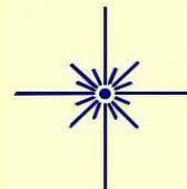




# The Guide Star

Newsletter of the Amateur Astronomers Association of Pittsburgh Inc  
Founded June 9, 1929 by Chester B. Roe and Leo J. Scanlon  
Website: 3ap.org



July 2010

Volume 44, No. 7

## 400 Years Ago This Month

You could make the case that in 1609 and 1610 the world's foremost astronomical research facility was located wherever Galileo happened to be spending the night.



In July of 1610, he was the first to telescopically examine Saturn and while his own observations couldn't be described as a success, he set a task that was to occupy astronomers for almost a half-century - explaining Saturn's appearance.

Galileo thought in the terms of his recent discovery of the Jovian moons and he readily interpreted Saturn's image as a large body accompanied by two smaller ones. He wrote, "...the star of Saturn is not a single star, but is a composite of three, which almost touch each other, never change or move relative to each other, and are arranged in a row along the zodiac, the middle one being three times larger than the lateral ones, and they are situated in this form: oOo...".

While we know that Galileo was hindered by his primitive refractor, Earth's 1613 passage through Saturn's ring plane had to have been confusing. The planet first showed as a disk flanked by two bodies, then as a single disk and finally the unexplained handles or ansae reappeared. Galileo was baffled and remained unable to imagine Saturn's actual structure.



**Three Drawings of Saturn by Galileo. The first was done in 1610. The last is dated 1616.**

That was left to Christiaan Huygens who published his Systema Saturnium in 1659, seventeen years after Galileo's death.

Using an unwieldy 2.3 inch telescope with a focal length of 23 feet, not that great an improvement over Galileo's scope but sifting through forty years of observations by other astronomers, he correctly interpreted what observers had been seeing:

"[Saturn]...is surrounded by a thin flat ring, nowhere touching, and inclined to the ecliptic."

One fanciful explanation of Galileo's failure is that his vision was in decline, an omen of his blindness at the end of his life. But a more reasonable explanation is that not even Galileo was in a position to imagine a planetary ring system at this time.

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Earth crosses the ring plane, on average, a little less than every fifteen years. Each crossing event consists of either one pass as in September of 2009 or three closely spaced passes as occurred in 1966, 1979-80 and 1995-96.

But while Saturn's changing appearance confused the early planetary astronomers, it also aided them. Of the nine "classical" moons of Saturn - meaning those discovered before 1950, all but one was discovered when Saturn's rings were either edge on or close to being so. The disappearance of the rings darkens the area adjacent to the planetary disk and moons are easier to spot.

This month with Saturn becoming an early evening object, it may be a good time to observe it with the tightened ring angle that helped to baffle the father of observational astronomy. The current viewing angle is about 2.5°.



**AAAP Member Phil Hughes caught Saturn in early April 2009 using a Celestron C8 and a modified Tuocam. The ring angle was about 3.4° at that time**

Next apparition, when Saturn appears as a morning object in early October, the angle will be greater than 6° and on the increase. For those who like to plan ahead, our next passage through the ring plane - a single pass event, by the way - is on March 23<sup>rd</sup> of 2025. Unfortunately, similar to last year's crossing, the planet will be located close to the Sun.

Of course, to complete any story, there's got to be a Pittsburgh connection.

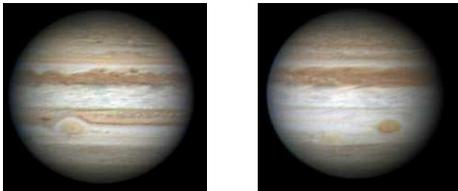
In 1895, using a new spectroscope built by John Brashear and the 13-inch Fitz refractor at Allegheny Observatory, director James Keeler determined that Saturn's rings consisted of particulate material.

