



the Skyscraper

vol. 42 no. 4
April 2015

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

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Friday, April 10, 7:00pm

at Seagrave Memorial Observatory

Comparing Antarctic geology to what we can find on Mars by Jay Dickson

The McMurdo Dry Valleys in Antarctica host geologic features that form nowhere else on Earth but are strikingly similar to features observed on Mars. For this reason, scientists have been exploring this terrain for decades to understand the limits of life on Earth and the potential for life elsewhere in the solar system. While it is the most stable landscape in the world, hosting buried ice millions of years old, the Dry Valleys do experience small amounts of surface erosion due to liquid water over long periods of time. Our group has been documenting these processes for many years using high-resolution time-lapse photography and incorporating these data into long-term climate data to understand how water behaves in polar landscapes generally inhospitable to liquid water. This presentation will show dozens of these time-lapse movies to show how barren landscapes evolve over time, and discuss what this means for the potential of liquid water on present-day Mars.

Jay Dickson is a planetary scientist who has studied the evolution and fate of water ice on Mars and in Antarctica for more than a decade. Jay received his B.A. from Hampshire College in 2002 and his M.S. in Geographic Information Science from the University of Southern California in 2014. Jay is a member of the research staff in the Planetary Geology department at Brown University.

Renew Your Membership Today

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

www.theskyscrapers.org/join-renew

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Astronomy Day - Saturday, April 25

Conrad Cardano will be organizing this year's Astronomy Day. Topics will include astrophotography for the very beginner and solar observing (weather-permitting). If you are interested in participating, or sharing your knowledge, contact Conrad at cardanoc@verizon.net.



Astronomers Without Borders

Global Astronomy Month

Phases of the Moon

Full Pink Moon
April 4 12:06

Last Quarter Moon
April 12 03:44

New Moon
April 18 18:57

First Quarter Moon
April 25 23:55



Seagrave Memorial
Observatory
Open Nights

Saturdays at 8:00 pm
weather permitting



President's Message

Bob Horton

The Annual meeting of Skyscrapers will be held at Seagrave Memorial Observatory on Friday, April 10th, starting at 7pm. We will be electing new officers for our society, voting on an operating budget for the coming fiscal year, a copy of which is included in this newsletter for you to review, and collecting membership dues.

Before discussing some of the details of our proposed operating budget, I would like to share with you some ideas that have been recently discussed at our Board of Directors Meetings. I believe these ideas offer exciting opportunities for Skyscrapers.

As I mentioned last month, we have begun planning to offer ongoing workshops for beginners that will provide even greater benefits to our membership. These workshops will be offered on Saturdays beginning in May.

Over the last couple of years, we have proven out the concept of operating a telescope remotely, by outfitting the roll-off observatory that houses our 16" telescope with an automated system to open and close the roof of the building, and to control the telescope and camera. We have operated this system from our meeting hall, and now all that remains to operate the telescope off-site is internet service.

Let's now consider moving forward with a new project that may involve col-

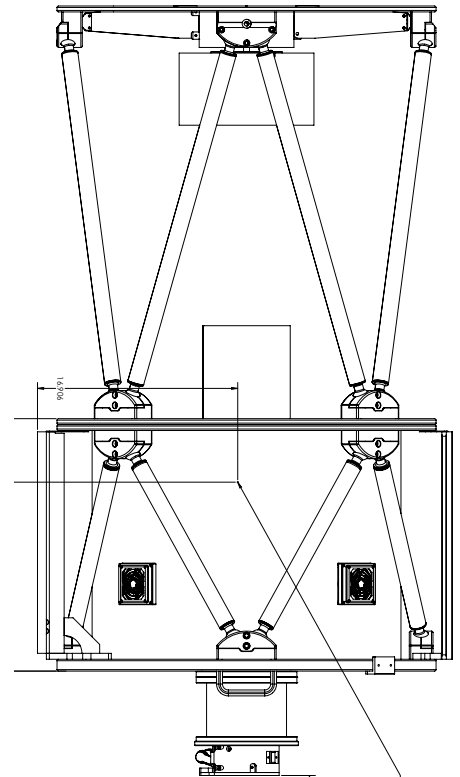
laborations with area colleges and universities. Brown University would like to set up a remotely controlled telescope on our property in the 24" to 27" range that would be used by astronomy students at Brown, and by our own members and visitors. We can talk more about this opportunity at the Annual Meeting.

Also recently, Skyscrapers was approached concerning the idea of hosting a NASA all-sky camera that would be used to monitor fireball meteors. All of the equipment would be free, but one requirement is that we have internet access – something we do not currently have.

