2020 Observation from the ORAS Observatory

-------- Original Message --------
Subject: Electrical power on the ORAS Observatory field
Date: Sat, 22 Aug 2020

hi all,
A small group of ORAS members, led by Dan Holler, spent several days this past week onsite at the observatory installing two electrical pedestals on the observatory field. (located in the eastern & southern field of the observatory). Each pedestal has a green outlet box containing dual-GFI sockets (4 plugs total per box). The eastern pedestal contains an outdoor breaker box that services both pedestals.


In addition to Dan, the main work crew was Denny Hill, Dean Salisbury, Ed Kuzemchak, and myself. Also lending a hand was Bob Kalan, Steve Behringer and Tim Spuck. All participants followed the ORAS pandemic rules, practiced social distancing and wore masks as much as possible while working.


The team utilized the club tractor and a ditch digging attachment donated by Bob. Additional construction materials, (wire, conduit, boxes, etc), along with the manual labor was donated by the team members minimizing the cost to the club.

After passing electrical inspection today, the trenches was back-filled and the outlets switched-on and successfully tested. (afterwards, the breaker box was left switched off)

Going forward, this will allow ORAS members using the observatory field to be able to setup further away from the building and still have electricity available to power their observing equipment and other camping gear. In the near future, electrical usage rules for both the new pedestals and existing outlets along the building will be developed and published. For now, we ask that no one run their camper AC from the outlets.

Kudos to all of the above folks who helped with this project!
Thanks! Larry

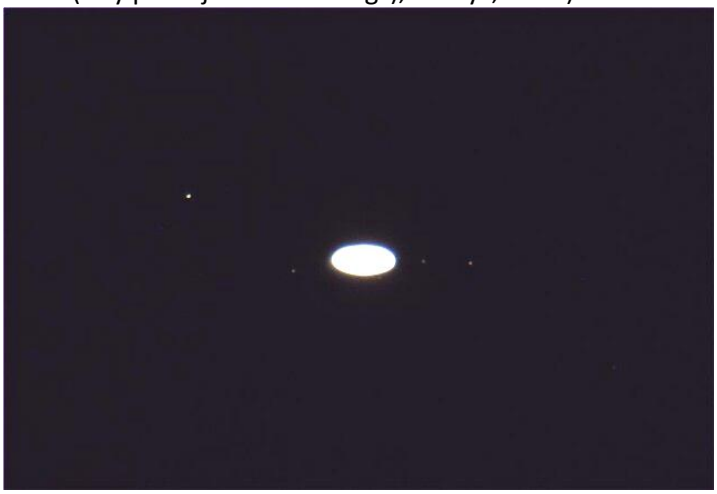
-------- Original Message --------
Subject:[ORAS] Observations from the ORAS Observatory
Date: Sun, 23 Aug 2020

hi all,

While at the ORAS observatory installing electrical pedestals on the field this past week, we also got a little observing in. It was a mix of clouds and clear skies, with Wednesday night being excellent!
I utilized the observatory's Meade 14" LX200GPS @ f10 with my ZWO ASI294MC camera for planetary imaging. Here's an image of Jupiter taken on the 18th: Also, a wider shot to include Jupiter's Moons:

(@ 10:08pm, 30 second avi clip, 306 frames stacked) (from left to right: Ganymede, Io, Callisto, Europa)

Then the ring world - Saturn: (@ 10:24pm, 30 second avi clip, 120 frames stacked)
and Saturn's Moons: (from left to right: Titan, Dione, Enceladus (tiny point just below rings), Tethys, Rhea)



And the main event - Mars!

(from 08/21/2020 @ 1:52am showing 89% gibbous phase, Central Meridian=24.5, Diameter=17.3 arcsec, bright South Polar Cap, haze visible over Northern cap, Mare Erythraeum visible at center disk. 25 second avi clip 1,084 frames stacked using RegiStax6)

Also did a little deep-sky imaging. Here's the best:
NGC253 - "Silver Coin Galaxy" (ROI=4144x2822, at 60 secs for a 10 min exp using IR filter)
M16 using L-eNhance filter, (ROI=4144x2822, at 60 seconds for a 20 minute exposure)

And, using my AllSky domecam (ASI224MC camera & fisheye lens), the Milky-Way from the Observatory on 8/19:

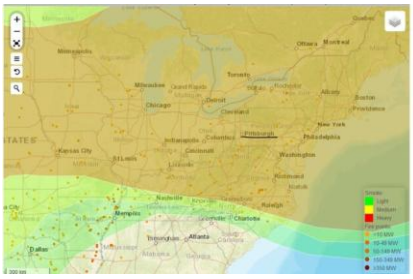
Here's the video: https://youtu.be/vFTtHoohTw0

Larry

-------- Original Message --------
Subject:[ORAS] Sept New Moon at the ORAS Observatory - Part-I: "A Smokey Start"
Date: Tue, 22 Sep 2020

hi all,
Spent the past New Moon week camping onsite at the ORAS Observatory with several other ORAS members. We all wore masks and social distanced. At one point there were up to nine of us on the field, but never all inside the observatory at the same time. While the weather for most of the week was clear and dry, the sky had a dull yellow overcast from all the western wildfires smoke. This photo looks more like Moonrise than the Sunset it actually was!

