



the Skyscraper

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January 2015

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

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Saturday, January 10, 7:00pm at North Scituate Community House

Observing Satellites by Rich Nugent

Our speaker this month is Rich Nugent from Framingham, Massachusetts. Rich has been interested in astronomy since the early 1960's when his dad introduced him to the wonders of the heavens. Rich acquired his first serious telescope - an 8-inch reflector - in the fall of 1969 and he hasn't stopped observing since. He joined the Aldrich Astronomical Society in the late 1960's, and worked as a planetarium lecturer at the Worcester Science Center during the early 70's. He attended Framingham State College and Northeastern University earning degrees in chemistry. After a 23+ year career as a chemist at New England Nuclear, Rich became a teacher of science and math in the Framingham school system. Currently in his 14th year, Rich now teaches chemistry and astronomy at Framingham High School. Today, his favorite toys include a Coronado solar telescope, a 12.5-inch Cave Astrola, and a 20-inch Dobsonian that he built in the early 1990's. Rich has been a member of the Amateur Telescope Makers of Boston for 22 years and organized the club's star parties during the 1990's.

Tonight, Rich will be presenting a talk titled Observing Earth Satellites. Beginning with the launch of Sputnik I in October 1957, Rich will reminisce about the early days of the Moonwatch program, the space race, the manned space program, Skylab, Mir, and Space Shuttles. His talk will include how to observe satellites including flaring satellites, geostationary satellites, and the International Space Station. There will be observing challenges and homework so do plan to attend!



International Space Station photos by Bob Horton

Phases of the Moon

Full Wolf Moon
January 5 4:53

Last Quarter Moon
January 13 9:46

New Moon
January 20 13:14

First Quarter Moon
January 27 4:48



Seagrave Memorial
Observatory
Open Nights

Saturdays at 7:00 pm
weather permitting



President's Message

Bob Horton

Each month, the Board of Directors and Trustees meet to conduct much of the business of the society. You don't need to be an officer to attend these meetings. If you have some ideas to share, or want to get a better idea of what is involved in running Skyscrapers, we want you to participate.

Our next Board of Directors meeting will be held at Seagrave on Saturday, January 24th at 2pm. Weather issues could force

us to reschedule or move the meeting place – if so, an e-mail will be sent to the membership.

Throughout the winter months, the board will be discussing ideas for activities that members might enjoy, such as member observing nights, imaging workshops, and more basic programs for beginners.

Additionally, longer range plans are being discussed at our board meetings. One

long range plan concerns forming collaborations with area colleges and universities to further enhance the educational resources that Skyscrapers can offer to both our membership and the public. These ideas offer exciting possibilities.

Please consider joining the discussion on January 24th, and help steer the future course of Skyscrapers!



Venus & Mercury in the twilight sky over Providence on January 7 by Bob Horton.



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 **January 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.

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Friday, January 9

Enjoy the Wonders of the World at the University of Rhode Island Planetarium!

University of Rhode Island Planetarium
Upper College Road
Kingston, RI

Friday, January 9th, 2015
6:00 and 7:00 P.M.

Contact: Francine Jackson: 401-527-5558

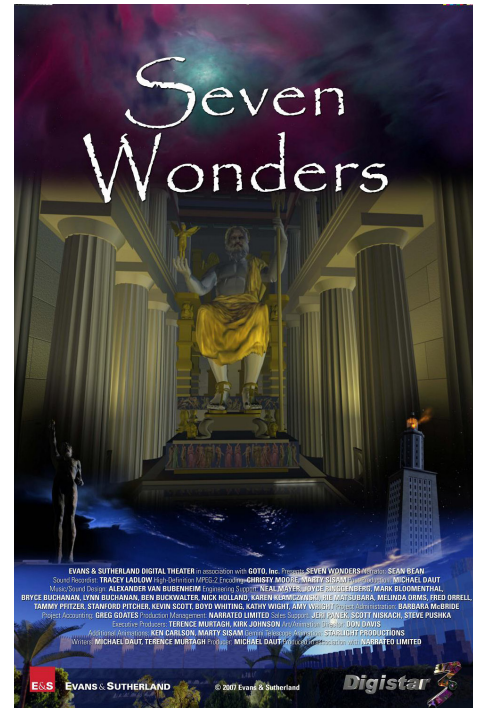
Come enjoy a tour of the Seven Wonders of the Ancient World! These incredible features were built before modern-day equipment was even a thought, and yet, today, one of these is still a major feature. Why were these made? How? Come learn of the beauty and majesty of the Seven Wonders of the Ancient World. In addition, learn what are considered the Seven

Wonders of the Universe, through the beauty of 21st century technology.

In addition to the featured presentation, *Losing the Dark*, a short introduction to light and its problems in our society will be given, as well as a tour of The Skies above the URI campus.

Admission to this presentation is \$5.00, to benefit the URI Planetarium fund. The URI Planetarium is on Upper College Road, at the end of Engineering Row and across the parking lot from East Hall.

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



The Sun, Moon & Planets in January

The Sun slowly climbs the ecliptic through the constellations Sagittarius and Capricornus during the month of January. Perihelion, Earth's closest point in its orbit, occurs on the 4th. At the beginning of January the Sun rises at 07:15 and sets at 16:27 and by the end of the month sunrise is at 07:01 and sunset occurs at 17:01.

The Moon is Full (Wolf Moon) on the 5th, Last Quarter on the 13th, New on the 20th, and First Quarter on the 27th.

Mercury undergoes a favorable eastern elongation throughout January and can be seen alongside Venus just after sunset for much of the month. On the 21st, the slim waxing crescent Moon is just over 3° above it.

Venus is visible low in the southwest just after sunset throughout January. Having passed superior conjunction back on October 25, we're still looking at it across the opposite side of the Sun. It exhibits a wide gibbous phase and grows slightly from 10.4 to 11.1 arcseconds. Watch for a pairing with Mercury during the second week, which comes as close as 38' NW on the 10, and a triple conjunction with the thin waxing crescent Moon and Mercury on the 21st.

Mars lingers in the western sky slowly making its way eastward into and through Aquarius. Its ruddy 4.5 arcsecond gibbous

disk shines at magnitude 1.1

Jupiter is the dominant planet all month. Reaching opposition on February 6, it rises shortly after the sun sets and is visible nearly all night, placed roughly halfway between the Beehive Cluster (M44) and Regulus.

Saturn is the only early morning planet visible this month, and can be seen just west of the claws of Scorpius. A nice pairing with the waning crescent Moon (49') can be seen on the morning of the 16th.

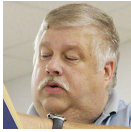
Uranus moves slowly eastward and can be seen as a magnitude 5.7 about 3° S of delta Psc throughout the month.

