

IMAGE-PROCESSING BASICS

Transform your astro-images from bland to bold



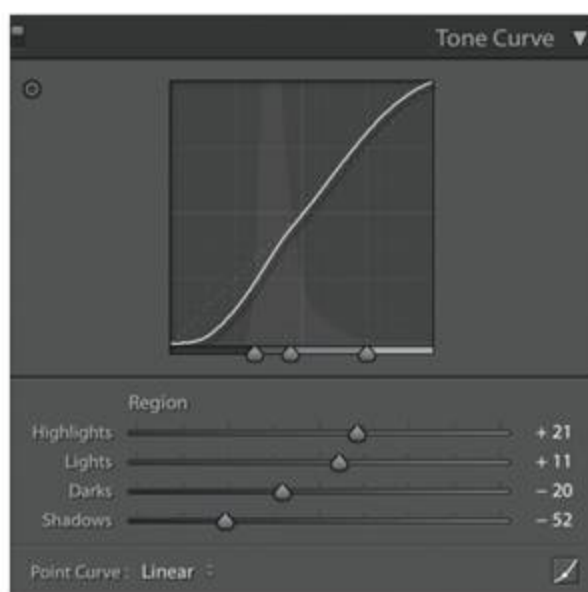
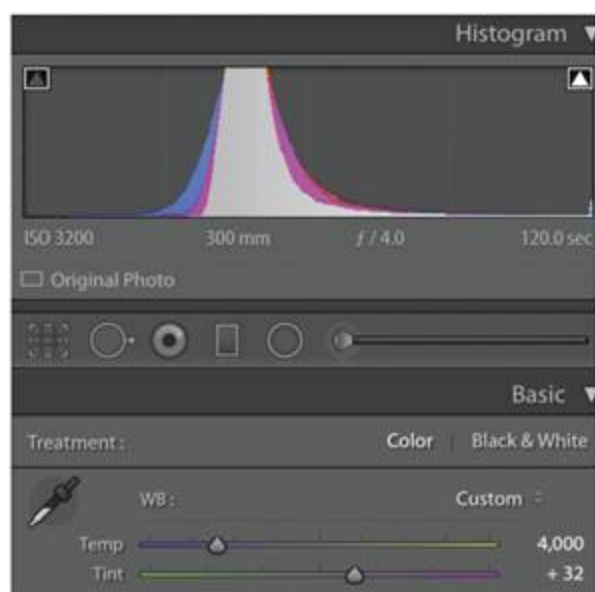
ARE YOU A GOOD COOK? I'm not. Yet if you give me a clear, concise recipe, I can whip up a pretty good meal. Image processing is a lot like that. You may not be a Photoshop guru, but by following a few simple instructions, you can turn your astrophotos into tasty visual treats.

For the best results, you need to start with high-quality ingredients. The recipe presented here assumes that you have

COOKED LIKE DINNER The simple recipe outlined in this article transforms the original unprocessed, straight-from-the-camera image below into something delicious, left. The author used a Canon 80D DSLR with a Canon 300mm lens to take this portrait of the Lagoon and Trifid Nebulas, in Sagittarius, while attending the annual Mount Kobau Star Party in British Columbia. The camera was set to ISO 3200 with the lens wide open at f/4. An iOptron iEQ30 Pro mount was used to prevent star trails during the 2-minute exposure. Readers wishing to follow along can download the raw image at www.BrightIdeaPhotography.com/SampleRawFile.zip.



GETTING GRAPHIC Below left: A simple trick to neutralize the colour cast of a wide-field image is to boost the saturation (using the Saturation slider in the White Balance panel), then line up the coloured humps in the RGB Histogram, maximizing the grey area in the graph. Below right: The easiest way to use the Tone Curve control is to “pinch” the hump in the luminance graph between the left pair of tiny triangular split controls before adjusting the main sliders.



taken a well-exposed, carefully focused, wide-field DSLR image captured in raw mode. I use Adobe Photoshop Lightroom Classic to “cook” my photos, but you can obtain similar results with pretty much any good image-processing software, including low-cost applications such as Affinity Photo.

A DASH OF COLOUR AND CONTRAST

All astronomical images have some sort of colour cast when they come straight out of the camera. You could set the White Balance preset to Daylight (after all, the Sun is just another star), but this usually results in a muddy-looking background, especially if shot in a light-polluted sky.

