



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:

- 2 President's Message
- 3 The Geminid Meteor Shower & Other Astronomical Events of Interest
- 4 Observe Apollo 8's Lunar Milestones
- 5 50th Anniversary of Apollo 8
- 6 The Sun, Moon & Planets in December
- 8 2018 Reports
- 12 Spiral Galaxy in Perseus NGC 1003
- 13 Proposed Changes to Constitution & Bylaws

**Skyscrapers
Board Meeting**
Monday, November 19, 7pm
All Members Welcome

Phases of the Moon

- New Moon**
December 7 07:20
- First Quarter Moon**
December 15 11:49
- Full Cold Moon**
December 22 17:49
- Last Quarter Moon**
December 29 09:34

Saturday, December 15, 6:00pm at North Scituate Community House

Holiday Party & Member Presentations

6:00pm Dessert Buffet

Our annual Holiday Party will take place at our December meeting. Please bring a dessert to share. (Bring any special serving item you will need). We will provide: Hot & Cold Drinks, plates, cups and forks etc.

7:00pm Member Presentations

The Poet and the Sky by Gerry Dyck

This will be a collection of poetry with astronomical themes and includes rarely-heard organ music by Sir William Herschel.

Gerry is an accomplished musician who has also been an avid observer and successful amateur astronomer all his life.

Over the years, he has shared his unique perspective by combining astronomy with music and poetry, to the delight of all.

Starscapes and Constellations: Easy Astrophotography

by Bob Horton

Come explore how easy it is to take dramatic photos with minimal equipment, as I provide a few tips on creating beautiful images of starscapes, constellations and more. No telescopes required!

Bob Horton joined Skyscrapers in 1974 and has been an active observer, astrophotographer and a mirror maker for over 40 years. He is the Manager of Astronomical Labs and the Ladd Observatory at Brown University.



President's Message

by Steve Hubbard

It's official! New England has just seen it's wettest fall on record. Wonderful for our lakes and reservoirs, pretty horrible for those of us who would like to see a clear night sky once in a while.

I've been a member since 1973. Over that time, yes there have been washouts and some cancellations of events, but nothing like what I've seen over the past year. At least 2 meetings and a number of observing sessions cancelled due to weather. I can only hope that this represents the worst weather year ever and that we can only go up from here.

Being as positive as I can about all of this, I'm looking forward to some upcoming celestial events and some of the beautiful win-

ter sights like the Orion nebula. If you are out and about on the evening of December 7, point your telescope towards Mars. Neptune will be very close to Mars, within 2 arc minutes and it's a great chance to not only see 2 planets in one field of view, but also to see Neptune itself. Check Mars a few days before and after as Neptune will be nearby during that time. Neptune is not very bright and not often seen, so I hope you don't miss this chance.

On Saturday December 15, we will be having our annual Skyscraper Holiday party. This year will feature a dessert pot luck type buffet and some talks by our own members Bob Horton and Gerry Dyck. It's always a fun time and there's lots of food and fellow-

ship to be had. Take a look at our website for more details as this will be a really unique meeting. Hope to see you there!

Happy Holidays, Happy New Year and let's hope for more clear skies in 2019!

Skyscrapers Food Basket

Skyscrapers has now started a food donation program! Just simply bring a caned good or two each time you visit the meeting hall or observatory; place it in the Food Donation box in the hall and they will be donated to our local food bank on a monthly basis.

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You shop. Amazon gives.

<https://smile.amazon.com/ch/05-0382371>

Skyscrapers Library Borrowing Procedure

The catalog of available items to borrow is available at <http://www.theskyscrapers.org/library-procedures>, as well as in the meeting hall in proximity to the bookcases.

To borrow an item a member can: 1) review the list online before coming to a meeting 2) review a hard copy of the list on a meeting night.

Once a member chooses an item they can ask **Dave Huestis** or **Weston Ambrose** to retrieve it from the bookcase. The member will then sign the item out. This check out procedure will occur only between 7:00pm and 7:30pm on monthly meeting nights held at Seagrave.

Borrowed items should be returned at the next meeting unless other arrangements are made.



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 **December 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.

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The Geminid Meteor Shower: An Early Holiday Treat for Stargazers & Other Astronomical Events of Interest

by Dave Huestis

As the year advances into the month of December, sunrise times occur much later in the morning, while sunset times occur much earlier. Here in southern New England the latest sunrise is around 7:13:09 a.m. on January 2, whereas the earliest sunset is around 4:14:58 p.m. on December 11. Despite the usually increasingly cold nights, amateur astronomers are able to begin their observing sessions soon after the dinner hour. Therefore, December is welcomed by many stargazers since it offers many hours of dark skies...as long as a bright Moon does not intervene.

During mid-to-late November, for those of you who commuted to work in an easterly direction had surely noticed a brilliant beacon above the east-southeast horizon before sunrise. That dazzling object was the planet Venus. Venus will continue to dominate the morning sky as December begins. A beautiful sky scene will greet your eyes on the morning of the 3rd as a waning crescent Moon will appear about six degrees above our planetary neighbor.

Joining Venus during early December will be our solar system's closest planet to the Sun—Mercury. On the 5th the waning crescent Moon will pass about six degrees above and to the right of Mercury. Mercury will continue to ascend into the sky until the 10th after which it will then begin to

descend back towards the horizon and the Sun. Around this time, depending upon your view of the horizon, you may begin to see the return of Jupiter. Each morning Jupiter will rise higher into the sky as Mercury is setting. On the 22nd these two worlds will appear within one degree (two full Moon diameters) of each other. So if you've never observed Mercury try using Jupiter as your guide to do so. By month's end Mercury will disappear from view in bright morning twilight.

While Mars continues to be visible throughout December, the distance between our two worlds increases from 94,469,737 miles to 117,172,414 miles by month's end. That means the image size of the planet through a telescope will continue to shrink. I suspect Mars' surface detail will be difficult to discern in smaller instruments. Consider how much the Earth has pulled out ahead of Mars in our respective orbits. Back at closest approach at the end of July the Earth and Mars were a mere 35,785,537 million miles apart.

I always look forward to the northern hemispheres' best shooting star display—the Geminids. With the peak of meteor activity on the night of December 13-14, I regard this showers' appearance as an early holiday gift from the Universe. And for 2018 if weather conditions are favorable

about 60+ meteors per hour may be seen from about 10 p.m. once the waxing crescent Moon sets until the sky begins to brighten during dawn. With no interfering moonlight stargazers will have an opportunity to see as many meteors as possible. All you will need is a dark-sky location devoid of interfering light pollution sources.

