

Urban Imaging Under Bright Urban Skies

A Report on the Aug 22nd 2015 Griffith Public Star Party

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Temperatures were warm during the day, although as night descended it got cool enough for me to need a jacket, which I forgot to bring with me. The skies were clear of clouds, and the wind was mild with gusts at times, but there was a lot of haze from the local fires and all their smoke, meaning bright skies tonight. Plus Griffith decided to resow their famous front lawn, which meant the antique street lamps lining the sidewalks had to be kept on for safety reasons, adding to the already bright environment. And of course there was a first quarter moon up in the sky

Despite all that, it was a most successful night. I managed to image a number of objects, generating a lot of enjoyment for the public. I even managed to capture a number of new (for me) objects.

But I began the day visually looking at the moon, or rather giving the public a look at the moon. After sunset, within about 15 minutes fellow LAAS member Rob Komodo captured Saturn in his 8-inch *classic red* Celestron SCT. He has the knack for finding planets in the daytime sky WITHOUT the aid of a computerized mount ! About 10 minutes after that, I managed to see it with the unaided eye. Now, I wasn't going to image it. Geo Somosa told me earlier in the week that even with the 12-inch Zeiss, the seeing wasn't good enough to see details due to Saturn's low altitude. But as I had half

an hour to kill waiting for it to get dark, I aimed the scope at it anyways. A small object at 45x, but the public liked it. Then as things got dark around 8:15pm, I switched to imaging, and headed for the deep sky.

All images have North going up, and east on the left. No dark frames were used. All images are 30 second exposures and are “raw”, meaning colorized and contrast stretched but nothing more, except where noted otherwise. Because of this, “hot” pixels appear. Since they are intensely colored and have sharp boundaries, they look different than a real star.

Since I used Vega to sync the mount up to the sky, M57 the Ring Nebula in Lyra was the first object at 8:49pm. Except for one or two images, all the images that night displayed trailing, either due to the scope not being properly balanced or simply the wind kicking it now and again. But as the goal is to present “live” images of deep sky objects to the public, the trailing was of no consequence.



This is a planetary nebula, the ring being the cast-off outer layers of an old star. The central star is faintly visible in the center. The ring glows from gas excited by the star; the red is from Hydrogen-alpha(?), and green from doubly ionized Oxygen (O-III).

Not a bad start to the night !

I should mention that I used the camera's 2x2 binned mode with a 1-second exposure as an electronic "finder" and this worked very well. I was able to SEE every target under this mode, albeit sometimes faintly, so centering was easy. For instance, The Ring was quite visible using this "search" mode on the camera. Of

course, this only works for the brighter objects, but as the sky glow pretty much killed anything below around 8th mag or so, this wasn't a factor.

A short hop away is M56, a small globular on the southeast corner of Lyra. I imaged it at 8:56pm. One-step noise removal was applied to the image.



Because I used autocolor and autocontrast, there appears to be more background glow in these images than the later ones taken on more southerly objects. Of course, the objects to the south should have more skyglow since I was looking right over the observatory and LA. Why these images have brighter backgrounds I don't know.

Moving right along, at 9:04pm I imaged the Dumbbell Nebula M27 in Vulpecula, a contrast with M57 nearby, in terms of size, shape, and brightness.



One-step noise removal was applied to get rid of visible pixel-to-pixel noise. Large extended nebulous objects tend to exhibit this.

Then I encountered my only failure that night. I tried to find Pluto around 9:10pm, but without a DSS image of the target area there was no real way to identify it from the densely crowded star field, even though the images only cover 18 arc-minutes in width !

After spending about 20 minutes in futility, I moved on.

Since the central Milky Way was coming towards the meridian, I went south and imaged the open cluster M11 in Scutum around 9:29pm with a 20 second exposure.



This cluster is known as the “Wild Duck”, although “flock of ducks” might be a better and more accurate name, as the name arises from a V-shaped arrangement of stars. It usually doesn’t show up as well on images as it does visually.

Despite the haze which shifted the color balance, the blue young stars with a sprinkling of red older stars present a fine view.

But tempted by the objects in Sagittarius which was right over Griffith Observatory's planetarium dome, I decided to travel further south, and at 9:35pm I visited an old friend, the great globular cluster M22 in Sagittarius, which I had imaged with every astronomical imager I had ever owned since I started in the mid-1990s. I was afraid the mount would swing all the way over since I had crossed the meridian to go for this object, but fortunately it didn't. A 20 second exposure.



But looking at M11 and M22 back-to-back, I noticed why for many years people thought M11 might be a loose globular cluster. Compare them for yourself.

Then since the mount wasn't complaining, I went for M8, the Lagoon nebula also in Sagittarius, at 9:42pm. One-step noise removal was used.



A lot of “oo”s and “ah”s when this image appeared! The prominent dark lane was immediately apparent, which gives the nebula its name. I had only imaged this object once before back in the late 1990s with another color camera, and I’m a little suspicious of the reds. Visual observers using large enough apertures so the eye’s color vision is engaged, have reported seeing the Lagoon with pastel apple green colors, and my previous image showed this too.

Now, this object is one of those that is too large to fit into a single frame for my equipment; the field of view is 18 arc–minutes wide by 14 arc–minutes tall.

Then a quick slew north and a couple of minutes later, I captured the Trifid nebula, M20, at 9:49pm.



This was a new object for me; I had never seen it visually nor imaged it before. The main nebula came up very well, but there is no sign of the blue reflection nebula north (up) of the main object. But reflection nebulae are notoriously faint and hence hard to see.

As with the Lagoon, one step noise removal was applied.

These two and the Omega and Eagle nebulas gave me a chance to explain how emission nebula work, and what cause the dark lanes, without having to repeat myself for every person had I been trying to go visual.

At 9:59pm, moving a bit further north, I imaged the Omega nebula, M17.



This is also a new object for me. One step noise removal was applied. I love the dark hold punched into the nebula's west side by a dust cloud between us the and bright nebula, and the bright knots.

The last target was the Eagle nebula, M16, which has the Pillars of Creation in it, seen in the lower center part of the image. Again, a new object for me. As with the other nebula images, one-step noise removal was used but nothing else.



But my mount's power plug had been working its way loose thanks to it being pointed somewhat down, and with the assistance of gravity working through the cord, on a long slew to try and image Neptune . . . lights out for the mount ! I tried to quickly resurrect the beast, but the laptop was also affected by the loss of communication with the mount, so that was the end of the night.

But it was exciting for me and the public to see these objects.

There is always a place for visual views; you cannot get better, clearer, sharper views of the moon and planets, even if the magnifications are low. And of course there is the joy of seeing things with your own eyes. However, many of the younger children, and a few adults, only take a few seconds to look, even after I've urged them to take a longer look, and some can't seem to find the exit pupil on the eyepiece. Perhaps the difficulty in looking through an eyepiece is one reason why I noticed that the general public, and especially children, tend to stare a lot longer at my computer screen, compared to the short amount of time some spent when I was going visual. And of course it's easier to see something if you use both your eyes.

So you imagers out there, reach out with your equipment at both ends; deeper into the universe, and closer at hand to the public.