



# the Skyscraper

vol. 47 no. 04  
April 2020

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 Sun, Moon & Planets in April
- 4 Supernova Deferred (for now), Easter, and a Meteor Shower
- 5 50th Anniversary of Apollo 13
- 6 Hubble at 30: Three Decades of Cosmic Discovery
- 7 Spiral Galaxy in Ursa Major: NGC 3877
- 8 Astrophoto Gallery
- 11 Proposed budget for 2020-2021
- 11 Membership Renewal 2020-2021



**Seagrave Observatory is closed as of March 14 until further notice.**

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

While we feel that the overall risk is very low, this action is being taken out of an abundance of caution. Many of our volunteers who donate their time to show the public the wonders of the universe fall into the more senior, higher risk category for this disease and their protection as well as that of all of our members and visitors is our utmost concern.

April and May meetings are postponed.

## Phases of the Moon

**First Quarter Moon**

April 1 10:25

**Full Worm Moon**

April 8 02:35

**Last Quarter Moon**

April 14 22:56

**New Moon**

April 23 02:26

**First Quarter Moon**

April 30 20:38

# President's Message

by Steve Hubbard

Dear fellow members of Skyscrapers. I've struggled to write a message to you all this month. It's hard to see much further than a few days and sometimes even hours out from the middle of this pandemic.

This is usually the beginning of the time when we can all start to enjoy some warmer nights and the many, many galaxies and other deep sky treats that the spring skies have to bring us.

This year sadly things have come to a very abrupt halt.

We don't know how long this will affect us all and what the future brings, but we still can always have our love of the night sky.

Ours is a somewhat solitary pleasure and social distancing shouldn't keep you from going out there with your telescope, binoculars or just your eyeballs. Going out to see the night sky is something that isn't quarantined and is a way for all of us to still try and share the wonders of the universe together.

For now, our elections and meetings are on hold. We don't know what the future will bring and when we can start to get back to normal.

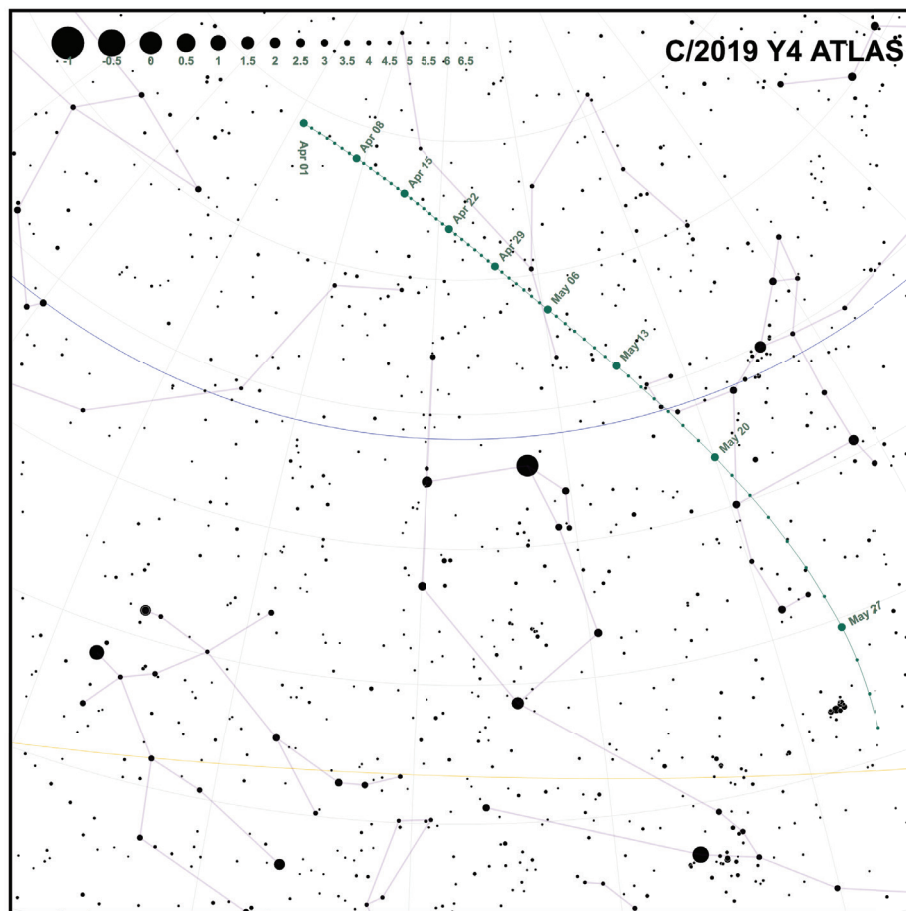
I'm sure you all join me in hoping that that happens soon and that we can get back together as a group to enjoy time and interest together.

Oh...and by the way...whenever it's clear be sure to start checking out comet

Atlas. It's a binocular object now and has prospects to brighten up over the next couple of months. I've seen some projections that it could brighten to between magnitude +1 to even -5! Lets hope that it gets to

the brighter end of the range and doesn't disintegrate as it gets closer to the Sun in a couple of months.

To help you find it, here is a web site: <https://theskylive.com/where-is-c2019y4>



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 **April 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.

