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the Skyscraper

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AMATEUR ASTRONOMICAL SOCIETY OF RHODE ISLAND ⋆ 47 PEEPTOAD ROAD ⋆ NORTH SCITUATE, RHODE ISLAND 02857 ⋆ WWW.THESKYSCRAPERS.ORG

In This Issue:

Seagrave Observatory is closed until further notice.

Due to the outbreak of coronavirus, Seagrave Memorial Observatory will remain closed to the public until further notice.

Phases of the Moon

Last Quarter Moon
November 8 13:46

New Moon
November 15 05:07

First Quarter Moon
November 22 04:45

Full Beaver Moon
November 30 09:30

The DASCH Project – Ten Years Later

A Presentation by Prof. Josh Grindlay
Saturday, November 7, 7:0opm EST via Zoom

Contact Steve Hubbard (cstahhs@gmail.com) for Zoom Meeting link and information.

Our speaker at the November meeting will be Dr. Jonathan (Josh) Grindlay from the Harvard/Smithsonian Center for Astrophysics. Josh will discuss the history and scientific results of the DASCH project (Digital Access to a Sky Century at Harvard). This is the tenth anniversary of Josh's talk to Skyscrapers in November 2010. Ten years ago Josh came to share this exciting new project he was leading, the digitization of the entire Harvard plate stack collection.

Harvard College Observatory houses a collection of over 500,000 astronomical glass plates, most of which are 8" x 10". There are also several thousand 11 x 17 plates as well as 4 x 5 plates. They cover both the Northern and Southern skies and span over 100 years. This is the largest collection in the world and also spans the longest time scale. Researchers wanting access to the data have always had to travel to Cambridge and manually find plates in the stacks, look at them on a light table and retrieve the data they needed for their research. The purpose of the DASCH project is to digitally scan the plates, measure the location and magnitude of all stars on the plate and then to store the results in a database for access from anywhere.

The photography on plates began in 1877 when E. C. Pickering became the director of Harvard College Observatory. In 1886 Anna Draper bequeathed a grant in the name of her deceased husband, Henry Draper, who had been interested in both photography and spectroscopy. In 1889 photography also began in Peru and later also from S. Africa, thus covering the entire sky. Study of the collection by a dedicated group of women "computers" led to fundamental understanding of the nature and distance to stars and "nebulae". Some of you may remember the talk to Skyscrapers by Dava Sobel on her history of the computers called "The Glass Universe".

At the conclusion of his talk in 2010 Josh invited any interested Skyscrapers to volunteer to help with the plate scanning. Ray Kenison and Steve Siok took up this offer and for nine years went to CfA and scanned each Thursday. This was only stopped because of the current pandemic. As an interesting side note, E. C. Pickering met an early death in 1918 because of the flu pandemic.

Please make an attempt to view this ZOOM meeting with your fellow Skyscrapers and enjoy the stories and results with Josh. Hope to see you then!

Dr. Jonathan Grindlay received his B.A degree in Physics from Dartmouth College in 1966 and his Ph.D. in Astronomy from Harvard in 1971. His primary areas of research interest are high energy astrophysics and compact objects. He has led the DASCH project since its inception and it has allowed him to lead research in "Time Domain Astronomy". Josh currently holds the Robert Treat Paine chair in Practical Astronomy. He shares this honor with his predecessors E. C. Pickering, Harlow Shapley, Donald Menzel and Irwin Shapiro. Additionally Josh has just been awarded a Legacy Fellow honor from the American Astronomical Society.

President's Message

by Steve Siok

Well, AstroAssembly is behind us! And I want to congratulate and thank all Skyscrapers who helped and attended. It went off without a hitch. We had three interesting speakers all dealing with imaging, probably the most up and coming area of interest to amateur astronomers these days. The combination of photography and image processing on home computers is attracting lots of people, especially younger ones, which is great for attracting younger folks to our society. I hope you all enjoyed the talks and remember that they are available to see again at home I you want to review any aspects of the presentations.

I want to especially thank the committee that arranged the afternoon's festivities. Thank you to Ian and Steve Hubbard for getting our speakers. Thank you to Linda for all the upfront planning, publicity and shepherding the attendees. Thank you to Laura for being our ZOOM administrator for the event. Thank you to Jimmy for publicity on the web site and in the Skyscraper as well as managing the Astrophoto contest. Thank you to Jim Crawford editing the recordings of the talks. And thank you to Kathy for doing everything I am incapable of doing!

I also want to thank all the attendees who graciously donated money above the requested donation. We made quite a bit of money as compared to a normal AstroAssenbly, without all the extra work hosting it in person at Seagrave. Now, I am not advocating we should do this again. I want next year to be normal!

So again, thank you one and all.

New Members

Welcome to Skyscrapers

Patrick Keane

Philip Levine

Marcelo Campi Lima

Michael Starring

David Iadevaia

Edward & Beth Donnelly

Scarlet & Lindsay Selby

Gregory Shanos

AstroAssembly Astrophoto Gallery & Winners

Thank you to everyone who submitted photos for our annual AstroAssembly astrophoto contest, and to all attendees who selected the winners.. We had 18 entries across four categories: Solar System, Deep Sky, Landscape, and Remote Image Processing. The winning entries begin on **page 10**, but we thought all of the submissions were worthy of publication. Please keep sending them in throughout the year!

—Jim Hendrickson

The Skyscraper is published monthly by Skyscrapers, Inc. Meetings are held monthly, usually on the first or second Friday or Saturday of the month. Seagrave Memorial Observatory is open every Saturday night, weather permitting.

Directions
Directions to Seagrave Memorial Observatory are located on the back page of this newsletter.

Submissions
Submissions to The Skyscraper are always welcome. Please submit items for the newsletter no later than **November 15** to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to jim@distantgalaxy.com.

E-mail subscriptions
To receive The Skyscraper by e-mail, send e-mail with your name and address to jim@distantgalaxy.com. Note that you will no longer receive the newsletter by postal mail.

Two Meteor Showers & Another Penumbral Lunar Eclipse

by Dave Huestis

I love the cool nights of November. The hazy skies of this past summer's four heat waves are long gone, and amateur astronomers can begin their evening observing sessions after dinnertime, courtesy of earlier sunsets.

But just as we are gradually growing accustomed to shorter daylight hours in the northern hemisphere as we approach the Winter Solstice on December 21, most of the United States will transition back to Eastern Standard Time (EST) from Eastern Daylight Time (EDT). This year that switch occurs at 2:00 a.m. on Sunday, November 1. Nothing in the heavens change. We are simply setting our clocks back one hour (we had set them ahead one hour back on March 8). "Spring ahead and fall back" is the mantra created to help us remember when this practice is put into effect. This bi-annual ritual takes a few days in which to get adjusted. At least we can look forward to an extra hour of sleep. Don't forget to reset all your devices with clocks (older units don't automatically accomplish this task) else you will be an hour early for any Sunday morning event.

Our first meteor shower of the month occurs on the night of November 4-5 with the Earth traversing a stream of particles comprising the Taurid meteor shower. These often very bright yellow fireballs (meteors that explode and fragment into multiple pieces) are fairly slow and enter our atmosphere at approximately 17-miles per second. Expect no more than about a dozen meteors at peak activity. Observe after midnight to increase your chances of seeing one. Look in the general direction of the constellation Taurus. To locate Taurus find the V-shaped pattern, called the Hyades, that defines the bull's face, or locate the Pleiades — the Seven Sisters star cluster. Unfortunately, a bright waning gibbous Moon (Last Quarter on the 8th) will overshadow many of the Taurids this year since it will reside nearby in the foot region of Castor, one of the Gemini twins to the east (left) of Taurus.

