



# the Skyscraper

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June 2014

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

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## Saturday, June 7, 5:30pm at Seagrave Memorial Observatory

### 5:30pm **Members Potluck Dinner**

We will hold our annual Pot Luck Supper on June 7th at Seagrave Observatory. You are asked to bring a dish or other item – appetizer, main dish, side or dessert. Beverages will be provided. If it is a good evening, you might want to have a lawn chair and some bug spray along as well.

Please contact Kathy Siok to indicate what you plan to bring at [kathys5@cox.net](mailto:kathys5@cox.net)

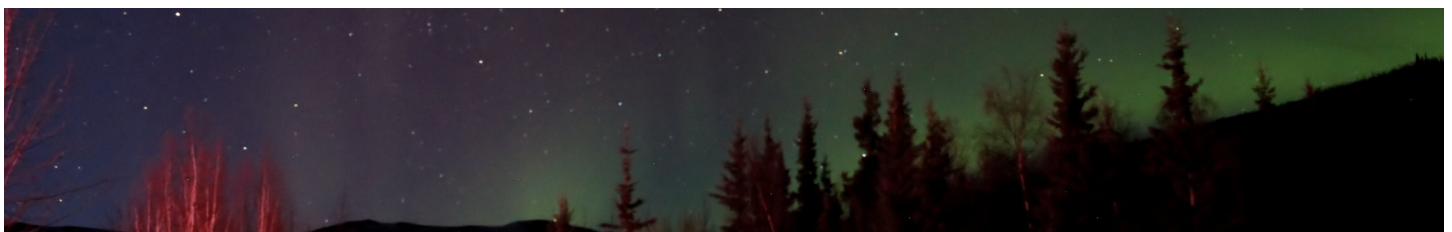
### 7:00pm **Dance of the Polar Light** by Steve Hubbard

Interested in learning more about the Northern Lights?

The speaker at the June meeting of The Skyscrapers Astronomical Society of RI will be longtime member Steve Hubbard. Steve and his wife along with fellow Skyscraper member Ray Kennison and his wife traveled to the wilds of central Alaska in early March of this year on a special trip devoted primarily to seeking out and viewing the Northern Lights.

Fairbanks Alaska is one of the best areas on Earth in which to see the lights both due to it's location and to the lack of a lot of outdoor lighting to impede the view. Steve will be presenting an account of his trip to the members at the Skyscrapers home in North Scituate RI where he will recount the fabulous scenery, fun adventures and what turned out to be some bright, memorable Northern Lights displays.

Steve has won awards for telescope making and imaging and has been a member and amateur astronomer since the early 1970's.



## Renew Your Membership Today

Memberships were due in April. If you haven't renewed yet, please renew online at

[www.theskyscrapers.org/join-renew](http://www.theskyscrapers.org/join-renew)

Secure Payments by

**PayPal**



## Upcoming Meetings

- |                     |                                                                    |
|---------------------|--------------------------------------------------------------------|
| Saturday, July 12   | Members' Observing Night                                           |
| Friday, August 1    | Dr. David Kipping from Harvard Smithsonian Center for Astrophysics |
| Friday, September 5 | Author Dava Sobel                                                  |
| September 26 & 27   | AstroAssembly                                                      |
| Friday, November 7  | "NASA helps Giordano Bruno find New Worlds" by Alan Powers         |



# President's Message

Bob Horton

Last month I spoke of goals for our organization, including making improvements to both our public outreach programs and activities for our membership to enjoy. Already we have some news to report...

## Public Outreach:

Just recently, Skyscrapers celebrated International Astronomy Day by hosting an afternoon and evening program of talks geared towards novices, and conducting tours of our facilities. Many of those attending were visiting Seagrave Observatory for their first time. Prof. Pete Schultz was our guest speaker for the evening, and his talk was entitled "My Moon", in which he provided the audience with a geologist's tour of the moon's varied landscape, showing many wonderful images. Prof. Schultz also brought along an incredible 8 x 8 foot photo of the moon, assembled from NASA images taken by LRO. The lunar detail in this giant photo was truly remarkable. With the photo displayed across three tables at the back of the meeting hall, guests were able to gather around, with Prof Schultz pointing out various features with a laser pointer.

I believe that Skyscrapers participated in Astronomy Day years ago, but it has certainly been some time since we have done this. The response from those attending this

year seemed quite enthusiastic. Even with limited advertising, we had about 50 people attending. This is even more remarkable when you consider that both the day and evening was cloudy with on and off showers. The original plan was to have telescopic viewing, but even the fickle nature of New England weather could not dampen the spirit of those attending this fine program.

I would like to thank Conrad Cardano, Chair of Astronomy Day, and all of the other volunteers who worked together to make this event happen.

## Membership Activities:

Pat Landers has been busy planning some Member's Nights for Skyscrapers, and it is hoped many of you will join in. Plan on setting up your own telescope, or simply enjoy observing through the society's telescopes. This is a great time to meet and socialize with fellow members, and especially for beginners, an opportunity to learn more about using telescopes and finding objects to observe. The next Member's Night is scheduled for Friday, May 30th, with more to follow. Look for announcements in future newsletters.

Back in March, about two dozen members spent the day visiting the Springfield Science Center and Wilder Observatory. That was a really fun day, and now we have



## Observing Night Saturday July 12th

Please join us after the July meeting for Observing night. If the weather is clear, the telescopes at Seagrave Observatory will be open, or you are encouraged to bring your own telescopes. Mars will be near Spica, Saturn is high in the south, and a waning gibbous Moon will be visible. Hope to see you there!

another great event to look forward to.

Steve Siok has been busy organizing an opportunity for us to visit the historic instrument collection at Harvard University on the summer solstice, Saturday, June 21st. This will be a lot of fun, and if you are interested in going you will find more information in this issue of the Skyscraper.

If you have ideas for activities you think we can all enjoy and benefit from, please consider sharing your ideas at any Board of Directors meetings, which all members are invited to attend.



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 **May 23** 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

Bob Horton [Robert\\_Horton@brown.edu](mailto:Robert_Horton@brown.edu)

## 1st Vice President

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

## 2nd Vice President

Steve Siok [ssiok@cox.net](mailto:ssiok@cox.net)

## Secretary

Tina Huestis [qthuestis@gmail.com](mailto:qthuestis@gmail.com)

## Treasurer

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

## Members at Large

Pat Landers [pblanders5@gmail.com](mailto:pblanders5@gmail.com)

Matt White [ka1bqp@msn.com](mailto:ka1bqp@msn.com)

## Trustees

Conrad Cardano [cardanoc@verizon.net](mailto:cardanoc@verizon.net)

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

Tom Thibault [DeepSpaceViewer@aol.com](mailto:DeepSpaceViewer@aol.com)

## Public Outreach Coordinator

Matt White [ka1bqp@msn.com](mailto:ka1bqp@msn.com)

## Public Relations Spokesperson

Francine Jackson [Francine\\_Jackson@brown.edu](mailto:Francine_Jackson@brown.edu)

## Observatory Committee Chairperson

Conrad Cardano [cardanoc@verizon.net](mailto:cardanoc@verizon.net)

## Membership Activities Coordinator

Pat Landers [pblanders5@gmail.com](mailto:pblanders5@gmail.com)

## Librarian

Alex Bergemann [astroalex@verizon.net](mailto:astroalex@verizon.net)

## Historian

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

## Archivist

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

## Editor

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

## Friday, June 6

### Black Holes Come to the URI Planetarium!

University of Rhode Island Planetarium  
Upper College Road  
Kingston, RI

Friday, June 6th, 2014  
6:00 and 7:00 P.M.

Contact: Francine Jackson: 401-527-5558

Black holes are one of the most amazing objects in our sky. Much has been written about them, but they still remain one

of the most questioned topics in astronomy. What are they? Where do they come from? Should we be worried about them coming to Earth? The University of Rhode Island, in cooperation with the Denver Science Center, will present Black Holes, Friday, June 6th, at 6:00 and 7:00 P.M. In addition, a short program on Light Pollution will be shown, then The Skies of the URI campus, a live introduction to the night sky.

Admission is only \$5.00, to benefit the

University of Rhode Island Planetarium Fund.

The University of Rhode Island Planetarium is located on Upper College Road, on the Kingston campus, across from the Art Center.

The University of Rhode Island Planetarium is available for programming for schools and other organizations. For more information, please contact Francine Jackson at 401-527-5558.

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## Saturday, June 21

### Visit the Harvard-Smithsonian Center for Astrophysics & Harvard Historical Instruments Collection

Saturday, June 21, 2014, 2:00pm

Harvard-Smithsonian Center for Astrophysics  
60 Garden Street, Cambridge, Massachusetts

Contact: [ssiok@cox.net](mailto:ssiok@cox.net)

On Saturday, June 21, Skyscrapers invites you to travel to Cambridge, Massachusetts for a visit to Harvard College Observatory and to the Collection of Antique Scientific Instruments. The day will begin in the afternoon. We will assemble at 2pm at the Center for AstroPhysics parking lot at 60 Garden St. Alison Doane, the curator of the Harvard plate stack collection will be our guide. She will show us the stacks, discuss the history of discovery made possible by the collection and let us see several of the more interesting plates. Please remember that the discovery of Cepheid variable stars and the discovery of the Hertzsprung Russel Diagram took place because of these plates. We will also visit the DASCH scanning machine and learn how the collection of plates is being digitized. We will next visit the Great 15" Refractor, the first truly big research telescope in the United States. It was built in Germany and constructed at Harvard in 1847. There are other scopes on the grounds we may get to visit, including the 9" Alvan Clark which is still used for public observing. This is the telescope used by Steven O'Meara when he discovered the spokes in the rings of Saturn before they

were seen by the Voyager spacecraft.

