



# 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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## Friday, February 2 at North Scituate Community Center

**6:30pm: Dessert Buffet**

**7:15pm: Short business meeting**

**7:30pm: Featured Presentation A New Window on the Universe from an Old Wave-Band**

The first radio telescopes used for astronomy operated at meter wavelengths or longer, but with the advent of better computers and new science cases, observations shifted to the centimeter regime. Centimeter observations are simpler than meter wave for several reasons, but over the last decade, several new meter wave radio telescopes have been constructed with the hope of observing a unique signature from the first stars and galaxies in the universe. This talk will

present the science behind these observations and describe the latest efforts to detect long-wavelength cosmological emission from the early universe.

Jonathan Pober is an assistant professor of physics at Brown, where he has been since 2016. He received his PhD from UC Berkeley, and was an NSF Astronomy Postdoctoral fellow at the University of Washington before coming to Brown.

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**Skyscrapers  
Board Meetings**  
Third Monday of the Month  
All Members Welcome

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## Phases of the Moon

**Last Quarter Moon**  
February 7 15:54

**New Moon**  
February 15 21:05

**First Quarter Moon**  
February 23 08:09



**Seagrave Memorial Observatory  
Open Nights**

**Saturdays at 7:00 pm**  
weather & conditions permitting

# A Month Without a Full Moon

by Francine Jackson

I'm not sure if any of you have checked for the date of February's Full Moon, but the one listed for February is on March 1st. As February only has 28 days, and our lunar cycle takes 29½ days, there's got to be some times when February must do without one. Surprisingly, it isn't as often as you might think. The last one happened in 1999, and we have until 2037 for it to happen again.

In fact, between 2000 and 2999, only 48 Februaries will be without a full Moon, and three of them will be leap years. The last 29-day month without a full Moon was in 1608, although I was quite surprised at this date, as I really believed I remembered February, 1980 not having one. The problem with that, of course, is that the Full Moon

didn't take place here, but astronomical occurrences are dated according to Greenwich Mean Time, or the time in England, and they squeaked by with one. With that in mind, the next scheduled full Moonless 29-day February will be 2572.

Of course, what this timing does this year is give us two Full Moons during both January and March. The second full Moon of each in regular parlance is often referred to as a blue Moon, one of two definitions for this term. Where this name came from, no one is really sure, although there are people who seem to be able to discern a bluish color to our neighbor, although not necessarily during these times.

And, although it is now history for us,

the last full Moon in January had with it a total lunar eclipse, but, of course, being New England, it occurred after moonset, and it was most likely cloudy anyway. But, don't worry: We only have a year to wait, as the next total lunar eclipse visible from here will be Sunday night, January 20-21, 2019.



*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 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 **February 15** to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to [jim@distantgalaxy.com](mailto: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](mailto:jim@distantgalaxy.com). Note that you will no longer receive the newsletter by postal mail.

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# The Sun, Moon & Planets in February

This table contains the ephemeris of the objects in the Solar System for each Saturday night in February 2018. All times are in Eastern Standard Time (UTC-5). Ephemeris times are for Seagrave Observatory (41.845N, 71.590W).

