2020 October Observations from Big Woodchuck Observatory

-------- Original Message --------
Subject:[ORAS] Full Moon testing
Date: Fri, 02 Oct 2020

hi all,
I've always found that the time around Full Moon is good for testing new equipment or a change in exiting setup configuration. (don't want to waste those dark nights!)
Inspired by Dean's wide-field images from his little iOptron SkyGuider& William Optic 51mm f4.9 refractor, I pulled-out from storage and dusted-off my SkyWatcher "Star-Adventurer" mount that I picked-up four years ago for the 2017 total solar eclipse (http://stellar-journeys.org/lemsolar/Eclipse2017.htm) and haven't really used since then.
I mounted my old 1980's vintage University Optics 11x80 f3.5 "Super Finder" (FOV= ~3.5 Deg x 2.5 Deg) on the mount with my ZWO ASI294MC camera and attached it all to my small outdoor pier that my allsky domecam normally sits on.

Was hoping to get outback early, but around 8pm, the clouds rolled-in and started spritzing the neighborhood. Finally around 11:30pm it cleared off, so out I went. After uncovering the scope, I spent some time getting it polar aligned on the pier, then pointed it at Vega and focused the camera. I turned-on the RA motor, (no Dec tracking), and let it run for a good 5 minutes with barely any detectable drift. As more clouds were on the way, I hurried up and tried-out a few short deepsky captures: M57: (tiny green disk between the two bright stars)

(ASI294MC & IR filter, ROI=4144x2822, 60 frames stacked, 1.5 sec exposure for 90 seconds, gain=300, B=55)

Deneb and the Pelican Nebula:

(ASI294MC & L-eNhance narrowband filter, 4144x2822, 24 frames stacked, 15 sec exposure for 6 min, gain=300, B=55)

Finally, I couldn't resist the Full Moon beckoning high overhead: (ASI294MC &IR filter)

Full-Moon1 = 4144x2822, 7 frames stacked, Exposure=2.5ms, gain=10, B=8
Full-Moon2 = 2072x1410, ~400 frames stacked. Exposure=2ms, gain=10, B=8)

Overall, it was a good test of both the mount and refractor, though being from the 80's the refractor suffers from edge defects. I might try another small optical tube on the mount.
Larry

-------- Original Message --------
Subject:[ORAS] More Near Full Moon testing
Date: Tue, 06 Oct 2020

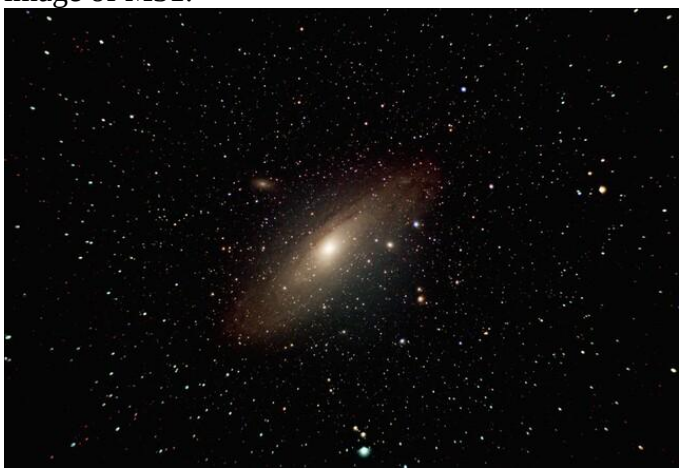
hi all,

With the 86% gibbous moon not rising till 9pm, there was a short window for additional small refractor image testing. Tonight I wanted to try my ZWO ASI294MC camera on my Arcturus 60mm f4 (240mm focal length) refractor that I normally use as a guidescope. In addition to a locking slide-tube, the refractor has a nice helical focuser with plenty of travel, which allowed me to get my camera and 2" filter drawer to focus.
I left the 60mm refractor mounted on my Canon-Zoom lens which is piggybacked on the 8" SCT optical tube & Altas EQ/G mount. I used the Canon-Zoom as the guidescope. After spending some time tweaking the telescopes and software, I started off using the IR filter to shoot several clusters with the 60mm

Here's the best, M11 in Scutum:

(ROI=4144x2822, 24 frames stacked, 5 sec exposure each, for 2 minutes)

With the Moon breaking above the horizon, I switched over to the Optolong L-Pro LP filter and took a long image of M31.



