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

In This Issue:

Cosmic Explosions: From Supernovae to Tidal Disruption Events

A presentation by Dr. Yvette Cendes Saturday, November 6, 7:00pm EDT at Seagrave Observatory

The biggest explosions in the universe dwarf any we see on Earth. In space, we regularly witness exploding stars that can shine brighter than the rest of a galaxy as a supernova, or a black hole ripping apart a star that's visible from billions of light years away in what's called a Tidal Disruption Event (TDE). In this talk, astrophysicist Yvette Cendes will discuss how we observe cosmic explosions from Earth and learn about them, from Chinese records thousands of years ago to her modern-day observations as a radio astronomer. This will include Yvette's research on supernovae, such as the closest one ever observed to Earth -- Supernova 1987A -- and outflows from TDEs that "spaghettify" stars that wander too close to black holes.

Dr. Yvette Cendes is a postdoctoral fellow at the Center for Astrophysics | Harvard & Smithsonian, where she specializes in transient radio astronomy. Yvette has written for several publications, including Astronomy, Discover and Scientific American, and is currently the astronomy consultant for Guinness World Records. Additionally, Yvette is known by many as /u/Andromeda321 on Reddit, where her "astronomer here!" comments are read by millions around the world.

Postponed due to weather, Seagrave Observatory will be open for Observe the Moon Night on Saturday, November 13 at 7pm.

President's Thoughts

by Steve Siok

We, as Skyscrapers, need to share our interest, experiences and knowledge of Astronomy with everyone we meet. This is the best way we can grow our society, to bring in more people of all levels of understanding. I had a visitor today who wanted me to help him understand his telescope, because he was having trouble using it. But he did not bring the scope with him. And so we talked. "Tell me about your telescope". He explained it was on a tripod. OK. "How do you observe". I look in the side. So was that a reflector or a refractor with a 90 degree prism. He was not sure but he said he wanted to get "one of those barrel telescopes" in the future. The problem he reported was that when he "tightened the screws" the scope shifted and the moon was no longer visible.

So to all of you, put yourselves in the position of helping the most fundamental novice and determine how you can help the person use their scope and how you can bring them into the more inclusive experiences of finding objects and becoming an amateur astronomer. My experience with this person was to learn they were very interested in learning about the sky but could not get beyond the fundamentals of scope use, let alone finding objects. This is a very important purpose we must serve. So all of you join us at events and help us, as a society, to assist the uninitiated and grow their passion for Astronomy.

Autumn day at Seagrave Observatory by Jeff Padell

AstroAssembly Presentations on YouTube

With our monthly meetings going virtual, 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/c/SeagraveObservatorySkyscrapersInc

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.

Skylights: November 2021

by Jim Hendrickson

The annual switch back to standard time occurs on Sunday, the 7th, shifting an hour of daylight back to the morning hours. This favors evening observing hours, as we can now begin an hour earlier than during daylight time. Note that times given in Coordinated Universal Time (UTC) are now five hours ahead of Eastern Standard Time. The daylight shift puts November's evening sky on display an hour earlier, and with it, some notable seasonal transitions.

While the sounds and smells of summer may have long passed, the sky above is reminding us of those warm, hazy nights. The three stars of the Summer Triangle, Vega, Deneb, and Altair remain prominently in view for a few hours after sunset. And if you start observing during twilight, and have a clear northwestern horizon, you may even see our beacon star of spring, Arcturus, making its final farewell during the first half of November. A fun challenge would be to see how late into November you can still see it above the horizon in the evening.

A little later on, say, around 7:30pm local time, look to the north for the Big Dipper. It now sits low on the horizon, and the two pointer stars, Merak and Dubhe, both reach their lower culmination around this time. These are the two stars that guide us to north all night and all year long, but they also point us to other notable places in the sky. Using the pointers, draw the usual line to Polaris, the North Star, and continue going along this line. When you're looking directly overhead at the zenith, turn around and face south. From the zenith, continue the line downward as it crosses Markab and Scheat, the western edge of the Great Square of Pegasus. Scheat, the northernmost star, is a class M2.5 giant about 200 light years from us, and appears distinctly orange through binoculars or a telescope. Markab is a class B9 dwarf about 140 light years away.

Now, continue the line southward. Keep going until you're just about 20° above the horizon. You will finally arrive at **Fomalhaut**, a class A3 star about 25 light years away. Fomalhaut sits alone in this region of sky, the southernmost of all first magnitude stars visible from our latitude, and defines the autumn evening sky. Due to its southerly declination, it is only above the horizon for a few hours, and once it begins to leave our sky, the winter constellations will be well on their way in.

The line we just defined, from Merak and Dubhe, through Polaris, the Great Square, and Fomalhaut, roughly defines the meridian marking the 23rd hour of right ascension. The next time you're looking at the pointer stars, you can now also note the location of the Great Square, as well as Fomalhaut, even when they are below the horizon.

We often point out where objects in the night sky are with respect to our familiar stars and patterns, but don't often think about where the **Sun** is located, since when the Sun is visible, nothing else (except the Moon) is, but if you're curious, the Sun passes **Zubenelgenubi** in Libra on the 7th. Also, beginning on November 29th, and extending through December 17, the Sun traverses Ophiuchus.

The **Moon** is new early on the 5th, and on the 7th, the waxing crescent appears near Venus, which is still close to its greatest elongation from the Sun. Look for the waxing crescent Moon near Saturn on the 10th, and again near Jupiter on the 11th, when it will be just past its first quarter phase. Two nights later, on the 13th, the waxing gibbous Moon points the way to Neptune. If you haven't seen Neptune yet, let the Moon be your guide, as it will be just 4° southeast of our outermost planet. The brightness of the Moon will make it a bit challenging to locate 8th magnitude Neptune, but a small telescope with about 20x magnification will help.

The highlight of the month is a **near total lunar eclipse** that occurs during the full Beaver Moon on the morning of the 19th. The Moon passes through Earth's shadow from 1:02am to 7:03am EST, with maximum eclipse occurring at 4:03am. The Moon will be located 6° from the **Pleiades** in Taurus, high in the west at the time of maximum eclipse. No special equipment is needed to view the lunar eclipse, but binoculars or a small, wide-field telescope enhances the view. See Francine Jackson's article to learn more about lunar eclipses.

As the Moon goes through its waning phases, watch it pass some notable sights. On the morning after the eclipse, the 20th, the Moon passes near the **Hyades** cluster in Taurus. Early in the morning of the 22nd, the waning gibbous Moon passes just a little over 1° from the open star cluster M35 in Gemini. At about 2:00am on the 24th, the waning gibbous Moon aligns with **Pollux** and **Castor** in Gemini, and the next night it passes 2.5° from **M44**, the Beehive Cluster, in Cancer. A little before 11:00pm on the 26th, the last quarter Moon rises 4.5° to the left of **Regulus** in Leo.

Mercury remains in a favorable viewing position through the first week of November. On the morning of the 3rd, watch for the waxing crescent Moon just 4° above Mercury, and the bright star Spica, in Virgo, 4.5° to Mercury's right. Mercury passes superior conjunction on the 29th.

Venus continues to meander eastward near the most southerly region of the ecliptic plane through Sagittarius, discernibly closing its distance to Saturn.

