I began my modern day quest in astrophotography about 3 years ago. I decided to buy a Canon 6D, mkii, full-frame camera to shoot the heavens with. My style is such that I like lots of stars and I like the variety of colors they have, albeit I like to have their images small, with tight halos.

I had started out using DSS for pre-processing and Photoshop for processing and just couldn't make Photoshop work. I could never get any color in the stars with Photoshop, nor could I get the color right; I guess I'm just too stupid for it. Dumb people like me need a method or, if you're a cook, a recipe and I just couldn't find one that worked. I mean no offence to any Photoshop people out there and I've seen very good work done using Photoshop.

I kept looking for solutions and then I found all these pictures with star color, in fact color galore. These images were done by processing them with software specifically designed for deep sky astrophotography and one of these, Pixinsight, was the most affordable solution for me so I went with it and I've never looked back since. Pixinsight gave dumb people like me a method that I can work with.

DSS is another story and I continue to use it to this day as I think it's a very fine program and sometimes it works better for dumb people too, since the interface is relatively straight forward. I used DSS to sample NEOWISE data over Pixinsight because I couldn't get a good master out of it; I guided on the comet head, incidentally, because it was so star-like.

I knew going into using Pixinsight I had a severe learning curve ahead of me but a method is a method so I decided to stick it out. It's not like Pixinsight has a manual, although they have some excellent mouse-over tool-tips so I got a book, called Inside Pixinsight, by Warren A. Keller; my edition has a date of 2016 but I know there is a later version so get that one if you're interested.

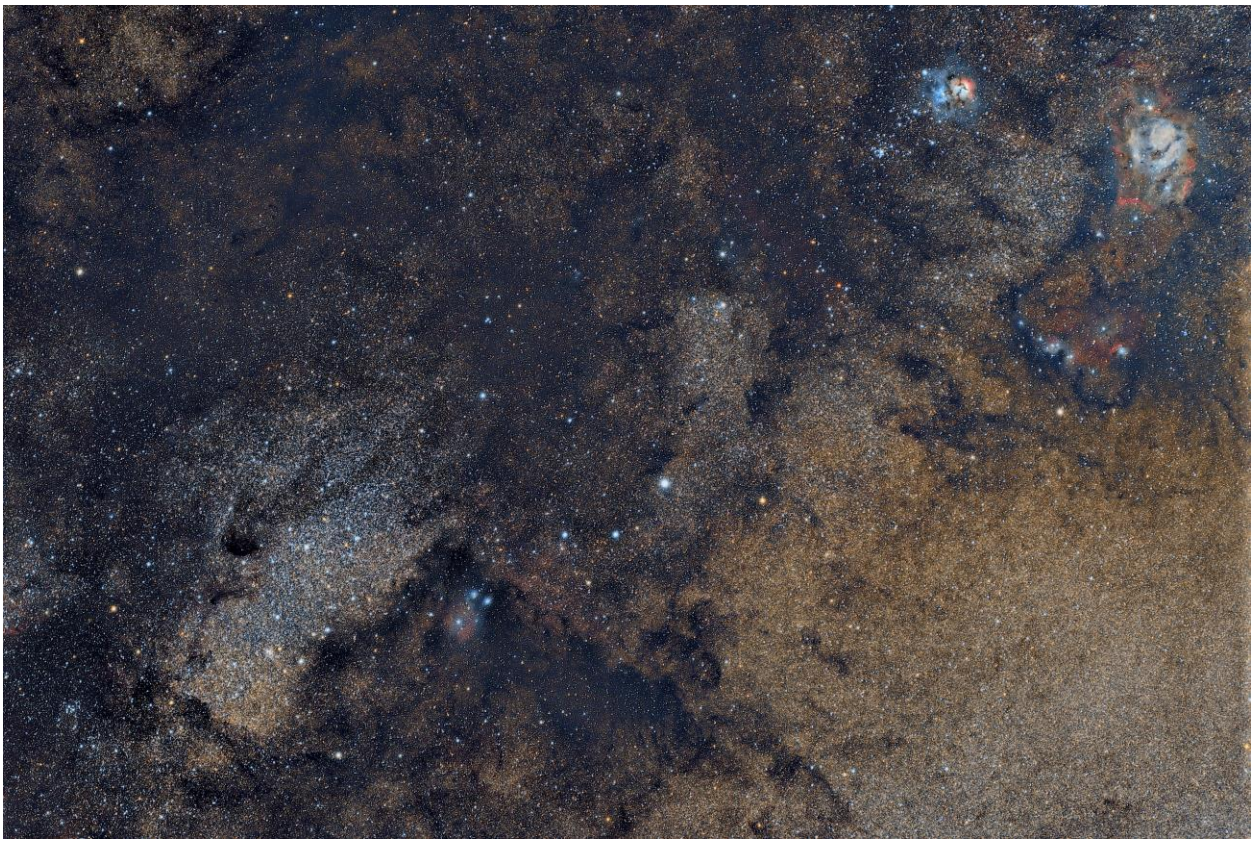
So now I've got my method. The method always works but there's always little things that are different about every image so it's not just cookie-cutter; you have to put some thought into it or it wouldn't be any fun.

