



NEWSLETTER

RITTENHOUSE  
ASTRONOMICAL  
SOCIETY

Founded 1888 WWW.RITTENHOUSEASTRONOMICALSOCIETY.ORG

September 2010

OPEN TO PUBLIC AND STUDENTS  
Upcoming Meeting on September 15th at  
7:15 PM  
The Franklin  
20th Street and Benjamin Franklin Parkway

New Meeting Format

At our officers gathering in July, we revised our meeting agenda . It now includes a question and answer period on any topic, announcements of upcoming meetings and events, and some dedicated time for social mixing and discussion. It is a new scaled approach. Below is an updated agenda:

5:30 All members welcome (personal tab) for sandwiches and conversation at Pete’s Pizza-reasonably priced local pizza diner, officers usually reach Pete’s by 5:45 pm.

7:15 Welcome, Call to order!

7:20 Sky this Month

7:30 How the Universe Works – Educational/Lesson

7:50 President Message

8:00 Upcoming speakers/events

8:05 Guest Presenter

8:50 Questions (Q & A on topic)

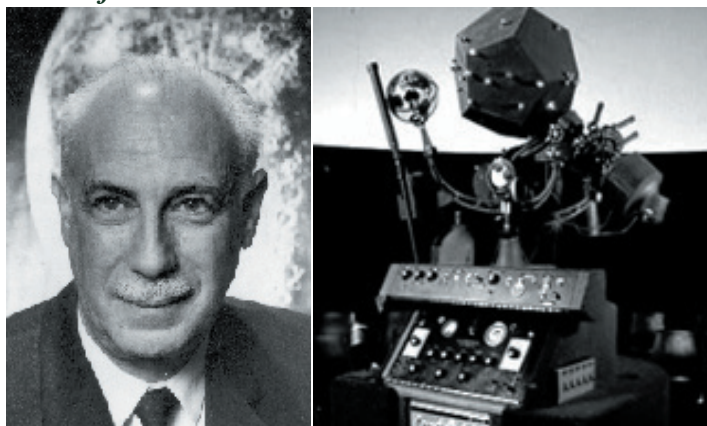
9:00 Weather Permitting = Observatory / Q & A on any topic with Mixer and snacks in observatory

9:00 Rainy night or overcast = Q & A on any topic with Mixer and snacks in our meeting room

- Open door policy; members are welcome to arrive at any time during the evening.
- Our target is to have the majority of audience and members in attendance by 7:50 pm. (We fully understand how traffic problems and other exhibits in the building may slow your arrival. If entering after we start rest assured your attendance is welcomed and appreciated.)
- Everyone is free to exit quietly when necessary (we understand that some individuals have transportation issues, no problem.)

September’s Meeting  
Special Date  
September 15th

Please NOTE: Due to the holiday of Rosh Hashana, our September meeting will be held on the third Wednesday instead of the second.



Joyce Towne (past RAS member and educator/producer at the Fels Planetarium), will join us for a retrospective review of Armand Spitz (past RAS president and member), and his quest to bring astronomy to the masses in planetariums manufactured here in Pennsylvania. Armand Spitz has long since passed away but his legacy lives on. Learn how planetaria evolved as Armand attempted to make these facilities affordable to many schools and museums. Joyce will talk about the evolution of the instrument into what is considered ‘state of the art’ today.

Joyce currently works for Spitz Incorporated, an amazing local resource for astronomy education. The Spitz company has been installing planetariums around the world since the late 1940’s. They entered the digital/full dome domain in the late 1990s with projection systems, real time software, and notable presentations and curriculum for those systems.