Mars returns to the morning sky in November, and if you're watching Mercury, you'll see the 2 planets draw close to each other. Mars is 2.25° below Mercury on the 8th, and by the 11th, the two planets trade places, with Mars becoming higher as Mercury moves back towards the horizon.

Dwarf planet **Ceres**, moving retrograde through the **Hyades** cluster in Taurus, is within a degree of **Aldebaran** for the first half of November. The magnitude difference between Aldebaran and the dwarf planet may require a bit more than binoculars to see easily. A small telescope with a magnification of about 25x should be adequate. As the distance between Ceres and Aldebaran

Events in November

2	Mercury & Spica (4.1°)
3	Moon & Mercury (3.6°)
4	**New Moon**
4	Moon & Mars (4.0°)
4	Uranus Opposition
7	Moon & Venus (4.1°)
10	Mercury & Mars (1.0°)
10	Moon & Saturn (5.7°)
11	**First Quarter Moon**
11	Moon & Jupiter (4.9°)
13	Moon & Neptune (4.3°)
16	Venus & Antares (1.4°)
17	Moon & Uranus (1.5°)
19	Venus & Nunki (0.2°)
19	**Full Beaver Moon & Partial Eclipse**
22	Mars & Zubenelgenubi (0.1°)
24	Moon & M44 (2.7°)
26	1 Ceres Opposition (mag. 7.0)
27	**Last Quarter Moon**

Times in EDT (UTC-4) through Nov. 6 & EST (UTC-5) from Nov. 7. Ephemeris times are for Seagrave Observatory (41.845N, 71.590W) widens, binoculars will be sufficient, but wait until the last week of the month, when the Moon will be out of the way.

Jupiter and **Saturn**, both moving prograde through Capricornus, are best seen early in the evening, when they are still relatively high in the south. Jupiter reaches eastern quadrature (90 elongation from the Sun) on the 16th, and by the end of November, both gas giants will have left our sky by about 10:00pm.

Uranus reaches opposition on the 4th. At a distance of 18.74 AU, it is now at its closest and brightest that it will be all year. When the bright Moon doesn't interfere,-head to a dark site and see if you can spot its distant glow without any optical aid, or just use your binoculars to locate it between Aries and Cetus. A chart to locate Uranus can be found in the October issue.

Both **Neptune** and asteroid **2 Pallas** are located in Aquarius, and are in good position for observing during early evenings, but as they both require binoculars to observe, it is best to observe them on nights without bright moonlight.

And finally, there are two notable **meteor showers** occurring in November. The first, which offers a substantially long window to observe them, is the Taurids, which is actually two showers, the Northern Taurids (peaks November 4-5) and Southern Taurids (peaks November 11-12). This low-rate shower whose meteors originate from Taurus, which is visible all night, lasts for several weeks. This makes observing the Taurids very forgiving to adverse weather conditions if you happen to miss the peak nights. The second is the annual Leonids, which peak on the night of the 16th-17th and originate near the sickle asterism in Leo. This part of the sky isn't visible until around 11:00pm, and this year, a bright gibbous Moon means less than ideal viewing conditions.

Star Party Update

by Jim Hendrickson

Wednesday, October 20, 2021
Winman Middle School
Warwick, RI

At the invitation of Cathy Hawthorne-Kocak from the Winman Middle School's STEAM lab, Skyscrapers participated in a night sky event at the Winman Middle School in Warwick for the second consecutive year (the first event was held in February 2020). The night sky program was part of their Lantern Night, which also included a night hike and other activity stations. The event was timed to coincide with the Full Hunter's Moon.

Present from Skyscrapers were Francine Jackson, Jim Hendrickson, Bob Janus, Mark Munkacsy, Ron Zincone and Heidi Morgan with telescopes ranging in size from Ron and Heidi's 60mm Tele Vue refractor to Mark's 6-inch home-built Dobsonian.

Before sunset, we set up on the practice field on the hill behind the school, which offered clear views to the west, southwest and southeast. Early weather conditions were favorable, with light cloud bands to the west, and a thicker bank to the east, which would partially obscure Moonrise.

There were about 200 in attendance, including middle-schoolers and their families, and were organized in groups that rotated through the different activities. This made the group size very manageable and the visitors were able to take their time.

Sky conditions did improve after sunset, and the entire south and southwestern sky were clear. A thin wisp of cloud in the west gave color to the twilight sky. Venus became visible early and we could clearly see its "quarter Moon" phase. Many viewers were surprised at how bright it was and some didn't realize they were looking at a planet until they looked at it through the telescopes. Jupiter and Saturn soon began poking through the deepening twilight. Two of Jupiter's moons, Ganymede and Europa, were clearly visible on opposite sides of the planet, and early in the evening, Callisto and Io passed in front of Jupiter's limb. Both Bob's and Mark's scopes were pointed at Saturn for much of the evening, which definitely attracted the most attention.

The Full Moon rose behind the cloud band to the east at 6:13pm, but its golden light could easily be seen through some gaps, until about 30 minutes later, when its full disk became visible.

Given the bright sky conditions, and that there were bright lights on the back of the school building, we were limited to viewing the bright objects, but Full Moon nights do make for memorable astronomy nights, and everyone enjoyed seeing three planets, many for the first time. The event concluded just after 8pm and there were discussions about participating again in 2022.

November's Near-Total Lunar Eclipse

By Francine Jackson

Although not as flashy as the much touted total solar eclipse, every so often we find ourselves able to observe another unique phenomenon: a total lunar eclipse. These, of course, differ from the solar eclipse in many ways:

First of all, for the most part, the observer doesn't have to make plans to travel wherever the eclipse decides to land on the Earth, as there is always a 50/50 chance to see it: If you can see the Moon, the eclipse is available for you;

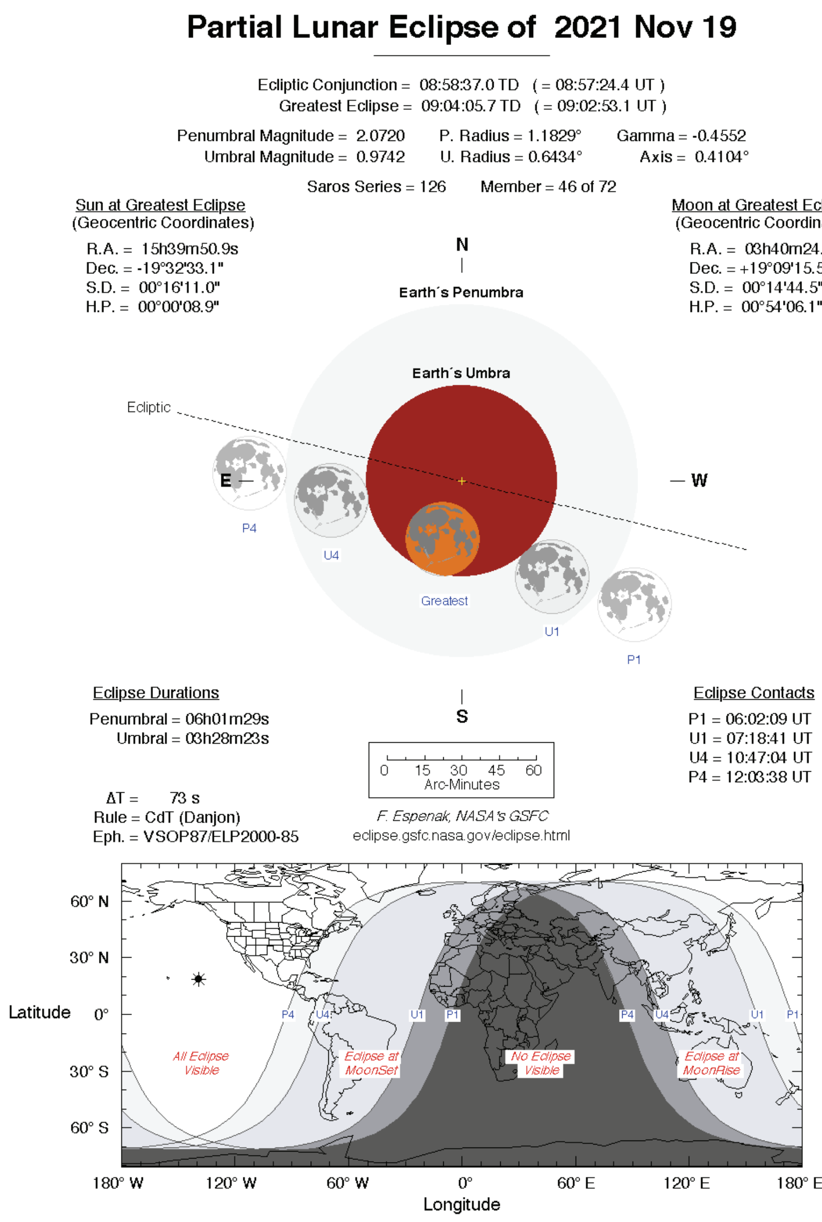
A total solar eclipse can only be observed by a person within the "path of totality," where the Moon's shadow strikes the Earth. With a lunar eclipse, the Moon is passing through the Earth's shadow, which is larger than the Moon's, allowing many more people to watch it;