## President

Steve Hubbard [cstahhs@gmail.com](mailto:cstahhs@gmail.com)

## 1st Vice President

Jim Hendrickson [hendrickson.jim@gmail.com](mailto:hendrickson.jim@gmail.com)

## 2nd Vice President

Bob Horton [Shootingsta98@gmail.com](mailto:Shootingsta98@gmail.com)

## Secretary

Kathy Siok [kathys5@cox.net](mailto:kathys5@cox.net)

## Treasurer

Matt Ouellette [matt80844@yahoo.com](mailto:matt80844@yahoo.com)

## Members at Large

Bob Janus [janus68@cox.net](mailto:janus68@cox.net)

Lloyd Merrill [lloydmerrell@gmail.com](mailto:lloydmerrell@gmail.com)

## Trustees

Jeff Padell [jeffpadell@gmail.com](mailto:jeffpadell@gmail.com)

Jim Crawford [jrcrawford@cox.net](mailto:jrcrawford@cox.net)

## Outreach Chairperson

Linda Bergemann [lbergemann@aol.com](mailto:lbergemann@aol.com)

## Observatory Committee Chairperson

Jeff Padell [jeffpadell@gmail.com](mailto:jeffpadell@gmail.com)

## New Member Steward

Tracy Prell [tracy.prell@gmail.com](mailto:tracy.prell@gmail.com)

## Librarian

Dave Huestis [dhuestis@aol.com](mailto:dhuestis@aol.com)

## Assistant Librarian

Weston Ambrose

## Historian

Dave Huestis [dhuestis@aol.com](mailto:dhuestis@aol.com)

## Editor

Jim Hendrickson [hendrickson.jim@gmail.com](mailto:hendrickson.jim@gmail.com)

## Astronomical League Correspondent (ALCor)

Jeff Padell [jeffpadell@gmail.com](mailto:jeffpadell@gmail.com)

# The Sun, Moon & Planets in April

This table contains the ephemeris of the objects in the Solar System for each Saturday night in April 2020. Times in Eastern Daylight Time (UTC-4) after March 8. 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>	0 54.1	5 47.2	Psc	-26.8	1919.0	-	-	-	1.00	06:23	12:49	19:16
	<b>11</b>	1 19.7	8 24.3	Psc	-26.8	1915.2	-	-	-	1.00	06:11	12:47	19:23
	<b>18</b>	1 45.6	10 54.6	Psc	-26.8	1911.3	-	-	-	1.00	06:00	12:45	19:31
	<b>25</b>	2 11.8	13 16.2	Ari	-26.8	1907.7	-	-	-	1.01	05:49	12:44	19:39
<b>Moon</b>	<b>4</b>	9 24.1	18 39.0	Leo	-12.4	1975.4	122° E	77	-	-	15:02	22:17	05:20
	<b>11</b>	16 04.8	-18 39.3	Sco	-12.6	1942.1	139° W	88	-	-	22:46	03:47	08:41
	<b>18</b>	22 24.4	-15 02.9	Aqr	-10.9	1757.8	56° W	22	-	-	04:29	09:49	15:17
	<b>25</b>	3 35.8	15 57.9	Tau	-8.9	1798.2	21° E	3	-	-	07:24	14:46	22:17
<b>Mercury</b>	<b>4</b>	23 24.4	-6 23.5	Aqr	0.1	6.4	25° W	67	0.46	1.06	05:39	11:20	17:02
	<b>11</b>	0 02.8	-2 26.3	Psc	-0.1	5.9	22° W	76	0.44	1.15	05:36	11:31	17:28
	<b>18</b>	0 45.4	2 23.9	Cet	-0.5	5.5	17° W	84	0.40	1.23	05:33	11:47	18:01
	<b>25</b>	1 32.7	7 55.9	Psc	-1.0	5.2	11° W	93	0.36	1.30	05:33	12:07	18:42
<b>Venus</b>	<b>4</b>	3 48.8	23 54.8	Tau	-4.3	26.8	46° E	45	0.72	0.63	08:06	15:43	23:22
	<b>11</b>	4 14.3	25 31.3	Tau	-4.4	29.3	45° E	41	0.72	0.58	07:56	15:41	23:27
	<b>18</b>	4 37.6	26 42.2	Tau	-4.4	32.3	43° E	36	0.72	0.52	07:46	15:36	23:28
	<b>25</b>	4 57.5	27 27.7	Tau	-4.4	35.9	41° E	30	0.72	0.47	07:34	15:28	23:23
<b>Mars</b>	<b>4</b>	20 21.8	-20 30.7	Cap	0.8	6.5	72° W	88	1.47	1.44	03:31	08:16	13:01
	<b>11</b>	20 42.0	-19 27.7	Cap	0.7	6.8	74° W	88	1.46	1.38	03:19	08:09	12:58
	<b>18</b>	21 02.0	-18 17.3	Cap	0.6	7.1	76° W	87	1.45	1.33	03:07	08:01	12:56
	<b>25</b>	21 21.6	-17 00.3	Cap	0.5	7.3	78° W	87	1.45	1.27	02:53	07:53	12:53
<b>1 Ceres</b>	<b>4</b>	21 53.6	-19 55.1	Cap	9.3	0.4	51° W	98	2.96	3.48	05:00	09:47	14:34
	<b>11</b>	22 03.1	-19 23.9	Aqr	9.3	0.4	56° W	98	2.96	3.40	04:39	09:29	14:18
	<b>18</b>	22 12.3	-18 54.4	Aqr	9.2	0.4	60° W	98	2.96	3.32	04:19	09:10	14:02
	<b>25</b>	22 21.1	-18 27.3	Aqr	9.2	0.4	65° W	98	2.96	3.24	03:58	08:52	13:45
<b>Jupiter</b>	<b>4</b>	19 46.8	-21 14.5	Sgr	-2.0	37.3	80° W	99	5.19	5.27	02:59	07:40	12:21
	<b>11</b>	19 50.0	-21 07.1	Sgr	-2.0	38.1	86° W	99	5.19	5.16	02:34	07:16	11:57
	<b>18</b>	19 52.7	-21 01.0	Sgr	-2.1	39.0	92° W	99	5.19	5.05	02:08	06:51	11:33
	<b>25</b>	19 54.8	-20 56.4	Sgr	-2.1	39.8	99° W	99	5.19	4.94	01:43	06:25	11:08
<b>Saturn</b>	<b>4</b>	20 12.3	-20 01.7	Cap	0.7	16.1	74° W	100	10.02	10.26	03:19	08:05	12:52
	<b>11</b>	20 13.9	-19 57.4	Cap	0.6	16.3	80° W	100	10.02	10.14	02:53	07:39	12:26
	<b>18</b>	20 15.1	-19 54.1	Cap	0.6	16.5	87° W	100	10.02	10.03	02:26	07:13	12:00
	<b>25</b>	20 16.1	-19 51.7	Cap	0.6	16.7	94° W	100	10.02	9.91	01:59	06:46	11:33
<b>Uranus</b>	<b>4</b>	2 12.8	12 52.2	Ari	5.9	3.4	21° E	100	19.81	20.74	07:15	14:05	20:54
	<b>11</b>	2 14.3	13 00.0	Ari	5.9	3.4	14° E	100	19.81	20.78	06:49	13:39	20:29
	<b>18</b>	2 15.8	13 08.0	Ari	5.9	3.4	8° E	100	19.81	20.80	06:22	13:13	20:03
	<b>25</b>	2 17.3	13 16.0	Ari	5.9	3.4	1° E	100	19.80	20.81	05:56	12:47	19:38
<b>Neptune</b>	<b>4</b>	23 22.5	-5 08.8	Aqr	8.0	2.2	25° W	100	29.93	30.83	05:31	11:15	16:59
	<b>11</b>	23 23.4	-5 03.3	Aqr	8.0	2.2	32° W	100	29.93	30.78	05:04	10:48	16:32
	<b>18</b>	23 24.3	-4 58.1	Aqr	8.0	2.2	39° W	100	29.93	30.71	04:37	10:22	16:06
	<b>25</b>	23 25.1	-4 53.4	Aqr	7.9	2.2	45° W	100	29.93	30.63	04:10	09:55	15:39
<b>Pluto</b>	<b>4</b>	19 47.9	-21 57.0	Sgr	14.4	0.2	80° W	100	34.01	34.18	03:03	07:41	12:19
	<b>11</b>	19 48.1	-21 57.1	Sgr	14.4	0.2	87° W	100	34.02	34.06	02:35	07:13	11:52
	<b>18</b>	19 48.3	-21 57.5	Sgr	14.4	0.2	93° W	100	34.02	33.95	02:08	06:46	11:24
	<b>25</b>	19 48.4	-21 58.1	Sgr	14.4	0.2	100° W	100	34.03	33.83	01:41	06:19	10:57