Visible Planets 09/15/2010

	Rises	Transit	Sets
Mercury	05:19 am	11:52 am	06:26 pm
Venus	10:25 am	03:26 pm	08:26 pm
Mars	09:53 am	03:15 pm	08:37 pm
Jupiter	07:23 pm	01:19 am	07:15 am
Saturn	07:46 am	01:47 pm	07:48 p;m

## President's Message

*Dr. Milton Friedman*

Astronomy is much more interesting today compared to 30 or 40 years ago. Back then, looking through a telescope gave an interesting image but astronomers had a limited knowledge of what they saw. The planets and deep sky objects had many curves and other markings but little could be explained. Beautiful sights without explanations.

In these modern times, the eyepiece of a telescope not only reveals the beautiful cosmos, it also stimulates the mind to think about what is going on out there, and each day we get more answers as science explains the mysteries of the universe.

As we look at the river of stars called the Milky Way (you don't need a telescope to see it; only a dark sky away from the city), think about the Milky Way, our home galaxy in which Earth sits. We now find out that the Milky Way is rotating 15 percent faster than was thought and that indicates the mass is 50 percent greater. As we look at the Milky Way traveling at 570,00 miles per hour, we find out that it may crash into the Andromeda Galaxy a little earlier than predicted, in 5 billion years!



In 1995, the world was shocked to learn that a planet was discovered beyond our solar system. As of August 19, 2010, 474 extrasolar planets have been discovered. We anxiously await the discovery of life out there.

Space probes have comet missions that bring back material and missions such as Rosetta that will land on a comet in 2014. If all goes well with NASA and ESA, spacecraft will go to Jupiter's moons Europa (there may be an ocean with microscopic life), and Callisto that may have an ocean below cratered ice. Saturn's moon, Titan has a significant atmosphere and probable river beds.

As we look at deep sky objects, we should realize that stars are being born in stellar incubators that we see. Back in our solar system, planets are being examined by spacecraft at Mercury, Venus, Mars, Jupiter, Saturn and one is on the way to a previous planet, Pluto.

Astronomy comes alive when we think about what we're looking at with the eyes, binoculars and a telescope and especially as we realize what is happening out there.



## July Officer's Meeting

*Submitted by Ted Williams, Secretary*

We would like to thank Denise Vacca and Joe Stieber for assisting our society now as Members-at-Large. Most of you know them from our past meetings. We also thank Dr. Ken Kremer, Dr. Carol Ludolph, Mike Mountjoy, Dave Walker, Robert Richards and Ivin Williams for continuing on in service as Members-at-Large.

### Some points to share from the meeting:

- We will be reaching out to local businesses that carry telescope gear for our post card promotion. In return, for promoting our society, we will list their web contacts on our website. These notices will also be distributed at the Bloom Observatory. It is also posted on our public website.
- The inactivity on our Facebook page was noted. Denise volunteered to help out. We would like to focus a bit of attention there and try to build it up and members can help. Getting on the "LIKE" list allows those on your friend list to see our post when they view your page. The list has tripled in size since our meeting and we expect it to keep growing. Your help here is appreciated.
- It was suggested we team with Willingboro Astronomical Society so members can have access to a dark sky observing sight. Willingboro conducts public star watches at a decent distance (but not too far) to get pretty good dark skies (well, much better than Philadelphia) We will be posting their public nights on our "members only" network website and on our public website in the "Rittenhouse Neighborhood" section of the home page.
- We now have purchased our networking site with support from individual member sponsors who only wish to be identified as the Rittenhouse educators. We will not

incur the cost from our treasury.

- Meeting agenda will be tweaked a bit to scale the presentations and to include a “question and answer mixer” at the end of each meeting. We feel this will create a comfortable environment for members and guests to address any topics of the evening, or to help answer any of their astronomical questions. Officers have decided that the money spent on the officer dinner before each meeting will instead be re-invested into the membership to cover the cost of a beverage and snack during the mixer.
- The dinner before each meeting when officers gather will now be open to any member who wishes to attend. We meet at 5:30 pm at Pete’s pizza, which is a short walk from the museum (meal cost is on your own and you will find quite reasonable prices with the highly recommended cheese steak!) We will post an invitation on our website and directions to Pete’s.
- We would like to expand the “Drive me to the Milky-Way” page with more member entries. We will address this at up-coming meetings.
- It was suggested that we have some orientation on the use of our “members only” network site that is a benefit of RAS membership. Some members that are not used to networking sites may not fully understand what is offered on the private site, and what can be accomplished there. This will be worked into future meetings as part of the lesson portion.
- Fall and spring speaker line up was discussed and is posted both on our public website and “members only” network site.

