



# the Skyscraper

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

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## Mysterious Io

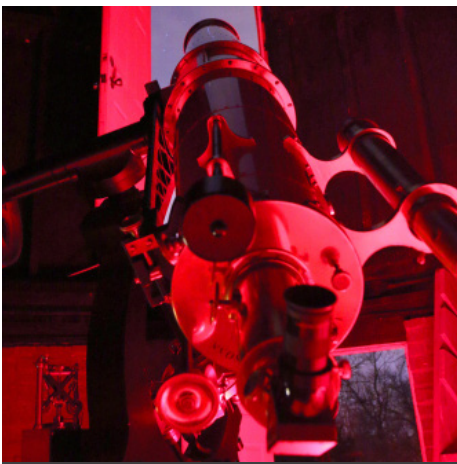
A virtual presentation by Dr. Jonathan Gradie on Saturday, March 4 @ 7:00pm

Contact Linda Bergemann ([L.Bergemann@aol.com](mailto:L.Bergemann@aol.com)) for Zoom Meeting link and information.

Is there still room for synoptic ground-based observations of volcanic processes? Abstract: The first report of a remarkable post-eclipse brightening of Io (for a few minutes when Io emerges from the shadow of Jupiter) was by Alan Binder in the early 1960s. Subsequent searches through the 1970s by others at telescopes large (88" MKO) and small (24" at Steward Observatory) produced scattered and seemingly unreliable observations. Because of the intense UV absorption in Io's spectral reflectance, sulfur was assumed to be dominant on the surface leading to the theory that condensation/sublimation of thin SO<sub>2</sub> atmosphere, photo-dynamic sulfur-bearing salts or sulfur allotropes might be the cause. Synoptic observations of Io during the 1973 apparition (<https://articles.adsabs.harvard.edu/full/seri/BAAS./0005//0000404.000.html>, see abstracts by Morrison and by Gradie and Zellner) demonstrated that the spectral properties Io's surface were not uniform between leading to trailing sides and that the polarimetric properties of Io might be changing with time suggesting seemingly random time-dependent changes in the surface's scattering properties. Were these time-dependent changes, which did not occur during eclipses, related to the elusive post-eclipse brightening or something else. The discovery of active explosive volcanism on Io by Voyager in 1979 seemed to put the issue on the backburner. But, what if the polarimetric observations were detecting major resurfacing events on Io caused by its volcanoes? Could an ongoing monitoring of Io's polarimetric properties provide evidence of the appearance of major volcanic plumes and their resurfacing characteristics? This talk will provide a

historical overview of the original ground-based observations (including some of the original data sheets!), how Voyager 1 & 2 changed the dialog and how 21st Century technology and small telescopes might add to or understanding of the dynamics of this mysterious object (a challenge to the amateur astronomer).

Dr. Jonathan Gradie, Ph.D., a retired planetary scientist and entrepreneur, received a BS in Astronomy (1973) and Ph.D. in Planetary Sciences (1978) both from the University of Arizona. His major focus was on applying polarization, photometric and infrared observations to understanding the properties of asteroids, comets and planetary satellites which he continued at Cornell University (6 years) and the University of Hawaii (for 32 years). Asteroid 3253 Gradie is named in recognition of this work. In the 1990s Dr. Gradie turned his attention to commercializing these remote sensing technologies to Earth observations and applications in medical imaging. Dr. Gradie, grew up in Putnam, CT, with dreams of being an astronomer but unaware of Seagrave Observatory a mere 15 miles east of his home. Fortunately, he discovered Seagrave and Skyscrapers upon returning to Northeast CT.



**Seagrave Memorial  
Observatory  
Open Nights**  
March 11 @ 7pm,  
March 18 & 25 @ 8pm

# President's Message

by Linda Bergemann

This past month, as we perused our membership roster for candidates for office in our upcoming election and prospects to assist with outreach activities, I don't know how many times I heard the comment "I don't know most of the people on this list." I have to admit, that I know most of the 140+ names, but few of the people.

Many of you are aware that we maintain our membership roster and our events calendar on the Night Sky Network (NSN). But, I would venture a guess that most have not visited the site or used these features.

The NSN is a nationwide coalition of amateur astronomy clubs. The NSN is supported by the National Aeronautics and Space Administration (NASA), the Jet Propulsion Laboratory (JPL), and the Amateur Astronomical Society of the Pacific (ASP). Some features have been developed through National Science Foundation grants.

The program offers services and resources to astronomy clubs throughout the United States. As a member of Skyscrapers,

we automatically register you as a member of NSN so you have access to members-only information once you login.

When we enter you on our roster, we enter only information that you provide on your membership application. And, as a default, we set your preferences so your name is visible to other members of Skyscrapers only (and theirs are visible to you), but not all members of NSN. Your email address is not visible to anyone, but me and four other coordinators.

Now, back to getting to know each other. You have complete control over the content of your personal information and its display on NSN under "My Profile" once you login. I would like you (and others) to tell us a little more about yourself and your interests in astronomy. Knowing something about you and your interests may help us plan for future events. And, please, add a photo of yourself, so we can recognize each other when we meet.

Please visit the Night Sky Network

## New Member Welcome to Skyscrapers

John Mannix  
of North Scituate, RI

([nightsky.jpl.nasa.gov](https://nightsky.jpl.nasa.gov)) and embellish your profile. Then, browse around. If you need some guidance, feel free to contact me; my email and phone number are available to all on NSN.

Skyscrapers is known for its congeniality. Let's keep it going!

## Skyscrapers Presentations on YouTube

Many of our recent monthly presentations on Zoom have been recorded and published, with permission, 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 **March 15** to Jim Hendrickson at [hendrickson.jim@gmail.com](mailto:hendrickson.jim@gmail.com).

### E-mail subscriptions

To receive *The Skyscraper* by e-mail, send e-mail with your name and address to [jim@distantgalaxy.com](mailto:jim@distantgalaxy.com). Note that you will no longer receive the newsletter by postal mail.

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# Let's Keep Our Night Sky As Dark As Possible

by Steve Hubbard

Last month I introduced you to the International Dark Sky Association (IDA).

We all suffer from the effects of light pollution and are often at a loss as to how to combat it. The IDA can help. Go to their website ([darksky.org](https://www.darksky.org)) and you will find a huge amount of resources to help.

In this month's column, I want to highlight lighting ordinances. There is a link explaining best practices, what to expect and how to go about working with your city or town to accomplish this. (<https://www.darksky.org/our-work/lighting/public-policy/lighting-ordinances/>)

I encourage all of you to take a look through this and think about whether how you can approach this. In my home town of Auburn MA, I was able to get onto a board that was responsible for the switchover of streetlights to new LED lighting. The process was long, but with someone advocating for the right type of LED lights (color temp of 3000K or less) and shielded lights, we were able to get much better lighting installed than in some of the surrounding towns. I couldn't have done this without the resources available from the IDA.

Fighting bad lighting can be done, but it takes persistence and it takes getting involved as early as possible.

Please consider at least joining IDA as a member and together we can fight to keep our skies as dark as possible.



Light pollution can be seen encroaching on the southern sky from Stellafane in this 2019 photo by Jim Hendrickson

## Book Review

# Losing the Sky

by Andy Lawrence, Edinburgh: Photon Productions, 2021, ISBN [978-1-8383997-2-6](https://www.isbn-international.org/product/978-1-8383997-2-6), softbound, \$7.38 U.S.

