



NEWSLETTER

WINTER 2016

RITTENHOUSE ASTRONOMICAL SOCIETY

Founded 1888 WWW.RITTENHOUSEASTRONOMICALSOCIETY.ORG

The function of our newsletter seems to have become obsolete as a vehicle for members to contribute their interests in the written format of the newsletters of old. Today our society member website provides immediate connections through the internet and allow us to share with each other in a more immediate manner consistent with today's expectations of immediate connectivity and feedback. We also are challenged that we have temporarily lost our newsletter collator and editor. We need to look at this format and its use anew.

Possibly the major function for a newsletter of this sort is to provide an electronic document intended for print, but also downloadable for review. The print version may be a document of our society's activities that is survivable into the future. Our electronic websites may dissipate due to an expired URL, lost flash drive, or an updated format of communication not compatible with previous electronic versions. Print is also destructible and lost, but if enough copies exist, it may be found a value to those future members that may have in interest in what this society is about. As a group of us look back over the years of RAS activity to create our second historical summary, the newsletters are the only piece of history we have left to go on.

Thus the focus of this issue of our newsletter is to highlight what has been an amazing year so far for our society meetings and community involvement. It also announces a lineup of presenters this spring that we are quite proud to bring to the astronomical community of Philadelphia and the Franklin Institute.

Astronomy Picture of the Day



Special Event Special Meeting Date Saturday January 9, 7:15 PM Franklin Institute

Robert Nemiroff, creator and editor of the very popular Astronomy Picture of the Day website will be sharing a selection of pictures from his unique perspective as the creator of this website. Dr. Nemiroff also plans to share some favorite astronomical related movie clips. An astrophysicist from Michigan Technological University and NASA Goddard, his PhD. was earned locally at the University of Pennsylvania in Astronomy and Astrophysics. Members from all area astronomy organizations are welcome to attend as we welcome the return of Dr. Nemiroff, a hometown favorite.

Upcoming in 2016



Dr. David Bradstreet / February 10, 2016 "Astronomy education remains an exciting and sorely neglected discipline in our schools. I envision that digital planetariums, when used creatively and effectively, can revolutionize and revitalize the astronomy education community and stimulate people to look at planetariums in an entirely new way." Dr. Bradstreet will share some of his research into binary star systems with some amazing findings and associated visuals he has developed.



Greg Kennedy of NASTAR will be our guest presenter this **March 9, 2016**. Mr. Kennedy will share some achievements and accomplishments made in the private space exploration. NASTAR is local just outside Philadelphia in Southampton PA. Their summer program is open for student enrollment!



April 13, 2015 Meeting: Dr. Derrick Pitts- Chief Astronomer- of the Franklin Institute, will join us to ramp up for the Philadelphia Science Festival this Spring. City Wide Telescope is an event we have supported annually since the inception of the City Wide Telescope event.



Philadelphia Science Festival / Science Carnival April 30, 2016

Our Society participates in the Science carnival with a booth that highlights a constellation "Shoot Out" We are in need of volunteers to assist us at this day long event.



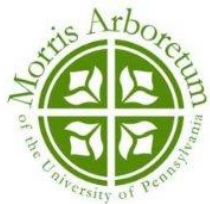
May 15 Meeting

Solar Observer **Rodger Kennedy from the Albuquerque Astronomical Society** will meet with us to better understand solar observation for the upcoming year of the eclipse. **Alan Daroff, Vice President Emeritus** may also be shedding some light on this topic.