Neptune is best early in January when it is still relatively high. By the end of the month it is sinking into the twilight, but be sure to watch it meet with Mars (14' S) on the 19th, the waxing crescent Moon (3° N) on the 22nd and Venus (49' S) on February 1st. Neptune appears as a bluish 8th magnitude "star" in binoculars.

Throughout January, a cometary visitor to our inner solar system, C/2014 Q2 Lovejoy is making a favorable pass as it moves northward through the constellations Lepus, Eridanus, Taurus., Triangulum and Andromeda.



Meteor Shower Prospects for 2015 and Other Astronomical Highlights



Dave Huestis

I always look forward to writing my January column because it previews a variety of astronomical events for the upcoming year. Yearly astronomical almanacs, both hard copy and Internet, can be referenced to find the best highlights amateur astronomers and casual stargazers may enjoy observing. I often supplement my choices using sophisticated planetarium software like Starry Night Pro to portray better exactly how these phenomena will look in the skies around southern New England.

However, it is quite discouraging how many sky events succumb to the weather whims of Mother Nature. Last winter was snowy and cold. Seagrave Observatory was closed until the last week in March due to the amount of snow cover. Ladd Observatory didn't fare much better. And cloudy skies conspired to keep these observatories closed on many of their public open nights throughout 2014.

It's difficult being an observational astronomer around here these days. We missed two lunar eclipses in 2014, plus many of the major meteor showers due to inclement weather. My observing reports are often more about meteorology than astronomy. In fact, a few folks have jokingly (I hope) suggested that I move out to the southwest to end their draught!

Well, I'm not ready to give up quite yet. I love Rhode Island and enjoy enlightening my fellow citizens on the beauty of the heavens. We've got to catch a break once in a while, and I'm hoping 2015 will be one of clear and transparent skies.

So with renewed enthusiasm, let me guide you through the year to see what our little corner of the universe has in store for us in 2015.

Even if the weather cooperates, the major meteor showers from January through July will be severely hampered by a very bright Moon. Fortunately, meteor displays occurring from August through December have much better observing prospects Moon-wise. (See the table at the end of this column.)

The first casualty of the new year is the annual Quadrantid meteor shower during the night of January 3-4. A waxing gibbous Moon (Full on the 4th) will brighten the

sky and greatly reduce the number of meteors that could be seen, which in a good year can be anywhere from 60-100 meteors per hour at peak. Only a handful or so will likely be visible through the interfering moonlight. And if the temperature is well below freezing during peak night, I wouldn't spend much time with the Quadrantids.

If you do decide to try your luck, at least block the Moon from direct view. You can see the meteors anywhere in the sky, but their radiant point (the area of sky from where the meteors appear to originate) is not far from the end star, Alkaid, of the Big Dipper's handle. From midnight till dawn, this area of sky will rise higher and higher above the north-east horizon, and by 4:00 a.m. it will be almost at zenith (directly overhead).

You'll know you've spotted a Quadrantid meteor if its dust train through the sky points back to the radiant point. Also, they are most often blue in color and frequently blaze more than halfway across the sky at 25.5 miles per second.



Steve Hubbard captured this image of Io transiting Jupiter at 1am on New Year's day. Taken with a 14" Meade SCT and a ZWO color imaging camera. AVI movie clip Processed with ASI2 and Registax

Jupiter will be rising earlier each night as we progress into the new year. This fifth planet from the Sun can be found in the constellation Leo, just east of the backwards question mark asterism (called the sickle) that forms the Lion's head. Blue-

white Regulus, the heart of the Lion, is the star located at the bottom of the question mark. Jupiter is fascinating to watch through a telescope. Not only can an observer see Jupiter's many belts and zones that form its atmosphere, but even a small telescope will reveal the parade of his four Galilean moons as they orbit about this massive world. Jupiter will move into the constellation of Cancer on February 4 and will be closest to the Earth two days later at 404,004,661 miles—the closest until June 10, 2019.

On February 22 there is a beautiful conjunction (close encounter) of Venus and Mars. Look to the western sky an half hour after sunset when they will be about one full moon diameter apart.

While a total lunar eclipse occurs during the pre-dawn hours of April 4, 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 horizon. It will set at approximately eight minutes later. You'll need to head out west to observe more of this beautiful celestial event.

In April the Dawn spacecraft will be arriving at former asteroid, and now dwarf planet, Ceres. You'll be hearing how amazing this is, considering that back in September a very energetic cosmic ray struck a major electronic component controlling one of the spacecraft's ion engines, sending the robotic explorer into safe mode. Handlers back on Earth saved the mission. Stay tuned for exciting images of this object, the largest in the asteroid belt.

Saturn will be at its closest to the Earth this year on May 23 at approximately 833,506,000 miles. This date is the middle of the best time to train a telescope on this magnificent ringed-world. Saturn will reside in the constellation Scorpius. (It will be easily visible in a late evening sky during April as well.) Everyone can't wait to observe Saturn and his beautiful rings. If you don't have a telescope, then please visit the local observatories listed at the conclusion of this column for some spectacular views. And don't forget to bring your children. They'll absolutely love it!

Meteor Shower Prospects for 2015

On July 14 the New Horizons spacecraft will finally encounter dwarf planet Pluto and five of its known moons after a journey that began at launch on January 19, 2006. At the time of close approach Pluto and the spacecraft will be approximately 2,968,900,000 miles away in the far reaches of our solar system. That's farther than Westerly for you northern Rhode Island residents! It will take the signal almost 4.5 hours at the speed of light to reach the Earth. I can't wait to see what new discoveries will be made.