So for the proposed budget that you will find in this newsletter, I have included a line item for internet service. We have actually had this in the budget for a couple of years now, listed as "other utilities". However, the amount allocated in the past was insufficient, and it was never spent. With internet service we could be remotely controlling the telescopes at Seagrave; have distant speakers provide us with talks; stream data to our web site, such as from a NASA all sky camera. We could also install security cameras to monitor our property, similar to what is done at Stellafane.

Internet service is costly, but it also opens a lot of opportunities for us as well. I think it is important enough that we in-

clude this line item in our budget for the membership to support.



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 17** to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to jim@distantgalaxy.com.

E-mail subscriptions

To receive The Skyscraper by e-mail, send e-mail with your name and address to jim@distantgalaxy.com. Note that you will no longer receive the newsletter by postal mail.

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Friday, April 3

Enjoy Cosmic Colors at the University of Rhode Island Planetarium

University of Rhode Island Planetarium
Upper College Road
Kingston, RI

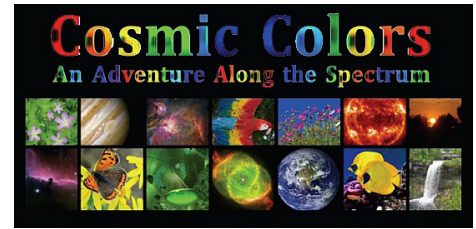
Friday, April 3rd, 2015
6:00 P.M.

Contact: Francine Jackson: 401-527-5558

As the new season of spring begins, thoughts turn to the beautiful colors of the returning flowers. But, how are we able to view these varied colors? What causes them? Cosmic Colors, an introduction to the way we see and feel, by means of the

electromagnetic spectrum, will take you back to the days of Sir Isaac Newton, to the surface of Mars, and every place in between, to show you the origins and importance of such everyday phenomena as X rays, micro-waves and infrared waves, and their relation to the colors we love so much.

Cosmic Colors, a planetarium program for audiences of all ages, will be shown at the URI Planetarium, Upper College Road, on the URI campus, at 6:00 P.M. Admission, to benefit the URI Planetarium Fund, is \$5.00. Cosmic Colors will be preceded by a 6-minute award-winning presentation on light pollution, Losing the Dark, and will



be followed by a live segment showing the Skies above the URI campus.

Come and see the beauty of color!

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

The Sun, Moon & Planets in April

Nights are getting shorter and at this time of year we see our winter constellations descent rapidly into the evening twilight which extends beyond 9pm by the middle of the month. During April, the deep night has us facing directly away from the plane of the Milky Way. If we could view the sky from an unobstructed mountaintop far from and polluting lights, we would see the Milky Way nearly encircling the horizon around midnight. As we look straight overhead, beneath the handle of the Big Dipper and near Coma Berenices, we are looking up into the North Galactic Pole. Due to this geometry, springtime is the best time for observing galaxies beyond our Milky Way.

Venus continues to dominate the evening sky, shining at a brilliant magnitude -4. While you can catch Venus very early after sunset, watch as the sky darkens a bit for Mars, which continues to maintain position just above the western horizon. While Mars has an estimated magnitude of -1.4, spotting it through so much atmosphere and twilight will be a challenge, and will become nearly impossible by the end of the month, so be sure to try to catch it early. Mercury circles around to the eastern elongation during April and will appear in the evening sky around the second and third weeks. A young waxing crescent Moon will appear low in the sky on the 19th, which may help you locate both Mercury and

Mars, as the three objects make a striking triangle only 6° wide. A day later, on the 20th, the Moon advances eastward and will now appear about midway between (and somewhat to the left of) Mars and Venus. Earthshine viewing and photographing opportunities on this night should be superb. Don't limit your gaze to the solar system, however, as a darkening sky will reveal both the Hyades and Pleiades clusters are nearby. Mars and Mercury may become too low to view by this point, but a location with an exceptionally low western horizon will provide the best view.

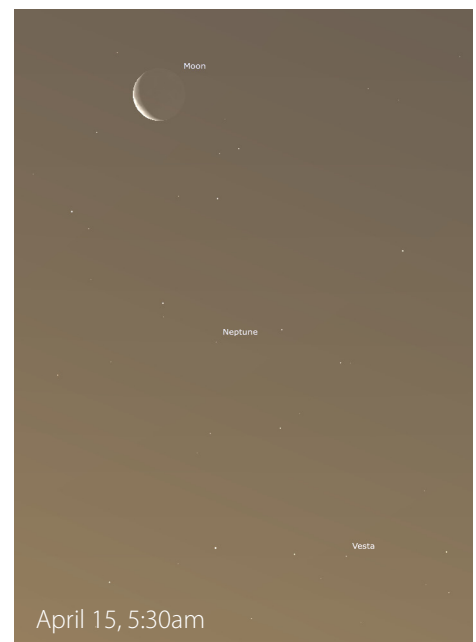
Throughout the second week of April, Venus will pass between the Hyades and Pleiades, forming a nice line on the 13th.