## *Coming Soon to a Gas Giant Near You*

The SEB or Southern Equatorial Belt is one of the two signature dark bands that cross Jupiter's bright disk, the other being the NEB or Northern Equatorial Belt. It's also the grayish brown belt that partly engulfs the Great Red Spot or GRS.

Currently, however, the SEB is being celebrated as the belt that disappeared.

Actually, the belt began to fade in late 2009 as Jupiter moved into the Sun's glare but in early 2010, as Jupiter became an early morning object, the belt had essentially vanished. One guess is that the dark gasses that constitute the SEB are now overlaid by the light colored gasses usually confined to Jupiter's zones.



***“Before and After” Shots of Jupiter’s SEB.  
Left 16 August, 2009. Right 30 May 2010***

***Photos Courtesy: Christopher Go, Cebu City, Philippines  
<http://jupiter.cstoneind.com/>***

However, for patient planetary astronomers, the situation is pretty good. Why? Because the SEB always comes back into prominence in an event called a revival and some have been described as spectacular. Since 1919 there have been fifteen revivals and all but three have been observed and documented. The last began on April 6th 1993.

SEB fadings and revivals typically follow a set pattern:

First, the SEB fades over a period of two or three months, sometimes longer. Simultaneously, the GRS darkens and its color can intensify. It's also contrasting with the new white background.

After a period of from one to three years, the revival begins in a localized area. A dark spot or streak begins to stream dark material in three currents. Often, there's an associated white spot present. Spreading across the surface, the dark material hits the GRS which begins to fade over a period of days or weeks.

Finally, an orange hued tint spreads across the revived SEB and the revival is considered finished.

The revivals of 1928 and 1975 are thought to have been the most vibrant while the weakest were in 1955 and 1964.

So, bottom line. One of the most prominent planetary features in the Solar System is due to make a reappearance at any time. We don't know if the show will be memorable or mediocre but the stage is set. The audience is waiting for the curtain to go up.

## *From an AAAP Imager*

There are a number of talented imagers in the club. Their technical proficiency, choice of subject, eye for composition and dedication to amateur astronomy are exemplary.



***John Pane imaged the day and a half old moon on May 6, 2008. He used a Canon 40D, a 200mm f/2.8 lens and 2x tele-extender, at f/5.6 to capture a pretty shot of the moon bathed in earthshine.***

**About the subject:** One of the most beautiful naked eye phenomena and sometimes called “the old moon in the new moon's arms”, our moon in earthshine is best seen on spring evenings or autumn mornings by northern observers.

The correct explanation of the phenomenon - sunlight reflected by Earth toward its moon - is usually ascribed to Leonardo.

Earthshine's brightness varies with cloud cover but Earth's reflectivity is about 20% greater between October and July. It's estimated that Earth casts 60% more light on the moon than our moon throws our way when full.

***John Pane's extraordinary composite documenting the progress of Comet 17P/ Holmes in 2007 can be seen at:***

**<http://antwrp.gsfc.nasa.gov/apod/ap080205.html>**

## [2010 Cherry Springs Star Party](#)

The Cherry Springs Star Party took place from June 10<sup>th</sup> to the 23<sup>rd</sup> and despite less than ideal weather it attracted an enthusiastic group of AAAP'ers. Some excerpts of their observing reports posted to the club Yahoo site:

".... most memorable observation was the whole Veil Nebula in my 120mm Orion ST120 with the Nagler 31mm EP and an Orion OIII filter. Pickering's wedge (Central portion) was even observable in the 120mm Achro..... was able to see the Coat Hanger naked eye, and the Great Rift (Dark Lane Dividing the MW) was very evident. ...."

- **James & Sue Schultheis**

"Cherry Springs.... was my first major event and I had a blast ....my 18" [gave] a close up view of the eastern segment of the veil (NGC 6992/6995) which had an unearthly ethereal quality with filaments and wisps clearly visible. .... I then located the western segment (NGC 6960) which was just as stunning. You could just take the scope and wander up and down each of these segments for a long time trying to take it all in; these views were the highlight of my trip. One other especially memorable object that night was when I managed to pull in the Green Rectangle (NGC 7027), aka the Magic Carpet, using a 6mm Ethos with the 18" DOB. It was amazing to see a rectangular planetary nebula, let alone a green one, which was flying quickly through the EP at 365 mag., thus its magic carpet quality...."