We will break for supper in Harvard Square. Not sure where just yet.

After dinner we will go to the Science museum in Harvard Yard. There will be parking at 52 Oxford St. Because June 21 is the solstice the Harvard Museums of Science and Culture will be open from 5 til 9 PM. We will be attending as part of this event. First Sara Schechter, the curator of the scientific instrument collection will give us a talk and will show us the two galleries of Astronomical Instruments. We will be allowed to view other galleries containing timepieces, navigational equipment and other instruments related to all the sciences and computing that form the overall collection. In addition there are several other museums which will be open, including the Harvard Museum of Natural History and the Peabody Museum of Archeology. The collection of glass flowers is contained in the museum of Natural History.

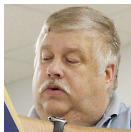
Members of the Amateur Telescope Makers of Boston, our sister society, will assist with the Solstice festival and will have scopes out for viewing at the museums.

For an overview of the museums, visit

the website [HMSC.harvard.edu](http://HMSC.harvard.edu)

All Skyscrapers and their guests are welcome. Transportation is on your own, just like the trip to Springfield and Amherst a month ago. Please let me know if you plan to attend so I can get a restaurant count. Send your name and number of folks to.





# Magnificent Saturn

Dave Huestis

“One of the first things that persons unaccustomed to astronomical observations ask to see when they have an opportunity to look through a telescope is the planet Saturn. Many telescopic views in the heavens disappoint the beginner, but that of Saturn does not ... the untrained observer is sure to be greatly impressed by the wonderful rings...No previous inspection of pictures of these rings can rob them of their effect upon the eye and the mind. They are overwhelming in their inimitable singularity, and they leave every spectator truly amazed.”

So wrote Garrett P. Serviss in his 1901 book, *Other Worlds*. And my associates at Seagrave and Ladd Observatories and I would wholeheartedly concur. Even a small telescope will reveal Saturn’s magnificent ring system. Read on to learn how you can use your own telescope to discover the beauty of Saturn and his rings. Don’t have a telescope? Then visit one of the local observatories for splendid views through some of the largest instruments in southern New England.

First, it is necessary to know where this sixth planet from the Sun can be found in the sky. On June 1, in deepening twilight at 9:00 p.m., Saturn will be approximately 26 degrees above the southeast horizon, residing among the stars of the constellation Libra. It will shine like a pale yellow star. If you wait an hour, Saturn will be five degrees higher in the sky. The red star Antares in Scorpius will be about 20 degrees (two fists held at arm’s length provides this measurement) away from Saturn in the seven o’clock position. Virgo’s brightest star Spica, white in color, will be about 24 degrees to the upper right (two o’clock position) of Saturn. Saturn will be slightly brighter. To the upper right of Spica you will find reddish Mars. Saturn will be a little fainter than Mars.

On May 10, Saturn was at its closest distance from the Earth for this year, about 827 million miles. (Last year’s close approach was 820 million miles.) By June 1<sup>st</sup> that distance will have increased to about 833 million miles. Despite these vast distances, the view through a telescope is spectacular. You’ll immediately see the rings. The north face of the ring plane will be tilted almost 22 degrees toward the Earth. (Last year the

tilt was only 18 degrees.) With the rings so wide open, this configuration allows much detail to be seen. In June 2017, they will reach their maximum tilt of 27 degrees.

It is really amazing that Saturn’s rings are visible at all, considering the planet’s distance from the Earth and the fact that the ring plane is only about 328 feet thick (just broader than the length of a football field). Although there are hundreds of ringlets, you shouldn’t have any difficulty seeing the separation between the primary “A” (outer) and “B” (inner) rings, called the Cassini Division. This gap is only 2,175 miles wide. In comparison, the width of the “A” ring is 9,321 miles and the “B” ring is around 16,032 miles across. What ring features can be observed will depend upon what size telescope is used.

The rings are composed of irregularly shaped dirty snowballs, ranging in size from grains of dust to the size of pebbles. There are also some “boulders” several feet across. They all orbit Saturn along the planet’s equatorial plane.

Though Saturn is a gas giant a little smaller than Jupiter, it does not exhibit the prominent bands and zones in its cloud tops as does its more massive cousin. Usually not much detail can be observed at all on Saturn’s disk. In fact, if it weren’t for Saturn’s ring system, this planet would be quite a boring destination for most amateur



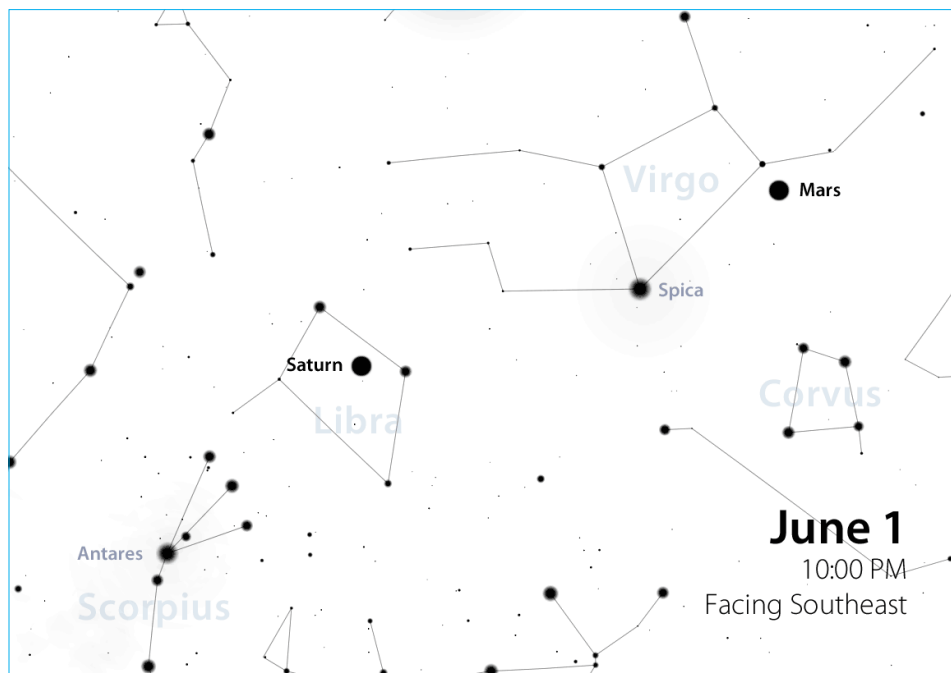
Saturn on June 2 by Steve Hubbard

astronomers and the public alike.

What one can look for is the planet’s shadow projected onto Saturn’s rings. In addition, with larger telescopes, a challenge is to observe the shadow of the rings upon Saturn’s cloud tops. These viewing circumstances provide a stunning 3-D effect of the Saturnian system without having to wear the special glasses.

Also, though Saturn has 62 known moons, at best we can observe the eight brightest with the largest of the telescopes available in Rhode Island. Those moons are: Titan, Rhea, Tethys, Dione, Iapetus, Enceladus, Mimas and Hyperion. The first five of the above can be observed in a dark moonless sky using the 12-inch Brashear refractor at Ladd Observatory.

So during the next few months, plan on treating yourself and your family and friends to wonderful views of Saturn. Whether it is observed through your own telescope or one of the instruments at any of the local observatories, you won’t be dis-



appointed.

While anyone can view fantastic images of the heavens on countless websites, nothing can stimulate your mind better than photons travelling through hundreds of millions of miles of space to reach your eye at a telescope eyepiece. This firsthand experience will far eclipse simply looking at images in any other media.

For as Carl Sagan said in his book and PBS television series *Cosmos* back in 1980,

“We are made of star stuff.” Reconnect with the heavens. Become one with the universe from which we evolved.

In conclusion, please visit any of the following observatories to observe Saturn to best advantage. Seagrave Memorial Observatory in North Scituate (<http://www.theskyscrapers.org>) is open every clear Saturday night for observing. Ladd Observatory (<http://www.brown.edu/Departments/Physics/Ladd/>) in Providence

is open every clear Tuesday night. And, bring your passport and an overnight bag to visit Frosty Drew Observatory (<http://www.frostydrew.org/>) in Charlestown on every clear Friday night. Please visit the respective websites for details about opening times and closures.

Experienced sky interpreters are on hand to provide guided tours to the wonders of the heavens.

Keep your eyes to the skies.



## Planetary Nebula in Ursa Major M97: The Owl Nebula

Glenn Chapple

Last month, we paid a visit to the spiral galaxy M108. I promised to feature its neighbor, the planetary nebula M97, this month. Did you take a sneak peek? I don't blame you. Just  $\frac{3}{4}$  degree southeast of M108, M97 can be glimpsed in the same low-power field. Their seeming nearness is an illusion. M108 lies some 45 million light years distant, while M97 is ensconced within the bounds of our Milky Way Galaxy at a distance of around 2,000 light years.

Like M108, M97 was discovered by Messier's contemporary Pierre Méchain in 1781. Described as one of the fainter of

the Messier objects, M97 can nonetheless be glimpsed with small aperture scopes. I first saw its ghostly 10th magnitude, 3.3 arcminute-wide form with a 3-inch reflecting telescope and magnifying power of just 30x.

