



NEWSLETTER

Summer 2017

RITTENHOUSE ASTRONOMICAL SOCIETY

Founded 1888 WWW.RITTENHOUSEASTRONOMICALSOCIETY.ORG

MONTHLY MEETINGS OPEN TO THE PUBLIC

September to June

7:15 PM

The Franklin Institute

20th Street and Benjamin Franklin Parkway

Upcoming Meetings/Events Include:

Table with 2 columns: Image/Logo and Event Details. Rows include West Jersey Astronomical Society (July/Aug), Wyoming High Country Lodge (Aug), University of the Sciences (Oct), Muddy Run Observatory (Oct), and International Dark Sky Association (Nov/Dec).

President's Message

~Ted Williams

As Earth carries us into the summer season, we look forward to summer training sessions at the Muddy Run Observatory. We are in preparation for its grand re-opening this fall with summer observing sessions both at Batsto and Muddy Run.

After a review of our first survey conducted at our May meeting, I feel we are on target with what we offer our members. Our board has laid a foundation for members to build on. It was very gratifying attending the City Wide Telescope Night planning session to see 17 members of RAS involved with this outreach effort of the Franklin Institute. Many have personally shared with me some



Rosecrans Memorial Airport St. Joseph's, Missouri

great reviews of their night out under the stars.

I feel good knowing we offer our members some amazing opportunities for astronomical observation. To have an observatory for use at a dark sky location is a unique opportunity for all of us to get involved together to make educational outreach at Muddy Run a success. I look forward to working with members this summer at Muddy Run Observatory and look forward to seeing you at the scheduled Public Star Watches.

Saint Joseph's Missouri is our target for members interested in witnessing the Solar Eclipse. We plan to meet on August 21st, at Rosecrans Memorial Airport to share the experience. Afterwards, some plan to head on out to Wyoming High Country Lodge for our Medicine Wheel Star party afterward. I hope to see you under the real stars (not just our planetarium views) this summer.



City Wide Telescope Night at Glen Foerd Estate on the Delaware River

Philadelphia Science Festival Rise to the Challenge

~Ted Williams

Much thanks to Dave Walker, Henry Blanco White, and Lynn King who assisted at the Philadelphia Science Carnival at Penns Landing with our solar viewing. I had the opportunity to attend the event as David Rittenhouse this year. It gave me an entirely new perspective on the day and appreciation of what this event has evolved into.

In previous years we have had an exhibit tent which in our last year highlighted a constellation shoot-out of sorts. It was enjoyed by all who stopped by, but it required constant interaction and a good number of volunteers to keep all involved happy. Lacking the volunteers for this exhibit last year deemed that we cut out the exhibit tent



City Wide Telescope Night at Laurel Hill Cemetery

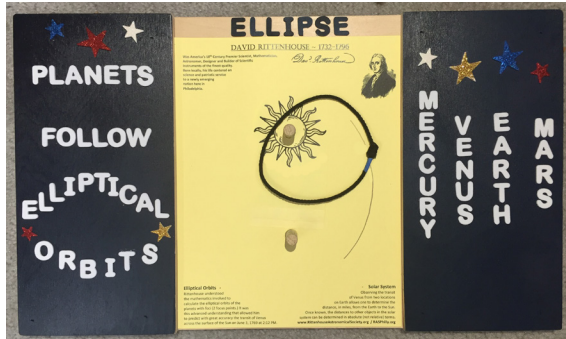
this year. So instead, we teamed with the Franklin Institute Astronomy exhibit as our base of operation. Members of Rittenhouse spread our solar scopes about their exhibit tent. Lynn interacted with visitors as Carolyn Herschel (first professional female Astronomer) and I developed and delivered an ellipse activity, as David Rittenhouse. I guided elementary through high school students, by first demonstrating, and then by encouraging them to draw an ellipse using two foci. The result of their work was a take home guide sheet with an explanation of elliptical planet orbits and some background on the mathematical genius of David Rittenhouse.

I believe Lynn and I were photographed over 100 times, as Carolyn Herschel and David Rittenhouse. Often posing with children as they showed off their ellipse diagrams. I felt the experience to be a joy to perform. It was unbelievable just how fast the time passed! Lynn and I realized we were the only colonial historic representatives we had seen at the Science Carnival and hope to re-create the roles next year.

Getting a break for lunch was a first for me in the 6 years I have attended and allowed me the opportunity to walk the Carnival (first time ever) to see the wide variety of activities and interactive lessons set up for the day. I usually only see the exhibits in our immediate area which all tend to be astronomy or space science related. Seeing all the varied fields of science represented and the number of organizations, schools and business that support this event made me all that much more proud to participate.

I'd like to encourage more members to get involved in supporting our educational outreach at The Science Festival and City Wide Telescope Night next year. I would hope that you too can experience some joy as together we battle scientific ignorance by sharing astronomical

understanding. Our country needs to engage young minds by participating in science, and then nurturing that early interest into related career areas. At Rittenhouse, we have an opportunity to rise to the challenge, while having fun at the same time.