Wednesday, Sept 16th was probably the worst day. Here's an older image from the NOAA 'smoke Map for the day.



Our area was right in the 'thick' of it!
(another version of their map - https://hwp-viz.gsd.esrl.noaa.gov/smoke/index.html# then select the 'Vertically Integrated Smoke' option, takes a few seconds to load)

Here's a couple of individual image captures from my allsky cam. The only reason you could even see the Milky-Way in the middle image was that the camera had gone into multi-second exposure mode. By naked-eye, it was barely visible. Normally, on a clear night at the observatory, you would expect the sky to look more like the right-hand image.

Overnight Thursday and into Friday morning, a front moved down from Canada, clearing the skies and setting up an awesome Friday evening. Here's the video from the 'Smokey' 16th: https://youtu.be/oFr4Pzfdy9s
And one from a very clear frosty Friday night on the 18th: https://youtu.be/VBX9HUtcIHI

Finally, I also made a little video of the observatory roof opening from inside: https://youtu.be/XIg7CgvYSUs
Unfortunately, I didn't turn on the domecam dew heater, so it's a bit fuzzy around the edges. Also, that night we left the observatory interior lights on, which messed-up the camera exposure, ruining the images from the remainder of the series. Still, It's a fun little vid. (everyone should checkout Dean's version that he made using his DLSR, it's outstanding!)

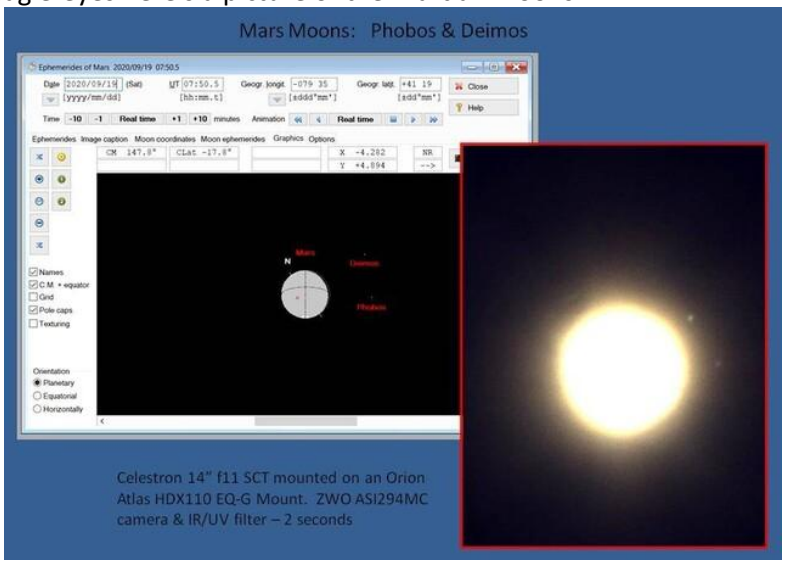
More images to come in the Part-II post.
Larry

-------- Original Message --------
Subject:[ORAS] Sept New Moon at the ORAS Observatory - Part-II: "A week of Planets"
Date: Tue, 22 Sep 2020

hi all,
During the smokey evenings, I put to use the Meade 14" LX200GPS telescope to image the Planets.
(quick maintenance note - the Meade 14" suffered a motor failure on it's Dec axis and is currently out of commission until Dan can figure out how to fix it) While Mars was the main event, I wanted to spend time imaging the other planets,,,, all of them! Here's the best images, so far,,,,,, (you can easily spend half a day with Registax reprocessing over and over, looking for perfection,,, LOL)
Venus: (on 9/18 using the Celestron 14" @ f11) Mars: (on 9/15 using the Meade 14" @ f10)

(dark elongated feature running from mid-disk toward left limb is Mare Sirenum, dark spot to lower right is Solis Lacus)

And, thanks to Dan H's eagle-eyes here's a picture of the Martian moons:



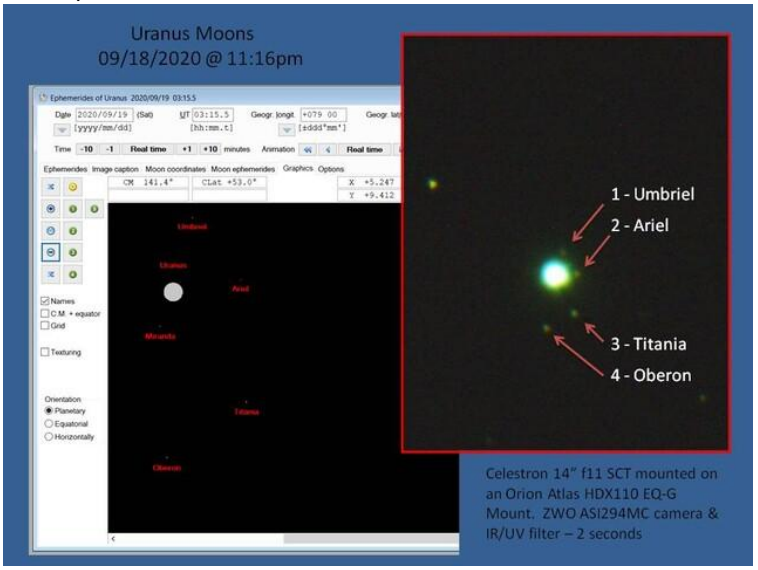
Jupiter: (on 9/15 using the Meade 14" @ f10)

