosen Greens for the Edit mode but after using the Eyedropper plus tool to add this cyanish green to my color definition for Greens, photoshop changed the name of Edit to Cyans. When making my green adjustments, I first moved Saturation to +7, then moved Hue to +5 then I clicked down in this area of the image because I wanted to change its tonal value. At that point further changes in the Hue or Saturation would now be changing that new range of green colors.

STEP 22: The Layers palette after adding the Overall Color layer set. Make sure the order of the layers stays the same inside the set with Hue/Saturation on top of Overall Contrast.

and dragging with the Eyedropper plus tool over greenish areas in the image to change the definition of the greens you are changing. Remember, you can always use Option-Cancel to return this tool to where it started before you made any changes. If you just want to see the effect of the additional green changes, first make the suggested changes to Master and then choose OK. Now double-click on the leftmost Layer thumbnail for this Hue/Saturation layer to bring up the Hue/Saturation dialog. Now move the Edit pop-up to Greens and go ahead and make your green changes. Since you made the changes to Master within the initial invocation of this dialog, turning the Preview checkbox off will now show you the image with just the Master changes applied. Turning the Preview checkbox on will show you the image with the Master changes and the Green changes. The Preview checkbox, for this second invocation of the tool, now just shows you the changes you added for the Greens. To see your changes as you work, make sure the Preview checkbox is checked while working in this tool and all color correction tools.

Now switch the Edit menu to Blues and notice that moving the Hue slider in Blues to +3 gives some shadow parts of the image a slightly more magenta tone. Adjust the Blues to a point where you like the image best.

Move the Edit menu to Reds and notice that moving the Hue slider to the right to +15 makes the dirt in the foreground appear more greenish-yellow. Moving this Hue slider to the left to -15 makes the dirt have a more magenta color. Notice that these moves also change the tones on the sunlit mountains to the top right of the image. I liked the Red tones the way they were, so I left the Red Hue at 0 but it is interesting to look at and understand the possibilities. Choose OK when you are happy with the image's Hue and Saturation.
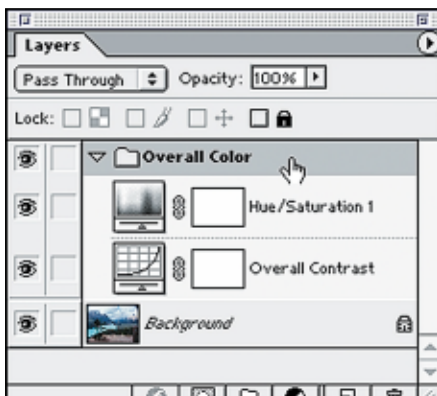
STEP 22: We have now finsihed the Overall Color Correction steps (Levels, Curves and Hue/Saturation), in this case we did the Levels step on the 16-bit per channel version of the image. We will group these steps into a layer set. **Choose Layer/New/ Layer Set and call this new set Overall Color. It will appear on the top of the other layers in the Layers palette. Click on the Layer thumbnail of the Overall Hue/Saturation layer and drag it until the cursor is on top of the Overall Color layer set icon. At that point you can release the mouse and the Hue/Saturation layer will become part of that set. Do the same thing with the Overall Contrast layer until your Layers palette looks like the one to the right.** Layer sets give you a way to group your layers and organize your work. Clicking on the arrow to the left of the Overall Color layer set will collapse this set so all you see is the folder showing that other layers are inside. Clicking on this arrow again will open this and show you the layers that are in this set. Layer sets are a very useful feature added for Photoshop 6.

ADJUSTING SELECTED COLOR AREAS USING MASKS

STEP 23: During the Overall Color Correction steps, which we just completed, the goal is to correct the overall image without using selections or masks to fine-tune the

*Chapter 19: Overall Color Correction*

color, or contrast adjustment, of any particular areas. We are looking at the entire image and trying to make the largest areas of it look correct. Now that we have completed those steps, we should have a histogram for this image that we are happy with having correct and neutral highlight and shadow values, an overall brightness and contrast that we like and also a good overall color saturation. Now we want to find the isolated parts of the image that can be improved even more, but will require a selection or mask to improve those areas. In this step we are going to enhance the look of the clouds.

Here is the Banf Lake image after completing the Overall Color Correction steps. Compare this to the version on the first page of this chapter.

