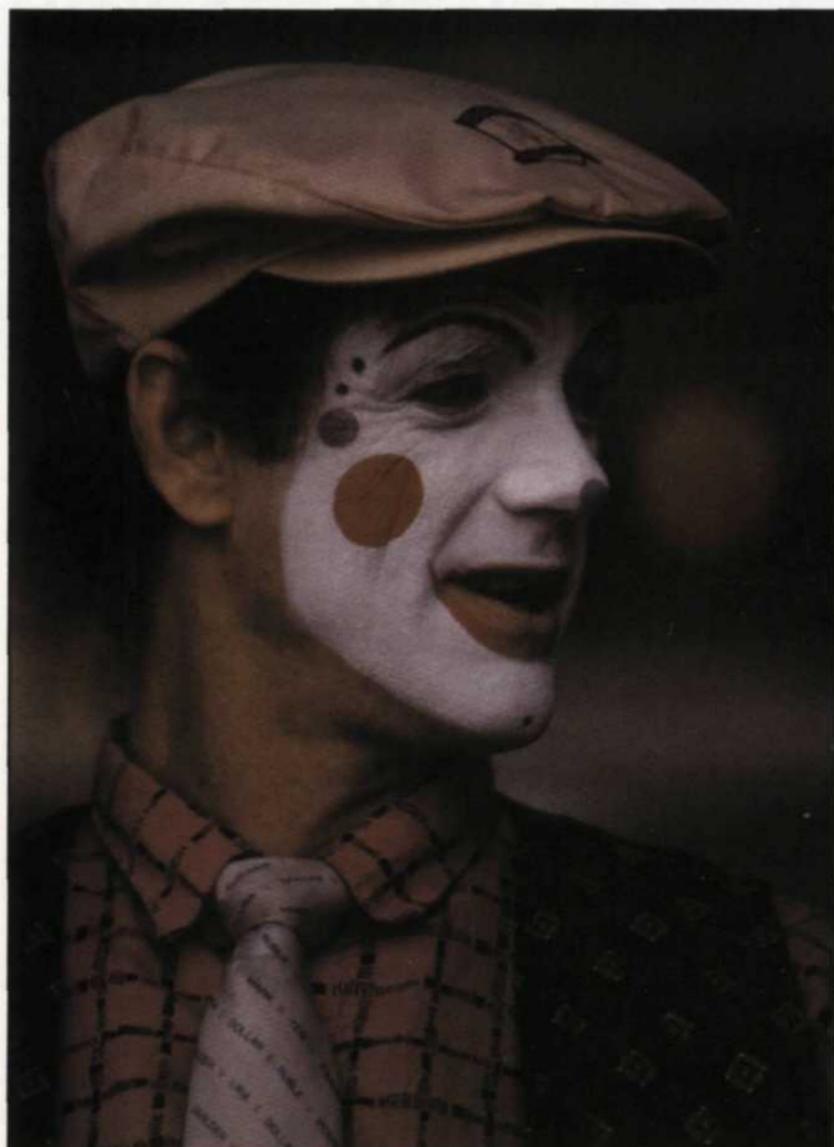


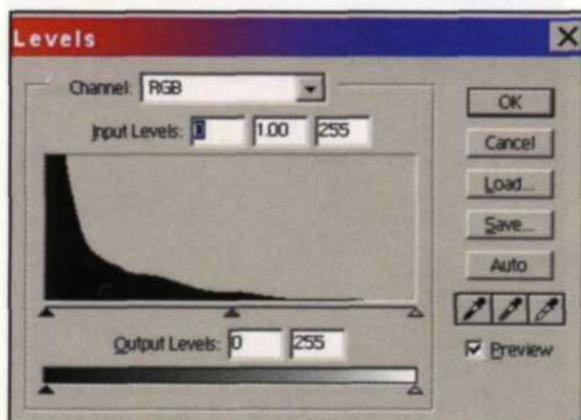
DIGITAL DIRECTIONS



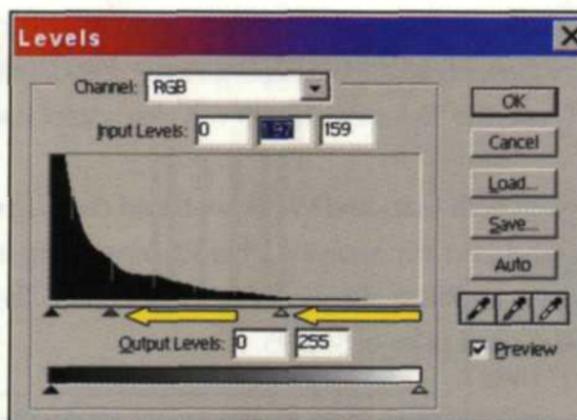
Underexposed slide



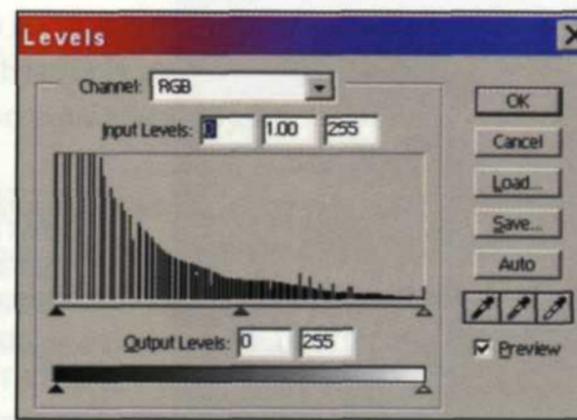
Corrected slide



Underexposed slide gamma



Corrected slide gamma

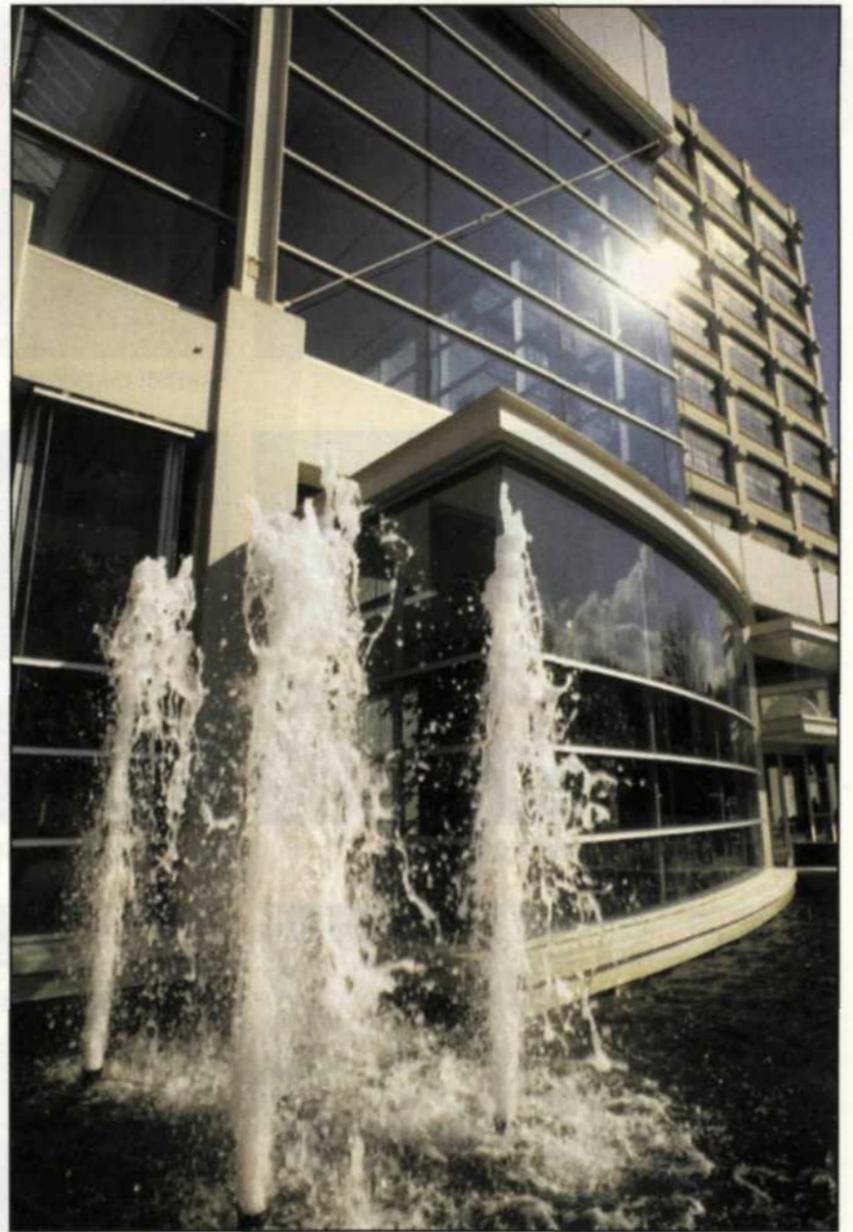


Final slide gamma

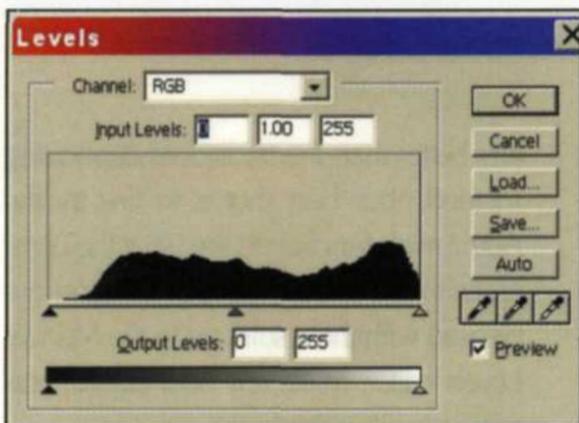
If you look at a list of photographers' common mistakes, incorrect exposure is at the top. Even with fancy cameras, accurate exposure meters, and wide exposure film latitude, many potentially great photos end up in the round file. For years, traditional photo labs have performed miracles in an attempt to recover those precious memories. Salvage was accomplished using duplicating film, masks, or filters—with good results—but the time and expense were usually too high. The digital world changed all that.