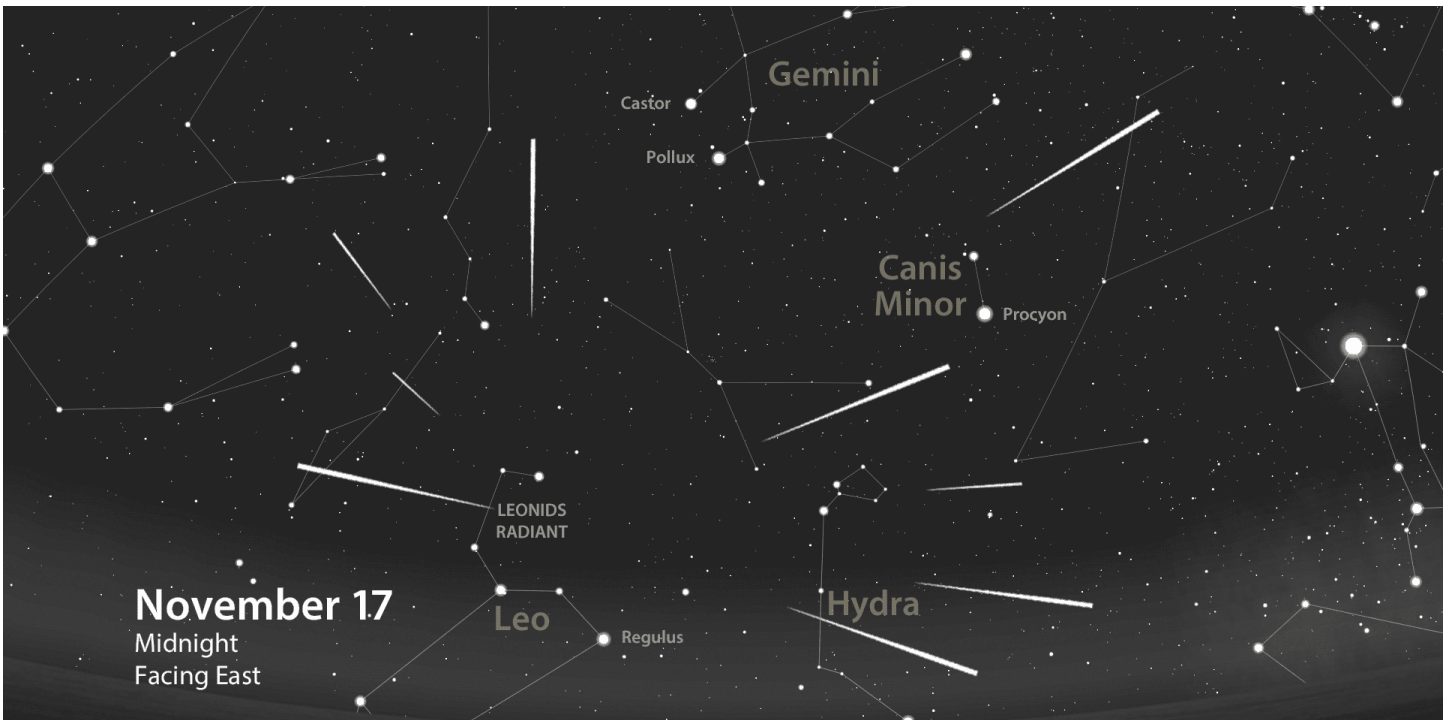
The second shooting star display of note occurs on the night of November 16-17 with no lunar interference. A waxing crescent Moon sets just after sunset on the 16th. This is the peak night of the annual Leonid meteor shower. Between midnight and dawn an observer well away from light pollution sources may see about 10-15 green or blue shooting stars per hour.

The Leonids blaze across the sky at around 44-miles per second as they hit the Earth's atmosphere nearly head-on. The resulting display produces many fireballs, with about half of them leaving trains of dust that can persist for minutes. The area of sky from where the meteors appear to radiate is in the Sickle (backwards question mark) asterism of Leo. Providing the skies are clear, the Leonids seldom fail to disappoint a determined stargazer.

During the early morning hours of November 30, we will experience yet another penumbral lunar eclipse. Back on the night of July 4-5 a very shallow eclipse occurred when the Full Moon passed between the Sun and the Earth and slid (from west to east/right to left) into the Earth's light shadow called the penumbra. Only about one-third of the top portion of the lunar surface was within the penumbral shadow. Even I could not detect the shadow's presence.

The upcoming penumbral eclipse may be slightly more detectable since at maximum eclipse the top two-thirds of the lunar surface will be affected. This will position the top portion of the Moon closer to the Earth's dark umbral shadow. The lunar surface should look somewhat subdued in this area. Compare it to the bottom portion of the Moon's disk not within the shadow. See this web site for a great animation of the event: https://www.timeanddate.com/eclipse/lunar/2020-november-30

The unfortunate circumstance is the



Penumbral Eclipse begins	2:32:22 am
Maximum Eclipse	4:42:53 am
Penumbral Eclipse ends	6:53:26 am

timing of this eclipse. It occurs when most of us are in dreamland. See the times of the major elements in the accompanying table. All times are EST (Eastern Standard Time).

When the maximum eclipse occurs at 4:42:53 a.m. the Moon will be positioned due west and about 33 degrees above the horizon. It will be located just to the right of the V-shaped Hyades star cluster. The orange star, Aldebaran, denotes one of the bull's eyes. The V will point towards the horizon. We will have a better chance of detecting the penumbral shadow at that time. Total duration of this eclipse is four hours, twenty-one minutes and four seconds.

Throughout the month continue to keep an eye on Jupiter and Saturn as they move closer to the western horizon each night and also closer to one another from our vantage point in space. On December 21 Jupiter and Saturn will be so close that they will appear as one object to the naked-eye just after sunset 15 degrees above the western horizon. This "Great Conjunction" will be the closest these two worlds have been since 1623, and it will be a spectacular event to behold. Details will be provided in my December column.

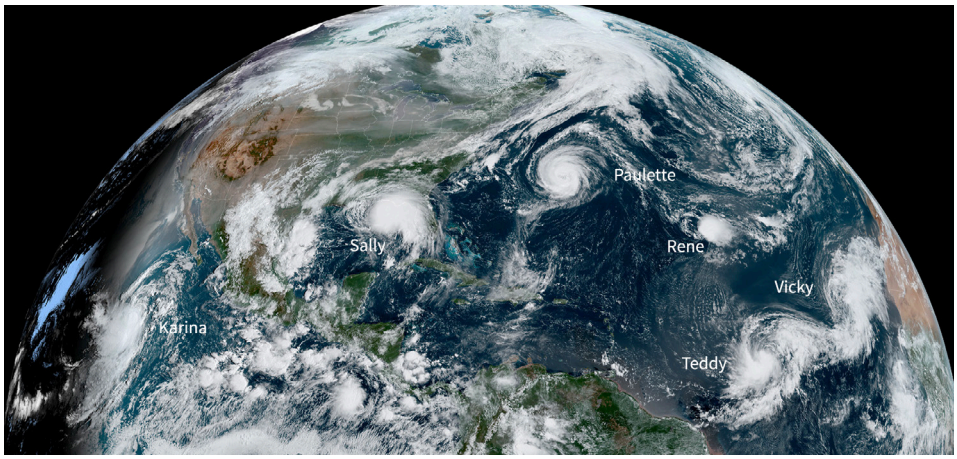
Mars will also continue to beckon one to focus a telescope on its pumpkin-colored disk. Although the Earth is now moving away from our neighbor after our recent close encounter, a decent amount of surface features will still be detectable even through small telescopes. Keep your eye on the planet's ever-shrinking South Polar Cap.