Reviewed by Francine Jackson

When I first received this book, I thought it was another one dedicated to light pollution; but, I was totally wrong. The author's warning is about the incredible glut of small satellites that are already in our sky, with many more projected to be launched. This results in the number of trails that show up in many astrophotos; also, sky observers are seeing more and more of them, and, their radio signals can coincide with that of radio telescopes.

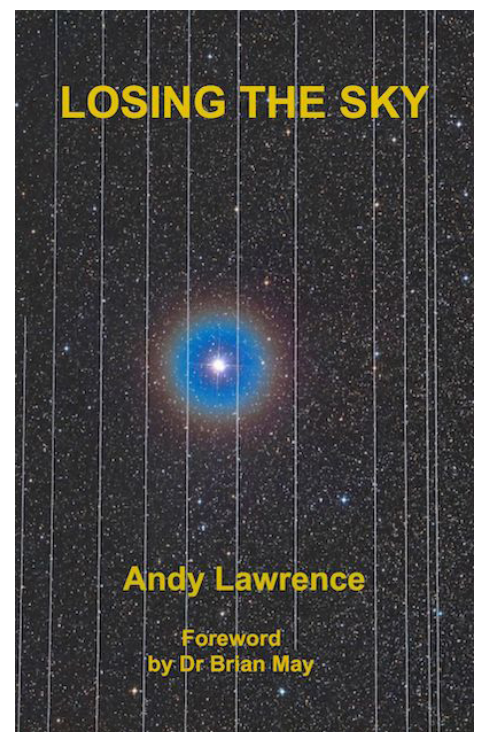
The original idea of these, especially the Starlink, by SpaceX, was to allow WiFi coverage in all parts of the world, especially where it is not available at this time, such as developing countries; however, the number of these satellites is now into the thousands, with more to be launched. In addition, other companies are contributing their share of these objects. And the final total could be impossible to imagine.

SpaceX has announced the possibility

of painting their satellites dark or a grayish color, but that just doesn't solve the problem of the numbers of objects already in low Earth orbit. There are departments charged with documenting the number of satellites circling our planet, but these are already more than can be constantly observed. And, it is believed they will remain in orbit at least a decade after their useful life is over.

Although this problem doesn't seem to have a solution that could be considered a compromise, dialogue with astronomers, both optical and radio astronomy, is starting to happen. However, companies requesting launch time for these objects seem to always be granted, resulting in more and more moving overhead.

It was always believed that light pollution was a major problem in our inability to enjoy the night sky; now, it seems, there is yet another way this is happening.



# Spot the Morning and Evening Star: Observe Venus

by David Prosper

**Venus** is usually the brightest planet in our skies, and is called “Earth’s Twin” due to its similar size to Earth and its rocky composition. However, Venus is a nightmare version of our planet, featuring a thick, crushing atmosphere of acidic clouds, greenhouse gasses, howling winds, and intense heat at its surface.

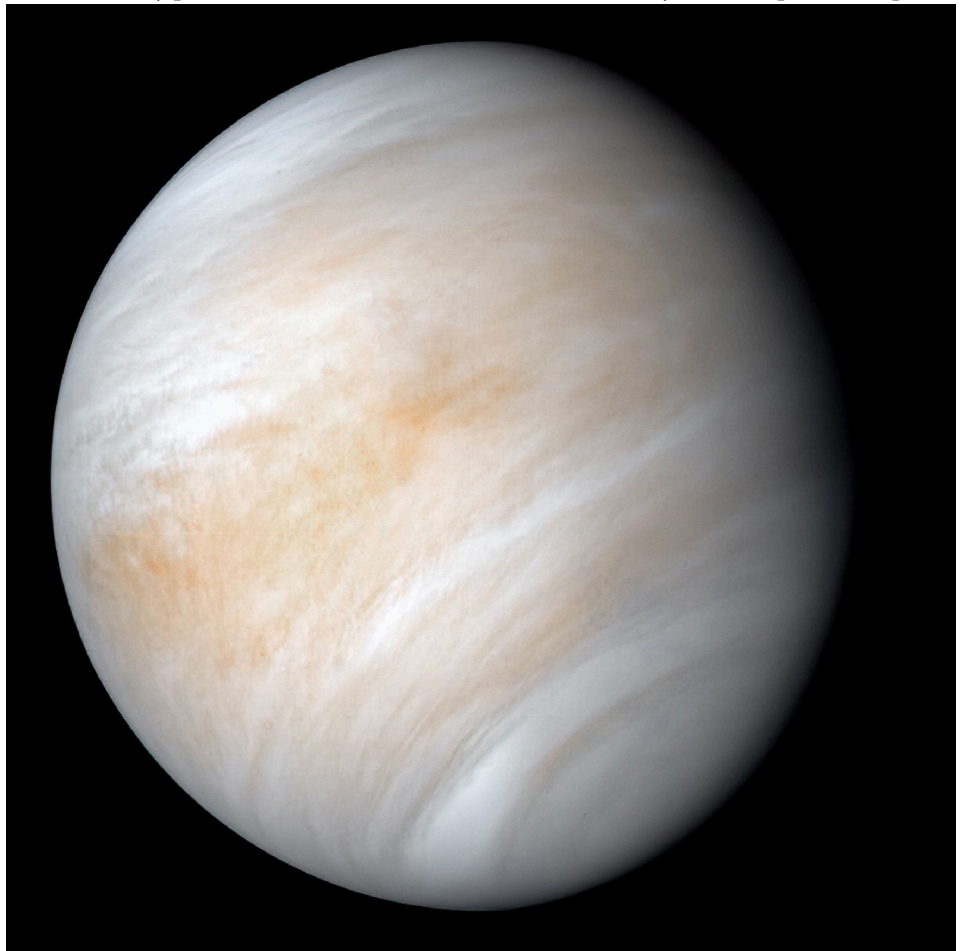
This rocky inner world’s orbit brings it closer to Earth than any of the other planets, and is the second closest to the Sun after Mercury. Like Mercury, Venus orbits between our planet and the Sun, so Earth-based observers can observe Venus in the morning before sunrise, or in the evening after sunset – but never high in the sky in the middle of the evening, unlike the outer planets. Since Venus is so striking in its twilight appearances, the planet features heavily in sky mythologies worldwide. Venus’s bright morning and evening appearances are the origin for its dual nicknames: the Morning Star, and the Evening Star. Some ancient astronomers never made the connection, and assumed the Evening Star and Morning Star were two unrelated objects! Observers can even spot Venus during the daytime, if the sky is very clear and the planet is bright enough. Venus also has phases, similar to the Moon and Mercury. Galileo’s observations of Venus’s phases helped turn the astronomy world upside down in the early 1600s, and you can see them yourself using a telescope or even a surprisingly low-power pair of binoculars. **Warning:** Please be very careful when observing Venus with a telescope in the early morning or daytime. Never allow the Sun to enter your instrument’s field of view, as you could be permanently blinded.

