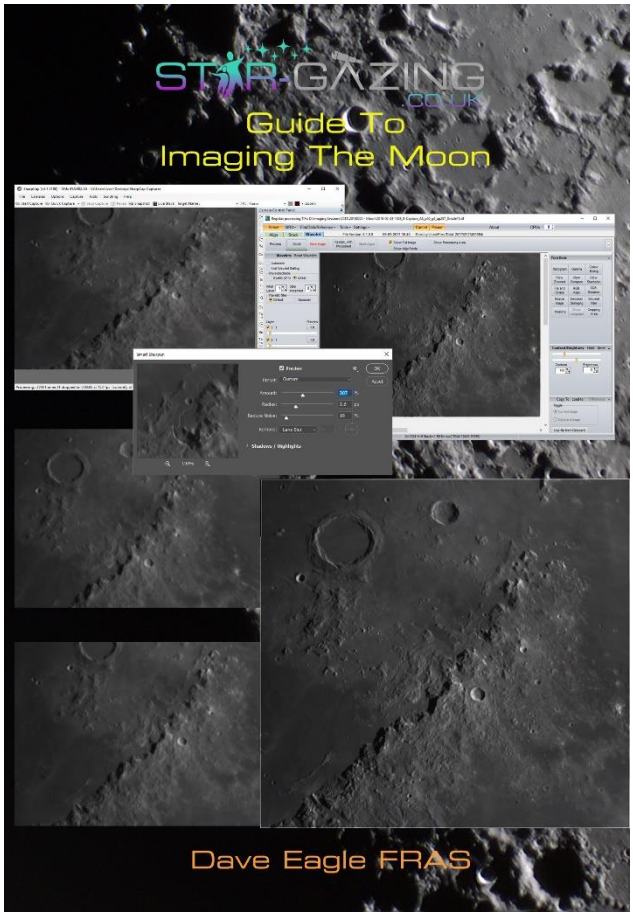
Creating a lunar montage to help reveal the earthshine and conserve the detail within the illuminated crescent.

Before I show you how to do this, a shameless pug:

My Star-Gazing Guide to Imaging The Moon, containing lots of hints and tips on imaging The Moon, with a DSLR or Webcam is available to order from my Web site.



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When the crescent Moon shines in the evening or morning sky, the light reflected from Earth, illuminates the portion of Moon not lit by the Sun. It looks absolutely spectacular to the naked eye. Capturing the moment on camera is however much more problematic.

These three images illustrate the point quite nicely. A short exposure, like the one on the left, captures the detail in the crescent, but the earthshine is not revealed.

A much longer exposure like the image in the middle is required to bring it out. In this case the earthshine is nicely revealed, but the bright crescent, directly illuminated by the Sun, is hopelessly over-exposed.

So how do we get around this problem to produce an image like the one on the right?

In fact, the image on the right was created from the other two images.

I have tried many methods to try and produce an image like this and this is (so far) the easiest way that I have found to create the effect I like, without creating too many obvious artefacts created from the process. With most of my image processing, I always try and find the simplest way to achieve reasonable results.

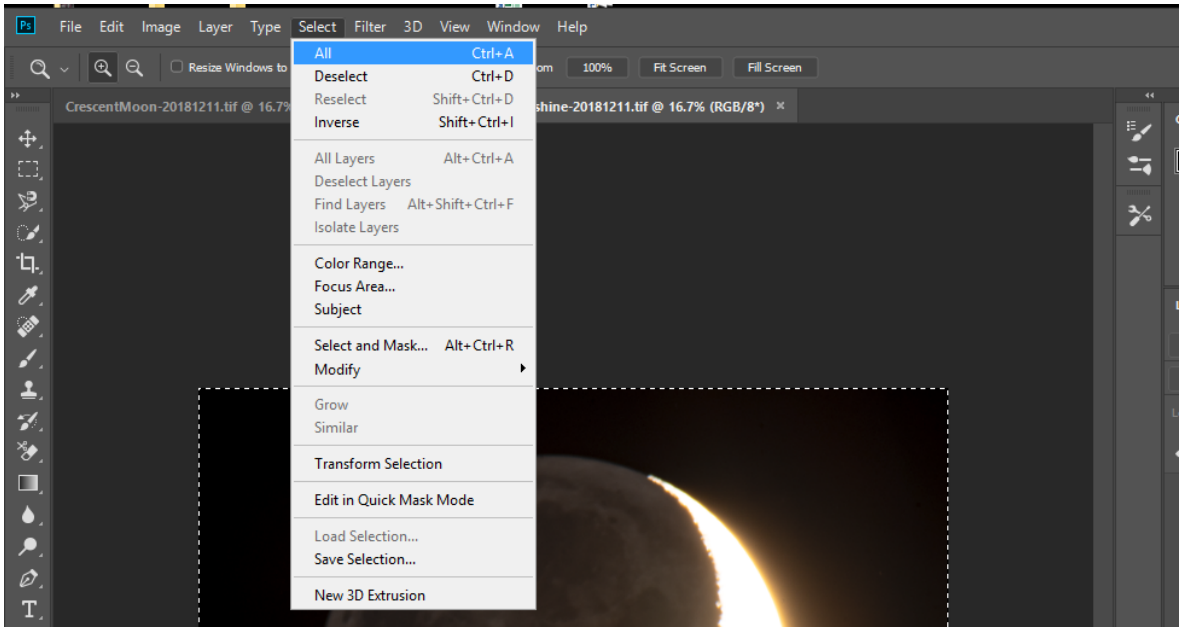
Here's my guide as to how I did it.