(ROI=4144x2822, 40 frames stacked, 30 sec exposure each, for 20 minutes)

Finally, with my telescope casting a nice shadow from the moonlight, I switched over to the Optolong L-eNhance narrowband filter and imaged several large-scale nebula:
NGC7000 & IC5010 (North American and Pelican Nebula) in Cygnus

(4144x2822, 24 frames stacked, 15 sec exposure each, for 6 minutes)

And IC1805 (SH2-190) and IC1848 (SH2-199), the 'Heart & Soul' nebula in Cassiopeia


(both - 4144x2822, 20 frames stacked, 60 sec exposure each, for 20 minutes)

So other than the need for a field-flattener, I am pleased with the wide FOV results from the 60mm.
I now starting to appreciate why some of the imagers like to utilize small refractors!
Next step is to see if the SkyWatcher Star-Adventurer mount can handle the combined weight of the 60mm & Canon-zoom together.

Oh, almost forgot, I also used my observatory 8" LX200 SCT @ f10 & my ASI120MC to image Mars.

(ROI=640x480, 60 sec avi , stacked ~2000 frames)

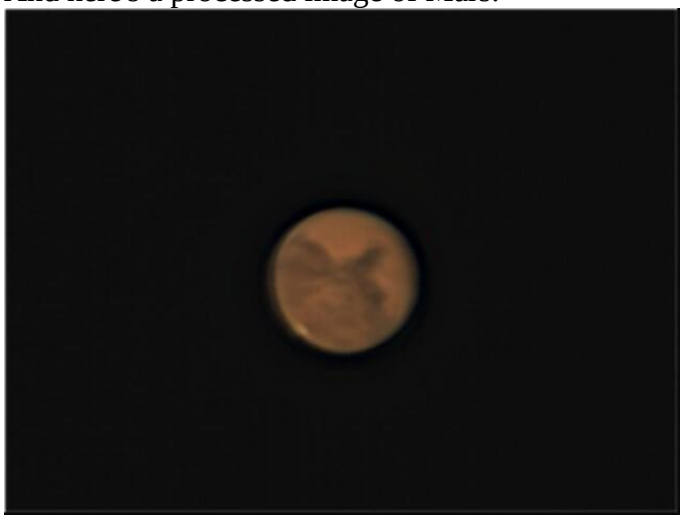
Still a little more testing to do,,,,,,,, Larry

-------- Original Message --------
Subject:[ORAS] Mars at Opposition!
Date: Thu, 08 Oct 2020

hi all,
Was out last night observing Mars.
By midnight it was hitting the meridian and displaying very nice detail. Here's my observatory 8" LX200GPS SCT and ASI120MC camera pointed at Mars.

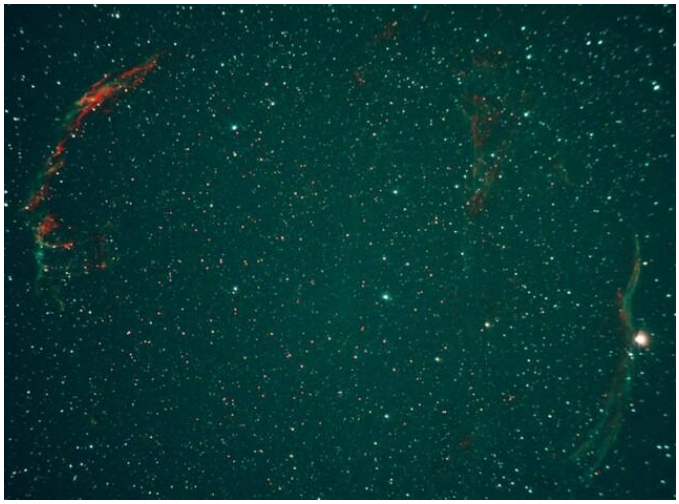
On my old observatory desktop PC (Win-XP), I have a program called 'Mars Previewer II'. Here's a phone pic of what it showed for the surface feature visible, along with a phone pic of what my camera was showing live on the laptop. Syrtis Major was prominently near the central martian meridian, and the image matches nicely.