Object	Date	RA	Dec	Const	Mag	Size	Elong	Phase(%)	Dist(S)	Dist(E)	Rise	Transit	Set
<b>Sun</b>	<b>3</b>	21 06.2	-16 35.9	Cap	-26.8	1947.3	-	-	-	0.99	06:56	12:00	17:04
	<b>10</b>	21 34.3	-14 26.2	Cap	-26.8	1945	-	-	-	0.99	06:48	12:00	17:13
	<b>17</b>	22 01.7	-12 04.6	Aqr	-26.8	1942.3	-	-	-	0.99	06:38	12:00	17:22
	<b>24</b>	22 28.5	-9 33.7	Aqr	-26.8	1939.4	-	-	-	0.99	06:28	11:59	17:30
<b>Moon</b>	<b>3</b>	11 20.6	6 57.2	Leo	-12.6	1935.4	147° W	92	-	-	19:46	02:27	08:57
	<b>10</b>	17 05.0	-18 41.0	Oph	-11.2	1750.2	64° W	28	-	-	02:58	07:56	12:52
	<b>17</b>	22 50.7	-10 11.0	Aqr	-7.8	1812	13° E	1	-	-	07:43	13:26	19:16
	<b>24</b>	4 52.1	17 29.5	Tau	-12.1	1965.8	99° E	58	-	-	11:50	19:20	02:52
<b>Mercury</b>	<b>3</b>	20 26.7	-21 03.4	Cap	-0.5	4.8	10° W	96	0.46	1.39	06:38	11:22	16:07
	<b>10</b>	21 14.6	-18 09.6	Cap	-0.8	4.8	6° W	99	0.43	1.40	06:46	11:42	16:40
	<b>17</b>	22 02.9	-14 05.6	Aqr	-1.2	4.9	2° W	100	0.40	1.39	06:50	12:03	17:18
	<b>24</b>	22 51.4	-8 54.5	Aqr	-1.3	5.1	6° E	98	0.36	1.33	06:51	12:24	17:58
<b>Venus</b>	<b>3</b>	21 31.5	-16 06.9	Cap	-3.8	9.9	6° E	99	0.73	1.70	07:21	12:26	17:30
	<b>10</b>	22 05.8	-13 15.1	Aqr	-3.8	10.0	8° E	99	0.73	1.69	07:17	12:32	17:48
	<b>17</b>	22 39.2	-10 05.7	Aqr	-3.8	10.0	9° E	99	0.73	1.68	07:10	12:38	18:06
	<b>24</b>	23 11.8	-6 43.3	Aqr	-3.8	10.1	11° E	98	0.73	1.67	07:03	12:43	18:24
<b>Mars</b>	<b>3</b>	16 10.9	-20 26.3	Sco	1.2	5.7	70° W	91	1.60	1.65	02:19	07:04	11:48
	<b>10</b>	16 28.9	-21 14.0	Oph	1.1	5.9	72° W	90	1.59	1.59	02:12	06:54	11:35
	<b>17</b>	16 46.9	-21 54.7	Oph	1	6.2	75° W	90	1.59	1.52	02:06	06:44	11:23
	<b>24</b>	17 04.9	-22 28.2	Oph	0.9	6.5	78° W	89	1.58	1.45	01:59	06:35	11:11
<b>1 Ceres</b>	<b>3</b>	9 12.0	30 18.6	Cnc	6.9	0.8	166° E	100	2.57	1.60	15:50	23:59	08:09
	<b>10</b>	9 05.4	31 00.0	Cnc	7.0	0.8	162° E	100	2.57	1.61	15:12	23:25	07:39
	<b>17</b>	8 59.0	31 31.1	Cnc	7.1	0.8	156° E	99	2.57	1.63	14:35	22:52	07:08
	<b>24</b>	8 53.4	31 51.0	Cnc	7.2	0.7	149° E	99	2.56	1.67	14:01	22:19	06:37
<b>Jupiter</b>	<b>3</b>	15 17.3	-17 02.7	Lib	-1.8	36	83° W	99	5.43	5.46	01:10	06:09	11:08
	<b>10</b>	15 19.9	-17 11.6	Lib	-1.9	36.8	89° W	99	5.43	5.35	00:46	05:44	10:42
	<b>17</b>	15 22.0	-17 18.2	Lib	-1.9	37.6	96° W	99	5.42	5.24	00:21	05:19	10:16
	<b>24</b>	15 23.5	-17 22.6	Lib	-2.0	38.4	102° W	99	5.42	5.12	23:55	04:52	09:50
<b>Saturn</b>	<b>3</b>	18 21.8	-22 27.7	Sgr	0.6	15.3	39° W	100	10.07	10.81	04:37	09:13	13:49
	<b>10</b>	18 24.7	-22 26.2	Sgr	0.6	15.4	45° W	100	10.07	10.73	04:12	08:48	13:24
	<b>17</b>	18 27.5	-22 24.5	Sgr	0.6	15.6	52° W	100	10.07	10.64	03:48	08:24	13:00
	<b>24</b>	18 30.0	-22 22.7	Sgr	0.6	15.7	58° W	100	10.07	10.55	03:22	07:59	12:35
<b>Uranus</b>	<b>3</b>	1 33.4	9 09.6	Psc	5.8	3.5	71° E	100	19.90	20.20	09:48	16:23	22:59
	<b>10</b>	1 34.2	9 14.3	Psc	5.8	3.5	64° E	100	19.90	20.31	09:21	15:57	22:32
	<b>17</b>	1 35.1	9 19.7	Psc	5.9	3.5	57° E	100	19.90	20.42	08:54	15:30	22:06
	<b>24</b>	1 36.1	9 25.8	Psc	5.9	3.4	50° E	100	19.90	20.51	08:27	15:04	21:40
<b>Neptune</b>	<b>3</b>	22 58.2	-7 34.3	Aqr	8.0	2.2	29° E	100	29.94	30.80	08:14	13:49	19:23
	<b>10</b>	22 59.1	-7 28.7	Aqr	8.0	2.2	22° E	100	29.94	30.86	07:47	13:22	18:53
	<b>17</b>	23 00.0	-7 22.8	Aqr	8.0	2.2	15° E	100	29.94	30.90	07:20	12:55	18:31
	<b>24</b>	23 01.0	-7 16.8	Aqr	8.0	2.2	8° E	100	29.94	30.92	06:53	12:29	18:05
<b>Pluto</b>	<b>3</b>	19 25.8	-21 33.8	Sgr	14.3	0.2	24° W	100	33.50	34.39	05:37	10:17	14:57
	<b>10</b>	19 26.7	-21 32.6	Sgr	14.3	0.2	31° W	100	33.50	34.34	05:10	09:50	14:30
	<b>17</b>	19 27.6	-21 31.3	Sgr	14.3	0.2	38° W	100	33.51	34.28	04:44	09:23	14:03
	<b>24</b>	19 28.4	-21 30.2	Sgr	14.3	0.2	45° W	100	33.51	34.21	04:17	08:57	13:37