Ellipse Activity Board from Science Festival

You Just Never Know

~Ted Williams

Observational astronomy is a quest of sorts. For those of us with the observing bug it is most times the quest for the best view possible.

Over the years of observing, I find myself viewing many of the same targets over and over ever hoping for optimum conditions. Lots of factors need to be favorable including cloud cover, wind, transparency, seeing, and humidity. With all of that in one's favor, you still need to find that magic moment. The moment when all calms to crystal clarity. The moment, even on the best of nights, can be fleeting but it usually requires an extended observation, while seated, with eye to the eyepiece.

This is not what one usually gets early on at our public star events as we are usually sharing the view as brief glimpses with all those visiting. But after the visitors leave, and many do early, due to the cold, dampness or just the late hour for young visitors we get some prime observing time.

That was the case on Saturday, May 20, 2017, at Batsto. Weather conditions looked terrible all day and during the drive over. I only attended hearing that Joe Stieber (longtime member of RAS) was going no matter what the conditions. All officers I conferred with felt the conditions did not warrant a trip. I just wanted to talk with Joe about our public star watches to come at Muddy Run and really did not care about the conditions.

That night, in the dark, a father and his daughter approached and asked if they had met me as David Rittenhouse. I was shocked. I inquired where and how could they tell it was me (or David R.) in the dark, since as D. Rittenhouse I use dress in colonial attire and don a wig.

His daughter had recognized my voice and said she still had her ellipse I helped her draw as David. They thanked me for suggesting this star party and told me I was the reason they were attending. At that moment, the clouds broke and the man, his daughter and myself enjoyed an amazing view of the Red Spot of Jupiter just reaching the meridian of the planet. A few more galaxies and the two visitors left overjoyed. I was overjoyed that a few more had attended due to my involvement at the Science Festival.

Then it happened. The conditions converged and the sky was clear as crystal. For those left, Joe Stieber Bernie Hosko, Suzanne Leap, and myself, the night was awesome. We observed over 15 galaxies, and as many star clusters. Bernie and Joe would challenge each other to find objects in as few 'sweeps' as possible. No automation here, just dead reckoning and good memory to find those deep sky wonders. I was treated to my summer self-challenge that I shared with those attending our June meeting, a view of the Sombrero galaxy clearer than any I had previously observed. Throw in a visiting comet, C/2015V2 (Johnson) and Joe's explanation of how to see it's motion, the night turned into a dream night of observation.

I had a tough time pulling out by 1:00 AM as Joe kept teasing, "look Ted I found another..." I drove home in a state of extreme satisfaction knowing the conditions had occurred for extreme clarity of our observations, and just as important, the gathering and camaraderie of observing friends. The night proved that you just never know (in this case, how good it can get!)



Comet C/2015V2 (Johnson)

Now You Know!

~Joe Stieber

As Ted indicated, it was pretty much a toss-up whether or not to go to Batsto that Saturday night. On the basis that I would rather not miss an observing opportunity if it cleared, even if it meant the possibility of seeing nothing but clouds, I decided to go since if I stayed home, I definitely wouldn't see anything. Suzanne and Ted evidently decided the same thing and they were there too. As it turned out, it cleared up shortly before the end of astronomical twilight, which was at 10:03 pm. Except for a brief passing cloud, it was still clear when the last couple of us of left just after 2 am Sunday.

My 12.5-inch dob is still in the shed (since last summer), but I had the reins of my friend Bernie's 13.1-inch dob, so we saw lots of the usual stuff you would expect to see this time of the year, for example, Saturn and Jupiter (with the GRS), a number of galaxies, some double stars, globular clusters, planetary nebulae and so on. For me, the highlights of the night were a supernova and a comet.



SN 2017eaw en NGC 9646 | 12.87CV | 2457893.51956 - 20170520.01956
20h34m44s.24 +60°11'35".9
Juan-Luis Glez. Carballo | Obs. Cerro del Viento | MPC 184
SC 0.2-m | CCD KAF8300 | F10 | 25x100"

SN 2017eaw was discovered in NGC 6946, a galaxy centered in Cygnus

Just over a week ago, SN 2017eaw was discovered in NGC 6946, a galaxy centered in Cygnus, but the SN is just across the border in Cepheus, 2° from Eta Cepheii. It's relatively bright (about magnitude 12.8 on Saturday night), so it is currently accessible to a modest amateur telescope. Shortly after the end of twilight, it was too low in the northeast to see, but at 12:45 am, I spotted it with the 13.1-inch at 166x. There was a definite match with my finder chart. S&T online has a good story about SN 2017eaw, complete with finder charts,

The other object was C/2015 V2 (Johnson), one of the four comets I saw in half an hour in early April. At the time, it was barely visible in 16x70 binoculars, but it has developed nicely since then. It's easy in the 16x70s now and was a fine sight in the 13.1-inch. Interestingly, it passed between a pair of field stars in Boötes (and pretty close to one of them) during the several hours I checked on it. The movement with respect to those stars during that time was obvious. S&T online also has a nice article about this comet, again with finder charts.