Venus’s other moniker of “Earth’s Twin” is a bit misleading. In terms of their surface temperatures and atmospheres, Venus and Earth are extremely different! The surface of Venus is warmer than that of Mercury, despite Mercury being many millions of miles closer to the Sun. While Mercury is still a scorching 800 degrees Fahrenheit (427 degrees Celsius), Venus is even hotter: 900 degrees Fahrenheit (482 degrees Celsius). The vast amount of carbon dioxide in the thick Venusian atmosphere acts as an insu-

lating blanket that retains much of the Sun’s heat, creating the runaway greenhouse effect that dominates its present-day climate. The Venusian surface is a crushing 90 Earth atmospheres on top of its absurd temperatures. These extreme conditions mean that the mission life of any past Venusian robotic landers were measured in hours at best – and usually minutes! However, conditions in Venus’s upper atmosphere may be much more hospitable, with temperatures and pressures at 30 miles (50 km) above the surface that are much more Earth-like in temperature and pressure. Studies of the Venusian atmosphere, including seasonal appearances of dark streaks and faint signals of suggestive chemistry, intrigue researchers with the possibility that some sort of life may persist in its clouds. But far

more evidence is needed to confirm such a claim, since non-biological factors like volcanism and other processes could also be the source for these signals.

Venus’s thick sulfuric acid clouds block direct visual observations of its surface from optical telescopes on Earth. Multi-wavelength observations from space probes show evidence of active volcanoes and possibly some sort of plate tectonics, but followup missions will be needed to confirm the presence of active volcanism, plate tectonics, and any possible signs of life. In order to do so, NASA is sending two new missions to Venus by the end of this decade: the orbiter **VERITAS**, which will map the surface in high detail and study the chemistry of its rocks and volcanoes, and **DAVINCI+**, which will study its atmosphere and possi-



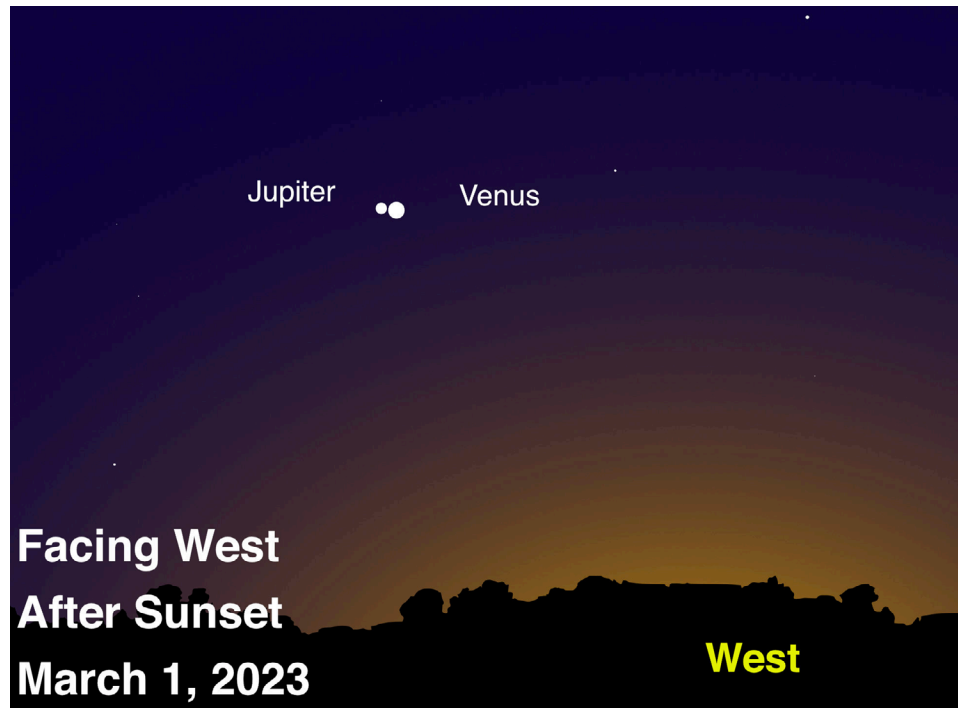
The top layers of Venus’s cloud pop in this contrast-enhanced image, reprocessed with modern techniques from Mariner 10 data. Credit: NASA/JPL-Caltech Source: <https://solarsystem.nasa.gov/resources/2524/newly-processed-views-of-venus-from-mariner-10/>

ble tectonic surface features via a “descent sphere” that will plunge into Venus’s clouds. Follow their development and discover more about Venus at [solarsystem.nasa.gov/venus](https://solarsystem.nasa.gov/venus), and of course, continue your exploration of the universe at [nasa.gov](https://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](https://nightsky.jpl.nasa.gov) to find local clubs, events, and more!*

Venus and Jupiter continue to move closer together in the evening sky this month. Jupiter will continue its descent towards the horizon while Venus will continue to climb and will be visible in the evenings through mid-summer of 2023. It’s a great year for Venus fans! Image created with assistance from Stellarium



# Skylights: March 2023

by Jim Hendrickson

March begins with a conjunction of the two brightest planets, Venus and Jupiter, in the western sky after sunset on the 1st. In one of the more spectacular sights in the sky, Venus will be just 0.5° (the width of the Moon) northwest of Jupiter.

As the month progresses, Venus moves higher above the western horizon as Jupiter loses its race against encroaching twilight, though it will remain visible until the end of the month.

Be sure to direct your gaze towards Venus on the 30th, when it will be 1.2° north of Uranus. If you haven’t observed Uranus recently (or at all), this is a great opportunity to find it.

Mercury passes superior conjunction on the 17th, and returns to the evening sky. On the 27th, Jupiter will be just 1.3° southeast of Mercury. By the end of the month, Mercury will set over an hour after the Sun.

In early March, the Moon passes some notable objects in the winter sky along its way to Full Worm Moon on the 7th. On the 2nd, it is 1.7° south of Pollux in Gemini; on the 4th, it passes 2.6° south of M44 in Cancer, and on the 5th, it appears 3.6° north of Regulus, in Leo.

On the waning side, the Moon is 2.6° north of Spica on the morning of the 10th,

and 3.5° east of Antares on the 14th. Last quarter occurs late on the 14th.

The Moon is new on the 21st, and returns to the evening sky. The waxing crescent appears 0.7° east of Jupiter on the 22nd, 0.9° north of Uranus on the 24th, and 1.7° south of the Pleiades, in Taurus, on the 25th, followed by first quarter, on the 28th.

Closing out the month, the waxing gibbous is 2.7° southwest of Pollux on the 30th, and 4.2° northwest of the open cluster M44, in Cancer, on the 31st.

Mars remains high in the southwest after dark, and continues moving eastward through the Winter Hexagon. It has dimmed somewhat since its peak brightness in early December, but is still bright enough to change the appearance of the departing season’s largest and most familiar asterism on a nightly basis. At mid-month, it passes near Alnath, in Taurus, and forming a “parallel pair” with Castor and Pollux in Gemini. On the 20th, Mars forms an equilateral triangle with the two bright red stars, Betelgeuse and Aldebaran. On the 22nd, Mars crosses the north-south axis, the line connecting Capella and Sirius, and moves into the eastern half of the hexagon. On the 23rd, it lies in a line with Aldebaran and Castor.