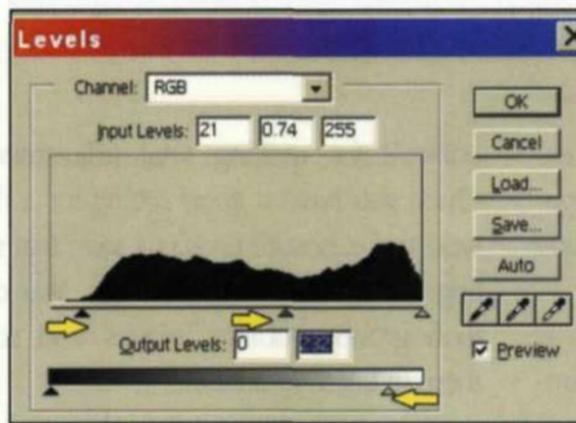
Overexposed slide



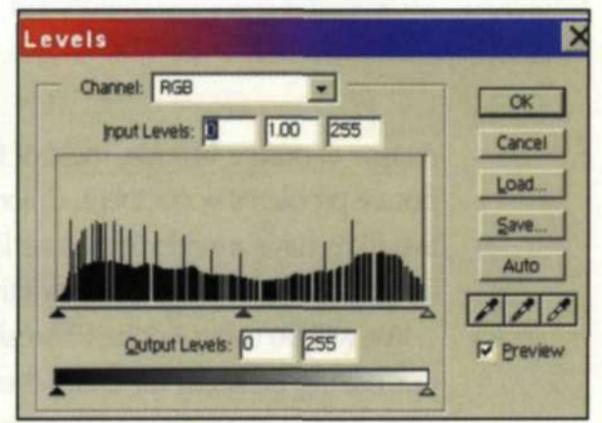
Corrected slide



Overexposed slide gamma



Corrected slide gamma



Final slide gamma

UNDER and OVER Exposure

Jack and Sue Drafahl

IF YOU CAN SCAN problem film into the computer, it can be improved using computer technology—usually with great success! With traditional photography, exposure corrections were generally applied to the entire gamma curve. Digital, on the

other hand, can bend any part of the photographic curve in any direction, which pushes beyond the laws of photographic physics.

There are several digital methods for manipulating incorrect exposures, so the

key is correctly matching the solution to the problem. If you analyze both under- and over-exposures in slides and color negatives, you will see a total of four possible combinations of problems. Since slides are final products and have a very