As shown on the top of this page, make sure that the active layer in the Layers palette is the topmost OverallColorCorrection set. The active layer is the one that is highlighted, you can click on the name of a layer to highlight it. We are going to create a new Curves adjustment layer which will appear on top of the OverallColorCorrection set and that means this new layer's corrections will happen after the overall color corrections have already occurred. Choose Layer/New Adjustment Layer/Curves or just press F3, if you have ArtistKeys installed, to make yet another adjustment layer which you should name DarkenClouds. Click a point in the center of the diagonal line and drag it down and to the right until the clouds have more drama and you like the way they look. We chose a point at Input 141 and Output 118. Don't worry about the rest of the image looking too dark, just get the clouds to look the way you want them.

Choose OK to finish your curve adjustments and notice that the Curve adjustment layer in the Layers palette has two thumbnails associated with it. The leftmost one is the Layer thumbnail and it contains the little icon that looks like a curve diagram, which shows you that this is a Curve type adjustment layer. The rightmost thumbnail is the Layer Mask thumbnail and it is completely white, which means that right now this adjustment is happening to the entire image. **Choose Image/Adjust/Invert to invert this Layer Mask thumbnail, and the layer mask, to completely black. Now this curve change doesn't apply to any of the image. Type a B, to switch to the Paintbrush tool and select a 200 pixel soft brush from the Brushes palette at the top left of the Options palette at the top of your screen. Type a D, for default colors, which will make your forground color white and your background color black. Make sure the Opacity for your brush is set at 100%. Now paint over the entire area of the clouds with this soft brush. Notice that as you paint, the darken curve is again applied to the areas where you painted in the mask with white. Don't bring the brush too close to the tops of the mountains, as you don't want them darkened by this Curves adjustment. If you accidentally paint too close to the mountains and they get darkened, you can use Command-Z to undo the last brush stroke or use the History palette (F8) to remove several brush strokes. You can also just type an X, for Exchange, to**
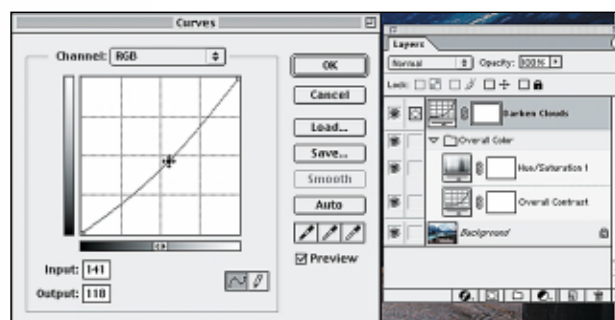

STEP 23: Here we have created the DarkenClouds adjustment layer and are setting the curve point at 141, 118.
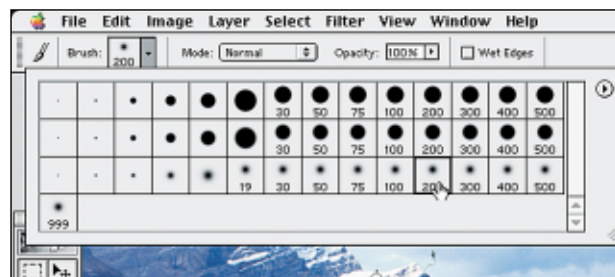
STEP 23: After typing B to get the Paintbrush, click and drag in the Brush pop-up at the left of the Options palette until you are on top of the 200-pixel soft brush. Releasing the mouse button at this point will close the Brush pop-up and select that brush. The brushes shown here are BarrysPhotoBrushes which we show you how to set up in Chapter 3.

Adjusting Selected Color Areas Using Masks
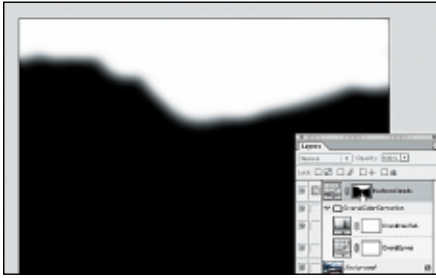
STEP 23: Here I have Option-clicked on the Darken-Clouds Layer Mask thumbnail to show my final clouds mask. Option-clicking a second time will show the image again.

switch the foreground color to black. **Painting over the mountains with black will again remove the curve adjustment from the black painted areas. Type X a second time to switch back to white.**

If you Option-click on the Layer Mask thumbnail for this DarkenClouds layer, you will actually see the mask. If you left any black holes within the clouds area, you can paint them white while looking directly at the mask. To see the image again, just Option-click on the Layer Mask thumbnail again.