As the Moon is necessary to be near the Sun - in the same direction in the sky - to cause a solar eclipse, the Moon is in its New phase, resulting in its occurring during daylight; Lunar eclipses, because they happen during a full Moon, which is on the opposite side of the sky as the Sun, take place at night;

As the Full Moon's light is reflective sunlight, it can be seen by just about anyone without causing observing problems. No protective eye protection is necessary;

Finally, lunar eclipses last longer. While the longest ever total solar eclipse lasts just about seven minutes, the normal total lunar eclipse can be observed, on average, close to an hour.

We're fortunate to be having an almost total lunar eclipse occur this month, on November 19, as about 97% of the Moon will pass within the Earth's shadow. As there will be just a tiny sliver of Moon still directly lit by sunlight, for us it will appear almost totally eclipsed. Unfortunately, it is occurring in the middle of the night for us here; however, we can be sure there will be dedicated observers willing to watch it in its entirety.



The Sun, Moon & Planets in November

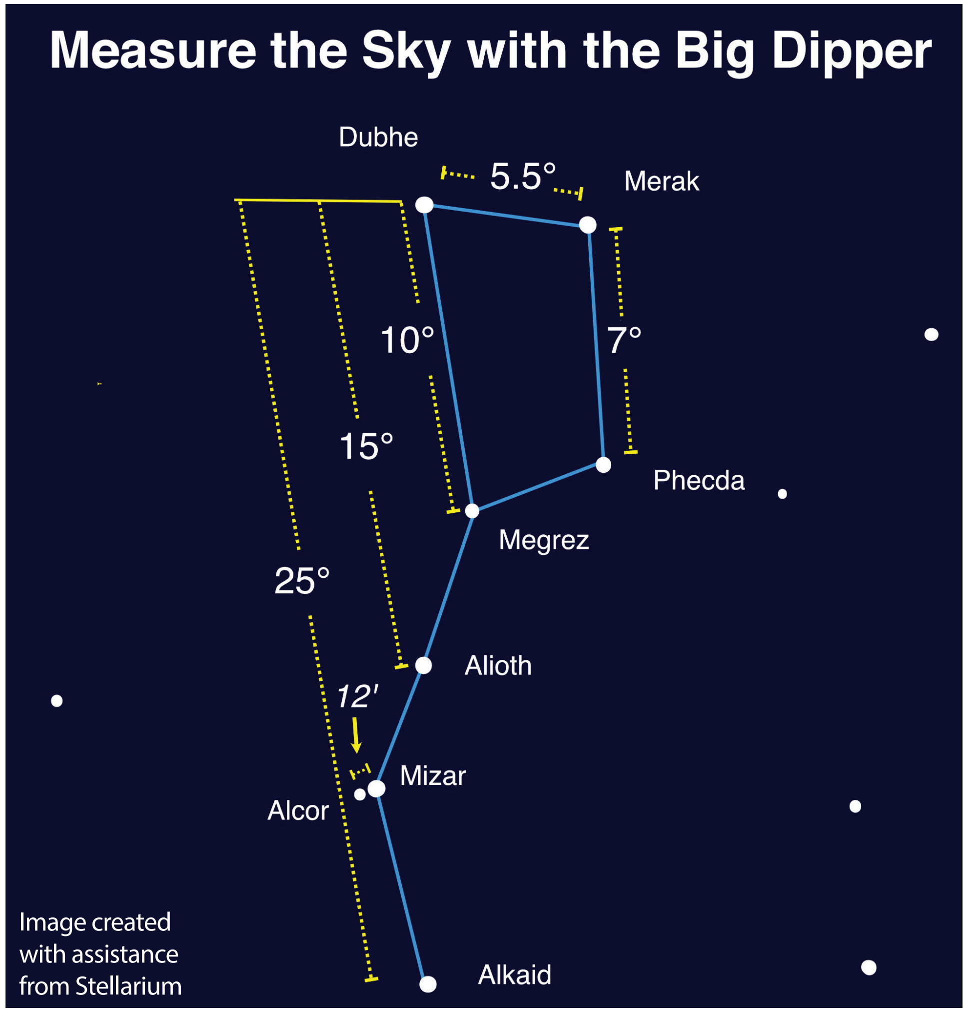
This table contains the ephemeris of the objects in the Solar System for each Saturday night in November 2021. Times in Eastern Daylight Time (UTC-4) through November 6, and Eastern Standard Time (UTC-5) from November 7. Ephemeris times are for Seagrave Observatory (41.845N, 71.590W).

