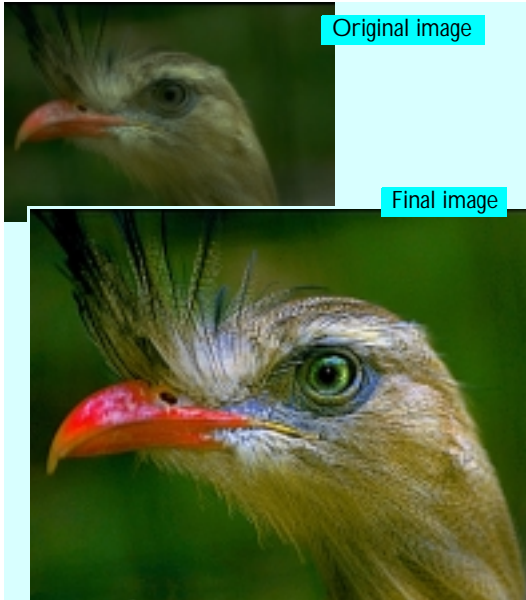


2. Picture Window Tutorial

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In this chapter, we present a short tutorial. It covers a number of basic operations, like cropping, adjusting brightness, color balance, and others that you will use over and over again with your images. These operations are characteristic of Picture Window generally. So after you have finished the tutorial, you will not only be able to perform these specific manipulations but will be getting comfortable with using Picture Window as well.

The only thing you need to do before you try this guided tour is install Picture Window—everything else, including a sample image, is provided. So start Picture Window by double-clicking its icon and then load a sample image. The procedure for loading the first sample image is next.

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The Opening Screen

When you first bring up Picture Window, you get a display like that shown at right. The menu and tool bar are displayed at the top of the window. A [Browse](#) window at the left shows thumbnails of images in any selected directory. (You can change the selected directory by clicking on the  button in the browse window and choosing a new directory.)

Loading an Image

The first file we want to open is **bird.jpeg** located in the Picture Window installation directory. The extension **jpeg** indicates the file is compressed using the JPEG standard. JPEG is designed specifically for photographs and easily achieves compression factors of 6 to 10 with good quality.

To load the image using the browse window:

- 1. Select the Picture Window installation directory.** In the browse window, click the  button. The Select Folder dialog is displayed. Navigate to the installation directory. By default, it is **C:\Program Files\Picture Window 3.0**. Click the **Select** button. All the images in the directory are displayed in the browse window.
- 2. Open the bird image.** To open Bird.jpeg, double-click on the image or drag it to the work area. The image is displayed in its own window.

You can also load images using the standard **File | Open** or **File | Open Photo CD** dialogs. (See [Opening Images](#).)



The Image Window

Notice that the image is displayed in its own **image window**. Since the image window is used throughout Picture Window, it is worth noting some of its features.

The title bar of the image window shows the file name of the image. Or, if the image has not yet been stored in a file, the title bar displays an image number. During a session, increasing image numbers are always assigned, so that you can be sure that a greater number means it's a later version.

The title bar also displays the image's magnification. You can change the magnification with the **Zoom** buttons in the tool bar.



Zoom in: Enlarges the image within the image window.



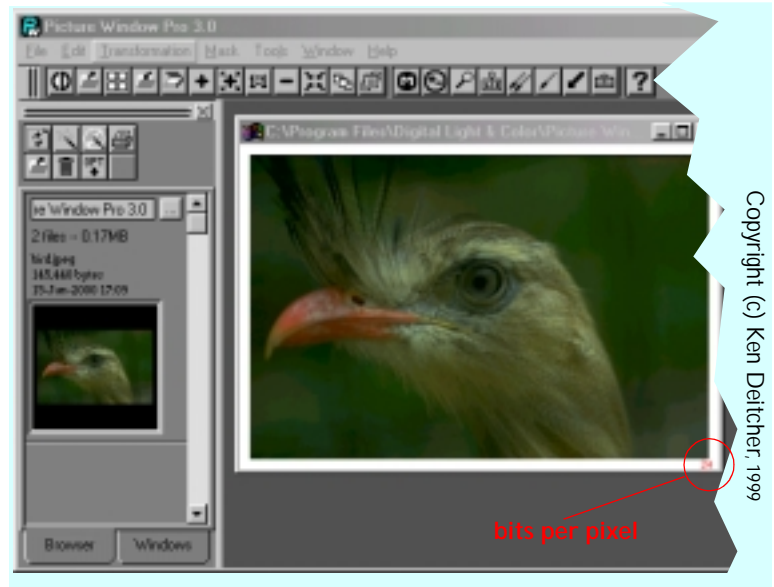
Zoom in and enlarge window: Enlarges the image. Also enlarges the image window, if possible.