FIXING CLOUDS AND REMOVING SPOTS

STEP 24: Now we are going to fix the top left and top right of the image where the lens shield of the camera removed some image area from this 28mm wide angle lens. **Click on the word Background in the Background layer to activate that layer. Type an M to switch to the Rectangular Marquee tool. Shift-M will toggle between the Rectangular and Oval marquee, by the way. Use this tool to select all of the clouds area**

STEP 24: Select this area with the Marquee to start the process of fixing the clouds

of the image as shown in the illustration here. Now choose Layer/New/Layer via Copy to turn this selection into a new layer right above the Background layer. You will work on this copy of the clouds so if you make a mistake, the original undamaged clouds will still be in the background layer below. **Click on the Lock Position icon at the top of the Layers palette to lock the position of this layer so you don't accidentally move it with the move tool. Type an S to switch to the Rubber Stamp tool, called the Clone Stamp tool in Photoshop 6, and choose the 100-pixel soft brush from the Brush pop-up in the Options palette at the top of your screen. Move the cursor over some good-looking clouds, a bit below and to the left of the dark top-right corner area. Option-click at the spot where you want to copy the clouds from. Now release the mouse button and move the cursor over to the top-right corner where you need to replace the black area with good clouds. Click and hold the mouse button as you drag across the black area and see it replaced by good clouds.** While the
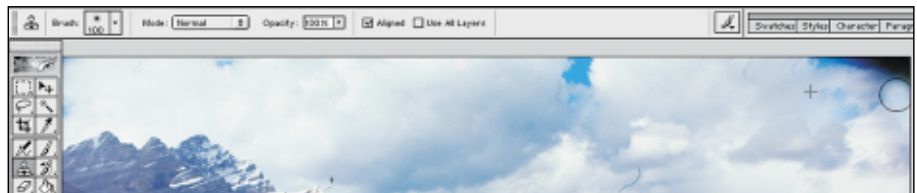

STEP 24: This is what it should look like in the Rubber Stamp tool with the mouse button down as you replace the black area with good clouds. The + shows you where clouds are being copied from and the circle shows you where the clouds are being copied to.

mouse button is down, you'll see a + where Photoshop is copying new cloud data from and a circle where the data is being copied to. Do this slowly and over and over again until you understand what is happening and get some good-looking clouds in the top-right corner. You can always choose Command-Z to Undo one step, then try it again. If you really mess up the area, bring up the History palette and click back

before you started using the Rubber Stamp tool. **When you have fixed your clouds, Option-double-click on the default Layer 1 name for this layer and rename it to Fix Clouds. Turn the Eye icon off for the Background layer for now, so you are just seeing image data from this Fix Clouds layer**.

Now zoom the image into 100% by choosing View/Actual Pixels (Command-Option-0) then zoom in one more time, using Command-Spacebar-click, to get the image to 200%. Press the Home key on your keyboard to scroll the image to the top-left corner then choose the third brush from the top left in the Brushes pop-up. You should still be using the Rubber Stamp tool, now the Clone Stamp tool. You can now press the Tab key to remove all your palettes from the screen. If you are still in Full Screen Mode, you will just see a close-up of the top-left corner of the screen. You now want to scroll through your image one full screen at a time and remove any dust or spots until you have a totally clean image. When you see a dust spot, or a larger piece of dirt, move the cursor next to the spot on top of an area that matches the color and contrast where the spot is. Hold the Option key down and click once where you want to copy image data from to fix the spot. Release the mouse button.**
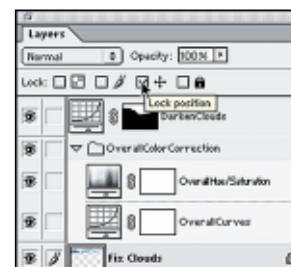

STEP 24: Locking the position of the Fix Clouds layer so it can't be accidentally moved.
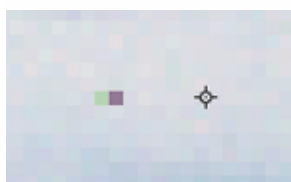
STEP 24: A spot to the left with the Option key down and cursor on the right. Option-click next to the spot to show Photoshop where to pick up color and detail.
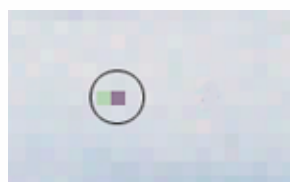
STEP 24: Click the spot without the Option key down. The cursor should look like this before you click, and the spot should be removed when you click using the pixels from where you Option-clicked before.
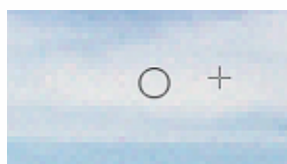

STEP 24: The circle and the crosshair that you see while cloning with the mouse button down. Photoshop picks up detail from the crosshair and places it down at the cursor circle.

