# the Skyscraper

vol. 44 no. 04
April 2017

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


## In This Issue:



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

## Phases of the Moon

**First Quarter Moon**
April 3 18:19

**Full Pink Moon**
April 11 06:08

**Last Quarter Moon**
April 19 09:57

**New Moon**
April 26 12:16

# Friday, April 7, 7:00pm
## at Seagrave Observatory

### Probing Weather on Distant Worlds

With the number of exoplanet discoveries increasing exponentially, researchers continue to probe their atmospheres to further our understanding of the fundamental physical processes that govern their dynamics and composition and search for potentially habitable planets.

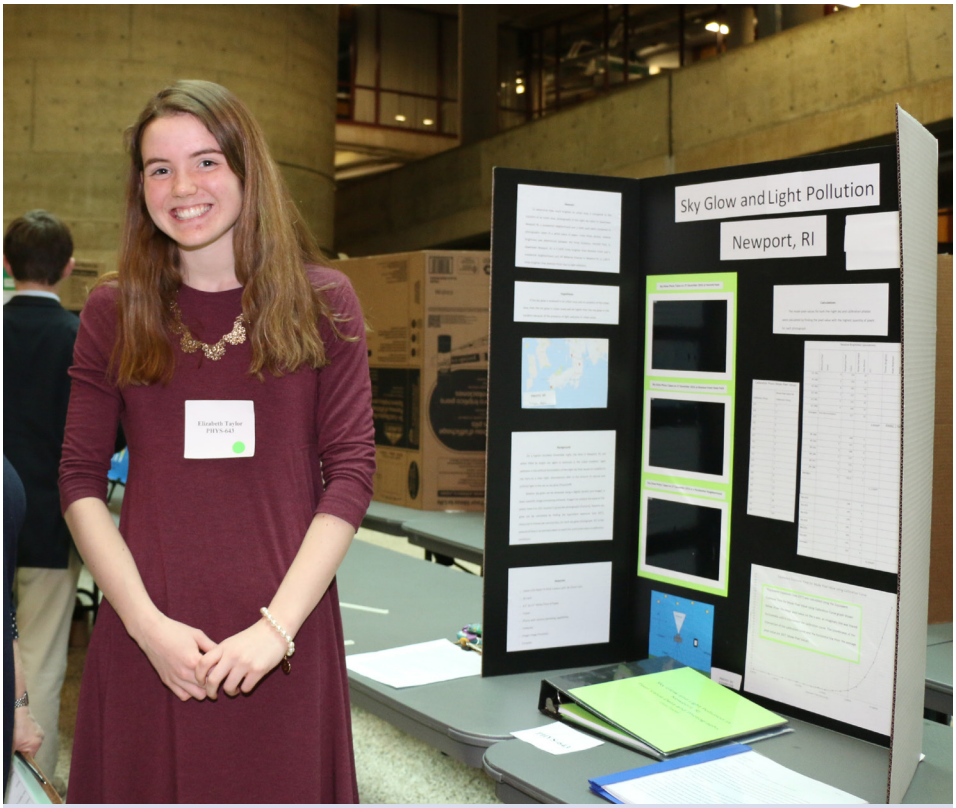
Exoplanets provide us with a sample far more diverse than our own solar system from which we can continue to gain deeper understanding of atmospheric physics and planetary science. In this talk I will discuss the methods used to discover exoplanets as well as how we characterize their atmospheres. Given the recent discovery of the Trappist-1 system of planets, I will discuss the uniqueness of this system and how my current work will help to determine whether any of these are, in fact, habitable.

Brian Kilpatrick is a graduate student in physics at Brown, working on his PhD with Gregory Tucker on the analysis of exoplanet data and plans for new observations with the upcoming James Webb Space Telescope.

# Wednesday, April 12, 7:00pm
## at Seagrave Observatory

### Dava Sobel: The Glass Universe

Due to a snowstorm in February, Dava Sobel's visit to Skyscrapers has been re-scheduled to Wednesday, April 12. We are very honored to have author Dava Sobel to speak about her new book "The Glass Universe." The topic is the work done by the women "calculators" at Harvard College Observatory under the direction and with the encouragement of E.C. Pickering. If you would like to attend, please RSVP to Steve Siok at ssiok@cox.net. Dava's book will not be available at this event, but she will sign your copy if you bring one.




**Elizabeth Taylor** from Rogers High School has received an award from Skyscrapers Inc. to recognize her work on light pollution in the city of Newport that was presented at the 2017 Rhode Island State Science Fair. She measured background sky light levels in several diverse locations and compared the images using special computer software. She will be given a one year family membership and has been asked to bring her project to one of our summer meetings.

## Star Signs Comes to the University of Rhode Island Planetarium

University of Rhode Island Planetarium
Kingston Campus
Upper College Road
Friday, April 14th, 2017, 6:00 P.M.
Contact: Francine Jackson 401-527-5558

There has always been the joke about the line, "What's your sign?" to introduce yourself to others; but, what exactly does that mean? What signs is someone talking about?

The University of Rhode Island Planetarium is going back in time to one of the very early presentations created by Evans and Sutherland producers to show a never-before seen program in the planetarium, and to show how the technology has changed in the planetarium profession in just a few short years. Star Signs was one of the first shows to use the all-sky format, now so prevalent in today's facilities, but its science is still perfect. Come and enjoy one of the earliest of the full dome presentations.

This program, for the general audience, will be preceded by a short program, Losing the Dark, on light trespass, and then will be followed by a live presentation on the Sky above the URI Campus. Admission is just $5.00, to benefit the URI Planetarium Fund.

The University of Rhode Island Planetarium is available for programs of many varied topics of astronomical interest for all age levels. For more information, please call 401-527-5558.

---

*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.

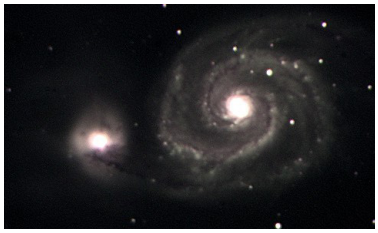
**Directions**
Directions to Seagrave Memorial Observatory are located on the back page of this newsletter.

**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.

# Spring 2017 Astronomy Workshop Series at Seagrave Observatory

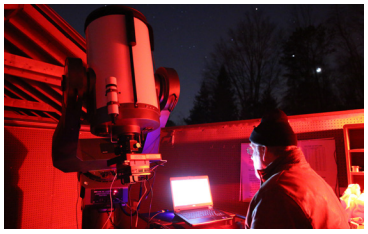
Anyone interested in learning the fascinating hobby of amateur astronomy is invited to come to Seagrave Memorial Observatory, 47 Peep Toad Road, Scituate, RI. Skyscrapers, Inc., the Amateur Astronomical Society of Rhode Island, is offering workshops on topics in astronomy to introduce anyone interested in the fascinating world of amateur astronomy. Also, sky permitting, each program will be followed by observing with the historic 8-inch refracting telescope. All programs are free and open to the public.



## April 22th, 6:00 P.M.: The Messier Catalog

The Messier catalog, a beginner's introduction to the sky, is a list of over 100 objects visible through small telescopes; some can even be seen with the naked eye. Steve Siok will discuss three types of these objects: open clusters, globular clusters, and galaxies, all of which are important to the understanding of and appreciating the structure of our own Milky Way galaxy, and how to plan observing sessions to seek out each of these types of objects, in order to plan your deep-sky observing throughout the seasons.

Steve Siok is the current president of Skyscrapers, Inc., and has been an amateur astronomer for many years.