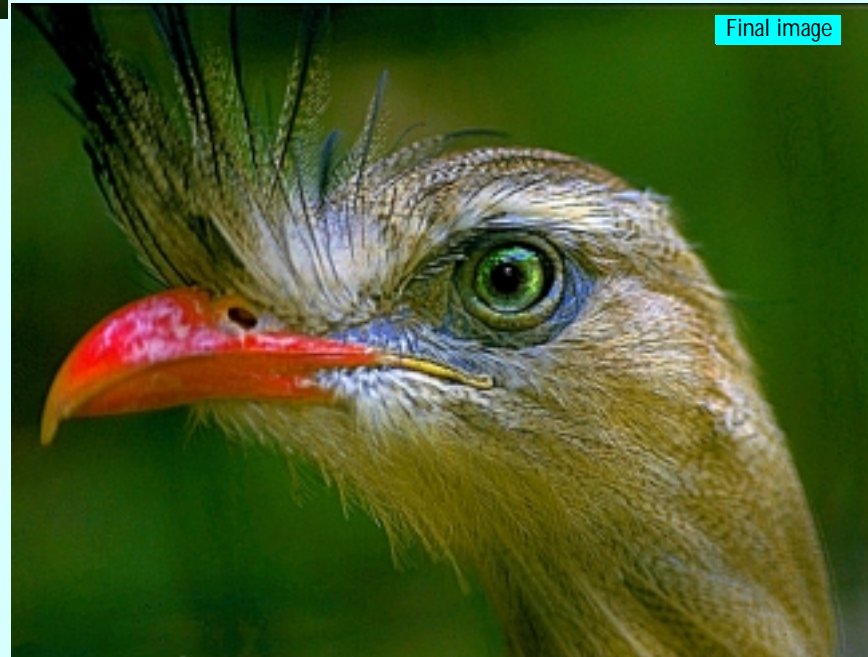


Zoom out: Reduces the size of the image and shrinks the window.

These functions are also available on the **Window** menu.

Finally, note the number in the lower right corner of the image window. It indicates the number of bits per pixel. Full color images have 24 or 48 bits/pixel. Monochrome images have 8 or 16 bits/pixel. 1 bit/pixel images are also possible.





Evaluating an Image

After you first display an image, evaluate it for a moment. What would you do to improve it? Very few photographs are finished when they come out of the scanner.

Frequently, the photographs we take have all the essential ingredients to be good images once their strengths are brought out and the impact of their defects is reduced.

The image at the top left is a photo of a fabulous bird, as it looks after scanning. By inspecting it critically, you can see a number of things that can be improved. The image contrast is subdued, it has a slight green color cast, and focus is soft.

On the following pages we work on the image in stages, making a series of improvements. Their cumulative effect is the second image shown at left.

To learn the most, load the image and perform the steps yourself as you read.

Cropping the Image

Since cropping makes the image smaller and thus more manageable for your computer, it's a good idea to crop the image early in the enhancement process. However, if you are not sure whether you want to leave a feature in or out, leave it in. You can always crop it out later.

So let's start by cropping the image. Crop is an image transformation, located in the **Transformation** menu.