- **Jim Johnston**

An extended report by **Larry McHenry**, a featured speaker at this year's CCSP is available at:

<http://home.comcast.net/~lsmch/sp-reports/spr2010-CS.pdf>

## [From the VP's Desk](#)

Back in the October issue I asked several questions regarding astronomy books and where members prefer to obtain them. As I sit here at the observatory awaiting the first visitors to the star party I browse through the three books that I always seem to have with me for an observing session.

*The Observer's Handbook*, I keep with me in case I am asked a question about the distance to a particular object or the type of double star that we are showing the visitor. Always handy for that question that catches you off guard.

The second book, *A Walk Through the Heavens*, I use to keep learning my way around the sky by using familiar asterisms to point the way to constellations that I do not yet have memorized. For this same reason I also reference *Patterns in The Sky*.

These three books are always with me when I am doing any type of planned observing or sharing the skies at star parties. At this point it has become a compulsion for me that I bring them, but I do end up using at least one of them each session.

So I wonder: Just what selection of books do other amateur astronomers take with them to observe and why? What reference materials do you find helpful or even absolutely necessary to drag out onto the observing field. What items do you use to prepare for a presentation of the night skies to others?

There have been many book reviews on our mailing list and here in the Guide Star. These are great ways to find such items, but in this specific instance I am looking to hear about the books that are considered observing partners. Share with the group on the Yahoo mailing list, at one of our club meetings, or even as a submission to the Guide Star.

Now get out there and start wondering.

- **Craig Lang**

## [Equipment For Sale](#)

### **Orion Skyview Pro Equatorial Mount (Upgraded with Orion's Intelliscope)**

- \* Can support scopes up to 20 pounds
- \* Dovetail Mounting Plate



Mount was purchased in 2003 so it cannot be upgraded to Orion's GoTo System, but does come with Orion's IntelliScope System which is no longer available for the Skyview Pro Mount. IntelliScope is a manual style GoTo System. After aligning the scope to polar north and performing a 2-star alignment, you key in the object you wish to observe, manually move the scope until the readout on the IntelliScope reads all 0s and the object should be in your field of view. From that point, the scope uses its motors to track the object. To be honest with you, I am not adding any extra cost for the IntelliScope System upgrade, I never found it to be that accurate. It gets you in the ballpark though. I would estimate accuracy at about 80%.

I will be more than happy to demonstrate the IntelliScope System for any potential buyer.

Asking \$150.00.

If you have any questions, please do not hesitate to e-mail [rpollack1@gmail.com](mailto:rpollack1@gmail.com) or call at 412-823-8268.

- **Ron Pollack**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
<p>All times given are local.</p> <p>Details for AAAP Events can be found at:  <a href="https://nightsky.jpl.nasa.gov/event-list.cfm?Club_ID=675&amp;EventEra=Future">https://nightsky.jpl.nasa.gov/event-list.cfm?Club_ID=675&amp;EventEra=Future</a></p>				1	2	3
4		5	6	7	8	10
					<p>* Moon 0.6° S of Pleiades.            * Venus, Mars and Saturn along with Regulus grace the evening sky</p>	<p>* MCPO MEMBERS S.P. (Sunset)            * Venus 1° N of Regulus</p>
11		12	13	14	15	17
				<p>* Crescent Moon joins Evening Planet Grouping</p>	<p>* Crescent Moon joins Evening Planet Grouping</p>	<p>* NEWO &amp; MCPO PUBLIC S.P. (Sunset)            * Perseid Activity begins</p>
18		19	20	21	22	24
						<p>* Jupiter Satellite Action</p>
25	26		27	28	29	31
<p>* Lawrenceville Urban Star Party</p>			<p>* Mercury close to Regulus</p>			<p>* Jupiter Satellite Action            * Kappa Piscium Occultation            * Passavant Retirement Community (7pm)            * Mars/Saturn Conjunction separation 1.8°</p>