# Supernova Deferred (for now), Easter, and a Meteor Shower

by Dave Huestis

As 2019 came to a close, the news media sensationalized a story about Orion's bright star **Betelgeuse**. The headlines were certainly designed to get one's attention. Betelgeuse was about to go supernova. However, the star's behavior was really old news that was recently enhanced by new observational data. You see, Betelgeuse is a red super giant star (20 times more massive than our Sun and approximately 1000 times larger) that is indeed nearing the end of its life cycle. And with a star this massive, the result will someday be a supernova event.

Betelgeuse is a known variable star, which pulsates back and forth about one full magnitude (brightness scale) in a 425-day period. What happened more recently is that the star dimmed a little more than usual, by about .2 of a magnitude. An imaging technique using radio waves revealed Betelgeuse appeared to be lopsided, but this discovery turned out to be a huge dust cloud blocking some of the star's light from reaching us. In fact, Betelgeuse has shed off great shells of its outer surface several times in the past, typical activity for these stars as they "burn" through their supply of nuclear fuel. Speculation arose that Betelgeuse's grand finale was soon at hand.

However, every article I read succinctly stated the event could happen soon, or 100,000 years from now. While it is inevitable that Betelgeuse will go supernova in the future, we needn't worry. Fortunately, at its distance of about 700 light years from the Earth, we will not suffer from any hard radiation effects. The supernova will be at least as bright as a Full Moon and will be

visible in broad daylight. About a day before we see the visible light from the supernova event our Earth will be bombarded by a harmless hail of neutrinos and gamma rays. That onslaught will be our advance warning system that Betelgeuse the star has met its demise.

Just as I began to write about Betelgeuse's potential imminent demise, new data revealed that Betelgeuse began to brighten once again during mid-to-late February (much like it has in the past). Astronomers will certainly keep monitoring Betelgeuse with their instruments in the hope of capturing the death of a star. If it happens within our lifetime, I hope it occurs when the constellation of Orion is above our horizon. The sight will be spectacular.

## Easter Observance Determination

Many religious celebrations are determined by astronomical circumstances. Easter is no exception. But because our secular calendar is not in sync with the motion of the heavens, Easter can occur as early as March 22 or as late as April 25. The general rule is: Easter will fall on the first Sunday after the Full Moon on or next after the vernal equinox (spring—March 19, 20 or 21). However, if the Full Moon occurs on a Sunday, Easter is celebrated on the following Sunday. This scenario happened in 2001.

However, there is a caveat to that rule that I only learned about back in 2018. Because the date of the vernal equinox does vary year-to-year, the determination for the Easter date depends on the "ecclesiastical approximation of March 21 for the vernal

equinox" according to <https://www.time-anddate.com>. This stipulation holds true even if the vernal equinox falls on the 19th or 20th of March.