Keep your eyes to the skies.

Dave Huestis is Skyscrapers Historian and has been contributing monthly columns to local newspapers for nearly 40 years. See more at http://theskyscrapers.org/dave-huestis

Astronomy & Climate

by Francine Jackson



On the morning of September 14, 2020, NOAA's GOES-East satellite spied six active tropical systems spanning the Atlantic and Pacific Oceans. Image NOAA

It appears observational astronomy is becoming a catch-22. The beautiful telescopes are primed for the sky, but the sky itself is being lost, due to both light pollution and climate. As noted in a recent edition of Science (Astronomy Is – and Has – a Climate Problem, Daniel Clery, vol.270, issue 6513, https://science.sciencemag.org/content/370/6513/153), for example, Chile's Paranal Observatory determined its average temperature had risen by 1.5 degrees Celsius, more than the average global rise of 1 degree since our preindustrial time.

An increase such as this can also increase humidity, thereby adding clouds. Also, more water vapor can block radiation, specifically infrared and microwave, creating disaster in much of an observer's research programs.

It appears that two major factors in astronomy are adding to the climate problem: travel, and the necessary use of supercomputers. In all major disciplines, of course, travel to what are generally annual conferences generates vast amounts of emissions. As an example, the 2019 meeting of the European Astronomical Society, held in Lyon, France, in late June, had attendees undergo temperatures over 110 degrees Fahrenheit. Because of this, many of their discussions became that of climate change, and the amount of carbon necessary for each person to arrive. The result – the equivalent of about 1.5 tons of carbon per delegate (p. 153).

It also was realized that the computer power necessary to work the huge telescopes as performed now can be considered wasteful. Surprisingly, a slight change in the program used can be a major factor lowering this. For example substituting a programming language such as Fortran or C++ for one such as Python would lower carbon by a factor of 100, because these and other similar languages require fewer operations.

Also, just the concept of virtual meetings, as we are having (although not exactly for the same reasons) are being seriously looked into. In fact, one of our previous speakers, Travis Rector, of the University of Alaska, Anchorage, a spokesman for the American Astronomical Society, has noted that members seem to be onboard for these. Rector noted that this year's virtual EAS meeting resulted in 1/3,000 of the "carbon costs," compared to the meeting in 2019.

Of course, in general, climate change is a major problem for all of us. Even if we do not observe directly, we only have to watch the commitment of all in saving Lick Observatory and Mt. Wilson in California from the raging inferno occurring there and elsewhere in our country. If only for the possibility of keeping looking up alive for both professional and amateur astronomers alike, we all should take time each day to just ask what little we can do to keep the science we love alive.

Francine Jackson is a NASA Solar System Ambassador, writes the weekly newsletter for Ladd Observatory See more at http://theskyscrapers.org/francine-jackson

Finding Uranus

by Jim Hendrickson

For much of 2020, the impending conjunction of Jupiter and Saturn kept our attention towards the eastern edge of Sagittarius since late spring, as Jupiter slowly catches up with Saturn for what will be a spectacular conjunction on December 21. But as they draw nearer to each other they are also settling lower into the southwestern sky. By mid-evening they will depart the sky altogether, leaving only Mars to draw our planetary attention during the evening.

While we're slowly pulling away from Mars, it remains bright and high in our sky, and even next opposition in 2022 will not be as close as it is now, so give it as much attention as you can.

When you're finished visiting Mars, let's take a journey to our solar system's seventh planet.

Uranus reached opposition on the night of November 1-2. It is at its closest to Earth for the year, at a distance of 18.79 astronomical units (AU) at its opposition, and shows a tiny globe of just 3.8 arcseconds, which is about 1/9 of the separation distance of the double star Albireo in Cygnus.

Due to its large distance from Earth, observing Uranus at opposition compared with observing it during other times has little effect on its apparent size and brightness, but because it is near the limit of unaided eye visibility (Uranus shines as bright as magnitude 5.7 near opposition), it's worth the challenge to try to spot it near opposition. To aid in this effort, Uranus is located relatively high in the sky, and in an area relatively devoid of dim stars.

It is best to plan your observation attempt between 10pm and midnight, when it is highest in the sky. This also means you'll want to observe when bright moonlight is out of view. November 8-20 is the optimal window for that this year.

Set yourself far away from lights in an area where the southern and overhead sky is least impacted by light pollution and familiarize yourself with the area between Cetus and Aries.

Begin at Menkar (alpha Ceti - a star familiar in Star Trek lore) and draw a line up to Sheratan (beta Arietis). Uranus lies in the patch of sky along this line, slightly closer to Sheratan than the midpoint. As a secondary reference, draw a line between Mars and the Pleiades. Near the intersection of these two lines is where you'll find Uranus.