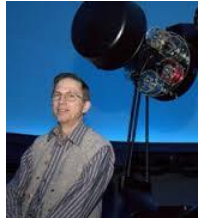
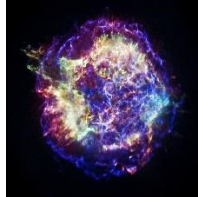



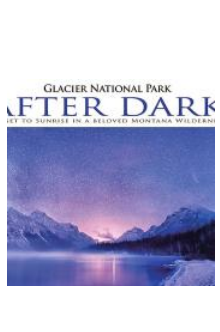

OPEN HOUSE NIGHT / JUNE 8, 2016
MEMBERS WILL PRESENT ASTRONOMICAL TOPICS OF THEIR INTEREST OR PASSION

| | |
|--|--|
| <i>Asterisms</i> | Lynn King |
| <i>TBA</i> | Renee Stein |
| <i>Eclipse, Transit, Occultation</i> | Adam Chantry |
| <i>Celestial Soudscapes</i> | Dan McCormick |
| <i>Star Clusters Globular, Open & Associations</i> | Ted Williams |
| <i>This is Rocket Science</i> | Dave Walker |
| <i>TBA</i> | Denise Vacca |
| <i>TBA</i> | Cameron Planchard |
| <i>Topic of Members Choice</i> | Your name here? Members, contact Ted Williams if you would like to present an astronomical topic of your choice. |



SUNDAY JUNE 12; SOLSTICE STEAM PUNK EXPO AT MORRIS ARBORETUM
We have again been invited to participate as purveyors of the Sun and provide telescopic views of our closest star in the Arboretum Gardens for visiting Steam Punk Expo participants. Volunteers with proper solar viewing equipment needed to assist us.

Some amazing past events have occurred this academic year. The New Year marks a proper time to document some of the recent guest presenters along with some of our community service projects our members helped to create.

| | |
|--|---|
| <p>Our Past December 9th Meeting. Guest presenter Keith Johnson's many experiences include graduate work at Kitt Peak National Observatory (now the National Optical Astronomy Observatory) and the NRAO 36-foot radio telescope and the Stewart telescope. Once in the planetarium field his professional support stepping up in service for the Southwestern Association for Planetariums, the Pacific Planetarium Association and now for the Middle Atlantic Planetarium Society as well as the International Planetarium Society, provided opportunities for Keith to travel around the world visit various astronomical facilities both of educational and research emphasis. Keith shared a world of travels and experiences with our membership. Keith celebrates his career at the Edelman Planetarium at Rowan University.</p> |  |
| <p>November 11, 2015 was a treat with two guest speakers. This meeting featured Eric Briggs from Spitz Incorporated. Eric has recently discovered another (yes another) super nova! We found out how he did it, and what is happening to these important discoveries. Joe DePasquale (Chandra Observatory) also presented "Visualizing the X-ray Universe" Currently in it's 16th year of operations, the Chandra X-ray Observatory, one of NASA's greatest. Joe has helped transformed our understanding of the cosmos from the constructive imaging he helps create viewing the hot gas around black holes with the X-rays captured by the Chandra Observatory..</p> |  |
| <p>This Past October 17 ~SHIVERFEST!~ We participated at Riverbend Nature Center's 8th annual slightly spooky, but always friendly fall festival! Shiverfest is Riverbend's most entertaining night of the year, with visitors enjoying a fun, family-friendly event. Rittenhouse Members were stationed at the end of the Haunted Trail and assisted with some Ghostly Sightings!</p> |  |
| <p>On October 14 Dr. Emily Rice came in from New York to address our society members. Brown dwarfs might be "failed" stars but they are also excellent analogs for gas giant planets, including the young, massive planets being directly-imaged around other stars with instruments like the Gemini Planet Imager and Project 1640. I will explain why we study brown dwarfs, the history of their discovery, and some of the most recent research results, as well as the importance of brown dwarfs for understanding exoplanetary systems.</p> |  |
| <p>October 9-Supporting the Conowingo Dam in their first astronomy night, fellow members Derrick, Al, Ted, Clyde Mike and Renee provided telescopes and astronomy talks. Although the night was clouded over, a great crowd of folks turned out and Al, Derrick and Ted presented to 80 of those interested enough to attend an astronomy event in bad weather.</p> |  |
| <p>September 9, John Ashley "The Nature of Night -- What We've Lost, What We've Found" Just 136 years after Edison's first lightbulb patent, we are losing our dark, night skies all across the globe. Without realizing it, we have traded the Milky Way for an alien orange glow that smothers the stars. After evolving with darkness for millennia, this relatively sudden shift to brighter nights is causing human health problems and ecological havoc for most of the plants and animals that we share this little planet with. Too much artificial light, too little real darkness. It's a modern problem that's easy to fix. Mostly what's missing is an awareness. John's program for the RAS was a gentle nudge to help us all wake up and rediscover the night sky.</p> |  |
| <p>September 4,5,6 We Escaped to help host the first Medicine Wheel Star Party in the Bighorn Mountains in Wyoming. High County Lodge is only 2 miles from Medicine Wheel and is located under some of the darkest skies in the Nation. Plans are being made to return this September 9,10 and 11 of 2016.</p> |  |

