



## NEWSLETTER

Summer 2015

# RITTENHOUSE ASTRONOMICAL SOCIETY

Founded 1888 [WWW.RITTENHOUSEASTRONOMICALSOCIETY.ORG](http://WWW.RITTENHOUSEASTRONOMICALSOCIETY.ORG)

MONTHLY MEETINGS OPEN TO THE PUBLIC

7:15 PM

The Franklin Institute

20th Street and Benjamin Franklin Parkway

**Upcoming Meetings/Events Include:**

Date	Presentation
Sep 09	John Ashley - Glacier National Park After Dark
Oct 14	Dr. Emily Rice - Brown Dwarfs Susannah Carroll, RAS artifacts housed at The Franklin Institute
Jan 09*	Dr. Robert Nemiroff - Astronomy Picture of the Day (APOD) * NOTE * Special Date - Saturday not Wednesday
Feb 10	Greg Kennedy - Private Space Sector
May 11	Roger W. Kennedy - Solar Observing

## Vice President's Message

~Ted Williams

We'd like to dedicate this "Special Issue" of our newsletter to Dr. Milton Friedman. Milt knew the importance of Rittenhouse Astronomical Society's involvement at the inception of the Philadelphia City Wide Science Festival. He backed the idea to our board from the beginning as we participated in what would turn out to be an annual event. Not only do we participate with the Science Carnival on the Parkway, but we play a key role in the City Wide Telescope Night.

This issue is special in that it celebrates some notable people, their involvement in a very important event, which left many with memories of a very remarkable experience. The special people are of course, our volunteers and those that organize their efforts together to participate in an amazing yearly festival for everyone, both in and around the Philadelphia area. This unique festival that provided a chance to participate in scientific investigations and activities that stimulated the minds of scientists of all ages. This special issue of our newsletter documents our participation in the Philadelphia Science Festival Carnival on the Parkway and City Wide Telescope Night which provided exceptional experiences for future scientist and engineers.

Our event organizers included Derrick Pitts, Ellen Trappey and Gerri Trooskin, who provided the vision and organization needed to coordinate a telescope night and the associated training for an event that takes places at nearly 30 locations simultaneously across Philadelphia. Ellen also directly assist's us in our involvement and participation at the Philadelphia Science Carnival on the Parkway as does Al Bruno.



*Masterman Charter School: Setting up early*



*Caroline Herschel visits Rittenhouse Booth at the Festival*

Our board of governors have supported and encouraged involvement over the past five years and have pulled together the needed volunteers from our society, to take part in both the telescope night and the parkway carnival. It merits their listing here.

Ted Williams, Vice President  
 Alan Daroff, Vice President Emeritus  
 David Walker, Secretary  
 Ruth List, Treasurer

Along with them are their fellow officers: Fern Culhane, Eric Carter, Carol Ludolph, Dan McCormick, Mike Mountjoy, Kyle Nemeth, Shawn Rush, Al Ryan, Renee Stein, Joe Stieber, and Denise Vacca who help to enable our society to exist and assist in navigating Rittenhouse Astronomical Society's participation in these festival events.

We'd like to thank those wonderful individuals who stepped forward to volunteer for City Wide Telescope night, at last count, eighteen members participated. We have included special reports submitted from some of these participating members: Al Lamperti, Dennis Wintering, Mitch Berger, Joe Stieber, Henry Blanco White, and David Walker.

Other members turned out to bring our carnival booth alive and man our solar telescopes for the Carnival on the Parkway. These members included Ted Williams, Ruth List, Denise Vacca, Renee Stein, Cameron Prichard, Kyle Nemeth, David Walker, Henry Blanco White, Lynn King, Wayne King, Mike Mountjoy and Fern Culhane. All day long, Derrick Pitts and other members cheered us on and later Ted was interviewed by Derrick on a special edition of WXPN's Kids Corner radio program.