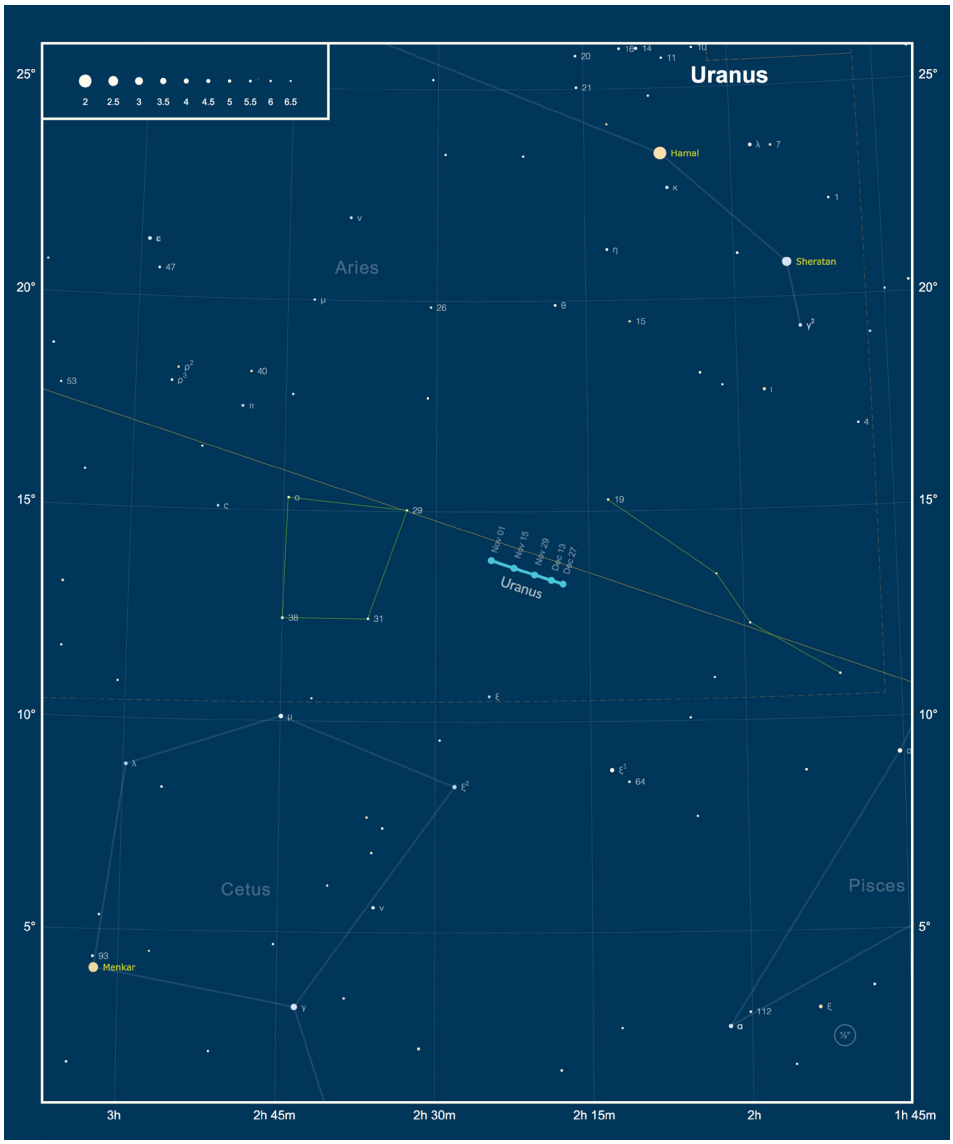
Using the chart, locate the two patterns of stars indicated; to the west of Uranus, you'll find a bent line of 6th magnitude stars about 7° long, and to the east there is a quadrilateral of 6th magnitude stars about 3°x3° in size. Uranus will be the brightest object between these two patterns. The blue-green glow of the planet will be much easier to spot in binoculars. Once you have located it, put the binoculars down and try again without any optical aid. It won't be easy, as not many amateur skywatchers can claim to have observed six planets without binoculars or a telescope. See if you can be one of them.

When you locate Uranus through binoculars, it should be fairly easy to track its westward motion over the coming weeks, moving about 1/4° westward each week.

Telescopically, Uranus doesn't have much to offer. It does exhibit a beautiful teal color that you won't find in any stars, and through larger telescopes you can resolve its featureless sphere and limb darkening under ideal seeing conditions. If you have seen photos of cloud features on Uranus, they would have been taken through special filters outside of the visible spectrum.

For an additional challenge, Uranus has four moons over 1,000 kilometers in diameter that are accessible through large telescopes, and can be imaged through medium-sized ones. The largest moons are 15th magnitude, and all of its moons are within 45 arcseconds of the planet.

Enjoy your evenings, good luck in locating Uranus, and let us know if are able to see it with just your eyes.



Jim Hendrickson is newsletter and web editor and has been a member for 20 years. See more at http://theskyscrapers.org/jim-hendrickson

NASA Night Sky Notes:

The International Space Station: 20 Continuously Crewed Years of Operation

By David Prosper

Did you know that humans have been living in the International Space Station, uninterrupted, for twenty years? Ever since the first crew members docked with the International Space Station (ISS) in November 2000, more than 240 people have visited this outpost, representing 19 countries working together. They have been busy building, upgrading, and maintaining the space station - while simultaneously engaging in cutting-edge scientific research.

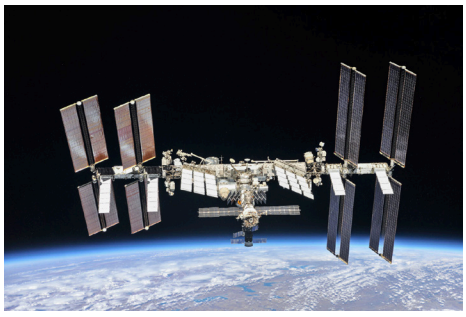
The first modules that would later make up the ISS were launched into orbit in 1998: the Russian Zarya launched via a Proton-K rocket, and the US-built Unity module launched about a week and a half later by the Space Shuttle Endeavour. Subsequent missions added vital elements and modules to the Space Station before it was ready to be inhabited. And at last, on November 2, 2000, Expedition-1 brought the first three permanent crew members to the station in a Russian Soyuz capsule: NASA astronaut William M. Shepherd and Russian cosmonauts Sergei Krikalev and Yuri Gidzenk. Since then, an entire generation has been born into a world where humans continually live and work in space! The pressurized space inside this modern engineering marvel is roughly equal to the volume of a Boeing 747, and is sometimes briefly shared by up to 13 individuals, though the average number of crew members is 6. The unique microgravity environment of the ISS means that long-term studies can be performed on the space station that can't be performed anywhere on Earth in many fields including space medicine, fluid dynamics, biology, meteorology and environmental monitoring, particle physics, and astrophysics. Of course, one of the biggest and longest experiments on board is research into the effects of microgravity on the human body itself, absolutely vital knowledge for future crewed exploration into deep space.

Stargazers have also enjoyed the presence of the ISS as it graces our skies with bright passes overhead. This space station is the largest object humans have yet put into orbit at 357 feet long, almost the length of an American football field (if end zones are included). The large solar arrays – 240 feet wide - reflect quite a bit of sunlight, at times making the ISS brighter than Venus to observers on the ground! Its morning and evening passes can be a treat for stargazers and can even be observed from brightly-lit cities. People all over the world can spot the ISS, and with an orbit only 90 minutes long, sometimes you can spot the station multiple times a night. You can find the next ISS pass near you and receive alerts at sites like NASA's Spot the Station website (spotthestation.nasa.gov) and stargazing and satellite tracking apps.

Hundreds of astronauts from all over the world have crewed the International Space Station over the last two decades, and their work has inspired countless people to look up and ponder humanity's presence and future in space. You can find out more about the International Space Station and how living and working on board this amazing outpost has helped prepare us to return to the Moon - and beyond! - at nasa.gov.

The ISS photobombs the Sun in this amazing image taken during the eclipse of August 21, 2017 from Banner, Wyoming. Photo credit: NASA/Joel Kowsky More info: bit.ly/eclipseiss

This article is distributed by NASA Night Sky Network. The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!



A complete view of the ISS as of October 4, 2018, taken from the Soyuz capsule of the departing crew of Expedition 56 from their Soyuz capsule. This structure was built by materials launched into orbit by 37 United States Space Shuttle missions and 5 Russian Proton and Soyuz rockets, and assembled and maintained by 230 spacewalks, with more to come! Credit: NASA/Roscosmos More info: bit.ly/issbasics

The Sun, Moon & Planets in November

This table contains the ephemeris of the objects in the Solar System for each Saturday night in November 2020. Times in Eastern Standard Time (UTC-5). Ephemeris times are for Seagrave Observatory (41.845N, 71.590W).