When The Moon is visible as a nice crescent and earthshine is nicely visible, take two images similar to the ones shown above. One at a longer exposure to reveal the earthshine and a shorter exposure showing the details in the sunlit crescent.

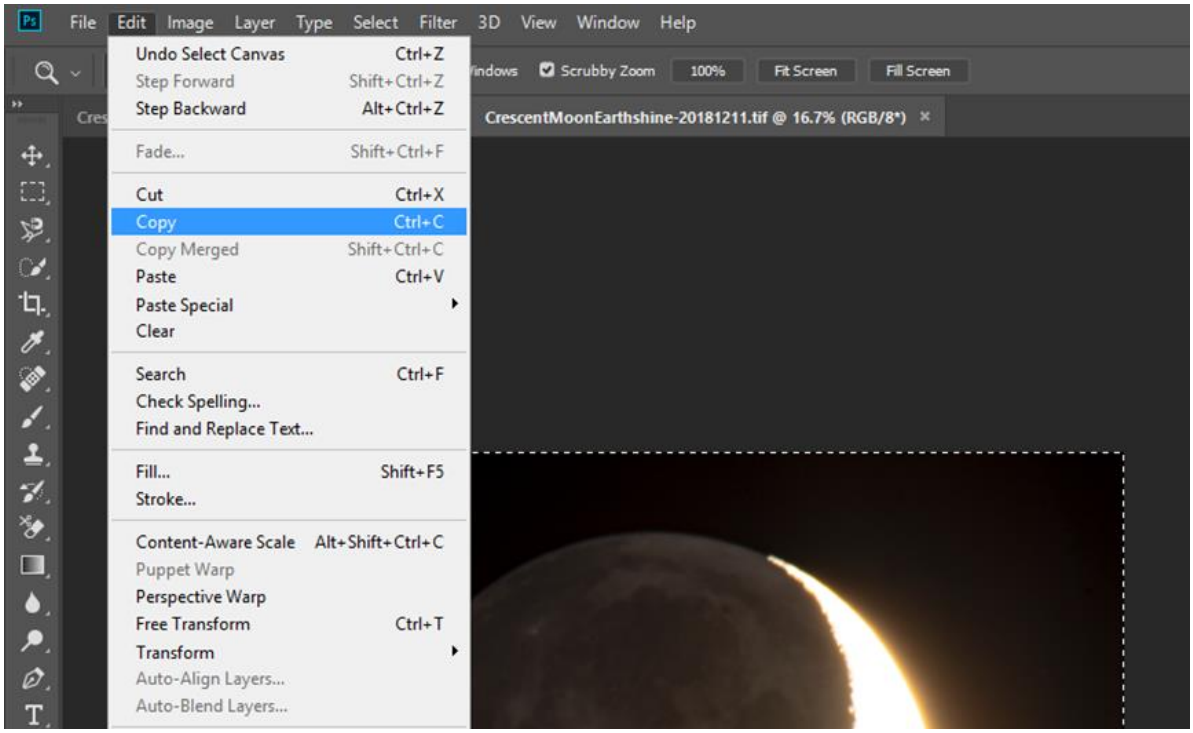
I use Photoshop for my image processing, but this same technique can be adapted for use in other image processing software.

Open both of the images in Photoshop.

Make the over-exposed image with the earthshine visible active by clicking on it.
From the Menu click **Select, All (or Ctrl-A).**
"Marching ants" will appear around the image.