A fine night!



It's Not Rocket Science: Venus, your Sole Desire: Part I

~Dave Walker

The Shining

Last Autumn, as the Sun dipped below the horizon, and the sky shades to a deep blue, gleaming in the West was the brilliant light of Hesperus, Ishtar, Vesper...

Venus!

Rising further off of the horizon at Sunset night by night, Venus put on a brilliant show from late November, through the end of March this year. Astute observers caught the courtship dance as Venus approached Mars in February; Earth's two closest planetary neighbors illuminating the Winter sky. The pair will not be close again until early October to repeat the ballet.

Now Phosphorus, or Lucifer, the bringer of light rises leading the Dawn. Having passed between Earth and the Sun (Inferior Conjunction), Venus returns to us in the wee hours of the morning at the beginning of April and will bit at it's most brilliant on the 30th. Venus will stay visible from the Philadelphia area until early Winter. Keen observers will see it paired with Mercury, the Crescent Moon, and Mars, as well as several brilliant stars this Autumn, including Spica and Regulus. Early risers will be well rewarded. For

late risers, Venus will return in February 2018 to the night skies after passing behind the Sun Superior Conjunction) in January.

Her Dance

Why does Venus appear only near Sunset and Sunrise? Venus orbits the Sun inside the orbit of the Earth; from our point of view it never passes overhead. Every 224.7 days Venus completes an orbit. Twice during that period its position in our sky takes it too close to the Sun to observe: when the planet is behind the Sun in "Superior Conjunction", disappearing for 50 days, and when it passes in front in "Inferior Conjunction, lasting a mere 8 days. But, when she does emerge, she is brilliant, and not shy. Beaming brightly for almost 9 months at a time. At its peak Venus is 47 ° above the Sun at "Greatest Elongation". One of the most spectacular pairings is a bright Venus and a slim Crescent Moon in a sky tinted by twilight's changing colors. Grab a pair of binoculars or a telescope and you will see the planet go through phases like the Moon; but always be careful not to point your instrument too close to the Sun!



*Jerri Cobb; a member of the FLATS
(First Lady Astronaut Trainees)*

Vice President's Message

~Denise Vacca

Hello everyone, I would first like to thank all of our Members, Officers and Members of the Board for another successful academic year. We've had a lot of good times and a lot of great meetings. We've helped to open a new Observatory, awarded a Rittenhouse medal, and had some tremendous speakers.

Some of the highlights were Katie Fehlinger from CBS Philly. Katie gave us a fascinating talk about Astronomy and Meteorology. Peter Detterline shared his photos from his educational & fun trip to Chile for the Astronomy in Chile Educator Ambassadors Program program.

Derrick Pitts got us pumped up for The Philadelphia Science Festival. Once again, we educated and entertained people around the Philadelphia area to what you actually can see in the city, dispelling myths that there's no astronomical sites to be seen in urban areas.

Gianna Ferrell took us down under to see the Emu in the Sky. Drew Mazer showed us how to photograph the sun and tips for the upcoming Solar Eclipse.

We've learned about David Rittenhouse through Bunnie Riedel from Historic Rittenhouse Town and delved more into the characters of William and Caroline Herschel in the outstanding Herschel documentary featuring Lynn King and Ted Williams of our very own group... movie stars!!!

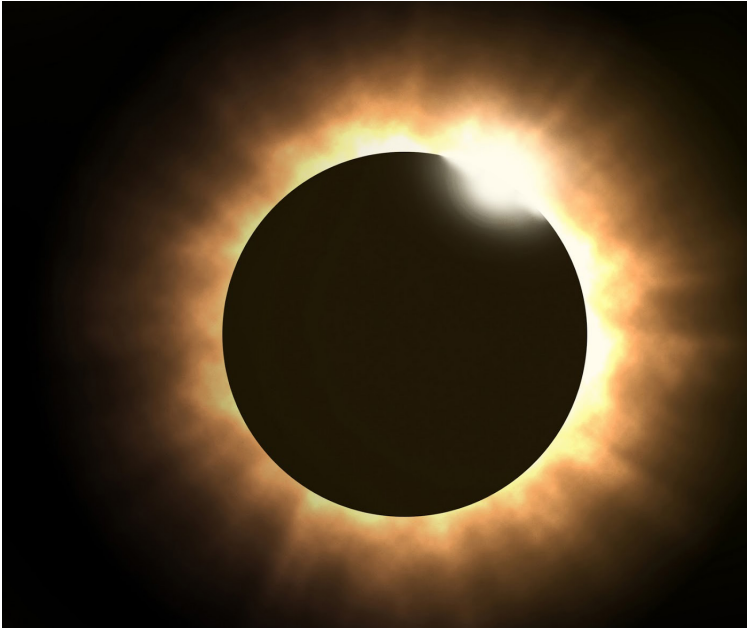
Joyce Town joined us once again with a history lesson on Armond Spitz and how some of the local planetariums were founded. It's always great to see Joyce back in the Fels Planetarium. (She is one of the people who started me on my astronomical journey & career)

I was fortunate enough to be a presenter for the May meeting. It was a very special subject for me, girl pride... how women fought and won their place in the Astronaut program.