Object	Date	RA	Dec	Const	Mag	Size	Elong	Phase(%)	Dist(S)	Dist(E)	Rise	Transit	Set
Sun	**6**	14 45.3	-15 58.7	Lib	-26.8	1935.9	-	-	-	0.99	07:24	12:29	17:34
	13	15 13.5	-17 57.6	Lib	-26.8	1939.3	-	-	-	0.99	06:33	11:30	16:27
	20	15 42.4	-19 41.2	Lib	-26.8	1942.3	-	-	-	0.99	06:41	11:32	16:21
	27	16 12.0	-21 07.3	Sco	-26.8	1944.9	-	-	-	0.99	06:49	11:34	16:17
Moon	**6**	15 46.0	-20 25.7	Lib	-8.5	1989.2	16° E	2	-	-	09:33	14:18	18:57
	13	22 49.8	-13 54.2	Aqr	-12.2	1874.7	108° E	65	-	-	14:14	19:51	01:38
	20	4 13.4	20 50.4	Tau	-12.5	1780.1	173° W	100	-	-	17:09	00:57	08:53
	27	10 12.7	16 03.4	Leo	-12.0	1820.6	96° W	55	-	-	22:40	05:54	12:55
Mercury	**6**	13 54.5	-9 51.1	Vir	-0.8	5.4	14° W	89	0.37	1.25	06:13	11:40	17:06
	13	14 37.1	-14 12.3	Lib	-0.8	5.0	10° W	96	0.41	1.36	05:45	10:55	16:04
	20	15 21.1	-18 08.1	Lib	-0.8	4.8	5° W	99	0.44	1.42	06:17	11:12	16:05
	27	16 06.4	-21 22.2	Sco	-0.8	4.7	1° W	100	0.46	1.45	06:49	11:30	16:10
Venus	**6**	18 02.3	-27 14.6	Sgr	-4.3	27.6	47° E	46	0.73	0.61	11:33	15:47	20:01
	13	18 31.1	-27 03.4	Sgr	-4.4	30.2	46° E	41	0.73	0.56	10:33	14:48	19:03
	20	18 57.2	-26 26.7	Sgr	-4.4	33.3	45° E	37	0.72	0.51	10:28	14:46	19:04
	27	19 19.7	-25 28.5	Sgr	-4.5	36.9	43° E	32	0.72	0.46	10:17	14:40	19:03
Mars	**6**	14 08.8	-12 33.8	Vir	1.7	3.6	9° W	100	1.60	2.57	06:36	11:52	17:08
	13	14 27.1	-14 10.5	Lib	1.7	3.7	12° W	100	1.60	2.55	05:33	10:43	15:53
	20	14 45.8	-15 42.4	Lib	1.6	3.7	14° W	99	1.59	2.53	05:30	10:34	15:38
	27	15 04.9	-17 08.8	Lib	1.6	3.7	16° W	99	1.58	2.50	05:27	10:25	15:24
1 Ceres	**6**	4 38.2	16 41.0	Tau	7.5	0.7	153° W	99	2.76	1.84	19:12	01:16	08:21
	13	4 32.6	16 47.0	Tau	7.3	0.7	161° W	100	2.75	1.80	17:39	00:43	07:48
	20	4 26.2	16 53.5	Tau	7.2	0.7	169° W	100	2.75	1.77	17:04	00:09	07:14
	27	4 19.2	17 00.8	Tau	7.0	0.7	176° W	100	2.74	1.76	16:29	23:35	06:40
Jupiter	**6**	21 42.5	-14 55.2	Cap	-2.3	41.4	99° E	99	5.01	4.75	14:16	19:23	00:30
	13	21 44.5	-14 44.2	Cap	-2.3	40.5	93° E	99	5.00	4.86	12:50	17:58	23:06
	20	21 47.0	-14 30.3	Cap	-2.2	39.6	86° E	99	5.00	4.97	12:24	17:33	22:42
	27	21 50.1	-14 13.5	Cap	-2.2	38.7	80° E	99	5.00	5.08	11:58	17:08	22:18
Saturn	**6**	20 40.3	-19 12.0	Cap	0.6	16.6	84° E	100	9.93	9.99	13:31	18:21	23:11
	13	20 41.6	-19 06.8	Cap	0.7	16.4	77° E	100	9.93	10.11	12:04	16:55	21:45
	20	20 43.3	-19 00.3	Cap	0.7	16.2	70° E	100	9.93	10.22	11:38	16:29	21:20
	27	20 45.3	-18 52.8	Cap	0.7	16.0	64° E	100	9.93	10.32	11:12	16:03	20:55
Uranus	**6**	2 41.7	15 15.5	Ari	5.7	3.8	179° E	100	19.73	18.74	17:22	00:21	06:20
	13	2 40.6	15 10.3	Ari	5.7	3.8	172° E	100	19.73	18.75	15:54	22:52	05:51
	20	2 39.5	15 05.3	Ari	5.7	3.8	164° E	100	19.73	18.78	15:26	22:24	05:22
	27	2 38.4	15 00.5	Ari	5.7	3.7	157° E	100	19.73	18.82	14:58	21:55	04:53
Neptune	**6**	23 27.2	-4 48.0	Aqr	7.8	2.3	127° E	100	29.92	29.32	15:22	21:07	01:52
	13	23 26.9	-4 49.8	Aqr	7.8	2.3	120° E	100	29.92	29.42	13:55	19:39	01:24
	20	23 26.7	-4 51.0	Aqr	7.9	2.3	113° E	100	29.92	29.53	13:27	19:12	00:56
	27	23 26.6	-4 51.6	Aqr	7.9	2.3	105° E	100	29.92	29.64	12:59	18:44	00:29
Pluto	**6**	19 47.1	-22 51.8	Sgr	14.4	0.2	71° E	100	34.40	34.71	12:54	17:28	22:02
	13	19 47.6	-22 50.8	Sgr	14.4	0.2	64° E	100	34.40	34.83	11:27	16:01	20:35
	20	19 48.2	-22 49.7	Sgr	14.4	0.2	57° E	100	34.41	34.94	11:00	15:34	20:08
	27	19 48.8	-22 48.3	Sgr	14.4	0.2	50° E	100	34.41	35.04	10:33	15:07	19:41

NASA Night Sky Notes:

Measure the Night Sky

By David Prosper



Fall and winter months bring longer nights, and with these earlier evenings, even the youngest astronomers can get stargazing. One of the handiest things you can teach a new astronomer is how to measure the sky – and if you haven't yet learned yourself, it's easier than you think!

Astronomers measure the sky using degrees, minutes, and seconds as units. These may sound more like terms for measuring time - and that's a good catch! – but today we are focused on measuring angular distance. Degrees are largest, and are each made up of 60 minutes, and each minute is made up of 60 seconds. To start, go outside and imagine yourself in the center of a massive sphere, with yourself at the center, extending out to the stars: appropriately enough, this is called the celestial sphere. A circle contains 360 degrees, so if you have a good view of the horizon all around you, you can slowly spin around exactly once to see what 360 degrees looks like, since you are in effect drawing a circle from inside out, with yourself at the center! Now break up that circle into quarters, starting from due North; each quarter measures 90 degrees, equal to the distance between each cardinal direction! It measures 90 degrees between due North and due East, and a full 180 degrees along the horizon between due North and due South. Now, switch from a horizontal circle to a vertical one, extending above and below your head. Look straight above your head: this point is called the zenith, the highest point in the sky. Now look down toward the horizon; it measures 90 degrees from the zenith to the horizon. You now have some basic measurements for your sky.

Use a combination of your fingers held at arm's length, along with notable objects in the night sky, to make smaller measurements. A full Moon measures about half a degree in width - or 1/2 of your pinky finger, since each pinky measures 1 degree. The three stars of Orion's Belt create a line about 3 degrees long. The famed "Dig Dipper" asterism is a great reference for Northern Hemisphere observers, since it's circumpolar and visible all night for many. The Dipper's "Pointer Stars," Dubhe and Merak, have 5.5 degrees between them - roughly three middle fingers wide. The entire asterism stretches 25 degrees from Dubhe to Alkaid - roughly the space between your outstretched thumb and pinky. On the other end of the scale, can you split Mizar and Alcor? They are separated by 12 arc minutes - about 1/5 the width of your pinky.

Keep practicing to build advanced star-hopping skills. How far away is Polaris from the pointer stars of the Big Dipper? Between Spica and Arcturus? Missions like Gaia and Hipparcos measure tiny differences in the angular distance between stars, at an extremely fine level. Precise measurement of the heavens is known as astrometry. Discover more about how we measure the universe, and the missions that do so, at nasa.gov.