(Red Spot and Galilean Moon shadow transit)

Saturn: (on 9/15 using the Meade 14" @ f10)

Neptune and it's moon Triton: (on 9/18 using the Celestron 14" @ f11)

Uranus and it's moons: (on 9/18 using the Celestron 14" @ f11)



Pluto: (on 9/14 using the Meade 14" @ f10)

With the exception of Pluto, Neptune & Uranus (which are all single image capture), all of the other planets were stacked avi clips of > 1000 sub frames. Came close to meeting the goal of capturing all the planets, but the motor fault on the Meade threw me off, missed out on Mercury.

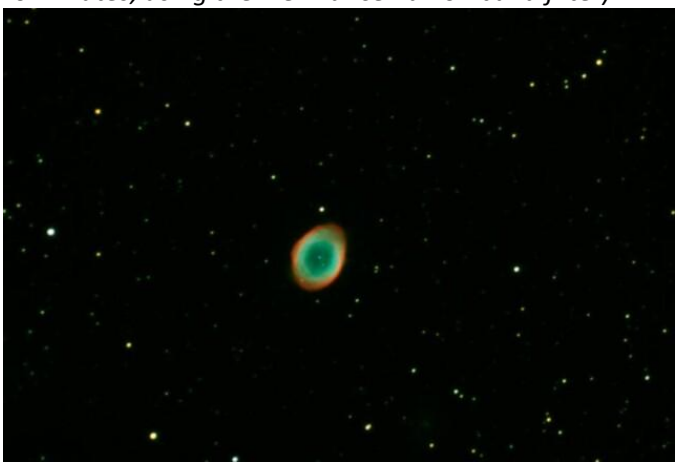
Still more images to come in Part-III!
Larry

-------- Original Message --------
Subject:[ORAS] Sept New Moon at the ORAS Observatory - Part-III: "The Deep"
Date: Wed, 23 Sep 2020

hi all,
Before we take a journey into the deep from the ORAS Observatory, one last stop in the Shallow Sky.
Here's my best attempt at Mars from Saturday evening, just past midnight, using the Celestron 14" and Orion Mount:
Mars: (on 9/20 at 12:45am using the Celestron 14" @ f11. South Pole at bottom, Solis Lacus center disk)

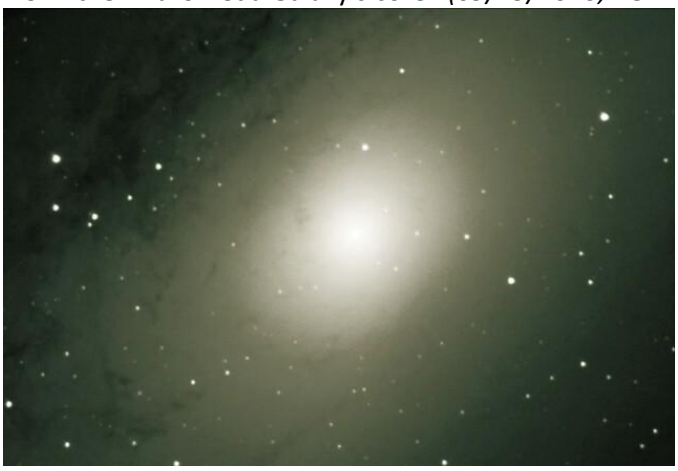
(over 2000 stacked sub-frame out of about 3000 captured. Unfortunately, there must have been a faint fuzzy on either the filter or camera optical window that I couldn't process out from the stacked image. Just have to live with it).

Now off the deep end! We'll start off somewhat locally within the Milky-Way. All of the below images were made using the Celestron 14" @ f11.
First up, M57 - the Ring Nebula in Lyra: *(09/18/2020, ROI=4144x2822, 30 second exposure, 20 subs stacked for total of 10 minutes, using the L-eNhance narrowband filter)*



And B33 - the Horsehead Nebula in Orion: *(09/18/2020, ROI=4144x2822, 180 second exposure, 11 subs stacked for total of 33 minutes, using the L-eNhance narrowband filter)*

Now, we'll move out into the Universe, starting with the Local Group: (note, for all the galaxy images, I've switched to using an IR/UV filter)
M31 - the Andromeda Galaxy's core: *(09/19/2020, ROI=4144x2822, 180 second exposure, for total of 9 minutes)*



And Andromeda's companions, M32 & M110:
(both on 09/19/2020, ROI=4144x2822, 60 second exposure, 5 subs stacked for total of 5 minutes)

And a few other fainter 'Local Group members over in Cassiopeia, NGC147 and NGC187:
(both on 09/19/2020, ROI=4144x2822, 60 second exposure, 5 subs stacked for total of 5 minutes)


I also went after a number of even fainter Local Group galaxies such as IC10, the Pisces Dwarf, and Andromeda-X, but they're not worth the bandwidth to show.