Project: National Outreach: Bighorn National Forest / Wyoming

Proposal: M.Mountjoy, T.Williams :Rittenhouse Astronomical Society

Inspiration: The Rittenhouse Astronomical Society has assisted and supported the Philadelphia Science Festival and Science Carnival on the Parkway since its inception. The festival started as a Franklin Institute initiative in 2010 with Rittenhouse as a founding partner and has grown into a City Wide celebration of Science, now with over 200 participants from a wide spectrum of businesses, colleges, universities and trade organizations.

The goal of the Festival is to bring science to the local neighborhoods that constitute the City of Philadelphia, although interest and participation extends to areas beyond the municipal border. Populations of particular interest were less advantaged neighborhoods with many individuals that may not find visiting the Franklin Institute to be a budget priority. Sharing a view of a planet or the moon through a telescope is 'miraculous' to folks who have never such an opportunity. The Festival has been a documented success and grows each year to encompass as many participants as possible. For the Rittenhouse Society, it has been a very beneficial connection since our mission is to bring astronomy education to the general public. Most of our participating members have returned multiple times to assist with the festival.

We have experienced that our website which has maintained its original URL address has grown in popularity over time. After an active presence on the web for 10 years, we are now high on many of the search engine listings. Search "Astronomy Philadelphia" and we are in the top 5 results. We now receive contacts from people around the globe inquiring about us, asking to be members, inquiring about our guest speakers. Many of our meeting visitors are visiting Philadelphia tourists that once hearing of us, plan a night around our meeting (a free educational night out in the city.) and possible views of the night sky through the rooftop Bloom Observatory.

Another initiative of The Franklin Institute has been the Citywide Telescope Night, led by Dr. Derrick Pitts and supported with a grant from the National Aeronautics and Space Administration. The City of Philadelphia is a partner in the effort and both The Franklin Institute and the City of Philadelphia rely heavily upon the members of Rittenhouse for this event to function properly.

Rittenhouse's has also assisted in the effort by actively promoting City Wide Telescope Night by word of mouth, through the Rittenhouse's Web Page and through social media outlets. Many of our members are pleased to assist with City Wide Telescope night and find the experience very fulfilling.

To encourage people to visit the Franklin Institute, we let them know they are welcome to attend Rittenhouse meetings, which are free to the general public. Membership is encouraged but not required to attend. Meetings of the Society are distinguished from other area astronomy clubs by the program setup, which has a long tradition of appearances and presentations by recognized leaders in various scientific endeavors, almost all of which relate to the astronomical interests of the membership. The presenters and their evening topics are publicized on our website and Facebook Page. It is also known that many in our society harbor a desire to observe from the darkest skies possible.

Objective: To assist in the continual development of the Franklin Institute's national awareness (our host organization) and subsequently that of the Rittenhouse Astronomical Society. To accomplish this we will search out dark sky locations across the nation and conduct public star observation sessions, commonly referred to as star parties.

To help meet the desires of our members and the public to find the darkest skies for observing and to gain Rittenhouse Astronomical Society a national presence, we wish to extend the Franklin Institute model of astronomy outreach to its surrounding neighborhoods into a national outreach.

For locations that are willing to join with us as hosts we will provide: Amateur Astronomer(s) well versed in astronomy to give optional daytime/evening presentations on astronomy. Sky Guide(s) equipped to give sky orientations for evening sky observations and telescope views of the heavens with an operator that can guide the scope to deep sky wonders. The astronomers will also offer alternative nighttime presentations during inclement weather.