Over the next 2 nights, on April 21-22, Mercury and Mars will be in close proximity, with Mercury passing within 1.5° north of Mars. Also on the 21st, don't miss the 3 day waxing crescent Moon shining just above Aldebaran and the Hyades.

Jupiter remains in prime viewing position early in the evening, setting noticeably earlier as late night becomes early morning. Jupiter gets a visit from the Moon on the 26th and 27th.

Saturn rises just after 11pm at the beginning of the month and is in prime viewing position from now through August. Perched atop the claws of Scorpius on the western fringes of the Milky Way, Saturn now shines at a brilliant 0 magnitude due

to the angle of the ring plane, which is close to its maximum. The Cassini division between the rings should be clearly visible in a small telescope on nights of good seeing, and cloud bands may even be seen on the planet itself. With the extension of the rings, this is also a good opportunity for observing Saturn's smaller satellites, as they can now be observed throughout their orbits without being hidden behind the planet's shadow or masked by the glare passing in front of the rings. How many moons can you see? Mimas and Enceladus



are about 13th magnitude and rather close to the planet, so a large aperture telescope is needed. The waning gibbous Moon is near Saturn on the morning of the 8th, and forms a triangle with Saturn and Antares on the 9th.

Dwarf planet Pluto is now high enough to observe in the early morning, located not far from π Sgr and σ Sgr.

Dwarf planet 1 Ceres can be spotted as an 8th magnitude point meandering through southwestern Capricornus during April. Due to its low position in the sky before sunrise, it is best seen towards the end of the month as it climbs higher and slowly brightens.

Moving further eastward, Neptune is now beginning to appear in the morning twilight, but doesn't offer much of interest other than on the morning of the 15th, when the waning crescent Moon appears just 2.5° above it. At this time, you may notice a "star" about the same distance, similar brightness as Neptune, and along the same line drawn from the Moon through Neptune. This is the asteroid 4 Vesta.

Uranus is in conjunction with the Sun



on the 6th and is not visible this month.

Last year we watched Ceres and Vesta in Virgo as they were in close proximity throughout the year. Ceres is the 1st and Vesta the 4th minor planets to be discovered, and they still retain these numbers in their official designations. This month, the third asteroid to be found and cataloged, 3

Juno, is well placed for viewing in Cancer, just below Jupiter. Juno shines at around magnitude 9 early in the month, fading to about 9.5 at the end of April, making it a target suitable for binoculars and small telescopes.

The Moon passes above Spica on the 4th, and below Regulus on the 27th.



The Cold Never Bothered Me Anyway

By Dr. Ethan Siegel

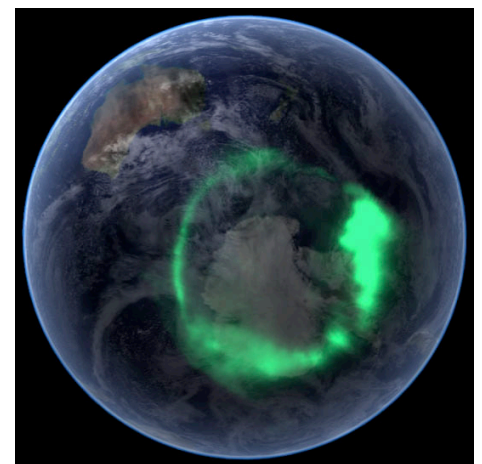
For those of us in the northern hemisphere, winter brings long, cold nights, which are often excellent for sky watchers (so long as there's a way to keep warm!) But there's often an added bonus that comes along when conditions are just right: the polar lights, or the Aurora Borealis around the North Pole. Here on our world, a brilliant green light often appears for observers at high northern latitudes, with occasional, dimmer reds and even blues lighting up a clear night.

