



## NEWSLETTER

Spring Equinox 2013

# RITTENHOUSE ASTRONOMICAL SOCIETY

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

OPEN TO THE PUBLIC

7:15 PM

The Franklin Institute

20th Street and Benjamin Franklin Parkway

### Upcoming Meetings Include:

Date	Speaker	Topic
April 10	• Dr. Derrick Pitts Chief Astronomer Franklin Institute	Philadelphia Science Festival
May 8	• Dr. Milton Friedman RAS President	“David Rittenhouse: The Astronomer who Helped Save Philadelphia”
June 12	• Members Night	Members Night

## Our 125th Year!

We started off our Anniversary year with a celebration of sorts. Rittenhouse Astronomical Society is now in it's 125th year of service in astronomy and astronomy education. We started to think along the theme for this year as a 'greatest hits' of sorts. We don't necessarily follow a theme through our year of meetings as some do not attend all meetings but instead pick their favorite topics and attend on those evenings.

Dr. Robert Nemiroff kicked off our year at our January meeting. He has been a past guest speaker that our members greatly enjoy. He is the creator/editor of Astronomy Picture of the Day (APOD) Website. This site originated in 1994 and continues to be an amazing resource for those interested in learning about not only astronomy, but many related areas of study such as atmospheric phenomena (Aurora,) Planetary Science, Space Exploration and more.

We opened the January meeting with Joe Stieber filling in for Alan Daroff with the night sky report. Joe filled us in on some comets to pass Earth this year and some of the tricks involved when forecasting how bright they will be. Joe promised to keep us informed this year since we may have one of those once in a lifetime events when a comet is bright enough to be seen during the day sky.

Ted picked up on four basic shapes that would allow us to enjoy the year ahead. A giant Diamond, Triangle, Square,

and Hexagon were shared that are keys to understanding each season.

Lydia Marie, a speaker who has presented at the Hayden Planetarium shared some mythology with us allowing all to enjoy the sky from the oldest of perspectives. Our constellations carry mythological tales that relate to us the existence of humanity over vast periods of time, our interactions, feelings, adventures, and a multitude of gods and goddesses.

I think all attended had their breath taken away from some of the truly awesome views that Dr. Neimeroff shared with us. New this year was a selection of video clips that were a combination of live events, computer generated modeling, and special effects that again moved his presentation over the top! From the vast corners of the Earth, to the vast edges of our Galaxy and Universe the journey he provided proved most excellent as our opening presentation this anniversary year.

A clear crisp sky awaited all those visiting the observatory. Jupiter has graced our evening sky for some time now and was nicely position to catch what some said was the clearest they had seen, proving that clear cold nights with still air are sometimes the best of conditions to observe. We impressed Dr. Neimeroff who viewed Jupiter through the Zeiss telescope, along with his wife and daughter were also visiting Philadelphia with him.



Endeavor on the streets of LA : LA Times

## President's Message

*Dr. Milton Friedman*

Everything in the universe is moving. Some of our evidence is based on the American Television Soap Opera, "As the World Turns" which ran for 54 years on TV.

Picture a star with the mass of the sun compressed from nearly one million miles in diameter down to an object with the same mass only 12 miles across. During the compression the electrons and protons of the star are now neutrons. This happens when at the end-stage of a star, a supernova explosion takes place sending heavy elements out into the universe while the core collapses into a neutron star which ends up with a rapid rotation rate.

The neutron star that emits radiation is known as a pulsar of which over 1,800 are known. The neutron star has the equivalent of a bar magnet and an intense magnetic field. When the star is seen from Earth, its radiation comes out of the poles and viewed from here may seem to send pulses like a turning lighthouse.

If a neutron star forms a binary system with a normal star, the intense gravitational field of the pulsar can pull material from the surface of the normal star to it and may become an x-ray pulsar.

The first pulsar that was observed was seen on Nov. 28, 1967. It was observed by a graduate student, Jocelyn Bell Burnell and Antony Hewish. At the time, no one knew what it was and there even was a possibility that messages were coming from another civilization. LGM-1 was used at that time referring to "little green men." However, when a second signal came from another part of the sky, the possibility that this was an alien signal was eliminated.

A neutron star is so dense, one teaspoonful of it would weigh a billion tons. There is something called a millisecond pulsar. These are found in globular clusters and are thought to speed up as matter falls onto a neutron star. The fastest millisecond pulsar turns 43,000 times a minute which is 716 times a second. Meanwhile, a controversy developed when Jocelyn Bell did not receive the Nobel Prize for her discovery. Pulsars are not just interesting, they are a source of intrigue among the astronomical community.