If I look at the grand perspective of everything, what would be the hardest part about Deep Sky Imaging? By far and away it's the imaging: I've got to wait for the lunar cycle to be right; the weather has to be good; I could be guiding in a troublesome spot for the mount; something could go wrong during the shoot; I can be pretty stupid. Look, if you've got the desire to go out in the cold, with the wind blowing, wait around until the sky clears, get all setup just when the clouds arrive, repeat for several days, your well on your way to being a stupid deep sky photographer like myself. All the advances in technology, the software hurdles, all that stuff is chump-change compared to imaging.

I currently focus every 30 minutes and keep everything positioned very closely by using a combination of techniques for dumb people. Once I get on target I record the RA and

DEC, draw cross-hairs on the PHD2 window with a dry ink marker using an overlay, and take a screen shot of PHD2 in case I get way off somehow.

The first shot I'm going to show you is of the Trifid and Lagoon Nebula region shot with a Redcat51 over 4 nights, and it's full-frame, without a crop, giving testimony to my dumb-people positioning technique. Also, the Redcat is a Petzval so it's very similar to Gary's NP127 but it has a 250mm focal-length instead of 660mm. Notice how flat the field is on the edges, a characteristic of having a married field-flattener to the optics. All Petzvals are 4 element scopes and Gary's 4th element is a doublet.



The next image is an image of one direction I want to go with Gary's scope; I want to do mosaicking and this image is my first crack at it. It's only a 2 panel mosaic of M31 but it employs a technique known as range compression, which I'll go into later. The mosaicking was done with the before mentioned source, Inside Pixinsight, and it was just another easy method to follow so I'd say don't sweat it; you need to have at least 20% overlap to do the merging and I think I've got about 30% here. The imaging was done with a 10" Astrograph at f/3.9 over 8 nights. As you can see, the number of nights just to shoot a couple of panels with range compression is a lot of a lunar cycle. In

order to go over lunar cycles, I'm going to need a very staple, unchangeable setup – an observatory, which is where the NP127 is going.

Sometimes targets have such a range in brightness that if you use a normal exposure on it, it burns into the image and that part of the image can't be stretched without some distortion; such is the case on targets like M31 and M42. In order to do range compression one needs to do so in processing, which won't work if you're already burnt in, or by taking data with exposures that have decreasing amounts. If the exposure technique is used, the exposures are blended together in Pixinsight by a process called HDRComposition. The HDR in the process name stands for High Dynamic Range, a process that adds the exposures together and re-normalizes them to intensity values between 0 to 1 – a normal intensity range; the net effect is to bring down the brightness of the brightest parts, while still allowing fainter parts to get more exposure. Stars will always become smaller with such a technique because they are bright objects that will have their brightness lowered, including their halo. This process is not going to yield an image that's like a normal image without range compression and I'm still learning and making some changes as a result of what I now know.

M42 uses range compression similar to M31. I shoot at ISO 800 with the following exposure sequence for range compression on the 10" Astrograph: 6 minutes, 3 minutes, 1 minute, and 30 seconds. M42 was shoot over 6 nights.

The technique works well on M13 too as you can see. Globular clusters have the problem that the central stars can't be resolved because the nucleus becomes a big blob so this technique works very well with the same exposure plan as mention previously.

Range compression works on comets and I used it when imaging NEOWISE. These are 10 second, 20 second and 1 minute exposures in an HDRComposition. The imaging was done on July 18, 2020. I had some atmospheric and light pollution in this shot as it was low on the horizon. I had to quit when the scope's FOV ran into the fence.