Click on the menu. You will notice that it contains a long list of operations. The three major categories are **Geometry**, **Gray**, and **Color**. **Gray** contains all the grayscale (i.e. black and white) operations for controlling brightness and contrast. **Color** contains functions for adjusting color balance and color saturation. **Geometry** is the one we want to choose. In addition to cropping, it contains functions for resizing images and for controlling perspective.

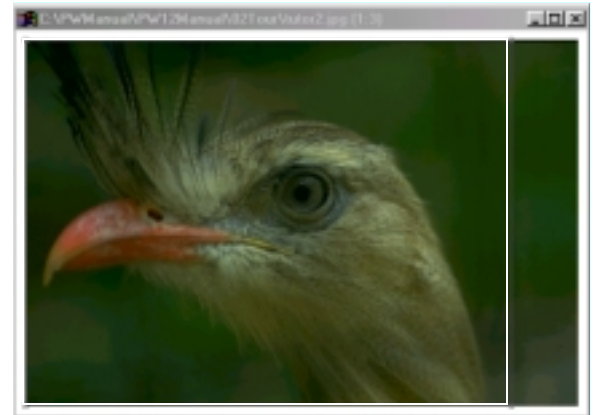


The Crop Procedure

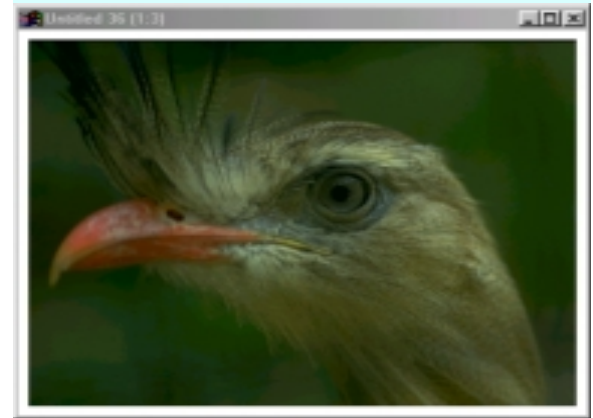
To crop the image:


1. **Click on the image window** to make sure that it is selected. In Picture Window, you select the image window first and then select a transformation for operating on the image.
2. **Display the Crop/Add Border Transformation.** In the **Transformation** menu, select **Geometry** and then select **Crop/Add Border**. The dialog box is displayed. Notice also, that there are little open squares in each corner of the image. These are “handles” that you can drag with the mouse to adjust the cropping rectangle.
3. **Drag the crop rectangle handles** to achieve the crop you desire. You can drag the corners or edges to adjust the size of the rectangle. You can also drag the interior of the rectangle to reposition it without changing its size.

To make fine adjustments, enlarge the image window by pressing the  tool bar button or selecting the **Zoom In** menu choice in the **Window** menu.
4. **Preview the crop.** To see the effect of the crop, click **Preview**. A small version of the image is displayed in a preview window. You can enlarge the preview window too, by selecting




Cropping: In this example, we dragged the right edge of the crop rectangle to the left to cut out the extra space. The result is below.



the window and pressing the  tool bar button. You can make further adjustments and preview the image again as many times as necessary.

Most dialogs have a **Preview** button. It lets you see the results of your editing without leaving the dialog. The preview image has only as much resolution as is needed for the screen, so your changes can often be applied much faster than to the full image.

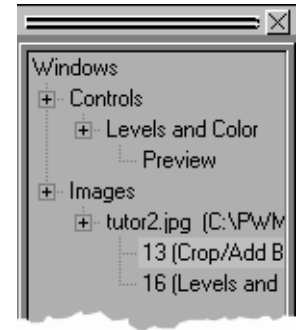
5. **Click OK.** When you are satisfied with the changes, click the **OK** button. The cropped image is displayed in a new image window. (Note, if you want to try additional variations, click the **Apply** button instead. Clicking **Apply** leaves the dialog up and allows you to make additional images.)

Hint: Sometimes transformation dialogs get buried under other windows. Just click the  button in the tool bar to bring all transformation dialogs to the top.