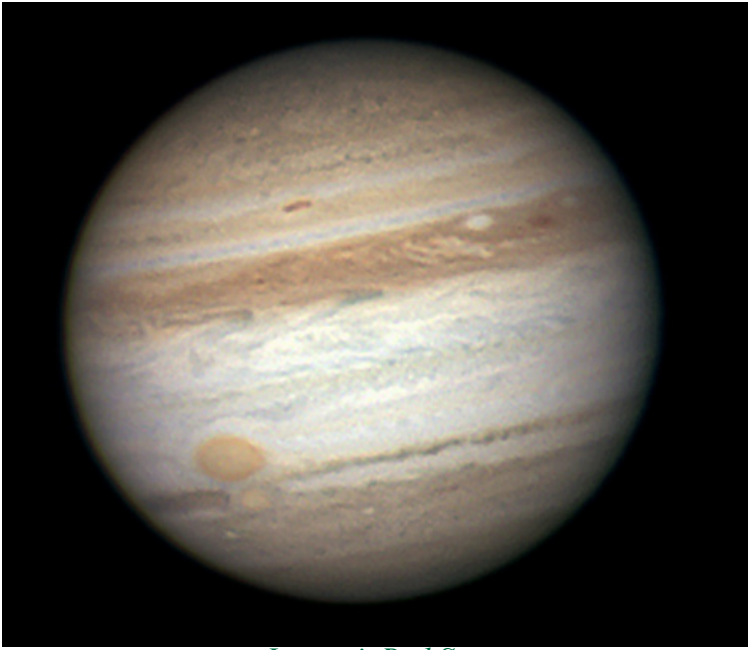
## Thank You Notes from City Wide Telescope Organizers

Derrick Pitts: Clear skies, calm winds and good targets hopefully made for an exciting and successful evening for everyone. Many thanks to you all for your participation. I know your audiences appreciated your efforts. Like you, I saw delight in the faces of the kids who were seeing the moon for the first time through your excellent equipment or those who proudly demonstrated their skill at positioning and focusing a Galileoscope for the first time. Someone in our audiences tonight will pursue a career in astronomy or space science based on what we did tonight!

Ellen Trappey (Community Program Specialist for Phila. Science Festival): Greetings, PSF Astronomers! I would like to echo Derrick's note of thanks. You all are absolutely amazing, and I'm so thankful that you were willing to give your time, energy and expertise to the Philadelphia Science Festival. I always forget that Astronomy Night is my favorite night of the year until I'm out at the sites watching all of you interact with the general public. This year was no different! I heard audible gasps of amazement, and saw the universe open to folks all across the city. Thank you, thank you, and thank you!



*Dave Walker Helping Young Viewers at the Festival*



*Jupiter's Red Spot*

## City Wide Telescope - 2015

While telescopes are the main focus of the evening, binoculars can also assist in providing a beautiful view of the evening sky. This year, eighteen Rittenhouse members stepped forward in service to participate in the City Wide Telescope Night for the kickoff of the Philadelphia Science Festival. Weather conditions could not have been better, the event took place on Friday April 24th. Many were able to view Jupiter's Great Red Spot from locations across the city of Philadelphia. We were lucky to have very steady viewing conditions which allowed for some spectacular views of the Jovian giant. Below are included some members reports about the event from different perspectives across the Philadelphia area.

### Report from Al Lamperti

At The John Jenks School, there were 150-200 people, many of which were young children. An added feature was the upper grade Jenks' students with iPads showing people waiting in line information on Jupiter's moons and our moon on Power Points presentations they had made ahead of time. Great learning experience for all involved. The crowd was very enthusiastic and absolutely thrilled with the event and views.

### Report from Dennis Wintering

Dennis assisted and reported they had great fun at Tinicum. The event was well attended. They handed out wallet-size flash cards of the objects they viewed depicting Jupiter with the location of the moons and a diagram of Ursa Major with a photo image of Mizar and Alcor. People were amazed. There was talk of organizing more events.

### Report from Mitch Berger

Terrific City Wide Astronomy Night at Philadelphia Center for Arts & Technology! We set up quickly upon arrival at 7pm and viewed several large sunspots in a chain toward the Southern limb. We only had 15 minutes for viewing before the homes on Stenton Avenue got in the way. We were viewing from a very small park adjacent to the school on Eastburn Avenue in West Oak Lane. (Had some large evergreens to our south that later shielded us so well from stray light and the McDonald's next door). Around 8pm, the kids spotted Venus first and helped align the small refractor toward it. At first I was confused by the image in the scope. It looked too small to be Venus. Right color, but no shape. Kinda like a star..... It was a star! El Nath, the bull's right horn tip!! We slooohed South a bit and were right on target with the goddess.....contact!! The ten kids and six adults were stunned by its beauty. Screams of delight were heard, plus some ooohs and aahhhs.