We had always assumed that there was some connection between particles emitted from the Sun and the aurorae, as particularly intense displays were observed around three days after a solar storm occurred in the direction of Earth. Presumably, particles originating from the Sun—ionized electrons and atomic nuclei like protons and alpha particles—make up the vast majority of the solar wind and get funneled by the Earth's magnetic field into a circle around its magnetic poles. They're energetic enough to knock electrons off atoms and molecules at various layers in the upper

atmosphere—particles like molecular nitrogen, oxygen and atomic hydrogen. And when the electrons fall back either onto the atoms or to lower energy levels, they emit light of varying but particular wavelengths—oxygen producing the most common green signature, with less common states of oxygen and hydrogen producing red and the occasional blue from nitrogen.

But it wasn't until the 2000s that this picture was directly confirmed! NASA's Imager for Magnetopause-to-Aurora Global Exploration (IMAGE) satellite (which ceased operations in December 2005) was able to find out how the magnetosphere responded to solar wind changes, how the plasmas were energized, transported and (in some cases) lost, and many more properties of our magnetosphere. Planets without significant magnetic fields such as Venus and Mars have much smaller, weaker aurorae than we do, and gas giant planets like Saturn have aurorae that primarily shine in the ultraviolet rather than the visible. Nevertheless, the aurorae are a spectacular sight in the evening, particularly for

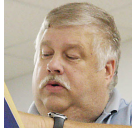
observers in Alaska, Canada and the Scandinavian countries. But when a solar storm comes our way, keep your eyes towards the north at night; the views will be well worth braving the cold!



Auroral overlays from the IMAGE spacecraft. Image credit: NASA Earth Observatory (Goddard Space Flight Center) / Blue Marble team.



The Orion & Running Man Nebulae, taken on 3/12/15 through AstroTech 65mm with Celestron Nightscape 8300. Exposures were (10) calibrated bias, (11) 2 min. darks, and (45) 2 min. unguided exposures for a total stack of 90 minutes. Processing was with AstroFx, Canon DPP, and Photoshop.. Photo by Tom Thibault



Astronomical Events Determine Easter Observance

Dave Huestis

Last month we explored the reason for the seasons. The motion of the heavens is a precise clock and calendar that can be used to determine when to celebrate special events. One doesn'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.

It should therefore not be surprising that many religions celebrate special events that are connected to the clockwork of the heavens. For instance, Christians celebrate 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.

Think back to Easter celebrations of years past. Was it cold or snowy and you had to bundle up? Or, were spring outfits proudly worn amidst warming sunlight and returning songbirds? Why these extremes of weather? Well, if the date for the celebration of Easter occurred on the same Sunday every year, our fickle New England weather could easily account for the differences in attire.

However, in some years Easter can occur as early as March 22 or as late as April 25. Why this range? The varying date for the observance of Easter is determined by astronomical circumstances. And in 2015 Easter is celebrated just short of midway between these two dates, on April 5.

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 A.D. 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 Friday, March 20, at 6:45 p.m. EDT. The Full Moon on or after that date occurs on Saturday, April 4. Therefore, Easter is celebrated on Sunday, April 5.

People aren't as observant of sky happenings these days as they once were long ago. Light pollution in and surrounding urban areas have blocked all but the brightest stars and planets from view. The Milky Way galaxy, our own island universe, can now be seen to best advantage only from dark rural skies.

Let's not lose our connection to the stars from which we were born. Proper lighting can promote safety if effectively installed. Keeping stray light from polluting the night sky will allow starlight to shine down from the heavens. Then maybe folks will begin to notice and appreciate the beauty of the starry heavens once again.

Have a happy Easter, and remember to keep your eyes to the skies!