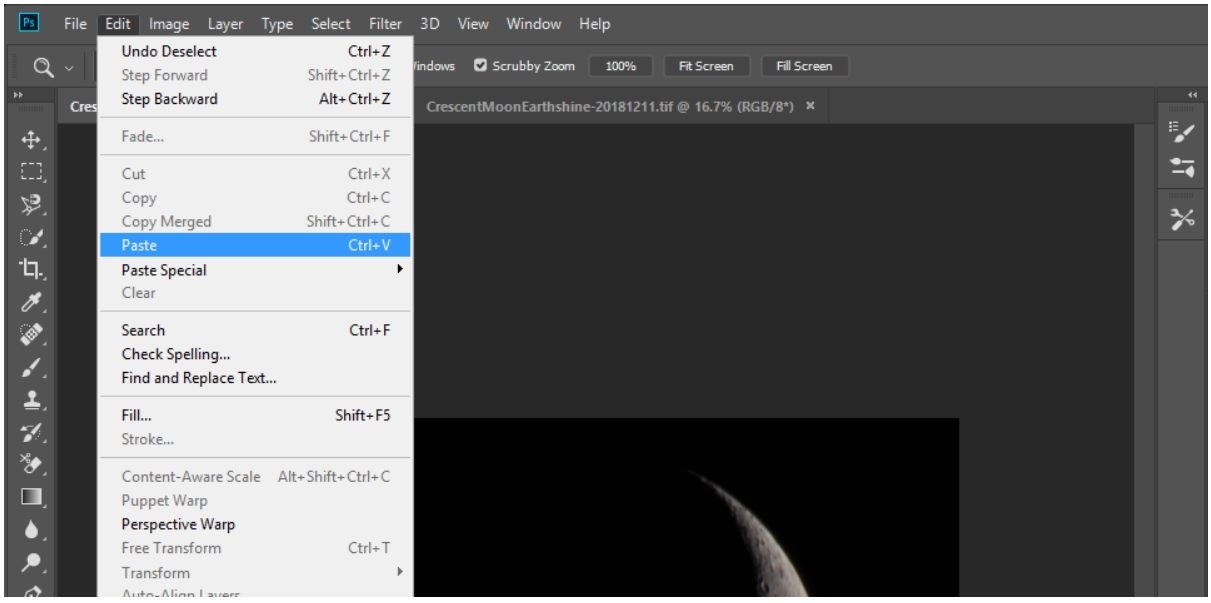


From the Menu select, **Edit, Copy (or Ctrl-C).**



The image has now been copied into the clipboard.

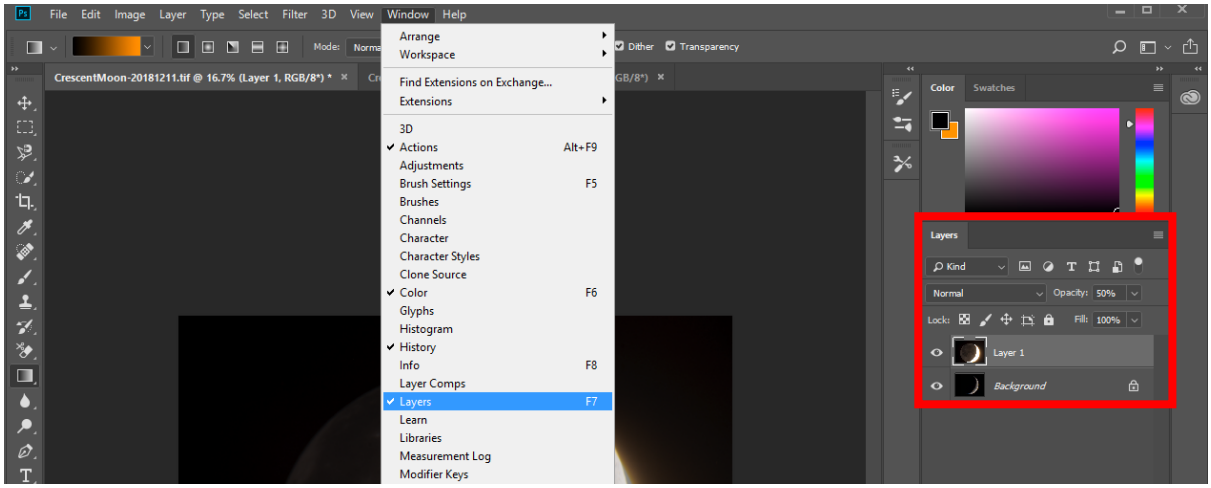
Go back to the under-exposed image and from the Menu, click **Edit, Paste (or Ctrl-V).**



A copy of the over-exposed Moon will now be hiding the underexposed image. It has been pasted in as a new layer. This layer is opaque and does not allow the lower image to be seen beneath it. More on this later.