We then looked at the moon, nearing first quarter. And, although Jupiter was inviting, we all took a break to watch a 12° ISS pass at 8:48pm. Also easier to see for the kids with their younger eyes, but my green laser made it easier to track in the yellow city glow. I explained to them that it was amazing to be able to see something moving so fast and hundreds of miles up, while it was nearing the coast of Florida! They could also see it's current path / ground track on a little cellphone, and understood why it appeared so low in our sky. Bright, large and high, Jupiter was probably the highlight of the night. Kids were delighted being able to see it and its complex of moons. They peppered me with thoughtful questions, especially about space travel and survival on strange lands. A great night out was had by all!



*A Similar Look at an ISS pass overhead*

### Report from Joe Stieber

I was at Thomas Jefferson University's Lubert Plaza, 10th and Locust Streets in center-city Philadelphia. The relatively open plaza offered reasonably good site lines, despite the surrounding tall buildings. My host at Jefferson, Bob Bartosz, made arrangements for me to drive into the plaza for ease of setup; in fact, he was waiting at the entrance to greet me when I arrived about 6:35 pm. Who would have guessed it would be so easy to set up in center city?

After selecting a spot (between light posts that mercifully never lit up), setting up and collimating, I was looking at the moon by 7:15 pm. From then until 10:30 pm when I started to pack up, there was rarely a moment when there wasn't someone looking through the scope, and usually, there were at least a few people waiting in line to look. The mainstay objects were the moon, Jupiter and Venus, and with just one scope, it was difficult to get away from them by popular demand. However, I did make a brief foray to look at the pretty double star Algieba (Gamma Leonis) and the globular cluster M3. Ted Williams had discussed the latter as a potential Astronomy Night target during the April 8th meeting of the Rittenhouse Astronomical Society (following the Astronomy Night kickoff dinner). It wasn't too difficult to find and I was surprised how well it looked under the conditions (center city with a first quarter moon), but it wasn't exactly a spectacular object, especially for the kids.

Indeed the weather was great. The gusty winds during the day had disappeared along with the puffy clouds, leaving a really clear sky. However, even more surprising was the stable seeing. Algieba was a pair of pinpoints with a clear gap separating them. Jupiter was magnificent too. I picked it up about 7:50 pm, and using my 12.5-inch dob at 100x, there were a number of dark bands visible in addition to the North and South Equatorial Belts. The Great Red Spot was easily seen a bit east of the central



*Meteorites on Display*



*Joe Stieber and Host Bob Bartosz*

meridian and I was able to follow it until 10 pm or so when it became foreshortened near the western limb. I don't know that I've ever had such an easy view of the GRS. It was also great that a number folks got to see Jupiter with only three moons (Io, Callisto and Ganymede) before Europa emerged from Jupiter's shadow at 8:06 pm (I reserved that minute for myself, watching Europa gradually light up as if it were on a dimmer, about a disc diameter from Jupiter).

Venus also showed a nice egg shape in the scope (since it was about 70% illuminated). Unfortunately, I failed to bring my moon filter which would have been helpful to cut the glare of this brilliant object. In any case, it offered a good opportunity to discuss the phases of Venus, as well as the moon. We lost Venus relatively early though (after 9 pm) because of a building in the way.

I also used my heavy-duty green laser with care to point out stars and constellations for those waiting in line and milling around. Bob Bartosz had a crew at a table set up in the plaza. In addition to literature and refreshments for the attendees, Bob had some of his meteorites on display. The large iron one is a treat; it's so much heavier than it's size would suggest, so it's weight is a real surprise when you pick it up. Without hesitation, I would say it was a great night!

