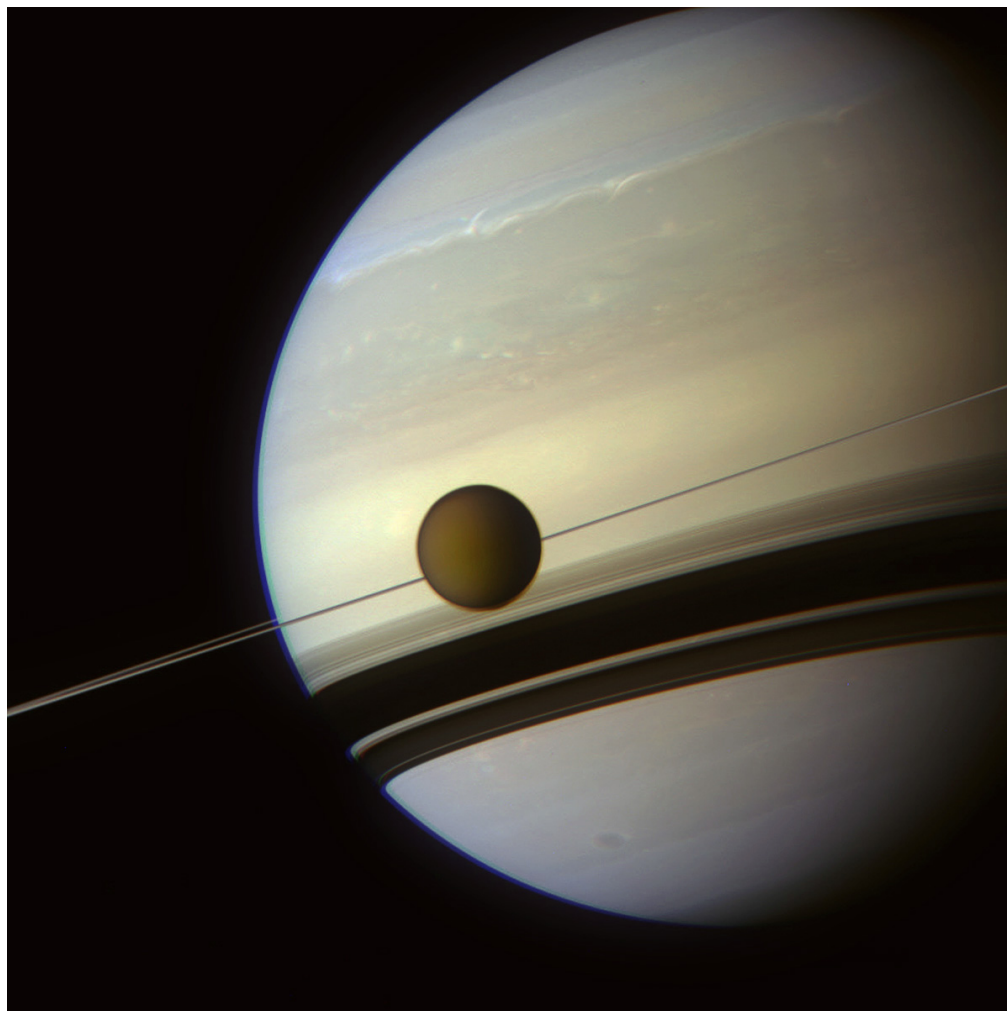


Sky WAA tch



In the Shadow of Saturn's Rings

This image of Saturn from the space probe Cassini shows a bright moon, thin rings, oddly broken clouds, and warped shadows. Titan, Saturn's largest moon, appears above as a featureless tan as it is continually shrouded in thick clouds. The rings of Saturn are seen as a thin line because they are so flat and imaged nearly edge on. Details of Saturn's rings are therefore best visible in the dark ring shadows seen across the giant planet's cloud tops. Since the ring particles orbit in the same plane as Titan, they appear to skewer the foreground moon.

Image Credit: [NASA/JPL-Caltech/Space Science Institute/J. Major](#)

Events for August 2012

WAA Lectures

There will be no WAA lecture in August. Lectures will resume in September.

“Member Presentations Night”

Friday September 7th, 7:30pm

**Miller Lecture Hall, Pace University
Pleasantville, NY**

WAA members will showcase their astrophotos, equipment and other insights. Let us know if you have something to show or tell. Please email the club with a brief idea of what you will be presenting. Free and open to the public. [Directions](#) and [Map](#).

More Upcoming Lectures

**Miller Lecture Hall, Pace University
Pleasantville, NY**

On Friday October 5th our speaker will be Mr. Al Witzgall. His talk will be entitled “The End of the World--but Don’t lose Any Sleep On It.” It will provide his response to the Mayan and other 2012 doomsday predictions. On Friday November 2nd our speaker will be Dr. Caleb Scharf, who is the Chairman of the Astrobiology Department at Columbia University. His talk will be entitled “Planets, Stars, Black Holes and the Quest for Our Cosmic Origins” and will elaborate on the subject of his latest book, *Gravity's Engines*. Lectures are free and open to the public.