And here's a processed image of Mars:



(8" SCT and ASI120MC &IR filter: 60 sec avi clip, ROI=320x240, ~2000 frames stacked. Exp=10ms, gain=0, B=12)

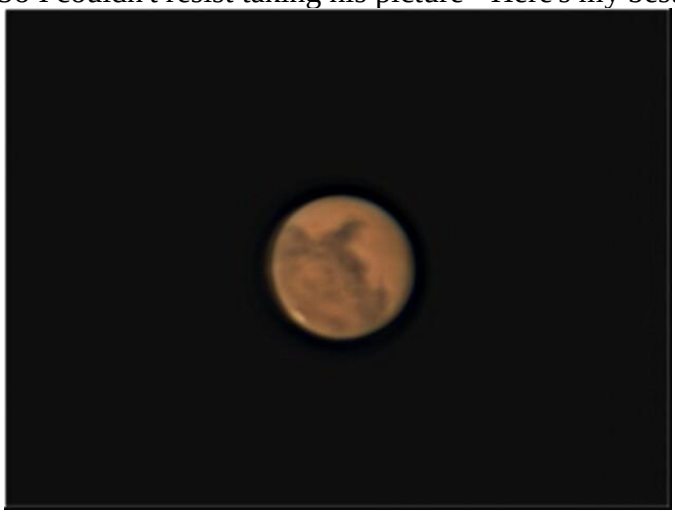
Also, got in a test image of the Veil Nebula using my 60mm refractor @ f4 using the ASI294MC and L-eNhance narrowband filter:



(ROI=4144x2822, exposure=60 secs for 20 minutes)
Larry

-------- Original Message --------
Subject:[ORAS] Mars Attacks!!
Date: Fri, 09 Oct 2020
hi all,
After spending several days swapping telescope components back-n-forth, I've finally settled on a good setup for my SkyWatcher Star-Adventurer small mount. But more on that later,,, First we need to talk about Mars! With a brilliant Mars lighting up the night-sky last evening, I had to pay Marvin the Martian a visit!
Here he is keeping an eye on us,,,,

So I couldn't resist taking his picture - Here's my best Mars image so far for this opposition:



(8" LX200GPS SCT and ASI120MC &IR filter: 120 second avi clip, ROI=320x240, ~4500 frames stacked. Exposure=12ms, gain=0, Brightness=12, Red=62, Blue=75),

This was taken shortly after midnight. Syrtis Major on center disk protruding upward with the dark splotch of Syrtis Minor to its lower right, The Hellas region is directly below both, then the south polar cap. Sinus Sabaeus is the elongated area to the left of Syrtis Major, and Mare Tyrrhenum to the right of Syrtis Minor.

After I was done capturing the avi, I slipped-in a 20mm eyepiece, and during moments of steady seeing was able to directly view the major features visible in the image. I used an orange eyepiece filter to help cut the glare and enhance surface details. This region of Mars should be facing us Earther's for the next several evenings, so now is the time to get out and either visually observe or image the Red Planet!
While you're at it, say 'Hi' to Marvin!

So to wrap-up my small scope/mount equipment testing, here's a pic of final setup - 60mm f4 refractor with the ASI294MC camera and Canon (25 to 100mm) zoom with the ASI290MC camera attached to the SkyWatcher Star-Adventurer mount.

Took a bit of counter-weighting to get the mount balanced in RA, even resorting to several heavy magnets. But with a good polar-alignment the mount tracks nicely. The final step was connecting the ASI290 camera to the mount's ST4 guide-port and using the Canon Zoom, (set to 100mm) as a guider. After tweaking the settings in PHD, I was able to successfully guide the mount in RA. Here's a guided image of M57:

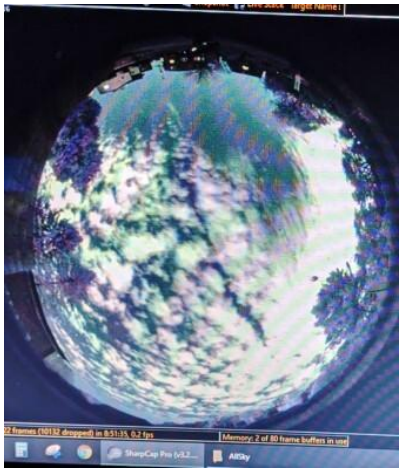
(ASI294MC & IR filter, ROI=1024x768, 30 second exposure for 15 minutes)

While none of the various focal-reducers or .5x barlows that I tried would eliminate the deformed field-edge stars, I realized that all I needed to do was change the camera's ROI to a smaller FOV to crop out the eggy stars. So it will depend on how large the object is that I am imaging as to whether to resize the ROI or not.
At this point, I'm set for my next dark-sky trip.
Larry