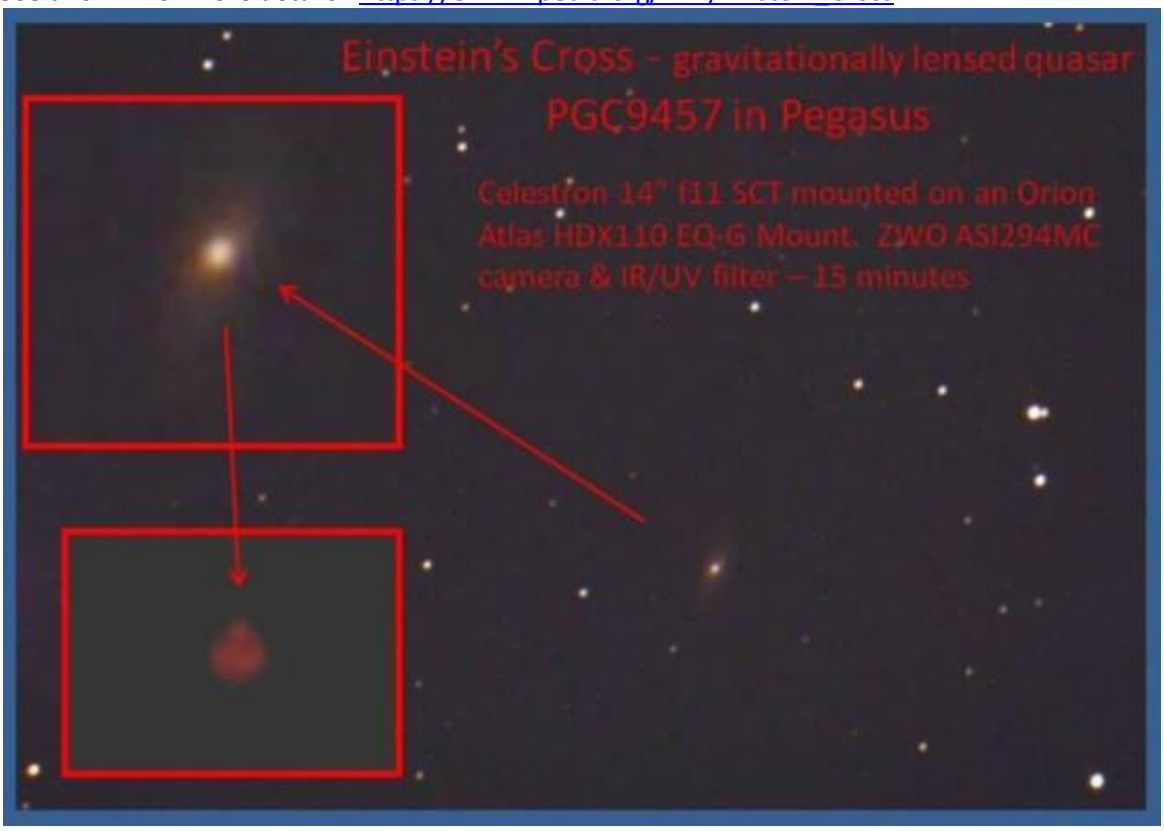
Now we'll journey deeper past the Local Group, first to NGC891 - the Silver Sliver Galaxy in Andromeda, and then to NGC7331 - the Deer Lick Galaxy in Pegasus:


*(NGC891 on 09/19/2020, ROI=4144x2822, 300 second exposure for a 3 sub stack for total of 15 minutes,
NGC7331 on 9/19/2020, ROI=4144x2822, 60 seconds for 15 subs tallying 15 minutes)*

Also, Stephan's Quintet in Pegasus (NGC7320, 7319, 7318A&B, and 7317):

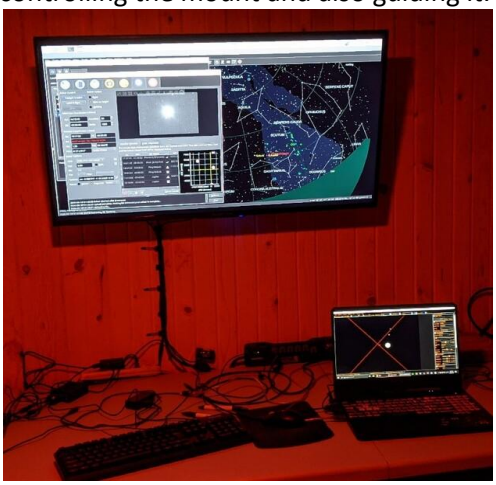
(09/18/2020, ROI=4144x2822, 300 second exposure, 6 sub stack for total of 30 minutes)

And to end our trip on a far distant shore, a stop at Einstein's Cross - lensed quasar, in Pegasus.
The 8 billion light-year distant quasar sits behind the much closer (400 MLY) foreground galaxy - PGC9457 whose gravity distorts the light coming from the quasar into four images.
See this link for more details: https://en.wikipedia.org/wiki/Einstein_Cross



(09/18/2020, ROI=4144x2822, 300 second exposure, 3 subs stacked, for 15 minutes)

Going back to an earlier note from Dan H about my going to the '***Dark Side***', Dan has enlightened me to the value of using **K-Stars** to control the observatory telescope. Here's a picture of my laptop connected to my ZWO camera running SharpCap, and the **Raspberry-Pi/big screen monitor** connected to both the mount and my ZWO guide-camera controlling the mount and also guiding it. (Dan had to temporarily run two additional USB cables out to the mount).