Mars reaches its eastern quadrature (90° from the Sun) on the 16th, and after being a long-time resident of Taurus over the past few months, it finally enters Gemini on the 24th. At the end of the month it appears near the open cluster M35, passing just 1.2°

## Events in March

- 1 Venus 0.5° NW of Jupiter
- 2 Mercury 0.9° S of Saturn
- 2 Moon 1.7° S of Pollux
- 4 Moon 2.6° N of M44
- 5 Moon 3.6° N of Regulus
- 7 **Full Worm Moon**
- 10 Moon 2.6° N of Spica
- 14 **Last Quarter Moon**
- 14 Moon 3.5° E of Antares
- 15 Neptune Conjunction
- 16 Mars Quadrature E90
- 17 Mercury Superior Conjunction
- 20 **Equinox (5:24pm EDT)**
- 20 1 Ceres Opposition (6.9)
- 21 **New Moon**
- 22 Moon 0.7° E of Jupiter
- 24 Moon 0.9° N of Uranus
- 25 Moon 1.7° S of M45
- 27 Jupiter 1.3° SE of Mercury
- 28 **First Quarter Moon**
- 29 Mars 1.2° N of M35
- 29 Makemake Opposition (17.1)
- 30 Venus 1.2° N of Uranus
- 30 Moon 2.7° SW of Pollux
- 31 Moon 4.2° NW of M44

Ephemeris times are in EST (UTC-5) through March 12 and EDT (UTC-4) after March 12 for Seagrave Observatory (41.845N, 71.590W)

north of the cluster on the 29th.

What other interesting alignments do you notice as you follow Mars on its nightly march through the Winter Hexagon?

When Mars begins to pass out of view, the next planetary body that becomes visi-

ble is our closest and brightest dwarf planet Ceres. Ceres resides in an area of the sky that often gets extra scrutiny this time of year, due to the prevalence of galaxies in the Messier catalog, which gets perused by deep sky observers in mid-March on the annual quest known as the Messier Marathon. More on that later.

Ceres never quite reaches naked-eye visibility, but when it is its closest to Earth, which occurs on the night of March 20-21, it can be seen in binoculars from a dark, moonless sky at just a bit brighter than magnitude 7. At opposition, Ceres is 1.6 AU from Earth, which is slightly closer than the maximum distance Venus and Earth can be, when the former is at superior conjunction. Although Ceres is considered to be a large object (it is the largest object in the asteroid belt), its 950 kilometer globe is hardly noticeable from a starlike point in even the largest telescopes. It gets as large as 0.83 arcseconds.

Saturn, which passed conjunction last month, is in Aquarius, visible low in the east-southeast before sunrise during the second half of March. On the 19th, the waning crescent Moon passes 5.6° to its south.

Neptune is in conjunction on the 15th, and is not visible in March.

The annual shift to Daylight Saving

Time occurs on the 12th. From 2:00am on that date, through November 5, Eastern Time will shift ahead one hour to four hours behind Coordinated Universal Time. This brings our first sunset in the 7pm hour to the 23rd.

The Sun crosses the border from Aquarius into Pisces on the 12th. Equinox occurs at 5:24pm EDT on the 20th, when the Sun crosses the celestial equator, and its declination then becomes positive. This brings in the season of spring for the northern hemisphere, and results in fewer hours of darkness than daylight.

Also, as a bit of astronomical coordinate trivia, a portion of the Sun's disk crosses into the non-zodiac constellation Cetus, the whale, for a few hours on the 28th.

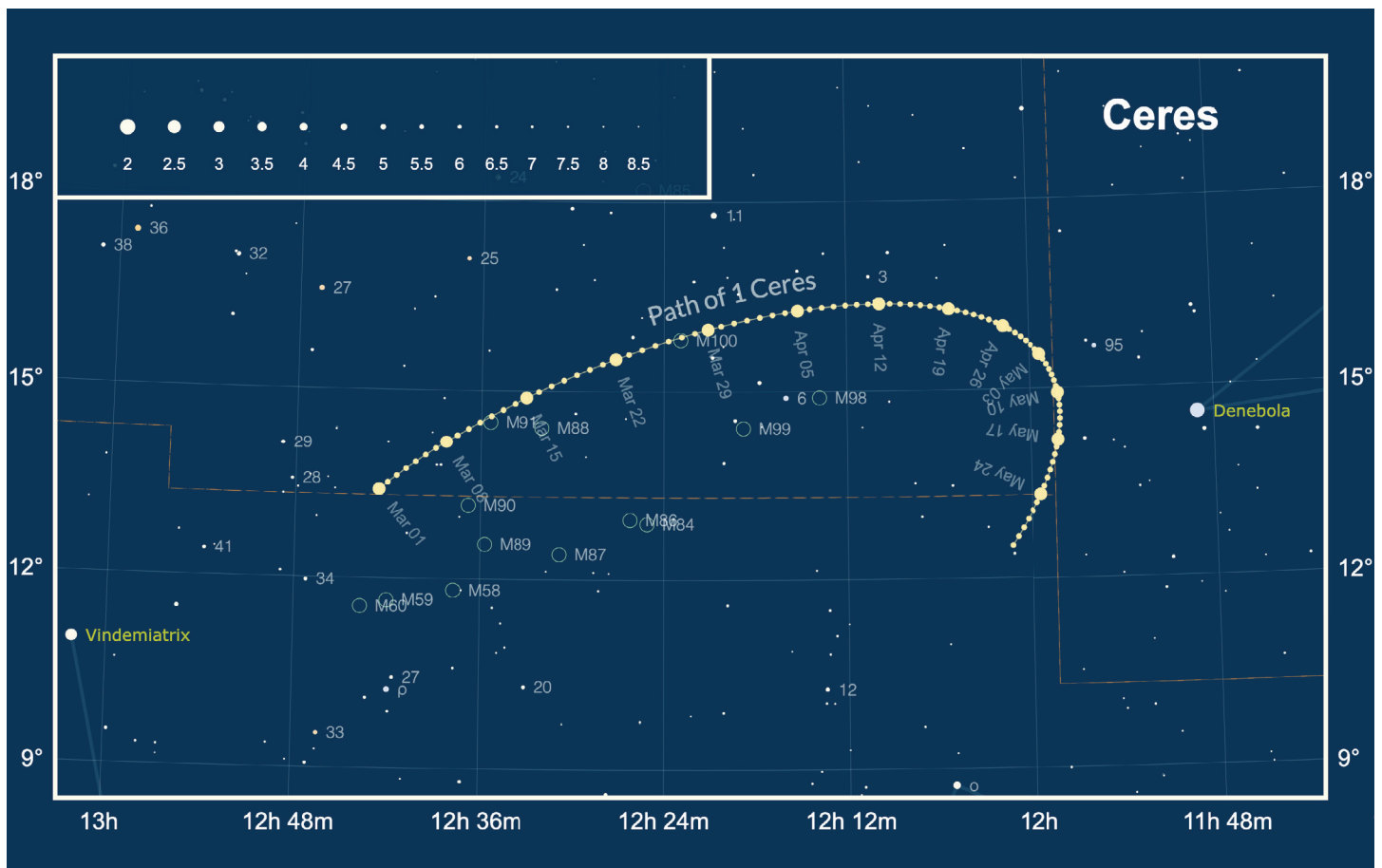
Dwarf planet Makemake reaches opposition in Coma Berenices on the 29th. At a distance of 51.7 AU, it shines at a meager 17.1 magnitude. Although this would require a very large telescope to observe visually, it can be detected with a modest telescope and imaging camera.

