



BACK BAY observer

The Official Newsletter of the Back Bay Amateur Astronomers
P.O. Box 9877, Virginia Beach, VA 23450-9877

EPHEMERALS february 2015

2/21, 4:00 PM
Nightwatch
Chippokes Plantation
Surry, VA

2/27, 7:00 PM
Garden Stars
Norfolk Botanical Garden

3/05, 7:30 pm
BBAA Monthly Meeting
TCC Campus, VA Beach
Building J, Planetarium



Looking Up!

Hey it's February and the days are getting longer again! Then again, that isn't necessarily a good thing as the dreaded Daylight Savings Time kicks in on March 8. So use the extra long nights to your advantage. I know Chuck Jagow has been getting up and looking at both Jupiter and Saturn in the early mornings. I can only see Jupiter from my house, but I really should get up and get out more.

On the outreach front, so far in 2015 we have had an outstanding turnout for our Saturday night Skywatch (see page 4), a successful 4-H event in Wakefield, and our enthusiastic club secretary, Leigh Anne Lagoe, provided a challenging solar system presentation to a large group of preschoolers. I really hope that we keep up this momentum and get more of the club members out to our outreach events. In February we have Skywatch, an event at Old Dominion, and Garden Stars at the Norfolk Botanical Garden. I hope to see you at these events.

Even though it is going to get warmer soon, I want to remind everyone that proper cold weather preparation is important, not only for the observer but also for guests. We have been putting out heaters at our Skywatch events, and this helps keep folks warm from the knees up. But the biggest problem I've observed at our events is that folks fail to prepare correctly in the footwear department. Unless you have three or four pairs of wool socks on

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January 8, 2015 Meeting Minutes

The January 2015 meeting was called to order at 7:30 PM in the Kiva Auditorium at Plaza Middle School, by president Jim Tallman.

Treasurer's Report:

- Chuck Jagow reported that there is \$2816.05 in the general fund, \$2040.67 in the scholarship fund, for a total of \$4856.72. Membership is currently at 99, but that number may decrease if dues are not paid by the end of January. Our bank account has \$334 more than accounted for. Some members that don't owe the full \$18 for dues are still sending the full amount.

Rapid Response Robotic Telescope (RRRT):

- Bird Taylor reported that they have been to Fan Mountain and imaged with the machine. They've been working with the new contact person at UVA, Matt Nelson. They should be able to use it remotely soon.

Old Business:

- Constitutional Bylaws still need to be reviewed. The Annual Picnic will be at Redwing Park on July 25, 2015.
- PhD candidate Chris Jones from NASA Langley will speak to our club at the February, 2015 meeting about a proposal for a Venus mission.

New Business:

Bruce Powers spoke to the Sunrise Rotary Club

in Norfolk on behalf of the BBAA.

Observing Reports:

- Mark Gerlach and George Reynolds both viewed C/2014 Q2 (Lovejoy). Vincent Pendleton did some imaging of the moon from Chesapeake.
- Nick Anderson announced that there will be a rare triple moon transit of Jupiter on January 24. Space X will launch a rocket on 1/10 at 4:47AM from Florida.
- Jim Tallman reviewed some of the kits we've received from the NSN including "Exploring our Solar System", "Space Rocks", and "The Magnetic Sun".

Astronomy 101: Part 3:

- George Reynolds briefly reviewed information that was discussed during the first Astronomy 101 class, then discussed different types of telescopes, mounts, finder scopes, and accessories. He showed the audience how to set up a refractor on an alt-az tripod, talked about the importance of having a methodic system for setting up and taking down, and gave some observing tips.

Meeting adjourned at 9:01 PM.

Minutes taken by Secretary Leigh Anne Lagoe

Note: Minutes were modified due to space constraints. Full minutes can be viewed at <http://backbayastro.org/minutes/2015-01-minutes.pdf>

Observer's Corner

Respectable. Indeed.