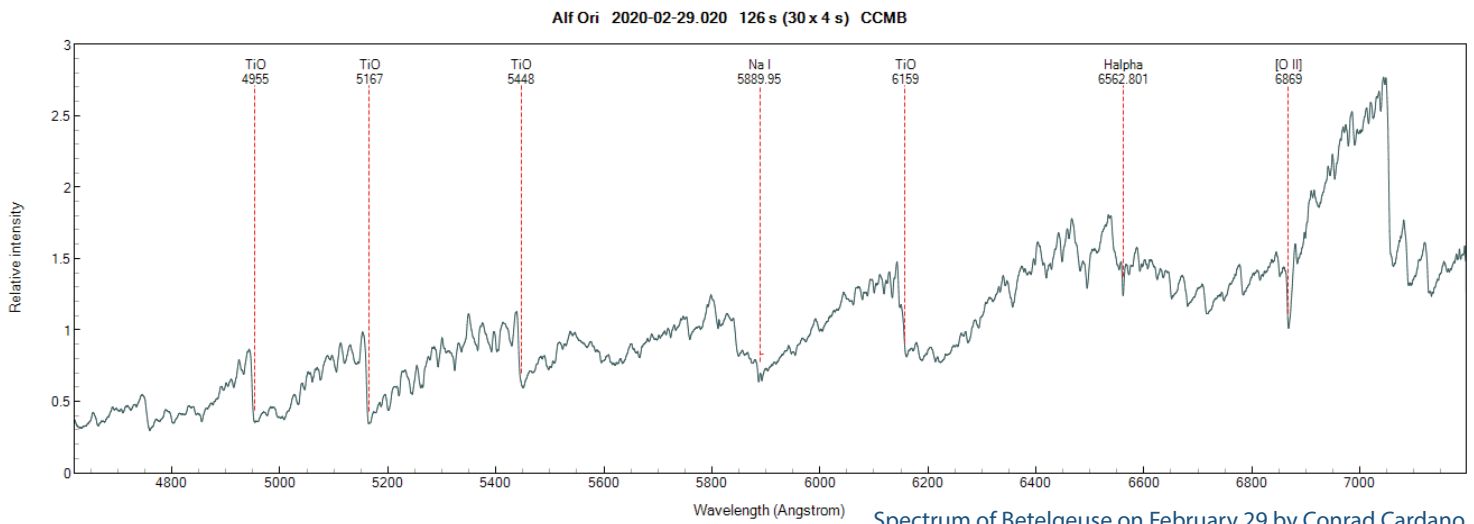
Therefore, for 2020, using March 21 as the date for the vernal equinox, the next Full Moon after March 21 will be on April 7 at 10:35 pm EDT (Eastern Daylight Time) this year. Therefore, Easter will be celebrated on the following Sunday, April 12.

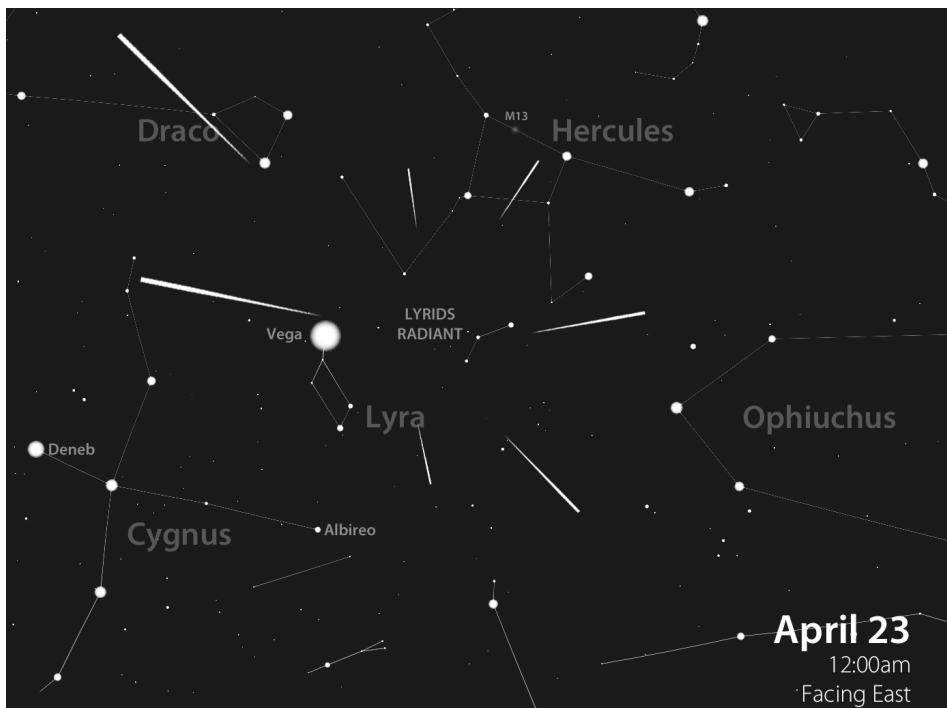
## April Lyrids Meteor Shower

It's been a while since Mother Nature has afforded us a decent display of shooting stars. Clouds or bright moonlight have often conspired to prevent us from watching "burning rocks" falling from the sky. However, on the night of April 22-23, between midnight and dawn, the annual April Lyrids meteor shower will reach its peak of activity. The Lyrids are actually the oldest known shooting star display, having been observed by Chinese astronomers on March 16, 687 BCE. Being such an old display, the number of meteors populating this stream of particles has greatly diminished. However, with good sky conditions and no interfering moonlight, perhaps up to 20 meteors per hour can be counted from dark sky locations.