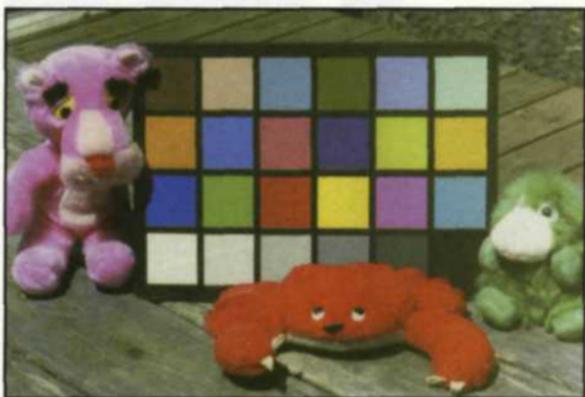
Underexposed negative



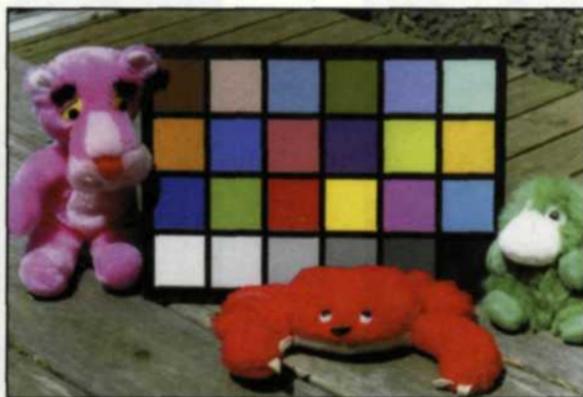
Normal negative



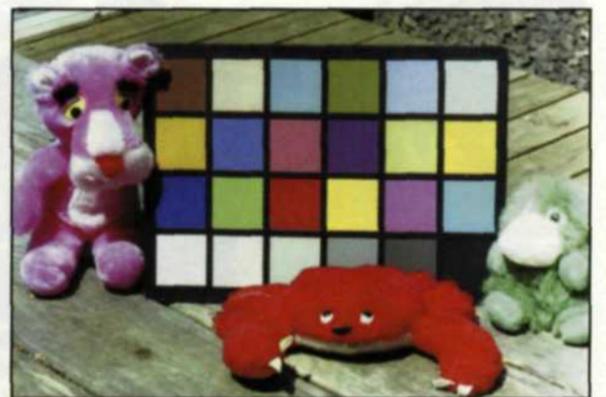
Overexposed negative



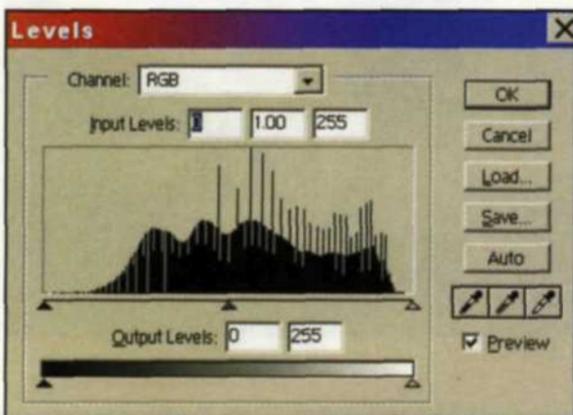
Underexposed negative to print



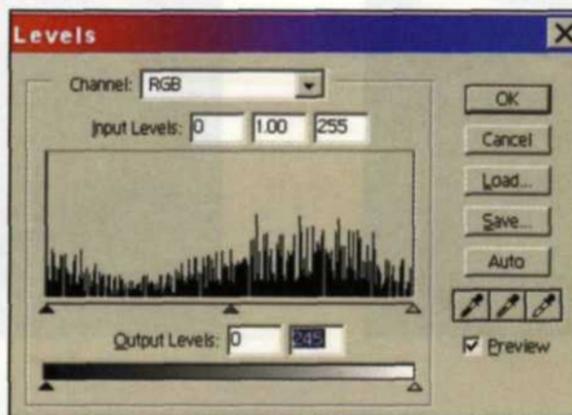
Normal negative to print



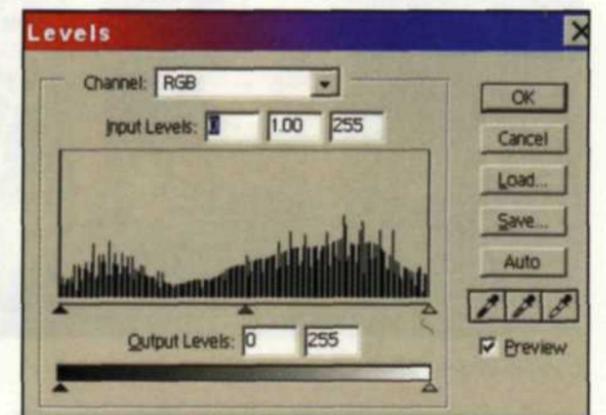
Overexposed negative to print



Underexposed negative to print gamma



Normal negative to print gamma



Overexposed negative to print gamma

narrow exposure latitude, most of the exposure problems occur there. Color negative films have a wider exposure latitude and can often be corrected in printing.