"Digital photography allows non-pros such as myself get respectable results. How many of you remember the film days? [Reciprocity](#) was such a problem back then. I even had a Williams-Celestron Cold Camera. I had to snip off a piece of 35mm film, load it in the special camera (all inside a light-proof changing bag) and then pack the camera with dry ice. All that work to take ONE picture, with usually marginal at best results. No wonder I turned to visual observing instead."

- Kent Blackwell



The Rosette Nebula (NGC 2237). Image by Kent Blackwell, Feb. 8, 2015, Canon 20Da, 400mm f/6, 208 sec exposure, ISO 1600.

The Back Bay Amateur Astronomer's
Observer

The BBAA Observer is published monthly; the monochrome version is mailed to members who do not have internet access. Members who do have Internet access can acquire the full color version on the Internet at <http://www.backbayastro.org/observer/newsletter.shtml>

Please submit articles and items of interest no later than the date of the monthly meeting in order to be in the next month's edition.

Please submit all items to:
bbaa.newsletter@gmail.com or BBAA Observer, P.O. Box 9877, Virginia Beach, VA

BBAA Meetings

The BBAA meet the first Thursday of every month except for July. While school is in session, we meet at the VA Beach TCC Campus. The March 5, 2015 meeting will be held at TCC in Virginia Beach, Building J, in the Planetarium at 7:30 PM. Directions are on our [Night Sky Network page](#).

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tennis shoes are just not going to cut it for very long on a cold winter night. A couple pair of wool socks coupled with a decent pair of hiking or hunting boots works very well.

Think about it, it is dark out and no one can see that your shoes clash horribly with your outfit, and I don't think anyone one really cares if they do clash. Parents this goes double for your young children and teens that are all about fashion. 😬

The number one reason that parents leave outreach events early is because their kids get cold feet or hands. While you're at it, you might as well take another look at that

thin little hoodie over the t-shirt they have on to make your evening last a bit longer.

Well, here's to February, our last month of no DST. May you all get to see something wonderful in the night skies this month!

Jim Tallman



Outreach Report | Bruce Powers

Skywatch 1-10-2015: Comets Real and Simulated

The Skywatch of January 10th, 2015 at Northwest River Park in Chesapeake was one of the best attended I have seen since I started attending these events in 2013. There were at least 15 cars and as many telescopes present that night.

Maybe it was the clear skies that attracted everyone, or maybe it was a New Year's resolution, or maybe some holiday gift 'scopes needed their first light. The shift from holding Skywatch on Friday to Saturday nights likely helped the numbers as well. Whatever it was, the turnout for the January 10th Skywatch was impressive for a volunteer organization. Besides the volunteers, there were at least 15 guests that cycled through the 'scopes over the course of the evening as well. For a winter night where the temperature dropped to as low as 18°F, the turnout was even more significant. Curious souls braved the frigid winter and came out in force to experience the night sky.



Leigh Anne Lagoe helps a guest make a comet.

Before the sun set, Skywatch regulars set up early so as to be available to help others with their new equipment. As an added bonus, our guests were treated to Leigh Ann Lagoe's comet composition demonstration using one of the outreach kits the club has recently received from the Night Sky Network. Using a little dry ice, some dirt and regular ice, with a bit of graphite mixed in, guests were able to make their very own comet in a container. Once complete, they were able to pull out the



Bruce Powers with his telescope at the January 2015 Skywatch.

simulated mini-comet, hissing and steaming thanks to the dry ice. Leigh Anne explained that comets are largely made of these materials, and went on to educate the crowd on why comets had tails, and why and how they brightened when they came near the sun.

The highlight of the evening was definitely being able to see Comet Lovejoy C/2014 Q2 at magnitude 4.9 in Taurus. This was the first bright comet I had seen in quite a few years through my scopes, so it was a real treat to be able to find it using the Sky Safari app running on my iPad. The iPad tried to shut down due to the cold, so I stuck some foot warmers on it (necessity is the mother of invention). The wise astronomical sage, Jim Tallman, updated my Comet Lovejoy ephemeris live, via his cell phone hot spot, right to my iPad. Amateur astronomy really has changed since I observed Comet Halley with my Celestron C8 in 1986. Back then I actually had to use paper star charts and setting circles - gasp - to find things.