Preparation: This past September 9 (2015) we hosted John Ashley at the Franklin Institute. Mr. Ashley is a photographer, author and naturalist who would talk about Light pollution. His recent book "Glacier National Park After Dark" attracted our attention and we planned to meet him in Montana to check out his work (local arts festival in Kalispell) and get a feel for what he would convey to our membership. While visiting Mr. Ashley to view some possible western sights for astronomy outreach, we started with the darkest sight in the nation, the famous astronomical site "Medicine Wheel" in the Bighorn Mountains in Wyoming. While there, we identified a new lodge near to the Medicine Wheel entrance. Wyoming High Country Lodge has guest accommodations for about 50 people in lodge rooms or in cabins. A large meadow adjacent to the lodge is available for campers visiting the event.

Lodge managers Matt Edwards and Emily Marcus informed us of their interest in hosting a public star watch at the lodge. Mr. Edwards was also an amateur astronomer. We accepted the invitation to attend the High Country Lodge and established a date for one month later on Labor Day weekend September 3,4, 5 and 6 to visit the site and facilities at the lodge, prepare a short program, and gauge the degree of public interest with only a short promotion period.

Local presenters were also lined up to augment our program. The augmented presentations included:

- A Marine Biologist on seeking out life in our solar system.
- A local prospector on local gold prospecting that is very popular in the Bighorn Mountain regions.
- A presentation on building a DIY telescope.

A website was developed to promote the event and was mailed to our members, posted on our public portal, our private membership site, and shared via Facebook on both Rittenhouse and Wyoming High Country Lodge websites. The web page is located at:

<http://www.rittenhouseastronomicalsociety.org/Pages/Hi.htm>

The program agenda is included below.

- 1) Dobson 12" telescope, sighting scope/device, eyepieces
- 2) Lasers (5mw) for sky observation
- 3) Star Maps for attendants covering September and October
- 4) Welcome to Astronomy Magazine for those interested
- 5) Projector for alternate night presentations indoors
- 6) I-Pad for media shown on projector
- 7) Image Stabilized Binoculars preferred, 7x 50 alternate recommendation.

Past Event Report

September 4 , 5 , 6 , 7/ 2015

Wyoming High Country Lodge Star Retreat

"The Closest you can stay near Medicine Wheel!"

1. Well versed Amateur Astronomer(s) assist in organizing and running the event;
2. Laser tours of the night Sky provided during evening observation sessions for orientation and binocular searches;
3. Provide alignment and orientation of telescope view of planets, moon or deep sky sights visible that evening;
4. Alternate indoor evening presentations in case of inclement weather;
5. Afternoon Presentations for those attending event.

Schedule of Activities: Outdoor observation would be conducted along with Laser assist binocular viewing each evening at twilight. To prepare for inclement weather, a list of 45 minute alternate presentations was developed for the event to include:

Friday Night

Star Map Orientation utilize Abrams Sky map and Calendar and Planisphere app (Presentation by RAS) *Moon-Phases Features* (Maria, Craters, Rays) observing tips using Moon Globe app. (Presentation by RAS)

Saturday Afternoon and Night

The Planets -Utilize Solar Walk app (Presentation by RAS) *Search for Life in our Solar System*- Presentation developed by Emily Marcus *Making a Telescope*-Presentation developed by Matt Edwards *What should I Purchase? What's the Difference?* -Binoculars vs. Telescopes (Presentation by RAS) *What are we Looking For?* Globular Clusters, Open Clusters, Nebula and Galaxies (Presentation by RAS)

Sunday Afternoon and Night

Exoplanets- Utilize Exoplanet app (Presentation by RAS)

Prospecting for Gold and Gemstones, Environmental effects of Mining-Presentation by local prospector Casey Edwards

Laser Safety, Drone implementation demonstrations by Mike Mountjoy (RAS Presentation)

Charles Messier: What are those "M" objects? (Presentation by RAS)

The above events were offered to lodge guests and visitors.