-------- Original Message --------
Subject:[ORAS] Friday the 16th, A night of chilly observing
Date: Mon, 19 Oct 2020

hi all,

With a cold front passing thru the region during the day last Friday, the evening predictions were for a cold and clear night of observing. But, right at sunset, the clear blue skies gave way to clouds rolling in from the Southwest. For the next several hours, the sky was overcast, finally around 10:30pm the clouds began to break-up enough to entice me to go outside. Then for the next hour, played sucker-hole tag with the clouds:



But it wasn't too bad, as there were enough clearings to get the telescope/camera focused while I waited out the clouds inside the observatory with the propane heater going, the radio playing, and munching on a candy bar while reading Sky&Tel,,, lol. Finally, by midnight, the sky completely cleared and I was able to get started. I continued wide-field imaging with my 60mm f4 refractor and ASI294MC camera , now back on the Atlas mount in the backyard piggybacked a-top the 8" optical tube. Started off with observing a few asterism's from my object list using my L-Pro light-pollution filter. The 'CoatHanger' (CR399) over in the Southwest in Vulpecula and then 'Kembles Cascade' to the Northeast in Camelopardalis: (ROI=4144x2822, 15 sec exp)

(6 frames stacked for 90 secs)

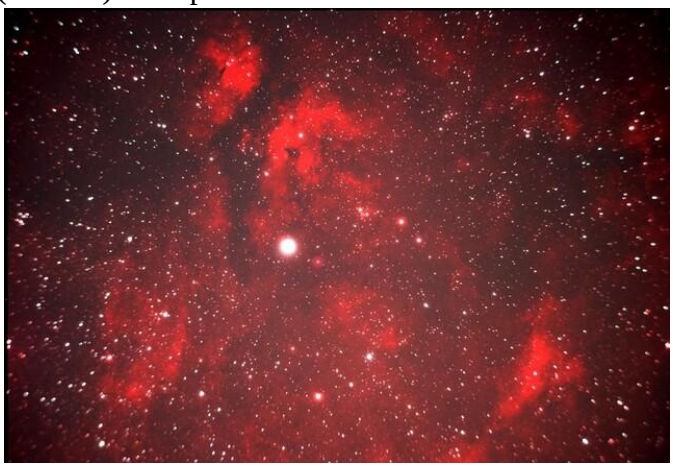
(15 sec exp, 20 frames stacked for 5 min)

I then moved on to clusters Melotte-20 and the Double-Cluster in Perseus: (ROI=4144x2822)

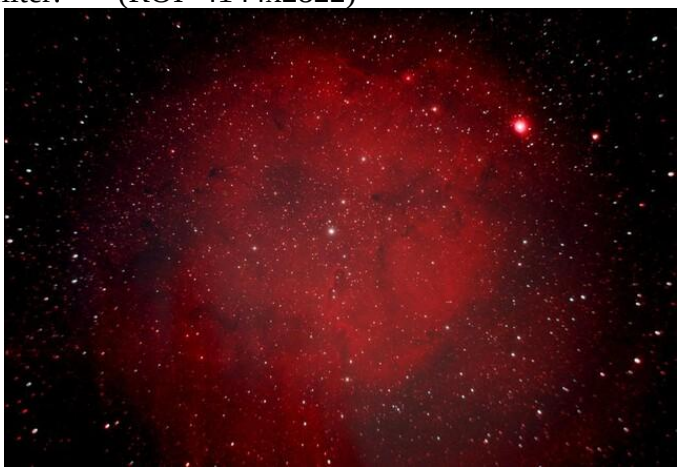
(15 sec exp, 60 frames stacked for 15 min)

(30 sec exp, 20 frames stacked for 10 min)

And I spent time re-imaging two large Sharpless2 nebula: SH2-108(IC1318) in Cygnus, and SH2-131 (IC1396) in Cepheus with the L-eNhance narrowband filter: (ROI=4144x2822)



(180 sec exp, 10 frames stacked for 30 min)