Object	Date	RA	Dec	Const	Mag	Size	Elong	Phase(%)	Dist(S)	Dist(E)	Rise	Transit	Set
Sun	**7**	14 50.3	-16 20.7	Lib	-26.8	1936.7	-	-	-	0.99	06:26	11:30	16:33
	14	15 18.6	-18 17.1	Lib	-26.8	1939.8	-	-	-	0.99	06:34	11:30	16:26
	21	15 47.7	-19 57.8	Lib	-26.8	1942.8	-	-	-	0.99	06:43	11:32	16:21
	28	16 17.3	-21 20.6	Sco	-26.8	1945.4	-	-	-	0.99	06:51	11:34	16:17
Moon	**7**	7 56.7	23 07.5	Gem	-12.2	1834.8	109° W	66	-	-	21:06	04:55	12:39
	14	14 13.0	-10 13.2	Vir	-8.7	1984.5	18° W	2	-	-	05:36	11:03	16:20
	21	21 14.2	-21 13.3	Cap	-11.6	1865.2	76° E	38	-	-	12:42	17:45	22:54
	28	2 36.6	11 06.3	Ari	-12.5	1788.9	154° E	95	-	-	15:31	22:40	05:59
Mercury	**7**	13 42.7	-8 21.8	Vir	0.0	7.5	18° W	43	0.31	0.89	04:49	10:21	15:53
	14	14 08.3	-10 36.6	Vir	-0.6	6.3	19° W	70	0.35	1.08	04:57	10:21	15:44
	21	14 45.6	-14 14.1	Lib	-0.6	5.5	16° W	86	0.39	1.23	05:21	10:31	15:40
	28	15 27.6	-17 54.1	Lib	-0.6	5.1	12° W	93	0.42	1.33	05:50	10:46	15:40
Venus	**7**	12 47.1	-3 12.1	Vir	-3.9	13.0	33° W	83	0.72	1.31	03:36	09:27	15:17
	14	13 19.1	-6 25.8	Vir	-3.9	12.6	31° W	85	0.72	1.34	03:52	09:31	15:10
	21	13 51.5	-9 34.6	Vir	-3.9	12.2	30° W	86	0.72	1.38	04:08	09:36	15:03
	28	14 24.7	-12 33.9	Lib	-3.8	11.9	28° W	88	0.72	1.42	04:25	09:42	14:58
Mars	**7**	0 59.4	4 53.1	Psc	-1.9	19.0	150° E	97	1.44	0.49	15:14	21:34	03:53
	14	0 57.5	5 09.7	Psc	-1.7	17.7	143° E	96	1.45	0.53	14:44	21:05	03:26
	21	0 58.1	5 38.6	Psc	-1.4	16.3	136° E	94	1.46	0.57	14:16	20:38	03:01
	28	1 01.0	6 18.9	Psc	-1.2	15.1	130° E	93	1.47	0.62	13:49	20:14	02:39
1 Ceres	**7**	22 26.3	-23 00.2	Aqr	8.8	0.5	104° E	97	2.97	2.56	14:28	19:02	23:36
	14	22 29.1	-22 16.0	Aqr	8.8	0.5	98° E	97	2.97	2.65	14:00	18:37	23:15
	21	22 32.8	-21 27.4	Aqr	8.9	0.5	93° E	97	2.96	2.75	13:33	18:14	22:55
	28	22 37.4	-20 35.1	Aqr	9.0	0.4	87° E	97	2.96	2.85	13:06	17:51	22:36
Jupiter	**7**	19 35.1	-22 05.9	Sgr	-2.0	36.3	67° E	99	5.11	5.42	11:34	16:11	20:49
	14	19 39.8	-21 55.0	Sgr	-1.9	35.7	61° E	99	5.11	5.52	11:10	15:49	20:27
	21	19 45.0	-21 42.7	Sgr	-1.9	35.1	55° E	99	5.11	5.61	10:47	15:26	20:06
	28	19 50.5	-21 28.9	Sgr	-1.9	34.5	49° E	99	5.11	5.69	10:24	15:04	19:45
Saturn	**7**	19 54.6	-21 10.6	Sgr	0.6	16.1	72° E	100	10.00	10.27	11:49	16:31	21:12
	14	19 56.6	-21 05.6	Sgr	0.6	16.0	65° E	100	9.99	10.37	11:23	16:05	20:47
	21	19 58.8	-20 59.7	Sgr	0.6	15.8	58° E	100	9.99	10.48	10:57	15:40	20:22
	28	20 01.3	-20 53.0	Sgr	0.6	15.7	52° E	100	9.99	10.57	10:32	15:15	19:58
Uranus	**7**	2 24.8	13 51.9	Ari	5.7	3.8	173° E	100	19.78	18.79	16:06	22:59	05:52
	14	2 23.7	13 46.6	Ari	5.7	3.7	166° E	100	19.78	18.82	15:38	22:31	05:23
	21	2 22.7	13 41.4	Ari	5.7	3.7	159° E	100	19.78	18.85	15:10	22:02	04:54
	28	2 21.7	13 36.6	Ari	5.7	3.7	151° E	100	19.78	18.90	14:42	21:34	04:26
Neptune	**7**	23 18.7	-5 38.7	Aqr	7.8	2.3	123° E	100	29.93	29.37	14:12	19:54	01:36
	14	23 18.4	-5 40.2	Aqr	7.9	2.3	116° E	100	29.93	29.48	13:44	19:26	01:08
	21	23 18.3	-5 41.1	Aqr	7.9	2.3	109° E	100	29.93	29.59	13:17	18:54	00:40
	28	23 18.2	-5 41.4	Aqr	7.9	2.3	102° E	100	29.93	29.71	12:49	18:31	00:12
Pluto	**7**	19 39.1	-22 38.0	Sgr	14.4	0.2	68° E	100	34.16	34.52	11:40	16:15	20:50
	14	19 39.6	-22 37.2	Sgr	14.4	0.2	61° E	100	34.16	34.63	11:13	15:48	20:23
	21	19 40.3	-22 36.2	Sgr	14.4	0.2	54° E	100	34.17	34.74	10:46	15:21	19:56
	28	19 41.0	-22 34.9	Sgr	14.4	0.2	47° E	100	34.17	34.84	10:19	14:54	19:30

Galaxy in Andromeda: NGC 278

by Glenn Chaple for LVAS

Mag: 11.5, Size: 2.1′ X 2.0′

The mere mention of the constellation Cassiopeia to a deep sky enthusiast conjures up visions of open star clusters like M52, M103, and the "ET Cluster" NGC 457. But if you move southward towards Cassiopeia's border with Andromeda, you'll come across a handful of galaxies that includes NGC 278 – this month's Observer's Challenge.

This nearly face-on spiral was discovered by William Herschel on the evening of December 11, 1786. It bears the Herschel Catalog designation H1591 (his 159th Class I [Bright Nebulae] object). Its calculated distance of 38 million light years translates to a true diameter of 26,000 light years.

I observed NGC 278 on the evening of September 20, 2020, using a 10-inch f/5 reflector. At 39X, it showed itself as a hazy "star." A boost to 208X revealed a ghostly circular patch with no discernible concentration. NGC 278 was faitly visible in my 4.5-inch f/7.9 reflector. At 90X, it looked more like a planetary nebula than a galaxy.

The coordinates for NGC 278 are RA 0h 52m 04.3s, Dec +47o 33' 02". Star-hoppers can find it by tracing a path from 4th magnitude omicron (o) Cassiopeiae (see finder charts below).