A layer mask needs to be applied to the upper layer. This will allow us to view the detailed under-exposed crescent which is currently hiding beneath.

To ensure the changes required can be made, from the Menu select, **Window,** and make sure **Layers** is ticked. Layers should now be visible on the right-hand side. Its exact location will depend on how Photoshop has been set up. Mine is shown highlighted in red in the screen shot below.

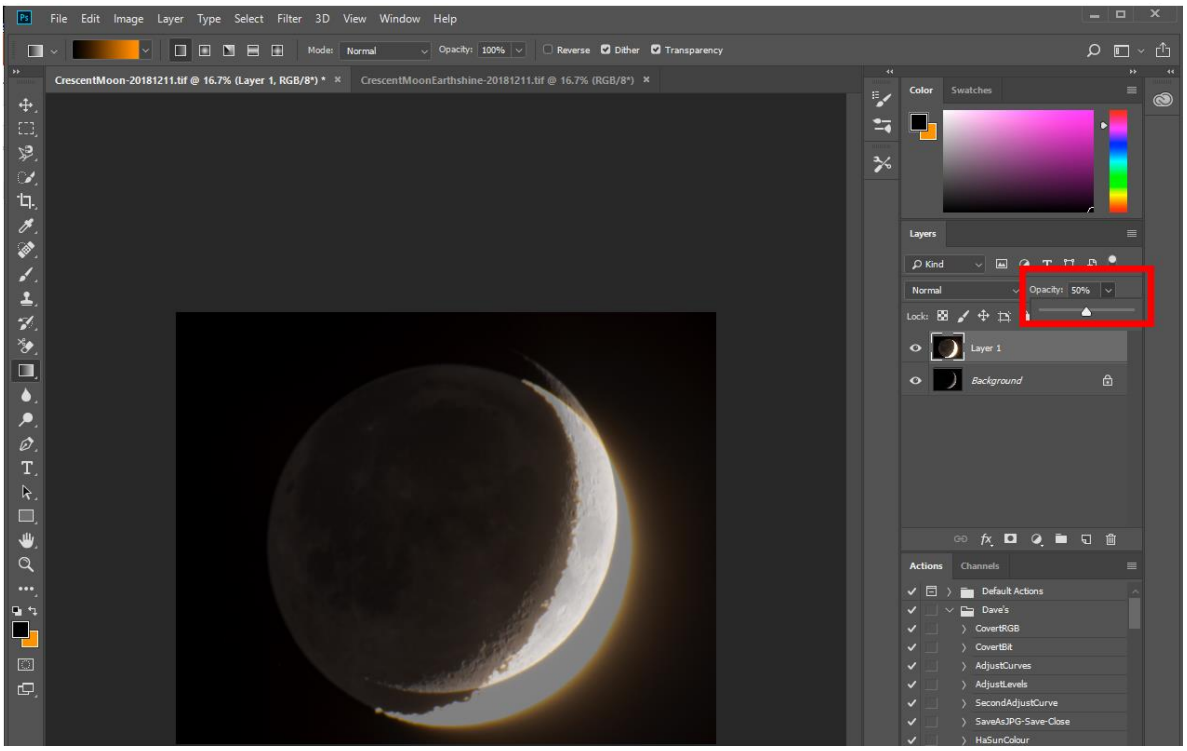


There will currently be two layers visible and small icons show the contents of the image held in each layer.