Finally, for deep-sky observers, March is the time of the year to embark on the annual Messier Marathon, an observing event when all 110 objects in Messier's catalog can be seen over the course of a single night due to the position of the Sun during the

third week of March being in an area mostly devoid of the Messier objects. It's a bit of a challenge to observe the entire catalog, as it requires exceptionally clear weather and unobstructed horizons, as some of the objects must be viewed in twilight.

The best time to conduct a Messier Marathon in 2023 is around March 23-25. The challenge begins with spotting the first two galaxies, M74 in Pisces and M77 in Cetus, while they are still in twilight and before they set. The crescent Moon should not interfere with early observing. The very last object in the challenge, globular cluster M30 in Capricornus, can be a bit tricky to pick up very low in the southeast during brightening twilight. Delaying your Messier Marathon by a few days makes this easier, but also makes the first objects more difficult, as they set earlier, and the Moon becomes brighter.

The best aspects of Messier Marathoning is when it is undertaken as a group activity, sharing views through different telescopes, and exploring parts of the sky you'd likely seldom visit. You can also keep a log of your observations and compete against your own best record. How many Messier objects have you seen during one night?



# The Sun, Moon & Planets in March

This table contains the ephemeris of the objects in the Solar System for each Saturday night in March 2023. Times in Eastern Standard Time (UTC-5) through March 12, Eastern Daylight Time (UTC-4) after March 12. 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
<b>Sun</b>	<b>4</b>	22 57.8	-6 37.6	Aqr	-26.8	1936	-	-	-	0.991	06:16	11:58	17:40
	<b>11</b>	23 23.8	-3 54.4	Aqr	-26.8	1932.5	-	-	-	0.993	06:04	11:56	17:48
	<b>18</b>	23 49.4	-1 08.7	Psc	-26.8	1928.8	-	-	-	0.995	06:53	12:54	18:56
	<b>25</b>	0 15.0	1 37.2	Psc	-26.8	1925	-	-	-	0.997	06:41	12:52	19:04
<b>Moon</b>	<b>4</b>	8 33.7	23 46.9	Cnc	-12.4	1791.3	141° E	89	-	-	14:47	22:23	05:48
	<b>11</b>	13 54.7	-11 36.7	Vir	-12.5	1829.9	140° W	88	-	-	21:11	02:38	07:56
	<b>18</b>	20 37.0	-24 08.8	Cap	-10.9	1939.2	51° W	19	-	-	05:32	10:17	15:10
	<b>25</b>	2 52.2	17 19.4	Ari	-10.4	1895.6	42° E	13	-	-	08:41	16:13	23:57
<b>Mercury</b>	<b>4</b>	22 18.3	-12 51.4	Aqr	-0.6	5.0	12° W	94	0.431	1.354	06:02	11:20	16:39
	<b>11</b>	23 05.2	-8 01.5	Aqr	-1.1	4.9	6° W	98	0.397	1.369	06:03	11:39	17:17
	<b>18</b>	23 53.6	-2 13.4	Psc	-1.6	5.0	2° E	100	0.357	1.350	07:03	13:01	18:59
	<b>25</b>	0 43.6	4 15.7	Psc	-1.5	5.3	8° E	96	0.322	1.281	07:02	13:23	19:46
<b>Venus</b>	<b>4</b>	0 53.5	5 08.6	Psc	-3.9	12.5	31° E	85	0.722	1.356	07:31	13:54	20:17
	<b>11</b>	1 24.7	8 41.5	Psc	-3.9	12.8	33° E	83	0.721	1.318	07:22	13:57	20:34
	<b>18</b>	1 56.3	12 04.9	Ari	-3.9	13.2	34° E	82	0.720	1.278	08:13	15:01	21:51
	<b>25</b>	2 28.4	15 14.8	Ari	-3.9	13.7	36° E	80	0.719	1.236	08:05	15:06	22:08
<b>Mars</b>	<b>4</b>	5 17.1	25 27.2	Tau	0.5	8.0	97° E	90	1.629	1.174	10:31	18:15	01:59
	<b>11</b>	5 30.3	25 33.7	Tau	0.6	7.5	93° E	90	1.634	1.244	10:16	18:01	01:45
	<b>18</b>	5 44.3	25 36.5	Tau	0.8	7.1	89° E	90	1.639	1.314	11:02	18:47	02:32
	<b>25</b>	5 59.0	25 34.8	Tau	0.9	6.8	86° E	90	1.644	1.384	10:50	18:34	02:19
<b>1 Ceres</b>	<b>4</b>	12 42.8	13 28.8	Com	7.2	0.8	153° W	99	2.572	1.647	18:45	01:37	08:29
	<b>11</b>	12 38.1	14 14.1	Com	7.0	0.8	159° W	100	2.574	1.622	18:10	01:04	08:59
	<b>18</b>	12 32.6	14 55.1	Com	7.0	0.8	163° W	100	2.577	1.610	18:34	01:31	08:29
	<b>25</b>	12 26.6	15 29.1	Com	7.0	0.8	163° E	100	2.579	1.610	17:58	00:58	07:58
<b>Jupiter</b>	<b>4</b>	0 47.9	3 56.3	Psc	-1.9	34.0	29° E	100	4.952	5.791	07:29	13:45	20:02
	<b>11</b>	0 53.8	4 34.3	Psc	-1.9	33.7	24° E	100	4.952	5.842	07:05	13:24	19:43
	<b>18</b>	0 59.8	5 12.6	Psc	-1.9	33.4	19° E	100	4.952	5.884	07:41	14:02	20:24
	<b>25</b>	1 06.0	5 51.2	Psc	-1.9	33.3	13° E	100	4.952	5.917	07:17	13:41	20:04
<b>Saturn</b>	<b>4</b>	22 08.6	-12 49.0	Aqr	0.9	15.4	14° W	100	9.820	10.781	05:51	11:06	16:22
	<b>11</b>	22 11.8	-12 32.2	Aqr	0.9	15.4	20° W	100	9.818	10.747	05:25	10:42	15:58
	<b>18</b>	22 14.8	-12 15.7	Aqr	0.9	15.5	26° W	100	9.816	10.701	06:00	11:17	16:35
	<b>25</b>	22 17.8	-11 59.9	Aqr	1.0	15.6	32° W	100	9.814	10.644	05:34	10:53	16:11
<b>Uranus</b>	<b>4</b>	2 53.0	16 12.1	Ari	5.8	3.5	62° E	100	19.661	20.099	08:47	15:50	22:52
	<b>11</b>	2 54.0	16 16.5	Ari	5.8	3.5	56° E	100	19.66	20.202	08:20	15:23	22:26
	<b>18</b>	2 55.1	16 21.5	Ari	5.8	3.5	49° E	100	19.658	20.296	08:54	15:57	23:00
	<b>25</b>	2 56.4	16 27.0	Ari	5.8	3.5	42° E	100	19.657	20.382	08:27	15:30	22:34
<b>Neptune</b>	<b>4</b>	23 42.3	-3 11.5	Aqr	8.0	2.2	12° E	100	29.911	30.882	06:49	12:39	18:30
	<b>11</b>	23 43.2	-3 05.3	Psc	8.0	2.2	5° E	100	29.911	30.900	06:22	12:13	18:04
	<b>18</b>	23 44.2	-2 59.0	Psc	8.0	2.2	2° W	100	29.911	30.905	06:55	12:46	18:38
	<b>25</b>	23 45.2	-2 52.8	Psc	8.0	2.2	9° W	100	29.911	30.896	06:28	12:20	18:11
<b>Pluto</b>	<b>4</b>	20 09.1	-22 32.5	Cap	14.5	0.2	44° W	100	34.720	35.431	04:31	09:07	13:42
	<b>11</b>	20 09.8	-22 31.3	Cap	14.5	0.2	50° W	100	34.724	35.348	04:04	08:40	13:15
	<b>18</b>	20 10.5	-22 30.3	Cap	14.5	0.2	57° W	100	34.729	35.257	04:37	09:13	13:49
	<b>25</b>	20 11.0	-22 29.6	Cap	14.5	0.2	64° W	100	34.734	35.158	04:10	08:46	13:22