## Some Highlights This Month

- July** *Mercury, Venus, Mars and Saturn* populate the evening sky. The latter three planets form a nice group below Leo augmented by the crescent moon near mid-month. *Jupiter and Uranus*, never more than 4° apart all month populate the eastern sky after midnight. For those using programs to predict GRS transits, *Jupiter's System II* longitude is 148°. *Selenographic Colongitude* is 128.65° at 0h UT at beginning of the month. Add 12.2° each day. *(All times below are local)*
- 8<sup>th</sup>-11<sup>th</sup>** *Venus* is less than 2° from Regulus.
- 17<sup>th</sup>** *Perseid* Activity begins. Peak on August 12th. International Meteor Org. Zenith Hourly Rate = 100
- 23<sup>rd</sup>** 00:28 *Io* Shadow Transit Begins  
01:07 *Great Red Spot (GRS)* Transits Meridian  
01:43 *Io* Transit Begins  
02:44 *Io* Shadow Transit Ends  
03:57 *Io* Transit Ends
- 27<sup>th</sup>** *Mercury* 20' S of Regulus at Sunset. About 12° off western horizon.
- 28<sup>th</sup> - 29<sup>th</sup>** *Southern delta Aquarid* Meteor Shower Peak. International Meteor Org. Zenith Hourly Rate = 16. Will be hampered by the 17 and 18 day old moon
- 30<sup>th</sup>** 00:38 *Ganymede* Transit Begins  
01:53 *GRS* Transits Meridian  
02:04 *Kappa Piscium* bright limb occultation begins position angle=26.4°. Occultation ends 03:19 dark lunar limb position angle=260.5°  
02:22 *Io* Shadow Transit Begins  
03:27 *Ganymede* Transit Ends  
03:32 *Io* Transit Begins  
04:38 *Io* Shadow Transit Ends  
05:46 *Io* Transit Ends

## An Appeal for Wagman

The Wagman Observatory building suffered damage this past year and extensive repairs are necessary. To help defray the considerable cost, the AAAP asks its supporters to consider making a donation.

Contributions may be sent to:

AAAP, Inc.  
Michael Meteney - Treasurer  
1070 Sugar Run Road  
Venetia, PA 15367

Please identify the purpose of the donation. They will be tax deductible. Letters for tax accounting will be forwarded in January.

## The AAAP Picnic



*Good food & Good Service  
(compliments of Bill Moutz)*



*Good Company & Good Talk  
(compliments of the Gang)*



*Good Grief...Good Laughs  
(compliments of Flacc Stüfel  
and Pittsburgh's Liquid Sunshine)*

## *A Welcome to Our New Members*

*Michael Antonelli & Family  
Gene S. Brown  
Tom Eng & Family  
Jesse & Bridget Wright*

## *And a Thank You*

*To Maureen & Bill Moutz for keeping The Guide Star both informative and entertaining over the past four years - and making it one of the perks of club membership.*

*Also a personal note of gratitude from the person who'll try to continue your example. Your kindness and generosity in showing me the ropes is greatly appreciated.*

*Two more gracious people would be hard to imagine.*

*- John Cheng*

*Amateur Astronomers Association of Pittsburgh, Inc.  
Founded June 9, 1929 by Chester B. Roe and Leo J. Scanlon*

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**AAAP Member Dues: \$24.00**

**Student Membership  
(K-12 & full time  
college student): \$16.00**

**Family Membership \$40.00**

**Basic Procedure for Paying Dues:**

1. Make check payable to "AAAP Inc."
2. Send check to:

**Michael Meteney, Treasurer  
1070 Sugar Run Road  
Venetia, PA 15367-1514**

**All Guide Star submissions are requested by the 20th day of the preceding month.**

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