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!

Astronomical League Award Programs

by Jeff Padell

I have completed and submitted for certification another Astronomical League award program, the Planetary Nebula Award. In order to receive this award you have to view or image 90 of 110 Planetary Nebulae. I have been working on the imaging award using the Slooh remote telescopes, the scopes at Seagrave and my own scopes. In addition to the images, which I stored for review at solarhead.shutterfly.com/astroleagueplanetarynebulas, you have to fill out a log sheet, I used Excel, with certain information about each image or observation. Some of the nebulae are well known such as the Ring or the Blue Snowball but many are hard to find and identify. I have learned a lot about planetaries during this work.

Now that I have completed this award I am beginning to work on two awards that are related to each other. The Local Galaxy Groups and Neighborhood, and the Galaxy Groups and Clusters. They don't overlap, the Local Galaxy groups are those related to us and the Milky Way/M31/M33 and those much further out into space the Galaxy Groups. These two are going to take some time maybe a couple years to complete. The Local groups need 88 groups imaged and the Galaxy Groups need to image 120 our of 250 groups.

The AL has programs for all levels of interest and all skill levels and ages. They range from the very easy to really difficult. as a reminder they have programs for everyone, you don't even need binoculars or a telescope for some of them.

If you are not a member of the AL feel free to contact me for information and I will be happy to assist you. You can find info about the AL at www.astroleague.org/ and a list of all available programs is at www.astroleague.org/al/obsclubs/AlphabeticObservingClubs.html

NGC 6894 is a Planetary Nebula in the Cygnus constellation. NGC 6894 is situated north of the celestial equator and, as such, it is more easily visible from the northern hemisphere. Taken with the SLOOH 17" Planewave in the Canary Islands. it is a 20 minutes exposure 4 Lums at 50 secs, 4 R,G,B each at 25 seconds, processed in Pixinsight and Photoshop and Lightroom

Planetary Nebula in Andromeda: NGC 7662

by Glenn Chaple for LVAS

(Magnitude 8.3, Size 37")

Last month's Observer's Challenge focused on NGC 6857, an emission nebula that astronomers once mistook for a planetary nebula. Our November Observer's Challenge, NGC 7662 in Andromeda, is a bona fide planetary nebula. It was discovered by William Herschel on October 6, 1784, one month after he found NGC 6857. At a magnitude of 8.3, NGC 7662 is a full 3 magnitudes brighter than NGC 6857. It's one of the brightest of all deep sky objects in its class, easily seen in a small scope. So what is its challenge?

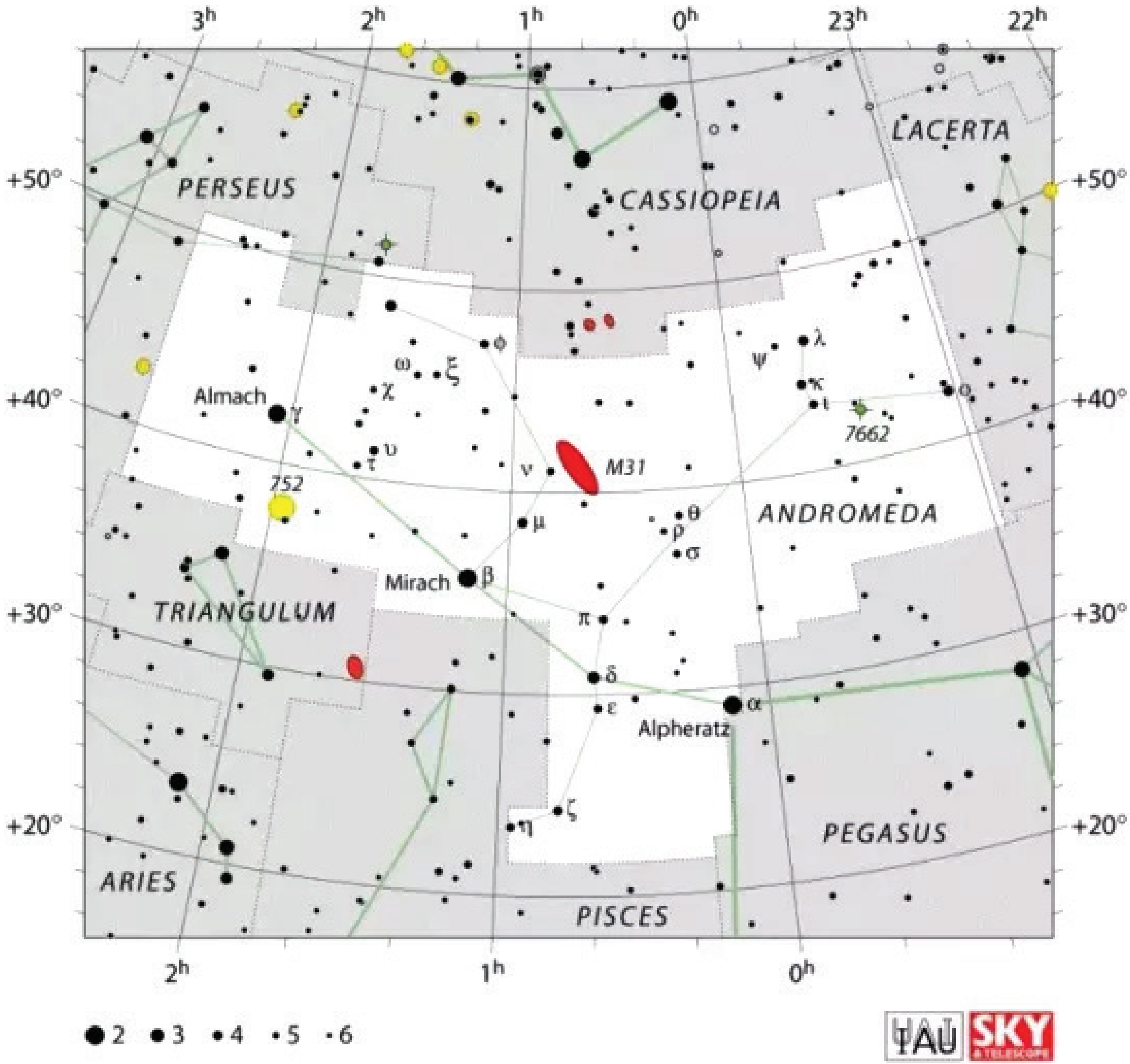
If you're a novice backyard astronomer, even the brightest and easiest planetary nebula can test your developing observing skills. These objects are small and will appear stellar at low magnifications. Begin your NGC 7662 quest at "Frederick's Glory," a Y-shaped asterism in the northwest part of Andromeda (refer to Finder Chart A). Using a low-power eyepiece and Finder Chart B, start at iota (ι) Andromeda, the 4.3-magnitude star on the chart. From there, move 2 degrees westward until the 6th magnitude star 13 Andromedae (the unlabeled star one-half degree northeast of NGC 7662) enters the field. Switch to a medium-power eyepiece (60X works fine) and sweep the area around 13 Andromeda until NGC 7662 comes into view as a small out-of-focus star. Center it in the field of view and switch to the highest magnification your telescope aperture and seeing conditions allow. Owners of GoTo scopes can "cheat" by punching in the celestial coordinates Right ascension 23h 25m 54s, Declination 42° 32' 6" and slewing straight to the target.