### Report from Henry Blanco White

Henry Blanco White returned to the Battleship New Jersey as he was there in years past. As he reported: I'd been there before, so I knew what to expect. No passing trade, so very low volume (a few tens rather than hundreds). But since people must have taken the trouble to seek us out, every visiting group had at least one person who was interested enough to ask questions, and I had time to talk to them, plus a group who were on the ship for a dinner party. The Ship's crew were energetic and helpful, but of course not astronomers, though some of them were old enough to remember doing celestial navigation when they were in the service.

Dark skies, no street lighting, low horizons, but that close to the water very poor transparency, and very poor limiting magnitude – I didn't see a single recognizable constellation all evening. And, of course no shelter from the wind, but I was dressed for that.

Still, the sun when we started, then the moon (which was showing up beautifully) and the moons of Jupiter gave us enough to work with.



*Renee and On-lookers at the Fairhill Cemetery*



*Picture of our moon from Renee's Phone and Telescope*

### Report from Denise Vacca and Renee Stein

We had a great night observing at Fairhill Cemetery. We had about 50 people (parents and kids) a few families hung out almost the entire evening with us.

Renee and I felt like we were really appreciated. The site was clean, only one port-a-potty for the bathroom but it wasn't the worse I've ever used. The staff were great and very enthusiastic. They even had a bonfire and marshmallows. The volunteers were very nice and also helpful.

The skies were great. We were able to get fantastic views of the prime targets and I was surprised (& happy) at how excited people were just seeing the Moon not to mention the screams to family members "se puede ver Júpiter y sus cuatro lunas" when looking at Jupiter---you can't buy that kind of happiness.

We definitely inspired people tonight. Makes ya feel good. Thanks for the opportunity!!!

Clear Skies!

### Report from Dave Walker

We had a terrific crowd at Laurel Hill Cemetery, reported David Walker. At least 150 but maybe more; I lost count. Isabel from the Franklin Institute came by to help with distributing materials and surveys, Manny Lim and his friend Kevin brought a telescope and helped run two telescopes provided by Emma Stern of Laurel Hill. I ran two telescopes of my own and helped a young astronomer set up use his.

We started just before Sunset with a Baader Solar Filter on my refractor getting great views of Sun Spots. A primer on the Sun and Stars followed; we had a very savvy crowd! Once trees and monuments got in the way we swung to the Moon which proved very popular as the crowd continued to grow. Some telescopes were left on the Moon all night; it's a crowd pleaser.

Multiple voices kept wondering what that bright star (in the West) was; so on to Venus! I didn't get many volunteers

for a landing expedition though. Lots of questions about its reverse rotation and phases. Then Jupiter was spotted so it was a good time to explain the Zodiac and Plane of the Ecliptic. Just on cue we were able to pick out Aldebaran, the upper part of Orion, Gemini, and the Dogs. We went over Seasonal Constellations before taking a tour of the Winter Circle.

Eyes were peeled for the ISS pass but it was not visible. Light was a problem as we moved East but most were able to find Leo. We focused telescopes on Jupiter and it's moons and answered a lot of questions. Once everyone got a look at Jupiter we moved to the Circumpolar Stars and the Big Dipper. Viewers located Mizar and Alcor, then on to Arcturus and Spica.

Returning to the Dipper we found Polaris. It was a good night and a beautiful venue.

I think you can tell by the reports included here that this event is the highlight of the year for our organization. If you want to get involved, the event grows each year and I'm sure we will be in need of more astronomers next year. I'm proud of the members we had participate and look forward to more joining in next year.

#### Report from Ted Williams

Our night could not have been better. Our host site was the Masterman Charter school who conducted the event behind their building on their playground. A wide view of sky, with few objects close by to block our horizon provided us a clear view in all directions. Weather conditions were fantastic and seeing was exceptionally clear, with little air movement, stable temperatures, and low dew points.



*A line forms to look through the scope at Masterman Charter School*

We were greeted by our host Liz Kelly and felt we had the royal welcome! The school opened it's doors to allow visitors the use of their rest rooms. Families that volunteered to assist arrived early and we challenged those early arrivals to find Venus with binoculars (an easy target once found.) A welcome table with star maps, glow sticks, pretzels and drinks were all provided to guest observers to compliment our telescopes. Volunteers were eager to help and assist those with binoculars. We easily had over 100 people stop by to take in the wonderful view of our sky.