*The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'll be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to Roger Ivester (rogerivester@me.com). To find out more about the Observer's Challenge or access past reports, log on to rogerivester.com/category/observers-challenge-reports.

Mario Motta (ATMoB) Taken with 32-inch scope using ASI6200 camera. 90 min total integration time. North up.

ATM of BOSTON

OBSERVING LOG

NAME: Glenn Chaple

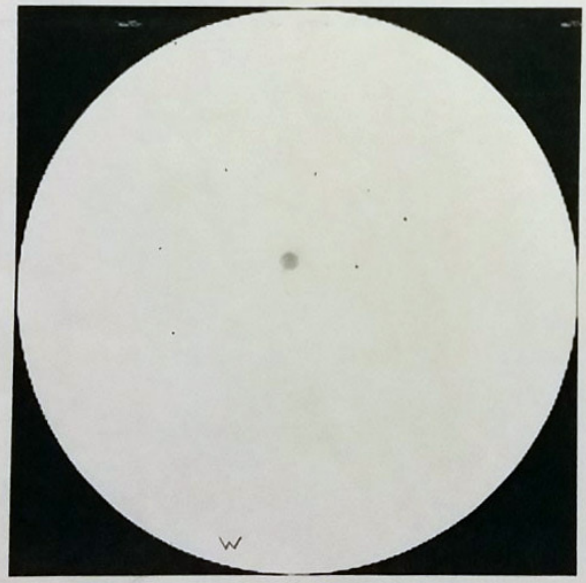
DATE (M/D/Y) 9/20/2020 TIME: 9:25 pm EDT

OBSERVING SITE: Townsend MA

SKY CONDITIONS: Seeing (Antoniadi Scale) III Limiting Magnitude 5.2

OBJECT: NGC 278 TYPE: Spiral Galaxy CONSTELLATION: Cas

SKETCH (note direction of west)



NOTES:

In 10-inch at 39X, visible as hazy "star." At 208X, appears as ghostly circular patch-no noticeable concentration

Also seen in 4½-inch reflector at 90X. Looks like a planetary nebula

Glenn Chaple (ATMoB) NGC 278 as seen with 10-inch f/5 reflector at 208X

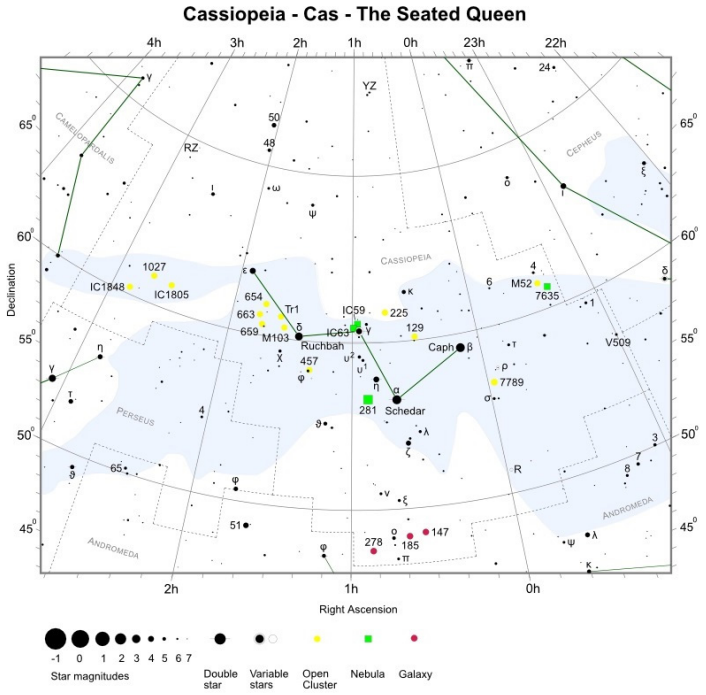
OBSERVING EQUIPMENT

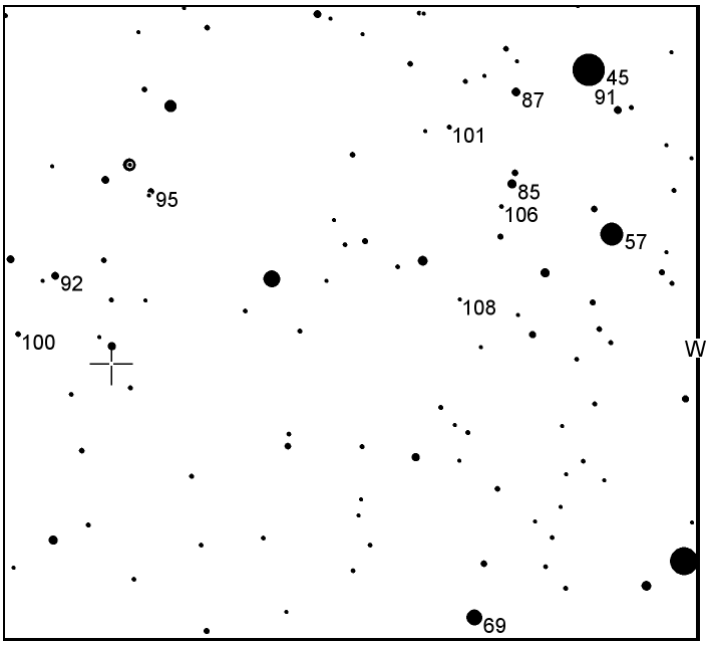
Binoculars ____X____

Telescope: 10-inch f/5 reflector Eyepiece: 6mm Tele Vue Radian

Mag: 208X Field Diam: 0.3 ° Filter (if any): _____

The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'll be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to Roger Ivester (rogerivester@me.com). To find out more about the Observer's Challenge or access past reports, log on to rogerivester.com/category/observers-challenge-reports.





Finder Charts for NGC 278: Above: www.freestarcharts.com; right: This chart was created with AAVSO's Variable Star Plotter (VSP). Field is 2 degrees on a side, with North up. Numbers indicate star magnitudes (decimals omitted). The magnitude 4.5 star at upper right is omicron (o) Cassiopeiae.

Jim Hendrickson wins 2nd place in Pawtucket Photo Contest

by Francine Jackson

Congratulations are due to Skyscraper member and newsletter editor Jim Hendrickson, who received second prize in the City of Pawtucket's annual photography contest. One of his hobbies, in addition to photography, is walking the seasonal National Park Ranger walks. At one of these, which met at the historic Slater Mill, Jim happened to capture the Moon as it passed within the building's cupola. What is considered the incredibly simplistic beauty of the Slater Mill, coupled with the natural beauty of our own satellite, makes this a picture that the judges deemed worthy of being one of the best of this year. Kudos to Jim! May you always keep your camera handy.