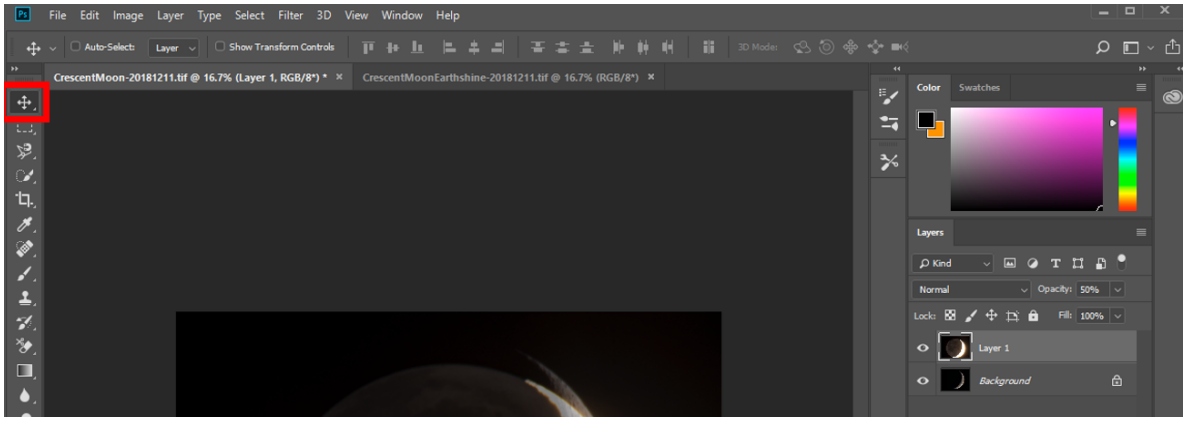
Click on the upper layer to make sure that it is selected.

Just above the layers is a drop-down menu called **Opacity**.

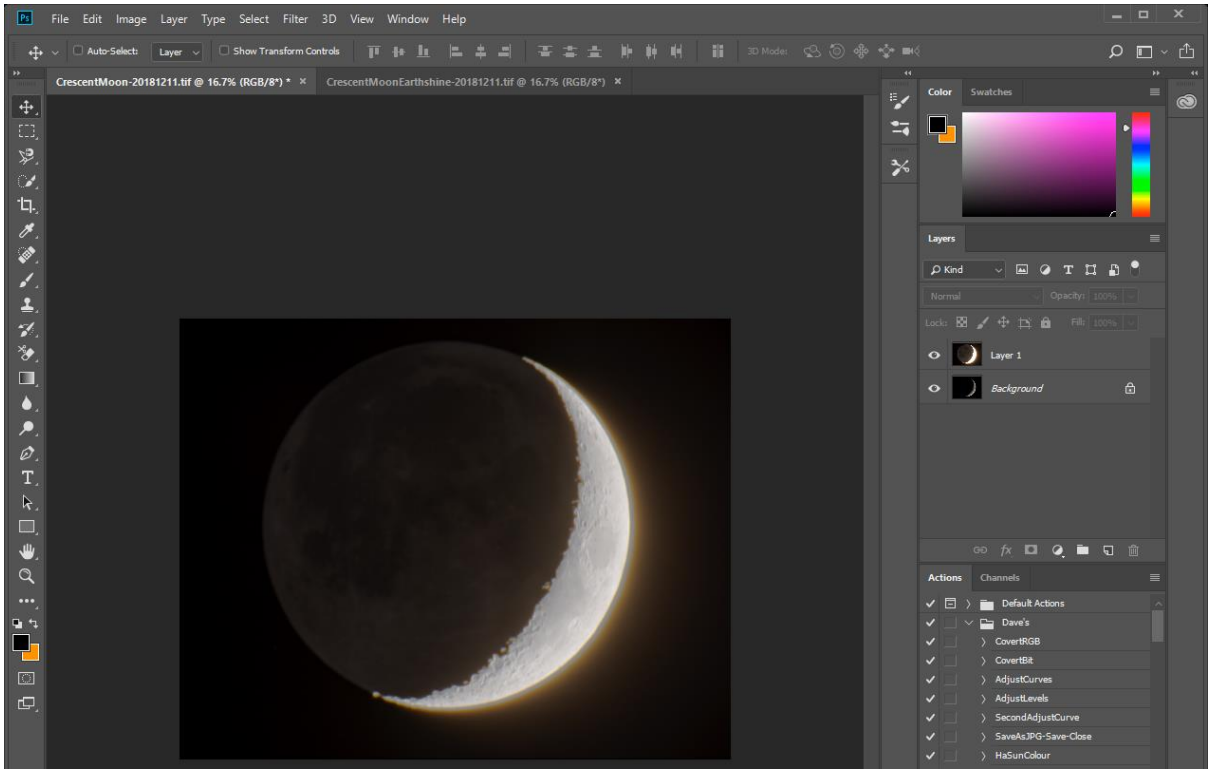
Click the drop-down menu and slide the opacity to 50%. You should now be able to see though to the image below. The chances are that the two images will not be exactly aligned with one another.



Select the **Move** tool.