In 1848, Irish astronomer William Parsons, the 3rd Earl of Rosse, studied M97 with his colossal 72-inch reflecting telescope (the “Leviathan of Parsonstown”). He noted and sketched a pair of dark circular areas within the nebulosity that gave M97 the appearance of an owl's head, hence its modern-day nick-name the “Owl Nebula.” Fortunately, you won't need Parsons'

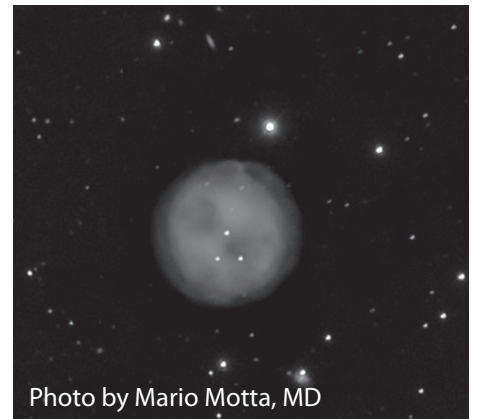
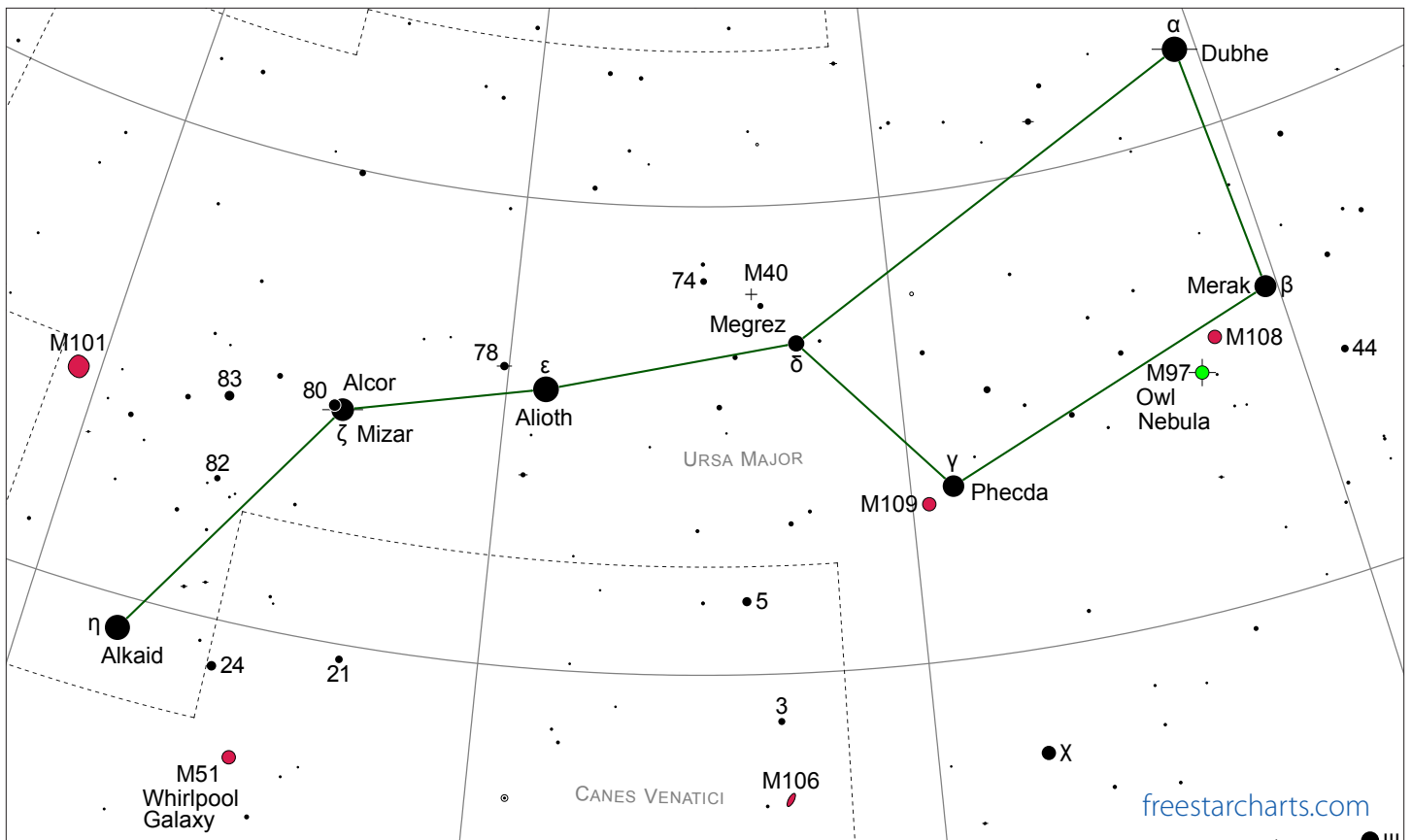


Photo by Mario Motta, MD

Leviathan to see the Owl eyes. With patience and a magnification of 138X, I once captured fleeting glimpses with a 10-inch reflector. The limiting magnitude that night was about 5. From a dark-sky site, a smaller scope should be able to do the trick.





# The Double Quasar and Gravitational Lensing

Pete Peterson

QUASAR QSO 0957+561 is also known as the Double Quasar. It is, in fact, a single quasar! Its light is being gravitationally lensed by a massive galaxy situated half-way between the quasar and Earth, causing the quasar image to appear twice. The discovery of this object in 1979 provided the first direct evidence for the gravitational lensing effect predicted by Einstein, who concluded his 1936 paper *Lens-Like Action of a Star by the Deviation of Light in the Gravitational Field* saying "... there is no great chance of observing this phenomenon..."

That's OK Albert. I've never seen this before either. Up until a week ago I'd not known that a fine example of gravitational lensing was viewable with amateur level equipment. But a friend of mine imaged this 17th magnitude a week or so back, and since it's so totally unique in my astro-experience I figured to give it a shot.

Equipment setup consists of a Meade

14" LX200GPS at  $f/5.87$  and SBIG ST-8XME with adaptive optics. There's an 8th magnitude star ideally situated for guiding but seeing isn't that good and transparency seems to be varying. The flats I took back on April 24th aren't very good, but then my flats never are. Imaged from 20:37 – 21:39 at 1 minute exposure, 2x2 binning,  $-20^{\circ}\text{C}$  chip temperature, 10 Hz guiding. At frame #58 a power cord jammed between the fork and the base terminating the sequence. Usually I'm happy with just enough exposure/frames to get an adequate S/N for astrometry but this is the first gravitationally lensed object I've ever seen and my objective was for 60 or more minutes.

Oh my! There it is, even with the first twilight polluted frame. The quasar separation is only 6 arc-seconds. The full frame image is 22 X 15 arc-minutes. Stacked 57x it cleans up pretty good.

Redshift is 1.413, meaning that the look-



From meteor showers to distant quasars, we'd love to read your observing reports. Please submit them for publication in the Skyscraper by sending them to [jim@distantgalaxy.com](mailto:jim@distantgalaxy.com).

back time is roughly 8.7 billion light years. With the scope running at 2180mm and sampling at 1.87 arc-seconds/pixel this isn't what one would call aesthetic imaging. But by golly, how many folks can say "I've seen a gravitationally lensed quasar?"

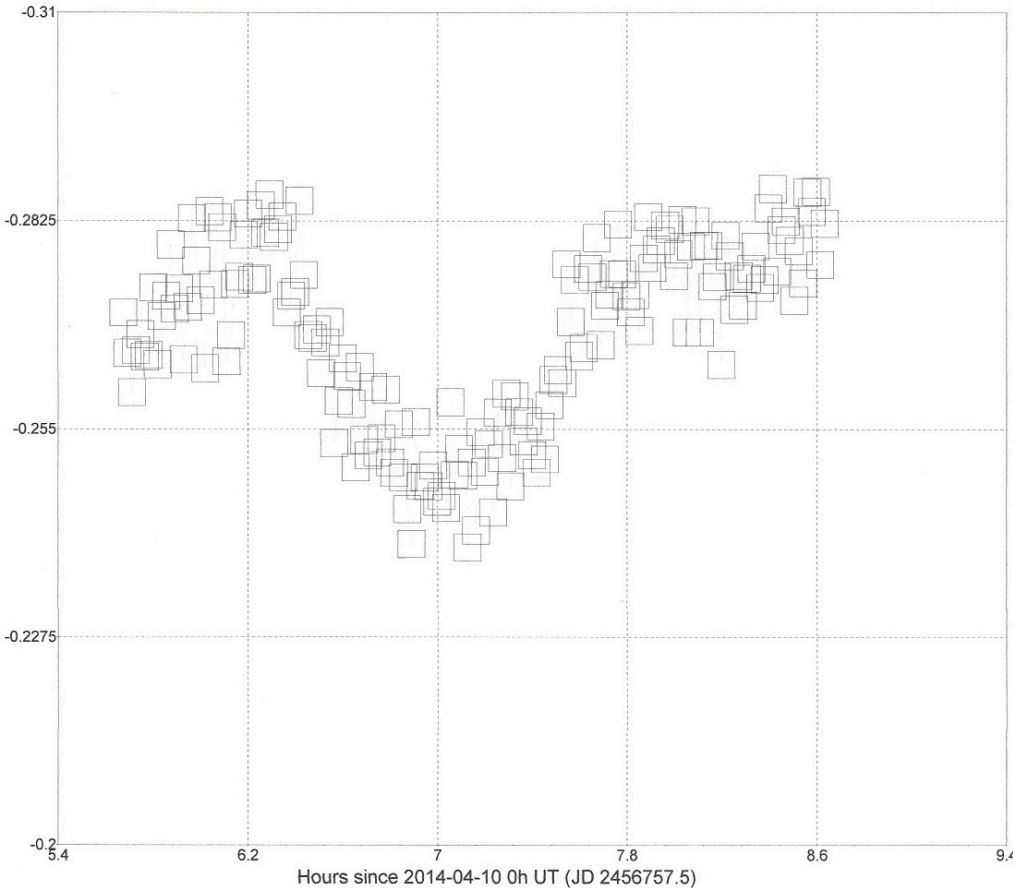


GRAVITATIONALLY LENSED QUASAR QSO 0957+561  
01:00 HRS UT, 6 MAY 2014  
WISHING STAR OBSERVATORY



# Measuring the Light Curve of a Transiting Exoplanet

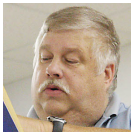
Bob Horton



I assisted a student here at Brown to collect images of an exo planet transit, TrES 3b. Photometry of the images using Max-IM DL produced the light curve on the right. The light curve shows the dimming of the star as the planet passes in front of it.