Observing Opportunities

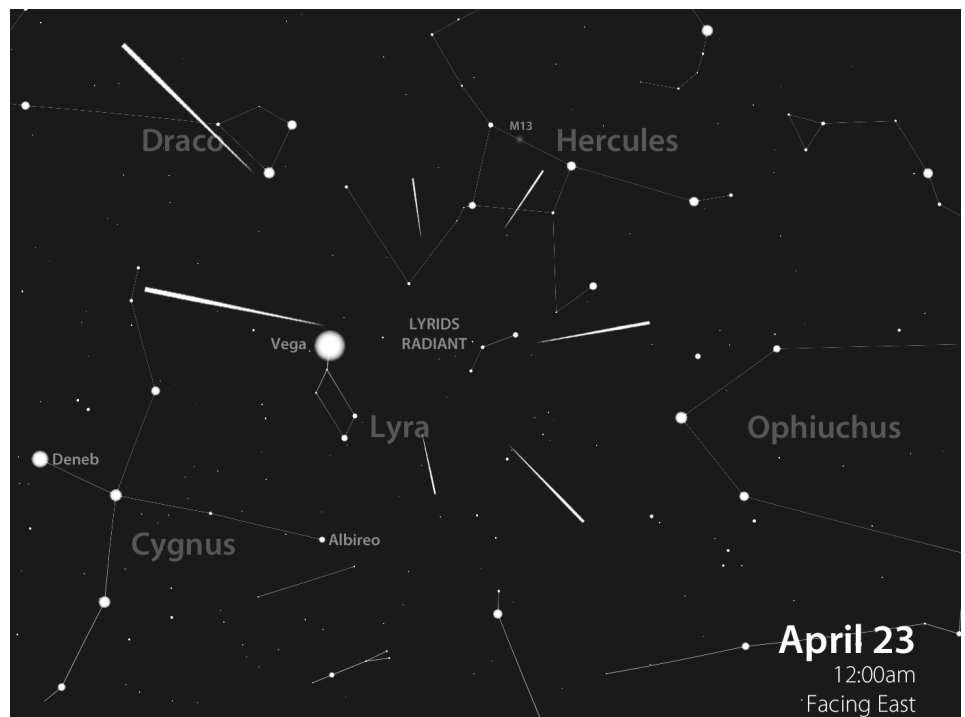
While the Full Moon of April 4 is important for fixing the date for the observance of Easter, there is even more significance to it that will catch the eyes (and telescopes) of amateur astronomers and casual stargazers alike. A total lunar eclipse occurs during the pre-dawn hours on that morning. Unfortunately here in southern New England we will see only a partial eclipse before the Moon sets below the western horizon. The partial phase begins at 6:17 a.m. EDT with the Moon barely two degrees above the ho-

zizon. It will set approximately eight minutes later. You'll need a dead horizon with no houses or trees to obstruct your view of this eclipse locally.

To observe totality during this beautiful celestial event one would have to travel generally west of the Mississippi River. However, totality lasts only 4½ minutes, making this total lunar eclipse the shortest one of the 21st century. I for one will catch what I can from Rhode Island and wait until the night of September 27-28 later this year when we will experience a total lunar eclipse in its entirety from our own backyard.

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. Only 10-15 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 waxing crescent Moon will set before midnight, thereby not interfering 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. Remember, while 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. I continually let my eyes roam the heavens while facing this general direction.

Clear skies for all your observing adventures.



Jupiter, March 29 about 8pm. Short AVI movie, processed with ASI2, registax and GIMP. 14inch SCT and ZWO ASI120MC by Steve Hubbard.



Rings of the Solar System

Francine Jackson

When I was a kid, apparently in the Dark Ages, we were happy to know that there was a beautiful ringed planet that we could see in just about every astronomy book ever printed. Then, in 1977, a major jolt came, when Uranus was discovered to have some type of ring system around it. This caused a change in the Voyager space craft program, as both Voyager 1 and 2, on their way to the outer part of the solar system, were now charged with determining whether Jupiter also carried rings on its orbital path. And, now that three of the Jovian planets had material circling them, logic dictated we finish the group, and, sure enough, Neptune also is surrounded by a set of rings.

Doubly surprising is that every ring set is totally different from the others. Saturn, of course, still has the only ones visible for all to see, from binocular observations which change the shape of Saturn to a tiny football, to the actual beauty visible even from rather small telescopes. However, to this day, the actual reason why they're present is still under debate.

The other three ring systems are virtually impossible to see. Only the Hubble telescope is capable of picking up rings around Uranus, but only the brightest of the approximate dozen known. And, of the three newer ring systems, only the rings of Jupiter seem to have an explanation for their presence: Debris from impacts of the four small satellites lodged between Jupiter and the large volcanic moon Io circling Jupiter for a time. Although the material eventually

circles into Jupiter, more dust is always leaving the surfaces of these tiny moons.

And now, it appears our Jovian planets aren't the only ring worlds. Last year, a tiny member of the Centaur class – objects considered hybrid asteroids/comets traveling in the solar system mainly between Jupiter and Neptune – also had a ring detected around it. Chariklo, barely 200 miles in diameter, has a set of two rings, apparently partly composed of water ice.

Recently, the original Centaur, Chiron, was found to possibly possess a ring, also.

Classified as centaurs, mythical half man/half beast because of their apparent double life, this set of objects could consist of thousands within this part of our neighborhood. And, to now potentially be a type of object that could have ring systems like the large planets, this is a very exciting possibility, for, if these two minor planets are ringed, how many others could be out there? The total of ringed objects is now six. Hopefully, that number will become higher in the coming years, and it seems as if this is the class of objects where they might be.