## April 29, 8:00 – 10:00 P.M.: Astrophotography

Members of Skyscrapers, Inc., have been taking beautiful astronomical images for many years. In observing them you might have believed it is too hard or too difficult to do yourself. This evening will introduce you to taking images with a CCD camera, but you can bring with you any photographic equipment you might own. Note: Space is limited, and this workshop is weather dependent. If cloudy it will be rescheduled. If interested, please contact Bob Horton at shootingsta98@gmail.com

Bob Horton and Jim Hendrickson have been photographing the sky for decades, and are always willing to impart their knowledge to others.

## May 6, 6:00 P.M.: Spring Constellations

For many, the beauty of the nighttime sky, and learning the constellations, looks almost hopeless; however, with a free computer program, Stellarium, and some of the seasonal star myths, you can easily learn the stars present at this time of year.

Francine Jackson has been associated with planetariums throughout the years, and loves introducing the sky.

## May 13, 6:00 P.M.: The Moon

Although the Moon is always with us, and the seasons occur every year, understanding the reasons for the seasons and the changing phases of our Moon is not always obvious. This session will be both a lively presentation and discussion of these two natural phenomena.

Kathy Siok is 2nd Vice President of Skyscrapers, Inc., and has been an amateur astronomer for many years.

## May 20, 6:00 P.M.: The Sun & Solar Eclipses

Today will be all about our nearest star, the Sun. You will learn what we know about Sun, be advised how to observe it very safely, and prepare for one of the most beautiful of our natural events, the total solar eclipse of August 21, 2017.

Ian Dell'Antonio is an Astrophysics Professor at Brown University.

# Astronomical Events Determine Easter Observance

**by Dave Huestis**

In simpler times our forefathers paid close attention to the clockwork motion of the heavens. One didn't have to observe the sky for too long a period of time to notice the cyclic phases of the Moon, or the changing position of the Sun relative to the horizon over the course of a year. Nature provided a precise clock and calendar that could be used to determine when to celebrate special events.

It should therefore not be surprising that many religions observances would likewise be established, in connection to these same astronomical circumstances. Christians, for instance, observe Easter every year, but the date for the celebration changes. Since we can barely even remember birthdays and anniversaries that always occur on the same date, it's time for me to enlighten you with the facts of how the date for Easter is determined.

Easter can occur as early as March 22 or as late as April 25. Why this range? The story began many moons ago when the Christian Church first developed. Since this holy day was determined in conjunction with Passover, Easter often fell on a weekday. However, in 352 CE the Council of Nicaea declared that it should always fall on a Sunday. They determined that Easter would fall on the first Sunday after the Full Moon on or next after the vernal equinox (spring—March 20 or 21). However, if the Full Moon occurred on a Sunday, Easter is celebrated on the following Sunday. This scenario happened in 2001.

This year the vernal equinox was on Monday, March 20, at 6:28 a.m. EDT. The Full Moon on or after that date occurs on Tuesday, April 11, at 2:08 a.m. EDT. Therefore, Easter is celebrated on Sunday, April 16, just nine days before the latest possible date for the event.

## April Observing Opportunities

By April 1st that brilliant beacon Venus that had been so prominent in the western sky after sunset will be lost to solar glare. However, this planet, named for the goddess of love, will soon reappear above the eastern horizon before sunrise. Look for it low in the sky around the second week in April. And on April, you can spot our innermost planet of our solar system, Mercury, just above the sunset point for a few days. You'll need an unobstructed view of the horizon to have any chance of success.

Furthermore, April is the time for casual stargazers to focus their attention and telescopes on Jupiter without losing any beauty sleep. At the beginning of the month Jupiter will be about 15 degrees above the southeast horizon at around 9:00 p.m. EDT. It will be the brightest astronomical object in this region of the sky, except when the Full Moon passes within three degrees on the evening of April 10.

This favorable prime time appearance of Jupiter is ideal, for on April 8, Jupiter will be at its closest distance to the Earth for this year—a mere 414 million miles. Jupiter will be visible all night. Even if you have a small "department store" refractor you will be able to observe four of Jupiter's largest moons (Io, Europa, Ganymede and Callisto), first discovered by Galileo Galilei in 1610. They are now known as the Galilean satellites. When several of the Galilean moons are visible at the same time, they often appear in a straight line, parading around Jupiter in the plane of its equator. If your timing is right you may catch one of the many interesting phenomena that can occur, including moon shadows on Jupiter's cloud tops, occultations (when a moon moves behind Jupiter's disk), or eclipses (when a moon slides into Jupiter's shadow). I love to watch Jupiter over an extended period of time during the course of one evening because the view is dynamically changing as you watch.

Also easily observed will be Jupiter's more prominent dark bands/belts and lighter zones, clouds which give the planet a striped appearance. Larger instruments may also reveal the Great Red Spot, a centuries old storm in Jupiter's cloud tops. A six-inch telescope or larger may be needed to catch a glimpse of it. Keep in mind that Jupiter rotates once in ten hours, making it possible to see the entire planet in one or two nights of observing. Use whatever optical aid you have at hand, but if you wish to marvel at the beauty of Jupiter and all it has to offer, then set aside some time to visit one of the local observatories for a splendid visual experience. And finally, on the night of April 22-23, you should scan the skies for members of the April Lyrids meteor shower. The Lyrids are the oldest known shooting star display, having been observed by Chinese astronomers on March 16, 687 BCE. Being an old display, the number of meteors populating the stream of particles has greatly diminished. Less than six 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. A waning crescent Moon will not interfere with the midnight to dawn peak of the Lyrids

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. I let my eyes roam the heavens while facing this general direction. Remember, even though you can trace back the dust train left by a Lyrid meteor back to the radiant point, members of this shower can appear anywhere in the sky

Clear skies for all your observing adventures.

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*

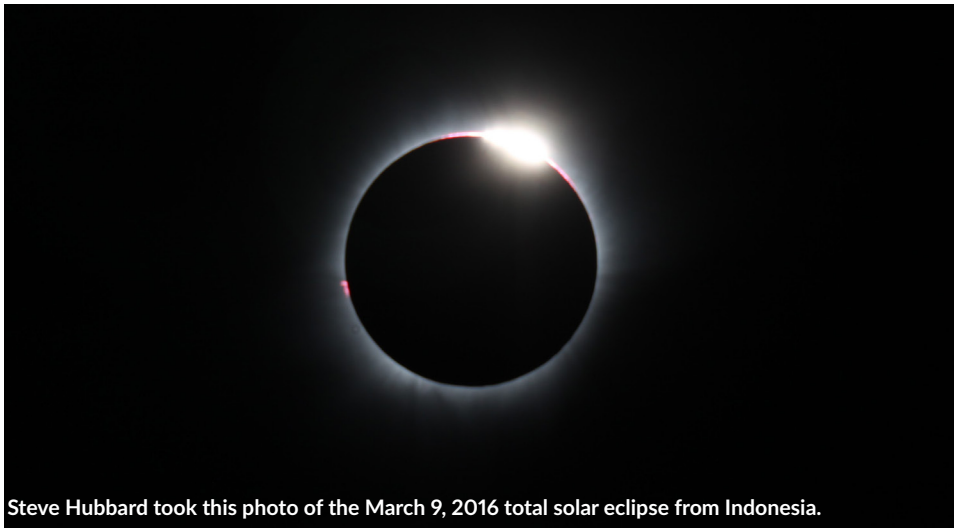
# Appreciating the Nature of a Solar Eclipse

**by Francine Jackson**

By now, all members of Skyscrapers, Inc., are aware that on Monday, August 21st, the U.S. will be home to its first total solar eclipse in decades. And, it will be all ours – the path of totality runs completely through the continental United States, from Oregon down through South Carolina. Also, the rest of the country will be able to observe a partial phase. For us in Southern New England, the Sun will lose just under three quarters of its ball to the dark of the New Moon.