## NING Update:

### *Newly owned private members network site*

We now have secured private sponsorship of our Network which allows us full ownership/control of our Networking site. Previously this was provided free to us from NING.COM.

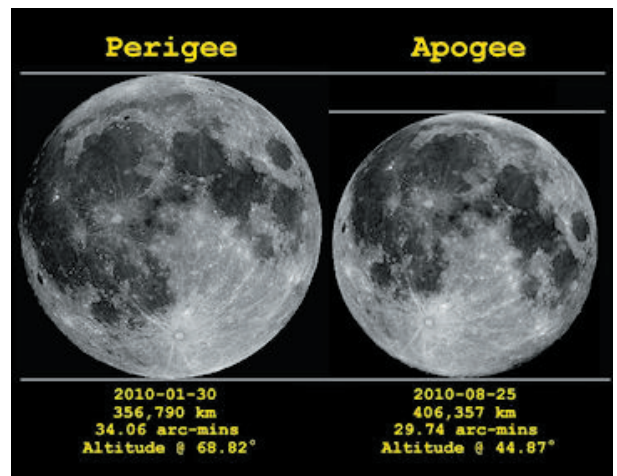
### **Changes incurred:**

- 1) The add panel originally in the upper right had on all pages within the network, has been replaced with a column titled “UP~Dates” which can help members quickly access upcoming celestial sights (eclipses, meteor showers, conjunctions) along with RAS activities.
- 2) We have re-activated the chat room feature. We realize that stargazing can sometimes be a last moment idea, and a chat room on our site will enable anyone to possibly immediately communicate where they are

planning to observe. This may be a farfetched idea, but providing the opportunity is the only way to test it out. On the down side, it might prove that what we do observationally is done mainly in solace, possibly alone. Either way, the chat room is back.

- 3) We now have an increased number of text boxes and rss feeds. Members can suggest RSS feeds they might want to see included.
- 4) Video embedding is a continued option, although we can no longer post video clips on the server.
- 5) We have lost the music player from the Network. Dan McCormick is looking for a possible replacement.

We can report that the transition from free site to subscription ownership was a smooth transition this past July. All content and pictures carried over effortlessly. The first month since the transition shows substantial increase in use when compared to the same period of time one year ago.



## Smallest Full Moon of the Year

*Liz Smith*

*From: [www.spaceweather.com](http://www.spaceweather.com)*

If you thought this week’s full Moon looked a bit small, you were right. It was the smallest full Moon of the year. Anthony Ayiomamitis of Athens, Greece, offers this comparison:

It shows the largest full Moon of the year (Jan. 30) vs. the smallest (Aug. 25th). “The difference between the two full moons is around 14.5% and certainly easily noticeable by the naked eye,” says Ayiomamitis.

Johannes Kepler explained the difference 401 years ago: The Moon’s orbit around Earth is an ellipse. One side of the orbit (perigee) is 50,000 km closer to Earth than the other (apogee). The full Moon of Aug. 25th was a distant apogee Moon, and that’s why it looked so small.

## Dark Skies at Batsto!

*Ted Williams*

At our officers meeting this summer it was decided that we would pair with the Willingboro Astronomical Society to offer members an observing experience that is truly from a dark sky. Willingboro conducts public star watches throughout the Spring, Summer and Fall seasons. We have 4 members that I know of that are both Willingboro and Rittenhouse members (three of which are on our officers board!) We offer an observing opportunity at our meetings (weather permitting) at the end of each meeting in the Bloom Observatory atop the Franklin Institute. That location is fine for observing planets, bright double stars, star clusters and even some bright globular clusters but it is through city light pollution.