An artist impression of a ring around Chariklo. ESO/L. Calçada/M. Kornmesser/Nick Risinger (skysurvey.org)



Lenticular Galaxy in Sextans NGC 3115

Glenn Chaple

Some of the finest deep-sky objects are bypassed because they lie in star-poor regions of the sky. Such was the case with our February “Sky Object of the Month,” the planetary nebula NGC 1501 in Camelopardalis. It’s also the situation with NGC 3115 – a bright “shoulda-been-found-by-Messier” object in that eluded the French comet hunter’s eye and, therefore, his catalog. It was eventually discovered by William Herschel while surveying the obscure constellation Sextans in 1787.

At 9th magnitude, NGC 3115 is the brightest example of an S0 galaxy, one that bridges the galactic gap between ellipticals and spirals. Its 8' by 3' dimensions (about half that, visually) have earned it the nickname “Spindle Galaxy” (a monicker it shares with the galaxy NGC 5866). It’s also entry number 53 in the late Sir Patrick Moore’s Caldwell Catalog.

NGC 3115 is found at coordinates 15h 06.5m (R.A.) and +55° 45.8' Decl.). Starhoppers need to begin outside Sextans with Alphard (alpha Hydrae). A line traced from this 2nd magnitude star through 5th magnitude gamma Sextantis and extended about 20 percent (3 degrees) further will bring you to the general vicinity of NGC 3115. A low power search should sweep it up.

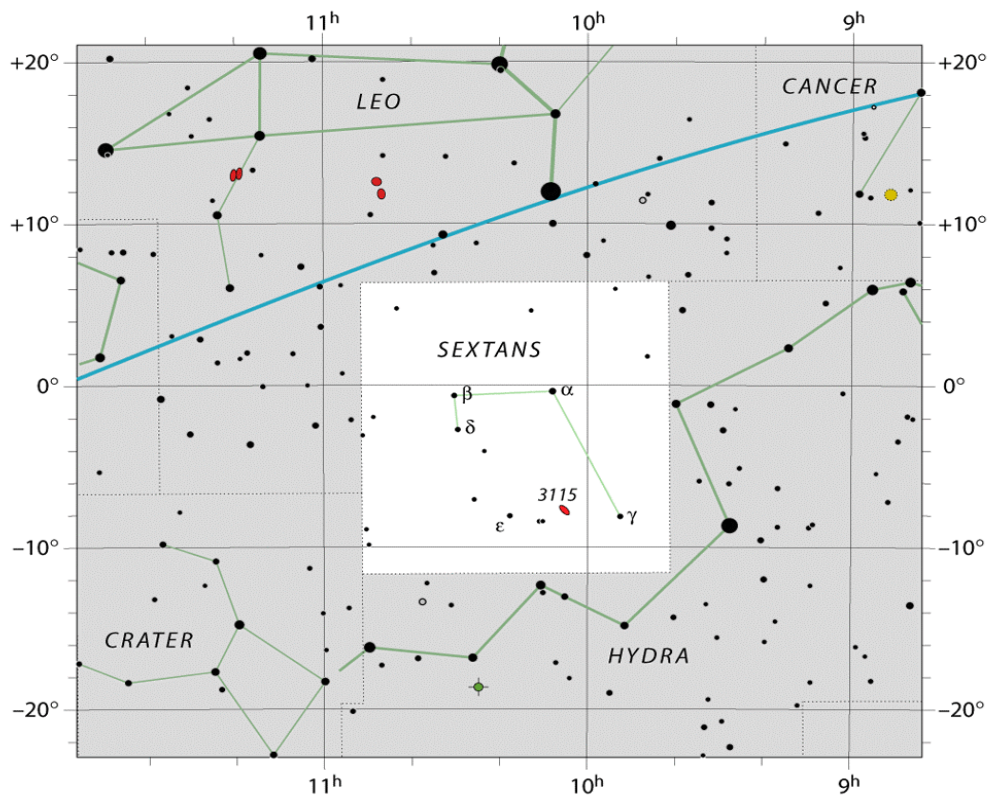
From dark-sky sites, NGC 3115 can be glimpsed with binoculars. I had no trouble picking it up in a 3-inch reflector at 30X, noting that it appeared “as a very oval, compact nebulosity surrounded by fainter nebulosity.” Except for sharply pointed ends and a stellar nucleus, NGC 3115 remains relatively featureless when viewed with medium to large-aperture scopes.

A fuzzy, elongated blob isn’t exactly something you’d want to show visitors at a public star party. Don’t let this nondescript appearance fool you. In 1992, astronomers discovered a beast lurking at the core of NGC 3115 - a monstrous black hole with the mass of **2 billion** suns!



www.eyes4skies.de

(c) Digitized Sky Survey



● 1 ● 2 ● 3 ● 4 ● 5 ● 6



constellation-guide.com (courtesy IAU and Sky & Telescope)



Moon over Wishing Star Observatory on March 24 by Pete Peterson.