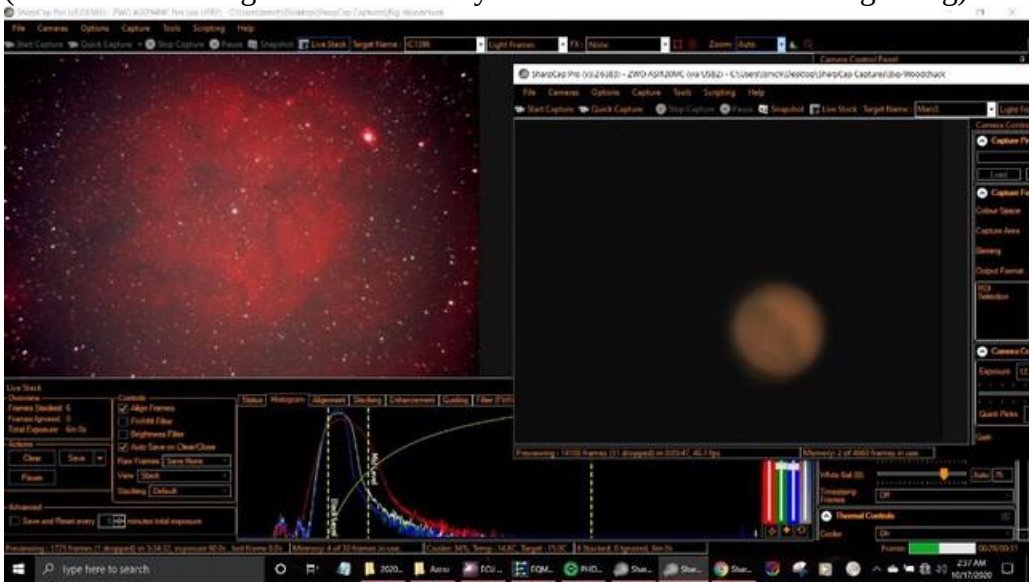


(60 sec exp, 45 frames stacked for 45 min)

Finally, I visited Mars with the observatory 8" LX200GPS @ f10 and my ASI120MC planetary camera and IR filter. Here's a single unprocessed subframe to give you an idea of what the view looked like in real-time. Then the processed 90 second avi stack of around 1600 frames:

In the processed image, I was able to identify the Martian South Pole, Syrtis Minor, Mare Tyrrhenum, Mare Cimmerium, Tritonis Sinus, Gomer Sinus, and the Elysium region.
After capturing the images, I switched the 8" lX200 to a 20mm eyepiece and was able to visually see similar details in steady moments to what the unprocessed image looks like.

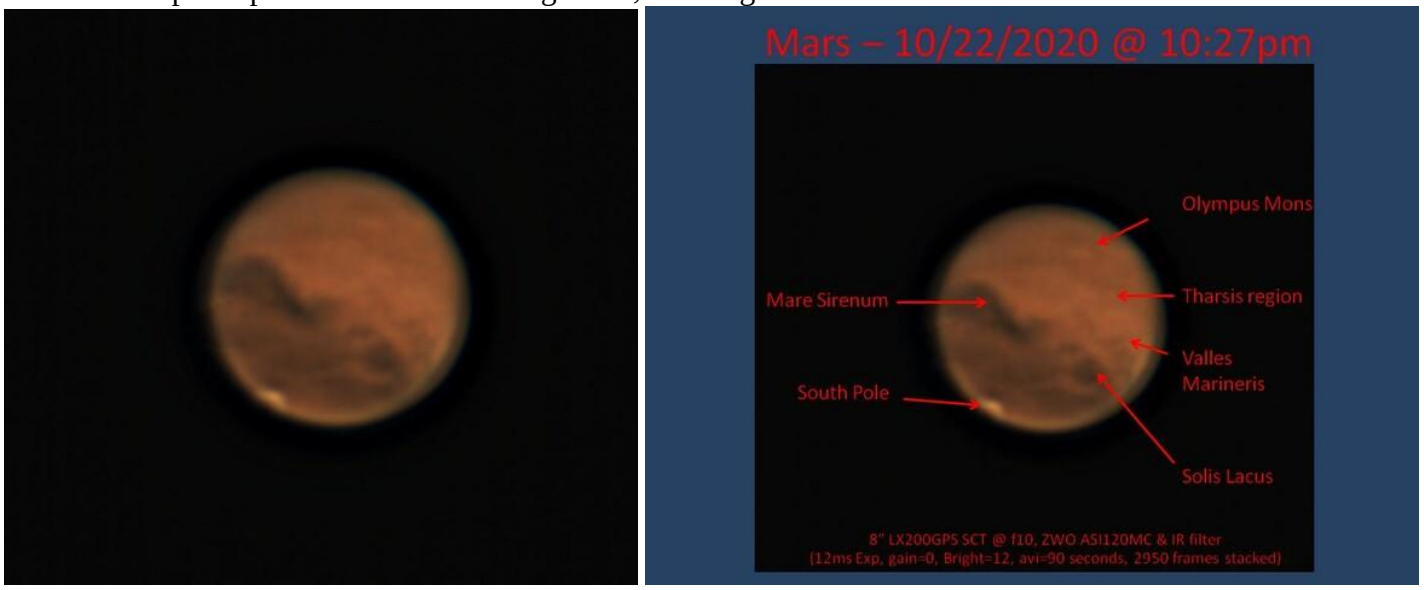
It's always more fun when the technology cooperates! Here's a screenshot of my laptop connected via USB to the 60mm and Atlas mount out in the yard doing narrowband imaging and guiding, and at the same-time connected via a 2nd USB to the SCT observatory telescope doing planetary imaging.
It was neat watching the deep-sky image build-up during Livestack using Sharpcap in one window, while watching a live feed of Mars in a second Sharpcap window.
(was also switching over occasionally to PHD to check on the autoguiding).