Within the K-Stars app, Dan and I used it's observing list/planetarium function to slew the telescope to an object, then used the astrometry/platesolving function to accurately center the telescope on the object, and then used the guide function to autoguide. It was pretty cool! With Dan giving me an overview and a little hands-on training of K-Stars, I was able to run the telescope myself, all from inside the warmup room.

(but Dan forgets that I 'AM' the 'Windows Guy',, lol,,, so no Linux for me! I plan on downloading the Win10 version of K-Stars and using that to control my home telescope).

Dan's fiendish telescope plan is to eventually run a second USB cable out to the Celestron 14" Orion mount and a QHY guide-camera. That USB cable will plug into the Raspberry-Pi/big screen monitor for dedicated telescope and guiding control. Then all the 'user' will have to do is bring their own personal laptop and camera, attached their camera to the telescope and plug it into the current existing USB cable (that runs under the floor) so they can control their camera with their favorite imaging software (such as SharpCap).
Sounds like a great plan to me! I'll let Dan go over any additional details that I missed.

So this concludes my September New Moon excursion to the ORAS Observatory! Hope everyone enjoyed the trip!
Thanks! Larry

-------- Original Message --------
Subject:[ORAS] October New Moon at the ORAS Observatory
Date: Fri, 16 Oct 2020

hi all,
With a decent looking weather forecast for this week, I headed up to the ORAS Observatory on Tuesday 10/13, along with several other club members (including Dan, Dean & his brother Gary, and Ed). Enjoyed the fall colors on the drive up from Pittsburgh. My plan was to set up on the field my little SkyWatcher Star-Adventurer mount and 60mm f4 refractor with the ASI294MC camera and Canon (25 to 100mm) zoom with the ASI290MC camera that I had been experimenting with in my backyard. Here's a pic of it ready to go for the night:

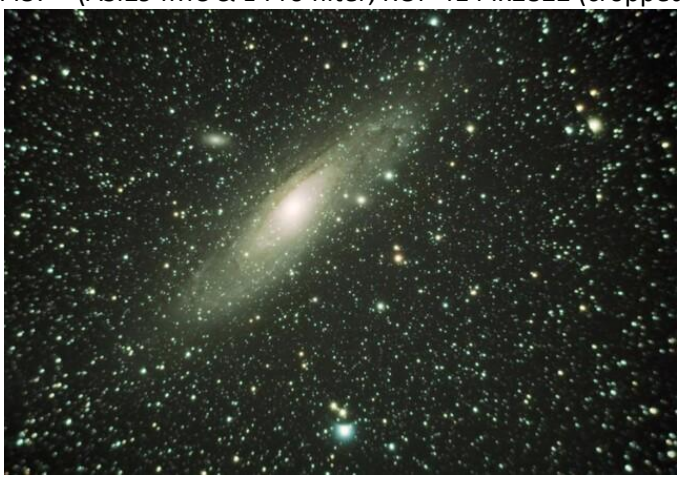
After dusk, I spent the next several hours exercising the technical gremlins from having my rig in the field for the first time. (even had issues with my allsky cam with the old laptop that I use to run it freezing up early and I not noticing that for several hours)

I discovered that the mount and optical payload was too heavy for either tripod that I had brought with me. (during my home backyard testing, i had it mounted on a small permanent pier). Every time I went to point the telescope to an object, the tripod mount head would shift, throwing off the polar alignment. I just couldn't get the tripod lock knobs to tighten down enough to keep the tripod head from shifting.Also, along the way, in breaking down the equipment in my backyard and lugging it to the observatory, I must have bumped the 60mm's focus, as it was out-of-whack. Being now set up on the field a good 20 ft away from the camper made it a pain to manually get the instrument back in focus. A lot of running back and forth between the telescope from the laptop & monitors. Most of my imaging attempts at early evening targets were unsuccessful.
Here's a not so great image of M8 and M20 in Sagittarius during the early evening:
(ASI294MC & L-eNhance filter, ROI=4144x2822 (cropped), 5 second exposure, 12 subs for 60 seconds)