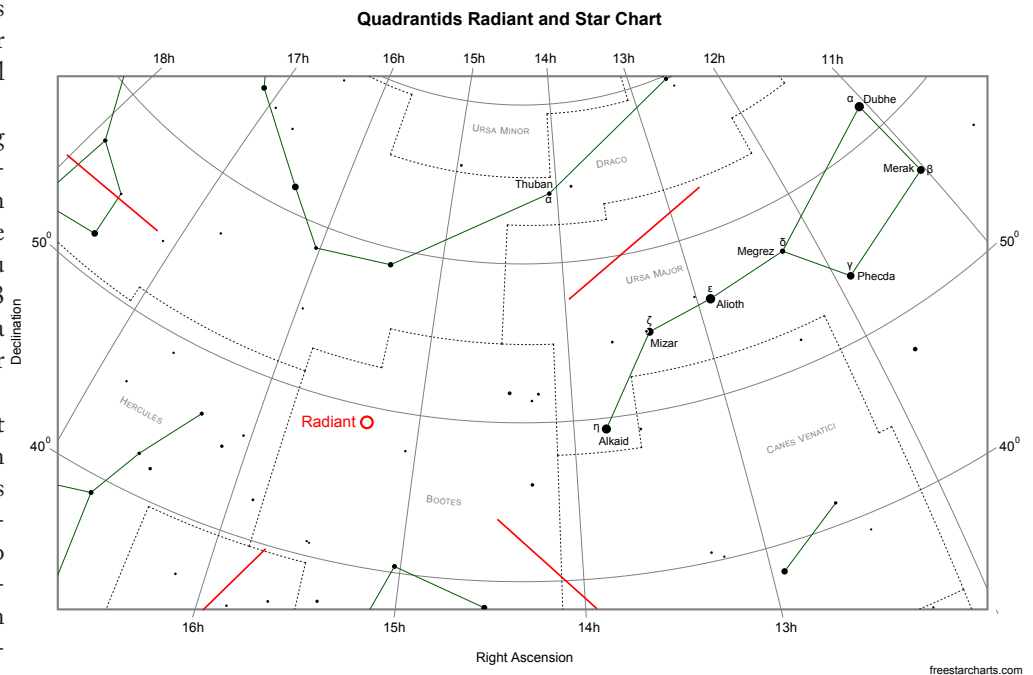
We are fortunate that another total lunar eclipse will occur on the night of September 27-28. This time, southern New Englanders will observe the entire event, provided the skies remain clear. The partial phase begins around 9:07 p.m. and totality at 10:11 p.m. These are all reasonable times of the evening to spend some quality time to follow the progress of this celestial ballet as the Moon slides through Earth's dark shadow.

Before sunrise on October 26, Venus and Jupiter will be within two full moon diameters of each other above the eastern horizon in the constellation Leo. Mars will be just below them as well. Over several days Venus will approach Mars. On November 3 Mars and Venus will be just over one full moon diameter apart.

And finally, on December 7, a waning crescent Moon and Venus will have a conjunction only two degrees (four full Moon diameters) apart in the eastern sky before sunrise. To the left of this pairing you might also detect Comet Catalina (C/2013 US10) with your naked-eye. Try using a pair of binoculars and scan the area if your eyes alone fail to find it.

In conclusion, please remember that the local observatories do remain open year-round to provide incredible views of the heavens with their wonderful telescopes. These facilities are unheated, so dress warmly. Seagrave Memorial Observatory (<http://www.theskyscrapers.org>) in North Scituate is open every clear Saturday night. Ladd Observatory (<http://www.brown.edu/Departments/Physics/Ladd/>) in Providence is open every Tuesday night. Frosty Drew Observatory (<http://www.frostydrew.org/>) in Charlestown is open every clear Friday night. Snow or ice can force closures, so please check the respective websites for any cancellation notices before venturing out for a visit. Currently the winter hours for Seagrave and Ladd are 7-9 p.m., while Frosty Drew begins at 6:00

Month	Shower	Date	Moon Phase
January	Quadrantids	3-4	Waxing Gibbous (Full on 4 th)
April	Lyrids	22-23	Waxing Crescent
May	Eta Aquarids	5-6	Waning Gibbous (Full on the 3 rd)
July	Delta Aquarids	28-30	Waxing Gibbous (Full on 31 st)
July	Capricornids	29-30	Waxing Gibbous (Full on 31 st)
August	Perseids	12-13	Waning Crescent
October	Orionids	20-21	Last Quarter
November	Leonids	16-17	Waxing Crescent (1 st Qtr on 19 th)
December	Geminids	13-14	Waxing Crescent



p.m. with no set end time.

Some of the topics highlighted in this column may be covered in depth as an event date approaches.

Please clip and save the following chart showing the observing prospects for the 2015 meteor showers. These displays of shooting stars only require your eyes, dark skies, and patience to enjoy.

Keep your eyes to the skies for 2015 and always.

Happy New Year!



International Year of Light

Francine Jackson

It seems as if there's always something to celebrate, a day, week, month, dedicated to a cause, or a concern, or just a way of remembering. For 2015, in what could be considered a surprise, and hopefully valuable move, UNESCO, the United Nations Educational, Scientific and Cultural Organization, has declared this year as the International Year of Light and Light-Based Technologies. At first, this title didn't really seem to belong to groups such as ours, but looking through much of the information there does seem to be targets for us.

Unfortunately, the opening ceremonies are January 19-20, at UNESCO Headquarters in Paris, so no one I'm aware of will be attending; however, the press release notes that this ceremony will "introduce all the key themes of the year, and will aim to inspire activities and events worldwide for the following 12 months." Most interesting for us is that, although "Light-Based Tech-

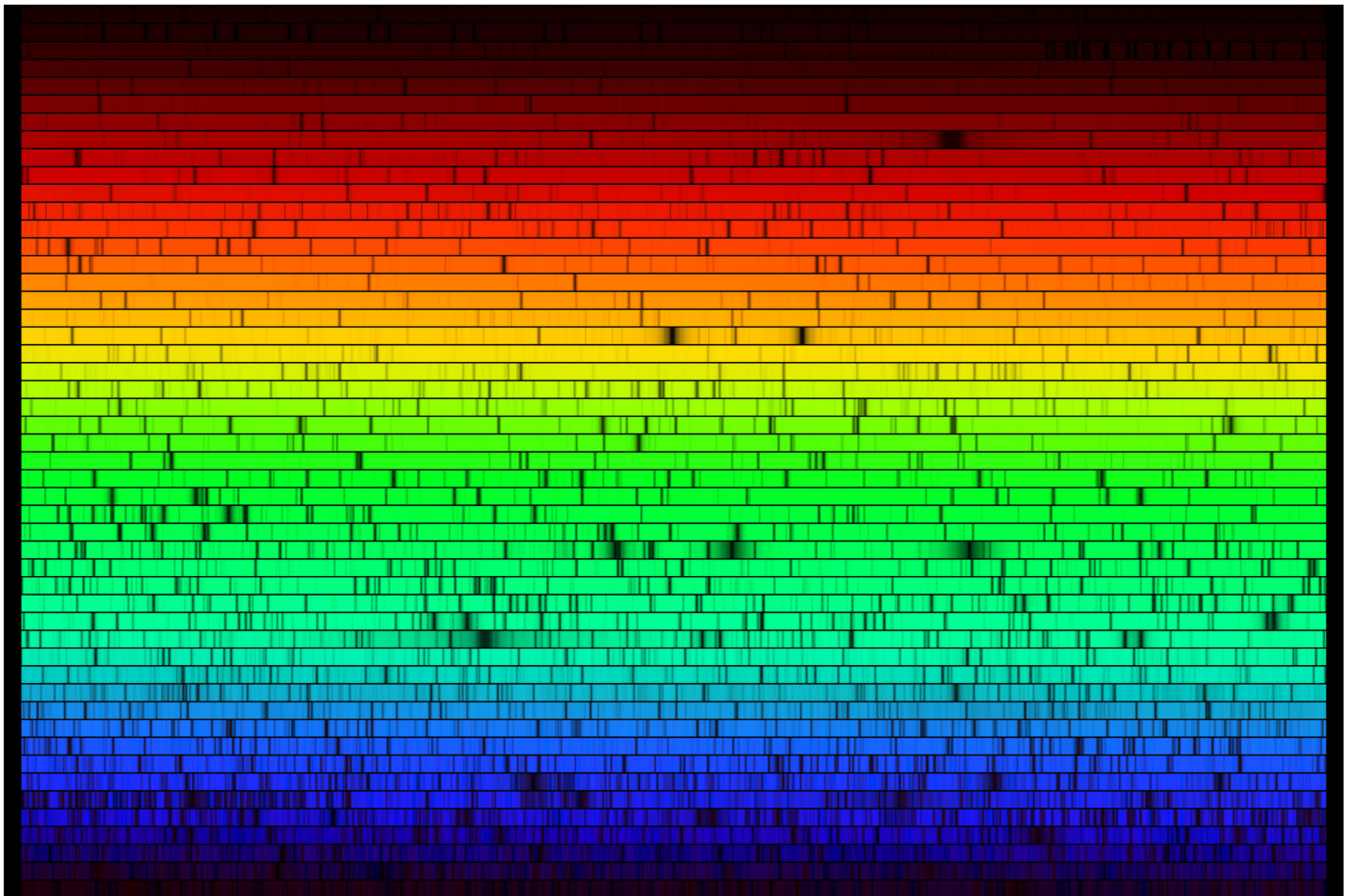
nologies" is included in the title, topics do include light pollution, innovative lighting solutions for society, and the role of light-based technologies in addressing global challenges, including science policy.