And of course, let's not forget the wonderful rocket reports from Dave, Renee's planet reports and observing lessons from Ted. Dan gave us wonderful audio accompaniments, Mike and Dave helped get us through those pesky technical snafus, Ruth put together our newsletters and many, many other members, and even some in addition to our group (For example, daytime console operator Simon) helped out in numerous ways to give us yet another successful Academic year.

We're already working hard to make our upcoming year even better. There might even be a surprise or two.

So, thank you everyone for the past adventure. Have a great Solar Eclipse in August and I look forward to seeing you all in September.



The First Predicted Eclipse

~Al Ryan

Cyaxares: Whoa, what happened to the Sun. Why has our daytime battle suddenly become a nighttime battle?

Alyatte: Golly gee, I dunno. Maybe this seven year war has gone on long enough and the Gods are angered at us!

Cyaxares: Yeah, you're right. A shame we didn't listen to that fakir Thales. Tell you what: my son Astyages will marry your daughter Aryenis and we'll forget about this damn war.

Herodotus, that giant of historians, suggests in this tale (as a Hollywood screenwriter would have it) that the war between the Medes and the Lydians in 585 BC ended when the warring parties witnessed an eclipse on May 28, 585 BC as predicted by Thales of Miletus. Thus, this became not only the first predicted eclipse in human history, but also because astronomers can calculate the dates of historical eclipses with accuracy, the earliest historical event whose date is known with precision to the day- as Asimov wryly noted.

Of course Herodotus, being a great historian, also casts some measure of doubt on the accuracy of the tale. It isn't until Edmund Halley's prediction of the May 3, 1715 eclipse that we can say for sure when the first predicted

eclipse occurred, some 2,300 years after the Lydian-Medes battle.

But can we be really sure. Edmund Halley in 1691 predicted the 1715 eclipse by referring to the Saros cycle, a period of about 223 synodic months (18 years, 11 days, 8 hours). The Saros cycle has been traced by through the early Greeks to the Chaldean astronomers in the several centuries BC.

It all raises interesting questions. For example, the Thales prediction is pooh-poohed by some because to predict a solar eclipse, you have to have some working knowledge of the Earth-Sol-Luna system and relationship. It has been suggested that the moon coming between the Earth and Sun as the cause of eclipses was not known at the time of Thales, and wouldn't be until Anaxagoras, more than a hundred years later .

It must have made for interesting math if the prevailing thought was that the Sun revolved around the Earth, but then did the Greeks believe that back then? It doesn't appear that the Babylonians did. But by the time of Anaxagoras, perhaps they did. And then later with Ptolemy, did they forget???

Looking to the East, records suggests that the Babylonians and the Chinese were able to predict solar eclipses as early as 2500 BCE. The astronomers Hsi and Ho, so the story goes, were executed for failing to predict a solar eclipse, thus jeopardizing the health and success of the Emperor. When it occurred on October 22, 2134 BCE, it became the oldest solar eclipse ever recorded in human history. I suppose we may thus also have the earliest accurately recorded known deaths as well.

Eclipses can be fun, especially the myths surrounding them that we get from cultures around the world to explain why the Sun suddenly disappears, what caused it and how to get it back. For example:



Vietnam:	The eclipse is caused by a giant frog devouring the Sun.
Norse:	The eclipse is caused by wolves devouring the Sun.
Ancient China:	The eclipse is caused by a celestial dragon lunching on the Sun.
Ancient Hindu:	The eclipse occurs when the deity Rahu is beheaded for drinking the Gods nectar and his head flies off into the sky and swallows the Sun.
Korean Folklore:	Mythical dogs trying to steal the Sun.
Pomo:	Indigenous people of the NW US tell us that a bear started a fight with the Sun and took a bite out of it. Later, met the Moon and took a bite out of her as well (which is an interesting way of explaining why a lunar eclipse may follow [or precede] a solar eclipse by about two weeks).
Ancient Greeks:	The eclipse was a sign of angry gods and the beginning of disasters and destruction.
Tewa Tribe:	The NM tribe believed an eclipse signaled an angry Sun who had left the skies to go to his house in the underworld [or more likely to the Jersey Shore].
Inuit Folklore:	An eclipse happened when the Sun goddess Malina walked away after a fight with the Moon god Anningan and Anningan caught up with her. [This is the first reference I have come across where the Sun is Female and the Moon is Male]
Benin and Togo:	The Batammaliba use the eclipse as a teaching moment. An eclipse meant the Sun and Moon were fighting and the only way to stop them from hurting each other was for the people on Earth had to resolve all conflicts with each other.