## Observer's Challenge:

# NGC 2024 "Flame Nebula": Emission Nebula in Orion

by Glenn Chaple

**Magnitude 10, Size 30' X 30'**

Our February Observer's Challenge, the emission nebula NGC 2024 (the Flame Nebula) in Orion, tests our visual skills in two ways. A 7th magnitude object, as estimated by Stephen James O'Meara, its light is spread over an area the size of the full moon. Worse yet, the Flame is hidden by the glare from the nearby bright star zeta ( $\zeta$ ) Orionis (Alnitak).

The Flame Nebula was discovered by William Herschel on the night of January 1, 1786. He cataloged it as a Class V object (Very large nebulae) and wrote, "Wonderful black space included in remarkable milky nebosity, divided in 3 or 4 large patches; cannot take up less than a half degree, but I suppose it to be much more extensive".

You won't need its 2000.0 coordinates, RA 5h41m54s and Dec -01o51'0.0" to find the Flame Nebula. It's just 15 arc-minutes ENE of Alnitak, the most southeasterly of Orion's three Belt stars. Seeing it visually requires moving Alnitak out of the field of view. Although a large-aperture scope is recommended, the Flame can be seen with small aperture instruments and medium magnifications, especially if skies are transparent and an O-III filter is used. O'Meara has glimpsed it with 7X50 binoculars, suggesting that Alnitak be blocked by a distant rooftop or sharp-edged structure.

Once you've (hopefully!) managed to capture the Flame Nebula, it's time to turn to another challenge - that pesky star Alnitak. At a visual magnitude of +2.0, it's the brightest spectral class O star in the sky. A hot blue supergiant, it's 20-30 times more massive than the sun and some 10,000 times more luminous. Alnitak has a visual companion - a blue-white giant of magnitude 3.7 situated some 2.4 arc-seconds to its SSE (Position Angle 166o). The pair may be split with a 3-inch scope and magnifying power of 150X, provided the seeing is steady. A third member, of 9th magnitude, lies 59 arc-seconds to the northeast.

The Flame Nebula is located about 1400 light years away. It has a diameter of approximately 6 light years.

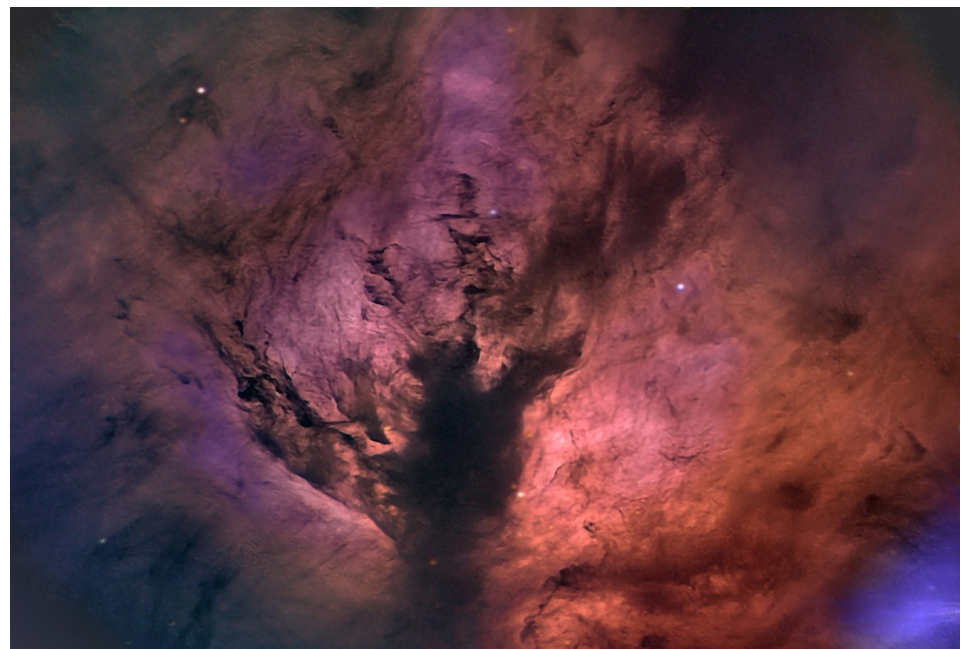
The purpose of the Observer's Challenge

is to encourage the pursuit of visual observing. It is open to anyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'd be happy to include them in our monthly summary. Submit your ob-

serving notes, sketches, and/or images to Roger Ivester ([rogerivester@me.com](mailto:rogerivester@me.com)). To find out more about the Observer's Challenge, log on to [rogerivester.com/category/observers-challenge-reports-complete](http://rogerivester.com/category/observers-challenge-reports-complete).



Image by Bob King (Astro Bob)



Mario Motta, MD. (ATMoB) "Taken with my 32 inch F6.5 telescope in Gloucester, MA, with ZWO ASI6200 camera. I used Red/Blue/Green filters, but also H alpha as there is some emission in Ha. No significant O3 or S2 emission to be had in NB imaging here. Total of 3 hours imaging in all. Combined and processed in PixInsight, including the new BlurXterminator, giving crisp detail. Field of view is 24x16 arc minutes."



# The Clouded Out Lunar Occultation of Mars

by Greg Shanos

The Northern part of the United States experienced an occultation of Mars with the Moon on December 8, 2022 when Mars was at opposition. The Southern states experienced merely a conjunction. The reverse happened on January 30-31, 2023 when the Southern part of the United States experienced an occultation and the Northern states a conjunction.

Skyscraper member Gregory T. Shanos was documenting the event. Greg had a SONY FDR-AX100 4K camcorder that took 15 second videos every 15 minutes of the event. A Meade 60mm refractor with a ZWO 178MM 6MP monochrome camera took 60 second videos every 15 minutes. A close-up of the event would have taken place with a Meade LX200GPS 10 inch GO-TO SCT and a ZWO ASI 290MM monochrome camera.

The skies were perfectly clear at sunset and remained that way until 12:30pm. Two friends of mine were photographing the event from Tampa, Florida and texted me that they were completely overcast at approximately 10:30 pm local time. The clouds took two hours to reach Sarasota. I saw a thick cloud band developing in the northeast region of the sky. The cloud bank quickly spread overhead and soon a quarter, then a half then three-quarters then the entire sky was completely overcast. Below is the last image I was able to obtain. Unfortunately the moon was unable to be



seen through the thick cloud cover. I only needed another 15 minutes for Mars to go behind the moon. So close and yet so far.

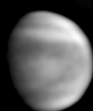
Overall, I witnessed a conjunction not an occultation of Mars with the moon. The

next conjunction of Mars will occur on January 13, 2025 and will be visible throughout the entire United States. Let's hope we see this one.