A twelve inch Orion Dob provided crisp clear sights of Jupiter and it's moons. The Earth's moon itself was enough to get most observers to gasp with their view. I am always surprised at the number of people who have never looked through a telescope, which I believe well warrants what we are doing. We need to remember that what we bring is more than just a view, it is a memorable "experience" that takes place in the context and comfort of ones own neighborhood.

Thanks to all those at Masterman who helped make this a great night of observation.

## Philadelphia Science Carnival on the Parkway 2015

Our day on the Parkway was met with great weather for a carnival. Partly sunny with temperatures reaching 73 degrees meant the crowds were quite large. Over 175+ exhibitors were on hand to share science with Philadelphia. Our question that we propose for our exhibit is "What is in the Sky Above?"

We answer that with a large display of four prominent star patterns (three of them constellations) including Big Dipper, Leo, Bootes and Gemini. Hanging Bootes (east side), Leo (center or south sky) and Gemini (west side) across the back of the carnival booth gives a backdrop of stars in the sky. This year we added the Big Dipper (although not a constellation) by popular request since many recognize the shape. What we create with them is a fairly accurate backdrop that represents what star patterns they can look for in the sky the night of the carnival.

To create the backdrops, patterns were drawn accurately for the constellations and stars were assigned three sizes according to brightness. This year we colored the stars according to their color classification.

Participants were given a short constellation talk and the constellations behind us act together as a basic sky map. We were able to accurately show the positions of Jupiter and Venus this year since they were near Leo and Gemini at the time of the carnival. Participants were asked to imagine a

picture of each constellation given only a basic stick figure rendition. If stumped, they are shown constellation maps with an artist rendition of each constellation to assist them.

If participants were up to the challenge, they were given a red laser and a quick orientation of laser safety. Participants are then asked to draw the constellation on the star patterns using the laser. Prompting questions similar to “Where is the Lion’s head? Where do you see the Twins? or Can you find any red stars?” are used to assist the participants. For advanced observers we also included M3 (globular cluster) and the outline of the Milky Way running across the bottom of Gemini. Some very observant participants asked about the objects (not labeled on our charts other than being white glitter on the white background of each constellation to represent the cluster and the Galaxy.)

After showing us their idea of what their constellation looks like, a prize was offered, but building it was required. A map of circumpolar constellations that shows their proper orientation throughout the night and oncoming year is cut out and built with two colors of paper, and a brass rad. The result is a rotating circumpolar map that can be adjusted by month and observing time. It is quite a nice hands on activity that keeps even the youngest visitors engaged.

After participating at the carnival booth, participants were encouraged to view the sun through some of the solar



*Constellations are the focus during the Science Festival*

telescopes we had set up (Henry White, David Walker and Wayne King helped to man the telescopes). Denise Vacca, Renee Stein, Cameron Prichard, Ruth List, Fern Culhane and Ted Williams all assisted through the day to keep the booth in operation.

This was the fifth year we have participated and if you ask any of those that assisted, it is a very quick and busy day. Hundreds of observers stop by, lines to the telescopes can be eight deep at times, but the view is well worth some patience.

We hope to expand the number of members involved next year so that some of us might be able to get some down time to tour the carnival ourselves. Please consider getting involved, it is a very rewarding experience for those members that participate.

## Meeting Report

Large, digital surveys of the night sky have revolutionized how astronomy is done. Astronomers are no longer tethered to their telescopes, but instead have access to terabytes of data on hundreds of millions of stars and galaxies through the Internet. John Bochansk, our February guest presenter, an assistant professor of Physics at Rider University and has used survey data over the last decade to study our home Galaxy, the Milky Way, and millions of its stellar constituents. His efforts have characterized millions of low-mass dwarfs, which are the most common type of star and the most likely to host small planets like our Earth. His studies have also focused on distant red giant stars, culminating in his discovery of the two most distant stars known in our Galaxy, nearly 1 million light years away. John explored the motivation behind large surveys, shared details of some of his results, and discussed the data-rich future of large astronomical surveys, most notably Gaia and the Large Synoptic Survey Telescope.