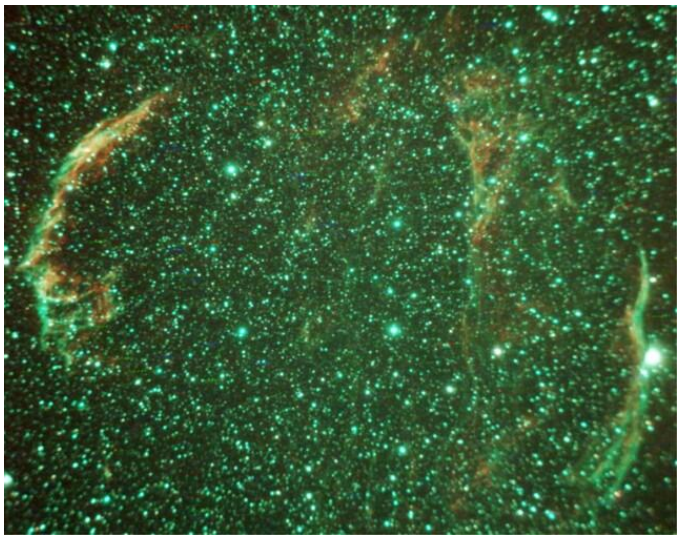
In the middle of all this, I took a break from my equipment headaches to re-sync the Meade 14" LX200GPS inside the observatory. Dan had previously fixed the Dec motor stall issue, (loose internal wiring), but the mount needed it's GOTO alignment redone. After successfully completing that, we spent some time viewing Mars thru several eyepieces and planetary filters and were able to visually see good detail on the Martian disk.

That break away from my telescope & mount issues must have been what I needed, as after returning to my camper, I was able to figure out how to gently finesse moving the telescope optical tube without messing up the mount alignment and also was able to get a good focus and even got autoguiding to work! Now I was finally 'cooking with gas', as they say, and was able to start down my list of wide-field targets to image. By then I had lost the first half-dozen objects to the southwest horizon, so I went for targets rising high in the east.

M31 in Andromeda: (ASI294MC & L-Pro filter, ROI=4144x2822 (cropped), 30 second exp, for 40 minutes)
M45: (ASI294MC & L-Pro filter, ROI=4144x2822 (cropped), 30 second exposure, 20 subs for 10 minutes)




NGC7000 and IC5070 (North American & Pelican Nebulas) in Cygnus:
(ASI294MC & L-eNhance filter, ROI=4144x2822 (cropped), 30 second exposure, 60 subs for 30 minutes)
Veil-Nebula (NGC6960, 6992, 6995, and Pickerings Triangle) in Cygnus:
(ASI294MC & L-eNhance filter, ROI=4144x2822 (cropped), 30 second exposure, 90 subs for 45 minutes)

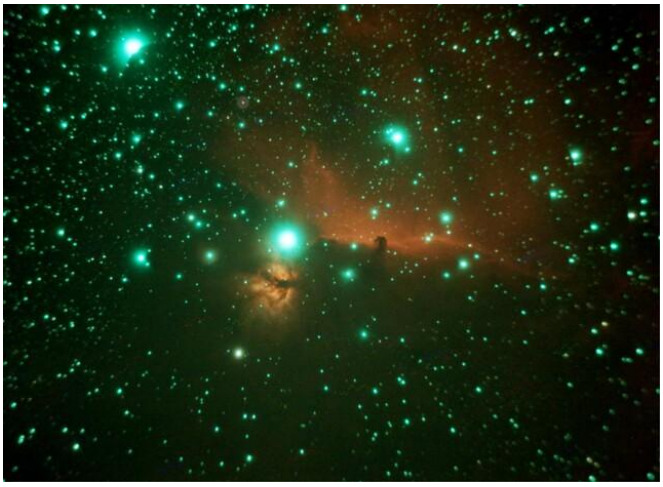



NGC253 & NGC288 in Sculptor:
(ASI294MC & L-Pro filter, ROI=4144x2822 (cropped), 30 second exposure, 60 subs for 30 minutes)

With the outside temp diving thru the low 40's, the dew was quite heavy. Using my portable propane heater, I was able to keep the work bench area under my camper's clamshell and curtained tent canopy in the comfortable low 60's.
With the time well past 4am, and Orion approaching the meridian, I pointed the telescope over to the Great Hunter's Belt.

NGC2024, IC434, and B33 (the Flame and Horsehead Nebula) in Orion:
(ASI294MC & L-eNhance filter, ROI=4144x2822 (cropped), 30 second exposure, 80 subs for 40 minutes)

As I was now getting to the point of falling asleep on my chair, I decided to make my image of the Orion Nebula region the last for the night.
M42, M43, NGC1977, and NGC1980 in Orion:
(ASI294MC & L-eNhance filter, ROI=4144x2822 (cropped), 30 second exposure, 30 subs for 15 minutes)



After rebooting the allsky cam laptop and getting that back capturing frames, it still gave me a little trouble as I had got behind in fighting the dew that was forming on the camera dome. Took awhile, but after cranking the dew controller to high, the dome mostly cleared.