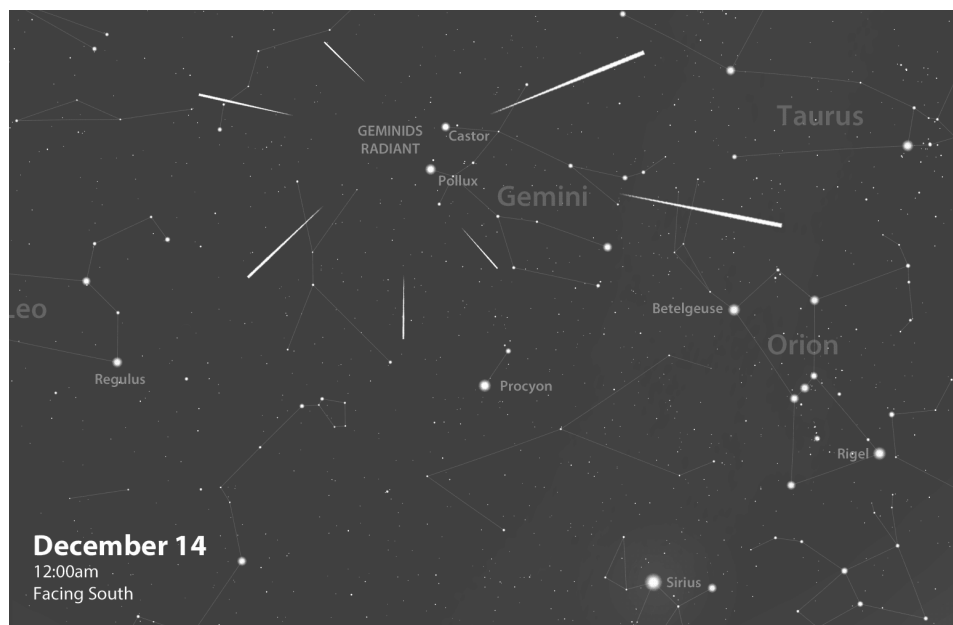
An observer can usually count on the temperature to be at or below the freezing mark during the Geminids. Regardless, I still recommend sitting or reclining in a comfortable lounge chair. Dress in layers. Climb into a sleeping bag if possible. Wear a hat to keep heat from escaping through your exposed head. Wear warm mittens, not gloves. Mittens keep your fingers together for added warmth. You can also use a few of those pocket warmers to keep extremities toasty.

Keep warm and alert, but don't get too comfy out there. I've told the following story many times since it occurred, but it is a cautionary tale that bears repeating.

Many moons ago during a Geminid meteor shower watch from Seagrave Observatory, the sky was clear when we started observing. However, sometime during the night we all fell asleep. When we awoke we realized some clouds had paid us a visit, since we were all covered with a dusting of snow. Moral of that story is...stay awake while meteor observing during the winter. Otherwise they may have to pick you up with ice tongs and thaw you out in the morning!!

One important fact to remember if you cannot observe the Geminids throughout the night until dawn is that this shower is one that can be observed before midnight. You won't see the peak rate of meteors, but you will see more than you could on any random night of sky watching. And there can be one advantage if you observe within a few hours of sunset. You may catch a few Geminid earth grazers as they skim tangentially across the top of Earth's atmosphere and parallel to the horizon. This scenario provides for much longer streaks, often looking like a stone skipping across a pond.

While the Geminids appear to radiate from Gemini near its brightest stars, Castor



and Pollux, scan around the sky as much as possible. As the night progresses and Gemini moves across the sky towards the west, your scan should move as well. At around 2:30 a.m. Gemini will be on your north/south meridian, just south of zenith. The number of meteors per hour should increase throughout your observing session. You'll know you've seen a Geminid if you can trace the origin of the meteor's trail back to the radiant point.

The Geminids are fairly bright and moderate in speed, hitting our atmosphere at 21.75 miles per second. They are characterized by their multicolored display (65% being white, 26% yellow, and the remaining 9% blue, red and green). Geminids also have a reputation for producing exploding meteors called fireballs. The source of the particles that comprise this meteor stream is a two-mile-in-diameter hybrid "rock

comet" named 3200 Phaethon. The Earth sweeps through its orbital path annually.

And finally, it doesn't seem possible that winter is nearly upon us in the northern hemisphere. On the 21st the Winter Solstice occurs at 5:23 p.m. EST (Eastern Standard Time). Notice how low an arc the Sun now travels across the sky. After this date and time the Sun's arc will rise higher and higher each day as it appears to travel northward in our sky, reaching the Vernal Equinox (spring) on March 20, 2019 at 5:58 p.m. EDT (Eastern Daylight Time). The apparent shift of the Sun's position in the sky is the result of the Earth's fixed axial tilt of 23.5 degrees as our planet orbits the Sun. Watch the following video for a review of this process: <https://youtu.be/d6rgyJkrMXg>

Seagrave Memorial Observatory (<http://www.theskyscrapers.org>) in North Scituate is open to the public every clear Saturday

night. However, in December Seagrave will be closed on the 15th. Ladd Observatory (<http://brown.edu/ladd>) in Providence is open every clear Tuesday night. The Margaret M. Jacoby Observatory at the CCRI Knight Campus in Warwick (<http://www.ccri.edu/physics/observatory.htm>) is open every clear Thursday night. Frosty Drew Observatory (<http://www.frostydrew.org/>) in Charlestown is open every clear Friday night year-round.

Happy holidays and clear skies to all.

Sneak peak for January: Total Lunar Eclipse on the night of January 20-21.



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>

NASA Night Sky Notes: Observe Apollo 8's Lunar Milestones

By David Prosper

December marks the 50th anniversary of NASA's Apollo 8 mission, when humans first orbited the Moon in a triumph of human engineering. The mission may be most famous for "Earthrise," the iconic photograph of Earth suspended over the rugged lunar surface. "Earthrise" inspired the imaginations of people around the world and remains one of the most famous photos ever taken. This month also brings a great potential display of the Geminids and a close approach by Comet 46P/Wirtanen.

You can take note of Apollo 8's mission milestones while observing the Moon this month. Watch the nearly full Moon rise just before sunset on December 21, exactly 50 years after Apollo 8 launched; it will be near the bright orange star Aldebaran in Taurus. The following evenings watch it pass over the top of Orion and on through Gemini; on those days five decades earlier, astronauts Frank Borman, Jim Lovell, and Bill Anders sped towards the Moon in their fully crewed command module. Notice how the Moon rises later each evening, and how its phase wanes from full on Dec 22 to gibbous through the rest of the week. Can you imagine what phase Earth would appear as if you were standing on the Moon, looking back? The three brave astronauts spent 20 sleepless hours in orbit around the Moon, starting on Dec 24, 1968. During those ten

orbits they became the first humans to see with their own eyes both the far side of the Moon and an Earthrise! The crew telecast a holiday message on December 25 to a record number of Earthbound viewers as they orbited over the lifeless lunar terrain; "Good night, good luck, a merry Christmas and God bless all of you - all of you on the good Earth." 50 years later, spot the Moon on these holiday evenings as it travels through Cancer and Leo. Just two days later the astronauts splashed down into the Pacific Ocean after achieving all the mission's test objectives, paving the way for another giant leap in space exploration the following year.