Now move the cursor on top of the spot and click without the Option key down. The data will be copied from where you Option-clicked to where you clicked without the Option key. If you hold the mouse button down and drag, you'll see a + where Photoshop is copying from and a circle where it is copying to.

Once you initially Option-click then click without the Option key, sets up the spacial relationship between where Photoshop copies from and where it copies to. If Aligned is on in the Rubber Stamp's options, this spacial relationship will stay the same until you Option-click again, so you don't have to use the Option key each time. You can just click and data will always be copied from the left, right, bottom or top of where you click, depending on your initial set of Option-click and then click. **To remove a big spot or piece of dust, you'll have to click multiple times, or hold the mouse button down and drag, until the spot is gone. You only need to Option-click again if the color of where you are copying from no longer matches where you are copying to.** If you are having trouble getting the Rubber Stamp tool to work
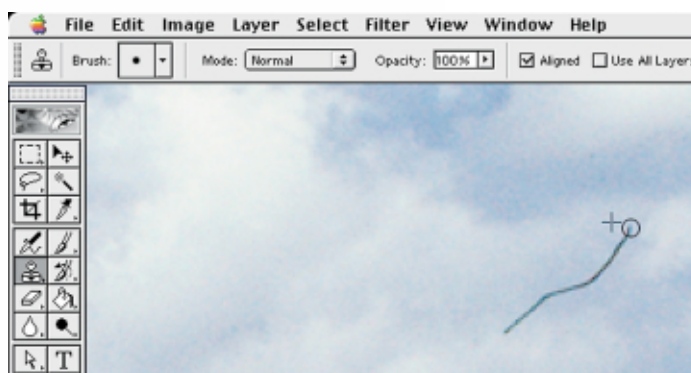
STEP 24: This long piece of dust with 3 straight sections can actually be removed in about 3 short steps. Option-click to the top left of the dust to pick up clean sky from there then Click at the top of the dust as shown here, which will remove the top end of the dust. Release the mouse button and move the cursor down the straight piece of dust and Shift-click just before the dust piece curves to the left. Shift-clicking will clone from where you first clicked in a straight line to where you Shift-click. You can repeat this process for the 3 straight sections of this strip of dust to remove it more quickly.
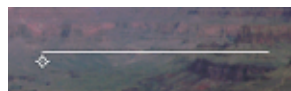
SCRATCH REMOVAL A: First, Option-click below the left end of a scratch using a brush slightly bigger than the scratch.

SCRATCH REMOVAL B: Second, click the left end of the scratch, centered on the scratch, directly above where you Option-clicked before.

SCRATCH REMOVAL C: Third, Shift-click the right end of the scratch, centered on the scratch. The scratch should disappear! You can use this technique to remove scratches made in film by the film processor. After the initial removal, you may need to do some further Rubber Stamp cleanup on some parts of the scratch.
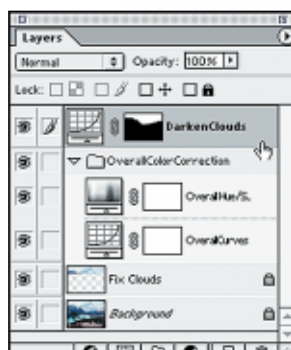
STEP 24: The final Layers palette for this master image.

correctly, look at page 42 of Chapter 4: "The Tool Palette" for more details about how it works.

When you have removed all the spots from this section of the screen, you can use Command-Page Down to scroll one screen full to the right. Now you remove the spots from this section and continue to scroll to the right until you reach the right side of the screen. At that point you can press the Page Down key on your keyboard to scroll one full screen down. Now you are fixing a full screen, then choosing Command-Page Up to scroll a full screen to the left. Move through the entire Fix Clouds layer until you have removed all the spots in this layer. Now use Tab to bring up your palettes again and click on the word Background to activate the background layer. Press Tab again to remove your palettesand then continue stepping through screens of the background layer until you have removed all the spots there, too.