# The Journey to Totality

by Dave Huestis

Today's column is a departure from my monthly highlights of upcoming astronomical events. February's lack of spectacular phenomena influenced my decision to recap last August's solar eclipse. However, this story is more about the journey to the path of totality than it is about the eclipse itself.

Ever since I became interested in astronomy in the early 1970s I was aware of a total solar eclipse that would diagonally traverse the United States on August 21, 2017. But that date was a long way off, so I travelled to Manitoba, Canada in 1979 for the total solar eclipse of February 26, where about 2 minutes and 40 seconds of totality was observed. Thus bitten by the eclipse "bug," I immediately signed on to a two-week eclipse/safari expedition to Tanzania, Africa in February, 1980. On February 16 about 3 minutes and 54 seconds of totality was successfully observed from Tarangire National Park, a game reserve. Other solar eclipses followed, including: a successfully observed annular eclipse from Greenville, South Carolina in May 1984; a clouded out total eclipse in Hawaii in July 1991; and a mostly clouded out view of annularity from Attitash, New Hampshire in May 1994.

As 2017 drew closer at hand I was a bit behind the eight ball. Planning for the 1991 Hawaii eclipse had begun three years prior to the event. However, I wasn't necessarily worried about elaborate plans for the August 21 event, since the 71 mile-wide path stretched 2500 miles diagonally across densely populated regions of the United States from Oregon to South Carolina. But I should have been. While millions of people

lived within totality's path, millions more were looking to position themselves within that zone as well.

My wife Tina and I did not wish to fly, so I began to research suitable locations along the path that would be within a two-day drive. I decided on Hopkinsville, Kentucky. Since this city would experience the longest duration of totality along the path, two minutes and forty seconds, everybody and their brother were also selecting this location. After a few phone calls and many follow-up emails, during June 2016, I was able to secure permission to observe the eclipse from the campus of Hopkinsville Community College (HCC). Now the challenge would be to find accommodations because most of the lodging establishments would not accept reservations until 11 months out.

However, I did contact a manager of one hotel chain in Hopkinsville. While he was not accepting reservations at the time, he told me they were considering charging \$1000 per night and requiring a three night minimum stay! I sucked in so much air in shock that I made the room I was in a vacuum! He took my name and email address to communicate the specifics when they decided on the rate. (The eclipse was on a Monday, so they figured they would book rooms for Friday, Saturday and Sunday nights.)

I called around the area and everyone was following suit. Even accommodations 120 miles away were in the \$500/night range with a three-night minimum. What to do? I would call it price gouging, but that definition only applies in emergency/disaster circumstances. Supply and demand

would be a more appropriate term, though I saw it as pure and simple greed!

A good friend of ours suggested Airbnb, an online accommodations broker. I had heard of this enterprise before, but had never checked it out. After a short search of their offerings I found a "Couple's Getaway/Writer's Retreat" in Adams, Tennessee. And as luck would have it, the place was within the path of totality. In fact, the property would experience two minutes and 35.9 seconds of totality. And the price was right, only \$175 per night. During the first week of August 2016 we booked four nights. (The lodging establishment in Hopkinsville eventually decided on \$899/night with a three night minimum.)