We will be using Adobe Photoshop as our editing program for fixing these images. If you use another editing program, you will find most of its controls perform the same functions, but may be located in a different spot or under a different alias.

Before we get into fixing the four types of exposure problems, we first need to look at the scanning process. Most scanners today have a wide variety of color, gamma, and exposure controls. When you initially scan the image into your system, don't try to get it perfect in the scanner preview. Just get it close because your editing software has more sophisticated

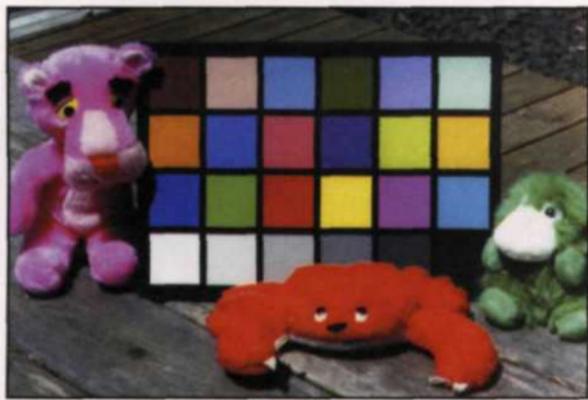
controls for making final adjustments. Once you have a good setting for a film type and exposure problem, save that setting for future salvage attempts. You can then group problem images and scan them in batch quantities.