## Dr. David Spiegel

*Astrobiologist*

*~Chris Richardson*

Greetings fellow Rittenhousers. I hope that you all enjoyed this past meeting's lecturer as much as I did. I was very excited that we had an astrobiologist finally come to give a talk. I know that some of you know that astrobiology is the field in which I want to study, so hearing Dr. David Spiegel's lecture was certainly enlightening as well as enjoyable for me.

Just to give a little background for those of you who may not be familiar with the term, astrobiology is basically the study of the origin and possibility of life in the universe. It includes many scientific disciplines, with astrophysics, biology, and chemistry being the more obvious ones, but also geology, paleontology, and atmospheric scientists as well. Astrobiology has become increasingly popular over the past few years. The discovery of exoplanets has really been the driving force behind the popularity, and, as we all saw, exoplanets are Dr. Spiegel's area of research. However, there have also been some other, and perhaps more promising discoveries, that have also aided in making astrobiology a promising and popular field of science. A perfect example has been the discoveries of amino acids (all life on Earth share the same 20 amino acids) which are vital for proteins which carry out necessary functions within all cells, and nucleotides (basically these are fundamental building blocks of RNA and DNA). These molecules have been found, not only in comets and asteroids, but also in interstellar space!!! How cool is that? The fact the these important molecules for life as we know on Earth have been found elsewhere in the universe seems very promising for the chances of life in the universe.

Dr. Spiegel's method of using Baye's theorem to calculate the chances of life was certainly new to me. Amongst all the optimism and skepticism about finding life in the universe, the only true way to know how rare it is, is to go looking for it. However, Dr. Spiegel's idea of using the Baye's theorem was certainly interesting, and it provided a much needed "devil's advocate" that all scientific hypotheses need. I actually did a little digging of my own into this theorem and found an article by Dr. Spiegel about a paper he referenced during his lecture. I found it on astrobio.net, which is one of my favorite websites. I've provided the link to the article, and I strongly recommend checking out some of the other articles on the site for anyone interested in astrobiology. Enjoy!

<http://www.astrobio.net/pressrelease/4722/belief-in-et-based-on-optimism-more-than-evidence>



## Planetary Society Philadelphia Region: Keeping the Dream Alive

*Phil Rossomando*

### Introduction/History

This article announces the formation and presents the vision of The Planetary Society - Philadelphia Region. This new organization is a local regional affiliate of the Planetary Society which was founded in 1980 by Carl Sagan, Bruce Murray and Lou Freedman. Visionaries who from youth saw space as a final great frontier to be explored these men weren't just astronomers and scientists. They were the children of the fifties, sixties and seventies an era that was significantly impacted by the space race. While at times frightening its implications were also exciting for this race could mean the attainment of space travel and a blossoming of humanity as a spacefaring species. This excitement drew many children and young adults including the author into science related majors and eventually into careers with the dream of being part of this new adventure. Space offered a new frontier, another hill to look over which could be reached if we applied ourselves and worked hard. Science education provided the means that could be used to explore that frontier. Many of us became dreamers. With good affordable educations and well-funded jobs we were given the tools necessary to turn our dreams into reality. This we did and the United States became a world leader in space exploration and a leader in scientific innovation both in space and on earth.

However, once we got to the moon our leaders seemed to lose focus. Being bottom-liners their only goal was reaching the moon not what to do after we got there. This author came to the realization that our only reason for going to the moon was to beat the Russians. Once this was done, our leaders saw little further need for the heavy investments in science that they had made previously so the budget for space exploration continued to decline and continues to decline to this day. Despite this we've continued making progress in space but this it is claimed is because of the large investments made previous to the moon landing and the vast pool of knowledge and dreamers that investment produced. The Planetary Society is populated with dreamers like Carl, Bruce and Lou. Dreamers who still believe that through their efforts, we can make the world a better place in which to live. The society's original purpose was to demonstrate by its very existence that the public strongly supported planetary exploration and the search for life beyond our planet. At its height the Planetary Society reached 100,000 members. Today we have nearly forty-thousand members in almost one-hundred countries Due to age and neglect the, pool of dreamers is dwindling and those of us who remain have one hope to achieve our dreams and that is to reawaken the excitement of space exploration still burning in our hearts.

In September 2010, renowned science educator Bill Nye (former student of Carl Sagan and long-time member of the Planetary Society) was named CEO. He has since helped to redefine the society's vision to establish our place in space with a culture that encourages exploration of other worlds and the protection of our own. To facilitate this redefinition we of the Planetary Society have targeted three action areas:

**We Create:** The Society is working to launch its own solar-sail, Lightsail-1, into space as early as next year. We also fund cutting edge research into planetary defense, SETI, and nearby exoplanet surveys, all areas woefully underfunded by current government agencies.