Believe it or not, this dedication is a follow-up to the 2009 International Year of Astronomy. Apparently, it was felt that so much interest in the sky was generated that year that a supporting program was necessary. The Year of Light's mission is "a global initiative that will highlight to the citizens of the world the importance of light and optical technologies in their lives, for their futures, and for the development of society." Although much of the information on the UNESCO web site is still rather sketchy, Skyscrapers, Inc., as an organization dedicated to the continuation of observing and enjoying the beauty of the night sky, should grasp this International Year of Light and do what we can for it.



INTERNATIONAL YEAR OF LIGHT 2015

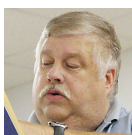
As more about this comes out – and I have to assume there will be a real rollout of many of the goals after the opening ceremonies – let us begin to think of ways to celebrate light, both good and bad, as this 2015 commences. Also, as more information is released, let us try to join with organizations around the world in whatever we can do to be a part of what could become a valuable worldwide cause.



High resolution spectrum of the Sun. Credit: N.A.Sharp, NOAO/NSO/Kitt Peak FTS/AURA/NSF



Geminid meteor streaks through Orion in this wide-angle photo taken by Jim Hendrickson at Seagrave Observatory after the December 13, 2014 meeting.



Geminids Meteor Shower Observing Report

Dave Huestis

December 13, 2014

The weather forecast for the December 13-14 peak night of the Geminid meteor shower did not look promising. The persistent clouds from a huge low center that slowly meandered northeastward towards the Canadian Maritimes seemed destined to swirl back around towards portions of southern New England. And it did for much of the North Shore and Cape Cod. But in northern Rhode Island the skies remained clear and transparent.

While the Geminids are one shooting star display that can be well observed during the early evening hours, the holiday

meeting of Skyscrapers prevented any of its members from participating in a meteor watch until after 9:00 p.m.

I arrived home in Pascoag around 9:30, gathered my observing chair, blanket, hat and mittens, and finally got settled outside on my back porch at 9:50. The sky was crystal clear with no wind. The temperature was 28 degrees Fahrenheit. It was an absolutely beautiful night for meteor watching. As soon as I sat down I counted my first Geminid. Thirty more were to follow until I called it quits at 11:25.

The display was a mixed bag of meteors. Many of the long duration ones were

fairly faint and most likely would have been missed by observers in light polluted skies. I observed quite a very short duration meteor within the middle of the stick-figure pattern that forms the twins of Gemini. While the Geminids are noted for producing very bright meteors called fireballs, none were evident during my observing session.

I hope many casual stargazers took advantage of the cloud free skies to watch the best shooting star display of the year. You never know when Mother Nature will cooperate again.

Keep your eyes to the skies.

Betelgeuse and Struve 817. 3-inch f/10 reflector at 60X; ½ degree field.