Pipeline Editing

Notice that you now have two image windows—one with the unchanged original image and the other with the changed new image. In Picture Window, most editing operations are not performed in place on the original image, but rather produce a new image. That way you can compare the new version with the previous one and continue from the one you like best. Also, you can easily return to a previous version, even if it's several stages back. This is particularly helpful when you are experimenting. You can save any image to a file at any time. On the other hand, if you don't think you will be returning to a particular intermediate step, you can delete its image window, to conserve memory.

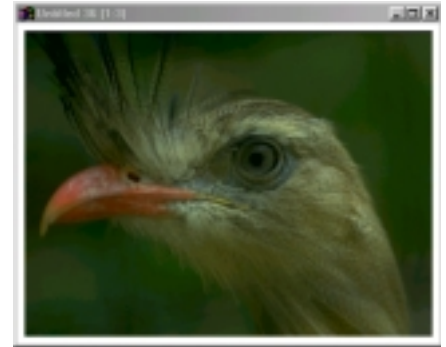
As you continue editing and the number of open windows accumulate, you might have trouble finding the window you need. One way to locate the right window is to use the [Windows Display](#) (Click the **Windows** tab at the bottom of the Browse display.) It shows a hierarchical list of open windows. To select a window just double-click on its title.



Adjusting Brightness and Contrast

Usually, brightness and contrast are among the most important adjustments you can make. You can think of brightness as being how light or dark the midtones of the image are. Contrast is the range of tones—from the darkest shadows to the lightest highlights.

Usually your goal is to make the shadows as dark as possible while retaining just a hint of texture and detail in most of the shadow areas. Likewise, you usually want to adjust the highlights so they are as white as possible, but also with a little bit of texture and detail. Finally, you want to adjust the midtones so they look realistic.



Evaluating the Sample Image

Let's look at the sample image with these criteria in mind. Compare the brightest feathers with the white of the border. They are not nearly as bright. Thus the bright areas of the bird could be made brighter, giving the photo more snap. Similarly, check the blacks. In this example they are satisfactory, but if they were not, we would want to make them darker.

Using the Levels and Color Transformation

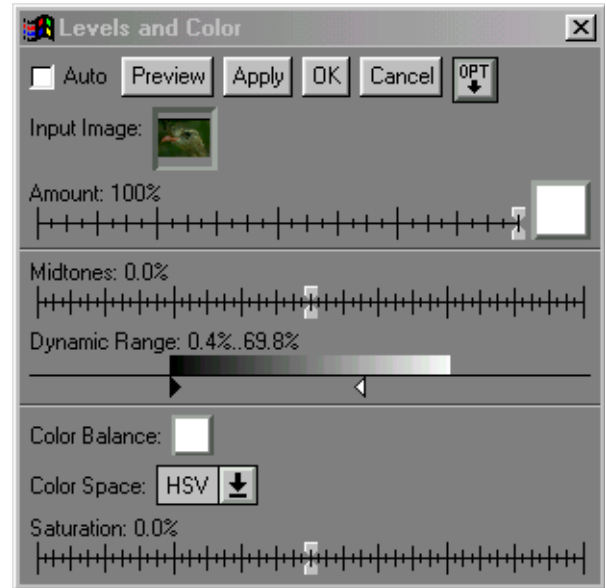
Picture Window has several transformations for adjusting brightness and contrast. We will use a simple and very effective transformation called **Levels and Color**. It gives you independent control of contrast and brightness as well as color balance and saturation. In this example, we will only explore its contrast and brightness features. See [Levels and Color Dialog](#) for information on its color controls.)

The Levels and Color Procedure

To use the **Levels and Color** dialog:

1. Select the **image window** containing the image you want to adjust.
2. Display the [Levels and Color Dialog](#). In the **Transformation** menu, select **Gray** and then select **Levels and Color**. The **Levels and Color** dialog box is displayed.