Here's a fact about NGC 7662 that I haven't mentioned. It's noted for its blue color, hence the popular nick-name, the "Blue Snowball." I was unable to detect any color at all when viewing NGC 7662 with a 60mm (2.4-inch) refractor, but the color was vivid when I viewed it with an 18-inch Dob. What is the smallest aperture that will bring the "Blue Snowball" to light? For that matter, what is the smallest aperture that reveals its 13th magnitude central star?

Challenge yourself by looking for NGC 7662 with binoculars. Using Finder Chart B as a guide, you should come across an 8th magnitude "star" in the position indicated on the chart. Reasonably dark skies will be a must if you're working with standard 7X30s or (better yet) 7X50s.

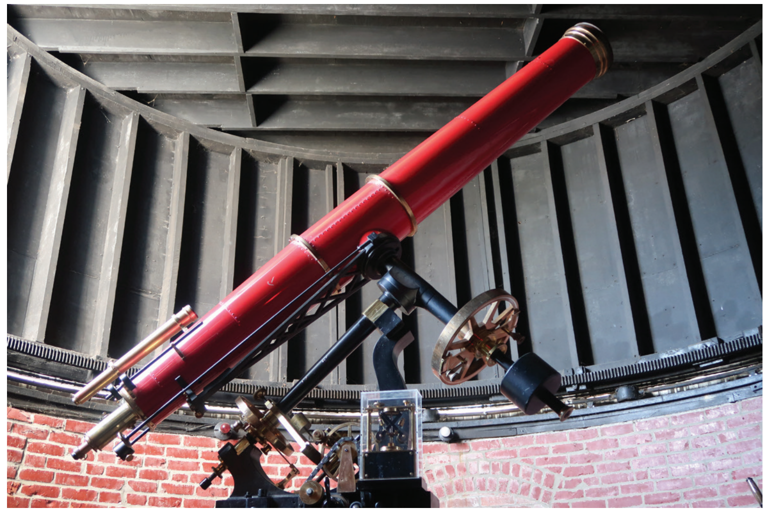
As is the case with many planetary nebulae, the distance to NGC 7662 is uncertain at best. Calculations fall between 1800 and 5600 light light years. I'll settle on a figure of 2500 light years, given by NASA and the Universe Guide website (universeguide.com). The latter source includes an interesting table that shows the time needed to arrive at NGC 7662 by various means of travel. Light speed gets you there in 2500 years. The New Horizons Probe, which took 15 years to reach Pluto would require 51 million years. A Mach 2 jet airliner would reach its destination in a little over 1 billion years, while a speeding (120 mph) car would require nearly 14 billion years, not counting a lot of stops for gas!. Want to take a stroll to the Blue Snowball? If you leg it out at a 15-minute-per-mile pace, plan on around 420 billion years! I don't know about you, but I'm sticking to my backyard and a telescope.

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-complete.