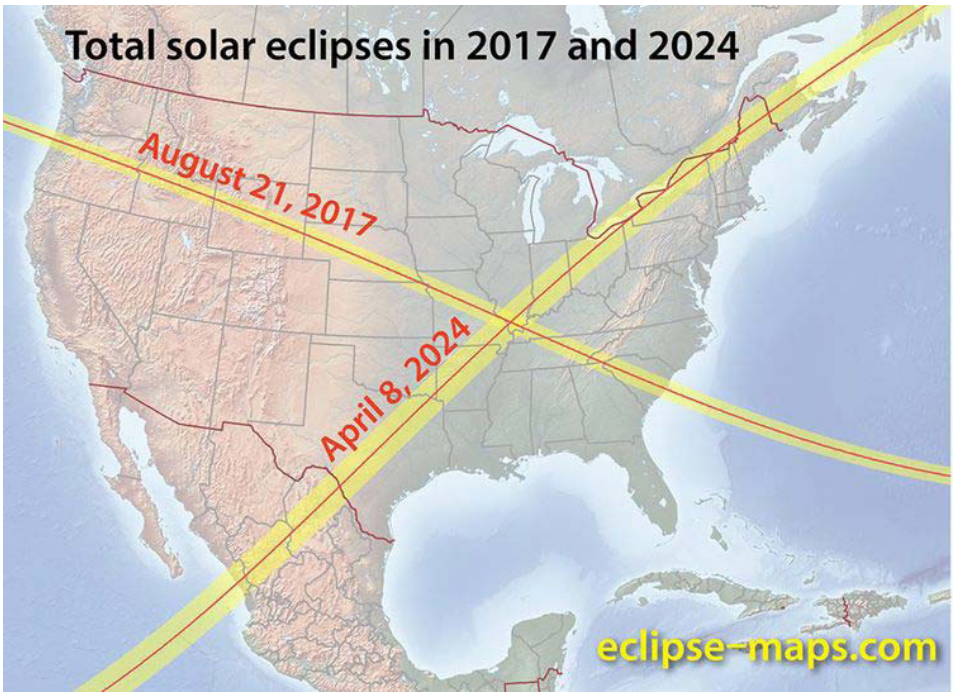
Even more striking is the fact that, just seven years later, the U.S. will again be home to a total solar eclipse, but this time it will literally cross in the opposite direction – from the Southwest, and up through New England, although we will share it with Mexico and eastern Canada. Because of its apparent giant "X" configuration, people living near Carbondale, Illinois will be at the crux, able to enjoy the two without leaving home; in fact, the residents are gearing up for this year's festivities at their Southern Illinois University's Saluki Stadium, most likely with the thought that they will all be back again in 2024.

Which brings up a problem: We will be having two almost indescribably beautiful phenomena forming a distinct "X," or cross, clear across the face of our continent. In addition to astronomy lovers, other disciplines are already gearing up for the "meaning" of this occurrence. Especially notable is the concept of the relevance to such as the Rapture. Certain clergy are already making plans for the astronomical signs that the end of the world is at hand. Especially important is the time frame of the 2024 eclipse. It is believed the years between the two will mark trials and tribulations in preparation for The End. Anything that happens in the sky from August, 2017 to April, 2024 will be yet another vindication that we don't have much time left here on Earth.



Steve Hubbard took this photo of the March 9, 2016 total solar eclipse from Indonesia.

And why, you may ask, are we mentioning this? Why should we as amateur astronomers even care? We love the sky, and will do everything we can to enjoy it. But, there are more people willing to take the word of someone who does not understand what is happening overhead, and then interprets it to mean some type of finality, than there are of us. Most may remember 2012 – with the transit of Venus, the inaccurately called positioning of the winter solstice, plus the apparent end of the Mayan calendar – but notice, we're still here. Some may recall the devastation caused by one man who equated a comet tail with The Coming. Even going back to 1991, where the Mexican president had to declare a ban on driving during the middle of the day – during eclipse time – and he had to issue a decree assuring the public that no cows would stop producing milk while that year's eclipse was in progress.

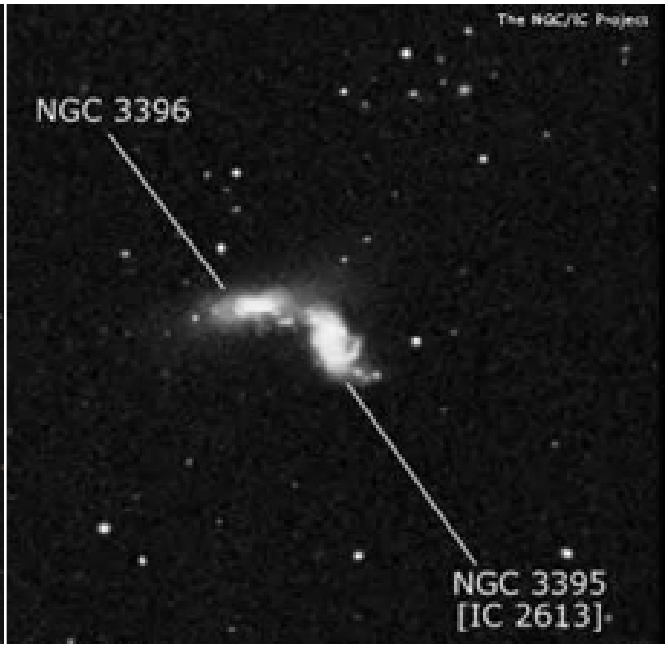



Many of us are preparing to either leave this area to venture to the path of totality, or stay here and observe our percentage in hopeful clear-sky comfort. We should also be taking the time we have before the eclipse to make sure as many people as possible know about the beauty, and the scientific aspects, of this event as possible.

Professor Jay Pasachoff of Williams College, who has already observed 65 total solar eclipses, refers to the awe-inspiring nature of an eclipse. This is what it should be, not an object of fear. Let us as lovers of the sky make sure this year's eclipse is, in fact, just that.