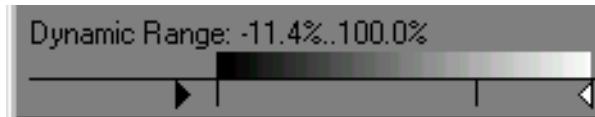
Notice the position of the shadow and highlight sliders on the Dynamic Range control. Picture Window sets these sliders to the actual brightness level of the shadow and highlight areas of the image. (When you move the sliders, a small scale mark shows their original positions.) For instance, we can see that the brightest area in our image is only about 69% of full possible brightness.





The original image and after cropping and Levels adjustment

3. Adjust the dynamic range. A good starting point for this adjustment is to simply move the shadow and highlight sliders to maximum black and white, respectively, and preview the image.



The further apart the sliders are, the higher the contrast of the image. For very high contrast, you can actually move them past the maximum white and black points. That has the effect of emphasizing highlights and shadows and increasing the contrast in the rest of the image.

4. Adjust the Midtones slider. The Midtones slider affects the mid-range tones most. Adjust it for the most natural brightness level for the subject at hand. We set the brightness to about +25%

5. Preview the adjustments. To see the effect of the adjustments, click **Preview**. A small version of the image is displayed in a preview window. Experiment with different settings and preview again, until you are satisfied with the image.

6. Click OK when satisfied with the adjustment. A new image is

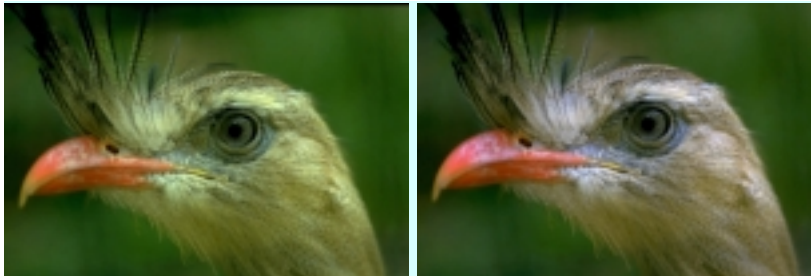
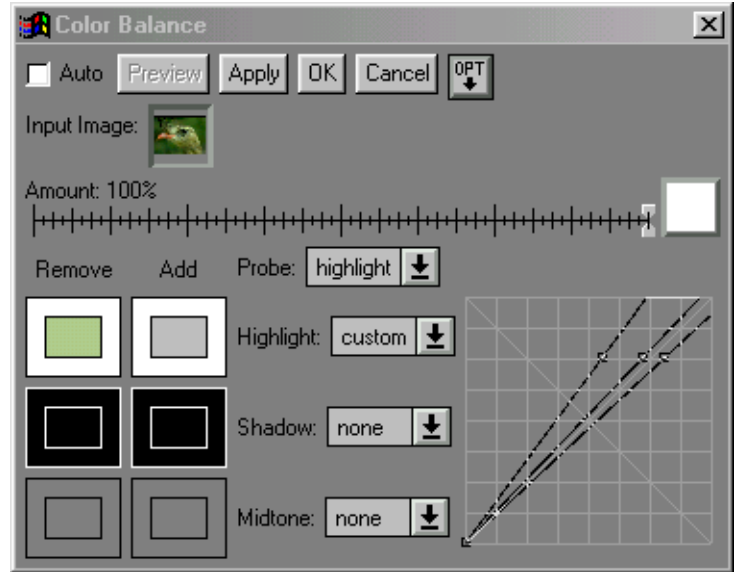
created in its own window. The dialog box is dismissed.

Note that you can also create a new image by pressing **Apply** instead of **OK**. See [Applying a Transformation](#) for a discussion of the two buttons.

Adjusting Color Balance

Notice that the whites in the feathers actually have a green tinge. We can remove this tinge by rebalancing the colors of the photograph, using the **Color Balance** transformation.

1. Select the **image window** containing the image you want to adjust.
2. Display the **Color Balance** transformation. In the **Transformation** menu, select **Color** and then select **Balance**. The **Color Balance** dialog box is displayed.
3. This transformation tries to determine the correction needed to balance the image. Its guess is frequently quite close. Click **Preview** to see the results of auto-correction. If they are satisfactory, click **OK** to create a new image. The auto-correction results in our case are shown below.