**We Advocate:** Exploration doesn't just happen. It takes funding and commitment from governments to enable the type of long-term missions necessary to make the biggest discoveries. We work hard every year to defend the small and getting smaller amount of money the United States devotes to the great adventure of space exploration.

We Educate: By actively reaching out to people of all ages we attempt to educate them about the benefits, excitement, and joy inherent in our exploration of the solar system. The Planetary Society is an official outreach partner of the B612 Sentinel project and NASA's OSIRIS-Rex mission. Our CEO Bill Nye travels the country spreading the word about the importance of science and space.

So the focus of the Planetary Society involves more than just the advancement of technology related to space and space exploration but also the reigniting of a dream with the torch of knowledge. This is also the purpose and vision of the Planetary Society – Philadelphia Region.

### Achieving that Purpose/Vision

It is this author's belief that the Planetary Society – Philadelphia Region is uniquely situated through political action, and local community outreach events to inspire excitement in space related activities.

Through presentations given in grade schools, high schools, and universities help encourage enrollment in technology and science related programs of study. In this way we propose to help produce student advocates for future space related endeavors within both government and private industry. With the help of our volunteers we shall further strive to increase local business and industry leader awareness of private sector and international space ventures. We shall strive to make them more aware of possible spinoff technological opportunities, showing positive connections between space exploration and the economic and social issues of the day. Through the expanded efforts of our regional society, local professionals will be made more aware of career possibilities within the new private sector space ventures we identify. Finally, it is the author's hope to acquaint more people, with who we (i.e., The Planetary Society volunteers) are. Through on-line and face-to-face encounters, we will strive to give our volunteers more of a feeling of involvement within our society.

As can be seen there will be a lot of exciting opportunities for our Philadelphia region volunteers. Too much work for any one person to carry out alone. Therefore we advocate a TEAM (Together Everyone Achieves More) approach towards the achievement of these goals. Being a volunteer member of the Planetary Society within this region will mean getting involved. For only with your support will we be able to ensure their achievement and thereby help the Planetary Society to create a better future through the exploration of other worlds and the better understanding of our own. Let's all strive to keep the dream alive.

### About the Author

As a charter member, Phil Rossomando has been a supporter of the Planetary Society for many years and a space enthusiast since the start of his career. Phil graduated from the University of Chicago with a master's degree in Information Science and spent over thirty-five years in technology based positions primarily within the defense industry. Phil has also taught at the university level. Phil recently retired and is now looking to write the next chapter in his life's story.



## Astronomy Night - April 26

Once again we are preparing for another stargazing blitz around the city of Philadelphia. Rittenhouse Astronomical Society has been working closely with The Franklin Institute to support a city-wide observation night in conjunction with the Philadelphia Science Festival, for the past two years. This is our third year in assisting with the effort to bring the view of our universe to the general public and the number of sites just keeps growing. Last year, there were about 12 sites that we helped to support and this year the number has grown to about 22 sites. Some of our members have already volunteered to help at many of the sites this year, but that was when we were told it to be only about 12 sites again. As the number has now grown, we are looking for more volunteers to help with the new additional sites.

At our last meeting we shared some ideas as to what to point out in the sky on that evening to the general public. Listed below are some of the viewing observations suggested for these evening sessions, as well as an updated list of the observation sites provided by The Franklin Institute.

Our April meeting will be devoted to talking about and preparing for the upcoming Science Festival. It is a wonderful experience and a fun day to spend with families, sharing our knowledge of the universe in which we live. Consider joining all of us on the parkway on April 20th or helping with the observation night on April 26th. Hope to see you at our April meeting.



Wayne M35 - NGC2158 labeled by Joe Stieber



M44 - Wayne King

### Here is a list of this years observation sites:

ArboretumAwbury Arboretum	John Heinz National Wildlife Refuge	
Riverbend Environmental Education Center	Teens 4 Good Urban Farm	
Congreso De latinos Unidos, Inc.	LEAP Academy Universtiy Charter School	
Folk Arts - Cultural Treasures Charter School	Battleship New Jersey	
UPenn School of Arts & Sciences	Sunnycrest Family Center	
Swarthmore College Science Center	Franklin Square Park	
Historic Fair Hill Burial Ground	Laur Hill Cemetery	
Imani Educational circle Charter School	Woodlands Cemetery	
Independence Seaport Museum	Frankford Hall	
Indochinese American Council	West Chester University	
University of the Sciences	Haverford Observatory	