The star is about 1300 light years away from us, and about the size of our sun. The planet has about twice the mass of Jupiter and orbits the star every 31 hours!

The telescope used was a 16" Cassegrain at the the B&H Observatory, in Providence, RI.



# Skyscrapers Sunspot Count Project Update

Dave Huestis

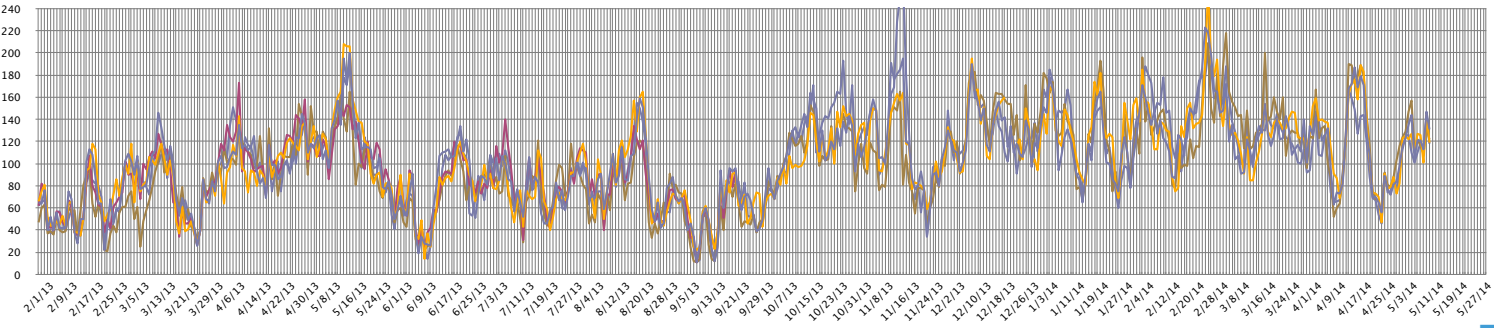
Here's the current database and spreadsheet of the Skyscrapers Sunspot Count Project from January 1, 2013 to present.

While there are still "cyclic" variations

every couple of weeks, activity has remained fairly constant during the last few months as the graph indicates.

Has the Sun reached peak yet? We re-

ally won't know until we are well past it and no additional peak activity supersedes what we've seen to-date.





**Astronomy Day 2014** was held on Saturday, May 10 at Seagrave Memorial Observatory. Steve Siok and Conrad Cardano gave presentations on telescopes and finding your way around the sky. Guests were treated to a few fleeting glimpses of the Sun through John Leonelli's filtered refractor and tours of the observatory.







Dr. Peter Schultz, Honorary Skyscrapers Member, presents "My Moon," a sampling of lunar geology to a full house at Astronomy Day. Pete brought a gigantic photographic map of the Moon to point out some features after the presentation.





# New England Astronomy: It's More Than Just Cloudy Skies

Francine Jackson

There's got to be a reason so many of us who love astronomy live in Southern New England. Yes, we have beautiful coastlines, great schools, fantastic parks and walkways. But, the one feature we seem to be missing is beautiful skies. Already this calendar year we have been unable to see three very unique celestial events, and yet, we're still here.

In mid March, almost as an invitation to a great beginning to spring, a very tiny asteroid actually was going to block the light of one of our brightest stars: Regulus. The heart of Leo, the Lion, would disappear from the constellation for several seconds, courtesy the rock Erigone. Although its path of occultation wasn't directly over our heads, we only had a relatively short drive to the path. From Bermuda, the observations would take place going upwards, in a northwestern direction, similar to 10:00 on a non-digital clock. But, this apparent once-in-a-lifetime event had other plans: The entire path of occultation became clouded out. Even thoughts of last-minute tickets to Bermuda would have been for nothing.

And, although this path didn't hover over our skies – we were clouded out that night, also – it was another fantastic event that we were denied. Skies, one; astronomy, zero.

The following month, we were prepped for the first total lunar eclipse in several years. Occurring on the festival of tax day, this eclipse also was to be the first of four taking place within the span of about a year and a half – a tetrad. Once again, although many of us were ready to spend much of the night enjoying the Moon change a ruddy color – not the blood as related in the news – clouds intervened, allowing us to spend the night in bed rather than outside enjoying the beautiful spring sky. The only good part of this is we will have another chance at a total lunar eclipse in early October. But, as to our sky phenomena: Skies, two; astronomy, zero.

In May, there was the possibility of witnessing a new meteor shower. The Earth was scheduled to pass through material that formerly was a part of Comet 209P/LINEAR. The early morning hours were alleged to be the peak time for a mass of

falling stars radiating from the northern circumpolar constellation Camelopardalis, meaning all of us anywhere in Southern New England should have great views – except for the unbelievable weather pattern that engulfed us all. Elsewhere, there were reports that the shower didn't live up to early predictions, but it would have been nice to observe for ourselves. Skies three; astronomy, zero.

So, the question remains: Why do we stay here? With beautiful skies elsewhere, what keeps us here, when what we really want to happen, the ability to see the sky, is so often denied us? My feeling is it has to be two factors: First, the fact that we have so many potential observing sites. Where else are there so many public observatories in such a small area? And, also, we're all in this together. The camaraderie we have, both when we can observe together, or even when we can't, when the skies do disappoint us, is well worth sticking around. Meanwhile, there will be observing nights – there have to be, sometime.



Clouds obscure the skies but not the fun at Astronomy Day 2014.



# The Hottest Planet in the Solar System

By Dr. Ethan Siegel

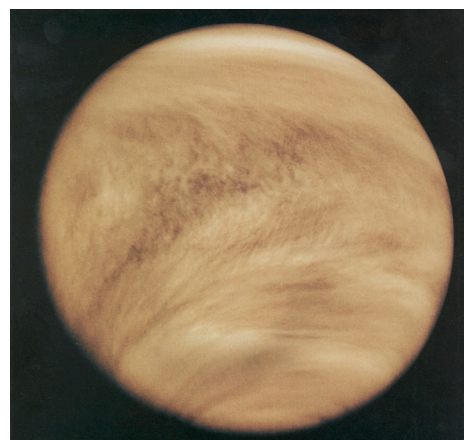
When you think about the four rocky planets in our Solar System—Mercury, Venus, Earth and Mars—you probably think about them in that exact order: sorted by their distance from the Sun. It wouldn't surprise you all that much to learn that the surface of Mercury reaches daytime temperatures of up to 800 °F (430 °C), while the surface of Mars never gets hotter than 70 °F (20 °C) during summer at the equator. On both of these worlds, however, temperatures plummet rapidly during the night; Mercury reaches lows of -280 °F (-173 °C) while Mars, despite having a day comparable to Earth's in length, will have a summer's night at the equator freeze to temperatures of -100 °F (-73 °C).

Those temperature extremes from day-to-night don't happen so severely here on Earth, thanks to our atmosphere that's some 140 times thicker than that of Mars. Our average surface temperature is 57 °F (14 °C), and day-to-night temperature swings are only tens of degrees. But if our world were completely airless, like Mercury, we'd have day-to-night temperature swings that were hundreds of degrees. Additionally, our average surface temperature would be significantly colder, at around 0 °F (-18 °C),

as our atmosphere functions like a blanket: trapping a portion of the heat radiated by our planet and making the entire atmosphere more uniform in temperature.

But it's the second planet from the Sun -- Venus -- that puts the rest of the rocky planets' atmospheres to shame. With an atmosphere 93 times as thick as Earth's, made up almost entirely of carbon dioxide, Venus is the ultimate planetary greenhouse, letting sunlight in but hanging onto that heat with incredible effectiveness. Despite being nearly twice as far away from the Sun as Mercury, and hence only receiving 29% the sunlight-per-unit-area, the surface of Venus is a toasty 864 °F (462 °C), with no difference between day-and-night temperatures! Even though Venus takes hundreds of Earth days to rotate, its winds circumnavigate the entire planet every four days (with speeds of 220 mph / 360 kph), making day-and-night temperature differences irrelevant.