A night of asteroid hunting at Wishing Star Observatory by Pete Peterson.



Bubble Nebula NGC 7635, Caldwell 11
20 X 600 Sec Images capture and calibrated with Maxim DL
Post processing with Pixinsight Photo by Lloyd Merrill.



Secretary

Tina Huestis

Skyscrapers March Meeting Meeting Minutes 3/6/15

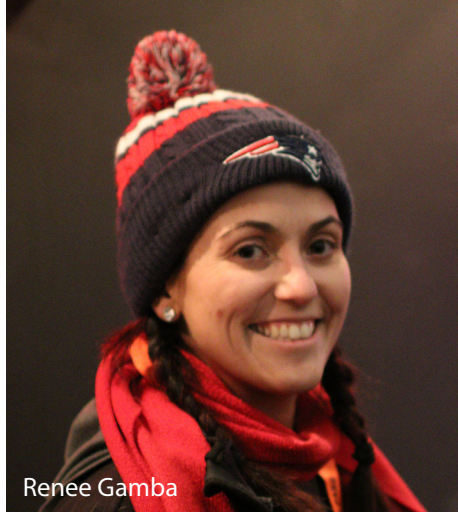
Kathy Siok called the Skyscrapers' March meeting to order at 6:05 p.m.

First Vice President, Kathy Siok, welcomed everyone to this special monthly meeting held at the Cormack Planetarium and explained that President Bob Horton could not be present and that she would be presiding over the meeting in his place. Kathy noted that both the Secretary and Treasurer reports were published in the Newsletter. There were no questions regarding them from the floor.

Second Vice President Report: Steve Siok noted that the April meeting will be held on Friday, April 10, (which is a week later because of the occurrence of Good Friday). If conditions at Seagrave Observatory allow, the meeting will be held there. However, if snow conditions still persist, the meeting will be delayed one week (April 17). • The April speaker will be Dr. Jay Dickson, Brown University planetary geologist, who spent three months in the Antarctic's Dry Valleys and just published an article in Science magazine on research of the makeup of water on Mars. • The May speaker will be Alan Sliski.

Trustee Report: The Observatory is currently closed due to the snow cover and inaccessibility of the grounds.

Nominations Committee Report: Ed Haskell noted that all positions have been filled and distributed a copy of the slate of officers to all those present. • The slate is as follows: President, Bob Horton; First Vice



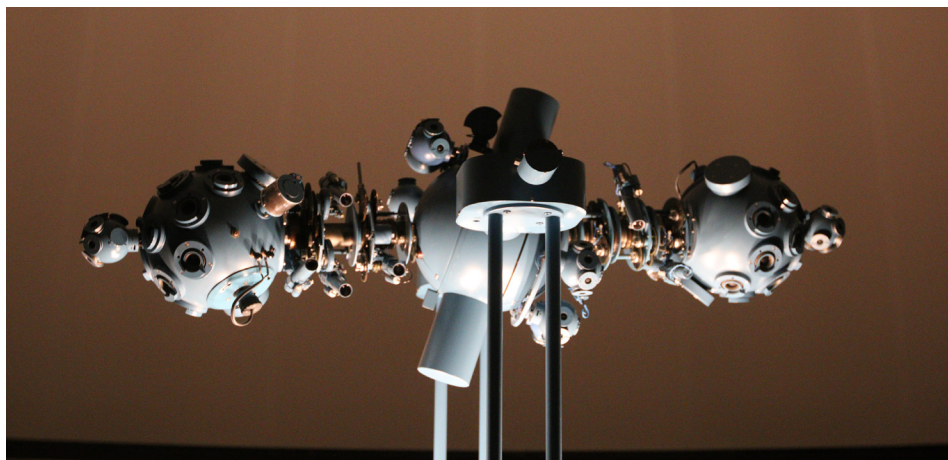
Renee Gamba

President, Steve Siok; Second Vice President, Kathy Siok; Secretary, Tina Huestis; Treasurer, Ed Haskell; Member at Large, Matt White; Member at Large, Ian Dell-Antonio; and Trustee, Matt Ouellette. • Ed informed everyone that the elections are held each year in April. The ballot will be sent to members and voting will occur at the April monthly meeting. • Kathy made a motion to close nominations, which was seconded. • She thanked Ed Haskell, Conrad Cardano, and Tom Thibault for their good work on this year's Nominations Committee.