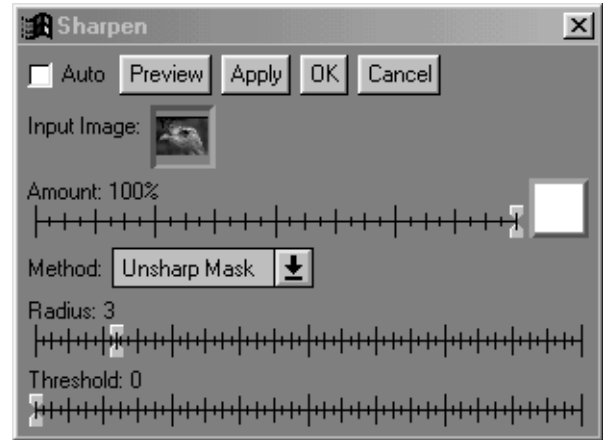


To bring the image into balance, the **Color Balance** transformation determined that it must subtract green. (Note the **Remove** highlight patch above.) The results are shown at left. Note that the feathers are whiter and the beak is redder. The blue highlights in the feathers are also more prominent.

Sharpening the Image

Images in which texture or fine detail are important can frequently be improved by sharpening their focus. In this image, the feather structure is a bit soft, so it is a good candidate for sharpening. To sharpen an image:

1. Select the **image window** containing the image you want to adjust.
2. Display the **Sharpen Transformation**. In the **Transformation** menu, select **Sharpen**. The **Sharpen** dialog box is displayed.
3. There are several sharpening methods. We chose **Unsharp Mask**, which is a good general-purpose sharpening method. All other settings are simply the defaults.
4. Click **Preview** to see the results of the sharpening. If they are satisfactory, click **OK** to create a new image. The original and final images are shown below.



Sharpening brings out the texture of the feathers.

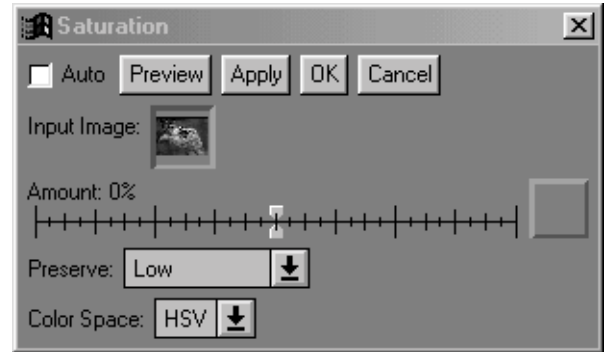
The amount of sharpening you can apply before artifacts start becoming noticeable is different for each image. In this case we sharpened the image twice.



Adjusting Color Saturation

After sharpening the image, we see that the colors look rather bleached. We can bring them out by increasing saturation.

1. Select the **image window** containing the image you want to adjust.
2. Display the [Color Saturation](#) transformation. In the **Transformation** menu, select **Color** and then select **Saturation**. The **Saturation** dialog box is displayed.
3. The transformation can be used to either increase or decrease the saturation by moving the slider either to the right or left. Experiment to find the best setting. Click **OK** to create a new image.



Increasing saturation by about 40% brings out the colors of the beak and the blue around the eye.

Setting the **Preserve** option to **Low** keeps areas of low saturation unaffected.