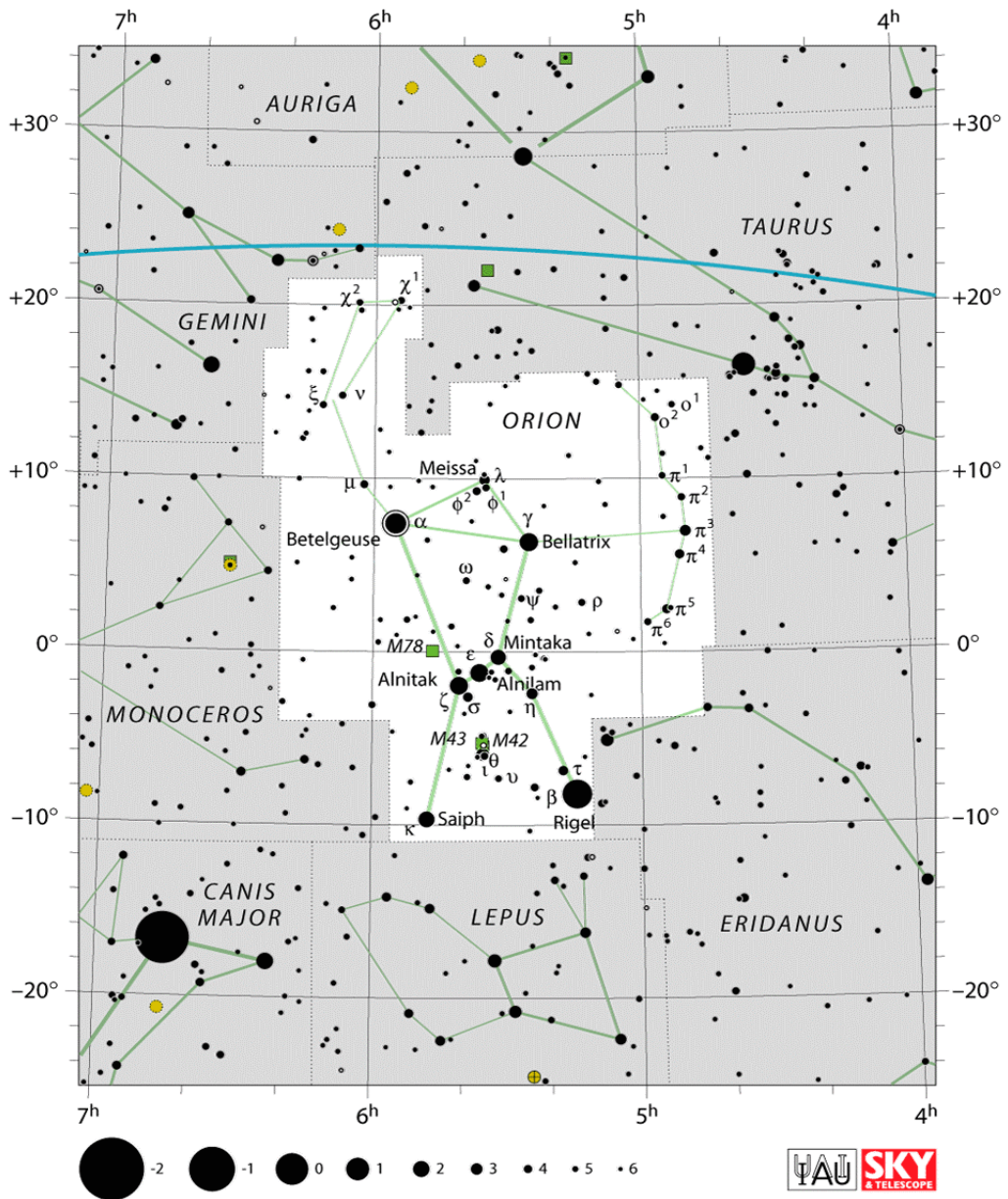
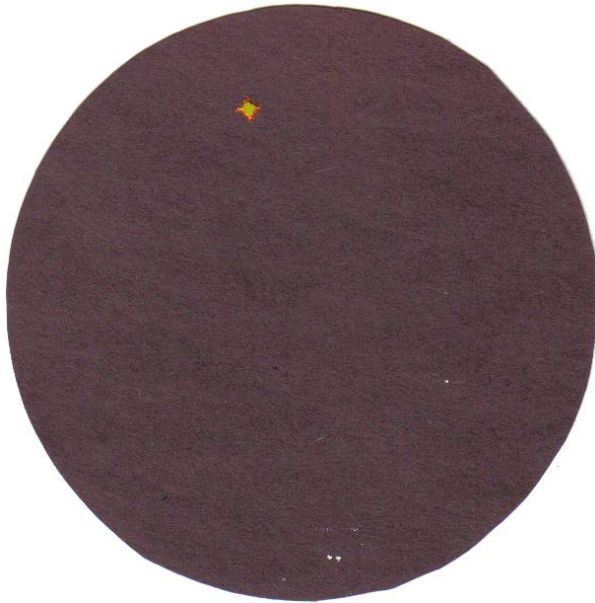


Double Star in Orion Struve 817

Glenn Chaple

I'm a big fan of "off-the-beaten-path" sky objects. One of my favorites is the little-known double star Struve 817 - the 817th double star catalogued by the German-born Russian astronomer F. G. W. Struve during a survey conducted between 1824 and 1827. I wrote about this little gem in my first "Object of the Month" column 5 years ago. It's time for a return visit!

According to a measure made in 2010 and posted in the Washington Double Star Catalog (available online at ad.usno.navy.mil/proj/WDS), Struve 817 consists of near-twin magnitude 8.68 and 8.93 stars separated by 18.7 arc-seconds in a position angle of 73°. The separation and P.A. differ little from what Struve himself measured around the time of discovery. Astronomers describe stellar partnerships that show little orbital motion as being "relatively fixed." If the component stars of Struve 817 form a true binary pair, their orbital period must encompass many centuries. What gives this relatively obscure double star a special allure is its location just 20 arc-minutes south of the red supergiant Betelgeuse. To find Struve 817, simply aim your telescope at Betelgeuse. A medium power eyepiece (75 to 100× works well) should capture this delicate pair shining just outside the dazzling rays of ruddy Betelgeuse. It's a startling sight. The Washington Catalog lists the spectra of Struve 817's components as A5 and K. Can you make out a color contrast between the two? Some years ago, I wrote a four-part seasonal series for Deep Sky Magazine in which I introduced my favorite 100 double stars. Included with such celebrated pairs as Mizar, Albireo, and the "Double-double" epsilon Lyrae was Struve 817. On the next crisp winter night when Orion beckons you to visit his magnificent Nebula, take a minute to travel a road less taken and try for this delightful double star.



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





Keeping an Eye on Storms and More

By Kieran Mulvaney

In late July 2013, Tropical Storm Flossie barreled furiously toward Hawaii. The question was not if it would strike, but when and where it might do so.

During the afternoon hours of July 29, forecasts predicted landfall later that week on the state's Big Island; however, by the time residents of the 50th state awoke the following morning things had changed. NOAA's Central Pacific Hurricane Center warned that the islands of Oahu, Molokai and Maui were now at a greater risk.

This overnight recalculation was thanks to the Day/Night Band viewing capabilities of the Visible Infrared Imaging Radiometer Suite, or VIIRS, on board the Suomi National Polar-Orbiting Partnership (Suomi NPP) satellite. VIIRS is able to collect visible imagery at night, according to Mitch Goldberg, program scientist for NOAA's Joint Polar Satellite System (JPSS), of which Suomi NPP is a part. That means it was able to spot some high-level circulation further north than expected

during the nighttime hours. This was an important observation which impacted the whole forecast. Without this forecast, said the Hurricane Center's Tom Evans, "we would have basically been guessing on Tropical Storm Flossie's center."

Polar-orbiting satellites, like Suomi NPP and the future JPSS-1 and JPSS-2 (scheduled for launch in 2017 and 2021, respectively), sweep in a longitudinal path over Earth as the planet rotates beneath them—scanning the globe twice a day. VIIRS, the imager that will be aboard all the JPSS satellites, images 3,000 km-wide swaths on each orbit, with each swath overlapping the next by 200 km to ensure uninterrupted global coverage. This high-resolution, rapidly updating coverage allows researchers to see weather patterns change in near real-time.