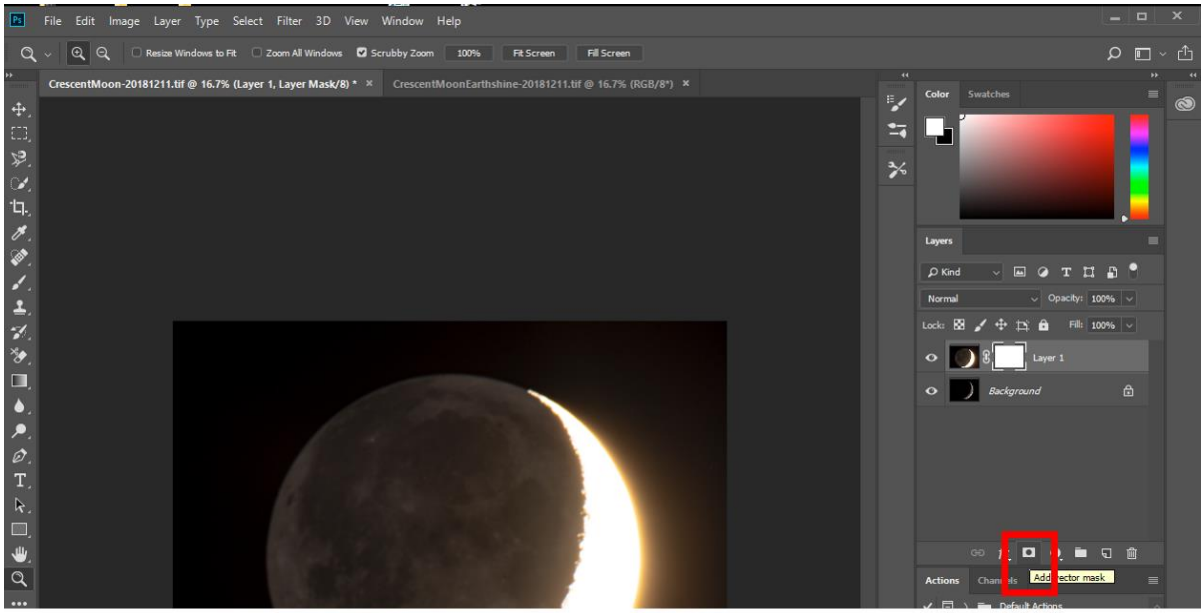
Hover the mouse over the image and hold down the mouse button. Move the mouse until the two images are registered. Fine adjustments can be made using the up, down, left & right arrows on the keyboard. Don't worry if the over-exposed limb of the crescent overlaps the correctly exposed portion. This is to be expected, but if the next step is done correctly, it should not be seen in the final image.



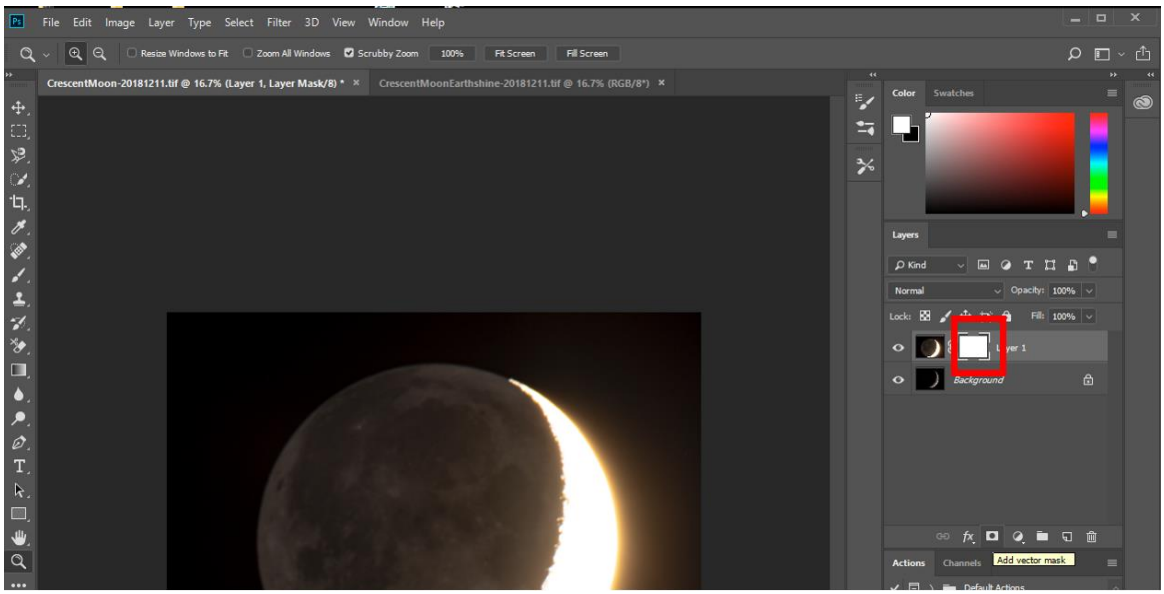
Once both images are aligned as shown above, change the **Opacity** of the upper layer back to **100%** so the lower layer can no longer be seen through the overexposed upper layer.