Lightening a Small Area

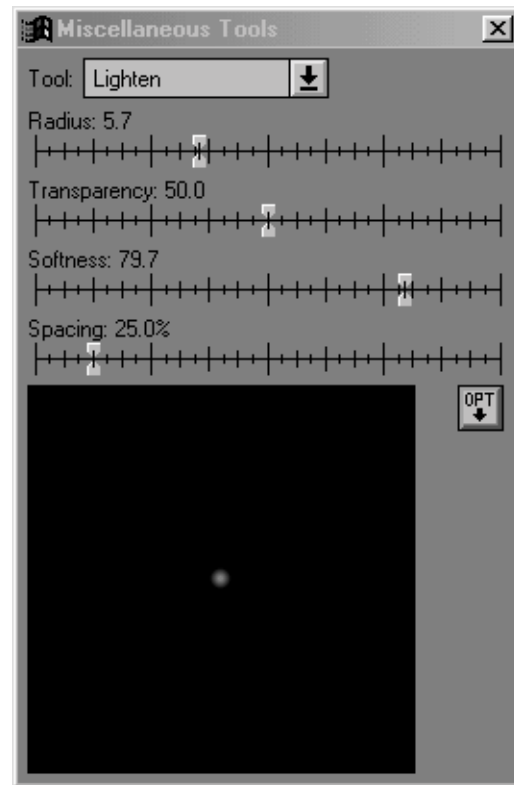
Eyes are frequently very important in drawing us into an image. In this particular case, they are a bit 'dead'. Highlights that can make eyes come alive are not very evident. However, if we look closely (detail, left), we can see that highlights do exist. So all we have to do is make them stand out more.



Picture Window has a series of paint brush-like tools for making local changes. In this case, we will use the **Lighten** tool to selectively lighten the iris of the eye.

To use the tool:

1. **Select the image window** containing the image you want to adjust.
2. **Enlarge the image.** Click the  **Zoom** button in the toolbar. Then place the cursor over the eye and click the left mouse button until the eye fills the image window.
3. **Display the [Miscellaneous Tools](#) dialog.** In the **Tools** menu, select **Miscellaneous Tools**. This dialog offers many tools, any of which can be chosen from the drop-down menu. We will use the **Lighten** tool.
4. You can set the tool's **Transparency** and **Softness**. Set these to high values to reduce the degree of change in each pass of the tool. That makes it easier to control the effect.



5. Move the mouse over the image. A small circle is displayed. It shows the size of the tool. Set the **Radius** slider so that the circle is somewhat smaller than the area you want to change.
6. Hold down the mouse button and go over the area you want to lighten. In our case, we circled around the iris, making a number of irregular passes to brighten it. Notice that the tool works directly on the image. (If you make a mistake or overdo the change, use [Undo](#) to reverse your action.)

The results are shown below.

We traced several passes around the iris to lighten it and make the eye glisten.

We also added a small highlight to the pupil with the [Paint Tool](#).

The result is to bring out the eye's spherical shape and to make it look more alive.



The original and final image are shown at the beginning of the chapter. (See [Evaluating an Image](#).)

The final step is to save the image, described next.

Saving the Image

After you have adjusted the image, save it in a file. Here is the procedure:

1. **Select the image window** containing the image you want to save.
2. **Display the [Save As Dialog](#)**. In the **File** menu, select **Save As**. The standard Windows **File Save** dialog is displayed.
3. **Set the file type**. If you intend to continue working on the image, select TIFF or one of the other uncompressed formats. If you have completed working with the image, and want to archive it using as little storage space as possible, save it as a JPEG compressed file.
4. **Select the drive and directory** in which you want to store the image and enter a file name for the image.
5. **Press OK to complete the operation. For all file types except JPEG, the image is saved.**

For JPEG images, the [JPEG File Save Dialog](#) dialog is displayed. Accept its default settings and click **OK**. The image is saved.

Using Other Transformations

This chapter is only an introduction to the transformations at your disposal. The transformations we performed, cropping, adjusting brightness, contrast, and color balance are required by most images. In addition, images frequently have dust marks and other small imperfections which can be removed with the [Speck Removal](#) tool. (Also see the [Image Retouching Techniques](#) white paper for an in-depth discussion.)

However, the manipulations you will want to perform ultimately depend on the image and on your creative purpose. Picture Window provides a very rich set of tools to help you get the most out of your photographs.

In the next chapter, we introduce all of the Picture Window functions and describe procedures that are common to most of the manipulations.