These swift and bright meteors disintegrate after hitting our atmosphere at a moderate speed of 29.8 miles per second. They often produce luminous trains of dust that can be observed for several seconds. The Moon will be new on the 23rd, so it will not interfere whatsoever with this year's shooting star display.

The Lyrids appear to radiate outward





from an area of sky on the Lyra-Hercules border near the bright star Vega, which will be about 45 degrees (halfway between the horizon and zenith) above the eastern horizon at midnight and well placed for observing. Let your eyes roam the heavens while facing this general direction. Remember, even though you can trace the dust train left by a Lyrid meteor back to the radiant point, members of this shower can appear anywhere in the sky. The Lyrids are a fairly narrow stream of particles, so don't expect many to be seen before or after peak night. It is produced by dust particles left behind by comet C/1861 G1 Thatcher,

Keep your eyes to the skies!



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

# 50th Anniversary of Apollo 13

by Francine Jackson

Many people have a phobia about the number 13. You may notice that very few hotels have a 13th floor; many slow their lives during Friday the 13th; it was even amazing to some diehard triskaidekaphobes that NASA named one of their lunar flights after that.

Surprisingly, that became true, at a very unique time: After Apollo 11's successful flight to the Moon, it was felt that a trip to our neighbor was a very routine expedition. NASA was getting calls on how flight information about Apollo 12 was interfering with soap opera broadcasts.

And, then, came the sentence that changed history: Astronaut Jack Swigert's, "Houston, we've had a problem." While 200,000 miles from Earth, mission controller Sy Liebergot noticed a low-pressure warning signal on one of the craft's hydrogen tanks. That signal could have been problematic, or just have shown a routine procedure was needed. Swigert, following procedure, flipped the switch for the "routine procedure." Immediately, the craft began to shudder: oxygen pressure fell, and power disappeared. Later investigation determined wires were exposed to the oxygen

tank via a series of manufacturing and testing errors. A spark from an exposed wire in the oxygen tank caused a fire, ripping apart one oxygen tank and damaging another inside the spacecraft.

Fortunately for the crew, they had a "backup" craft: the Aquarius, the lunar module; however, not intending to return to Earth, it didn't have a heat shield for returning through our atmosphere.

Anyone who has seen the Ron Howard movie "Apollo 13" knows that astronauts Jim Lovell, Jack Swigert and Fred Haise, through the ingenuity of the ground crew and the determination of the astronauts, did return home, to a grateful and attentive public. No longer was spaceflight considered a routine activity. Also, in the wake of the mission, certain changes were made: Removing all cryo tank fans and wiring; adding another oxygen tank to supply the crew, if needed; adding more water bags in the command module. These, and others, made further missions safer.



Fully illuminated Moon as seen by Apollo 13 during the return coast to Earth. Apollo Image Archive/NASA



Francine Jackson is a NASA Solar System Ambassador, writes the weekly newsletter for Ladd Observatory and teaches astronomy at the Community College of Rhode Island. See more at <http://theskyscrapers.org/francine-jackson>

# Hubble at 30

## Three Decades of Cosmic Discovery

By David Prosper

The **Hubble Space Telescope** celebrates its 30th birthday in orbit around Earth this month! It's hard to believe how much this telescope has changed the face of astronomy in just three decades. It had a rough start -- an 8-foot mirror just slightly out of focus in the most famous case of spherical aberration of all time. But subsequent repairs and upgrades by space shuttle astronauts made Hubble a symbol of the ingenuity of human spaceflight and one of the most important scientific instruments ever created. Beginning as a twinkle in the eye of the late Nancy Grace Roman, the Hubble Space Telescope's work over the past thirty years changed the way we view the universe, and more is yet to come!

We've all seen the amazing images created by Hubble and its team of scientists, but have you seen Hubble yourself? You actually can! Hubble's orbit -- around 330 miles overhead -- is close enough to Earth that you can see it at night. The best times are within an hour after sunset or before sunrise, when its solar panels are angled best to reflect the light of the Sun back down to Earth. You can't see the structure of the telescope, but you can identify it as a bright star-like point, moving silently across the night sky. It's not as bright as the Space Station, which is much larger and whose orbit is closer to Earth (about 220 miles), but it's still very noticeable as a single steady dot of light, speeding across the sky. Hubble's orbit brings it directly overhead for observers located near tropical latitudes; observers further north and south can see it closer to the horizon. You can find sighting opportunities using satellite tracking apps for your smartphone or tablet, and dedicated satellite tracking websites. These resources can also help you identify other satellites that you may see passing overhead during your stargazing sessions.

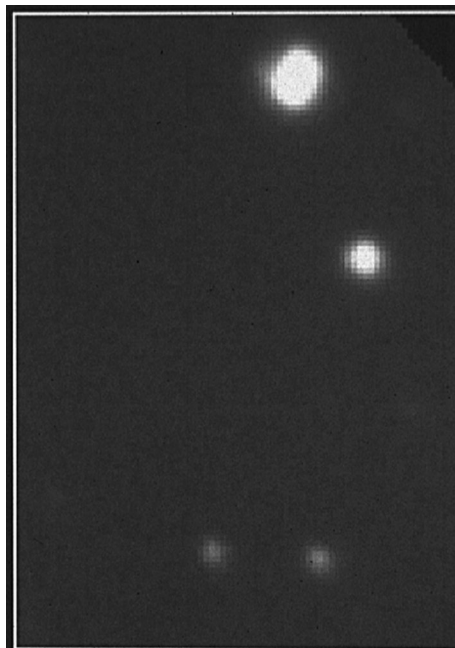
NASA has a dedicated site for Hubble's 30th's anniversary at [bit.ly/NASAHubble30](http://bit.ly/NASAHubble30). The Night Sky Network's "Why Do We Put Telescopes in Space?" activity can help you and your audiences discover why we launch telescopes into orbit, high above the

interference of Earth's atmosphere, at [bit.ly/TelescopesInSpace](http://bit.ly/TelescopesInSpace). Amateur astronomers may especially enjoy Hubble's images of the beautiful objects found in both the Caldwell and Messier catalogs, at [bit.ly/Hubble-Caldwell](http://bit.ly/Hubble-Caldwell) and [bit.ly/HubbleMessier](http://bit.ly/HubbleMessier). As we celebrate Hubble's legacy, we look forward to the future, as there is another telescope ramping up that promises to further revolutionize our understanding of the early universe: the James Webb Space Telescope!