Our wonderful hosts in Adams were Ray and Jo Lacroix. Come to find out, Ray used to live in Woonsocket, and had also lived in Burrillville, my home town. And his two sons live in nearby Gloucester. It was simply meant to be!

As we got into 2017, our travel plans were finalized for the 1100 mile drive down to Adams. Then on Wednesday, March 29, our universe changed in an instant. My wife Tina had a major stroke. No warning signs ... just BAM! When I was finally able to see her after surgery to remove the clot, she recognized me immediately. Her speech was only slightly slurred. Her memory was intact. Her left side was compromised. Tina could barely move her arm and leg, but at least had feeling on that side. She was unable to walk. Her left eyesight was also deficient. I've never felt so helpless in my life. But there was nothing I could do. She was in the capable hands of the staff at Rhode



Island Hospital.

I had an astronomy lab to teach at Bryant that night. My students had studied for a quiz, and there was no way to get the quiz to campus on time. Tina was still under the effects of sedation, drifting in and out of consciousness. However, she was concerned about my lab. She insisted I teach my class as scheduled. It was a temporary distraction. When I arrived home after the lab I simply lost it. The house was empty and Tina wasn't there as usual to ask me "how did the lab go tonight?"

The next day when I visited Tina, one of the first things she asked was, "How did the lab go last night?" That's my Tina! She spent one week recovering at Rhode Island Hospital.

Tina's next chapter to recovery was four weeks of rehab at the Rehabilitation Hospital of Rhode Island in North Smithfield. The fine group of therapists spent at least three hours per day helping Tina to recover the everyday tasks you and I take for granted. They worked on Physical Therapy, Speech Therapy (really cognitive/logic/memory therapy – Tina's speech was fine), and Occupational Therapy.

Right from the beginning of her rehab Tina told the therapists of our eclipse expedition plans. She expressed that she would do anything towards attaining that goal. Every day that I visited her I would see improvement. She proved to be a very good patient. Her determination was unbelievable. Attitude is everything ... well, at least in conjunction with the great work by the therapists. Eventually they had her using a walker to get around. She even briefly attempted a cane with close supervision before she was released.

On May 1 Tina came home. She had been away for five weeks. Within a week therapists from Concord Home Health and Wellness Services began in-homecare visits. They continued and expanded upon the progress Tina had already made. She used the walker for while, but soon began using the cane without assistance more frequently. She expressed her desire to the PT that we were still going to the eclipse and that she would use the cane, not the walker, if she had to. Tina was soon walking without the cane. (Note: Though we did bring the cane with us on our trip, she did not use it at all. In fact, all her therapists would

be very proud of her. Two days before the eclipse we walked around downtown Hopkinsville, KY, where perhaps one hundred vendors were hawking anything eclipse themed. And on the day after the eclipse we walked most of Mammoth Cave. Both excursions Tina managed without the cane. What a trooper! I was very proud of what she had accomplished.)

During the first week of June my plan was to still drive about 40 minutes the morning of the eclipse up to Hopkinsville to observe with faculty of HCC. Unfortunately, the administration made some changes to their plans. Therefore we decided to observe right from our spot in Adams, only losing 4.1 seconds of totality. This change was the best thing that could have happened to our plans.

We arrived at Ray and Jo's place in Adams, Tennessee on Friday evening, August 18. The walkout basement apartment was cozy with all the amenities. They treated us like family. On Monday, eclipse day, they provided us a barbecue before, during and after the eclipse. We wouldn't have had that kind of hospitality at any of the other lodgings. Their two daughters, one son-in-law, one boyfriend, and two young children joined in the festivities. I brought several pair of eclipse glasses for them to use.

Fortunately there were no clouds in the vicinity. When the partial phase began the temperature was 93 degrees with extremely high humidity. I obtained a good series of partial phase images leading up to totality using a 300mm lens. Unfortunately when I removed my solar filter I inadvertently changed the focus, resulting in my totality images being slightly out of focus. See this link for some of these images: <http://www.theskyscrapers.org/huestis-2017-eclipse>. See this Youtube link for a short movie of totality taken by Ray's son-in law Ryan: <https://www.youtube.com/watch?v=2O-qGJUMaJYI>

When the Sun reappeared 2 minutes and 35.9 seconds later, it looked like an extremely bright arc light. I decided not to take outgoing partial images. During totality the temperature dropped 8 degrees from 93 to 85.