Here's a couple of interesting subframes:
Early evening Bolide in Caassiopeia and Venus/Moon rise in Leo: (ASI290MC around 30 secs, 1 sub each)

And here's the link to the video: https://youtu.be/pqEe91vHWdU

During the day Wednesday, the sky conditions slowly went downhill. (Bob and Denny dropped in for a visit during the day) The various weather sites weren't very promising for that night, and several were predicting storms & high winds. So with that in mind, most of us decided to break-down our telescopes and spend the evening enjoying conversations. Of course, around 10pm, it began to clear off, but by then we were all too tired, so after a little naked-eye stargazing with a green-laser assist, I headed in for bed.

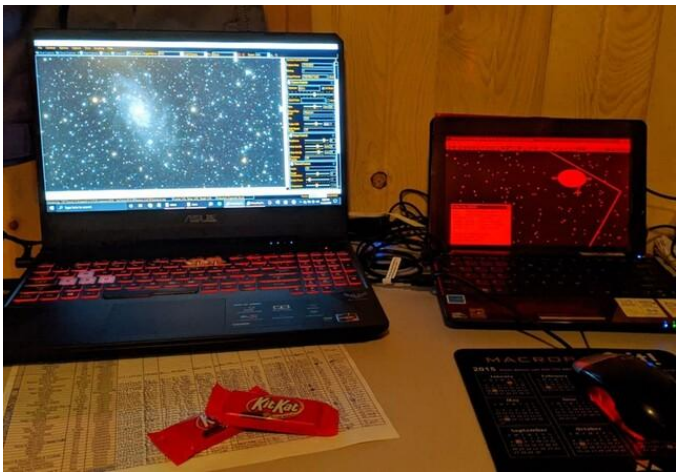
Thursday, the forecast showed a line of storms would be approaching later in the evening, so we all finished packing-up our campers, and headed for home. So even though it was only one night for me, it was a pleasant trip to the observatory. Hoping to make one more road trip, (to somewhere) for the November New Moon. Then it will be time to winterize the camper!

Larry

-------- Original Message --------
Subject:[ORAS] Two Frosty Evenings at the ORAS Observatory
Date: Mon, 16 Nov 2020

hi all,
Several of us spent time last week at the ORAS Observatory, (Denny, Ed, and myself), on Thursday and Friday evenings. Denny and I utilized the observatory's two 14" SCT telescopes, while Ed was in his mobile observatory for most of the night, except for a couple of visits with us during the evening outside on the observatory floor.

I set up my ZWO widefield imaging kit piggybacked on the Meade 14" (60mm f4 refractor & ASI294MC and my Canon 25mm - 100mm Zoom lens & ASI290MC).
At the f10 prime focus of the 14" was my planetary camera - ASI120MC with flip-mirror. Inside the warm-room, Denny took the table under the big screen monitor, and I setup a table with my imaging and LX200 control laptops, observing list, and a bag of KitKats at the opposite end of the room.



Once the Sun dipped below the horizon on Thursday evening, the temperature swiftly began to drop into the low 40's, falling thru the 30's into the mid 20's by 4am. Everything outdoors was icey, and the heavy ground frost looked like snow. While frosty, the sky was beautifully clear, and after booting up the Meade telescope, focusing the cameras and taking control of the mount with the laptop, I was soon working my way through the widefield objects list using the 60mm. I started off using the L-Pro filter as it performs better with star clusters and galaxies than the L-eNhance narrowband.
My first targets were several very-late season open clusters in Ophiuchus, NGC6633, IC4665, and then IC4756 in Serpens Cauda. I was fortunate that they were still just barely visible above the western observatory wall. For IC4756, I had to laugh, as when I went to look thru the 14" using the flip-mirror eyepiece, the view was actually blocked by the wall, but the extra height of the piggybacked 60mm allowed me to get an image. LOL.
I then slewed the telescope a little higher in elevation to capture M11 and a portion of the Scutum Starcloud in the Southwestern sky.

(NGC6633)

(IC4665)

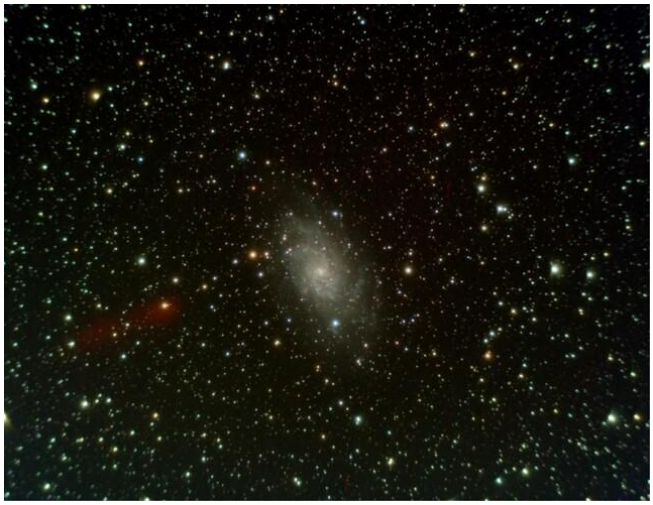
(IC4755)

(M11)

(NGC6633, IC4665, & IC4756: 15 second exposure, 40 frames stacked for a 10 minute total, cropped in post-processing. M11 - 30 seconds exp 20 frames, for 10 minutes).