India:	Fast during a solar eclipse because food cooked during an eclipse will be poisonous and unpure.
Everywhere:	An eclipse is a danger to pregnant women and their unborn children, who along with young children are asked to stay indoors during a solar eclipse.

What you can do to bring the Sun back: get together to bang pots and pans and make loud noises to scare away the demons causing the eclipse.

Or better still, follow along with Italy where it is held that flowers planted during a solar eclipse are brighter and more colorful than flowers planted at any other time of the year.



*Enjoy the Eclipse wherever you are!
Be Safe! Don't look directly at the Sun without glasses!*

The Quarterly Quote

With the arrival of spring and inevitably summer comes flowers, foliage, and, of course, the Virgo Supercluster. All this brings to mind the following quote:

“The world is so full
Of a number of things,
I’m sure we should all
Be as happy as kings.”

~ R. L. Stevenson

STEM



Science • Technology • Engineering • Math

STEM and RAS

~Alan Ryan

No, this article is not about how Rittenhouse Astronomical Society promotes Science, Technology, Engineering and Mathematics. But it is close to that. This article is about how RAS' mission can indeed have a rising effect on the general level of science education within the small community we affect.

There are some interesting facts and startling conclusions from a study reported in the January 31 Proceedings of the National Academy of Sciences by Christopher S. Rozek. For instance:

- During high school, developing competence in science, technology, engineering, and mathematics (STEM) is critically important as preparation to pursue STEM careers, yet students in the United States lag behind other countries, ranking 35th in mathematics and 27th in science achievement internationally. Given the importance of STEM careers as drivers of modern economies, this deficiency in preparation for STEM careers threatens the United States' continued economic progress.

- A study based on the theory that parental intervention conveying the importance of mathematics and science courses to their high-school-aged children confirmed earlier studies showing an improvement in mathematics and science standardized test scores on a college preparatory examination (ACT) for adolescents by 12 percentile points. Additional findings suggest that the intervention can affect STEM career pursuit indirectly by increasing high-school STEM preparation. This finding underscores the importance of targeting high-school STEM preparation to increase STEM career pursuit.

- Overall, the findings demonstrate that a motivational intervention with parents can have important effects on STEM preparation in high school, as well as downstream effects on STEM career pursuits 5 years later.

Science, technology, engineering and math is what we do in reaching out to the public to teach about astronomy. When a student asks a question after looking through a telescope, the answer may stimulate a question based on general science (how fast does light travel), or technology (how do those lenses or mirrors make the image so big), or engineering (what is the difference between a Newtonian and a Gregorian) or mathematics (why must we use the slingshot effect around Jupiter to reach the outer planets). So get personal and talk to students when we do our outreach, in our meetings, on the street, in the line at the movies...

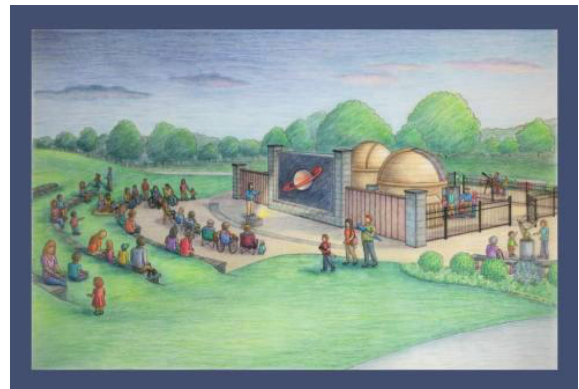
There is much ado about STEM these days. My own employer is heavily engaged in promoting STEM based efforts. It participates with TFI and NEED with its Energy Energizing program in augmenting local schools' science curricula, and recently awarded a \$150,000 grant to the Pottstown School District to promote STEM.

In these days of where "alternative science" is attempting to gain a foothold, it is important not only to keep looking up, but to keep students interested in asking why, how, where and when. We may not always see a kid have his "aha" moment during City Skies, but I have never left an outreach event where I wasn't certain that someone left wondering enough to find out on their own. And if RAS activities can engender that, then I think we are doing our job.

We diligently continue work on our Muddy Run Partnership and observatory. Details of the project are posted here:



Muddy Run Observatory
Holtwood PA
NASA Night Sky Network





The Domino Effect

~Alan Pasicznyk

Jon eased back on the controls of the hovercraft as he ascended another boulder strewn mountain ridge. He knew that he was rushing things a bit, but he wanted to be home in time for his father's birthday. It was a long haul from the Hellas basin to Syrtis Major, and he breathed a weary sigh of relief when he finally topped the last ridge and could see the illuminated circle of lights in the far distance which was Independence City, his home. The sun had just set, and to his left he could see the brilliant blue "evening star" that was planet Earth.