We were successful. Tina's strong determination during recovery resulted in her observing her first total solar eclipse. Immediately afterwards we began talking

about the April 8, 2024 total solar eclipse. Our stay with Ray and Jo is aptly summed up by a plaque on the wall of the basement apartment: "Arrive as friends. Leave as family."

Tina has since gone back to work and continues toward her goal of full recovery.

Dave Huestis PS. We put 2660 miles on the Rogue!



*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>*

# Open Cluster in Canis Major

## Messier 41

by Glenn Chapple for LVAS

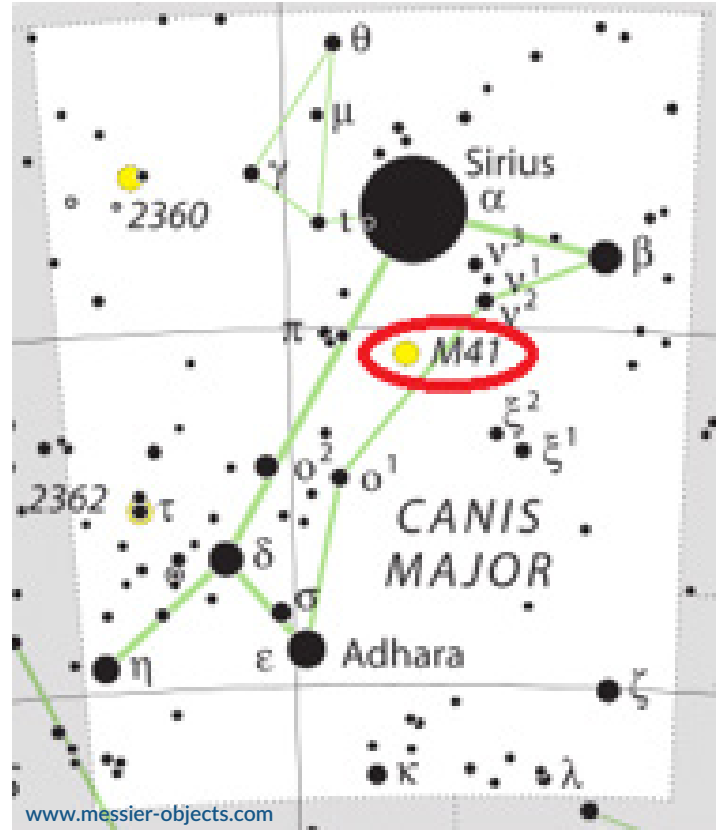
**(Mag. 4.5; Size 40')**

The open star cluster Messier 41 might not seem like much of an observer's challenge. It's bright enough (magnitude 4.5) to be seen with the unaided eye and is resolvable with binoculars. A small telescope magnifying just 30X will capture about two dozen cluster members scattered across an area slightly larger than a full moon. Large aperture scopes will capture upwards of 100.

One of the cluster's more interesting features is a ruddy star located near the center. I learned about it in William Tyler Olcott's *Field Book of the Skies* – my primary guide during my early days as a backyard astronomer in the mid 1960s and early 1970s. My earliest attempts with a 3-inch f/10 reflector proved disappointing. I expected a ruby red star to dominate the eyepiece field. No such luck, and it wasn't until 1977 that I saw what seemed to be a reddish star near the heart of M41. I wasn't positive this was the star Olcott referred to and wrote, "Bright star in center seems reddish, but this may be a result of prior knowledge." I re-observed M41 with a 4.5-inch f/8 reflector in 2004 and labeled the red star on a drawing I made (see below). Compare it with an image made by Mario Motta using a 6-inch scope.

M41 is easily found just 4 degrees south of Sirius. It was possibly seen by Aristotle around 325 B.C and recorded by the Italian astronomer Giovanni Battista Hodierna around 1654. Situated about 2100 light years away, M41 spans some 25 light years.