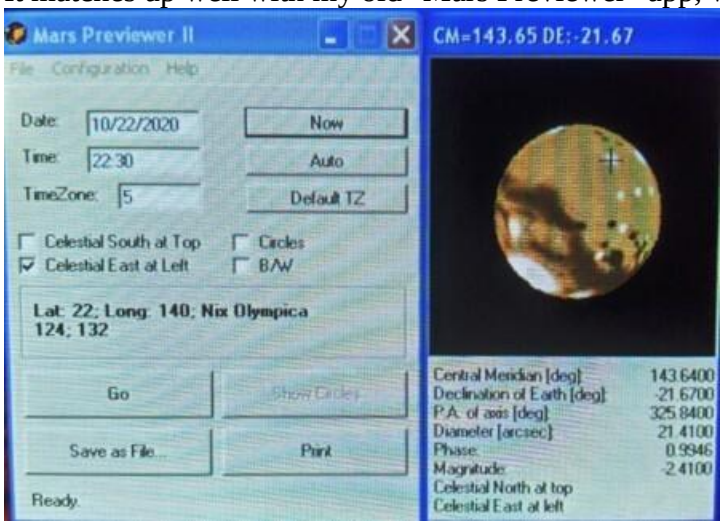
Finally started getting tired around 4:30am, and with frost in the air outside, I shut everything down inside & out and packed it in for the night. Looking forward to my next 'trip' out to the backyard!
Larry

-------- Original Message --------
Subject:[ORAS] More Mars!
Date: Fri, 23 Oct 2020

hi all,
Great sky conditions last night in Baldwin. Was out in the home observatory till 5am doing deep-sky imaging (more on that in a later email). But I took time-out to also get in another observation of Mars! The planet's rotation has now moved an interesting region into view during the evening prime-time.
Using the observatory 8" LX200GPS SCT and my ZWO ASI120MC camera & IR filter, I captured a 90 second avi clip and processed that with Registax6, stacking around 2950 frames. Here's the result:



It matches up well with my old "Mars Previewer" app, which uses the old-school names.



Lots of great surface detail, including the "Eye of Mars" - Solis Lacus, and a first for me, the largest volcano in the solar system - Olympus Mons! (white blotch). Several other small volcano blotches are visible in the Tharsis region. And I was also able to pull out the area of the giant rift canyon - Vallis Marineris. (the little squiggly line)

So while we're a few weeks past opposition, there's still plenty of awesome Martian details to see.
Get out and observe Mars while you can! Marvin is waiting for you to visit,,,,,, Larry

-------- Original Message --------
Subject:[ORAS] A deep-sky space odyssey
Date: Sun, 25 Oct 2020

hi all,
As I mentioned in my previous note regarding Mars, last Thursday here in the South Hills, we experienced really good sky conditions for observing. A front had passed thru during the day clearing both the clouds and smoke and it was nearly New Moon. We were on tap for dark skies that evening!
I spent the evening out in my backyard observatory with my 60mm f4 refractor and ASI294MC camera on the Atlas mount, working my way thru the list of large wide-field deep-sky objects suitable for imaging/observing with a small telescope or binoculars. I started the hunt with open star clusters using the Optolong 'L-Pro' LP filter. As you might notice, my first two targets were getting a little low in the southwestern horizon: IC4665 and NGC6633, both in Ophiuchus. (ROI=4144x2822)