Catch the hottest planet in our Solar System all spring-and-summer long in the pre-dawn skies, as it waxes towards its full phase, moving away from the Earth and towards the opposite side of the Sun, which it will finally slip behind in November. A



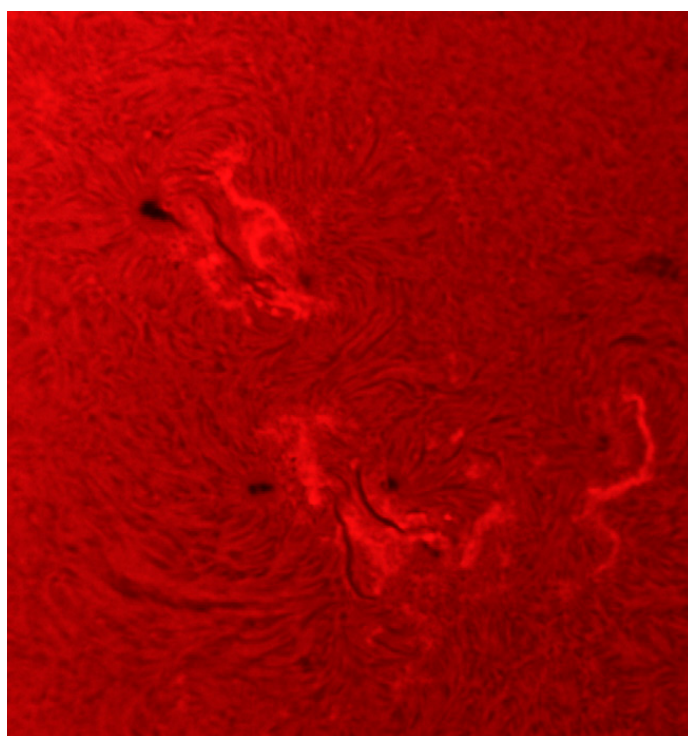
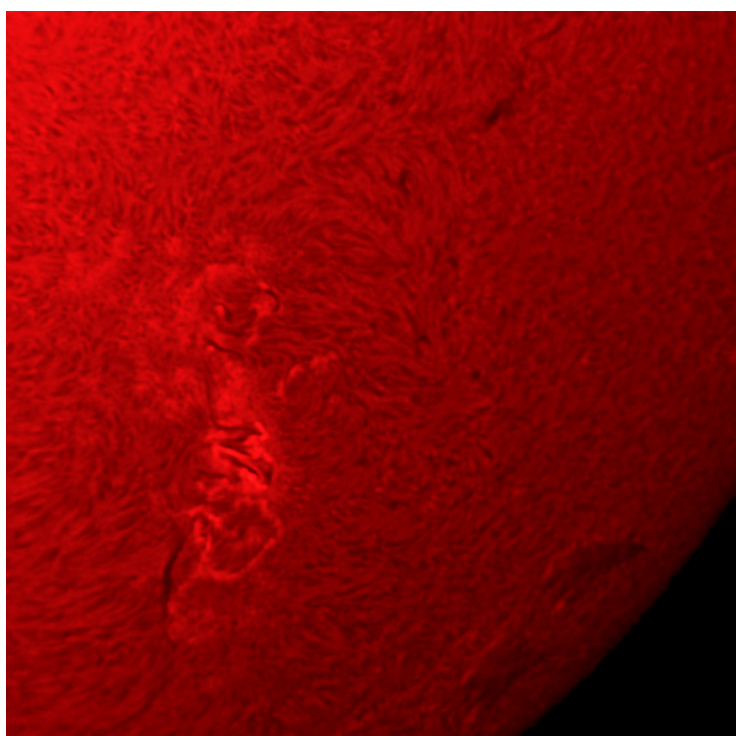
NASA's Pioneer Venus Orbiter image of Venus's upper-atmosphere clouds as seen in the ultraviolet, 1979.

little atmospheric greenhouse effect seems to be exactly what we need here on Earth, but as much as Venus? No thanks!

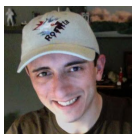
Check out these "10 Need-to-Know Things About Venus":

<http://solarsystem.nasa.gov/planets/profile.cfm?Object=Venus>.

Kids can learn more about the crazy weather on Venus and other places in the Solar System at NASA's Space Place: <http://spaceplace.nasa.gov/planet-weather>.



The Sun on May 11. Some great details on the surface with a LOT of spot groups. Some nice prominences, but generally small. All taken with a Lunt 100mm single stack, ZWO imager and processed with AS!2 by Steve Hubbard.



# What's Up in Space News?

Jason Major

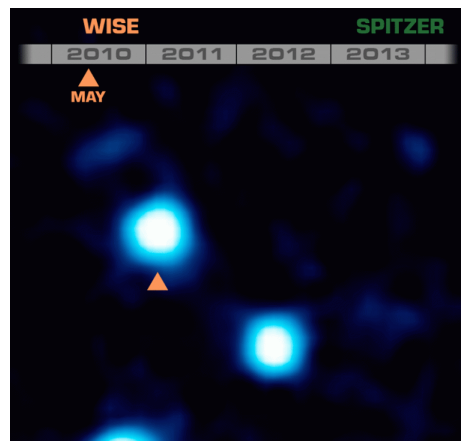
So perhaps spring didn't feel terribly spring-like around these parts. Then again, maybe it did... this is New England after all! But June 21 is quickly approaching, and will usher in a long-awaited summer (at 6:51 a.m. EDT, to be exact) which will hopefully be filled with plenty of good weather, lazy days, and miraculously clear nights perfect for stargazing! (With no hats or hot chocolates needed.)

Of course seasons on Earth are relative to your location – it's nearing winter in Australia – and the stargazing is always perfect in space! And speaking of space, there are lots of fascinating exploration missions going on right now around the Solar System, with new data, images, and discoveries from beyond our own blue sphere coming in almost every day. Here's some of the most recent and most interesting news:

## Curiosity Takes a "Selfie" on Mars

Not to be outdone by teenagers with iPhones, NASA's Curiosity rover has sent back the coolest "selfie" ever: from inside a crater on Mars! Actually the picture seen here is a combination of nearly a dozen different images acquired with the rover's turret-mounted Mars Hand Lens Imager, or MAHLI, on April 27 and 28. I found the raw images on NASA's MSL [mission site](#) (I like to check there often for the latest pics from Mars) and stitched them together in Photoshop to create a panoramic mo-

saic. After sharing it on Universe Today (a news blog I regularly contribute to) it went viral and made the rounds of other online outlets. It's not a perfect image, as there are some areas where the tiles don't line up perfectly due to the angle of the MAHLI lens, but it gives a great view of the 3.5-mile-high Mount Sharp and, of course, Curiosity's "smiling" face! Isn't she a beauty? [Read more about this here.](#)



## A Nearby Star Has Been Found That's Colder Than Ice – Literally!

Who says all stars have to be hot? At a frigid  $-54^{\circ}\text{F}$  WISE J085510.83-071442.5 is the coldest brown dwarf yet found, and at only 7.2 light-years distant it's also the fourth closest star to our Solar System. [Read more here](#) and watch an animation of this chilly star from WISE and Spitzer observations [here.](#)

## Astronomers Create a Computer Simulation of the Universe

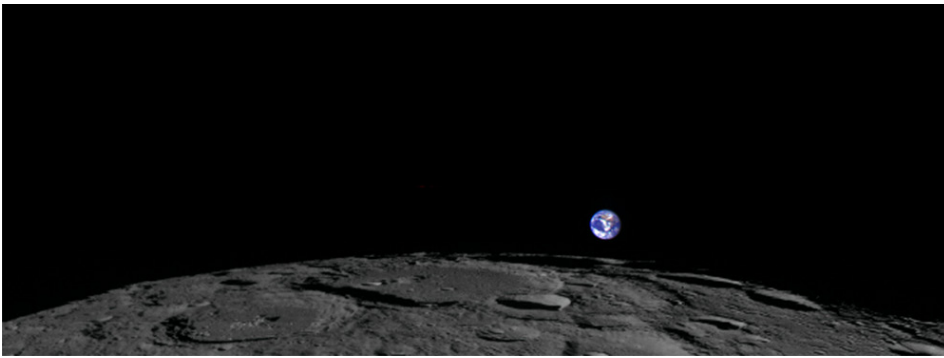
...and it works. At least, it works to create an end result similar to what the currently observable Universe looks like today. Researchers from the Harvard-Smithsonian Center for Astrophysics and MIT set 8,000 powerhouse computers on a three-month task of building a representative section of the Universe, based on what's known about the physics of both normal (baryonic) and dark (non-baryonic) matter. The resulting model – called Illustris -- is uncanny in its resemblance to the actual Universe and can now be used to study and test theories of cosmology at any location and period in the history of the cosmos. [Read more and watch the simulation here.](#)

## A New Earthrise for the 21st Century

On December 24, 1968, Apollo 8 astronaut Bill Anders took the historic "Earthrise" photo while in orbit around the Moon. On February 1, 2014, NASA's Lunar Reconnaissance Orbiter captured a very similar image of our planet, using its high-tech LROC imager specially designed to map the lunar surface in high-definition. Seeing our world from 225,000 miles away is always a treat, so be sure to [check out the full image and animation here.](#)

## Earth-Observing Satellites Clock Runaway Glaciers in Antarctica

Taking a look back at Earth again,



NASA and ESA satellites monitoring the ice on West Antarctica have helped researchers confirm that the glaciers there are on an “unstoppable” slide into the ocean, due to warm water currents steadily cutting away their grip on the land from below. This isn’t good news for future generations of humans living along the world’s shores, as these massive ice sheets alone could help raise global sea levels by several feet. [Learn more about this sobering discovery here.](#)

And in what may have easily been the biggest space news in the past several weeks:

### Kepler Finds a Possible “Earth 2.0”

It’s the closest thing yet to the astronomical Holy Grail: the discovery of a truly Earth-sized exoplanet orbiting its host star within its habitable zone – the region of space where water could remain liquid on a planet’s surface. Revealed to the world during a NASA press conference on April 17,

