

Advanced Techniques

Substituting a Hydrogen-Alpha Filtered Technical Pan Image for the Black Separation in a CMYK Color Image

This is a more sophisticated technique that you can use in Photoshop. If you have shot a color photo of an object and a black and white techpan or, better yet, a hydrogen-alpha filtered techpan of the same object, you can substitute the black and white h-alpha image for the K (black) separation in a CMYK version of the color file.

This technique produces amazing results including increased sharpness and contrast, recording fainter detail, and finer grain.



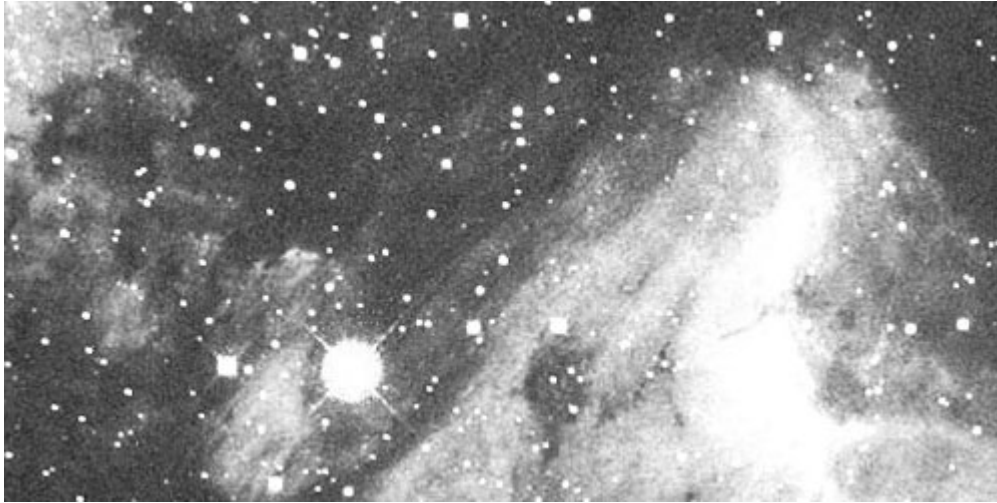
The original color image



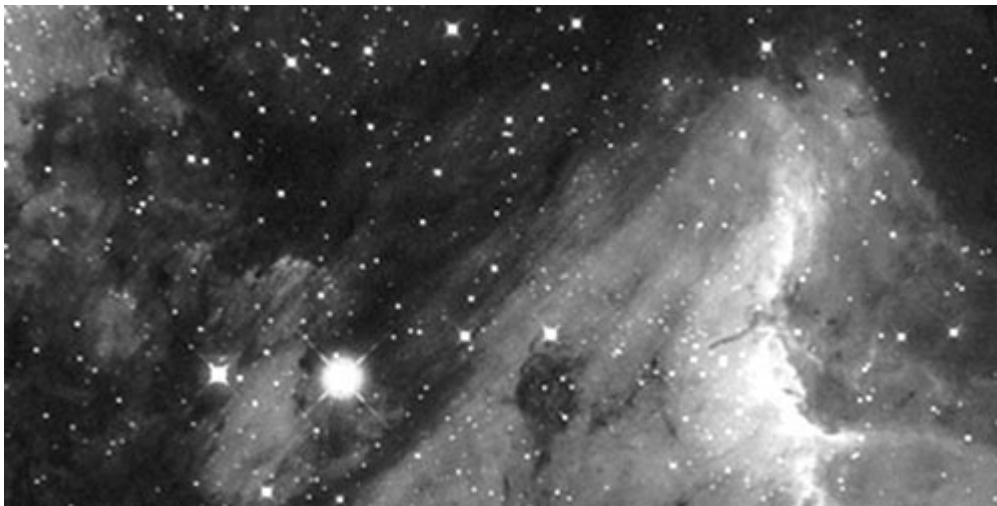
H-alpha B&W substituted for the K separation in CMYK mode

After you have your image scanned, it will be in the RGB file format. You can easily convert it to CMYK in Photoshop under **Image > Mode > CMYK** color .

Most magazines and newspapers print with Cyan, Magenta, Yellow, and Black inks. The black K separation is used in CMYK printing because if you use only cyan, magenta and yellow inks together on a printing press, you do not get a very deep or pure black.



The black K channel of the CMYK image



Original H-alpha filtered B&W image

If you examine the K separation from the CMYK image of the Pelican nebula, and compare it to the hydrogen-alpha image, you can see why the substitution helps to enhance the image. The hydrogen-alpha image contains much fainter detail because the filter blocks out much of the sky glow, while permitting the light from the nebula lines to pass in a longer exposure. This also increases the contrast between the nebula and the sky. The hydrogen-alpha filtered image also holds more detail in the highlights despite its increased contrast. H-alpha filtered images are also usually sharper because they only have to focus a single portion of the spectrum. Finally, the hydrogen-alpha image helps the color image by greatly decreasing the overall grain of the composite.

The technique is actually quite simple.

First, make sure the color and techpan images are the exact same size, and align the images with the techniques described in the [Aligning Negatives Digitally](#) article.

Convert the color image to CMYK and substitute the H-alpha black and white image for the K separation in Photoshop's Channel Palette by just pasting it into the K layer.

The resulting color image will be darker than the previous color image because of the substituted channel. Convert this new color image back to RGB. Finally go into **Levels** and re-adjust the values till the photo is like you want it. Save this image under a new file name.

It should be noted that this technique works best if the color and black and whites are shot on the same night with the same equipment, preferably back to back. Lot's of registration problems will be encountered if the photos are shot in widely different parts of the sky due to differential refraction. Other problems can also be encountered such as the two different images actually being different sizes because the focal length of the telescope changing with the temperature. Or stars not being in register if shot under high-humidity conditions where the emulsion absorbs the moisture during the long exposure and swells.

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