---

*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*


# Interacting Galaxies in Leo Minor

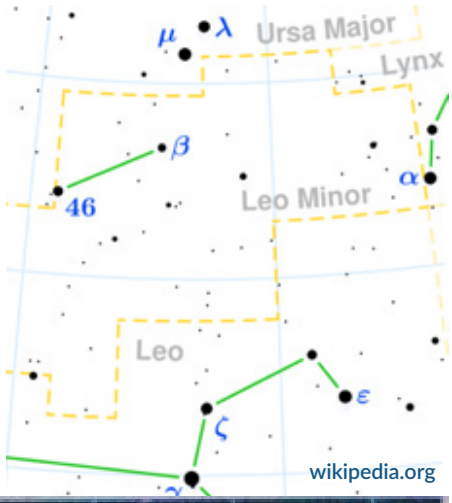
# NGC 3395-96

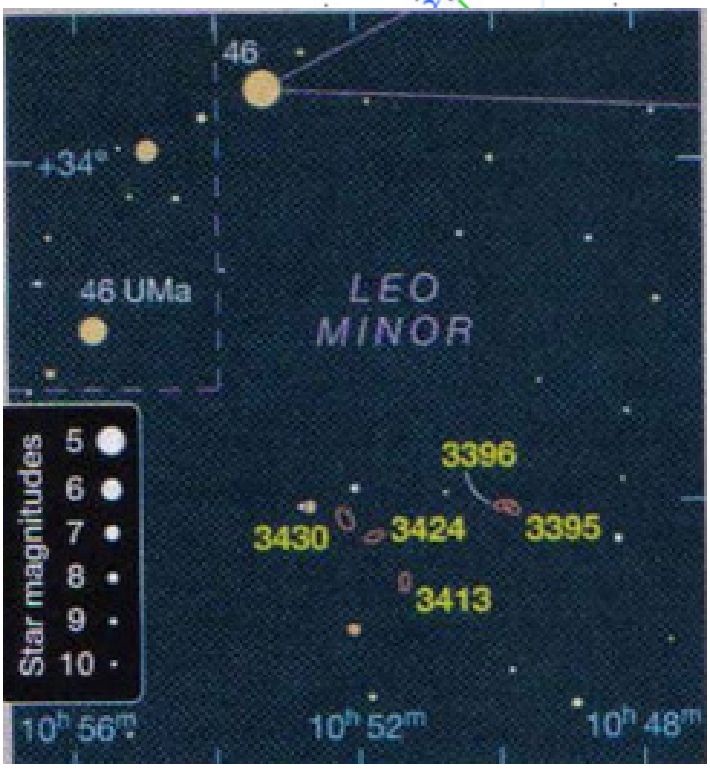
**by Glenn Chaple for LVAS**

### Mags. 12.1/12.2; Sizes 1.9′ X 1.2′/ 2.8′ X 1.2′

This month's LVAS Observer's Challenge is a true challenge. NGC 3395 and NGC 3596 are interacting galaxies (catalogued as Arp 270 in Halton Arp's Atlas of Peculiar Galaxies) located near the eastern edge of Leo Minor, 1½ degrees SW of the 4th magnitude star 46 Leo Minoris. The first challenge is in seeing them at all. Each galaxy is a 12th magnitude object and will require exceptionally dark skies if you choose to tackle them with a telescope of 6-inch aperture or less. For owners of medium-sized instruments (8 to 12 inches), the challenge is in picking out detail in each. In his "Deep Sky Wonders" column in Sky and Telescope, Walter Scott Houston wondered if the bridge between these galaxies might be picked up in a 30-inch scope. Can it be detected in a scope half that size? The challenge is yours!

NGC 3395 and NGC 3396 were discovered by William Herschel on December 7, 1785. Studies indicate a distance of anywhere from 72 to 85 million 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) or Fred Rayworth (queex@embarqmail.com). To find out more about the LVAS Observer's Challenge or access past reports, log on to lvastronomy.com/observing-challenge.*

# What It's Like on a TRAPPIST-1 Planet

By Marcus Woo

With seven Earth-sized planets that could harbor liquid water on their rocky, solid surfaces, the TRAPPIST-1 planetary system might feel familiar. Yet the system, recently studied by NASA's Spitzer Space Telescope, is unmistakably alien: compact enough to fit inside Mercury's orbit, and surrounds an ultra-cool dwarf star—not much bigger than Jupiter and much cooler than the sun.

If you stood on one of these worlds, the sky overhead would look quite different from our own. Depending on which planet you're on, the star would appear several times bigger than the sun. You would feel its warmth, but because it shines stronger in the infrared, it would appear disproportionately dim.

"It would be a sort of an orangish-salmon color—basically close to the color of a low-wattage light bulb," says Robert Hurt, a visualization scientist for Caltech/IPAC, a NASA partner. Due to the lack of blue light from the star, the sky would be bathed in a pastel, orange hue.

But that's only if you're on the light side of the planet. Because the worlds are so close to their star, they're tidally locked so that the same side faces the star at all times, like how the Man on the Moon always watches Earth. If you're on the planet's dark side, you'd be enveloped in perpetual darkness—maybe a good thing if you're an avid stargazer.

If you're on some of the farther planets, though, the dark side might be too cold to survive. But on some of the inner planets, the dark side may be the only comfortable place, as the light side might be inhospitably hot.

On any of the middle planets, the light side would offer a dramatic view of the inner planets as crescents, appearing even bigger than the moon on closest approach. The planets only take a few days to orbit TRAPPIST-1, so from most planets, you can enjoy eclipses multiple times a week (they'd be more like transits, though, since they wouldn't cover the whole star).

Looking away from the star on the dark side, you would see the outer-most planets in their full illuminated glory. They would be so close—only a few times the Earth-moon distance—that you could see continents, clouds, and other surface features.

The constellations in the background would appear as if someone had bumped into them, jostling the stars—a perspective skewed by the 40-light-years between TRAPPIST-1 and Earth. Orion's belt is no longer aligned. One of his shoulders is lowered.

And, with the help of binoculars, you might even spot the sun as an inconspicuous yellow star: far, faint, but familiar.

Want to teach kids about exoplanets? Go to the NASA Space Place and see our video called, "Searching for other planets like ours": https://spaceplace.nasa.gov/exoplanet-snap/

---

*This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!*

This artist's concept allows us to imagine what it would be like to stand on the surface of the exoplanet TRAPPIST-1f, located in the TRAPPIST-1 system in the constellation Aquarius. Credit: NASA/JPL-Caltech/T. Pyle (IPAC)