Instruments on Suomi NPP allow scientists to study such long-term changes too—things like, "the patterns of sea surface temperature, or coral bleaching," says

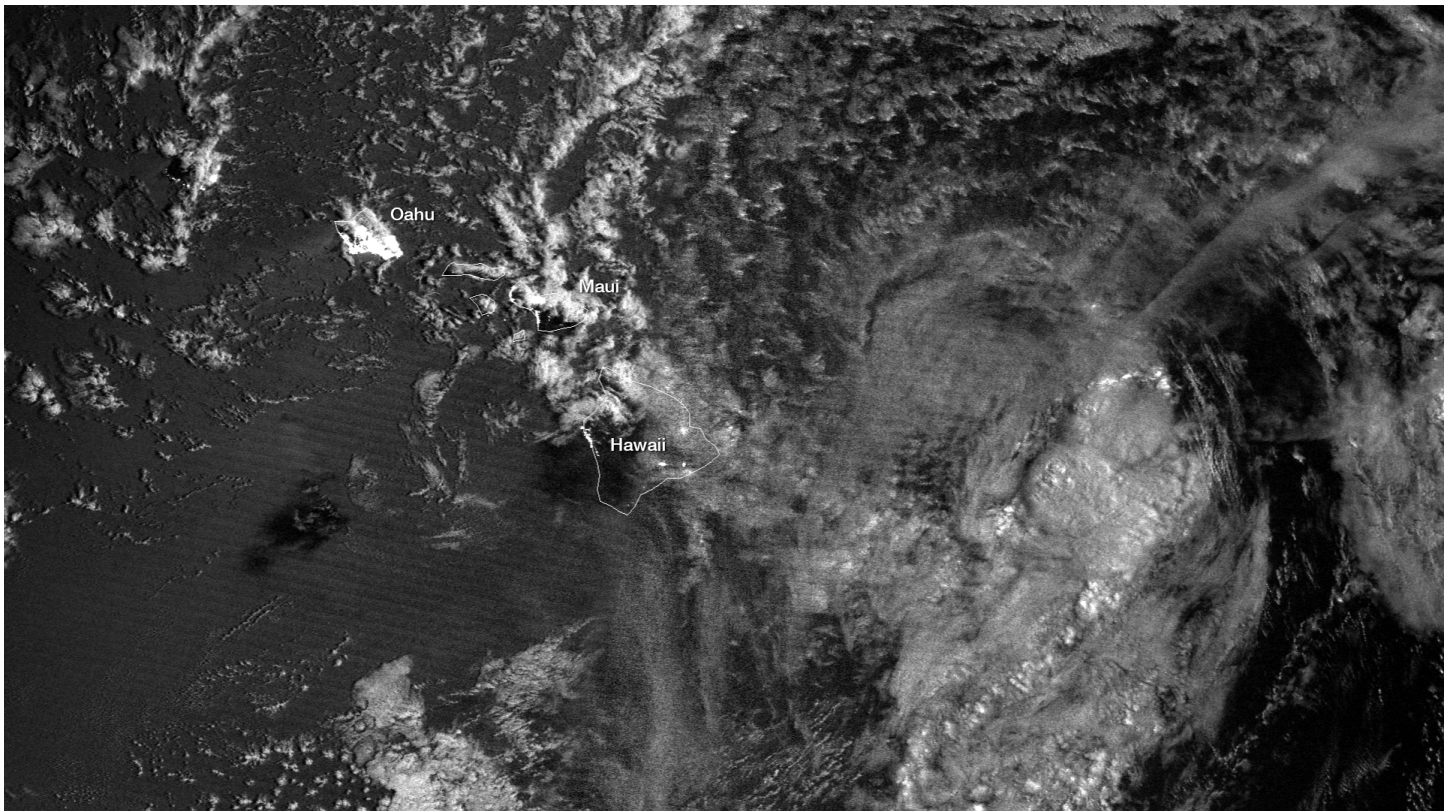
Goldberg. They are even used by the World Bank to determine how much energy is burned off and wasted from natural gas flares on oil drilling platforms.

While scientists are excited by the JPSS series' wide range of capabilities, the ability to address pressing immediate concerns is, for many, the most tangible value. That was certainly the case in July 2013, when thanks to Suomi NPP, authorities had ample time to close ports and facilities, open shelters, activate emergency procedures, and issue flash flood warnings. Despite heavy rains, high surf, and widespread power outages, accidents and injuries were few. By the time the storm passed, Hawaii was soaked.

But it was largely unharmed.

Learn more about JPSS here: <http://www.jpss.noaa.gov>.

Kids can learn all about how hurricanes form at NASA's Space Place: <http://spaceplace.nasa.gov/hurricanes>



S-NPP captured this image of Tropical Storm Flossie heading toward Hawaii using its VIIRS Combined Day-Night Band sensor. Credit: NOAA.



Secretary

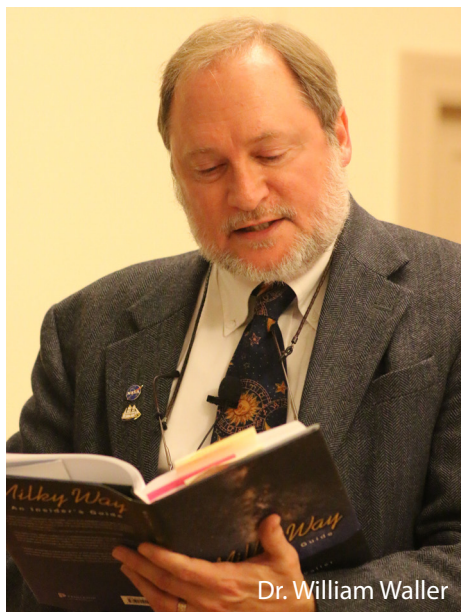
Tina Huestis

Board of Directors Meeting Minutes 12/13/14

President Robert Horton called the Skyscrapers' December meeting to order at 6:40 p.m.

Bob welcomed everyone to the business meeting and remarked that the 200 astronomical images, which served as the backdrop for the evening's holiday potluck dinner, were contributed by Skyscrapers members. Bob thanked them for sending their photos, which he compiled into a very impressive 145 slideshow.

President, Robert Horton: Bob began the meeting by recognizing Francine Jackson. Francine urged attendees to take some of the complimentary Orion spacecraft materials (models, wrist bands, bookmarks, and calendars) that she brought to the meeting. • Francine noted that UNESCO designated 2015 as the "International Year of Light," which is a United Nation's global initiative highlighting the importance of light and dark-sky awareness issues. She's also researched it further with the Skyscrapers Board to have programs based on all aspects of light as a start for our public nights next year. • Bob remarked that NASA has scheduled 2018 for its initial SLS rocket launch. If you support NASA, Bob urged the membership to write to your representatives to let them know that you are in favor of



Dr. William Waller

NASA and this effort. • Bob also reminded Ed Turco that he won an AstroAssembly raffle prize, which he could pick up tonight.

Treasurer, Linda Bergemann: Linda introduced new members: Chris Martel and Jim & Pamela Wallace, who will be voted on at the next meeting in which they are in attendance. • Also she noted that both Michael Davol (of East Providence, RI) and Tracey Prell (of Riverside, RI) were present and, as such, they were formally voted into membership that evening.