SAVING AND ARCHIVING YOUR MASTER IMAGE

STEP 25: **Now that you have spotted your master image, you need to save this file and go ahead and make a test print to be sure you are happy with the color. We will show you how to prepare the test print in Step 26 and beyond. After making the test print, you may need to come back to one or more of your adjustment layers and tweak the color before you achieve a final print. To tweak an adjustment layer, just double-click on its Layer thumbnail, which will bring up that layer's Levels, Curve or Hue/Saturation dialog and show you the adjustments you already made. You can then make subtle changes to what you have already done based on what you want to change in the print. When bringing up an adjustment layer a second time, turning the Preview checkbox off shows you the image based on the first set of adjustments; turning on the Preview checkbox shows you the image with the further changes you have added after bringing it up the second time. To see the image without this adjustment layer at all, you need to turn off this layer's Eye icon in the Layers palette. When you are finally happy with all your adjustments to this image, save and archive this as your master layered image to a CD or some other permanent backup storage.**

RESAMPLING AND RETARGETING COPIES OF A MASTER IMAGE FOR DIFFERENT SIZE PRINTS AND OTHER USES

### MAKING AN RGB OR CMYK PRINT VERSION

STEP 26: **After saving your master layered file, choose Image/Duplicate (F5) to make an onscreen copy of your master image. Turn on the Duplicate Merged Layers Only option in the Duplicate dialog and enter a name for this image of LakeTest 300 dpi 4x6. Choosing Merged Layers Only in Photoshop 6 will blend all the layers in this copy into one Photoshop background layer. Press F for Full Screen mode and then Command-0 to fill the screen with this copy. Go into Image/Image Size (F7) and turn off the Resample Image option at the bottom of the dialog.** This allows you to play

around with numbers to see what you will get without resampling your image. If you don't need to resample, that is better, and when you do resample, you want to resample down and make a larger image smaller, rather than resample up. **Set the resolution to 300 dpi, which is the resolution you would use to print this on a 150-line screen press, your typical glossy magazine. With the resolution set to 300 dpi and Resample Image off, you can see that this image has enough information to print over 6 inches wide and over 4 inches high. If you wanted a 4x6 test print, you now know you can do this and resample down instead of up. Turn Resample Image back on and set the width to 6 inches; notice that the height now says 4.319. Your numbers may be slightly different, depending on how you did your initial crop.** The point here is that the Image Size dialog is showing you that with the width set to 6 inches, you have a little more height than you need. If you look at Pixel Dimensions, at the top of the dialog, it is also showing you that the image is going to be a little smaller if we resample to 300 dpi at 6 inches wide. **Choose OK to Resample the image.**

STEP 27: Now we need to sharpen the image because it is at its final size and we have not sharpened it before, even while scanning. You will get better sharpening results if you don't sharpen the image till it reaches its final resample size. **Choose View/ Actual Pixels (Command-Option-0) to zoom the image to 100% and then do Filter/Sharpen/Unsharp Mask (F4).** The details of the Unsharp Mask filter are explained in the next chapter, but what you need to know here is that you will use different settings in this filter, depending on the size of the image and also on the particular image. Also, you are usually best judging the results of a sharpen or a blur while looking at the image at 100%. **For this image, I have decided to use the 100, 1.0 and 5 setting. Start with these values and then you can play with the settings and see what they do to the image, as long as the Preview button is on in the Unsharp Mask dialog.** Again, we will go into the details of what each setting does in the next chapter. You may want to check and respot your image after the final sharpening; there should be little additional work! **Do Command-S to save your image in RGB format. If you were going to make a test print on an Epson or other RGB printer, this would be the image you'd test.**