The Geminids, an excellent annual meteor shower, peaks the evening of December 13 through the morning of the 14th. They get their chance to truly shine after a waxing crescent Moon sets around 10:30 pm on the 13th. Expert Geminid observers can spot around 100 meteors per hour under ideal conditions. You'll spot quite a few meteors by avoiding bad weather and light pollution if you can, and of course make sure to bundle up and take frequent warming breaks. The Geminids have an unusual origin compared to most meteor showers, which generally spring from icy comets. The tiny particles Earth passes through these evenings come from a strange "rock

comet" named asteroid 3200 Phaethon. This dusty asteroid experiences faint outbursts of fine particles of rock instead of ice.

You can also look for comet 46P/Wirtanen while you're out meteor watching. Its closest approach to Earth brings it within 7.1 million miles of us on December 16. That's 30 times the average Earth-Moon distance! While passing near enough to rank as the 10th closest cometary approach in modern times, there is no danger of this object striking our planet. Cometary brightness is hard to predict, and while there is a chance comet 46P/Wirtanen may flare up to naked eye visibility, it will likely remain visible only via binoculars or telescopes. You'll be able to see for yourself how much 46P/Wirtanen actually brightens. Some of the best nights to hunt for it will be December 15 and 16 as it passes between two prominent star clusters in Taurus: the Pleiades and the V-shaped Hyades. Happy hunting!



This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, stargazing info and more.



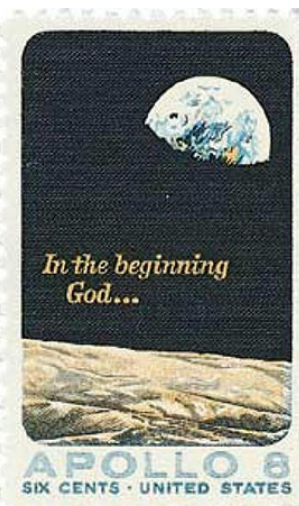
Earthrise, 1968. Note the phase of Earth as seen from the Moon. Nearside lunar observers see Earth go through a complete set of phases. However, only orbiting astronauts witness Earthrises; for stationary lunar observers, Earth barely moves at all. Why is that? Credit: Bill Anders/NASA

50th Anniversary of Apollo 8

by Francine Jackson

Fifty years!?! Could it really have been fifty years since we first traveled to the Moon, showing us it was a very viable possibility.

The Apollo 8 craft, with veteran and friend astronauts Frank Borman and Jim Lovell, and first-timer Bill Anders, made history, leaving the Earth just days before Christmas, on a mission to do what had never been done: To make it to the Moon, and, most importantly, return home. They would also, for the first time ever, be out of radio contact, as part of their voyage took them around the Moon, separating themselves from Mission Control by the diameter of the Moon, through which radio waves couldn't pass.



On their trip, which is very well documented in the book *Apollo 8*, by Jeffrey Kluger, the astronauts were the first persons to ever see the far side of the Moon; they also took the first picture of the Earth from the great lunar distance, and, in a very reverent, gripping Christmas Eve address, quoted from Genesis, finally wishing the best to the citizens from the crew of the Apollo 8 to “all of you on the good Earth.”

The image of Earth taken by the astronauts was chosen by Life magazine as the first of their 100 photographs that changed the world: It also became the major feature of the postal service's stamp issued in Apollo 8's honor; They also were named

Time's Men of the Year for 1968; And, they also were the first astronauts ever invited to say the Pledge of Allegiance to start a Super Bowl, Number III, on January 12th, 1969, at Miami's Orange Bowl. The New York Jets won, 16 – 7, over the Baltimore Colts.

Many historians feel this was the most important of the Apollo missions, as it showed that man could leave the Earth, travel out into a new place, and return home safely. This precedent setting journey allowed the next set of adventures, the actual landings on the Moon, to take place.