**Binoculars 7:30-9:30**

- Pleiades & Hyades star clusters setting in West
- Jupiter setting in West (can be seen in scope 1 hr. before sunset)
- Orion Nebula setting in Southwest
- Beehive Star cluster in Cancer the crab

**Telescope 7:30-9:30**

- Jupiter setting in West
- Orion Nebula
- M35, Foot of Castor in Gemini the Twins (high in south) Mag. 5.0

**Binoculars 9:00-10:00**

- M44, Beehive Star Cluster
- Coma Cluster in Coma Berenices, open star cluster

**Telescope 9:00-10:00**

- M 67, Cancer the Crab, open star cluster Mag. 6.9
- M 53, Coma Berenices, Globular cluster Mag. 7.6
- Saturn, rising in the East

**ASTERISMS VISIBLE**

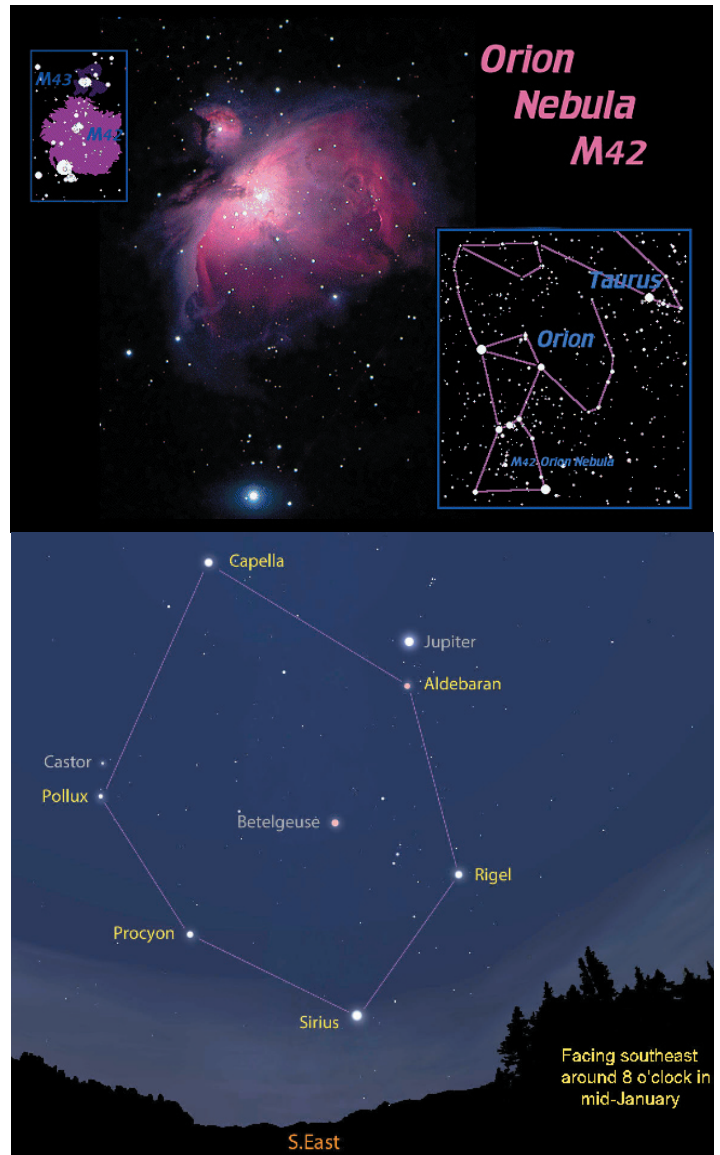
- Winter Hexagon
- Winter Triangle
- Leo Backward Question Mark
- Big Dipper
- Bootës (kite shape, ice cream cone shape)
- Spring Diamond ~ Virgo Diamond

**RAS & YouTube**

Rittenhouse Astronomical Society is continuing to move into the current ways of communicating by adding ourselves to the YouTube Generation. There is not a soul on Earth that has been born since June 7th 2007 that has not been exposed to YouTube. Many videos that are uploaded to YouTube go viral in a matter of hours and reaches generations of people from the very young to the aging population that stays in touch with its younger counterparts. As Rittenhouse Astronomical Society reaches its 125th anniversary, we are joining this new communication vehicle to reach new astronomers, young



<http://www.youtube.com/watch?v=zUyJP7IwC1M>



and old to come and join in our passion of exploring our universe. Our main goal is to promote and support science learning in our community.

We started our first round of YouTube videos at our March meeting. The interviews included: Ted Willaims, Denise Vacca, Dave Walker, Shawn Rush, Dan McCormick, Jr., Eric, Alan Daroff.

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