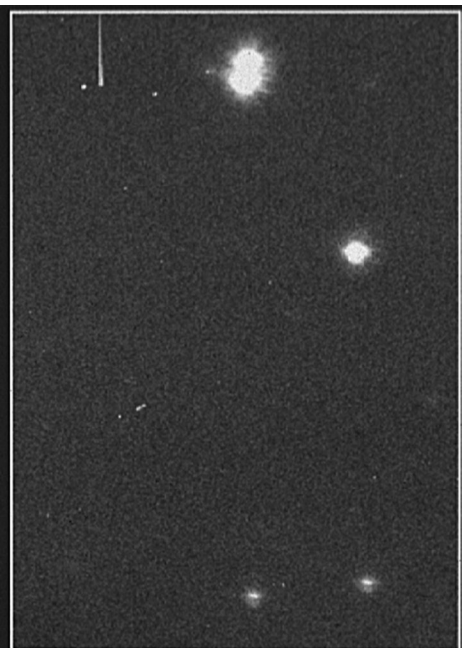
Discover more about the history and future of Hubble and space telescopes at [nasa.gov](http://nasa.gov).



*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](http://nightsky.jpl.nasa.gov) to find local clubs, events, and more!*



GROUND BASED IMAGE  
LAS CAMPANAS OBSERVATORY  
CARNEGIE INST. OF WASHINGTON



HUBBLE SPACE TELESCOPE  
WIDE FIELD/PLANETARY CAMERA



Hubble's "first light" image. Even with the not-yet-corrected imperfections in its mirror, its images were generally sharper compared to photos taken by ground-based telescopes at the time. Image Credit: NASA



# Spiral Galaxy in Ursa Major: Major: NGC 3877

by Glenn Chaple for LVAS

**Mag: 11.0 Size: 5.5' X 1.3'**

The best star-hops are those that require no hopping at all. Such is the case with this month's Observer's Challenge, the near edge-on spiral galaxy NGC 3877. Center the magnitude 3.7 star Chi ( $\chi$ ) Ursae Majoris in the field of your scope's finder and then peer into the eyepiece. If your eye is properly dark-adapted, you should see an oval haze just  $\frac{1}{4}$  degree to the south.

In March of 1998, a supernova appeared in NGC 3877, quickly reaching 12th magnitude. It was visible in my 4-inch f/4 rich-field reflector (Edmund Scientific's Astroscan), as was the galaxy itself. To see NGC 3877 with such a small aperture demands dark-sky conditions. In Vol. 2 of *The Night Sky Observer's Guide*, authors George Kepple and Glen Sanner note that an 8 to 10-inch scope will reveal the galaxy's central condensation, while scopes with twice the aperture should bring out the mottled appearance of its outer regions.

NGC 3877 was discovered by William Herschel on the night of February 5, 1788. Along with M 109, it belongs to the Ursa Major Galaxy Cluster. Its distance is variously recorded as 42 to 50 million light years. If at the latter distance, NGC 3877 would span some 80,000 light years.

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

NGC 3877 and supernova 1998S, March 25, 1998. Magnification 74X FOV 20'. North is to the right. Sketch by Glenn Chaple (ATMoB)