Our guests were suitably impressed that after making a simulated comet in a bucket, they got to see the real thing out in space hurtling towards the sun through the eyepiece of a telescope. Jim Tallman further wowed the guests with images of Lovejoy he was shooting with his large refractor.

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January Skywatch Report, continued from [page 4](#)

I was even more impressed with our club's "catered astronomy outreach". We had hot chili, hot tea, hot chocolate, hot coffee, and too many cookies available. There were even gas and electric powered heaters to warm my feet, since I never seem to wear enough socks to these winter Skywatch events.

I only logged seven objects that night, but, as always, the reason I go is to talk to guests about astronomy and help others with their 'scopes since I have received so much telescope help myself from the BBAA. Also, I never get tired of teaching guests how to correctly pronounce the planet Uranus as I

show it to them as a tiny greenish-blue dot out on the edges of the solar system.

Winter Skywatch events are definitely worth your time. So grab your 'scope and join us as we bring astronomy to the people of Hampton Roads, tell a few tall tales, experience the wonders of the universe live, and enjoy catered hot beverages. The seeing and transparency of the winter skies makes everything just a little bit sharper in the eyepiece. Come take advantage of the new Saturday dates for 2015 Skywatch events, but be sure to wear enough socks!



SCENES FROM THE JANUARY 2015 SKYWATCH:

Clockwise from Top Left: A parking lot full of cars, telescopes ready to go, and the sun hadn't even set yet! Jim Tallman shows off his beautiful refractor as everyone excitedly waits for it to get dark; A young guest makes her very own comet while learning about cometary science from Leigh Anne Lagoe; Jim Tallman checks out the 'catered buffet line', dressed in his full winter Skywatch regalia (pictures by Bruce Powers).

Fascinating Jupiter | Nick Anderson

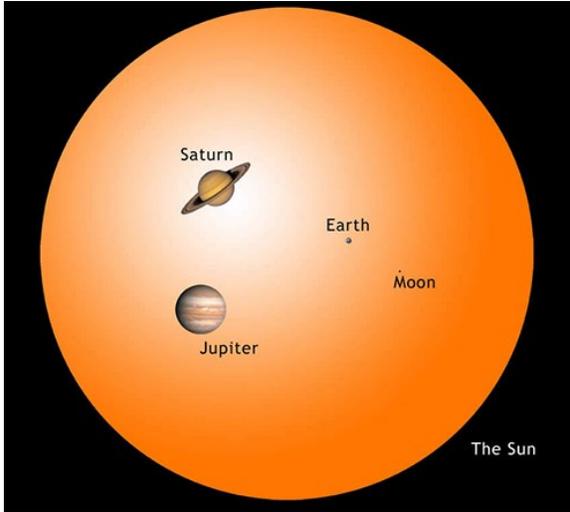
It's prime season to observe our giant planetary neighbor

Jupiter is the largest of the planets in the Solar System, more than double the mass of all the other planets combined. Its gravity is able to trap hydrogen and helium (unlike the terrestrial planets), forming layers of these gases on its surface. Were Jupiter about 75 times more massive, it would be a star in its own right, able to fuse hydrogen into helium in its core.

Jupiter is typically the third brightest object in the night sky (after the Moon and Venus), with a peak apparent magnitude of -2.94. Though large in size, the planet has a rotation rate of just 10 hours. The resulting centrifugal forces (directed outward) are responsible for the planet's equatorial bulge. Jupiter's equatorial radius is actually 7% greater than its polar radius, a characteristic noticeable to keen-eyed observers.



Jupiter taken by the Cassini spacecraft in 2000.



Jupiter compared in size to the Sun.