The March meeting brought us a group effort by our RAS members to present Astronomy 101, a basic primer in what one needs to know to get started in astronomy. Many members stepped forward to assist including Denise Vacca, Renee Stein, Joe Stieber, Shawn Rush, Dave Walker, Ted Williams, Mike Mountjoy, Eric Carter, Al Ryan and Dan McCormick who accompanied our presentation with a musical score. Basic tools including types of binoculars, and some basics on what one needs to know to purchase a first time telescope were shared. After some equipment tips were shared, sights to view with binoculars and telescopes throughout the year were shared season by season. We also tried a “Constellation Shoot-out” with members and guests. Twenty constellations were shared by picture and

participants tried to guess as each was displayed in the planetarium sky. Thanks to Denise for suggesting and coordinating this activity.

In April, Dr. Derrick Pitts visited our meeting to ramp us up for City Wide Telescope Night and the Philadelphia Science Carnival on the Parkway. Now in it's 5th year, we have participated in this event since day one. Not only did Derrick set the scene for this year's events, he also shared some updates on the Thirty Meter Telescope and what has happened since ground breaking. TMT will provide new observational opportunities in essentially every field of astronomy and astrophysics.

- Spectroscopic exploration of the "dark ages" when the first sources of light and the first heavy elements in the universe formed;
- Exploration of galaxies and large-scale structure in the young universe, including the era in which most of the stars and heavy elements were formed and the galaxies in today's universe were first assembled;
- Investigations of massive black holes throughout cosmic time;
- Exploration of planet-formation processes and the characterization of extra-solar planets;
- Discovery observations that push into the terrestrial-planet regime;

Furthermore, as has been the case for every previous increase in capability of this magnitude, it is very likely that the scientific impact of TMT will go far beyond what we envision today and TMT will enable discoveries that we cannot anticipate.

Our May meeting was a membership favorite, exploring the music of Gustav Holst's "The Planets". Ed McCaffrey from the Methacton School District treated us to an updated version of the presentation with lots of insight into how the music depicts the scientific features of each of the planets known at the time of the composition. He then concluded with a selection of music that his students voted to represent the now dwarf planet of Pluto, which was an unknown Solar System object at the time the music was composed.

Our year of meetings concluded in June with an "Open House" meeting where members could sign-up to present a topic of their interest to the group. This year there was quite a variety of topics from favorite stars, double-stars, and other favorite objects in the sky to find using both binoculars and/or telescopes. Dr. Paul Halpern returned to share the "Schrodinger's Cat" theory. Denise Vacca whetted our appetite with the research being done at NASA on how space effects the human body. They are using Mark and Scott Kelly. As Mark and Scott are twins and since Mark

has retired from the NASA astronaut program, his brother Scott is spending a year on the ISS. Kyle Nemeth gave a brief talk on Superluminal Motion and how scientists said it is an optical illusion as we perceive the motion from here on Earth. Other presenters were Mitch Berger demonstrated the "HeavensAbove" web site that helps to locate satellites in the sky while Manny Lim gave us a brief look at how RAS has changed over the years. The meeting concluded with a pleasant night of observing in the Bloom Observatory. Rarely have we been treated to such a nice evening of star gazing at the end of a meeting. Both Jupiter and Saturn were highlights of the night's observations!



## Rowan College at Gloucester County Donation:

A recent Japanese animation festival held at Rowan College at Gloucester County (January 9-10) called Kotoricon 2015 attracted some attention for us. We were asked to participate by adding an astronomy night after the conference with telescopes and to possibly give a science talk for the animation festival.

Ted Williams presented an afternoon talk using flat screen projections of Solar Walk and Sky Safari to give a general star talk as to what could be seen the night of the convention. A beginner's talk on tools of our trade (basic binoculars and small beginning telescopes) was also included. Participants were prompted to return at the end of the festival to the commons area to view Venus and Jupiter in the night sky. Joe Stieber, Renee Stein, and Dan McCormick all helped with telescopes to assist visitors with a clear view.

After the convention the folks who organized the event were impressed enough with what we did that they decided to donate \$500.00 to Rittenhouse for our services the night of the event. It was suggested by those that participated in the event that we start a telescope fund with the donation to purchase a scope that RAS members could take to events such as this one and also to our combined star watches with the Willingboro group.

**Rittenhouse Astronomical Society**

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