*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](mailto:rogerivester@me.com)) or Fred Rayworth ([queex@embarqmail.com](mailto:queex@embarqmail.com)). To find out more about the LVAS Observer's Challenge or access past reports, log on to [lvastronomy.com/observing-challenge](http://lvastronomy.com/observing-challenge).*



Mario Motta, MD







# Sixty Years of Observing Our Earth

By Teagan Wall

Satellites are a part of our everyday life. We use global positioning system (GPS) satellites to help us find directions. Satellite television and telephones bring us entertainment, and they connect people all over the world. Weather satellites help us create forecasts, and if there's a disaster—such as a hurricane or a large fire—they can help track what's happening. Then, communication satellites can help us warn people in harm's way.

There are many different types of satellites. Some are smaller than a shoebox, while others are bigger than a school bus. In all, there are more than 1,000 satellites orbiting Earth. With that many always around, it can be easy to take them for granted. However, we haven't always had these helpful eyes in the sky.

The United States launched its first satellite on Jan. 31, 1958. It was called Explorer 1, and it weighed in at only about 30 pounds. This little satellite carried America's first scientific instruments into space: temperature sensors, a microphone, radiation detectors and more.

Explorer 1 sent back data for four months, but remained in orbit for more than 10 years. This small, relatively simple satellite kicked off the American space age. Now, just 60 years later, we depend on satellites every day. Through these satellites, scientists have learned all sorts of things about our planet.

For example, we can now use satellites to measure the height of the land and sea with instruments called altimeters. Altimeters bounce a microwave or laser pulse off Earth and measure how long it takes to come back. Since the speed of light is known very accurately, scientists can use that measurement to calculate the height of a mountain, for example, or the changing levels of Earth's seas.

Satellites also help us to study Earth's atmosphere. The atmosphere is made up of layers of gases that surround Earth. Before satellites, we had very little information

about these layers. However, with satellites' view from space, NASA scientists can study how the atmosphere's layers interact with light. This tells us which gases are in the air and how much of each gas can be found in the atmosphere. Satellites also help us learn about the clouds and small particles in the atmosphere, too.

When there's an earthquake, we can use radar in satellites to figure out how much Earth has moved during a quake. In fact, satellites allow NASA scientists to observe all kinds of changes in Earth over months, years or even decades.

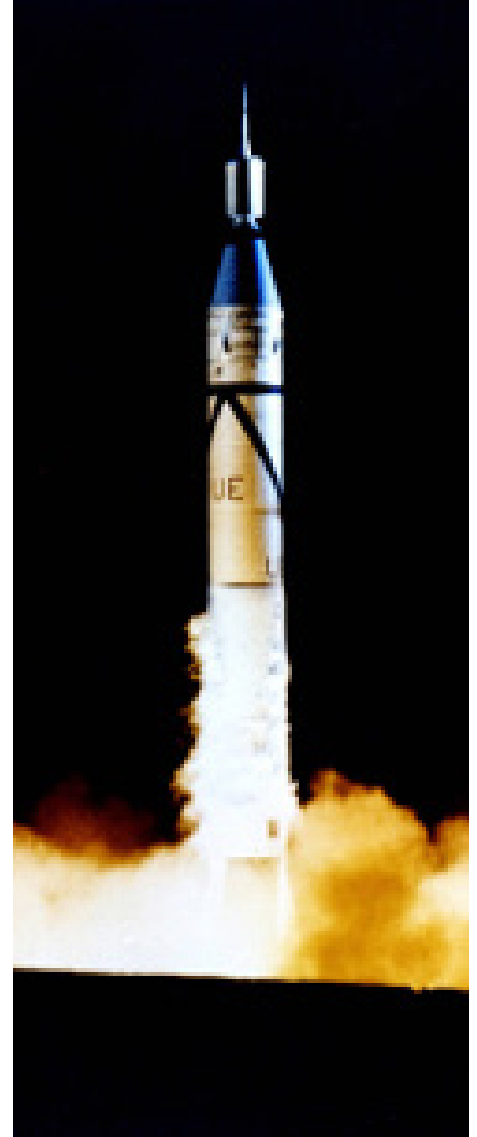
Satellites have also allowed us—for the first time in civilization—to have pictures of our home planet from space. Earth is big, so to take a picture of the whole thing, you need to be far away. Apollo 17 astronauts took the first photo of the whole Earth in 1972. Today, we're able to capture new pictures of our planet many times every day.

Today, many satellites are buzzing around Earth, and each one plays an important part in how we understand our planet and live life here. These satellite explorers are possible because of what we learned from our first voyage into space with Explorer 1—and the decades of hard work and scientific advances since then.