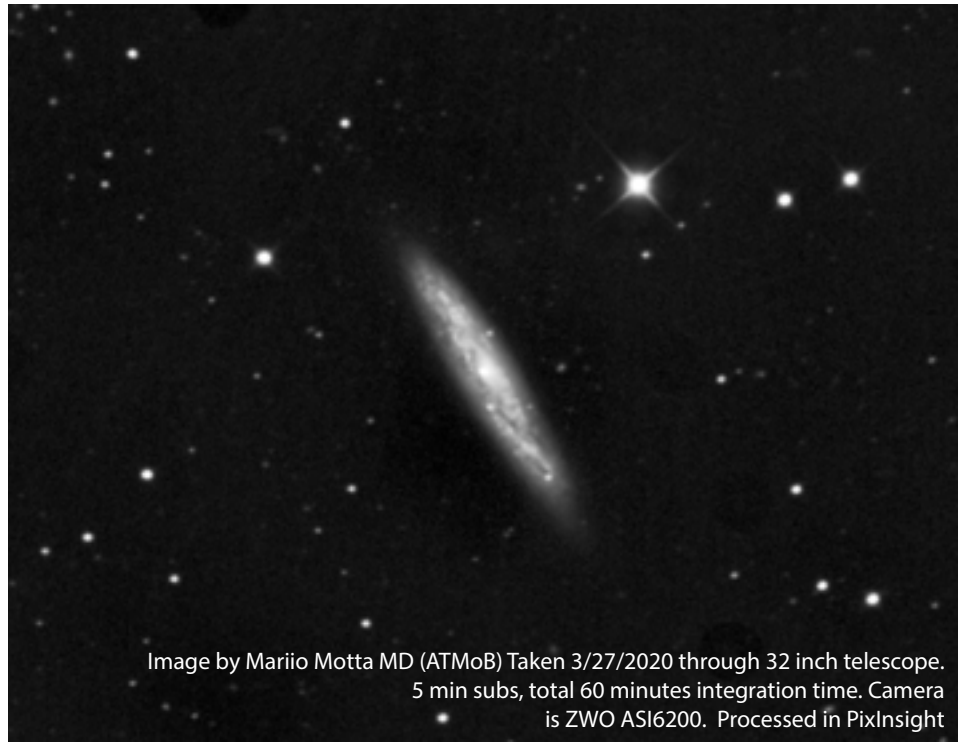
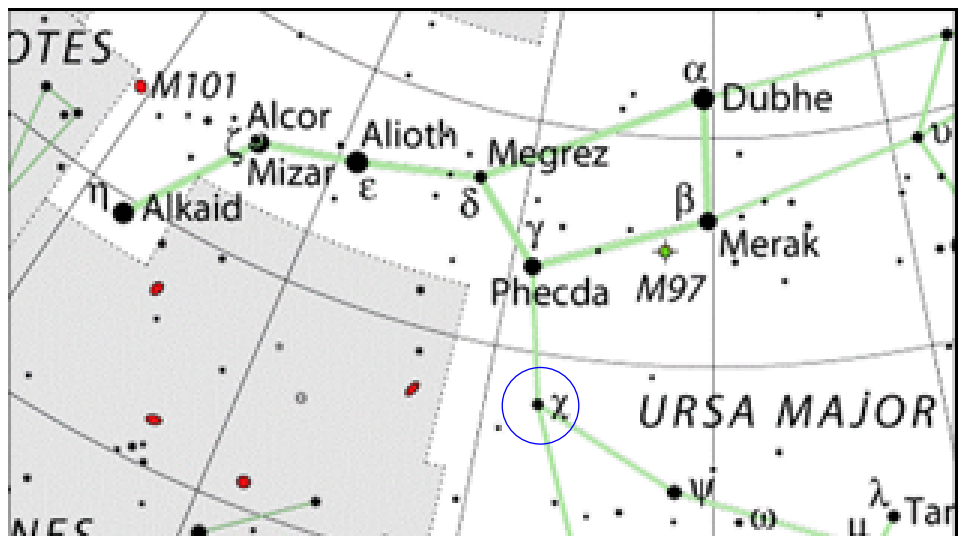
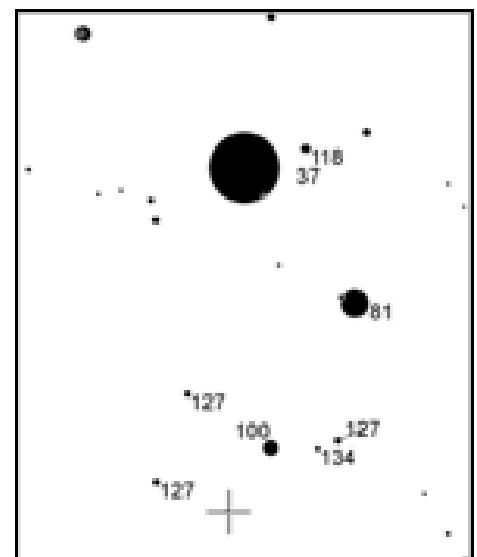
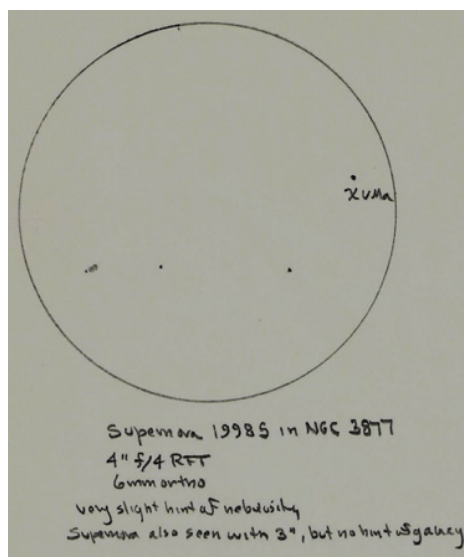


Image by Mariio Motta MD (ATMoB) Taken 3/27/2020 through 32 inch telescope. 5 min subs, total 60 minutes integration time. Camera is ZWO ASI6200. Processed in PixInsight



Finder charts for NGC 3877. Bright star in right-hand chart (from AAVSO Variable Star Plotter) is chi ( $\chi$ ) Uma. Numbers refer to magnitudes of field stars. North is up in this 25' by 30' field.



# Astrophoto Gallery



Attached is an image of Comet C/2019 Y4 ATLAS, taken with an 8" F4 on March 22 by Bob Horton. Scott MacNeill did the image processing from the 4 separate images and flats.