A layer mask now needs to be applied to this upper layer.
If done properly will layer mask will allow us to see the underexposed crescent in the lower image and, and still see the earthshine in the upper image.

Making sure that the upper layer is still selected, at the bottom of Layers, click the white rectangle with a black dot in the middle. This adds a **Layer Mask** to the selected layer.



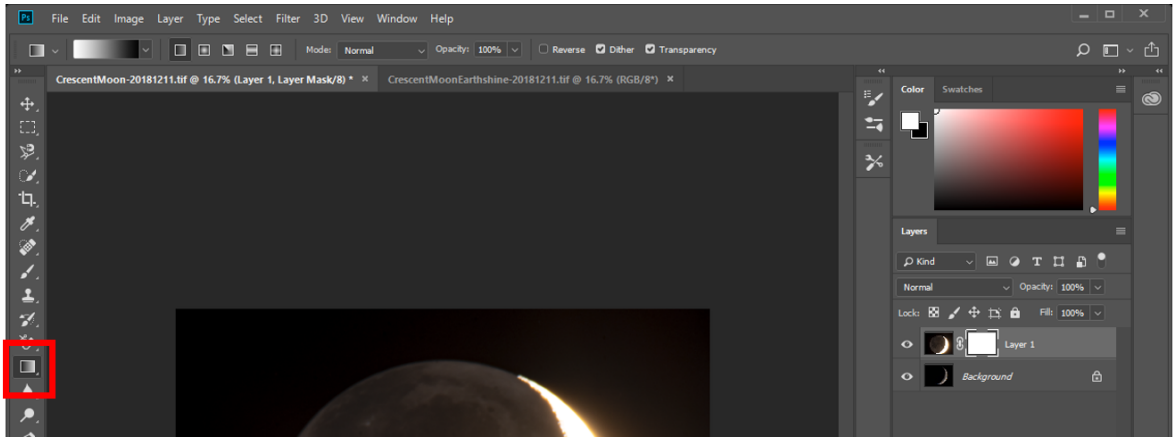
This layer mask is now visible in Layers as a white icon next to the icon of the upper layer, as shown below.



At the moment the mask is pure white. This means that the layer it is attached to is completely opaque. If the mask was pure black, the layer would be completely transparent. Any level of grey between black and white gives it some transparency. The blacker the level of grey in the mask, the more transparent it becomes. The closer to white the mask is, the less transparent it is.

A gradient of brightness across the layer mask need to be added, so that we can hide parts of the image below that we don't want and reveal what we do. This will help us to achieve the composite image required.