STEP 28: **If you were going to print this as a CMYK press proof of some sort, make sure your CMYK working space in the Color Settings preferences was correct for this print job, then you'd choose Image/Mode/CMYK to convert this image to CMYK. Depending on your monitor calibration and your other preferences setup, you might notice a certain color and/or contrast shift after converting to CMYK. You can use Command-Z to toggle back and forth between RGB and CMYK to help you decide if you need to make adjustments after converting to CMYK. When View/Proof Setup is set to the default of Working CMYK, you can actually do this and make the adjustments in RGB mode by turning on View/Proof Colors to see what your RGB file will look like when converted to CMYK.** Because I don't usually adjust my RGB master files based on how they will look in CMYK, my normal workflow is to go ahead and
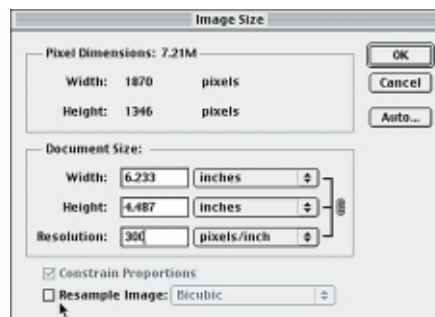
STEP 26: The Image Size dialog with Resample Image off and the dpi set to 300, which allows us to see how big of an image we can get at that resolution we want without resampling. If the WIdth and Height shown here are bigger than what we need, we know that we will be resampling down and not up, which is what we want. To test print this on an Epson printer, I'd probably just set the pixels/inch to 310 and not resample.
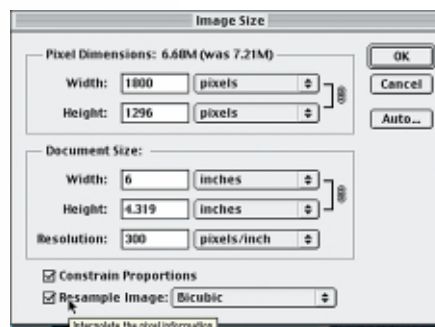
STEP 26: The Image Size dialog with Resample Image turned on again after we have typed in an exact width of 6 inches and set the resolution to exactly 300 pixels/inch. When placing the image in a page layout application, the size and resolution need to be exact. Notice how the Pixel Dimensions at the top of the dialog show the before and after sizes.
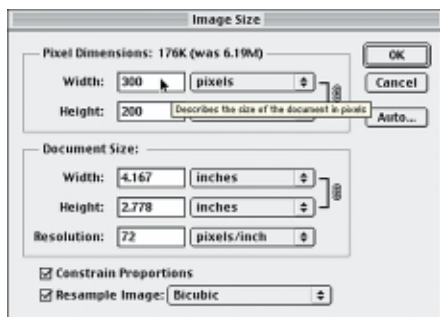
STEP 29: Here we made a much smaller Web image by setting the pixels/inch to 72 and the Pixel Dimensions to 300 wide by 200 high.

do the conversion to CMYK and then fix any problems in that particular CMYK version at that time. This is my preference because the main focus of my images is my larger art prints that are destined for RGB output devices, like the LightJet 5000 or Epson 7500.

MAKING A WEB VERSION

STEP 29: **Use the Window menu to go back to your BanfLakeLayers master image; then choose Image/Duplicate again with Duplicate Merged Layers Only on naming this file BanfLakeWeb300x200. Choose F for Full Screen mode and View/Fit On Screen (Command-0) to fill the screen with this image. Type C to switch to the Crop tool, and press Return to bring up its options. Set the Width to 3 and the Height to 2; then draw the crop box across the full width of the image. Release the mouse and then click in the center of the crop box and drag down to center the crop area, so an even amount is cut from the top and bottom of this image. Press Return to actually do the crop. The Crop tool will have now forced the image to the aspect ratio you have chosen. Now choose Image/Image Size (F7) to bring up the Image Size dialog again and set the top Width, in the Pixel Dimentions area, to 300 pixels; then set the dpi to 72 making sure the Pixel Dimentions still read 300 pixels at the top. Press OK to resample your image for the Web. Now choose Command-Option-0 for 100% and then press F4 for Unsharp Mask and use the 200, .5, and 0 settings.** Larger amounts and smaller Radius values seem to work better for the small Web images. **Now choose File/Save As and save this file in JPEG format with the Quality set at High (8) and Baseline Optimized On.** These JPEG settings are explained in great detail in the last section of the book: Images for the Web and Multimedia.

In previous versions of this book, we had used an image called the Grand Canyon for this initial Overall Color Correction exercise. For *Photoshop 6 Artistry*, I decided to move on to a new image with a slightly different approach. The Grand Canyon image however, is a great image to illustrate that setting the highlights and shadows to neutral values can do a lot towards the color correction of many images. **To gain extra understanding of what we are doing here and why, you might also want to go through the Overall Color Correction process described in this chapter using the Grand Canyon image, which is still on the CD for this chapter.**

STEP 29: Here is the JPEG version of this image we made in step 29 but printed at 300 dpi.

STEP 29: The final version of the Banf Lake image after sharpening and resampling to 6 inches wide. For my final art print of this image, I also removed the people and the post in the front right of this image. Doing that is a bit advanced for the first exercise in this book. Later in this book, you'll learn to do that type of thing and more.