Kepler-186f is a rocky exoplanet just slightly larger than Earth orbiting a red dwarf 490 light-years away. It’s the first exoplanet of its size to be confirmed in a habitable zone... and, with over 70% of stars in the galaxy being red dwarfs, there are likely a lot more like it out there. Now whether Kepler-186f has an atmosphere with liquid water remains to be seen, but the possibilities are definitely intriguing! [Read more in my coverage on Universe Today here.](#)

As you see it’s been a busy few weeks in space and those were only just a few of the recent stories! There were many more, including:

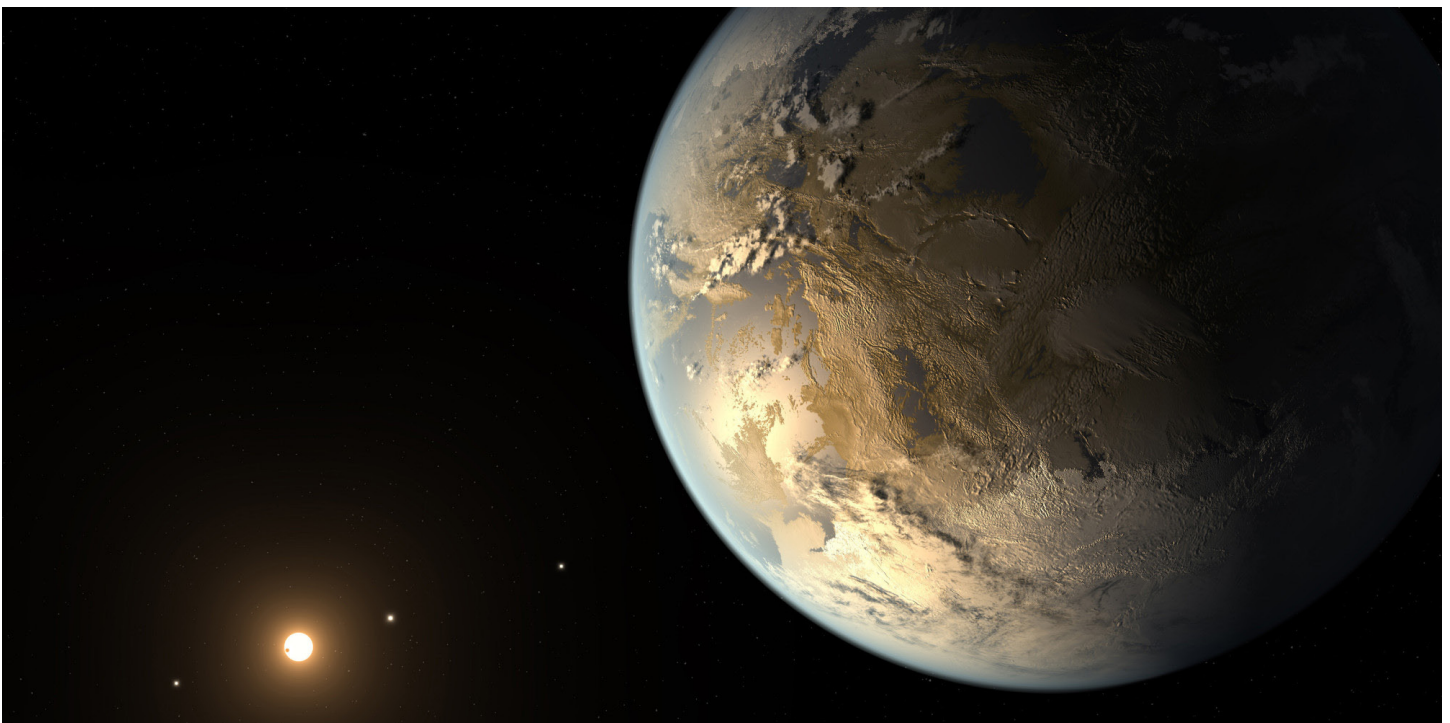
...Saturn may be still [actively producing moons](#), Curiosity started [drilling more holes](#) on Mars, our Sun’s [twin sister](#) may have been found (Obi Wan was wise to hide her from us), planetary scientist Colin Pillinger (of Beagle 2 fame) [passed away](#), JPL engineers [3D-printed](#) their own Martian meteorite (named “Block Island,” no less!), our galaxy’s magnetic fingerprint [has](#)

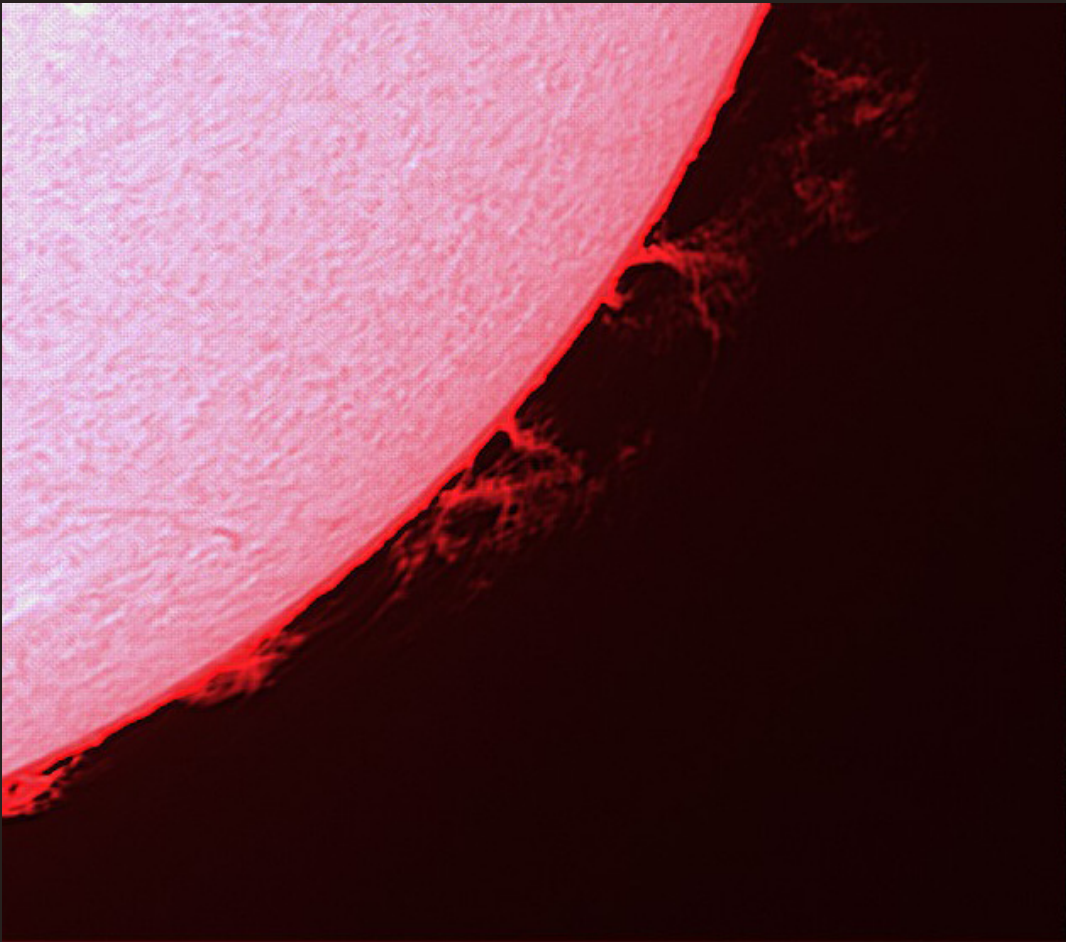
[been mapped](#), a meteor was [caught on camera](#) over Toronto during the day, the largest moon in the Solar System [has sandwich-like layers](#) of ice and water, Saturn [snuck behind the Moon](#) for observers in Australia, Captain Kirk was awarded a [medal from NASA](#) (how logical of them) and there’s now a way for everyone to watch [beautiful HD video of Earth from orbit](#) live from the ISS, thanks to the new HDEV experiment which is up and running.

Also, back in April I had a chance to tour NASA’s Jet Propulsion Laboratory and Deep Space Network in California during a two-day NASA Social event. Suffice to say it was all the positive superlative words I could possibly think of, so if you want to read my account of what happened and see some photos, check out my [article on Universe Today here.](#)

Do you have any questions about these stories or want to know where you can learn more? Feel free to contact me at [jpmajor@me.com](mailto:jpmajor@me.com), and follow me on Twitter [@JPMajor](#) and on Facebook as [Light-In-The-Dark](#). Ad astra!

*Jason is a freelance graphic designer and a space news blogger currently living in Warwick, RI. He writes for Universe Today, Discovery News, and on his blog LightsIn-TheDark.com. He has also been featured on National Geographic News, Space.com, io9.com, PhysOrg, NBC News Cosmic Log, and has attended several launch events at NASA’s Kennedy Space Center.*





Mars on June 2 by Steve Hubbard. Note how much smaller Mars is than just a few weeks ago. It also shows a phase. Some surface details are still visible.

Solar prominences on May 31 by Steve Hubbard.



Jupiter with Moons and Mars on May 3 by Matt White.



The Moon through the 8-inch Clark telescope at Seagrave Observatory on April 5. By Matt White.



2 day old waxing crescent Moon with prominent Earthshine as seen during open night at Seagrave Observatory on Saturday, May 31. Photo by Jim Hendrickson



The center of the Milky Way with Sagittarius, Scorpius & Saturn from Pascoag. Photo by Jim Hendrickson.