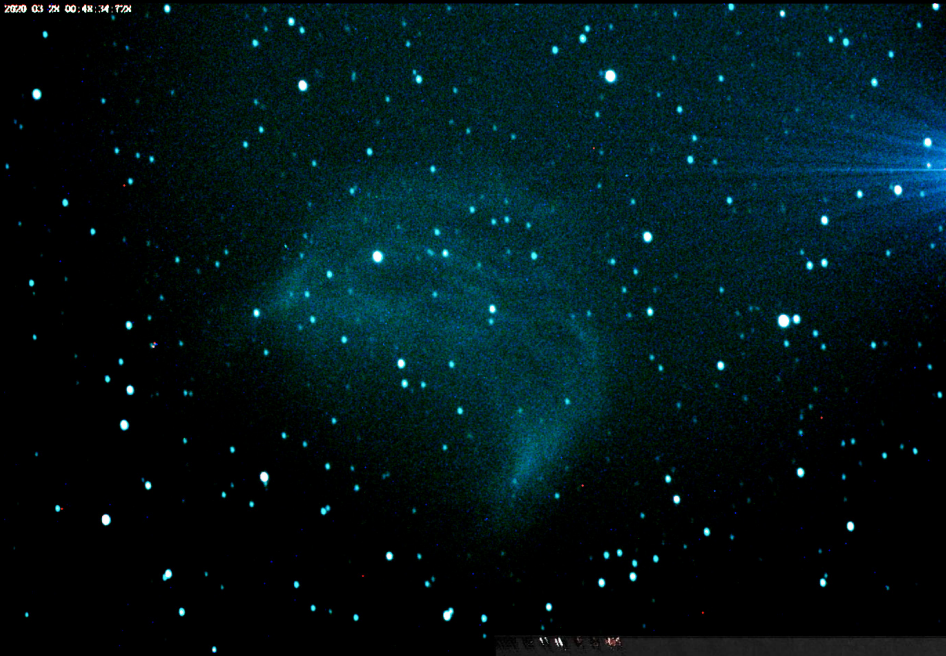
2020 03 28 01:16:39:383



Comet C/2019 Y4 ATLAS taken on March 27 by Steve Hubbard.



2020 03 24 00:48:14.1724



Sharpless 2-274, the Medusa Nebula, is a large but faint planetary nebula in Gemini. Image by Steve Hubbard.

Spiral galaxy NGC 2403 in Camelopardalis. This is a stack of 60 images of 90 seconds each at a gain of 350. Taken with a 14" SCT and ZWO ASI294 and processed with Astra Image and GIMP. Image by Steve Hubbard



2020 03 22 02:30:31.468



NGC 4565 in Coma Berenices by Steve Hubbard.



NGC 2392 in Gemini

NGC 2371 in Gemini



NGC 1501 in Camelopardalis

Planetary nebulae images  
by Steve Hubbard.



Conjunction of Jupiter, Mars and  
crescent Moon on March 18 by Jim  
Hendrickson. Visible to the right of  
Jupiter are Io, Ganymede and Callisto.

# Membership

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_

Email \_\_\_\_\_

How did you hear about us? \_\_\_\_\_

## Membership Dues

All renewals are due on 1 April for the beginning fiscal year. Dues received from new members after 1 April will be applied to the current fiscal year. Dues received from new members during the months of January through March are applied to the remainder of the current fiscal year and the whole of the next fiscal year.

Today's date: \_\_\_\_\_

	Annual Dues (choose one category)
Junior <input type="checkbox"/>	\$15
Regular <input type="checkbox"/>	\$50
*Family <input type="checkbox"/>	\$60
Senior <input type="checkbox"/>	\$25
Contributing <input type="checkbox"/>	\$

(any amount in excess of annual dues is gratefully accepted as a donation)

\*The Name of the primary family member is listed above. Please identify on separate paper the name, address, email and phone number of the second family member. The second member shall have voting rights during election cycles if 18 years of age.

**Total \$**  
(Make check payable to Skyscrapers, Inc.)

**Mail to:**  
Skyscrapers, Inc.  
47 Peepthead Road  
North Scituate, RI 02857

## Proposed budget for 2020/2021

Matt has worked up a proposed budget for the next fiscal year. Most things are roughly the same as last year with a few exceptions.

The amount requested for outreach has been bumped up to \$700.

The amount the trustees are requesting is being set to \$2500.

Jeff Padell tells me that they hope to complete the outstanding work needed for around \$1500, but have a cushion in case.

Also, the roof for the Clark is leaking. The trustees will be attempting to fix that, but if not, we might be talking about something more extensive.

That is up in the air for now.

Please take a look at this when you have a chance, the proposed budget amounts are highlighted at the right in yellow. The actual amounts spent as well as originally budgeted are on the left.

We will talk more about this at the next board meeting on March 28.

## Skyscrapers Inc. Fiscal Year 2019-2020 Budget & Ytd Totals

Category	Budget	YTD Totals	Delta	2020-2021 Proposed Budget
<b>INCOME</b>				
AstroAssembly	4,000	3,934	(66)	4,000
Dues	3,100	3,350	250	3,300
AL Membership	90	90	0	90
Donations	1,300	7,598	6,298	2,650
Sale of Equipment	100	140	40	100
Star Party Donations	300	150	(150)	300
Transfer from Savings/CD	2,035	0	(2,035)	0
<b>TOTAL INCOME</b>	<b>10,925</b>	<b>15,262</b>	<b>4,337</b>	<b>10,440</b>
<b>EXPENSES</b>				
Astro Assem Exp	1,450	1,234	216	1,300
AL Membership Exp	100	100	0	100
Contingency	258	35	223	223
Corporation, State Fee	22	22	0	22
Domain Name	20	156	(136)	0
Donation	50	0	50	50
PayPal Fees	50	69	(19)	70
Outreach	300	298	2	700
Postage and Delivery	75	11	64	75
Property Insurance	2,500	2,594	(94)	2,600
Refreshment Expense	200	77	123	200
Trustee Expense	3,500	7,635	(4,135)	2,500
Utilities	2,400	2,438	(38)	2,600
<b>TOTAL EXPENSES</b>	<b>10,925</b>	<b>14,669</b>	<b>(3,744)</b>	<b>10,440</b>
<b>OVERALL TOTAL</b>	<b>0</b>	<b>593</b>		<b>0</b>



# 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