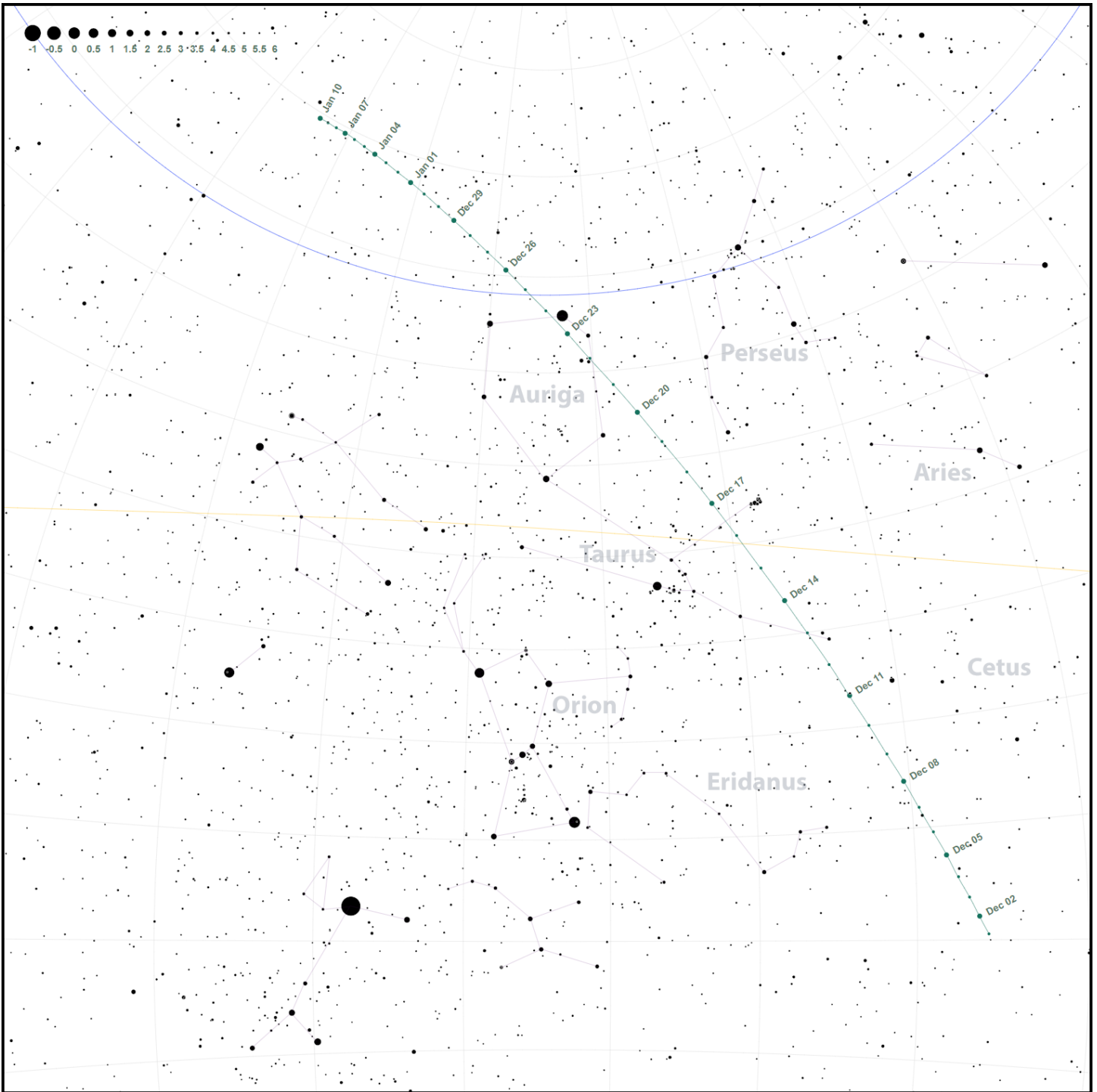


Francine Jackson is Skyscrapers Public Relations Spokesperson, writes the weekly newsletter for Ladd Observatory and serves as planetarian at the University of Rhode Island. See more at <http://theskyscrapers.org/francine-jackson>

The Sun, Moon & Planets in December

This table contains the ephemeris of the objects in the Solar System for each Saturday night in December 2018. Times in Eastern Standard Time (UTC-5), except for November 2 (UTC-4). 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	1	16 28.0	-21 45.3	Oph	-26.8	1946.2	-	-	-	0.99	06:53	11:35	16:16
	8	16 58.4	-22 41.0	Oph	-26.8	1948.2	-	-	-	0.99	07:00	11:38	16:15
	15	17 29.3	-23 14.9	Oph	-26.8	1949.9	-	-	-	0.98	07:06	11:41	16:16
	22	18 00.3	-23 26.2	Sgr	-26.8	1951.1	-	-	-	0.98	07:10	11:45	16:19
	29	18 31.3	-23 14.5	Sgr	-26.8	1951.7	-	-	-	0.98	07:13	11:48	16:23
Moon	1	11 35.5	6 26.9	Leo	-11.7	1896.8	77° W	39	-	-	00:32	07:06	13:31
	8	17 30.7	-20 57.5	Oph	-6.9	1799.9	8° E	1	-	-	08:00	12:49	17:36
	15	23 19.3	-9 20.0	Aqr	-11.7	1804.7	85° E	45	-	-	12:22	18:12	00:10
	22	5 20.1	19 24.4	Tau	-12.7	1981.7	169° E	99	-	-	16:33	00:13	07:54
	29	12 16.4	2 52.5	Vir	-12.0	1898.0	95° W	55	-	-	23:32	05:53	12:05
Mercury	1	15 55.0	-18 20.6	Lib	3.7	9.6	8° W	6	0.31	0.70	06:03	10:56	15:51
	8	15 43.0	-16 55.4	Lib	0.4	8.0	19° W	35	0.33	0.84	05:21	10:20	15:19
	15	16 00.7	-18 16.4	Lib	-0.2	6.7	21° W	62	0.37	1.00	05:18	10:12	15:06
	22	16 34.0	-20 30.6	Oph	-0.3	5.9	20° W	77	0.41	1.15	05:34	10:19	15:03
	29	17 14.6	-22 30.9	Oph	-0.3	5.4	18° W	87	0.44	1.26	05:56	10:32	15:08
Venus	1	13 50.2	-9 53.2	Vir	-4.5	41.3	40° W	26	0.72	0.41	03:29	08:56	14:22
	8	14 07.0	-10 29.8	Vir	-4.4	37.0	43° W	31	0.72	0.46	03:21	08:45	14:10
	15	14 27.4	-11 36.1	Lib	-4.4	33.3	45° W	37	0.72	0.51	03:18	08:38	13:58
	22	14 50.7	-13 01.4	Lib	-4.4	30.3	46° W	41	0.72	0.56	03:19	08:34	13:49
	29	15 16.3	-14 36.8	Lib	-4.3	27.6	47° W	46	0.72	0.61	03:24	08:33	13:41
Mars	1	22 45.9	-9 05.1	Aqr	0.0	9.3	91° E	86	1.42	1.01	12:21	17:51	23:22
	8	23 02.5	-7 09.2	Aqr	0.1	8.8	88° E	86	1.43	1.06	12:02	17:40	23:18
	15	23 19.2	-5 10.8	Aqr	0.2	8.4	86° E	86	1.43	1.12	11:44	17:29	23:14
	22	23 36.0	-3 10.8	Psc	0.3	7.9	83° E	87	1.44	1.18	11:27	17:18	23:11
	29	23 53.0	-1 09.9	Psc	0.4	7.6	81° E	87	1.45	1.24	11:09	17:08	23:07
1 Ceres	1	14 32.6	-8 07.1	Vir	8.8	0.4	31° W	99	2.63	3.43	04:05	09:38	15:11
	8	14 43.9	-9 04.1	Lib	8.9	0.4	35° W	99	2.64	3.38	03:52	09:22	14:51
	15	14 55.1	-9 57.7	Lib	8.9	0.4	39° W	99	2.64	3.33	03:39	09:05	14:31
	22	15 06.1	-10 47.7	Lib	8.9	0.4	43° W	98	2.65	3.28	03:26	08:49	14:11
	29	15 16.9	-11 34.1	Lib	8.9	0.4	48° W	98	2.65	3.21	03:12	08:32	13:52
Jupiter	1	16 12.7	-20 29.1	Sco	-1.6	31.0	4° W	100	5.36	6.34	06:33	11:17	16:02
	8	16 19.3	-20 45.9	Sco	-1.6	31.1	9° W	100	5.36	6.33	06:13	10:56	15:40
	15	16 25.8	-21 01.5	Oph	-1.6	31.2	15° W	100	5.35	6.30	05:53	10:35	15:17
	22	16 32.3	-21 15.9	Oph	-1.6	31.4	20° W	100	5.35	6.26	05:33	10:14	14:55
	29	16 38.7	-21 29.1	Oph	-1.6	31.6	26° W	100	5.35	6.22	05:13	09:53	14:33
Saturn	1	18 33.9	-22 40.8	Sgr	0.6	15.2	29° E	100	10.06	10.91	09:03	13:38	18:13
	8	18 37.3	-22 38.6	Sgr	0.5	15.1	23° E	100	10.06	10.96	08:39	13:14	17:49
	15	18 40.7	-22 36.0	Sgr	0.5	15.1	16° E	100	10.06	11.00	08:14	12:50	17:25
	22	18 44.2	-22 33.0	Sgr	0.5	15.0	10° E	100	10.06	11.03	07:50	12:26	17:01
	29	18 47.8	-22 29.6	Sgr	0.5	15.0	4° E	100	10.06	11.04	07:26	12:02	16:37
Uranus	1	1 49.2	10 39.6	Ari	5.7	3.7	140° E	100	19.87	19.10	14:11	20:52	03:32
	8	1 48.5	10 35.8	Ari	5.7	3.7	133° E	100	19.86	19.18	13:43	20:23	03:04
	15	1 47.9	10 32.8	Ari	5.7	3.7	126° E	100	19.86	19.27	13:15	19:55	02:36
	22	1 47.5	10 30.6	Psc	5.7	3.6	119° E	100	19.86	19.37	12:47	19:27	02:08
	29	1 47.2	10 29.2	Psc	5.8	3.6	111° E	100	19.86	19.48	12:19	18:56	01:40
Neptune	1	23 01.5	-7 18.9	Aqr	7.9	2.3	95° E	100	29.94	29.84	12:29	18:04	23:40
	8	23 01.6	-7 17.8	Aqr	7.9	2.3	88° E	100	29.94	29.96	12:01	17:37	23:13
	15	23 01.8	-7 16.1	Aqr	7.9	2.3	81° E	100	29.94	30.08	11:34	17:10	22:46
	22	23 02.2	-7 13.8	Aqr	7.9	2.3	74° E	100	29.94	30.20	11:06	16:43	22:19
	29	23 02.6	-7 10.9	Aqr	7.9	2.3	67° E	100	29.94	30.31	10:39	16:15	21:52
Pluto	1	19 25.0	-22 03.3	Sgr	14.4	0.2	41° E	100	33.69	34.43	09:51	14:29	19:06
	8	19 25.9	-22 02.2	Sgr	14.4	0.2	34° E	100	33.70	34.51	09:24	14:02	18:40
	15	19 26.8	-22 01.0	Sgr	14.4	0.2	27° E	100	33.70	34.57	08:57	13:35	18:13
	22	19 27.7	-21 59.7	Sgr	14.3	0.2	20° E	100	33.71	34.63	08:31	13:09	17:47
	29	19 28.7	-21 58.3	Sgr	14.3	0.2	13° E	100	33.71	34.67	08:04	12:42	17:20