Proposal / Future Considerations:

Proposal:

We are proposing to conduct the event again, there is continued interest from our hosts at High County Lodge. They have proposed the dates of September 9, 10 and 11, 2016. We are looking for a combination of support, funds and donations to fulfill this initiative.

Cost Analysis

| | |
|---|---------|
| • Air Travel for two to Billings, Montana | \$1,580 |
| • Car Rental | \$275 |
| • Equipment shipping to Wyoming | \$165 |
| • Equipment shipping to Philadelphia | \$155 |
| • Lodging (three nights for one person) | \$270 |

We recommend two individuals to haul telescope gear, both to assist with set up, take down, star orientations, guiding telescope. We are requesting technical assistance from the Franklin Institute to cover the cost of a technician to assist with the event. This may take the form of professional leave for the technician and travel expenses to attend the event.

Telescope was damaged cosmetically during shipment; challenges were encountered shipping on Labor Day Weekend. After conferring with Derrick Pitts, Chief Astronomer of the Franklin Institute, it was suggested that purchase of a telescope to be shipped in advance, built on site, and left for possible future presentations is a viable alternative. 2" Eyepieces can be provided by assisting amateur astronomers.

-Recommended Scope, 12" Dobsonian Orion Intelliscope \$1700.00

Project Stellar

Proposal for Astronomical Community Outreach Facility: Submitted by AI Ryan

1. Description of the Project

Project Stellar will have the primary goal of bringing an additional education/recreational facility to the Muddy Run area communities. Solar Energy will be a permanent focus and attractant of the facility, but the facility will provide outreach and serve as a resource for students and teachers in local schools and colleges for astronomy, physics and STEM₁ related subjects.

The Facility will house a professional grade telescope that is fully automated and suitable for both daytime observations of the Sun and nighttime observations of the sky. The facility will provide a space for public speakers, both indoors and outdoors, and maintain a library suitable for grade levels 3-12.

The Rittenhouse Astronomical Society² (RAS) will provide personnel for the design and construction oversight of the facility, and will provide for monthly star parties with professionals³ in the field to speak at these events. RAS will also team with local organizations such as UPenn, Swarthmore College, Chesmont and Delaware Astronomy Clubs, and others to sponsor some of the planned events. Special events will be held once each season and on the occasion of rare astronomical events.⁴ Additionally, time may be reserved for use of the observatory and equipment for private research projects.

The Facility grounds may also be used for other events scheduled at Muddy Run Park such as the Family Fall Festival, Muddy Run Open House, Fun Fox Hunt, Concerts, Nature-related celebrations, Community Picnic/Meeting (outdoor area) place.

2. Site Location and Security

The location of the facility will be near to the Muddy Run Visitor's Center. The exact and optimal location is yet to be determined. Security will be maintained by Exelon but should not involve any greater expense or effort than already extended for security of the Visitor's Center. Insurance will also be under Exelon's existing form of coverage. As the use of the facility and events will be without charge, there should be no need for personal injury insurance under Pennsylvania law.

3. Proposed Structure and Equipment (Alternative 1)

To facilitate both public outreach, serve as a teaching tool and allow for research by the astronomical community⁵, a rooftop roll-off facility with a covered speaker area and projection screen is proposed. The building will be combined with an outdoor natural amphitheater seating area. The outdoor area will allow for open area presentations and space for members of the public to set up their own telescopes on star party nights. Examples of a domed observatory a rooftop roll-off observatory and one illustration of an open air amphitheater are shown at the end of this proposal. The observatory's roll-off roof and all computers and equipment will be powered by a solar system with a backup generator.⁶

¹ STEM - Science, Technology, Engineering and Mathematics

² Rittenhouse Astronomical Society (RAS) is one of the oldest amateur astronomy societies or clubs in the country. It is known for its public outreach and since 1933, has awarded the Rittenhouse medal to many luminaries in the field of astronomy..

³ RAS members will typically preside over each event at the facility and operate the equipment .

⁴ Typically, an event would be held for each Equinox (Spring and Fall) and each Solstice (Summer and Winter). RAS would also host a special event such as a solar or lunar eclipse, cometary passage or other types of events unlikely to be witnessed for another generation or longer.