## Venus in the Ultraviolet February 22, 2023

Gregory T. Shanos Sarasota, Florida USA  
Meade LX200GPS 250mm f/12500mm f/10  
ZWO ASI 178 MM monochrome camera  
Prime focus- no Barlow (resampled 1.50x)

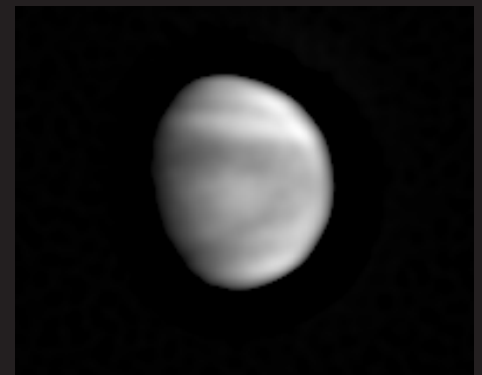
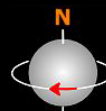
Magnitude: -4.0  
Diameter: 11.9"  
Phase: 87%  
Altitude: 36°  
Seeing: 7/10 Good Windy  
Transp: 9/10 Excellent Daylight  
Resolution: 0.19"  
De: -0.2°  
Ds: 0.6°  
Ls: 45°



22h 45.0m UT

CMI (Surface): 302.8° CMI (Atm): 280.8°  
Chroma U Band Bessel (320nm-380nm)


Upper atmospheric clouds (dark) of Venus in the Ultraviolet.





## Comet C/2022 E3 ZTF by Maarten Broess

The attached photos I took from my backyard in Lincoln on January 23 and 26 with a 70mm telescope and 1 hour of 180sec subs. On The 23th and 26th the comet was easily visible in my 4 1/2 inch reflector as well. This week the comet has faded significantly. Still visible but hard to discern any structure.





## Comet C/2022 E3 ZTF meets Mars by Jim Hendrickson

Taken from Seagrave Observatory on  
February 11 using William Optics RedCat  
51 & Canon 40D SLR on Sky-Warcher Star  
Adventurer tracker.



## Venus & Jupiter Conjunction by Bob Horton

Venus and Jupiter paired up, as seen  
from the student observatory at Brown  
University, March 2, 2023.

# Reports

## Minutes – Skyscrapers Executive Committee Meeting via Zoom Monday, January 30, 2023 | 7PM

The January 30th executive meeting of Skyscrapers, Inc., was called to order by President Linda Bergemann at 7:04 P.M. Also present were Dave Huestis, Steve Brown, Kathy and Steve Siok, Jim Hendrickson, Jeff Padell, Angella Johnson, Michael Corvese, Bob Janus, and Francine Jackson.

### Open Action Items

Roofing: No report as yet, but Bob Janus, Steve Siok and Matt White will look into it.

Treasurer's report: Kathy took this from Laura, and so far, everything looks all right. Laura also is doing fine.

Linda is working on the planet cards.

Linda has drafted input on the open night duties document and will send to Steve S.

Bob Janus is working on the inventory list. He stated we have acquired a lot of new equipment.

Scituate yearbook: We thought we might have missed the deadline, but will send in money anyway; Bob J. did find the deadline is February 21st.

Jim Hendrickson updated the membership application on the website.

The antenna project is moving on. There are masts sticking out of the ground. Bob Janus tried to make them freestanding, and they seem to be okay. The project does need two more supports.

On the 16-inch Meade, a gear will be replaced. We don't have to buy anything for it, although we do have money for the instrument if more is needed.

A replacement for the camera that failed has been purchased, but not yet installed.

### Officer Reports

#### President:

The telescope that was won from the Astronomical League is going to the Woonsocket library, although it seems parts for it have been changed.

We were contacted by a man in Woonsocket, who would like to donate two telescopes: an 8-inch Dobsonian and a 6-inch Starblast. We will take them, but we do need to get rid of some telescopes we already have.

AstroAssembly is scheduled for September 29th and 30th.

#### Monthly Meetings:

Ed Walsh would like to have different speakers for the clubhouse. He also an-

nounced February's speaker is Jonathan Grady, speaking on ground-based observations of Io.

#### Treasurer:

Kathy stated the budget is similar to previous ones, noting we are having good donations coming in. Amazon has announced that its Smiles will be discontinued. Revenue from the sale of books and equipment is up over \$6,000.

#### Membership:

Angella stated we have three new members.

#### Program Committee:

Michael Corvese is working on Astronomy Day, April 29th. Again, we will be working with the Museum of Natural History and Planetarium. We also have a need for youth programs, and will be working on that the next couple years. Also, International Observe the Moon night is October 21st, on first quarter Moon.

#### Observatory Committee:

Steve is sending out a calendar for two months at a time. We also need more people for the nights. He will send out an email looking for more volunteers.

#### Nominating Committee:

Dave Huestis chairs the nominating committee. He does still have some openings.

#### Roofing Committee:

Steve Siok noted the Champlin grants next deadline is June 1st, if we are going to try to apply for money for the roof repairs.

#### Trustees:

Trustees reported there was ponding in the parking lot, and that part was cordoned off.

#### Unfinished Business

Tracy Prell mentioned Robert Reeves may be in the neighborhood, and could give a talk on Monday, April 17th. Contact info has been given to Linda.

#### New Business

Conrad proposed an astrophotography gallery wall in the meeting hall.

#### "Good of the Organization"

We bought a new clock.

The next meeting will be February 20th at 7:00 P.M.

The meeting was adjourned at 7:56 P.M.

Respectfully submitted,

Francine Jackson

## Minutes – Skyscrapers Executive Committee Meeting via Zoom Monday, February 20, 2023 | 7PM

The February 20th, virtual executive meeting of Skyscrapers, Inc., was called to order by President Linda Bergemann. Also present were Michael Corvese, Bob Horton, Dave Huestis, Kathy Siok, Rick Lynch, Bob Janus, Jim Hendrickson, Steve Siok, Ed Walsh, Steve Hubbard, Angella Johnson, Steve Brown, and Francine Jackson.

The minutes were approved.

Bob Janus: concerning the roof – he has called, asked for approximate bids before taking measurements (Steve Siok stated 16 feet). Bob is looking for actual bids, but it will be a while before the work will be able to be done, as we will have to look for a grant to fund it.

Linda: The auditor's findings have not been worked on yet. She gave "planet cards" to Steve Siok to customize.

Steve Siok is looking for volunteers for the observatory committee, and is waiting for comments on the tentative schedule.

Trustees: We have a surplus of telescopes. An Excel sheet of them will be made. They are trying to determine which to get rid of.

Radio Jove: Ed Walsh is working on it, and is preparing a group for it once it's ready.

The 16-inch Meade work is on hold, as is the PTZ camera.

The Woonsocket library telescope isn't ready to send out.

#### Officer reports:

Linda: A Meade ETX90 was recently donated – it's like new. At the annual meeting April 1st, Kathy Siok will be sending out a budget.

Ed Walsh: monthly meetings: March, Johnathan Grady (a new member) will speak on remote sensing of Io; Andrew Case will speak at the annual meeting in April on his solar work, and the May meeting will be on the recent Iceland trip.