Trustee, Tom Thibault: Tom reported that about 90 – 95% of the work (which was previously budgeted) has now been completed. The trustees expect to finish up the remainder in the spring. Tom noted that the building and grounds were looking well thanks to all the volunteers and work sessions. Bob Horton thanked the Trustees for all of this hard work and effort. The Trustees also wanted to recognize the work of Kent Cameron, Matt White, and Bob Stahlbush for their work scrapping/painting, as well as Matt Ouellette who helped with yard work. Over a two-month period, these members — along with a few others — helped with miscellaneous clean up and material/trash movement. • Bob offered his thanks to all members for a very productive year. • He also expressed a special thank you for the work of two nonmembers: Adam Thibault and Brian Crawford (sons of trustees Tom Thibault and Jim Crawford). These two volunteers worked on many projects, including the kiosk, cabinetry work, and many upgrades and installations of electrical work. In appreciation, Bob presented Adam and Brian with certificates of appreciation from the organization.

First Vice President, Kathy Siok: Kathy reported that January's program will be held on January 10 (the second Saturday). It will take place at the North Scituate Community Center. The topic will be about observing Earth's satellites.

For the good of the organization: Tom Thibault noted that on January 23 – 24 there would be a triple shadow transit on Jupiter, which might lend itself to a possible members' observing night. Keep looking for emails on possible observing opportunities. • Bob reported that the 16-inch drive base is out of commission. However, Brown University has donated their old 16-inch mount and this replacement will work in the interim.

Steve Hubbard introduced Dr. William Waller, professor at Tufts University.

Speaker, Dr. William Waller presented



Treasurer

Linda Bergemann

Cash Flow YTD as of January 2, 2015(4/1/14 through 01/02/15)

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	\$873.37
Refreshment Donation	\$44.00
TOTAL Donation	\$917.37
Dues	
Contributing	\$35.95
Family	\$120.00
Junior	\$15.00
Regular	\$790.55
Senior	\$297.90
TOTAL Dues	\$1,259.40
EAGLE Project In	\$970.00
Misc Income	
Book Income	\$56.00
Interest Inc	\$18.57
Sale of Items	\$660.00
TOTAL Misc Income	\$734.57
Star Party Donations	\$533.00
Subscription Income	
Astronomy	\$68.00
Sky & Telescope	\$65.90
TOTAL Subscription Income	\$133.90
TOTAL INFLOWS	\$8,859.49

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
Tent Rental	\$720.00
TOTAL Astro Assem Exp	\$2,525.27
Contingency	
Speakers Fees	\$200.00
TOTAL Contingency	\$200.00
Corporation, State Fee	\$20.00
EAGLE Project Out	\$970.00
Postage and Delivery	\$24.15
Presidential Fund	\$40.00
Printing and Reproduction	\$10.70
Property Insurance	\$2,386.00
Refreshment Expense	\$131.99
Subscription Payments	
Astronomy	\$68.00
Sky & Telescope	\$65.90
TOTAL Subscription Payments	\$133.90
Trustee Expense	
Capital Equipment	\$222.33
Property Maintenance	\$3,298.65
TOTAL Trustee Expense	\$3,520.98
Utilities	
Electric	\$174.41
Porta-John	\$693.00
Propane	\$80.25
TOTAL Utilities	\$947.66
TOTAL OUTFLOWS	\$10,910.65
OVERALL TOTAL	(\$2051.16)

Cash and Bank Accounts - As of 01/02/15

Capital One Bank	\$12,357.04
Cash	\$42.00
Checking	\$10,123.70
PayPal	\$14.37
TOTAL Bank Accounts	\$22,537.11

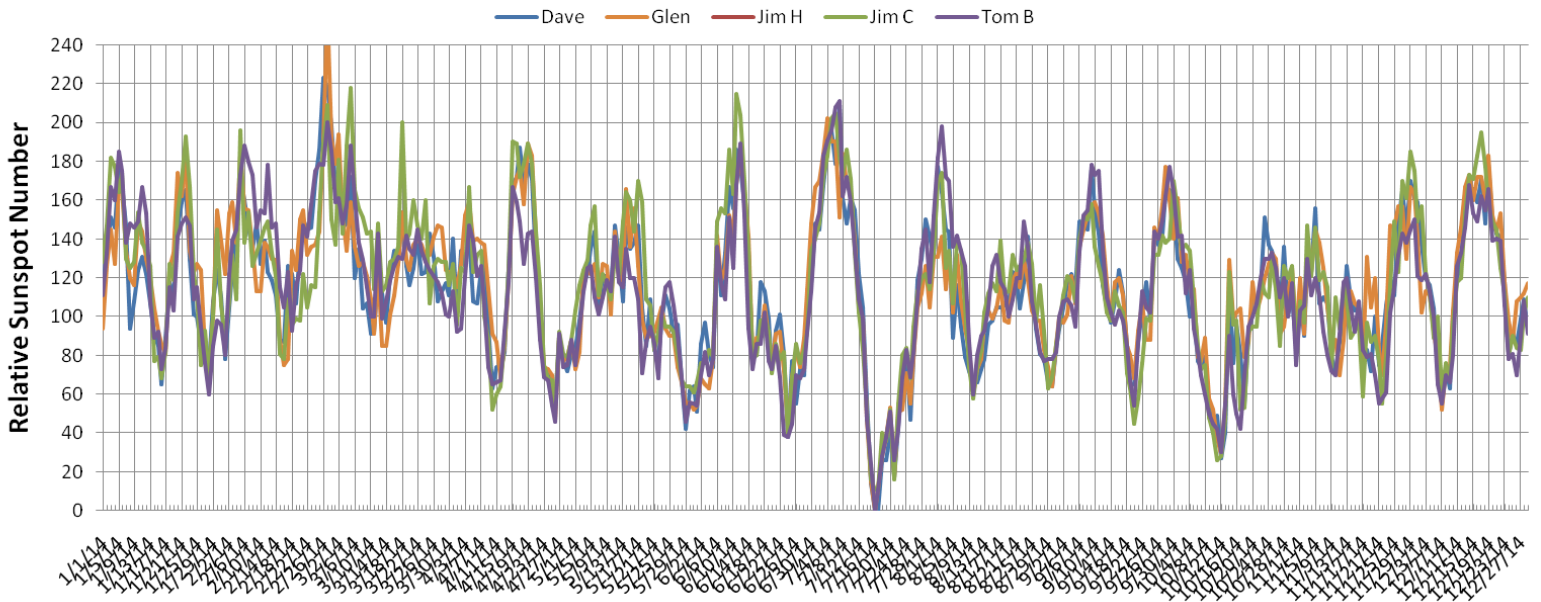
the talk “Navigating our Milky Way.” Dr. Waller’s presentation was a figurative magic carpet ride to the stars, constellations, and objects within (and outside of) the Milky Way. His tour included the galactic center and anti-center, as well as upstream and downstream of the Sun’s orbit. Some highlights included: M8 Lagoon, M16 Eagle

Nebula, M20 Trifid Nebula, M42 Orion Nebula, and M57 Ring Nebula. Interspersed among such images were factoids about stellar nurseries, light & wind sculpting, redistribution of elements by supernova, geometric parallax to determine distances, and the Kepler Mission to find exo-planets. Dr. Waller encouraged everyone to visit “The

Galactic Inquirer” at www.galacticinquirer.net to keep informed and updated on what’s happening in astronomy. After his presentation, Dr. Waller was available to sell / sign copies of his book: “Milky Way — Insider’s Guide.”