The meeting adjourned at 6:15. Submitted by Tina Huestis, Secretary.

Renee Gamba presented the Planetarium Program, "Oasis in Space," using the Cormack Planetarium's full-dome system and Zeiss Projector. The presentation marveled at the presence of water on Earth, where water occurs in all of its forms: liquid, vapor, ice, oceans, and rivers. The program explained how the Earth's atmosphere was created, which enabled the rains that filled the oceans on the planet. The program took the audience on a search for water elsewhere in other solar systems in our galaxy.

Renee Gamba also showcased the Zeiss Projector and its new Zodiac constellation figures. She noted that the Planetarium is producing its own shows in collaboration with Brown University.



Treasurer

Linda Bergemann

Cash Flow YTD as of March 25, 2015
(4/1/14 through 03/25/15)

INFLOWS

AstroAssembly	
Banquet	\$1,475.00
Centennial Mugs	\$145.00
Grill	\$397.25
Raffle	\$539.00
Registration	\$1,755.00
TOTAL AstroAssembly	\$4,311.25

Donation

Misc Donation	\$937.23
Refreshment Donation	\$44.00
TOTAL Donation	\$981.23

Dues

Contributing	\$136.31
Family	\$296.76
Junior	\$29.37
Regular	\$1,577.35
Senior	\$776.98
TOTAL Dues	\$2,816.77

EAGLE Project In

Misc Income	\$970.00
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Book Income	\$106.00
Interest Inc	\$33.92
Sale of Items	\$660.00
TOTAL Misc Income	\$799.92

Star Party Donations

Subscription Income	\$533.00
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Astronomy

Sky & Telescope	\$170.00
	\$131.80
TOTAL Subscription Income	\$301.80

TOTAL INFLOWS

	\$10,713.97
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OUTFLOWS

Astro Assem Exp	
Banquet	
Caterer	\$1,121.00
Reception	\$108.30
TOTAL Banquet	\$1,229.30
Centennial Postcard	\$85.60
Grill	\$180.37

Refreshments

Friday PM	\$7.98
Saturday AM	\$2.02
TOTAL Refreshments	\$10.00

Speaker Fee

	\$300.00
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Tent Rental

	\$720.00
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TOTAL Astro Assem Exp

	\$2,525.27
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Contingency

Speakers Fees	\$200.00
TOTAL Contingency	\$200.00

Corporation, State Fee

	\$20.00
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EAGLE Project Out

Postage and Delivery	\$970.00
	\$73.15
Presidential Fund	\$40.00
Printing and Reproduction	\$25.56
Property Insurance	\$2,386.00
Refreshment Expense	\$182.64
Subscription Payments	
Astronomy	\$170.00
Sky & Telescope	\$131.80
TOTAL Subscription Payments	\$301.80

Trustee Expense

Capital Equipment	\$222.33
Property Maintenance	\$3,298.65
TOTAL Trustee Expense	\$3,520.98

Utilities

Electric	\$214.31
Porta-John	\$693.00
Propane	\$80.25
TOTAL Utilities	\$987.56

TOTAL OUTFLOWS

	\$11,232.96
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OVERALL TOTAL

	(\$518.99)
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Cash and Bank Accounts - As of 03/25/15

Capital One Bank	\$12,372.39
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Cash	\$0.00
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Checking	\$11,294.92
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PayPal	\$401.97
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TOTAL Bank Accounts

	\$24,069.28
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Income

AstoAssembly

Banquet \$1,475.00
Grill \$400.00
Raffle \$500.00
Registration \$1,800.00

Total AstroAssembly \$4,175.00

Donations \$1,500.00 (Saturday Nights, Astronomy Day, Gifts, Etc.)

Dues \$3,665.00 ~ 89 members

Star Party Donations \$700.00 (Groups - offsite and at Seagrave)

Total Income \$10,040.00

Expenses

AstroAssembly

Banquet \$1,200.00
Reception \$120.00
Grill \$200.00
Refreshments \$75.00
Speakers \$300.00
Table rental \$100.00

Total AstroAssembly Expenses \$1995.00

Contingency \$1,065.00

Corporation, State Fee \$30.00

Domain Name \$15.00

Donations \$50.00

Postage and Printing \$100.00

Property - liability Insurance \$2,600.00

Refreshments \$150.00

Property Maintenance (Trustees) \$1,985.00

Utilities

Electric \$250.00
Porta-John \$700.00
Propane \$ 100.00
Internet \$1,000.00

Total Utilities \$2,050.00

Total Expenses \$10,040.00

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