# The Sun, Moon & Planets in April

This table contains the ephemeris of the objects in the Solar System for each Saturday night in April 2017. All times are in Eastern Daylight (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** | 0 42.1 | 4 31.7 | Psc | -26.8 | 1920.7 | - | - | - | 1 | 06:28 | 12:50 | 19:12 |
| | **8** | 1 07.7 | 7 11.4 | Psc | -26.8 | 1916.9 | - | - | - | 1 | 06:16 | 12:48 | 19:20 |
| | **15** | 1 33.5 | 9 45.2 | Psc | -26.8 | 1913.1 | - | - | - | 1 | 06:05 | 12:46 | 19:27 |
| | **22** | 1 59.5 | 12 11.0 | Ari | -26.8 | 1909.4 | - | - | - | 1.01 | 05:54 | 12:44 | 19:35 |
| | **29** | 2 25.9 | 14 27.1 | Ari | -26.8 | 1905.8 | - | - | - | 1.01 | 05:44 | 12:43 | 19:43 |
| **Moon** | **1** | 4 11.4 | 15 25.3 | Tau | -11.0 | 1986.0 | 53° E | 20 | - | - | 09:50 | 17:11 | 00:37 |
| | **8** | 10 51.3 | 7 42.1 | Leo | -12.5 | 1869.1 | 142° E | 90 | - | - | 16:52 | 23:21 | 05:42 |
| | **15** | 16 25.6 | -16 54.9 | Oph | -12.4 | 1757.3 | 138° W | 87 | - | - | 22:43 | 03:50 | 08:54 |
| | **22** | 22 16.6 | -11 11.5 | Aqr | -11.1 | 1851.2 | 60° W | 25 | - | - | 03:53 | 09:29 | 15:13 |
| | **29** | 4 50.1 | 17 01.6 | Tau | -10.2 | 2003.9 | 35° E | 9 | - | - | 08:32 | 15:59 | 23:29 |
| **Mercury** | **1** | 1 49.1 | 13 55.2 | Ari | 0.0 | 7.5 | 19° E | 43 | 0.33 | 0.9 | 07:01 | 13:56 | 20:53 |
| | **8** | 2 05.0 | 16 02.0 | Ari | 1.4 | 9.2 | 17° E | 19 | 0.37 | 0.73 | 06:41 | 13:43 | 20:45 |
| | **15** | 2 01.5 | 15 15.8 | Ari | 3.5 | 10.9 | 9° E | 4 | 0.41 | 0.62 | 06:12 | 13:10 | 20:07 |
| | **22** | 1 46.5 | 12 15.5 | Psc | 4.6 | 11.8 | 3° W | 0 | 0.44 | 0.57 | 05:42 | 12:27 | 19:12 |
| | **29** | 1 34.3 | 9 00.3 | Psc | 2.7 | 11.5 | 14° W | 7 | 0.46 | 0.59 | 05:15 | 11:48 | 18:22 |
| **Venus** | **1** | 23 51.8 | 7 15.2 | Psc | -4.0 | 58.7 | 13° W | 2 | 0.72 | 0.29 | 05:29 | 11:56 | 18:22 |
| | **8** | 23 43.1 | 4 48.1 | Psc | -4.2 | 54.8 | 21° W | 7 | 0.72 | 0.31 | 05:02 | 11:20 | 17:38 |
| | **15** | 23 41.5 | 2 54.8 | Psc | -4.4 | 49.7 | 29° W | 13 | 0.72 | 0.34 | 04:39 | 10:52 | 17:04 |
| | **22** | 23 46.9 | 1 50.1 | Psc | -4.5 | 44.4 | 34° W | 19 | 0.72 | 0.38 | 04:21 | 10:30 | 16:39 |
| | **29** | 23 58.1 | 1 34.1 | Psc | -4.5 | 39.6 | 39° W | 25 | 0.72 | 0.43 | 04:06 | 10:14 | 16:22 |
| **Mars** | **1** | 2 52.5 | 16 54.3 | Ari | 1.5 | 4.2 | 34° E | 96 | 1.51 | 2.23 | 07:53 | 14:59 | 22:06 |
| | **8** | 3 12.3 | 18 20.7 | Ari | 1.5 | 4.1 | 32° E | 97 | 1.52 | 2.27 | 07:39 | 14:52 | 22:04 |
| | **15** | 3 32.2 | 19 38.7 | Tau | 1.5 | 4.0 | 30° E | 97 | 1.53 | 2.31 | 07:26 | 14:44 | 22:02 |
| | **22** | 3 52.4 | 20 47.9 | Tau | 1.6 | 4.0 | 28° E | 98 | 1.54 | 2.35 | 07:13 | 14:36 | 22:00 |
| | **29** | 4 12.7 | 21 47.8 | Tau | 1.6 | 3.9 | 26° E | 98 | 1.55 | 2.39 | 07:02 | 14:29 | 21:57 |
| **1 Ceres** | **1** | 3 08.1 | 14 42.2 | Ari | 9.0 | 0.4 | 37° E | 99 | 2.76 | 3.49 | 08:17 | 15:14 | 22:11 |
| | **8** | 3 18.6 | 15 39.7 | Ari | 9.0 | 0.4 | 33° E | 99 | 2.75 | 3.54 | 07:56 | 14:57 | 21:58 |
| | **15** | 3 29.5 | 16 35.0 | Tau | 9.0 | 0.3 | 29° E | 99 | 2.75 | 3.58 | 07:35 | 14:40 | 21:45 |
| | **22** | 3 40.6 | 17 28.1 | Tau | 8.9 | 0.3 | 25° E | 99 | 2.74 | 3.62 | 07:15 | 14:24 | 21:32 |
| | **29** | 3 52.0 | 18 18.6 | Tau | 8.9 | 0.3 | 21° E | 100 | 2.74 | 3.65 | 06:56 | 14:08 | 21:20 |
| **Jupiter** | **1** | 13 13.0 | -6 01.7 | Vir | -2.3 | 44.1 | 172° W | 100 | 5.46 | 4.46 | 19:35 | 01:15 | 06:56 |
| | **8** | 13 09.7 | -5 41.3 | Vir | -2.3 | 44.2 | 178° E | 100 | 5.46 | 4.46 | 19:03 | 00:45 | 06:26 |
| | **15** | 13 06.4 | -5 21.1 | Vir | -2.3 | 44.1 | 172° E | 100 | 5.46 | 4.46 | 18:31 | 00:14 | 05:57 |
| | **22** | 13 03.2 | -5 01.8 | Vir | -2.3 | 43.9 | 164° E | 100 | 5.46 | 4.48 | 17:59 | 23:43 | 05:27 |
| | **29** | 13 00.2 | -4 44.1 | Vir | -2.3 | 43.6 | 157° E | 100 | 5.46 | 4.52 | 17:27 | 23:13 | 04:58 |
| **Saturn** | **1** | 17 50.4 | -22 04.6 | Sgr | 0.4 | 16.9 | 104° W | 100 | 10.05 | 9.77 | 01:19 | 05:56 | 10:34 |
| | **8** | 17 50.5 | -22 04.2 | Sgr | 0.4 | 17.1 | 111° W | 100 | 10.05 | 9.66 | 00:51 | 05:29 | 10:07 |
| | **15** | 17 50.2 | -22 03.7 | Sgr | 0.3 | 17.3 | 117° W | 100 | 10.05 | 9.55 | 00:24 | 05:01 | 09:39 |
| | **22** | 17 49.6 | -22 03.2 | Sgr | 0.3 | 17.5 | 124° W | 100 | 10.06 | 9.45 | 23:55 | 04:33 | 09:11 |
| | **29** | 17 48.7 | -22 02.7 | Sgr | 0.3 | 17.7 | 131° W | 100 | 10.06 | 9.36 | 23:27 | 04:05 | 08:42 |
| **Uranus** | **1** | 1 28.6 | 8 40.7 | Psc | 5.9 | 3.4 | 12° E | 100 | 19.93 | 20.91 | 07:00 | 13:34 | 20:07 |
| | **8** | 1 30.1 | 8 49.6 | Psc | 5.9 | 3.4 | 6° E | 100 | 19.93 | 20.93 | 06:33 | 13:08 | 19:42 |
| | **15** | 1 31.6 | 8 58.4 | Psc | 5.9 | 3.4 | 1° W | 100 | 19.93 | 20.93 | 06:07 | 12:42 | 19:16 |
| | **22** | 1 33.1 | 9 07.2 | Psc | 5.9 | 3.4 | 7° W | 100 | 19.93 | 20.93 | 05:40 | 12:15 | 18:51 |
| | **29** | 1 34.6 | 9 15.9 | Psc | 5.9 | 3.4 | 14° W | 100 | 19.93 | 20.91 | 05:14 | 11:49 | 18:25 |
| **Neptune** | **1** | 22 57.9 | -7 32.6 | Aqr | 8.0 | 2.2 | 29° W | 100 | 29.95 | 30.82 | 05:28 | 11:03 | 16:38 |
| | **8** | 22 58.8 | -7 27.4 | Aqr | 8.0 | 2.2 | 35° W | 100 | 29.95 | 30.76 | 05:01 | 10:37 | 16:12 |
| | **15** | 22 59.6 | -7 22.6 | Aqr | 8.0 | 2.2 | 42° W | 100 | 29.95 | 30.69 | 04:34 | 10:10 | 15:45 |
| | **22** | 23 00.4 | -7 18.1 | Aqr | 7.9 | 2.2 | 49° W | 100 | 29.95 | 30.6 | 04:07 | 09:43 | 15:19 |
| | **29** | 23 01.1 | -7 14.1 | Aqr | 7.9 | 2.2 | 55° W | 100 | 29.95 | 30.51 | 03:40 | 09:16 | 14:52 |
| **Pluto** | **1** | 19 23.0 | -21 09.4 | Sgr | 14.3 | 0.2 | 82° W | 100 | 33.3 | 33.42 | 02:47 | 07:29 | 12:10 |
| | **8** | 19 23.3 | -21 09.4 | Sgr | 14.3 | 0.2 | 89° W | 100 | 33.31 | 33.31 | 02:20 | 07:02 | 11:43 |
| | **15** | 19 23.4 | -21 09.6 | Sgr | 14.3 | 0.2 | 96° W | 100 | 33.31 | 33.19 | 01:53 | 06:34 | 11:16 |
| | **22** | 19 23.4 | -21 10.0 | Sgr | 14.3 | 0.2 | 103° W | 100 | 33.31 | 33.08 | 01:25 | 06:07 | 10:48 |
| | **29** | 19 23.4 | -21 10.6 | Sgr | 14.3 | 0.2 | 110° W | 100 | 33.32 | 32.97 | 00:58 | 05:39 | 10:20 |