Since you only want to make involved corrections once, we also recommend that you scan the image at as high a resolution as possible. Thanks to technological advancements, most scanners today hardly take any longer for large scans, and storage is no problem as hard disks are quickly approaching terabytes.

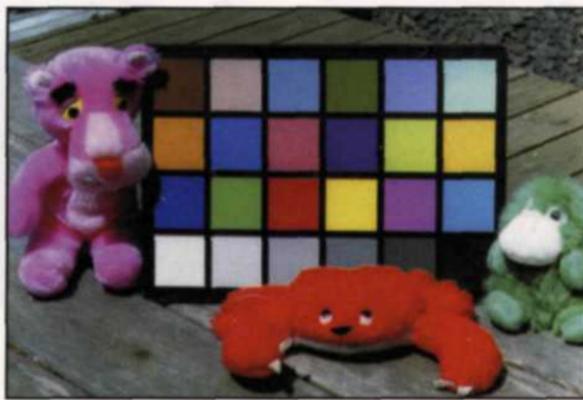
When repairing exposure errors in slide film, underexposures are easiest to fix. There are several approaches to repairing the image once the image is scanned. You could simply lighten the image using the brightness control, but that wouldn't be

any better than the traditional duplicating method. Your best shot is to first try the Auto Levels function to see what the computer thinks should be done. If you are pleased with the results, go to the Manual Levels editor, make any final adjustments and your job is finished.

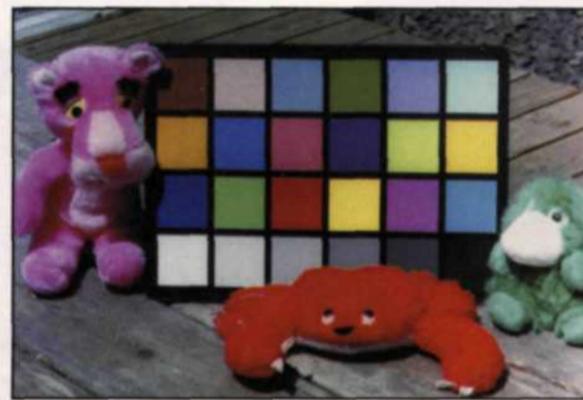
Most of the tweaking adjustments will be to the middle of the gamma curve in the Histogram. This chart displays all the data in the image from shadow to highlight. If there is any data missing, simply drag the small slider at each end to include data and the entire image readjusts. The slider in the middle is used to increase and decrease the amount of mid-tone detail. If a color crossover appears, you must adjust each color separately. You can also verify the contrast range using the Auto Contrast control.