Kathy Siok: Her screen wasn't able to be seen, but she did state the club is doing well. We have \$7,500 more income than expenses right now. Expenses are running about as expected at present, as the Trustees' and outreach budgets have been less than budgeted.

Angella noted we have three new members: Peter and Savitri Derring, and John Mannix. She made an Excel spreadsheet for all the members. Kathy Siok asked what the last column was, and Angella explained it is when their membership dues end. Kathy mentioned that perhaps there could be room on the sheet for information on any

members' possible talents that could prove useful for the club.

Michael Corvese: He's started work on Astronomy Day, and spoke on the new committee for youth programs, which could eventually be a blueprint for the future.

Steve Siok – Observatory Committee: He sent out a list showing March and April nights. There are 18 members, and five are needed each public evening. He will send out an email, asking for more volunteers.

Dave Huestis – Nominating Committee: There is no change since the last meeting. He still needs someone for 1st vice president. It was noted that the president does have the power to appoint a member into an office.

Bob Janus noted we will need the toilet for the April 1st meeting. Also, he saw there was no one listed for the telescopes that night. Steve said there will be no viewing that night, so all could be at the annual meeting. Bob also mentioned the telescopes in the meeting room – he will put them in the Patton Observatory.

Steve Siok asked whether there is a refreshments committee, as he would be willing to help out. He noted it's not easy to have people buy food for it.

April 17th: Robert Reeves would like to speak that night, but it's a Monday, and he would be looking for a ride from NEAF,

plus a night's room (a member or a hotel). This was refused.

The gallery wall is a good idea, but we need two people to work on it. Bob H. And Bob J. have offered. We have images for it from last year. Persons contributing in the future will be asked to print their own photos.

We need a policy for off-site parties, and possibly should revise the bylaws to do so. There was no consensus on it. Bob H. has offered to work on it; also, the president can appoint others.

RIEEA membership renewal has come up. Should we? As there are members who belong, it was decided not to do so.

Rick Lynch spent time talking of the possibility of field trips. He gave several possible one-day trips: Harvard College Observatory, Wellesley College Observatory, Boston College Observatory, Haystack. He also mentioned doing a two-day trip to Williams College, Smith College, the Five-College Consortium, and possibly to Springfield. He also mentioned possible international tours, such as Edinburgh.

Rick also is concerned about the new Amazon building, and their lighting, as this could cause us major problems. Steve H. said he has a lighting committee in Auburn, which put in new LEDs. This went through the town board. Should we send a letter to Amazon, and to the town?

Treasurer's Report	
Cash Flow	
2/1/2023 through 2/27/2023	
Category	2/1/2023-2/27/2023
<b>INFLOWS</b>	
Astronomical League Membership Contrib.	\$ 7.50
Donation	
Donation: Amazon Smile Donation	\$ 37.31
<b>TOTAL Donation</b>	<b>\$ 37.31</b>
<b>Dues</b>	
Dues: Family	\$ 60.00
Dues: Regular	\$ 100.00
Dues: Senior	\$ 125.00
<b>TOTAL Dues</b>	<b>\$ 285.00</b>
<b>TOTAL INFLOWS</b>	<b>\$ 329.81</b>
<b>OUTFLOWS</b>	
Donations Exp	\$ 25.00
PayPal Fee	\$ 6.59
<b>Utilities</b>	
Utilities: Electric	\$ 8.14
<b>TOTAL Utilities</b>	<b>\$ 8.14</b>
<b>TOTAL OUTFLOWS</b>	<b>\$ 39.73</b>
<b>OVERALL TOTAL</b>	<b>\$ 290.08</b>
<b>Balances (2/27/2023)</b>	
<b>Coastal1 Credit Union</b>	
11 Month CD (2.5%)	\$ 25,462.35
Business Money Market (1.05%)	\$ 16,520.90
Business Savings	\$ 115.14
Business Checking	\$ 9,673.35
PayPal	\$ 200.91
<b>TOTAL</b>	<b>\$ 51,972.65</b>

Membership renewals will be emailed.

Linda received a request from a grandmother asking for guidance for her grandchild to learn astronomy.

The meeting was adjourned at 8:15 P.M.

Respectfully Submitted.

Francine Jackson

## Winter Star Clusters in Puppis by Jim Hendrickson

Clockwise from top-right: NGC 2423, Messier 47 & Messier 46 (with planetary nebula NGC 2438 embedded). Taken from Seagrave Observatory on February 11 using William Optics RedCat 51 & Canon 40D SLR on Sky-Watcher Star Adventurer tracker.



# OBSERVATIONS

My good friend Lani Ching recently joined me for a fantastic evening of stargazing. We observed a medley of targets consisting of the Orion Nebula, Pleiades star cluster, Andromeda galaxy, and Mars through my 8-inch Dobsonian telescope. We also decided to observe the "Green Comet," which has been featured on the news recently. I feel it was an underwhelming comet that got much more hype than it deserved. But nonetheless, we captured a few images of it using my Canon DSLR camera as it was passing within two degrees of Mars.

After reading fellow Springfield (MA) STARS Club member Warren Carrington's posts on Facebook about observing and imaging the sun, I was motivated to view the sun and its details through a solar telescope. I was excited to observe many features on the sun's surface and multiple prominences around its edge. I also captured an image of the sun using my Canon DSLR camera.

In contrast to observing the sun, I also had an opportunity to view our moon and observe both the "Lunar X" and "Lunar V" features. They are visible along the moon's terminator for a short time around the first quarter phase and are a result of illuminated peaks amongst shadowed valleys.

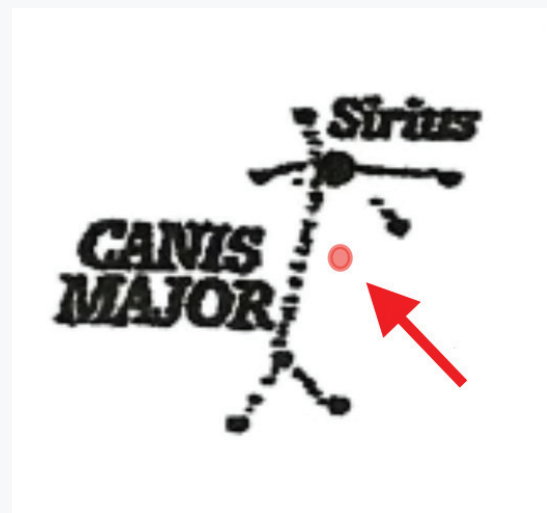


The purpose of the Starry Scoop is to communicate current astronomy and space events. If you want to share your observations or get digital copies of the Starry Scoop, contact [starryscoop@gmail.com](mailto:starryscoop@gmail.com). The Starry Scoop is now on Facebook. Clear skies!

# OBJECT OF THE MONTH

The featured object for the month of March is Messier 41 (M41), located in the constellation Canis Major. Sometimes referred to as the Little Beehive Cluster, this bright open cluster is comprised of about 100 stars and is estimated to be about 190 million years old. In 325 BC, Aristotle recorded it as a peculiar "cloudy spot" in the sky, making it the faintest object recorded of this time.

This object can be found about four degrees south of Sirius, the brightest star in the night sky, low in the south. M41 is visible with the unaided eye under dark skies and covers an area roughly the size of the full moon.



Messier 41



# 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.



47 Peeptoad Road  
North Scituate, Rhode Island 02857