## MAY REPORTS



## Secretary

Tina Huestis

### Board of Directors Meeting Minutes – 4/21/14

Attendees: Bob Horton, Kathy Siok, Steve Siok, Linda Bergemann, Tom Thibault, Conrad Cardano, Matt White, Jim Hendrickson, Ed Haskell, Dave Huestis, and Tina Huestis

**Bob Horton, President:** Meeting called to order at 7:15PM at Seagrave. The incoming President acknowledged and thanked outgoing President Ed Haskell for his excellent service and expressed the wish to continue the goals that the Society has set, to keep up the momentum, and to expand on public and members programming. The expectation will be to offer fun and engaging opportunities and motivate members to become more involved in event planning. • The transitional need for signature authorities was raised. • Bob Horton announced his appointment of Francine Jackson as Marketing Spokesperson.

**Kathy Siok, 1st Vice President:** The May2 meeting will be at Seagrave Observatory with two of the membership presenting: Steve Siok will talk on the “Examination of the 1856 Edition of Burritt’s Star Atlas” and Alan Hall will speak about “Sketching Mars – Learning to Be a Better Observer.” • The June 7<sup>th</sup> meeting will be held at the Observatory and will consist of a members’ pot luck dinner (RSVP with food items to [kathys5@cox.net](mailto:kathys5@cox.net)) and Steve Hubbard will present “What’s on Your Bucket List?” • A special September meeting is being planned featuring noted author Dava Sobel (topic TBD) and will be held at the Community Center to allow for increased attendance/interest • November’s topic will be Alan Powers speaking on how “NASA Helps Giordano Bruno Find New Worlds.” • Other future meeting plans are in development • AstroAssembly planning has begun and one feature will be the 100th Anniversary of Seagrave Observatory. • The Scituate Community Center has been reserved for October 4 for the dinner buffet and featured speaker presentation portions of AstroAssembly.

**Steve Siok, 2nd Vice President:** Steve Siok gave an update on AstroAssembly

planning with the intent to broaden the overall theme of the 100 year anniversary to extend beyond the actual observatory building itself and to revisit some of the more notable discoveries/events that were happening during that time. • The suggested membership trip to Harvard University to view the collection of historic plate stacks along with the 9-inch and 15-inch telescopes was mentioned. Plans are still being firmed up.

**Linda Bergemann:** The year-end report will be in the newsletter and noted that the Society was ahead from prior year.

**Tom Thibault, Secretary:** Had nothing to report.

**Trustees: Conrad Cardano** reported that new ceiling tiles were installed in the Meeting Hall and painting of the interior walls were begun. The insulation will be addressed in a future Board meeting. • Discussions of ways to make the Meeting Hall more user friendly and reorganizing existing assets, such as the Library, were discussed. An initial follow-up work session was scheduled for April 26 to take stock of both the Library’s resources and refreshment supplies. • Conrad Cardano provided updates for Astronomy Day (Saturday, May 10) and the automation program. It was noted that the automation program would be completed in time to be used during Astronomy Day. Dr. Peter Schultz has agreed to be that event’s keynote evening speaker. • It was announced that junior member Alex Bergemann has chosen a project (TBD) at Seagrave for his Eagle Scout requirement.

**Public Outreach Coordinator Matt**

**White:** Possible improvements as to how Open Nights might be run will be discussed at next month’s Board meeting.

Meeting adjourned at 9:15PM

Submitted by Tina Huestis - Secretary

### Skyscrapers May Meeting Minutes — 5/2/14

President Bob Horton called the Skyscrapers’ May meeting to order at 7:30PM.

**President, Bob Horton:** Bob welcomed all those present and asked if anyone was visiting Seagrave for the first time; Russell Chaplis was noted as being a first-time visitor. • Bob next recognized Ed Haskell with a framed certificate. Bob cited Ed’s excellent work as outgoing President, crediting him with instituting the well-deserved change to the business meeting format. • Bob began the meeting by accepting announcements. • Conrad Cardano reminded everyone that Saturday, May 10, Skyscrapers was celebrating Astronomy Day at the observatory with basic talks beginning at 3:00PM, ending with Dr. Peter Schultz as evening speaker at 8:00PM. Dr. Schultz will use images (weather permitting) of the Moon projected from the 16-inch Meade. All members are invited to bring their telescopes.

**Historian, Dave Huestis:** Dave announced that he, Steve Siok, and Matt White are downsizing the library and that it will not be available during this transition. It was hoped that by next month’s meeting the library would be open for business. • Dave reminded everyone that Alex







## Treasurer

Linda Bergemann

Cash Flow YTD as of May 23, 2014  
(4/1/14 through 5/23/14)

### INFLOWS

Donation	
Misc Donation	\$625.00
<b>TOTAL Donation</b>	<b>\$625.00</b>
Dues	
Family	\$60.00
Junior	\$15.00
Regular	\$296.50
Senior	\$148.97
<b>TOTAL Dues</b>	<b>\$520.47</b>
Star Party Donations	\$38.00
Subscription Income	
Sky & Telescope	\$32.95
<b>TOTAL Subscription Income</b>	<b>\$32.95</b>
FROM PayPal Account	\$226.68
<b>TOTAL INFLOWS</b>	<b>\$1,443.10</b>

### OUTFLOWS

Contingency	
Speakers Fees	\$100.00
<b>TOTAL Contingency</b>	<b>\$100.00</b>
Postage and Delivery	\$9.80
Refreshment Expense	\$20.29
Subscription Payments	
Sky & Telescope	\$32.95
<b>TOTAL Subscription Payments</b>	<b>\$32.95</b>
Trustee Expense	
Capital Equipment	\$124.99
Property Maintenance	\$334.25
Other Trustee Expense	\$1,300.00
<b>TOTAL Trustee Expense</b>	<b>\$1,759.24</b>
Utilities	
Electric	\$55.23
Porta-John	\$99.00
Propane	\$80.25
<b>TOTAL Utilities</b>	<b>\$234.48</b>
TO Checking	\$226.68
<b>TOTAL OUTFLOWS</b>	<b>\$2,383.44</b>

### OVERALL TOTAL

**-\$940.34**

### Cash and Bank Accounts - As of 5/23/14

Capital One Bank	\$12,341.51
Checking	\$10,329.42
PayPal	\$0.00
<b>TOTAL Bank Accounts</b>	<b>\$22,670.93</b>

Bergemann is Librarian and to see him to sign out books or star charts. Members can use materials for the loan of one month and to return them at the following monthly meeting.

**2<sup>nd</sup> Vice President, Steve Siok:** Steve reported on last month's trip where members visited the Springfield Science Museum and Amherst College's Wilder Observatory. • Steve is organizing a June outing to the Harvard Smithsonian Center for



Steve Siok

Astrophysics (CFA) at 60 Garden Street. The group will be given a guided tour of the CFA, the Museum of Historical Instruments, plus the 9-inch and 15-inch telescopes. The highlight will be the collection of 65,000 historical plates that is being compiled into digital storage using the DASH (Digital Access to a Sky century at Harvard) scanner. It was noted that the timing coincides with the summer solstice celebration planned at the Museum. If anyone is interested, contact or email Kathy Siok, Steve Siok, or Bob Horton.

**Member at Large, Matt White:** Matt noted that he has been appointed Outreach Coordinator by the President. As part of this function, he is announcing the following star parties and is soliciting volunteers: May 9 at Steere Farm Elementary School (contact Dave Huestis) and July 21 at the Gloucester Manton Public Library in Chelchatchet (contact Matt White, Dave Huestis, or check the newsletter for details). • Matt is seeking members to become trained on the scopes to help with Saturday evening programs. This training can be informal and to contact him for more information. • Matt again invited members to participate in Astronomy Day at Seagrave. • Bob Horton said that the Astronomical Society of Southern New England was holding their own event in Barrington, and that a notice was sent to the membership about both items. • Bob thanked Matt for his dedication and participation on Saturday evenings. Bob reminded everyone that these programs serve both as a source of financial income as well as an education purpose. • Bob also announced his appointment of Francine Jackson as Public Relations



Al Hall

Spokesperson. She will use her communications skills to promote the organization and will begin posting Skyscrapers' events on the Brown University community email distribution.

**Secretary, Tina Huestis:** Tina noted that the minutes of the April Board Meeting will be published in the next newsletter. • Since the Treasurer was not in attendance, Tina presented the following membership report: Taylor Iascone (of Johnston) and Mark Sweberg (of Warwick) were introduced as prospective members and will be presented for a vote at the next meeting in which they are in attendance. Also a motion was made and seconded, voting to accept Dr. Ellsworth Starring (of Barrington) and John Minot (of Blackstone, Massachusetts) as member and junior member, respectively. William Kraimer (of Niantic, Connecticut) was not present for this vote.

**1<sup>st</sup> Vice President, Kathy Siok:** Kathy reminded everyone that the Saturday schedule will restart in June and July. However, the August meeting will still be held on Friday night. • The June 7 meeting will include a members' potluck picnic at 5:30PM (RSVP with food items to kathys5@cox.net). Following the dinner, member Steve Hubbard will present "What's on Your Bucket List?" (a talk on aurora observations from his Alaskan trip). • July 12's speaker is TBD. • The August 2 program will be Dr. David Kipling on Kepler data research. • September 5's meeting is author Dava Sobel (topic TBD) and will be held at the North Scituate Community Center. • October is AstroAssembly. • November will be Alan Powers speaking on how "NASA Helps Giordano Bruno Find

New Worlds.”

Bob Horton introduced the evening’s presenters: members Steve Siok and Alan Hall.