# February/March Reports

## Minutes of Board of Directors 2/20/2017

Held at Ladd Observatory, somewhere around 7pm.

**Future meetings:** Started with a general discussion of future meetings. Potluck in June? First meeting back at the observatory on April 7 which would be our annual meeting. A friend of Tracy Prell from Kosovo might be presenting in July. Details to be worked out. • Conrad Cardano, Dye Hill Observatory, March 4, Community center.

**Secretary:** No report.

**Treasurer:** Lloyd reported that everything is up to date and that he would be sending out a preliminary budget for review soon.

**Trustees Report:** Jim Crawford reported that he has the new security system his house and intends to install this at the observatory in early April. 4 cameras are anticipated. The Trustees will advise the membership when the system is in, active and they're able to spy on the members. It was suggested that members consider observing fully clothed once the system goes on line. Jim had an electrician come to give us an estimate to remove the overhead electrical line going to the observatory. He will update us on that once the estimate is in.

**Nominating Committee:** Jim Crawford and Bob Horton are still begging, groveling and pleading for members to fill all of the potentially open slots for our upcoming election.

**Astronomy Day:** This occurs on April 29. Francine Jackson started a discussion about potential ideas. Solar observing followed by a workshop? She will work further on some ideas, whatever we do, it was agreed that we would be doing this at Seagrave observatory.

**Library Telescopes:** Linda Bergemann has agreed to head this program up. Thanks to retirement and a burning desire for meaning in her life, we now have someone to coordinate and drive this forward. It was suggested that we get 1 telescope, modify it and see what sort of interest from libraries in the state there would be. Linda has been working with the New Hampshire Astronomy society and also in communication with John Root from the Aldrich Astronomical Society. Both are well into this program. All the needed modifications are on the NH web site.

**Spring Workshop Series:**

Francine reported that these will run starting on April 22 and run every Saturday until Memorial day. Topics suggested were: Bob Horton and Jim Crawford / Astrophotography, Ian Dell'Antonio / Solar, Steve Siok / Globular Clusters, Kathy Siok / Introduction to astronomy.

**AstroAssembly:** Kathy Siok reported that the theme so far is: Exciting Work by Amateurs. Possible speakers were discussed. It was suggested that there be a special category for Solar Eclipse photography due to the upcoming eclipse. Many further details remain to be worked out, but progress is being made.

**Light Pollution:** We discussed a letter that Jim Hendrickson wrote about a potential new power plant in the town of Burrillville. There is concern about potential light pollution around it. There was discussion about who to talk to and it seemed best to reach out to town officials first. • Matt Ouellette is going to reach out to the engineers working on the new Citizen's Bank project in Johnston. He will try and find out what the plans are for lighting. • Next meeting of the Board of Directors will be on Monday March 20th again at Ladd observatory unless the grounds are clear of snow at Seagrave.

Respectfully submitted by your humble society secretary, Steve Hubbard

## Minutes of Skyscraper monthly meeting March 4 2017

**Report of the Nominating Committee: Bob Horton / Jim Crawford:** After an extended period of arm twisting, pleading and begging, a complete slate of officers for 2017 to 2018 was presented: President: Steve Siok • 1st VP: Ian Dell'Antonio • 2nd VP: Kathy Siok • Treasurer: Lloyd Merrill • Sect'y: Steve Hubbard • Trustee: Tom Thibault • Members at large: Tracy Prell and Linda Bergemann

There were no additional nominations from the floor. • Francine Jackson and Jim Hendrickson will organize the election, send ballots out etc.

**Spring Workshop Series:** These will commence on April 22 and will go for 5 weeks. These are primarily geared towards folks new to astronomy. Start time to be 6pm on Saturdays. Exact details and who will present each topic still being worked out.

**New Members:** Your humble society secretary announced 2 new members who had provided applications. Max Ledoux, a Junior member and Ronald (Ron) Fratus, a regular member. Ron was in the audience and both will be presented at the next meeting to be formally voted upon.

**Library Telescope:** Member Jeff Padell brought an Orion Star Blast telescope that he recently purchased. This was presented to the membership to see what the typical library telescope provided looks like. Modifications would be made before they go to a library, but the basic size and design could be viewed by all those in attendance.

**Astroassembly 2017:** Kathy Siok presented an update on AstroAssembly. This will occur on October 13 and 14 of this year. Friday evening would be open to anyone wishing to give a talk. We have 3 speakers already lined up to include our Saturday featured evening speaker. Even though this is months away, Mrs. Siok make a plea for volunteers.

**Upcoming Speakers / Meetings:** Ian Dell'Antonio outlined some of the upcoming events. For our April meeting, we will be having a graduate student from Brown University who has been working on the recently announced "Trappist System." Well…not actually working there, but doing some research about it. • On Wednesday April 12, we have rescheduled author Dava Sobel to come to Seagrave Observatory to talk about her new book "Glass Universe."

**Special Opportunity:** Steve Siok mentioned that there is a play called "Silent Sky" at the Arsenal Theater in Watertown MA about the life of Henrietta Leavitt. Some of our members will be organizing a trip to see it.

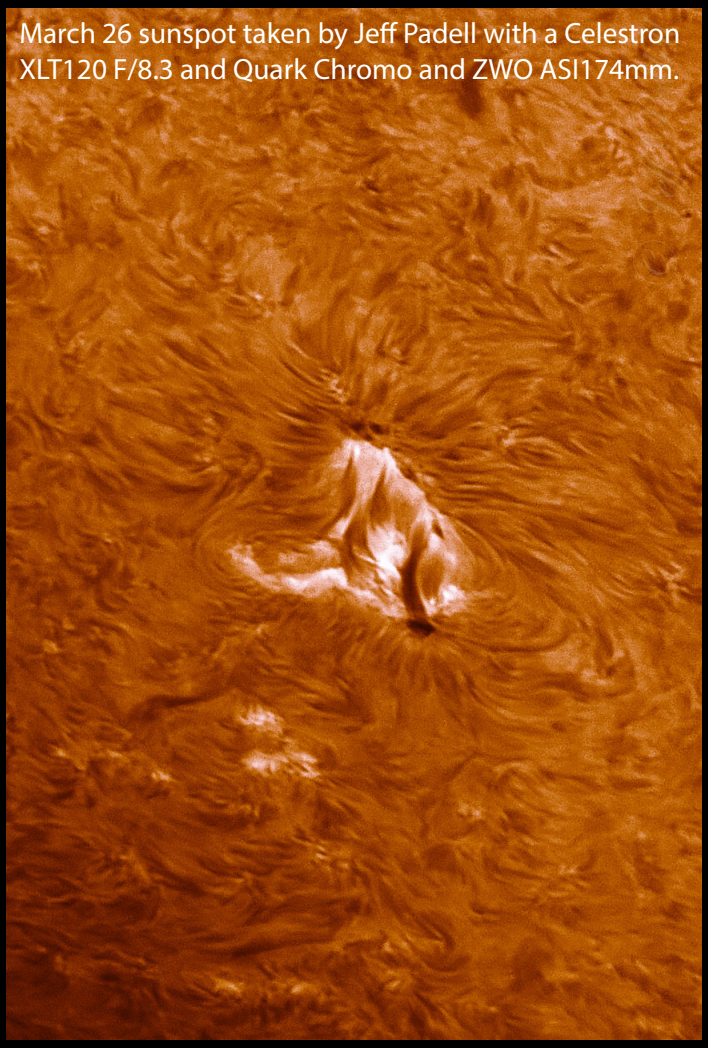
Member Conrad Cardano then presented a talk about his recently constructed home observatory made from a converted garden shed.