Because of the thin pink atmosphere, night fell quickly on Mars, and with it the bitter cold. It was enough of a drain on the fuel using the anti-gravs without having to switch on the heater. But somebody had to check on the robotic miners down in Hellas, and as was usually the case, several needed reprogramming to maximize the production of Technetium ore. Besides, it was his job, and where would the world be without Technetium 106 for cold fracto-fusion?

Oh well, he thought, at least Independence fits my lifestyle better than living with the rowdies who mined at Freedom City near Olympus Mons. After shutting down the craft and passing through several air locks, he finally came to his home module.

"I hope I'm not too late," he said to his wife Yvonne who had the homemade cake on the table already.

"No, that's fine," she said. "Deke just got here a few minutes ago and he's playing with the kids in the next room."

After hearing his voice, the children ran into the room.

"Daddy, Daddy, look what Grandpa brought!"

They were clutching a family album that looked as if it had been around since the Dark Ages. Finally Deke walked into the room.

"Hi, Jon. I thought I'd bring that old album along to show the kids. I haven't had it converted to Crystal yet, so you'll just have to be content with looking at flat pictures."

"Suits me fine... say, Kristin, Lisa. Come here and tell Daddy what Hank taught you today."

"Hank" was a synaptic digit analog home computer, family library, teacher, and, on rare occasions, mini-philosopher.

"Today was Math day," shouted Kristin.

"Well then, can someone tell me, if Grand-pop was born in 2046 and this is 2107, then how old is he?"

"Uhhh, vewy, vewy old," mused Kristin.

"Sixteeee one," answered his older sister very cautiously.

"You got it, Lisa, so now let's celebrate Grand-pop's 61st birthday."

After dinner and the traditional birthday cake, they all sat down around the couch to look through Deke's album. The pictures were all brittle and the colors faded to greens and yellows.

"And what dat one?" Kristin repeatedly asked his grandfather.

"That's a picture of my daddy, your Great Grand-pop on Earth."

"And what dat?"

"That's Great Grand-pop down by the ocean."

Kristin looked at the ocean and seemed puzzled. How could there possibly be so much water in one place?

"And here's one of Great Grand-pop getting his award from the International Space Agency, back in '39 I believe."

Finally they were coming to the last and oldest of the pictures.

"And what dat one," Kristin once again asked.

"That's Great Grand-pop when he was a little boy like you, with his Mommy."

"And what dem?"

"Those are old fashioned optical telescopes."

The once mended picture was badly cracked, and all the colors had faded to greenish-gray, but in the background, a small sign that was barely legible read "Welcome to Muddy Run Observatory."

(A special "thank you" to RAS member Barbara Siegel Ryan, who, quite unknowingly, contributed to the content of that last..final..sentence.)

Your Appointed Officers

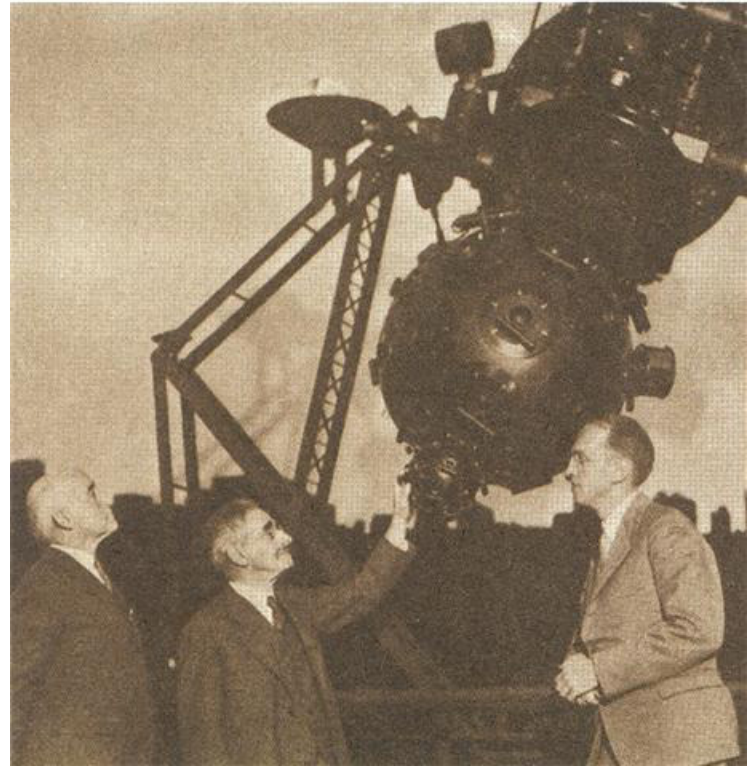
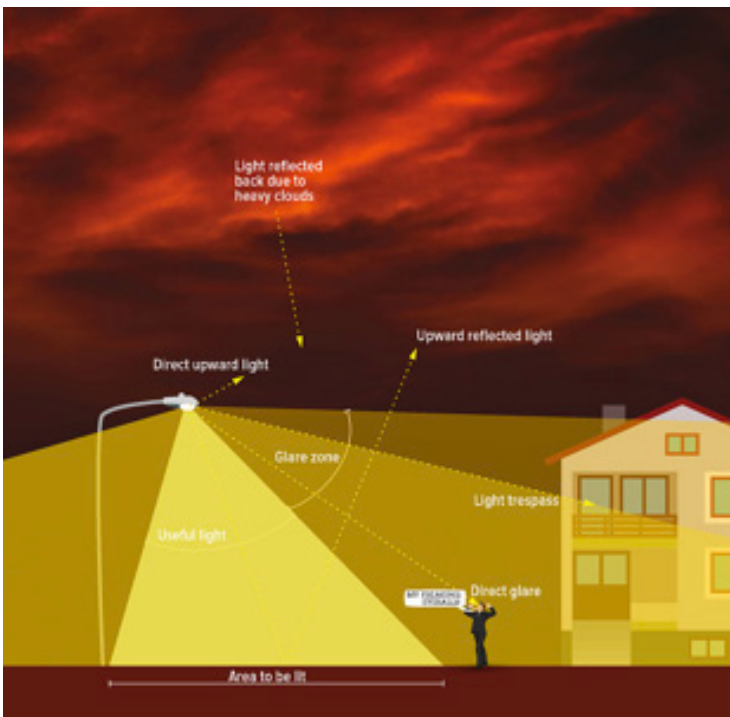
Here is a list of your current officers and Board members:

Officers	
President	Ted Williams
Vice President	Denise Vacca
Secretary	David Walker
Treasurer	Dan McCormick, Jr.
Board Members	
Fern Culhane - Registrar; Public Relations	
Ruth List - Newsletter Editor; Historian	
Mike Mountjoy - Instructional Technology Advisor	
Shawn Rush - You Tube Administrator	
Barb Ryan - Public Relations	
H. ALfred Ryan - Public Outreach	
Renee Stein - Educator	

Light Pollution Simple Ways We All Can Help

~ credit: darkskies.org

Light pollution is something that we all rarely think about in our busy, modern life style. Have you ever traveled out to the countryside and wonder why you don't see any pink clouds on a cloudy night? What we are looking at in the city is all of the 'wasted light' that is being projected to the skies above. If you have ever been far away from city light you know the dark 'inky black' skies you see when it's cloudy. This is thanks to little or no light pollution in that area. Let's take a step back and define light pollution. In its basic definition, light pollution is excessive and inappropriate artificial light. We all can do simple things to help our skies dark again at night. The simplest of them all is turning off unwanted lights when not needed - both inside and out. If you would like to have security lights on your property, install automatic sensors so we light up areas only when needed. Something else we all can do is change the kinds of fixtures that are on our lights. Many home centers have fixtures that prevent light from being projected up; instead all light is directed towards the ground where it is needed the most. Even if we can take the steps of safeguarding our light and directing it to where it is needed, we will all have darker skies one area at a time. I encourage everyone to take a look at all of the resources online about how each of us can take one small step for a darker night sky. It doesn't have to be dramatic steps. Just remember, turn lights off when not needed or change your lighting fixtures so we all can take back our night skies!



Dr. Howard McClenahan, Secretary of The Franklin Institute and Director of the Museum; Samuel Fels; and Dr. James Stokley, the Institute's Associate Director for Astronomy, admire the Mark Zeiss II planetarium instrument in the Fels Planetarium, circa 1933

A Historical Perspective

~ David Brown

My Early Days as an Amateur

I was 13 when I purchased my first telescope, an Edmund 4 1/4". I earned it by mowing lawns, shoveling snow, and doing myriad other small jobs for neighbors. I got it personally from Edmund Scientific Company, which was located 2 miles or so from my home. I had been inspired to do that by a neighborhood friend who showed me Vega through his 2" refractor, also bought from Edmunds. One night when I was 11 or so I took the 2" out under the stars, and pointed it at the brightest 'star' in the sky. Unknowingly I saw Jupiter for the first time, with its retinue of Galilean satellites. I thought I had discovered a planetary system around another star! Imagine the thrill of that to a young person learning that by himself. My older friend kindly laughed it off and said I was just looking at Jupiter and its moons after I told him about it later. Thus began my interest in learning more about astronomy, leading to the 4 1/4". Once I got the telescope I immediately realized I didn't know what I was looking at. Looking at a star for more than a couple of minutes becomes -- shall I say -- pretty uninteresting pretty fast to a 13 -year-old. I didn't