Willingboro observes at a few locations through the year, one of them is Batsto Village in Wharton State park in central New Jersey. Most believe that you cannot see the Milky Way from horizon to horizon in New Jersey which was clearly disproved this past August 7. Members of Rittenhouse were extended an open invitation to attend (we promoted this on our private network and our public web site.)

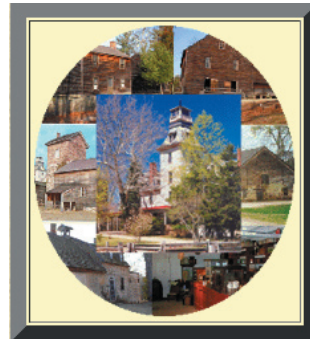
I attended the August session to check out the Batsto observing site. The drive is approximately 1 hour 15 minutes from center city Philadelphia. There is plenty of ample parking (some lighting) and a huge field, a short walk from the car, dedicated to telescope gear. On this particular evening there were about 24 telescope set-ups and upwards of 50 -60 visitors through the evening. Joe Stieber (RAS Member-At-Large) and Lloyd Black (Willingboro president) were welcoming and more than accommodating. Lloyd offered any RAS members the invitation to set up their telescopes on the main field with the Willingboro group. Walking around the site, one quickly finds many motivated helpful amateur astronomers who are quite friendly and inviting as they encourage you to look through their scopes and see the view.

This is probably the best way one can compare telescopes and see what each one offers. Many of the observers will quite willingly share the advantages and disadvantages of their observing gear making it a great learning experience of what can be achieved with a particular telescope (rather than what is promised by most telescope manufacturers.)

I want all members to know that if you decide to drive out to attend, you will be welcomed and feel quite at home with many beginning and experienced observers. I want to thank the members of Willingboro for their accommodation of our members and look forward to observing with them

in the future. Their next observation night is September 11, before our first meeting this fall. Please consider starting the upcoming academic year off with an observing trip (again to be held at Batsto Village.) I am planning to attend; maybe I will see some of you there. Please remember no telescope or experience is necessary to attend. Having an interest, and possibly a few questions, is all you need to have an enjoyable evening.

For directions to the site; go to the Willingboro Web site: <http://www.wasociety.net/>



For information on Historic Batsto Village goto; [www.batstovillage.org/village.htm](http://www.batstovillage.org/village.htm)

## NJ State Museum Planetarium

*Trenton Polishes top gemstone in its Crown*

Unknown to many is an amazing planetarium facility that sits across the Delaware River in Trenton New Jersey. It sits very close to the gold dome of the state house, another gemstone in its own right. I had a recent opportunity to attend a planetarium presentation in their newly refurbished planetarium (newly in planetaria speak...now about one year since installation.)

This praise is long overdue, but I need to say BRAVO to the folks at the New Jersey State Museum. In this time when we can all find faults with our government, it helps to point out successes. The renovation was superb giving the Delaware Valley area another fine facility to access the Universe.

People make up our government and I need to offer congratulations to the people who made it happen. Jay Swartz has worked with the New Jersey State Museum Planetarium for the past 20 years or so, and Eric Eubanks, assists as a part-time planetarium educator. Jay Swartz knew what the facility was capable of after having the background by developing shows and presenting them in the theater. He assisted in advising and overseeing the installation of a full dome immersive theater by Sky Scan. Jay demonstrated his superior knowledge by advising the museum to keep the original optical mechanical Minolta MS-10 planetarium instrument as the centerpiece. In

effect, he has created what the industry refers to as a Hybrid system. Planetariums with this type of set up can take advantage of the best that can be projected by video, but also offer the superb imaging still only capable by a planetarium optical mechanical instrument. Great Job! Excellent choices!