⁵ By appointment, local amateur astronomers associated with established clubs; students and faculty of partner colleges and universities.

⁶ No heating system is necessary for the observatory, however a small warming room for the operator may be equipped with a small portable heating unit.

Table 1 Costs (does not include site preparation)

| Item | Cost |
|--|---------------------|
| Modular Roll-off Roof Observatory or fully accessorized MaxDome | \$15,000 - \$20,000 |
| *ASA 400 Telescope | \$33,600 |
| *ASA DDM85 Direct Drive Mount | \$15,000 |
| Computer System | \$6,000 |
| Software and licenses | \$2,400 |
| Accessories (eyepieces, filters, cables, projection camera, power regulator, etc.) | \$3,000 |
| | \$75,000 - \$80,000 |

*These are top of the line items.

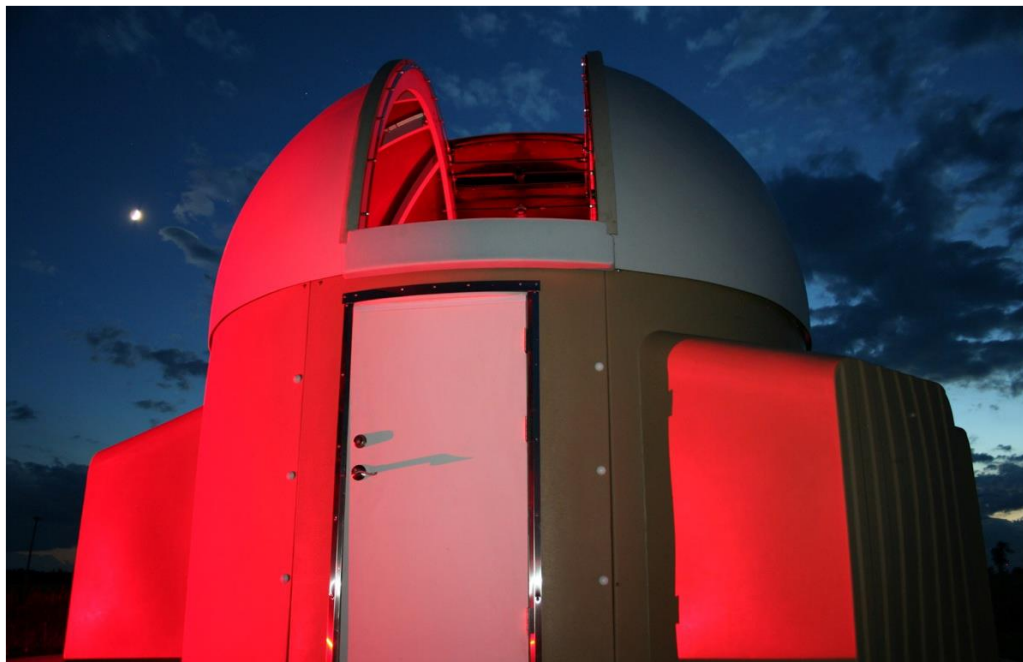
4. Proposed Structure and Equipment (Alternative 2)

A second alternative would be to use the existing Muddy Run Visitor's Center's rooms and facilities for the public outreach components of the teaching and exhibition uses. An added structure would be the actual observatory. Conceivably, the observatory could be built as an addition off the side or rear of the existing building and could take the form of either a domed structure or a roll-off green or solar paneled rooftop. Costs estimates would be comparable. The outdoor amphitheater would not be necessary and site preparation may be considerably less.

5. Public Outreach

RAS will be responsible for scheduling and conducting:

- At least one annual Exelon sponsored star party
- One Spring and one Summer Special Public Events
- Conducting classes, workshops and presentations on topics of interest geared toward ages 10 – 18.
- Providing presenters for all of the above.
- Coordinating with local schools and local astronomy clubs and developing school projects in conjunction with the PECO/Franklin Institute/NEED curriculum enhancement program.





Roll Off Roof on The Franklin Institute's Bloom Observatory