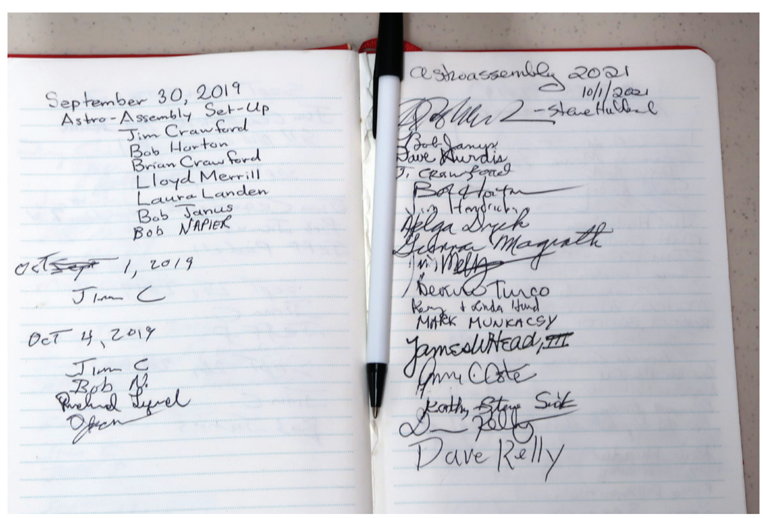


Memorial Garden Dedication

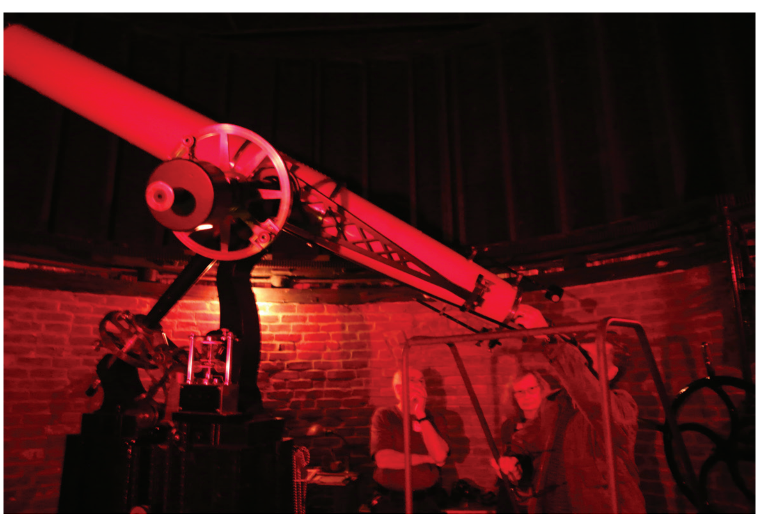
Daytime Activities



Presentations



Observing



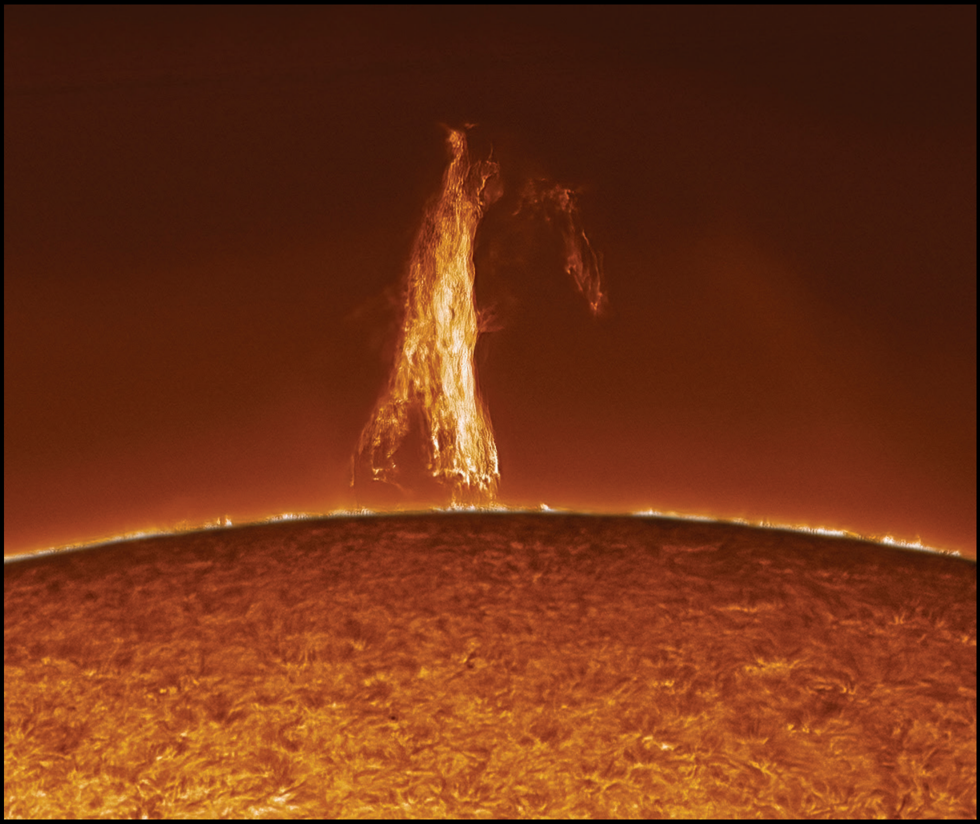
AstroAssembly Astrophoto Contest

The 2021 AstroAssembly astrophoto contest had a total of eight entries in three categories. Attendees selected their favorites from an online survey and there were total 16 responses. Congratulations to Joe Zajac for taking 1st Place in all three categories, a Triple Crown.

Landscape: 1st Place
Solar Eclipse at Sunrise
Taken June 10, 2021 from Harvard, MA | Canon EOS 5D MKII Camera | Canon 70-200mm f/2.8 lens at 200mm and f/5.6 | Paper/mylar solar eclipse eyeglasses cut and used on camera lens as a filter | 4 second exposure | ISO-800 | Cropped in Photoshop | Denoise Topaz AI | by Joe Zajac

Solar System: 1st Place
From top left. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto

Taken Multiple Nights 2021 from Harvard, MA | Celestron C11 Schmidt Cassegrain Telescope | Celestron CGEM Equatorial Mount | Cameras: ZWO ASI 224MC (Jupiter and Saturn) and Mallincam DS287 (all other planets) | 2X Barlow Lens | Effective Focal Ratio f/20 (5588mm) | ZWO Atmospheric Dispersion Corrector used on Jupiter and Saturn | Ultraviolet pass filter used on Venus to reveal clouds | 2-4 Minute AVI video files at 60-100 FPS processed with Autostakkert! 3 and Registax 6 | Additional de-rotation of planetary images for Mars, Jupiter and Saturn with WinJupos | Adobe Photoshop Elements used to create montage. | by Joe Zajac



Solar System: 2nd Place
Solar Prominence

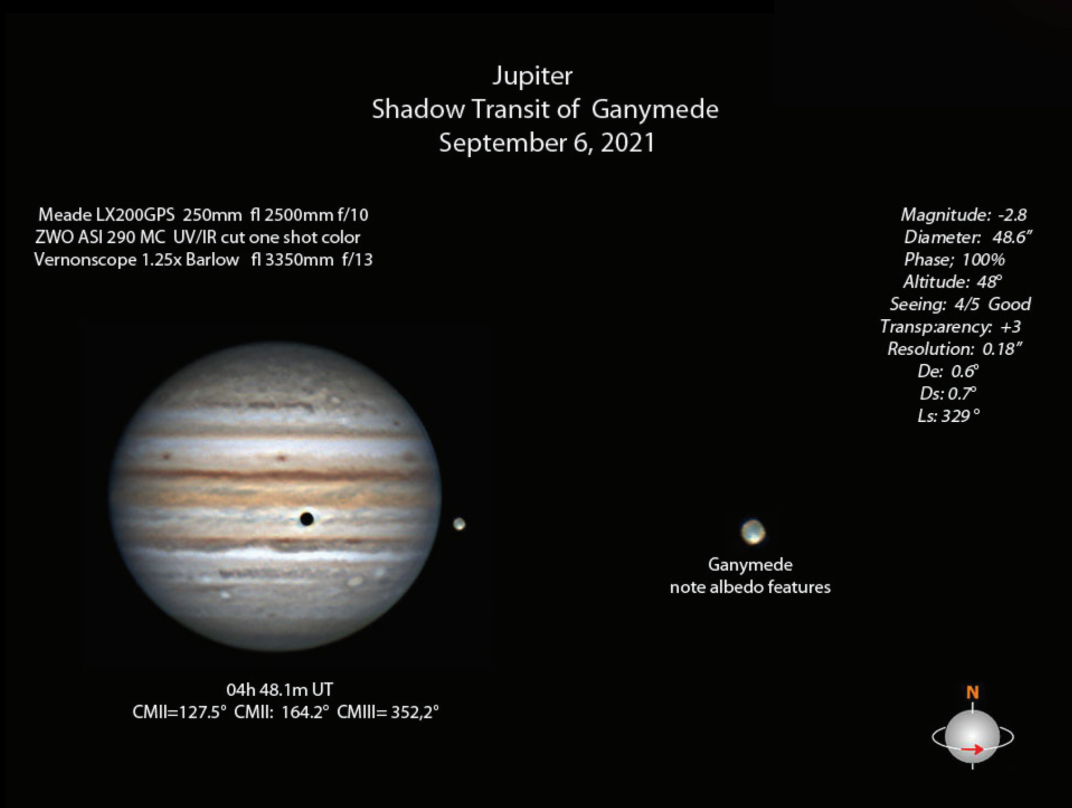
Taken with Lunt 102ED achromat, Quark Chromosphere, ZWO ASI174mm camera | 500 frames of the prom and 1000 frames of the surface, 50 of each stacked and then combined and colored in Photoshop | taken July 9 2021 | by Jeff Padell

Solar System: 3st Place Conjunction of Saturn & Jupiter with Galilean Satellites

Taken from Middletown, RI on December 21, 2020 using Canon SLR and C-90 Maksutov-Cassegrain. | Satelltes of Jupiter are top to bottom: Callisto, Io, Ganymede, Europa| by Jim Hendrickson

71.8% Partial Solar Eclipse

June 10, 2021 North Kingstown town beach, RI 5:54 AM TeleVue 60 APO w/2.5X TeleVue Powermate for 900mm f/15 Astrozap glass solar filter Manfrotto tripod and ball head Remote shutter release Canon 6D, 1/200sec, ISO 1600 | by Ron Zincone



Jupiter with shadow transit of Ganymede

by Greg Shanos

Deep Sky: 1st Place
Andromeda Galaxy M31

Taken August 2 2021 from Harvard, MA | Telescope Astro-Tech AT102ED (4" ED Refractor) | Focal reducer field flattener ATR8 Astro-Tech 0.8X | Effective focal ratio f/5.6 (571mm) | Celestron CGEM Mount | Astrotech 60mm Guide Scope with ZWO ASI224MC Guide Camera | PHD2 Autoguiding Software | Imaging Camera SBIG ST-8300M Mono CCD Camera at -20C | UV-IR Filter | Total Exposure 65 minutes (Sum of 13 5 minute sub-exposures) | 10 Dark Exposures | 10 Flat Exposures | 20 Bias Exposures | Processed with SIRIL, Photoshop Elements, Google Photos | by Joe Zajac

Deep Sky: 2st Place
M57 Ring Nebula

Description: M57, or the Ring Nebula, is a planetary nebula, the glowing remains of a sun-like star. The tiny white dot in the center of the nebula is the star's hot core, called a white dwarf. M57 is about 2,000 light-years away in the constellation Lyra | Dates taken: Various nights in August 2021 | Equipment: C-14 with SBIG STF-8300C camera on a Losamandy Titan German equatorial | Exposure details: 40X300Sec images | Processing: Integration and reduction using MaximDL, postprocessing PixInsight | by Lloyd Merrill

November 2021 Volume 20

STARRY SCOOP

Editor: Kaitlynn Goulette

WHAT'S UP

Daylight savings time comes to an end on the 7th, which brings earlier nightfall to enjoy the winter constellations that are joining our sky. November evenings welcome Taurus the Bull and Orion the Hunter into our eastern sky. These are bright, easy-to-spot constellations, both containing a myriad of things to see.