To learn more about satellites, including where they go when they die, check out NASA Space Place: <https://spaceplace.nasa.gov/spacecraft-graveyard>

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This photo shows the launch of Explorer 1 from Cape Canaveral, Fla., on Jan. 31, 1958. Explorer 1 is the small section on top of the large Jupiter-C rocket that blasted it into orbit. With the launch of Explorer 1, the United States officially entered the space age. Image credit: NASA

# January Reports

Report of the Skyscraper Executive Committee meeting January 29 2018

- In attendance: Lloyd Merrill, Steve and Kathy Siok, Tracy Prell, Jim Hendrickson, Bob Horton, Francine Jackson, Ian Dell'Antonio, Matt Ouellette, Steve Hubbard

**Future Speakers / Meetings:** Friday, February 3, NSCC. Dessert Buffett, Jonathan Prober, Cosmology with very long wavelength radio waves

- Saturday, March 3, NSCC, Meredith Hughes, Star forming disks

- April meeting, Cara Battersey from UCONN.

- Possible extra event /meeting in April, Robert Reeves. Runs the Texas Star Party and will be in New York attending NEAF this year.

**Bylaw change proposal / Steve Hubbard:** This was discussed and a minor modification made to the text. Will be presented by Steve at the February meeting and discussed / voted upon in March.

**Nomination / Elections:** Bob Horton and Tracy Prell are heading up the nomination committee. Linda Bergemann and Francine are in charge of the election committee.

**AstroAssembly 2018:** A date for the event was discussed. It was decided that the last weekend in September (Sept 28 and 29) would be set for this year's event. A theme is still to be decided upon. Tracy Prell has a lead on a possible featured speaker, Michelle Thaller, Asst. Director of Science and

Communication at NASA Goddard Space Flight Center.

**Treasurer's Report:** We are in fairly good shape as far as budget goes. Some shortfall, not as many members renewing. We should review the dues level for Seniors as currently 1/3 of our membership is in this category.

**Trustees:** We have received a large number of decent telescopes and other items from an estate. This currently fills about 1/3 of the membership hall. The Trustees are in the process of inventorying the items as a first step to deciding what to do with everything. We need to resolve this before we move the meetings back into the meeting hall in April.

**Spring Workshop Series:** There was lots of back and forth about methods and thoughts to help increase membership and participation. Linda Bergemann is willing to head up a committee to work on this. It was decided to table more of this discussion at this time, but revisit this later. There has been poor attendance at past workshops. We may decide to try a different format. Nothing finalized at this time.

**All Sky Fireball Network Camera:** Ian brought this up as a proposal in response to a call for participation from NASA. This requires a short 2 page proposal to be submitted within 2 more days. All were in favor of trying to get this for the observatory and Ian will be working on this with the help of some other members.

Cash Flow YTD 2017  
4/1/2017 through 12/31/2017

Category	4/1/2017-12/31/2017
<b>INFLOWS</b>	
Astro Assembly Income	
Banquet	1,200.00
Doantions	7.00
Grill	273.00
Raffle	547.00
Registration	1,680.00
<b>TOTAL Astro Assembly Income</b>	<b>3,707.00</b>
Donation	
Library Telescope Program	1,150.00
Memory of Kent Cameron	470.00
Misc Donation	1,377.33
<b>TOTAL Donation</b>	<b>2,997.33</b>
Dues	
Family	840.00
Junior	30.00
Regular	1,048.60
Senior	635.00
<b>TOTAL Dues</b>	<b>2,553.60</b>
Star Party Donations	135.00
<b>TOTAL INFLOWS</b>	<b>9,392.93</b>
<b>OUTFLOWS</b>	
Astro Assem Exp	
Banquet	
Caterer	747.50
Reception	28.00
<b>TOTAL Banquet</b>	<b>775.50</b>
Grill	144.85
Misc	59.46
Printing	43.50
Refreshments	
Friday PM	33.96
<b>TOTAL Refreshments</b>	<b>33.96</b>
<b>TOTAL Astro Assem Exp</b>	<b>1,057.27</b>
Corporation, State Fee	22.00
Outreach	
Library Telescope Program	1,165.67
<b>TOTAL Outreach</b>	<b>1,165.67</b>
Property Insurance	2,537.00
Trustee Expense	
Capital Equipment	730.00
Property Maintenance	2,049.33
<b>TOTAL Trustee Expense</b>	<b>2,779.33</b>
Utilities	
Electric	205.76
Internet	649.91
Porta-John	778.95
Propane	80.25
<b>TOTAL Utilities</b>	<b>1,714.87</b>
<b>TOTAL OUTFLOWS</b>	<b>9,276.14</b>
<b>OVERALL TOTAL</b>	<b>116.79</b>

## Maine Astronomy Retreat Summer 2018

We are reaching out to share with you information about the Maine Astronomy Retreat at Medomak Retreat Center in Washington, Maine - a vacation for you and your telescope!