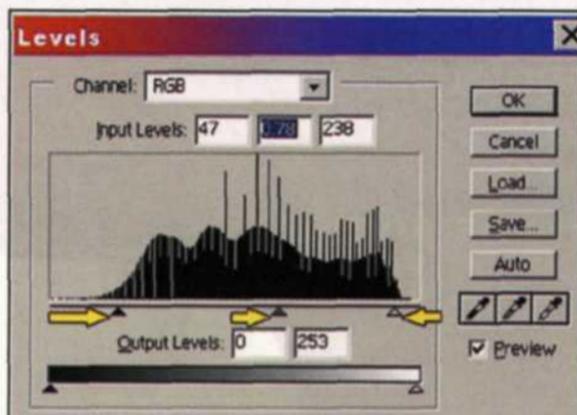
Underexposed negative in computer



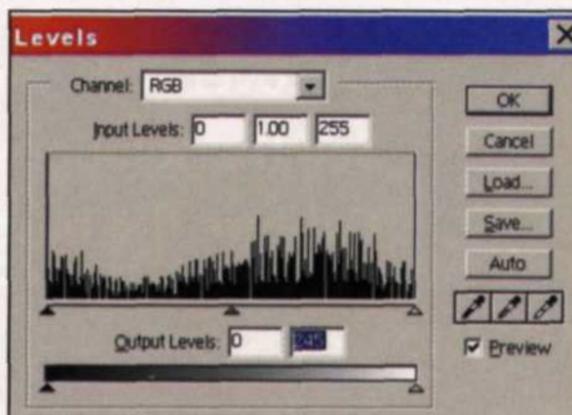
Normal negative in computer



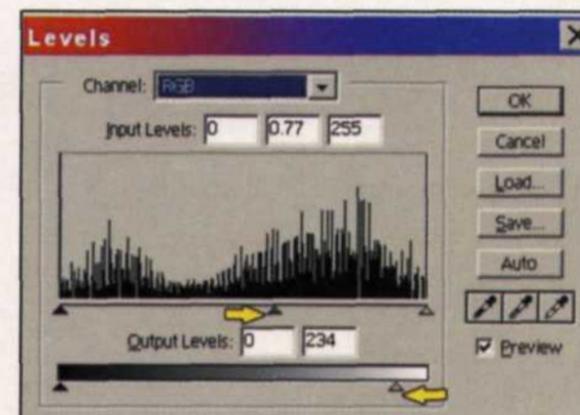
Overexposed negative in computer



Underexposed negative in computer gamma



Normal negative in computer gamma



Overexposed negative in computer gamma

If the Auto Levels and Auto Contrast don't do the job to your satisfaction, Undo or step backwards, and adjust the entire image using the Levels control. Start your adjustment with all the color curves together, and then adjust each curve separately, going back and forth until you achieve satisfaction.

Overexposed slides are the most difficult to correct because once the highlight detail is permanently lost, it can never be recovered. Since the highlight detail is usually predominant in an image, these images may not be salvageable. You can try using the highlight slider at the bottom of the histogram to decrease the amount of data in the highlight.

What you are really doing is adding a small amount of white and gray tone to resemble the missing highlight detail. The remaining part of the image can then be reduced in intensity using the middle and shadow density sliders. The contrast will need to be manually reduced using the Contrast control. Good luck and don't be discouraged!

Underexposed color negatives are usually very flat and grainy. In most cases the Auto Levels function will get you very close to achieving a satisfactory image.

From there it is just a matter of adjusting each individual color using the Histogram control until the image has a good contrast range. You will then need to go to the Saturation control and increase the saturation to compensate for the color loss. There is a tendency to overuse this control, so back off a bit when you think it looks good.

If you have one of the new film scanners with the ICE3™ (cubed) technology from Applied Science Fiction, you can reduce the grain using the GEM (Grain Enhancement and Management) technology. The grain is reduced during the scan, which saves you a lot of editing. If your scanner doesn't have this technology, you can use the Dust and Scratch, Despeckle, or Smart Blur tools to reduce the grain in the image. You will lose a little image sharpness using these controls, but it is usually better than a grainy photo.

The Dust and Scratch and Despeckle tools are pretty straightforward in their use, but the Smart Blur takes some experimentation to get a grasp of its functions and limitations. You can preview all three effects, so if you don't like the results, just back out of the effect. If your image has a lot of blue tones such as sky or water, you

can apply any of these grain reduction tools to adjust the blue channel.

An overexposed color negative can have high contrast and it may take a couple of scans before you get one you like. Care must be taken when scanning not to lose any of the highlight detail in these dense negatives. You will probably have to set the gamma a little higher than normal to incorporate the full range of mid-tones. Once the image is scanned into your computer, you can use the Auto Levels and Manual Levels to make your final adjustments to the image. There is also a good chance that the colors will be oversaturated, so you may have to use the controls to decrease the color saturation. Image exposure problems are tough to repair and these digital solutions are not perfect cures. You will have to practice your editing techniques in your quest for competence. Even then, these final images will not have the quality of an image exposed properly in the first place, but they are generally good enough to make your customers happy. ●

Jack and Sue Drafaht are free-lance writers and professional photographers based outside Portland, Ore.