In the southern sky, the 1st magnitude star Fomalhaut, "The Lonely One," is found grazing the tree line with the constellations Pegasus and Andromeda sailing high overhead. Between these objects is a very dim part of the sky with a few faint constellations, including Pisces.

To the west, the constellation Capricornus is beginning to dive towards the horizon, taking Jupiter and Saturn along with it. The first quarter moon passes by the two planets on the 10th and 11th. Also in the west is the Summer Triangle asterism consisting of three 1st magnitude stars: Vega, Deneb, and Altair. This star formation will remain in our evening sky all month.

November 26th marks the 10-year anniversary of the launch of the Curiosity Mars Rover. Curiosity was launched from Cape Canaveral and after a nine-month trip, landed inside the Gale Crater on Mars. It was originally planned as a two-year mission, but is still running today. The rover's main goal is to study the climate and geology of Mars, and determine if life ever existed on the Red Planet. Eight months ago, Curiosity was joined by another rover named Perseverance, or Percy for short. Percy's main goal is to also search for signs of ancient life on Mars, and it features many new technologies, including a helicopter named Ingenuity.

On November 19th, a partial lunar eclipse will be visible from all of North America between 2:19am to 5:47am EST. Maximum eclipse occurs at 4:03am EST. The earth's shadow will darken 97% of the moon, which will most likely appear deep red or grayish red in color. This explains the origin of the infamous "blood moon" name.

NOVEMBER'S SKY

4: New Moon

4-5: Taurid Meteor Shower Peak

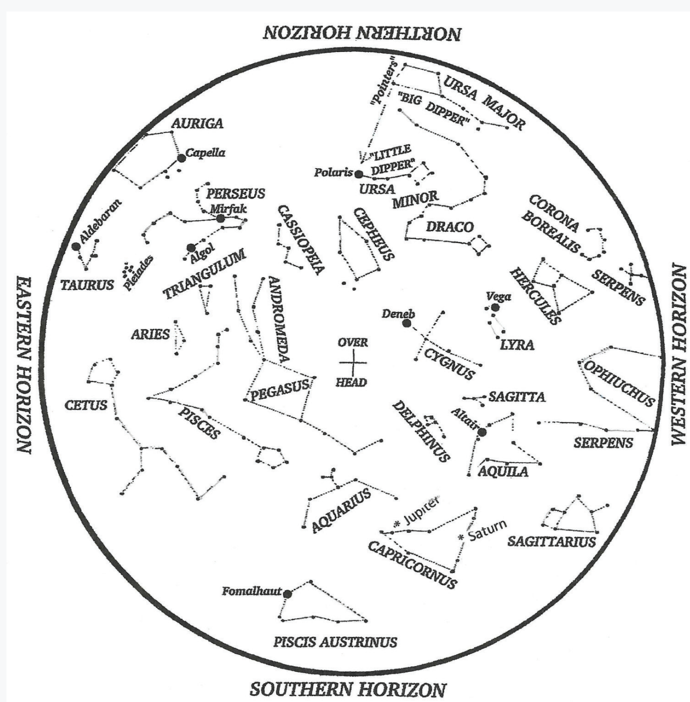
5: Uranus at Opposition

7: Daylight Savings Time Ends

17-18: Leonid Meteor Shower Peak

19: Full Moon

19: Partial Lunar Eclipse



Credit: Roger B. Culver

Hold star map above your head and align with compass points.

OBSERVATIONS

The highlight of my recent observations was a night spent under the skies of my Middle School at an exciting star party. To scan the skies, we used my 8-inch Dobsonian telescope along with a similar instrument set up by Richard Sanderson, president of the Springfield STARS Club. This event was the kick-off of my school's Astronomy and Space Club that I've been attempting to start for years.

Just as the sun was setting, we took turns observing Venus in the southwest sky between the trees and light posts of the school's parking lot. The planet was about 50% illuminated and resembled a quarter moon. My fellow students were amazed at Venus's appearance and were intrigued that that this planet goes through phases much like the moon does.

As darkness set in, we shifted our gaze to Saturn, which was at its highest point in the sky. Together with its moon Titan, it was a spectacular sight through the steady atmosphere at a magnification of 150.

We then took turns observing Jupiter and its Galilean moons. The cloud bands of Jupiter were very prominent, but the moons were the main topic of conversation as their positions changed slightly as they continued in their orbits around the "Jovial One" throughout the evening.

As the full moon rose in the east, we aimed our telescopes and took turns observing it. The crater Tycho and its rays, together with a few other prominent craters, were the most popular discussion points.

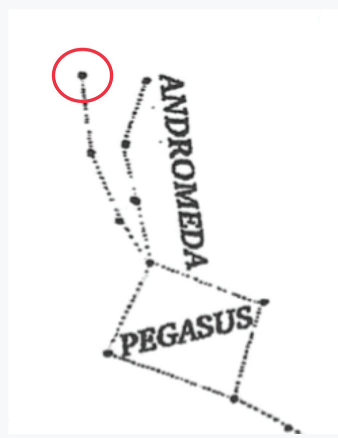
The purpose of the Starry Scoop is to communicate current astronomy and space events. If you want to share your observations or get digital copies of the Starry Scoop, contact starryscoop@gmail.com. The Starry Scoop is now on Facebook. Clear skies!

OBJECT OF THE MONTH

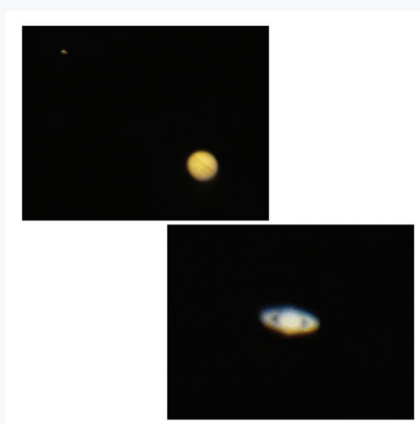
The featured object for the month of November is Gamma Andromedae, commonly known as Almach. This is one of the brightest stars in the constellation Andromeda and is actually a multiple star system.

To the unaided eye, Almach appears as a single point of light, but a telescope resolves it into two components. These contrasting stars shine vivid orange and deep blue. Today, we know that the smaller blue star is really three stars very close together, making Almach a quadruple star system.

You can find Almach in the eastern part of the constellation Andromeda. Use the map below to help you find it. Good luck!



Almach



Jupiter w/ Moon & Saturn
Photos by Danielle Desmarais
Taken through a telescope
with a Galaxy J7 Star Smart Phone

Directions to Seagrave Memorial Observatory

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.

www.theSkyscrapers.org

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47 Peeptoad Road
North Scituate, Rhode Island 02857