Washington, Maine has some of the darkest skies in the Northeast, with a limiting visual magnitude of 6.3 (SQM value: 21.3 MPSAS). This summer, August 11-17, we are hosting our fifth annual Maine Astronomy Retreat. For six nights you will be able to revel under our expansive dark skies - we will have telescopes on hand and encourage you to bring yours, too. During the day, in addition to engaging lectures and programs by our expert facilitators, our facility is at your disposal. Enjoy our quiet waterfront equipped with canoes and kayaks, play tennis and basketball on our

courts, or take a scenic drive and explore the beautiful coastal towns of mid-coast Maine.

The retreat is led by J. Kelly Beatty, Sky & Telescope's senior editor, and Bruce Berger, director of Amateur Telescope Makers of Boston Research and Imaging Observatory; Our special guest and instructor will be Babak Tafreshi, founder of The World at Night and nightscape photographer for the National Geographic image collection.

For this star party there's no need to bring a tent, sleep in a sleeping bag, or eat uninspired food. Medomak has comfortable, private cabins with real beds, hot showers, and electricity, as well as delicious, locally-sourced meals prepared on the premises. And it's all included in your tuition. Limited to 40 participants.

We would love it if you would pass on this information to your group members or include it in your newsletter and calendar of events.

Also, please be sure to stop by our booth at NEAF to learn more, or just for a nice "hello."

More details and the ability to register can be found here: <http://www.astronomyretreat.com>

Questions? Would you like to speak with a live human? Please feel free to give us a call at 1-866-MEDOMAK.

Thank you so much for your time and consideration.

Best regards,

David Brunner, Director

Medomak Summer Camp for Families & Retreat Center for Adults

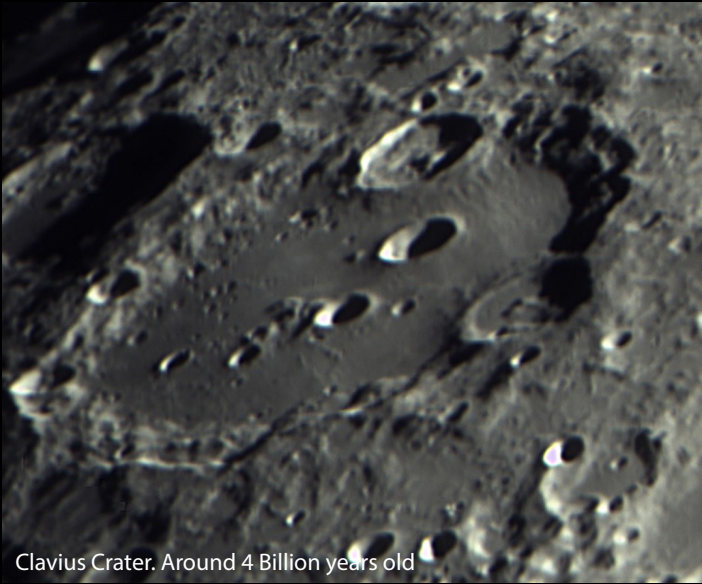




Star Party and presentation by Kim Arcand from Chandra X-Ray Observatory at Seagrave on Friday, December 1.







Clavius Crater. Around 4 Billion years old



Crater Plato. A bit over 60 miles across



The area around Straight Wall on the Moon. Roughly 66 miles long.



Clavius Crater. Around 4 Billion years old

Lunar images taken by Steve Hubbard with a 14-inch SCT on January 24.



First Quarter Moon taken through the freshly cleaned 12-inch lens of the Brashear refractor at Ladd Observatory by Jim Hendrickson.





January's first Full Moon: Supermoon rising sequence over the Castle Hill Inn and Light House in Newport, RI. January 1, 2018 by Bob Horton.



January's second (Blue) Full Moon was also a partial lunar eclipse. This view from Sabin Point Park by Tracy Prell on January 31, 2018



# 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