Comet 46P Wirtanen makes a close approach to Earth on December 16 at a distance of 0.077 AU (11.5 million kilometers) and will be well placed for northern hemisphere observers. It will be visible in binoculars for several weeks and is expected to reach naked-eye visibility in mid-December. Watch as it passes by the Pleiades on December 15-16 and near Capella on December 22-23. This chart, produced using data from JPL Horizons, shows positions of the comet at midnight, EDT.

2018 Reports

Skyscrapers Monthly Meeting May 2018

Seagrave Observatory Attendance: 40

1- Four attendees new to Skyscrapers introduced themselves and mentioned how they had heard about the group (web, Open House, from a member)

2- Tracy Prell was introduced as the "New Member Steward" whose function it is to attend to the needs of those new to the organization.

3- Dave Huestis was introduced as our Librarian, taking over for Alex Bergemann who is leaving to join the Coast Guard. Weston Ambrose was introduced as the new assistant Librarian. • The library is open monthly and a catalog will be available online.

4 - It was announced that Dues are payable for the coming year. You may renew online or send a check.

5 - Food Bank Donations will be collected at each meeting as a contribution to the town food bank.

6 - A certificate from the Astronomical Society of the Pacific and NASA was presented to Skyscrapers to honor the group for the local Great Eclipse Party in August, 2017.

7 - Upcoming Events • May 12th - at URI Planetarium (6 PM) Showing of "The Starry Tale" - free • May 26th - on the lawn at Ladd Observatory in Providence - showing of "The Martian" in conjunction with the Cable Car Cinema - free • June 9th - Skyscrapers Meeting at Seagrave featuring a dessert buffet (pot luck) • June 15th Observing at Riverbend Farm in the Blackstone Valley area. This session will be dedicated to one of our recently deceased members, Kent Cameron, who started this star party a few years ago. • July 27 - Mars Party at Seagrave to observe the planet at opposition (closest approach to the Earth)

8 - All were reminded to refer to the astronomical articles written by Dave Huestis that appear in local newspapers and the Skyscraper Newsletter each month to keep up with local astronomical news.

The Main Speaker this month was Dr. Cara Battersby of University of Connecticut. She made a presentation about research for her PhD thesis that involved analyzing stars in a section of the Milky Way to find more information about the origin of star formation.

Skyscrapers June Monthly Meeting: Saturday June 9 @ Seagrave Observatory

1- Tracy Prell, the new member steward, was introduced.

2. Steve Siok, immediate past president, was given a small gift at the start of this meeting.

3. Dates for upcoming events were announced: Saturday, July 28th Mars Party @ Seagrave Observatory 7 PM • Jason Major will present his Mars images prior to our star party. • People are asked to bring Mars-related materials to share

August 9 - 11 Stellafane Convention (Springfield VT) • August Monthly Meeting - Saturday, August 18 7PM Pot Luck and Members Observing Night • September Monthly Meeting - Friday, September 7 Speaker TBA • September 28 & 29 Astro-Assembly 2018

4. Trustees: New donation boxes added to the building for visitors to Seagrave to encourage donations • Member Star Parties scheduled on the following Saturdays: 6/23, 7/7, 7/14, 8/23

5. Skyscrapers plans to join the Astronomical League, an organization of amateur astronomy organizations. This group will allow members to participate in many different programs involving observing and research and a monthly publication. It also connects Skyscrapers to many other individuals interested in astronomy. • Jeff Padell will be our Coordinator and Contact person. The costs to the society are \$10 per year and individuals in Skyscrapers who want to get these perks are asked to pay \$7.50 per year. Contact Jeff asap if you are interested (jeffpadell@gmail.com).

6. AstroAssembly is held annually at Seagrave and is our major fundraiser. Dates: Sept 28 & 29th. More details will be available on the Skyscraper website and in emails.

7. Weston Ambrose, one of our jr members, presented the group with a 3D model of Seagrave Observatory that he designed and printed in one of his classes.