Report provided by your humble society secretary Steve Hubbard

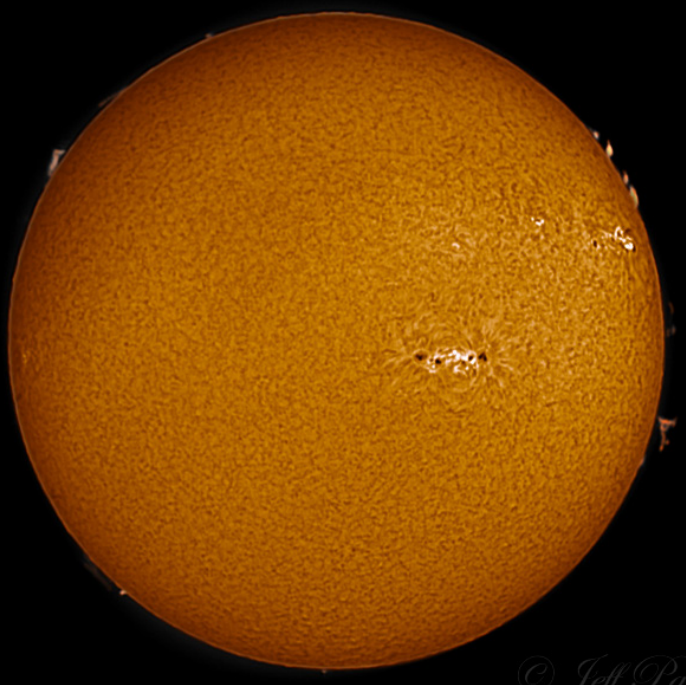
Conrad Cardano

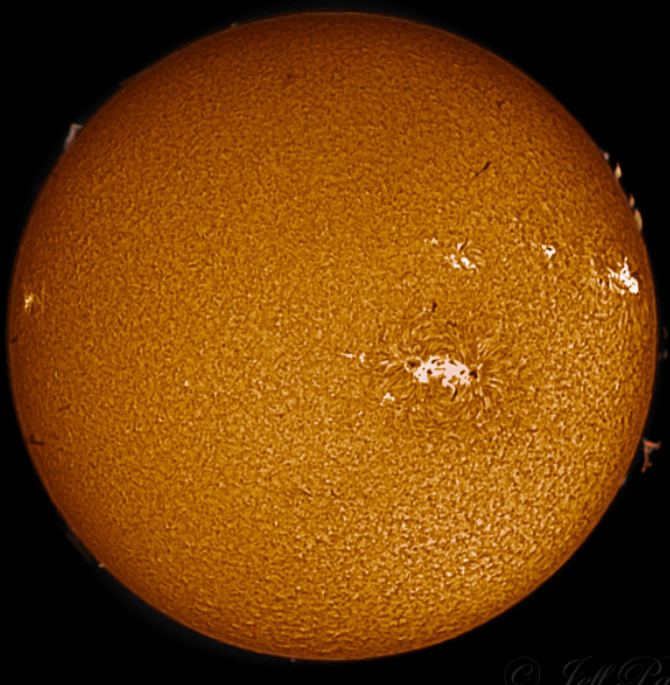
# Astro Image Gallery

Messier 81, a spiral galaxy in Ursa Major, taken on March 20 by Conrad Cardano using the ZWO 174mm + ES 102, f/7 APO; stacked 34 x 30 second exposures and processed it with Astro art. Compared to the Canon, the ZWO has significantly less noise. Conrad used FireCapture to control the camera and take images which produces a very nice logfile of the settings used to take the images.



March 26 sunspot taken by Jeff Padell with a Celestron XLT120 F/8.3 and Quark Chromo and ZWO ASI174mm.