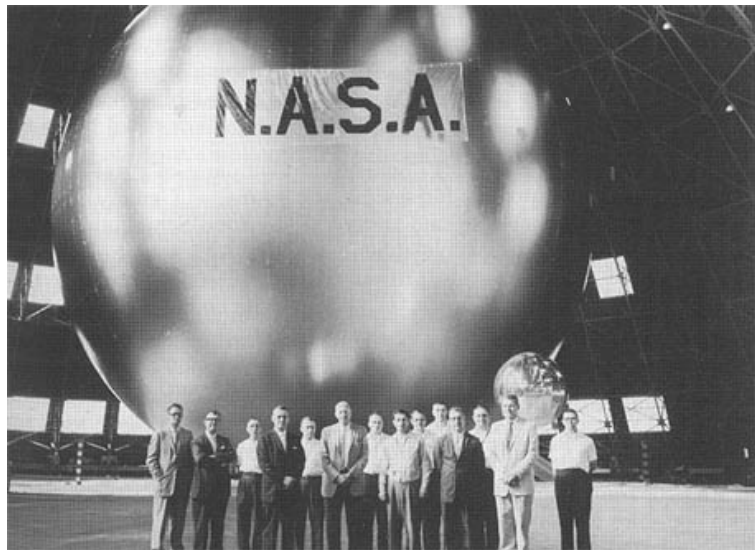
know about variable stars, or Barnard's Star zipping along, or other spectacular stellar characteristics yet. Another trip to Edmunds resulted in the purchase of a Norton's Star Atlas, the finest beginners atlas of the day. Then came the understanding that I needed to be able to relate the scale of the map on the page to the stars on the sky. But I had a home surrounded by quite a few trees. So, first, the challenge became learning the constellations as best I could peeking through the 'holes' in the treescape. But boy was that fun! It was a big puzzle that demanded solving..... One thing lead to another, and on a trip to the Fels Planetarium I learned about the Rittenhouse Astronomical Society.

I decided to go to a meeting. In those days, as I understand they do now, they met at the Franklin Institute in Philadelphia. Now to a 13 year old, we're dealing with serious stuff here. Fortunately, I was encouraged to go by my family. My father took me to my first meeting in what must have been in the fall of 1956. I remember that most of the members were well dressed: sportcoats, ties, sweaters, nice dresses, etc. People were much more formal then, which I now think is a good thing. And the talks people gave -- the members -- were pretty serious: Discussions of various observations and field trips they had made and the results of some real honest-to goodness calculations they did. Mathematics! Egad! To a kid, that's a revelation: Astronomy isn't just about observation. Oh, and they had a speaker who talked in deep, mellifluous tones about a subject that was totally unintelligible to me. But somehow this only piqued my interest even more. THIS was also part of doing astronomy! The sense I got of the members

then was one of great interest, calm, intelligence, and quiet warmth and friendliness. Afterwards, it was clear as I talked to my father on the way home, that I just couldn't wait for the next meeting. Thus began a longstanding relationship with the RAS, lasting until the mid-70's. What a pleasure it was.

My early days of RAS membership included the first days of the space program. After Sputnik, the world changed, of course. Coupled with the worry that America was behind in some ill-defined space race (ill-defined at *that* point in time), there were national security matters to worry about. So there was a general feel of excitement and adventure in the air -- momentous things were happening-- but there was a diffuse, ominous feeling to some of it as well. Explorer I did fly just months after Sputnik, lifting spirits, and there were banks of amateurs spotting satellites for Operation Moonwatch, so, there was great interest and enthusiasm flowing in the amateur community. I cannot remember if such satellite-spotting teams existed at the RAS or the Institute, but the RAS History indicates there was an active group. Among the members, individual satellite spotting activities did take place. For one, I clearly remember spotting the Echo satellite with my 4 1/4". I remember I convinced myself that I could actually resolve the disk of that huge, aluminum-coated mylar balloon while nudging my telescope to track it and all the while the telescope is vibrating every-so slightly. Hmmm... The definition of telescopic 'proof' certainly changes as you get more experience.

Ed Bailey was the assistant director of Fels Planetarium and a prominent member of the RAS, even in the 50's. As a youngster, and not having met him at that point, I distinctly remember Ed's Fels Planetarium talks. In those days, talks under the planetarium dome weren't 'programmed' and the speaker made the show using the planetarium projector to illustrate the points he wanted to make. No additional media were used. Ed was a master planetarian. His voice took on a tone, or timbre, that naturally induced wonder as he described the majesty of the stars to the listener. He had a way of telling stories and myths of the constellations, and relating descriptive astronomy that was magical. I was awestruck. Imaging meeting him at RAS at still a young age and talking to him, in his easy, gently humorous, intelligent way. What a privilege.



Project Echo was the first passive communications satellite experiment. Each of the two American spacecraft, launched in 1960 and 1964, was a metalized balloon satellite acting as a passive reflector of microwave signals. Communication signals were bounced off them from one point on Earth to another.

Rittenhouse Astronomical Society
P.O. Box 283
Feasterville, PA 19053-0283