**Speaker, Steve Siok:** Steve’s talk, “Examination of the 1856 Edition of Burritt’s Star Atlas,” was a glimpse into the lives of 19<sup>th</sup> century astronomers, who used materials such as this atlas to observe. Steve noted that Messier objects were lacking in Burritt’s version, even though this list was completed in 1793. Another major difference between Burritt’s and today’s atlases is the constellations. Steve explained that these sky patterns and their names underwent standardization by the International Astronomical Union (IAU) at its first General Assembly in 1922. The membership was treated to a rare historical tour — with images such as Frederick’s Glory and Herschel’s Telescope, as well as long-forgotten names, like the Wagoneer (now known as the Charioteer) and Cynosura vel Alrucaba (translated as the dog’s tail), which is now Polaris. Steve concluded by describing an experiment that he conducted in plotting the precession of the equinoxes over the centuries by using various historic atlases.

**Speaker, Alan Hall:** Al’s talk, “Sketching Mars: Learning to Be a Better Observer,” was about experiences using a log book to memorialize his observations. Al encouraged keeping a log book to rekindle personal connections with past observations. He coached that practice is the way to train to become a good observer. Also, the tool of sketching forces one to observe better. Other tips were: get a notebook and take notes, recording temperatures, etc.; use a red flashlight; use a clipboard as a drawing surface; start with black & white images using a No. 2 pencil; use Mars Previewer (free downloadable shareware) to become familiar with the planet features prior to observing; look for tiny details; and be ready to be reactive, for instance keeping one’s gear assembled in case of weather changes.

The meeting adjourned and members

went outside to observe Mars through the 8-inch Clark refractor.

Submitted by Tina Huestis, Secretary.

## Board of Directors Meeting Minutes — 5/24/14

Attendees: Alex Bergemann, Linda Bergemann, Conrad Cardano, Jim Crawford, Ed Haskell, Jim Hendrickson, Bob Horton, Dave Huestis, Tina Huestis, Pat Landers, Bobby Napier, Kathy Siok, Steve Siok, Tom Thibault, and Matt White.

**Bob Horton, President:** Bob called the meeting to order at 7:08PM at Seagrave.

**Tina Huestis, Secretary:** Tina noted that the minutes from April’s monthly meeting will be published in the upcoming newsletter. • Tina also noted that, in the absence of the Treasurer, she presented the membership report at the April meeting. • Tina suggested modifying the requirement that new members must be present in order to be voted in. There was discussion on the merits of both changing the restriction as well as keeping the current rule. Bob Horton asked everyone to give the matter further consideration and to bring suggestions to the next executive board meeting.

**Linda Bergemann, Treasurer:** Linda noted that a few bills were paid since the last board meeting, (e.g., ceiling tile replacement, pest control, and portable toilet) and that the check from Bryant University was received. • Linda mentioned that a slip was left in the mail box indicating a parcel was at the Post Office for pickup. • Linda said that there were no membership renewals, and that (unofficially) the renewal rate stands at about 60% – 70%. It was agreed that a friendly reminder to pay dues should be included in the upcoming newsletter and sent via the email distribution list.

**Kathy Siok, 1st Vice President:** Kathy Siok gave the following programming update. • Saturday, June 7, will be held at the Observatory with a members’ pot luck dinner starting at 5:30pm (RSVP with food items to kathys5@cox.net). Steve Hubbard will present, “What’s on Your Bucket List?” • July 12, also on a Saturday, will include a members’ observing night. Speaker is TBD. • August 1 will be held on Friday night and will feature both Dr. David Kipping (“Searching for Moons of Planets that Orbit Kepler Stars”) and David Sliski (“Opportunities at DASCH”) • September 5 will be held at the North Scituate Community Center. Dava Sobel will speak about “Galileo and His 500 Birthday.” • AstroAssem-

bly will be held one weekend earlier than normal due the observance of Yom Kippur. Kathy was able to reserve the Community Center for this new date. • November 7 will feature Alan Powers, who will talk on how “NASA Helps Giordano Bruno Find New Worlds.” • And lastly, Saturday, December 13, has been reserved at the Community Center for the holiday meeting.

**Steve Siok, 2nd Vice President:** Steve distributed a tentative AstroAssembly schedule with times and speakers, still to be confirmed. He is considering including a “poster session” in the Meeting Hall as a venue for attendees/members to promote their latest projects. • Ideas for commemorative items for AstroAssembly were also discussed. • A Boy Scout troop expressed interest in staffing the afternoon Grille in return for a percentage of those sales. • The concept of a membership discount was raised regarding the registration fee and possibly Grille food prices. Evening banquet ticket prices are also being re-evaluated. • Steve reported on details for the upcoming June 21 outing to the Center for Astrophysics (CFA) and the Harvard Museum of Culture & Science. Alison Doane will lead our tour of the Digital Access to a Sky Century at Harvard (DASCH) project. The timing of the proposed CFA visit also coincides with free evening museum admission as part of the Summer Solstice celebration at Harvard. The ATM’s of Boston will be set up in the courtyard of the museum for public observing.

**Membership Activities Coordinator Pat Landers:** Pat is assuming the duties of Membership Activities Chair and brought up his intention to offer special evening observing sessions for members throughout the summer and fall, or perhaps every two months. Details TBD.

**Public Outreach Coordinator Matt White:** Matt reminded everyone about the following planned star parties: Friday, July 18, (8:00 – 11:00PM) at the Gloucester Manton Public Library (rain date 7/25) and Tuesday, July 22, (7:30PM) at the Jessie Smith Memorial Library in Harrisville (rain date 7/29). • Matt informed the Board as to potential ideas on how future open nights might be run, perhaps including a presentation (similar to what was done at this year’s Astronomy Day) if weather conditions are poor. • The Observatory Committee could take the lead, loading images from the 16-inch telescope onto a laptop, and projecting them for visitors so that they might gain a better understanding of what

Next Board Meeting

Thursday, June 19, 7pm  
Seagrave Observatory

can be seen during the evening. • Steve suggested a strategy of dedicating each scope to observe only pre-arranged objects, which would ensure that visitors are not disappointed by waiting in lines, only to discover that they were viewing something they had seen earlier from a different instrument. • It was noted that closer coordination would be needed to minimize scheduling conflicts with members' nights, star parties, or other events. • With the prospect of increased public and members events, a discussion arose as to placing the donation box in a more prominent location (e.g., on the way out) and to make sure that membership forms are available in multiple locations, in addition to the outdoor kiosk. • Conrad recommended a meeting of the Observatory Committee to discuss the restructuring of the current public night format. • Bob suggested working with the Trustees for their input/suggestions for the next meeting. • Kathy Siok mentioned that

the Roger Williams University has offered the services of interns who could develop seasonal PowerPoint presentations (which could supplement the need for expanded programming needs).

**Dave Huestis, Historian:** Dave gave an update on plans for producing a commemorative Seagrave Observatory post card for AstroAssembly. • He also mentioned his unsuccessful attempts to have various publications run a story on the 100-year anniversary. Dave will still pursue this possibility, but he is focusing on writing a succinct version for "News Notes" and "Astro Notes" in Sky & Telescope and Astronomy magazines.

**Trustees: Conrad Cardano** reported on the success of Astronomy Day, despite the poor weather. There were 16 pre-registrations, but only six actually showed up (most likely due to weather). Dr. Schultz's evening program drew a full audience of at least 50 people. Lessons learned were: (1)

potentially moving the event to the Community Center if the attendance is greater, (2) perhaps offering more accessible programming for the casual visitor (e.g., exhibits, telescopes on the lawn), and (3) consider holding our Astronomy Day in a more visible location with higher traffic, such as the town commons in North Scituate. • Bob asked everyone to think about fundraising, specifically grant writing. • Conrad reported on the progress of last week's work session that tackled the removal of about three-quarters of the ceiling insulation. Another work session is scheduled for the upcoming Saturday to finish the job. • The Trustees conducted a walk-through of the buildings and grounds and developed a comprehensive list of maintenance items (as well as other improvements) for consideration. Tom Thibault presented all of these items to the Board and provided a context on those having a higher priority for repair. • Tom also handed out suggested elevation plans for the walls of the Meeting Hall as thought starters for suggested improvements of the floor plan, shelving, and other resources in order to maximize seating and safety. • Linda suggested that the Board consider instituting an annual budget for maintenance that would address the ongoing upkeep of the property. • Bob recommended that the Observatory Committee should hold regular meetings to hash out members/public events and work together as a team. Conrad agreed to organize a meeting sometime in the summer and will encourage existing key holders to help volunteer in the upcoming slate of projects/programming.

Meeting adjoined at 9:02PM

Submitted by Tina Huestis - Secretary

## Two Editorial Positions At Sky & Telescope

Sky & Telescope is looking for experienced amateur astronomers to fill two editorial positions this summer. We are looking for amateurs with strong writing skills, and who can also help us expand our efforts in new types of media, such as video and digital. We are hoping to find one editor who is an equipment expert, and another who is an observing expert. We are looking for candidates who either live in the Boston metro area, or who are willing to relocate to the Boston area, and who are willing to serve on our staff for the long term. If you know of any amateur astronomers who might be qualified and interested, they can apply directly by going to:

<http://www.fwmedia.com/careers>

They can scroll to the bottom of the page and click "Search our current openings." On the next screen, they can select Cambridge, MA in the Location box. That will show the two editorial positions, one that is equipment oriented and the other that is observing oriented.

Robert Naeye, Editor in Chief, Sky & Telescope

### Phases of the Moon

**First Quarter Moon**

June 5 20:39

**Full Strawberry Moon**

June 13 04:11

**Last Quarter Moon**

June 19 18:39

**New Moon**

June 27 08:08



# 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