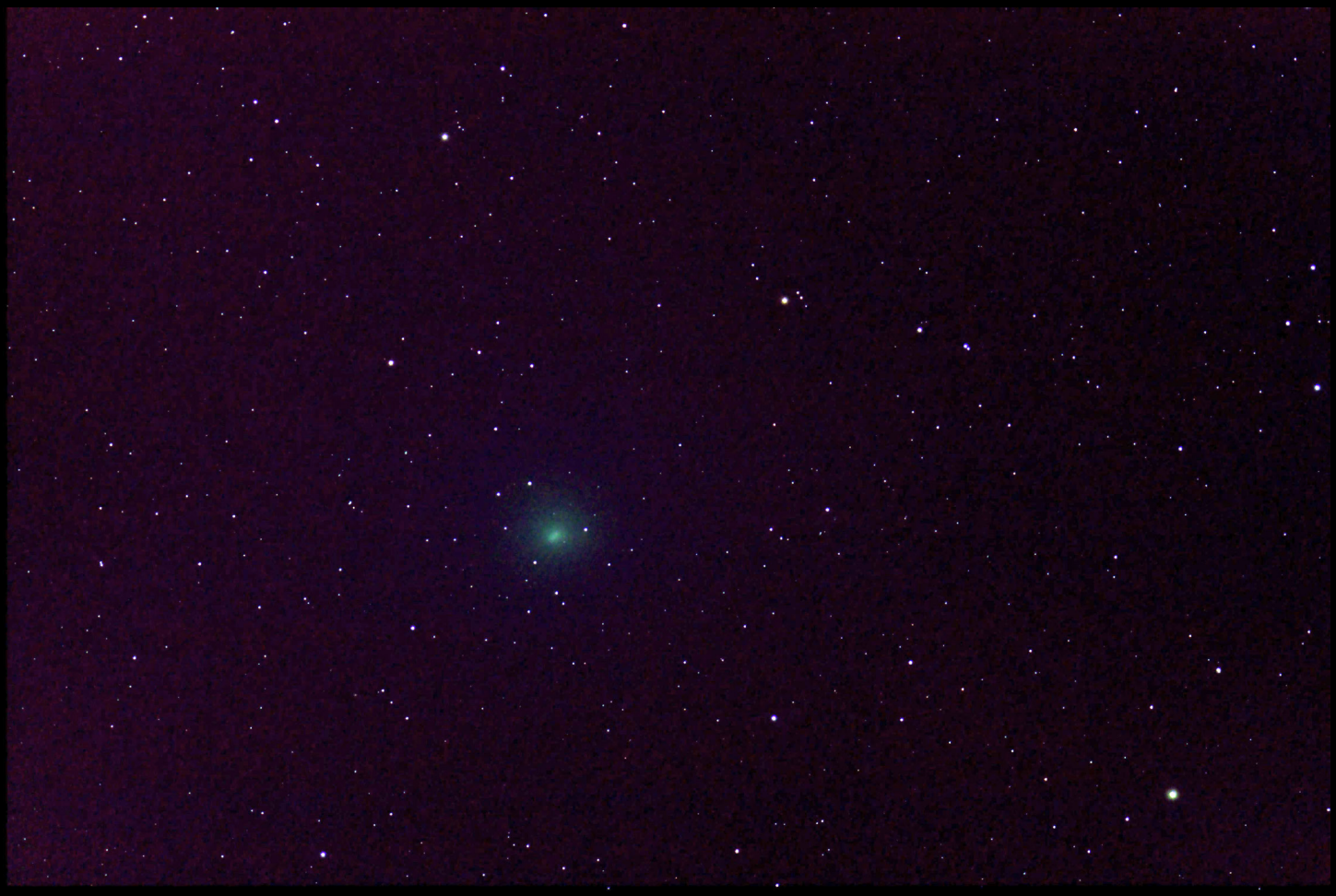




On Sunday, April 2, Jeff Padell took his LS50 to Seagrave Observatory and shot both in single stack and double stack, here is the difference. The plages around the sunspots are a bit overexposed, but in the double-stacked image you can see the dark filaments that don't show in single stack

ZWO 174mm (monochrome) camera mounted to a Lunt 60mm scope, using eyepiece projection to magnify the image onto the camera. The image was processed with AutoStakkert.

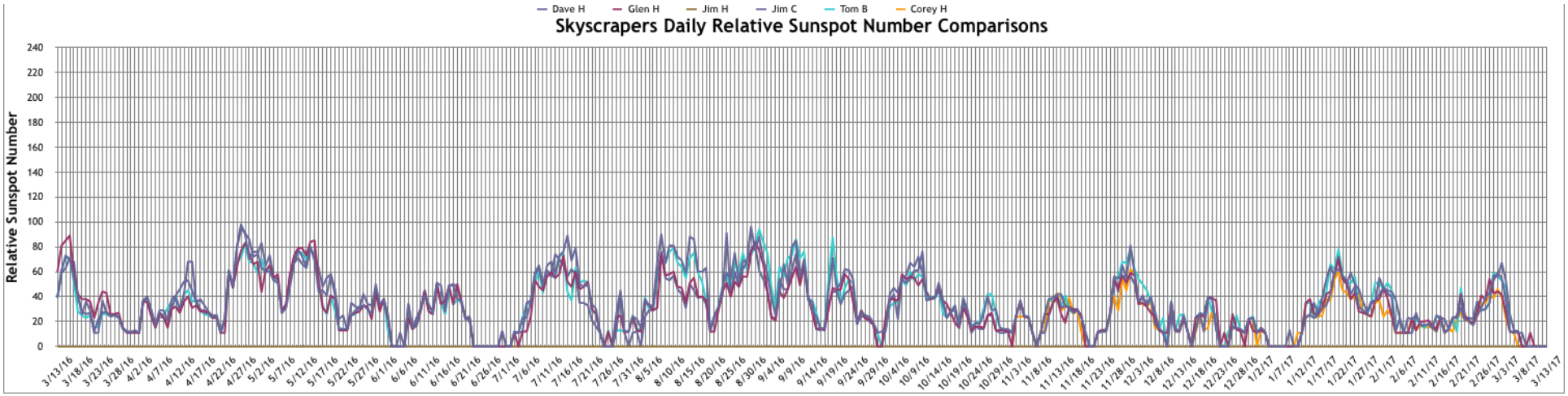
Venus taken during the daytime on March 23 by Conrad Cardano using eyepiece projection with a ZWO 174 camera through an ES 102 refractor; stacked 800 frames using AutoStakkert.



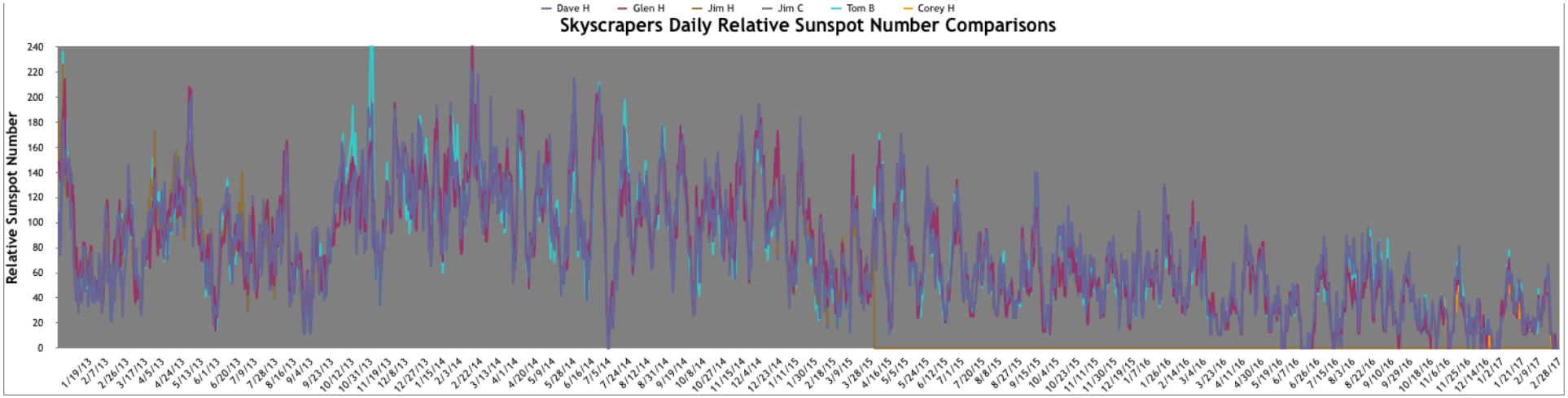
Comet 41/P Tuttle taken on March 20 by Conrad Cardano with a Canon DSLR + ES 102 f/7 APO; stacked 20 x 30 second exposures and processed with Astro Art.

# Skyscrapers Daily Sunspot Count Numbers

March 2016-March 2017




January 2013-March 2017



# 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** | ☐ | **$15** |
| **Regular** | ☐ | **$50** |
| ***Family** | ☐ | **$60** |
| **Senior** | ☐ | **$25** |
| **Contributing** (any amount in excess of annual dues is gratefully accepted as a donation) | ☐ | **$** |

*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 Peeptoad Road
North Scituate, RI 02857

# Proposed 2017-2018 Budget

| Category | Budget |
|---|---|
| **INCOME** | |
| AstroAssembly | 3,500 |
| Donations | 3,700 |
| Dues | 3,100 |
| Star Party Donations | 300 |
| **TOTAL INCOME** | **10,600** |
| | |
| **EXPENSES** | |
| Astro Assem Exp | 2,000 |
| Contingency | 300 |
| Corporation, State Fee | 20 |
| Domain Name | 20 |
| Donation | 50 |
| Outreach Donation | 1,200 |
| Postage and Delivery | 100 |
| Property Insurance | 2,600 |
| Refreshment Expense | 100 |
| Trustee Expense | 2,078 |
| Utilities | 2,132 |
| **TOTAL EXPENSES** | **10,600** |
| | |
| **OVERALL TOTAL** | **0** |

As agreed by eBoard on 3/20/2017

# Directions to Seagrave Memorial Observatory

www.theSkyscrapers.org

**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.

---

SKYSCRAPERS INC.

47 Peeptoad Road
North Scituate, Rhode Island 02857