Detecting subtle colour casts can be difficult. One trick you can use is to temporarily set the Saturation slider to +100, which makes such problems appear obvious. Next, adjust the Temp and Tint sliders and observe the Histogram display. The idea is to try to line up the coloured humps and maximize the grey area in the middle of the graph while minimizing the coloured fringes on the sides of the hump. I find this to be an extremely sensitive way to colour-balance my astro-shots.

Once you’ve eliminated the colour cast, return the Saturation slider to 0. The image will now look rather dull, so let’s add back some colour. Two controls allow us to ac-

complish this: Saturation (which we just used) and Vibrance. They work in slightly different ways; a combination of both is usually required for best results. The exact settings are a matter of personal preference. As a starting point, try +30 for Saturation and +20 for Vibrance.

If there is a “secret sauce” to help spice up an astrophoto, it’s the Clarity slider. Increasing Clarity instantly adds life to photos. But be careful not to overdo it—if you crank up the Clarity too high, odd structural artifacts will begin to appear. Try a setting of around +50. Like spiciness, how “hot” you make it is up to you.

Astro-images typically pack a lot of information into a fairly narrow luminance range. While you can use the Tone sliders in the Basic panel to improve overall contrast, I get better results with the Tone Curve. This tool might look more complicated, but don’t fret—I’ve got a trick to make it super easy to use.

When you open the Tone Curve panel, notice that there is (usually) a pronounced hump in the Histogram. The key is to move the little triangular “split controls” under the graph so that the left and middle controls bracket most of the hump in the graph, as shown in the illustration at top right. Next, work with the four Region sliders for Highlights, Lights, Darks and Shadows to tweak the contrast in each of

Photron ^{new} Ritchey-Chrétien Telescopes



To capture the best astro-images in history, engineers chose Ritchey-Chrétien design optics for the Hubble Telescope. Now you can take your imaging to the next level with a Photron RC telescope.

SkyGuider™ Pro



Our new SkyGuider™ Pro is packed with features, ones that enable you to capture images as you see them in your mind’s eye. Visit our website or contact your iOptron dealer to learn more.

iOptron
www.ioptron.com

those tonal ranges. I generally end up with an S-shaped curve after increasing the Highlights and Lights and decreasing the Darks and Shadows.

SPICING UP THE DETAILS

Astronomical photographs are often shot at a high ISO due to the relative dimness of the objects we're trying to capture. This

frequently leads to images peppered with digital noise. Fortunately, there's a remedy. What we want to do is reduce the noise without making the details appear soft. This is where the Sharpening and Noise Reduction controls in Lightroom's Detail panel come into play. Before beginning, though, zoom in to 100 percent so that you can properly evaluate the effects of your actions.

In the Sharpening section, I normally reduce the Amount slider and increase the Masking slider (astrophotos don't work well with the default settings). Next, I increase the Luminance slider in the Noise Reduction section until the confettilike background noise just starts to disappear but before detail is affected. Use the same approach for the Colour control in this section to get rid of the blocky colour patches that often appear, again while ensuring the retention of subject detail.

Now it's time to deal with defects arising from your camera lens. You can use Lightroom's built-in lens profiles to automatically correct issues such as distortion, vignetting and chromatic aberration. With the Lens Corrections panel open, simply select the make and model of the lens you used to take the photo. For the image on page 18, I used a Canon 300mm f/4 optic. (If your particular model is not listed, check the Adobe Lens Profile Downloader.) The only time I don't enable the profile corrections is when I'm shooting with a fish-eye lens.

SEASON TO TASTE

At this point in the process, you should have an image that's dramatically improved from the original photo. Every picture is unique, though. You'll likely need to circle back and retweak some of the adjustments a second (or even a third) time. The good news is that changes to raw files are non-destructive and completely reversible. So feel free to experiment.

One final piece of advice: After you've done your initial edits, set the image aside and come back to it later with fresh eyes. You'll be surprised at how often you discover that you've gone too far and need to dial back a few of your adjustments. But remember that there's no single "right" look for a photo—it's a matter of personal taste. Just like cooking. ♦

Tony Puerzer is a full-time professional photographer and part-time amateur astronomer living in Nanaimo, British Columbia.

CYGNUS NEBULOSITY Striking deep-sky portraits like this one, showing the North America Nebula, in Cygnus, are the result of skilled capture techniques in the field and careful image processing afterwards. The author used a modified Canon 60D camera and an 85mm lens for this 2-minute shot at ISO 3200 with the lens wide open.