Monthly Presentation Videos on YouTube

With our monthly meetings going virtual this year, we have begun to record and publish, with permission, our monthly Zoom presentations on the Skyscrapers YouTube channel. Go to the URL below to view recent presentations.

https://www.youtube.com/channel/UCEZ5UnO-Sly0DXsSrUAxONg


AstroAssembly Astrophoto Gallery

▲Winner: Remote Image Processing

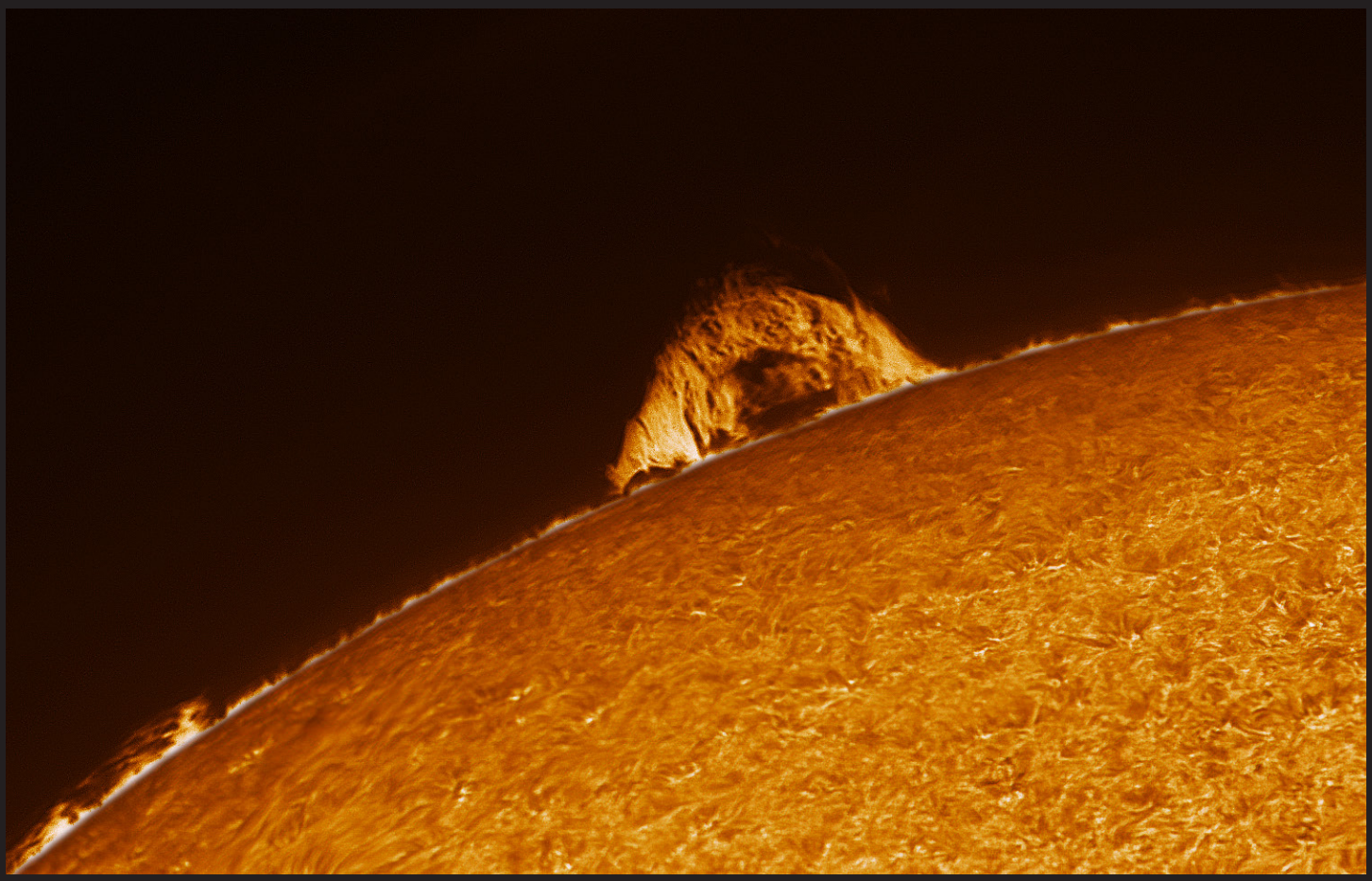
Rosette Nebula by Jeff Padell

Rosette Nebula Mar 3 2020 SLOOH Observatory 17" Planewave FLI PL16803 20 minute exposure 5 Lums 5 R 5 G 5 B stacked Processed in Nebulosity 4 and Star Tools

◀Winner: Deep Sky

Horsehead & Flame Nebulae by Lloyd Merrill

Horsehead and Flame Nebula 43 10-minute images taken Feb-Mar 2020 Sofware: Image capture software - MaximDL Image calibration and stacking - MaximDL Image post-processing - Pixinsight Equipment: Telescope - 152mm f/5.9 refractor Guide scope - Orion Short Tube 80 Mount - Losmandy Titan Cameras: Imaging; STF-8300C camera Guiding: Starlight Xpress Lodestar2



▲ Winner: Solar System

Solar Prominence by Jeff Padell

Aug 26 2020 Skywatcher ED120, Quark Chromosphere ZWO ASI174mm-cool 20 second exposures (2) 500 frames for Prom and 1000 frames for surface Astrostakkert, Registax, Photoshop

Winner: Landscape ▶

Crescent Moon & Venus by Bob Horton

Crescent Venus rises behind the Moon just after being occulted on June 19, 2020. Taken with 200mm f/4 Newtonian.

Summer Milky Way & Jupiter by Griffin Haisman. Integration is 3x2 minute subs. Gear used was a Skywatcher Star adventurer, stock nikon d700, and an 18mm, f/3.5 lens.

Centaurus A (NGC 5128, Caldwell 77) by Gregory T. Shanos. Date Taken: April 10, 2020 Equipment: Meade LX200GPS 8-inch ACF, Atik Horizon cooled one-shot-color, Optec f6.3 focal reducer Exposure Details: Live stack of seventy 12 second exposures bin 2x2 high gain totaling 14 minutes. 4 Megapixel image. Object was only 15 degrees above the horizon from Sarasota, Florida. Specific Processing: Minimal processing in Photoshop CS4 using Neil Carboni's Astronomy Tools.

Moon, Mars & Jupiter by Jim Hendrickson . March 18, 2020, Canon 40D on William Optics RedCat 51 250mm f/4.9. Io, Ganymede and Callisto are visible to the right of Jupiter. Europa is lost in the glar to Jupiter's upper left.

Comet F3 NEOWISE by Scott MacNeill. Date Take: July 15, 2020 Equipment: Canon Ra, 50mm (Nifty-Fifty), Orion Sirius EQ-G Exposure: 30 seconds * 30 Processing: I made several composites of this image after darks, flats, offset reduction. I composited every third image aligned on the comet, via sigma-clipping . I then composited the resulting three stacks, aligned on the comet. via median. This effectively removed all stars from the comet's tail. Lastly I composited the last 3 images, aligned to the stars, via median. I processed both resulting images separately, then combined the two in Photoshop.

Transit of Mercury by Richard Sanderson. Date: 11 November 2019 Telescope: 5-inch f/5 refractor, stopped down to 2 inches Camera: Handheld iPad Air Note: The sun was heavily filtered by clouds, with even thicker clouds moving in from the left. At no time did anybody look through an unfiltered telescope.