With the splendor of the Minolta Machine, and the amazingly crisp, bright image provided by the Sky-Scan projection system, newly refurbished seats, new carpet, refurbished entrance display and an interactive science kiosk Earth projection system in the planetarium lobby, and you have a facility in which Trenton can take pride. I'd say it shines quite brightly for science education and astronomy. I'd recommend a trip to the planetarium on a Saturday or Sunday to anyone in the Philadelphia area that wants to take in the view!

Since Trenton is about 1/2 hour from Philadelphia. I will propose that our group plan a field trip to the New Jersey State Museum for one of their fall sky observing sessions. They start with a presentation in the planetarium, and then move to Washington Crossing State Park to use the telescopes at the Simpson Observatory that are operated by the Association of Amateur Astronomers of Princeton University.

We will discuss this at an upcoming meeting.

## Building NASA's First Lunar Orion Test Capsule

*Reporting Live from Michoud Assembly Facility*

*Dr. Ken Kremer*

America's first Lunar Test capsule for people since Project Apollo has just been welded into shape. This work finishes the structural framework of the pioneer Orion crew cabin – known as the Ground Test Article - or GTA, by a Lockheed Martin contractor team toiling away at the historic NASA-owned Michoud Assembly Facility (MAF) in New Orleans.

The GTA is the essential forerunner of a crewed spacecraft which NASA had intended to utilize for a return of human footsteps to the Moon, and then to Mars and beyond until President Obama proposed to wholly terminate Project Constellation, including Orion, in his initial 2011 budget proposal and radically alter NASA's future path.

"The Orion GTA is the flight test article that was designed

in support of Lunar Missions," explained Mark McCloskey to me during my fact finding visit to Michoud to observe the capsule first hand. McCloskey is the Lockheed Martin Sr. Production Manager for Orion at Michoud.

McCloskey and other senior Lockheed representatives spoke to me in depth about Orion development at NASA's Michoud manufacturing facility in New Orleans. Michoud is also the production site for the Space Shuttle's huge External Tanks.



*NASA's First Lunar Orion Test Capsule has just been welded together by Lockheed Martin team at NASA Michoud Assembly Facility in New Orleans using state of the art friction stir welding process specially developed for Orion project. Note crew hatch (with protective blue covering) just below crew tunnel at top protruding visibly into cabin. Birdcage like fixture clamps the pieces together during Friction Stir Welding operation. Credit: Ken Kremer*

This GTA test vehicle is not the de-scoped and stripped down, unmanned "rescue lifeboat" recently proposed by President Obama at his April 15 space policy speech at the Kennedy Space Center (KSC) where he resuscitated the Orion project, but with limited functionality.

President Obama's space proposals have been harshly criticized by many Apollo era veterans, including astronauts Neil Armstrong, Jim Lovell and Gene Cernan, key members of Congress and many others in academia and industry as a "Blueprint for a Mission to Nowhere" with no firm goals or destinations and at the cost of tens of thousands of US jobs in the midst of the global economic recession.

Everyone working on Orion clearly hopes that the vehicle will move forward. Several Billion taxpayer Dollars have already been invested, but the future is unclear.



*Lockheed Martin team of more than 80 aerospace workers poses with Orion GTA just welded into one piece. Credit: Ken Kremer*

I was fortunate to visit Michoud for a detailed up close and personal inspection tour of the newly created Orion spacecraft shortly after completion of the final close out weld. It was an awesome experience to stand right beside the newly assembled Orion GTA and converse about its construction, development and features with the team of technical experts and aerospace workers responsible for building it. I was free to gaze inside the Orion cabin directly through its crew hatch and windows and photograph everything. It was remarkably easy to imagine myself floating weightlessly through the crew tunnel to enter the ISS and embark on daring Science journeys of Exploration and Discovery.