8. Francine Jackson attended seminars about presenting family workshops to construct a Galileoscope, a teaching telescope. In July, she plans to hold small gatherings of 2 to 3 families to help them build their own and take them home to observe together. This involves no cost to Skyscrapers or families.

9. Kent Cameron was a long standing member who passed away recently. For many years, he had been involved in a series of observing sessions on the Blackstone Canal @ Riverbend Farm in Uxbridge, MA. Skyscraper will continue these sessions this summer in memory of Kent. Sessions will take place rain or shine on the following dates: June 15th, July 27th, August 17th, Sept 21st, Oct 5th. For more information contact Francine Jackson (francine_jackson@brown.edu).

10. Terry Turner invited participants at Skyscraper meetings to participate in a food drive to help the local food bank. Nonperishable foods should be brought to Seagrave and will be collected each month.

Submitted by Kathy Siok, Secretary

Skyscrapers E Board June 11 2018 Minutes

Present: Steve Hubbard, Jim Hendrickson, Matt Oulette, Kathy & Steve Siok, Terry Turner, Jeff Padell, Jim Crawford, Tracy Prell, Francine Jackson, Bob Horton, Bob Napier, Linda Bergemann

1. New Members Update: There was a discussion of items related to recognition of membership. Each of the following was considered and assigned to be investigated for the next meeting: • - Membership Certificates to be given to new members (Assigned to: Jim Hendrickson) • New ID badges for people to wear during meetings - IDEAS (Assigned to: Tracy and Kathy) • using a lanyard and hanging these up between meetings in one of the closets • Coming up with a uniform design • Membership Cards (Assigned to Jim Crawford)

2. Constitution/bylaw changes proposed (Linda): Linda Bergemann presented some changes to our bylaws to eliminate the need for voting in new members. The wording and ideas were discussed. The final document will be presented to the membership for voting as described in the current by-laws.

3. New Society T shirts. Some membership interest. Design team? Tracy and Kathy will come up with design options and a plan to make tshirts (etc) available for purchase by the members. They will discuss this at the next Exec Comm meeting.

4. Upcoming meetings: @ Seagrave Saturday July 28th 7PM Mars Party (Mars is very close to the Earth). Speaker: Jason Major to highlight his photog-

raphy of Mars. Those attending are asked to bring any Mars-related materials to this meeting. • Saturday August 18th 7PM Pot Luck Dinner followed by Member Star Party • Friday September 7th 7 PM Regular monthly meeting with Speaker • No October Meeting due to AstroAssembly on 9/29 • Meetings from December to March will be at the Scituate Community House. • To reserve the space, we call the town clerk at Scituate Town Hall • Star Parties: June 23, July 7, July 21, Aug 11 at Seagrave Observatory 8:30 Start Time - Member Star Parties • June 15, July 27, August 17, Sept 21, Oct 5 at Riverbend Farm, Uxbridge, MA 8:30 Start Time

5. Trustees: Jeff reported the following: Donation Boxes had been put up in the meeting hall and main observatory • Due to a leak, the metal on the Patton roll off roof needs to be replaced (Urgent - \$1000 or less) • Permission given to complete this work • An estimate will be obtained to take down a tree on the property • Request to purchase a Televue 2 in Star Diagonal for the 16 inch telescope at a cost of \$261 • (Tracy Prell will donate the fund needed to make this purchase.) • Jim Crawford mentioned that he is investigating a new Port-A John service for Seagrave.

6. AstroAssembly - October 28 & 29th

Terry Turner, Bob Horton and Kathy Siok will work as team to organize and run this event. • Some volunteers have already been confirmed. • Reminders for more volunteers will start at the next meeting. • Discussed were: A discount for members, the Astrophoto contest (no names to be on photos submitted) • Possible Speakers: Ed Ting, Ian Dell'Antonio, Steve Hubbard • Need program in time for Stellafane (August 9 - 12)

7. We need to remind members that annual dues should be paid at this time. • A printout of non payers will be reviewed then emails, calls or other personal reminders can be sent out.

8. Reminders for Star Parties and meetings are needed prior to these events. • The secretary will send out emails. • Can we add a Google calendar to our website for visitors? • The "Night Sky Network" might have a calendar we can use. (Assigned to: Jim Hendrickson)

9. Article about food drive should be in the newsletter (Terry T) as well as reminders to members. • Cans of food should be brought to each meeting. Terry will collect them and bring to the food bank.

10. Options to revamp website and costs

were discussed - Club express?, forums??

Next Executive Committee Meeting: Monday August 20th @ 7 PM Seagrave Observatory

Submitted by Kathy Siok, Secretary

August Monthly Meeting canceled due to weather

Skyscraper Executive Committee Meeting

Monday, August 20, 2018 Seagrave Observatory 7 PM

Present: Steve Hubbard, Jim Hendrickson, Matt Ouelette, Kathy Siok, Tracy Prell, Linda Bergemann, Bob Horton,

Lloyd Merrill, Bob Napier, Francine Jackson, Bob Janus, Jim Crawford, Jeff Padell, Steve Siok

1. AstroAssembly – Sept 28 & 29, 2018

Members get \$5 off Registration. Advertising online – sites of Astronomy, S & T and other places • Emails to: Membership, last year's attendees, area astronomy organizations • Prizes are a little thin. Trustees will evaluate this year's donations of equipment and provide some items for the raffle. Raffle permit has been obtained from the Police Dept. • Potential Evening speaker will be contacted by Tracy: Jonathon McDowell of CFA Harvard • Ask for more Volunteers at Sept 7th meeting. • Probable dates for AstroAssembly 2019 • Theme: 50th Anniversary of Apollo 11 (Moon walk) • Tracy mentioned a possible speaker: Michelle Thaller (NASA)

2. Monthly Meetings: September 7th – Rich Sanderson – speaker No October Meeting • November 2 – no speaker yet • December 15th Holiday Meeting (August speakers) • Jim H will check with Scituate Town Hall about the dates for winter meetings.