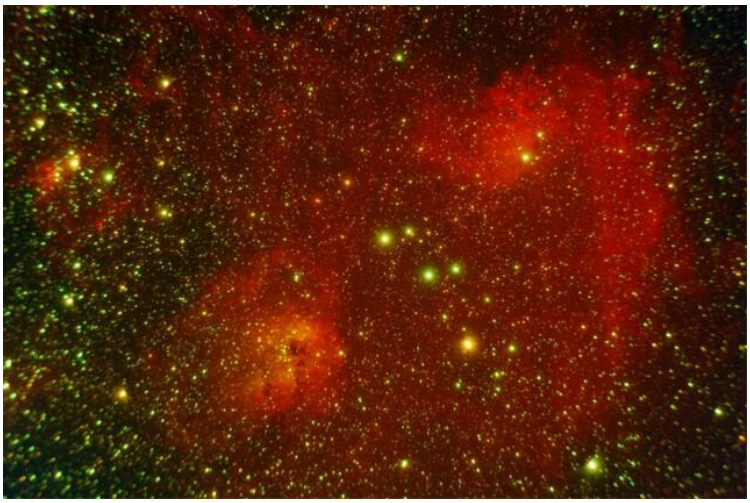
With Mars beckoning, I captured a 90 second avi clip using the ORAS 14" LX200GPS SCT & my ZWO ASI120MC camera with IR filter, and later processed an image of 2,570 subframes . Dark surface features include Syrtis Major & Syrtis Minor visible on center disk. Mars is definitely looking more gibbous!

I then spent the next several hours imaging the Triangulum Galaxy - M33, and the Pleiades - M45 with the 60mm refractor, both 60 second exposures for a full hour. (weird reddish glow to the left of M33)




At that point, with Orion rising high in the Southeast, Denny mentioned that there was a new comet visible near Orion's Belt, 8th magnitude Comet Atlas (C/2020 M3).
After consulting an online finder-chart, I was quickly able to pull-in the little green fuzzball with my Canon Zoom at 100mm & f5.6 using the ASI290MC camera for a 60 second exposure for 15 minutes.

Finally, I switched over to the L-eNhance narrowband filter for the 60mm & ASI294MC camera and imaged several bright SH2 HII nebula including IC405 (Flaming Star) in Auriga, IC2177 (Seagull) in Monoceros, at 60 seconds exposure for 30 minutes each,




and the HorseHead & Flame (B33 & NGC2024) in Orion at 60 seconds for one hour.

With the clock going on 4am, Denny and I decided to call it a night and shutdown the telescopes and closed up the observatory.

Friday was mostly sunny and cool, but at sunset, scattered clouds and a light haze rolled-in for most of the early evening, causing both Denny and I headaches while trying to align and focus the equipment. During the day, I decided to try deep-sky narrowband imaging with the 14" at f10, so I switched my cameras and cabling around. This turned-out to be a mistake, as what I had thought from the previous night that the 14" LX200's alignment was spot-on, was not true when trying to image at f10 with the big glass.
The mount's accuracy was off enough to make it very difficult in finding objects. (plus the now lousy sky conditions didn't help).

After several hours struggling, I had lost interest in using the 14" to image, and as it would be a pain to try and switch the cameras back around, I was almost ready to throw-in the towel. But then the sky finally cleared, so I decided to make 'lemonade' by using the Canon Zoom lens & ASI290MC camera that I normally use as a video-finder as the night's main imaging camera! It wasn't the ideal setup, as I couldn't use either of my filters, and the camera wasn't cooled, but, it saved the evening!
I set the zoom lens to 25mm @f5.6 and proceeded to image a number of very wide field objects. These included the Hyades cluster in Taurus, Melotte-20 (Alpha Persei) cluster in Perseus, (both 15 seconds exposure for 10 minutes):

And Collinder-70 (Orion's Belt) extending down to M42, (30 seconds for 10 minutes), and the Rosette Nebula (NGC2244) in Monoceros, (60 seconds for 10 minutes).

So, not exactly what I had planned for the evening, (no Arp Galaxies or Abell Planetaries with the 14"), but it still ended-up being a fun and useful night. At 1am, we packed the laptops and closed-up for the night.

Saturday morning, all three of us were up early, and after checking the weather forecast, decided to pack our equipment and head for home.

In addition to using the Meade 14" inside the observatory, I also had my allsky camera running, collecting images every 30 seconds on both nights.
Unfortunately, the best night (Thursday), was lost due to my forgetting to turn on the domecam's dew heater, with heavy dew, turning to frost, claiming the starlight.
But after learning my lesson, Friday night's images were captured, so here's a video of the evening! (watch for Mars appearing in the evening dusk, transiting through the clouds while the summer Milky-way sets, then Mars itself setting in the west while the winter constellations fill the meridian sky, with the finale of Venus rising before sunrise)
https://youtu.be/JDUigsjxXk0

So that's it for my last trip this year to the ORAS Observatory. Star clusters, galaxies, nebula, Mars and a comet! A good catch for two frosty nights!
Later this week I'll be winterizing the camper and putting it to bed for the winter.

Larry