*Interior view of Orion GTA cabin shows crew hatch at left adjacent to four windows. Crew tunnel above. Aluminum backbone assembly at bottom provides rigidity and is attach point for crew seats, storage lockers and more. Astronauts would enter the International Space Station through the tunnel after docking. Credit: Ken Kremer*

Check out these Nasatech.net panos of the Orion GTA.  
<http://nasatech.net/MAFGroup100602/>  
[http://nasatech.net/MAFGTA1\\_100602/](http://nasatech.net/MAFGTA1_100602/)

“The GTA is a manufacturing pathfinder to validate production processes and tools,” McCloskey told me. “It is the first full-sized, flight like test article in the Orion crew exploration program. We are utilizing technologies that have not been used on spacecraft before.”

“Everything inside Orion and all subsystems will be state of the art,” Larry Price, Lockheed’s Deputy Program Manager for Orion explained to me.

This key assembly milestone was accomplished by welding together the last two large individual segments of the crew cabin using new and complex advanced technology processes specifically invented and developed for Orion, by a technique called Friction Stir Welding (FSW). FSW is a highly precise solid state welding process used for joining metallic components in a repeatable and predictable manner.



*Peering into Orion GTA crew cabin through the crew hatch toward astronaut windows at left and tunnel at top. Credit: Ken Kremer*

The combined structural framework comprises the habitable volume for the initial 16.6 ft (5 m) diameter Orion crew cabin, which is 2.5 times larger than the Apollo era Lunar capsules.

The next step in GTA assembly is pressure testing. After pressure testing, “the GTA framework will be outfitted with internal and external mass and volume simulators for components like the crew seats and consoles, lockers, life support, environmental control, waste management, and more,” explained Tim Knowles. He is the Orion GTA Vehicle manager for Lockheed Martin at Michoud. “When all the work to prepare the GTA is done, the final Orion GTA crew cabin will look very much like a real Orion capsule,” Knowles said.

“We all love what we are doing. We have a team, young and old, who are all very committed to the Orion program. We want to put astronauts into space and continue building the Orion for the foreseeable future and beyond.”

“This is the type of job that a tremendous number of people want to work on because they realize the end result is amazing. So, we never had problems trying to get people to work on this program. Orion is the kind of program that we’ll tell our grandkids about and be proud of working on forever,” McCloskey concluded.

Check out my online articles at the Planetary Society, NASA Watch and my website:

## Astronomy Outreach:

*Dr. Ken Kremer*

Please contact me for more info or science outreach presentations by email. My upcoming Astronomy talks include:

UACNJ Astronomy Symposium: Hope NJ, Sep 25, Sat, 8 PM. “The Space Shuttle, The Space Station and Whats Beyond for NASA”. Website: <http://www.uacnj.org/>

Gloucester County College Astronomy Club: Sewell, NJ, Sep, TBD, 7 PM. “6 Years of Mars Rovers and the Search for Life (in 3-D)” Website:

[http://www.gccnj.edu/news\\_and\\_alerts/rotating\\_ads/ken\\_kremer.cfm](http://www.gccnj.edu/news_and_alerts/rotating_ads/ken_kremer.cfm)

Stella Della Valley Star Party & Bucks-Mont Astronomical Association (BMAA): Ottsville, PA, Oct 9, Sat, 3 PM. “The Space Shuttle, The Space Station and Whats Beyond for NASA” & “Mars Rover Update”. Website:

<http://www.bma2.org/Sdv.html>

Rittenhouse Astronomical Society (RAS) at the Franklin Institute: Philadelphia, PA, Oct 13, Wed, 8 PM. “The Space Shuttle, The Space Station and Whats Beyond for NASA” Website:

<http://www.rittenhouseastronomicalsociety.org>

Washington Crossing State Park: Titusville NJ, Nov 21, Sun 1 PM. “6 Years of Mars Rovers and the Search for Life (in 3-D)”

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**NASA JPL Solar System Ambassador & The Planetary Society**

**Web site:**

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<http://www.universetoday.com/author/ken-kremer/>

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