3. Star Parties: Steve Hubbard will serve as Point Person for the present • The job includes: Be primary contact with the people asking for the party, Keep a schedule of dates, • Advertise to get volunteers, Coordinate with Trustees for parties at Seagrave, Handle donations. • Mentioned: Portable donation box for events away from Seagrave. • Dates: Sat 8/25 Members Star Party @ Seagrave, 9/21 Blackstone Valley Party • Two other events have been requested – Steve H will make contacts

4. Website re-design discussion: Steve Hubbard has done some research on "Club Express" platform that is used by ATMoB. • They have done extensive study and comparison of other possible platforms and

provided that to us. • After a discussion of features and prices, a committee was appointed to study this further and come back with recommendations to the EC about further action at the next meeting. • The members are: Jim Hendrickson (chair), Lloyd Merrill, Tracy Prell, Bob Napier

5. Member Issues/New members: Badges to be worn at meetings- lanyards (At least by executive Committee) • Kathy will use the current format and update the badges for current members • The membership application will be revised and copies will be made for Seagrave • Simple renewal forms will be printed • The microphone must be used at meetings – Jim will make up a set of directions for its use. • Discussion of Astronomical League status (Jeff) • Discussion of update categories of contributing membership. Currently they are Sponsor \$60, Supporter \$100, Patron \$250, Benefactor \$500 They should be much higher in 2018

6. Bob Horton asked for permission to purchase some small parts for \$10 Approved

7. Outreach Events: Observe the Moon Night is scheduled for Saturday, October 20th at Seagrave • Francine will hold the Galileo telescope workshop for families during that afternoon.

8. Kathy mentioned that the American Chemical Society is celebrating Space Science during National Chemistry week (week of Oct 23). We plan to involve Skyscrapers in an ACS activity as possible.

9. As a result of a discussion of future purchases / activities, the idea of revisiting our 5 year plan and prioritizing for the future was introduced. This would help Skyscrapers get grants as well as focus member efforts and spending.

10. Next Executive Committee Meeting: Monday Sept 20th @ 7 PM Seagrave

To be discussed: AstroAssembly, Unpaid Dues strategies, Web update recommendations

Submitted by Kathy Siok, Secretary

Skyscrapers Monthly Meeting Minutes Friday, September 7, 2018 7:30 PM Seagrave Memorial Observatory

1. Welcome by President Steve Hubbard.

2. AstroAssembly 2018 – September 28 & 29th • This annual event is our major fundraiser and gathers amateur astronomers from all over New England. • Attendees at the meeting were asked to attend and to volunteer to help.

1. It was announced that New Member Forms were available in the meeting hall for anyone who wished to join the society.

2. Changes to the existing bylaws were read to the membership and will be printed in the newsletter and on the website. Per the constitution, they will be voted on at the next meeting (to be held in November).

Good of the Organization:

1. Ian Dell'Antonio announced that Brown University Physics Dept would be sponsoring a Waterfire event in Providence at the end of September. There will be exhibits and telescopes.

2. Bob Napier introduced a program directed by Dennis Conte or AAVSO. This will provide citizen scientists with the on-line training to process the data returned by the TESS sky survey, detecting new exoplanets. All are welcome to find out more about this on the AAVSO website.

3. Star Parties at Riverbend in September and October

4. International Observe the Moon Night will be held on Saturday October 20th. • Seagrave will be open for activities. During the day there will be a workshop for families to build a small telescope and in the evening there will be viewing depending on the weather.

The September speaker was Rich Sanderson who presented his 10 most important moments in astronomical viewing.

Submitted by Kathy Siok, Secretary

November Monthly Meeting canceled due to weather

Cash Flow YTD 4/1/2017 through 10/30/2018

Category	4/1/2017-10/30/2018
INFLOWS	
Astro Assembly Income	
Banquet	1,475.00
Grill	410.00
Misc	319.00
Raffle	754.00
Registration	1,600.00
TOTAL Astro Assembly Income	4,558.00
Donation	
Misc Donation	1,144.24
TOTAL Donation	1,144.24
Dues	
Family	840.00
Regular	1,550.00
Senior	700.00
TOTAL Dues	3,090.00
Misc Income	90.00
Sale of Items	25.00
TOTAL Misc Income	115.00
Star Party Donations	100.00
Subscription Income	
Sky & Telescope	32.95
TOTAL Subscription Income	32.95
TOTAL INFLOWS	9,040.19
OUTFLOWS	
Astro Assem Exp	
Banquet	
Caterer	747.50
Reception	8.34
TOTAL Banquet	755.84
Grill	164.15
Misc	67.25
TOTAL Astro Assem Exp	987.24

SKYSCRAPERS INC. FISCAL YEAR 2018

Category	Budget	YTD Totals
INCOME		
AstroAssembly	3,700	4,558
Dues	3,100	3,090
Donations	1,000	1,144
Sale of Equipment	1,400	25
Star Party Donations	300	100
TOTAL INCOME	9,500	8,917
EXPENSES		
Astro Assem Exp	1,500	987
Contingency	258	253
Corporation, State Fee	22	22
Domain Name	20	0
Donation	50	10
PayPal Fees	50	32
Outreach	150	0
Postage and Delivery	50	13
Property Insurance	2,600	0
Refreshment Expense	100	10
Trustee Expense	2,500	2,175
Utilities	2,200	1,690
TOTAL EXPENSES	9,500	5,192
OVERALL TOTAL	0	



Type II supernova in Messier 77

On December 4, Conrad Cardano took this picture of a supernova that was recently reported in Sky & Telescope. M77 supernova Koichi-Itagaki (2018ivc) using GSO RC 6" f/9 with a ZWO 174MM camera. 200 frames at 20 seconds each.



Spiral Galaxy in Perseus NGC 1003

by Glenn Chaple for LVAS

Magnitude: 11.5

Size: 5.5' X 2.0'

When William Herschel conducted his systematic sky surveys during the latter part of the 18th century, he placed his deep sky finds into 8 categories, or classes. Class I through III included nebulosities of varying degrees of visibility, class I being the brightest. Although the Herschel Catalog designations have been replaced by the New General Catalog (NGC) numbers, they still serve as guides to selecting “faint fuzzies” appropriate for a specific aperture telescope. Consider the spiral galaxy NGC 1003 in Perseus. When Herschel came upon it in the autumn of 1784, he catalogued it twice – as number 238 in Class II (Faint Nebulae) and as number 198 in Class III (Very Faint Nebulae). In either case, this is not a target you’d select for a small backyard scope.

George Kepple and Glen Sanner’s Night Sky Observing Guide provide descriptions of deep-sky objects by aperture ranges of 4-6, 8-10, 12-14, 16-18 and (occasionally) 20-22 inches. The smallest aperture for which a visual description of NGC 1003 is given is for the 12-14-inch range. In the Observing Handbook and Catalogue of Deep-Sky Objects, authors Christian Luginbuhl and Brian Skiff describe it as “easily visible in 15 cm (8 inches). Can this galaxy be glimpsed with smaller apertures? To capture NGC 1003 with a 4 – 6-inch scope will require extremely dark sky conditions and a well-trained, dark-adapted eye.

Telescopically, NGC 1003 appears as a faint east-west smudge, concentrated towards the center. Measurements hint at a distance of 33 light years, which translates to a true diameter of 54,000 light years.