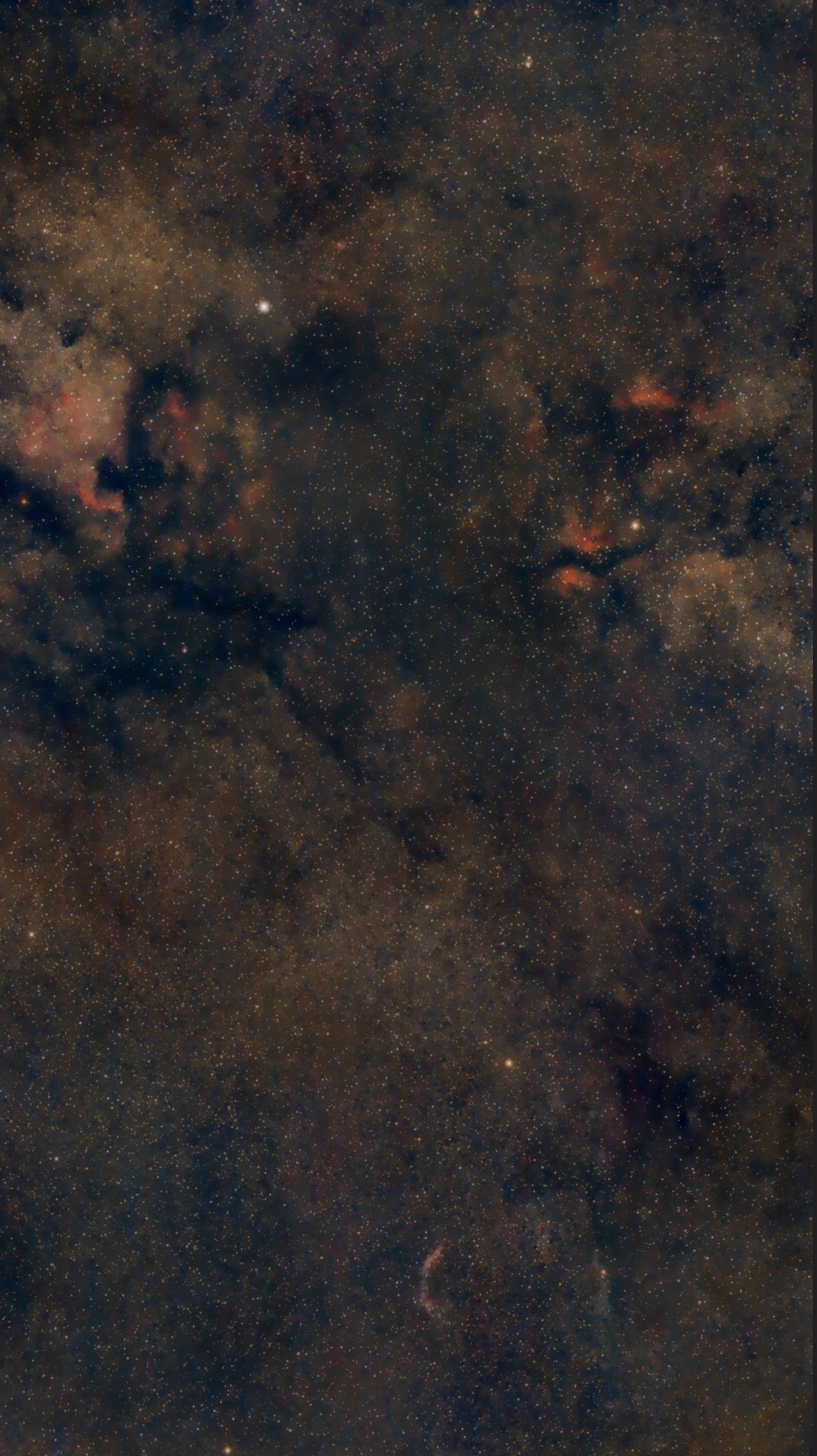
The Clouds of Venus in the Ultraviolet by Gregory T. Shanos. Date Taken: September 11, 2020 10h 52m UT Equipment: Meade LX200GPS 10-inch f/10 2500mm fl ZWO ASI 290 monochrome camera with Orion UV filter (320-380 nm) Exposure Details: One-minute video exposure 9.9ms gain 385. Planet was mag -4.2 phase: 64.3% diameter 17.9″ Central Meridian 180.2° Ideal observing conditions with Venus high in the morning sky. Specific Processing: Autostakkert 3.0.1.4 using drizzle 1.5x, Registax 6.1 AstraImage 5.5.8.0 Photoshop CS4 Stack of 3000 images.

Crescent moon, Mercury (right of center), Venus (lower right) by Richard Sanderson. Date: 24 May 2020 Equipment: Canon EOS, Canon zoom lens set at 135mm, ISO 400, 2.5 sec., f/5.6

Andromeda Galaxy by Jeff Padell. Nov 27 2019 Orion ST80 and Canon 80D DSLR Skywatcher EQ6-R mount 60 minute exposure BackyardEOS, Photoshop, Lightroom

Comet NEOWISE by Ronald Zincone.

Comet Neowise by Laura Landen. Date: Taken July 18, 2020 Nikon D850 70-200mm lens with 1.4 teleconverter 3 sec. at f/5.6, ISO 10,000 Noise reduction and basic processing in Lightroom



Cygnus Central Region by Griffin Haisman. 20 hours of data collected in 2 minute subs at iso 400, over 8 nights spread out over the course of two months starting in late July. Equipment used: Mount was a SkyWatcher Star Adventurer, The camera was a stock nikon d700, the lens was an 80mm, f/4.5 lens. No filter. Shot from bortle 8 skies. Processed in Pixinsight.

Milky Way at Beavertail by Ronald Zincone. Taken Sept. 12, 2020 Olympus E-M1 mark iii Laowa 7.5mm lens 10 sec. at f/2.0, ISO 3200 Perspective correction and basic processing in Lightroom

Milky Way Galactic Nucleus by Scott MacNeill. Date Take: July 13, 2020 Equipment: Canon Ra, Tokina 11-16mm at 16mm, Orion Sirius EQ-G Exposure: 180 seconds * 20 for starscape, 60 seconds * 5 for landscape Processing: I captured the starscape with clock drive enabled. I disabled the clock drive to capture the landscape. The starfield is a sigma-clipping composite, with darks, flats, and offset reduction. The landscape is a median composite. The starscape and landscapes were processed separately and combined in photoshop.

Directions to Seagrave Memorial Observatory

www.theSkyscrapers.org

From the Providence area:
Take Rt. 6 West to Interstate 295 in Johnston and proceed west on Rt. 6 to Scituate. In Scituate bear right off Rt. 6 onto Rt. 101. Turn right onto Rt. 116 North. Peeptoad Road is the first left off Rt. 116.

From Coventry/West Warwick area:
Take Rt. 116 North. Peeptoad Road is the first left after crossing Rt. 101.

From Southern Rhode Island:
Take Interstate 95 North. Exit onto Interstate 295 North in Warwick (left exit.) Exit to Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.

From Northern Rhode Island:
Take Rt. 116 South. Follow Rt. 116 thru Greenville. Turn left at Knight's Farm intersection (Rt. 116 turns left) and follow Rt. 116. Watch for Peeptoad Road on the right.

From Connecticut:
• Take Rt. 44 East to Greenville and turn right on Rt. 116 South. Turn left at Knight's Farm intersection (Rt. 116 turn left) and follow Rt. 116. Watch for Peeptoad Road on the right.
• or • Take Rt. 6 East toward Rhode Island; bear left on Rt. 101 East and continue to intersection with Rt. 116. Turn left; Peeptoad Road is the first left off Rt. 116.

From Massachusetts:
Take Interstate 295 South (off Interstate 95 in Attleboro). Exit onto Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.

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