Jupiter displays a broad variety in its cloud patterns, including several prominent bands parallel to the Jovian equator. The easiest to catch sight of are Jupiter's two dark cloud belts on either side of the equator: the north equatorial belt (NEB) and the south equatorial belt (SEB). A particularly notable feature is the Great Red Spot (GRS), a raging storm more than double the size of Earth that has

persisted in Jupiter's south equatorial belt for centuries. But the GRS is not always obvious, as its color can range from a vibrant red or orange to a pale salmon tint.

Just as exquisite are its four largest moons: Ganymede, Callisto, Io, and Europa. All of them can be spotted in just binoculars and are easily seen in a telescope. These moons were first discovered shortly after the invention of the telescope by none other than Galileo Galilei (1564 - 1642) in January 1610, and are often referred to as the "Galilean moons". Their discovery (along with the phases of Venus) was an enormous blow to acceptance of the geocentric (Earth-centered) model for the Solar System.

All of the Galilean moons are tidally locked to Jupiter (like the Moon is to Earth). Ganymede is the largest moon in the entire Solar System, larger than Mercury in size (though less massive). Owing to its size, Ganymede even possesses its own magnetic field. Callisto—the outermost of the four moons—is the most

Jupiter, continued from [page 6](#)

heavily cratered object in the Solar System. Its surface is so densely cratered that new impacts will often erase old ones.

The inner two Galilean moons are a “fire and ice” duo. Spurred by the gravity of Jupiter, Io has over 400 active volcanoes. Europa, on the other hand, features a highly reflective icy surface, marked by cracks. Europa displays few craters, the signs of a young surface. Most notable, perhaps, are the liquid water oceans thought to exist underneath. Of all of the Solar System bodies, it is thought to have the greatest potential for harboring extraterrestrial life.



The four Galilean Moons of Jupiter in order of increasing orbital distance from Jupiter: Io, Europa, Ganymede and Callisto. These images were taken by NASA's Galileo spacecraft. Named in honor of the discoverer Jupiter's four largest Moons, the mission was a huge success, finding, among other things, evidence of subsurface saltwater on Europa, Ganymede and Callisto and recording the intensity of volcanic activity on Io. (NASA)

The Galilean satellites regularly pass in front of or behind Jupiter. Four different events can occur: (1) a satellite transit, when one of the moons passes in front of Jupiter's disk from our vantage point, (2) a shadow transit, when a moon casts a shadow on Jupiter, (3) an eclipse, when one of the moons temporarily hides in Jupiter's shadow, and (4) an occultation, when Jupiter's disk obscures our view of the given moon. Typically these events will come in pairs (either the first two or the last two together), though not necessarily. On rare occasion, it is possible for as many as three of the Galilean moons to transit simultaneously, as recently seen on January 24, 2015 (the next such occurrence will not be until March 20, 2032).



This image, taken by BBAA member Chuck Jagow, nicely illustrates a shadow transit.

[Mutual satellite events](#) can also occur when their orbital planes line up with the Sun, producing occultations or eclipses by one moon to another! Based on this special geometry, mutual event seasons occur just twice in Jupiter's 11.9 year orbital period. Fortunately though, right now we are in the middle of such a season. With Jupiter's opposition just occurring on February 6, now is the perfect time to make plans to observe one of these unique events.



February 2015

BBAA Events	Special Outreach	Astronomical Events
2/05 BBAA Monthly Meeting		2/3 Full Moon
		2/6 Jupiter Opposition
2/21 Nightwatch @ Chippokes Plantation		2/11 Last Quarter Moon
		2/18 New Moon
2/27 Garden Stars @ Norfolk Botanical Gardens		2/25 First Quarter



Sneak Peek into March

Thu 3/05/2015 Monthly Meeting, TCC, 7:30 pm
 Mon 3/09/2015 Science Night at Deep Creek Elementary, 6:00 PM
 Sat 3/14/2015 Skywatch at Northwest River Park, 7:15 pm
 Sat 3/22/2015 Nightwatch at Chippokes State Park, Surry VA.