(15 sec exp, 1 frame stacked for 5 secs)

(5 sec exp, 6 frames stacked for 30secs)

Sharpcap wasn't very happy trying to stack frames that included tree-limbs! After considering getting a chainsaw out, I decided it would be easier to go after targets with a little more altitude. So I slewed the mount up to Cassiopeia and imaged the large clusters M52 and NGC7789: (ROI=4144x2822)

(15 sec exp, 40 frames stacked for 10 min)

(15 sec exp, 40 frames stacked for 10 min)

I then turned to a little galaxy hunting and settled-in for an imaging run on M33 - 'Triangulum Galaxy or Pinwheel' in the Triangulum constellation:

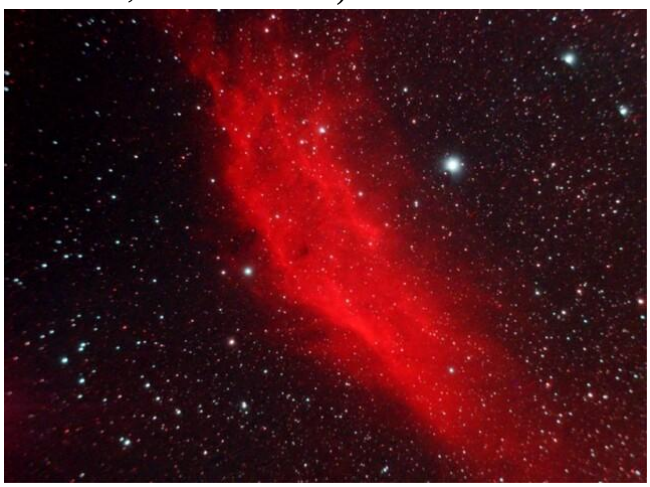
(ROI=4144x2822, 60 sec exp, 30 frames stacked for 30 minutes)

In preparation for tonight's imaging session, during the afternoon I created in advance a set of flat-frames to use with each filter. Flats, (unlike dark-frames), must be created with the camera & filter attached to the telescope pointed at a light source. I used the blue-sky & white t-shirt technique to build the flats. The goal of using flats is to remove vignetting (the sometimes bright over-exposed looking center from your image that can occur depending on your camera and telescope combination), and give your image a more uniformly dark background. They also help to reduce the effects of smudges or dust on the camera sensor.
Here's an unprocessed example of M13 imaged without a flat and with a flat:

As you can see, the flat that I used fixed the bright center, but now caused the field corners to be a little brighter. This was due to my slightly over-exposing the flat when i created it.
(thank you Denny for explaining that to me!). My solution for the images from this observing session was to slightly crop the frame edges, eliminating most of the bright corners.
I hope to become more experienced with creating and using flat-frames!

So, that enough astro-imaging technical details. Now, back to tonight's deep-sky!
After finishing M33, (and this was when I was also grabbing a video clip of Mars), I decided to switch-out filters and use the Optolong L-eNhance narrowband to work on my Sharpless2 (SH2) HII regions observing project, and hunt the larger SH2 objects for the rest of the evening with the wide-field 60mm refractor.
Here's the four best of the night. All are ROI=4144x2822, 60 second exposure, 30 frames stacked for a 30 minute total image. (bright corners cropped)
SH2-157 in Cassiopeia, (that's M52 again in the lower left), and SH2-171 (NGC7822) in Cepheus:


And SH2-220 (NGC1499 - 'California Nebula') in Perseus, and SH2-276 (a brighter portion of 'Barnard's Loop' near M78, also in the shot) in Orion:




Finally, I did try to get an image of the planet Uranus. It's small size and faintness makes it more difficult to image than Jupiter, Saturn, or Mars. (8" LX200GPS SCT and ZWO ASI120MC camera & IR filter)