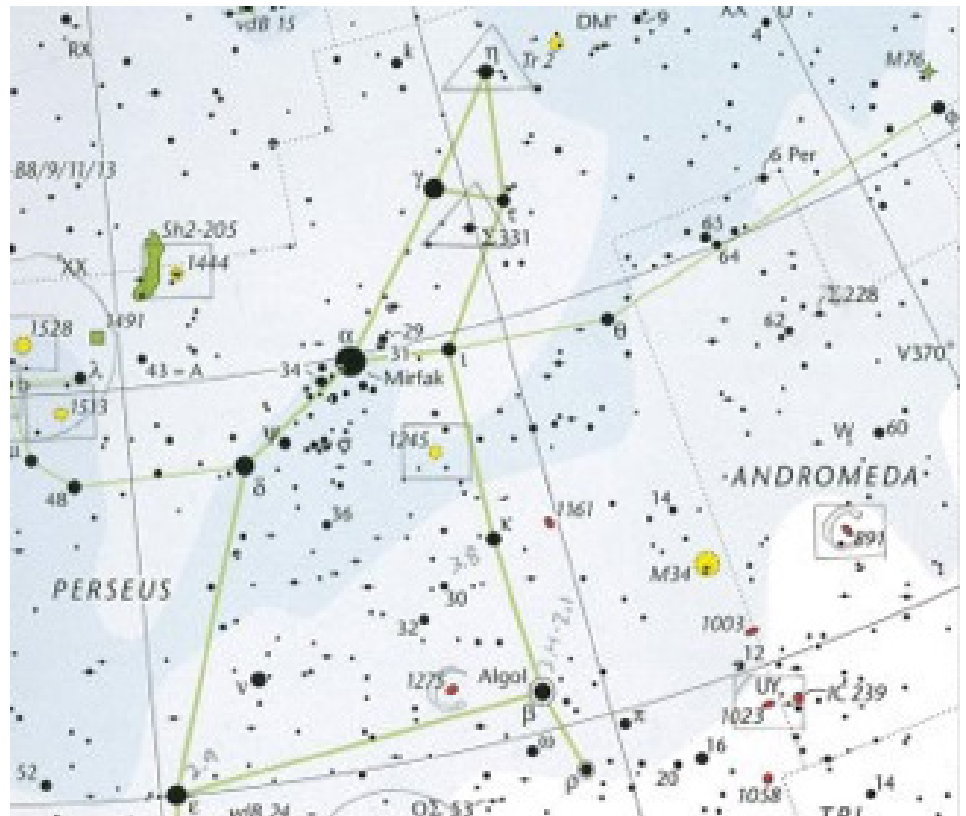
NGC 1003 is located about a degree northwest of the 5th magnitude star 12 Persei. It’s interesting to note that when constellation boundaries were formally defined by the International Astronomical Union in 1930, the borderline between Perseus and Andromeda cut through the western part of NGC 1003 – the galaxy literally resides in two constellations!



inthesky.org (North is up)

The purpose of the LVAS Observer’s Challenge is to encourage the pursuit of visual observing. It is open to everyone that is interested, and if you are able to contribute notes, drawings, or photographs, the LVAS will be happy to include them in our monthly summary. If you would like to contribute material, submit your observing notes, sketches, and/or images to either Roger Ivester (rogerivester@me.com) or Fred Rayworth (queex@embarqmail.com).

To find out more about the LVAS Observer’s Challenge or access past reports, log on to



10minuteastronomy.wordpress.com (from Pocket Sky Atlas)

Proposed Changes to Constitution & Bylaws

Constitution

ARTICLE IV: MEMBERSHIP

§2. An applicant for Junior, Regular, Family, and Senior shall submit the standard form of Membership application together with noted dues, shall be proposed by an existing member at a regular meeting, and shall become a member upon receiving a favorable majority vote at a subsequent regular meeting of the Society.

§8. Membership Dues in this Society are as listed within the Membership Application.

Bylaws

ARTICLE I: FISCAL YEAR & DUES

§2. Dues are payable on April 1 for the dues year then beginning. The annual dues shall be set out in the Membership Application (revised annually). Persons applying for membership during the months of April through December pay the above stated annual dues for the current fiscal year (April – March). Persons applying for membership during the months of January through March pay the above stated annual dues, but their membership extends through the next fiscal year. Persons making donations over and above their membership dues shall be called Contributing Members. Four distinguished categories of Contributing Members shall be designated: Sponsors (\$60); Supporters (\$100); Patrons (\$250); and Benefactors (\$500).

ARTICLE II: OFFICERS

§7. The Secretary shall:

1. Take the minutes of all meetings, regular, special, Annual and Board of Directors, and submit a written report to be published in the Skyscraper newsletter.
2. Maintain an accurate, classified list of the membership of the Society. Membership Applications shall be submitted to the Secretary who shall transmit the attached dues to the Treasurer.
3. Notify applicants for membership of their election or rejection.
4. If required by the President, notify all additional officers, chairmen and committees of their appointment.
5. Send all required notices to the membership.
6. In general, conduct the correspondence of the Society.
7. Have custody of the records of the Society.

Constitution

ARTICLE IV: MEMBERSHIP

§2. An applicant for Junior, Regular, Family, and Senior shall submit a Membership application together with appropriate dues to the Secretary of the Society. Application for membership and payment of dues may also be done on the Society's website.

§8. Membership Dues in this Society are as listed within the Membership Application and on the Society's website.

Bylaws

ARTICLE I: FISCAL YEAR & DUES

§2. Dues are payable on April 1 for the dues year then beginning. The annual dues shall be as stated in the Membership Application and on the Society's website. Persons applying for membership during the months of April through December pay the above stated annual dues for the current fiscal year (April – March). Persons applying for membership during the months of January through March pay the above stated annual dues, but their membership extends through the next fiscal year. Persons making donations over and above their membership dues shall be called Contributing Members. Four distinguished categories of Contributing Members shall be designated: Sponsors (\$60); Supporters (\$100); Patrons (\$250); and Benefactors (\$500).

ARTICLE II: OFFICERS

§7. The Secretary shall:

1. Take the minutes of all meetings, regular, special, Annual and Board of Directors, and submit a written report to be published in the Skyscraper newsletter.
2. Maintain an accurate, classified list of the membership of the Society. Membership Applications and renewals shall be submitted to the Secretary who shall transmit the attached dues to the Treasurer.
3. Notify applicants for membership of receipt of their application and welcome them into the Society. Introduce new members to the general membership at the next regular meeting they attend.
4. If required by the President, notify all additional officers, chairmen and committees of their appointment.
5. Send all required notices to the membership.
6. In general, conduct the correspondence of the Society.
7. Have custody of the records of the Society.

ORIGINAL

PROPOSED CHANGES - 06/12/18

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