



NEWSLETTER

# RITTENHOUSE ASTRONOMICAL SOCIETY

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

November 2006

OPEN TO PUBLIC AND STUDENTS  
Upcoming Meeting on November 8th at  
7:30 PM  
Fels Planetarium  
The Franklin Institute  
20th Street and Benjamin Franklin Parkway

## Special Event: Mercury Transit

We will start quite early on November 8<sup>th</sup>. 2:00 P.M for those interested in viewing the Mercury Transit. Derrick Pitts, Dr. Milton Friedman and Ted Williams will be in the rooftop observatory spotting Mercury as it transits the sun. This Franklin Institute special event will be an excellent opportunity for interested observers to view the transit due to the small size of the innermost planet. Telescope observing with proper solar filters is recommended since Mercury as compared to the Sun will only be 1/195 the apparent size.

Our regular night meeting is by member request. Our telescope information night is an opportunity for members, guests and students to find out what they need to know when purchasing, or upgrading a telescope.

Starting with binocular basics leading through refractors, reflectors and go-to telescopes, society members will share what they found beneficial and practical. Whether you are just starting, expanding your interest, purchasing a gift, or a seasoned star watcher, we are sure you will find something



to meet your needs. It will also be a good opportunity to view the renovation work in the observatory, completed by Chris Ray and Dr. Fred Orthlieb, under the supervision of Derrick Pitts. Daylight will highlight not only the telescopes mechanical features, but the new roof, floors, decking and facility improvements.

## Refurbished!:

### *Joel N. Bloom Observatory*

The October meeting gave us an inside peek at the renovation of the Bloom Observatory at the Franklin Institute. The primary focus of this renovation was the restoration of the 10" Zeiss Refracting Telescope. We began with an introduction to the renovation project by Derrick Pitts. It was interesting to learn how the museum was able to take advantage of a combination of planned facility upgrades and necessary renovations to



find both the time and the funding for this renovation. After the intro, we began to see the actual process of disassembling, removing, and restoring the telescope.

It turns out the mechanical complexity of the scope is probably closer to that of a car than to an ordinary telescope. This scope has elements that are unique to only a few scopes in the world. Several of these elements caught my attention. One such element is a system of several concentric tubes attached to long shafts with shifting weights that automatically offset the flex of the tube when the scope is in different orientations. None of this is visible from outside the scope. It is built into the main optical tube, and is a purely mechanical system. There are no controls, motors, or adjustments necessary. Another unique element of the scope is that the weight of the entire scope is directed through different supports and casings onto a single large shaft that is counterbalanced by weights hung under the floor.

The mechanical wizardry of its design is breathtaking.

This turns out to be right up Chris Ray and Dr. Fred Orthlieb's alley. Chris has a background in restoring old telescopes, and Fred is a Professor of Mechanical Engineering at Swarthmore College. Together, it took them several weeks to fully disassemble and remove the scope. I was impressed with the fact that they not only took it apart, but learned how to take it apart, learned how it was originally put together, kept track of all the parts, and learned how to put it back together again, too. Even more impressive is that they did it all without breaking anything!

The entire scope was moved to a shop at Swarthmore College. Over the summer, Chris, Fred and their team completed several tests and conducted a complete restoration of every part of the telescope. This included everything from stripping paint to repacking bearings, to experimenting with new and improved lubricants. It was an impressive combination of mechanical ingenuity, creativity, experimentation, and some elbow grease.

The newly renovated and reinstalled scope now sports a complete lubrication of all working parts, perfect balance (1 finger will move it), a computer guidance system for go-to capability, a new corrosion-resistant paint job, clean optics, and all-new gearing with high precision drive motors. The Joel N. Bloom Observatory is now open at the Franklin Institute, where it continues its mission of education and inspiration for the next generation of scientists.

~ Mike Mountjoy

### Visible Planets 11/08/2006

	Rises	Transit	Sets
Mercury	07:44 am	12:46 pm	05:48 pm
Venus	07:52 am	12:56 pm	06:00 pm
Mars	07:12 am	12:23 pm	05:34 pm
Jupiter	08:30 am	01:27 pm	06:23 pm
Saturn	12:56 am	07:38 am	02:30 pm

LAST CALL Now available Observer's Handbook \$18.00, Astronomical calendar from the Roayla Astroomical Society of Canada \$11.00 ~ Contact Alan Daroff at the November Meeting.

### Rittenhouse Astronomical Society Officers

Dr. Milton Friedman	President
Alan Daroff	Vice-President
Ruth List	Treasurer
Ted Williams	Secretary
Carol Ludolph	Member at Large
Dave Walker	Liaison

Student Check In	7:15 - 7:30 pm
Astronomy Lesson	7:30 - 7:50 pm
Call to Order: Dr. Milton Friedman	
Sky Tonight: Alan Daroff	
Guest Speaker	
Rooftop Observing: Weather Permitting	

## Student Lesson: Circumpolar Stars

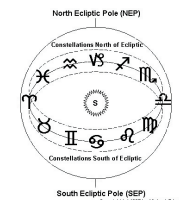
*Our October meeting started off* a series of short-order astronomy courses for students that are welcome to attend our . Circumpolar Stars seemed a logical place to start since they are always visible in the night sky. One is sure to have a greater chance of finding a constellation if it can be seen on most any night.

To find those star patterns we used a dipper clock. If you missed our meeting you can download them from our website. Copies will also be available at our November meeting.

We also demonstrated measurement of the 40-degree angle that we approximately find Polaris at and why that occurs. Handouts are available for the estimation you can accomplish using your hands and fingers extended at arms length to measure the angle of altitude of a celestial object.

We finished by observing a few map interpretations of the north sky and used the Fels Planetarium digital sky to track the stars apparent motion through the evening.

*Our next lesson will cover* another group of constellations that change through the year. We can find them by using an imaginary tool, the ecliptic plane. We will discuss how you can visualize the ecliptic path of the planets, and the plane we use to reference them.



A good way to prepare for November's lesson is to find out what your Zodiac or birth sign is. We will visualize those constellations in the planetarium sky and find out how they are used today by amateur astronomers to locate the planets.

~ Ted Williams

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