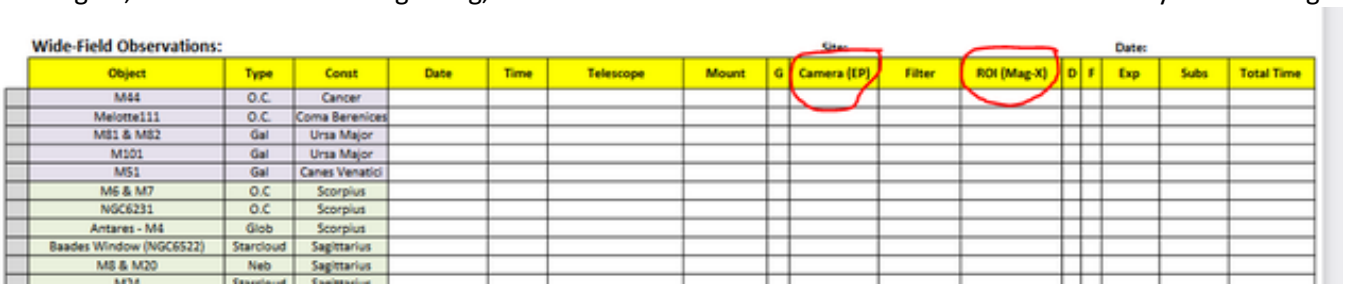

(60 sec avi clip processed with Registax6, stacking ~150 frames)

So that concludes last Thursday's space adventure and that will have to hold me for a few days, looks like rain thru Friday!
Larry

-------- Original Message --------
Subject:[ORAS] new Wide-Field Objects list
Date: Fri, 30 Oct 2020

hi all,

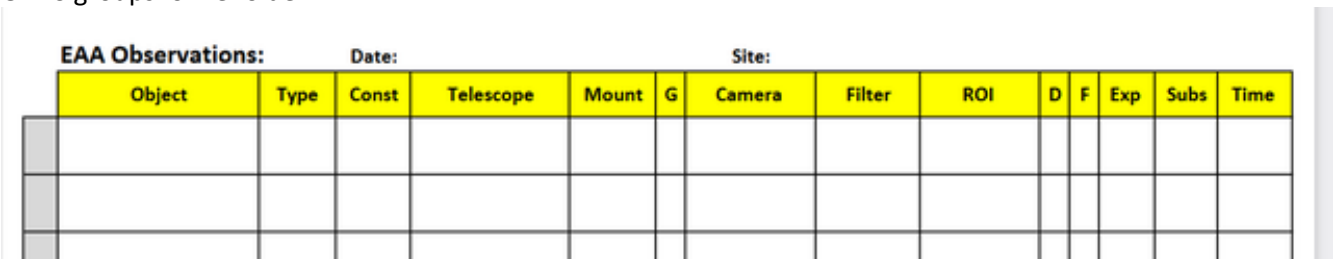
I've updated my observing list of wide-field objects to image or visually observe using small telescopes. (PDF attached)
The list started-off based on experience, but I've since added entries drawn from Sky&Tel's "Pocket Sky Atlas", and "Binocular Highlights" booklets, along with the "Night Skies - Observers Guide" by George Kepple & Glen Sanner.
I've sorted the objects by season, (Spring Summer, Fall, Winter), and color-coded them. To make the list dual usable by both imagers and visual observers, I tweaked the "Camera" and "ROI" columns to include eyepiece "(EP)" and magnification (Mag-X)".
For imagers, the "G" column is for guiding, the "D" & "F" are for darks & flats. Just check the box if you are doing these.



Wide-Field Observations:

Object	Type	Const	Date	Time	Telescope	Mount	G	Camera (EP)	Filter	ROI (Mag-X)	D	F	Exp	Subs	Total Time
M44	O.C.	Cancer													
Melotte111	O.C.	Coma Berenices													
M81 & M82	Gal	Ursa Major													
M101	Gal	Ursa Major													
M51	Gal	Canes Venatici													
M6 & M7	O.C	Scorpius													
NGC6231	O.C	Scorpius													
Antares - M4	Glob	Scorpius													
Baades Window (NGC6522)	Starcloud	Sagittarius													
M8 & M20	Neb	Sagittarius													

I've also revised my EAA imaging/observing form and attached a PDF of that. (both PDF's have been uploaded to the ORAS groups.io file folder.



EAA Observations: Date: Site:

Object	Type	Const	Telescope	Mount	G	Camera	Filter	ROI	D	F	Exp	Subs	Time

If anyone wants the actual MS spreadsheet xls for either of these, send me a personal note (lsmch@comcast.net) and I'll email it directly to you.
Larry