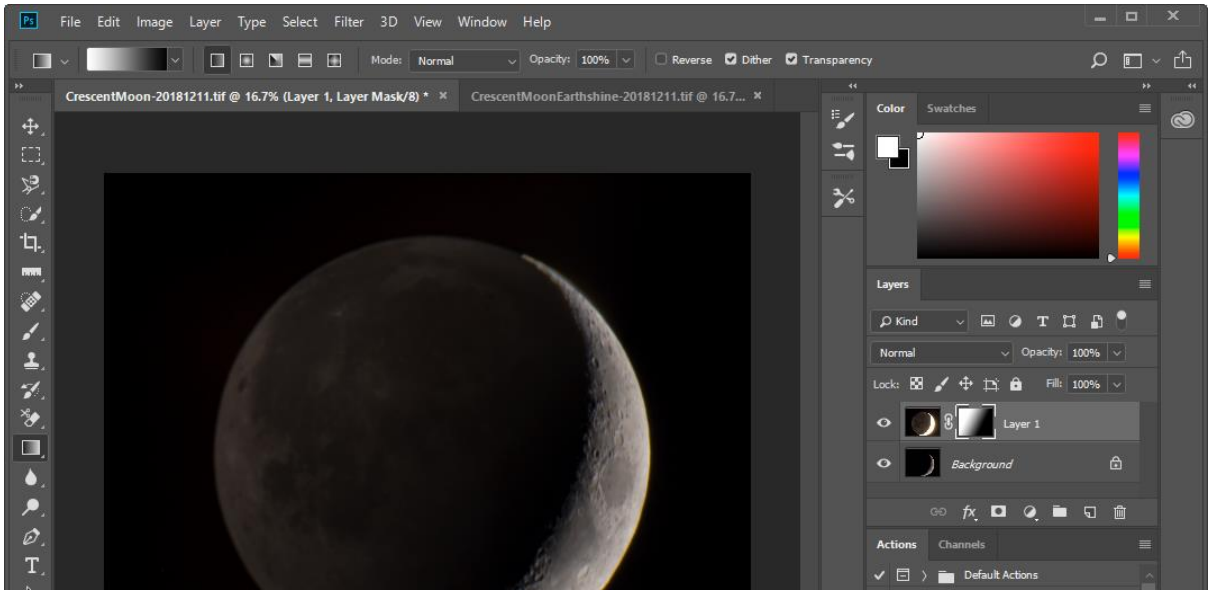
From the Toolbar Menu, select the **Gradient Tool.** It may be hidden, so click on the right-hand mouse button to reveal and select it.



Make sure that layer mask is already selected. It should be selected by default, once it has been created.

Click the right-hand mouse on the image close to where the edge of the earthshine Moon would be. Keep the mouse button pressed and draw a straight line towards the bright crescent.

When happy with the position and angle of the line on The Moon, let go of the mouse button. The images should now look something like the image below.



Look within Layer at the layer mask on the upper layer.
It now has a gradient of light and dark running across it.
This is what is allowing us to see the bright crescent but hides the over-exposed image.

Click on the icons of the individual images now and use a curve adjustment to get the background levels more even, adjust the brightness of the earthshine, or even add some more saturation to the image to really bring the image to life.

You may see a drop in brightness of the earthshine as it gets closer to the crescent. This is due to the gradient that was used to obtain the result, but that's a small price to pay for getting this effect.

These adjustments and more hints and tips on imaging The Moon using either a DSLR or Webcam can be found in my Guide To Imaging The Moon.

This is available to order directly from my Web site, or on Amazon.

Once finished, flatten the image to remove all the layers and save the resulting image as a new file.

If I do find a way of producing this same result without the fading of the earthshine, I'll let you know.

Have fun.

Dave

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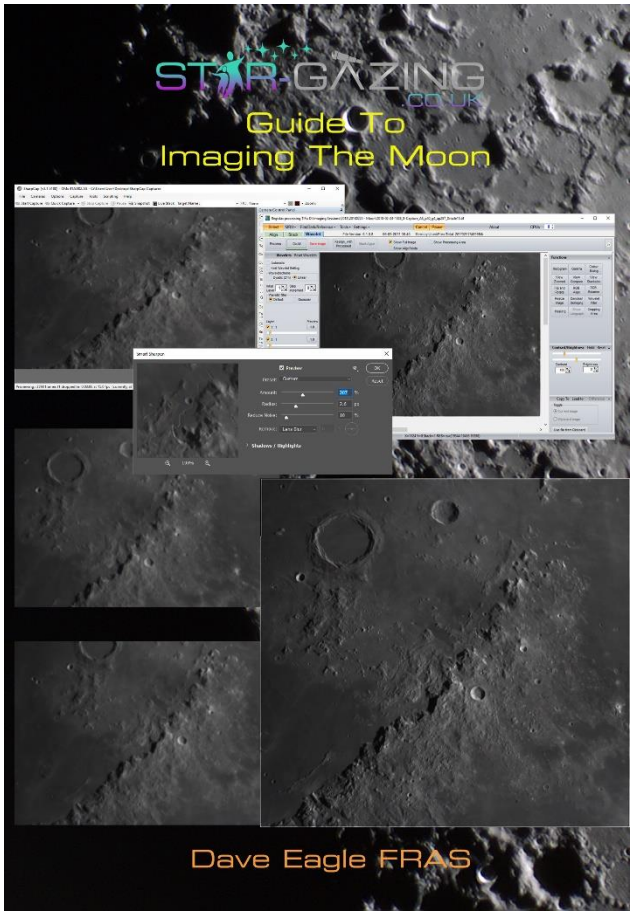

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