The meeting concluded at 8:05. Submitted by Tina Huestis, Secretary.

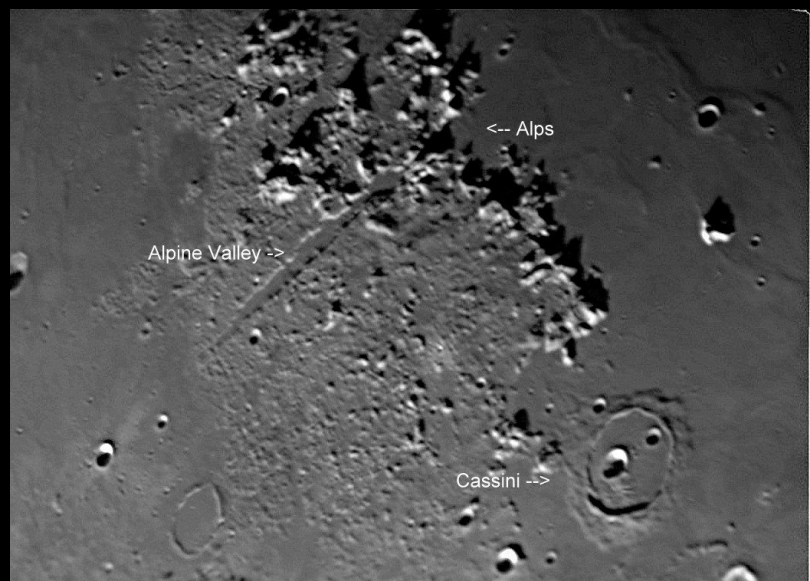
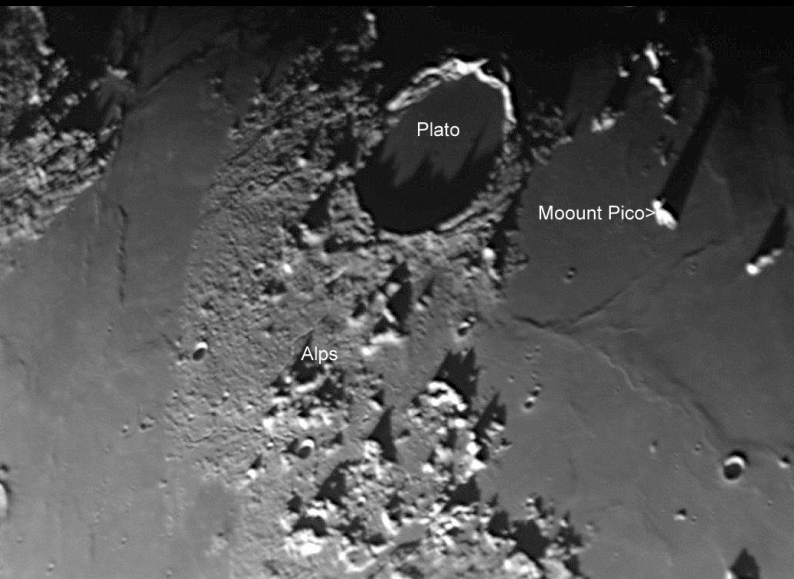
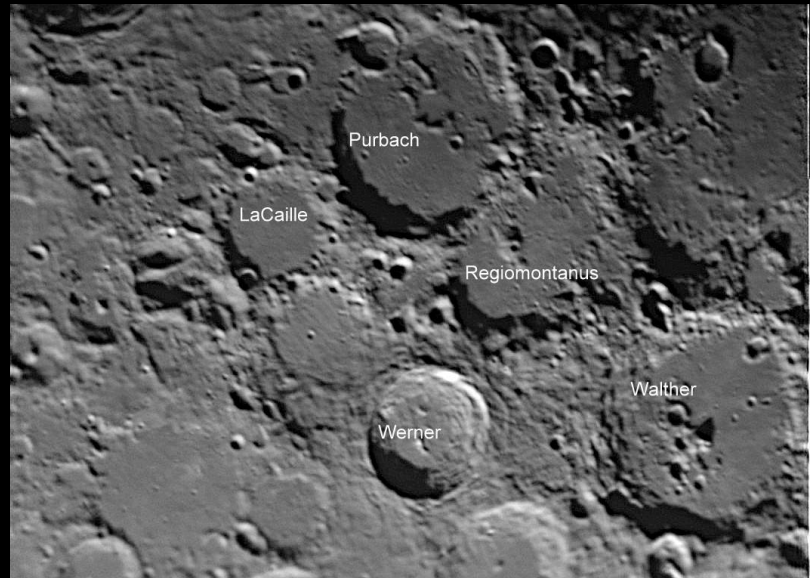
Skyscrapers Daily Relative Sunspot Number Comparisons



Moon halo over Seagrave Observatory open night, December 27, 2014 by Jim Hendrickson. This photo was featured by meteorologist RJ Heim's during the 11pm weather report on WJAR channel 10 later that evening.

Lunar Landscapes by Steve Hubbard


Monday, December 29








Orion's Belt & Sword. Twelve 30s exposures stacked; 200mm lens. Photo by Jim Hendrickson.



Finished processing the shot of the HorseHead Nebula. Cropped to a 8 x 12 format and reduced size to send. The picture was composed of (5) Calibrated Bias, (10) Dark Frames, and (30) 100 second frames stacked for a total of 50 minutes of exposure. The image was unguided and shot with a Celestron Nightscape 8300 through a Astro-Tech 65 Refractor. Photo was processed with AstoFX, Digital Photo Professional, and Photoshop. Photo by Tom Thibault



Attached is a second attempt at processing M45. Its tough to pull out the nebulosity without blowing out the stars. The photo was taken with the Celestron Nightscape 8300 through the Astro-Tech 65mm. Photo was cropped for 8 x 12 format and was comprised of (5) Calibrated Bias, (10) Dark Frames, and (25) 100 second Exposures for a total exposure of 42 minutes. Photo was unguided and processed with AstoFX, Digital Photo Professional, and Photoshop. Tom Thibault

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