Starway to Heaven

Saturday August 11th, Dusk

**Meadow Picnic Area, Ward Pound
Ridge Reservation, Cross River**

This is our scheduled Starway to Heaven observing date for August, weather permitting. Free and open to the public. The scheduled rain/cloud date is July 18th. Participants and guests should read and abide by our [General Observing Guidelines and Disclaimer](#). [Directions](#)

New Members. . .

Nicholas Colangelo - New City
Satya Nitta - Cross River
Frank Moliterno - Mt. Vernon

Renewing Members. . .

Jose E. Castillo - Pelham Manor
Michael & Ann Cefola - Scarsdale
Patricia Mahon - Yonkers
Bill Newell - Mt. Vernon
Ihor Szkolar - White Plains
John James - Sunnyside

Members Classified

For Sale: Celestion 8” SCT and various eyepieces and accessories including tripod & 50 mm finder. Very good condition. Comes with 1¼ in. star diagonal, 26 mm Plossl eyepiece and 7 mm ortho. Also either with the scope or sold separately – 2”. Televue star diagonal, 2” 40 mm Televue wide field eyepiece, 2” Celestron 2X Barlow, Meade variable 2-3 X Barlow, 2” deep sky filter. Contact: Joe Geller by email at Joerg6666@hotmail.com for further details.

As a service to members, the WAA newsletter will publish advertisements for equipment sales and other astronomy-related purposes. Ads will only be accepted from WAA members and must relate to amateur astronomy. Please keep to 100 words, include contact info and provide by the 20th of the month for inclusion in the next issue. The newsletter is subject to space limits; so ads may be held to subsequent issues. The WAA may refuse an ad at its sole discretion. In particular, price information will not be accepted. Members and parties use this classified service at their own risk. The Westchester Amateur Astronomers (WAA) and its officers accept no responsibility for the contents of any ad or for any related transaction. Send classified ad requests to: [Newsletter](#).

WAA APPAREL

Charlie Gibson will be bringing WAA apparel for sale to WAA meetings. Items include:

- Caps, \$10 (navy and khaki)
- Short Sleeve Polos, \$12 (navy).

Call: 1-877-456-5778 (toll free) for announcements, weather cancellations, or questions. Also, don’t forget to periodically visit the [WAA website](#).

Articles and Photos

Green Laser Safety

On July 17th, ABC news reported that a JetBlue pilot suffered an eye injury when a green laser was pointed directly into the cockpit as the plane was en route to New York's John F. Kennedy Airport on Sunday, July 15th. The green laser was shone through the windshield of JetBlue Flight 657 from Syracuse, hitting the first officer in the eye. The plane was on approach at 5,000 feet. The flight landed safely at JFK 10 minutes later. The pilot's injury was described as "minor" but medical attention was sought.

In 2011, there were more than 3,500 documented incidents of lasers being pointed at aircrafts, up from less than 300 in 2005. Two planes were reportedly targeted by a green laser beam in San Francisco in early July. Those pilots were not injured.

Although the beam seems faint to users on the ground, it is still concentrated and can blind pilots even at fairly high altitudes.

Authorities say they're ramping up their response efforts and pursuing stricter penalties.

"Interfering with a flight crew is a federal crime. So, the FBI has looked into these laser incidents over the last several years," said Richard Kolko, special agent with the FBI. Several individuals have been prosecuted.

Laser pointers are also subject to state laws. A Massachusetts man was sentenced to three years in prison in 2011 for shining a green laser at a Massachusetts State Police helicopter in 2007, and a California man was sentenced to 2½ years in federal prison in 2009 for aiming a laser beam at two planes as they were about to land at John Wayne Airport in Orange County.

Laser pointers are not toys. They can be useful to identify celestial objects for teaching purposes, but it is critical that anyone using a laser be mindful of their risks and considerate of the safety of others. The WAA Board has updated the section on laser safety in our [General Observing Guidelines](#). Please observe the guidelines and ask others to do the same. It is particularly important to ensure that no aircraft are near intended targets before activating the beam.

WAA discourages the use of laser pointers at its star parties unless required for valid educational purposes.

- Laser pointers are teaching tools and should only be used for pointing out stars, planets and other celestial objects.
 - Lasers are limited to 5mW or less.
 - The beam must be on for the shortest period necessary and then shut off.
 - Users must ensure that no aircraft are within 60 degrees of the beam at any time, regardless of aircraft altitude.
 - The beam must not be pointed at people, animals, cars, planes, buildings or reflective surfaces.
 - Users must ensure that no one looks directly into the beam, as it could cause blindness.
 - Lasers (including telescope collimators) may not be left unattended.
 - Children under the age of 18 are not permitted to use laser pointers.
-

Book Reviews: Comets, Maps and Copernicus by Larry Faltz

On my Transit of Venus trip to California and Hawaii (see last month's [newsletter](#)) I had to occupy myself for 4 long plane rides plus some down time not filled with the lazy and generally unproductive addiction of television, so I prepared by bringing a book and then by buying three more during the trip.

It's always a challenging pleasure to have to choose a new book, preferably by browsing in an out-of-the-way used book store. On a trip to the American College of Physicians meeting in New Orleans in April, I happened upon Crescent City Books on Royal Street in the French Quarter. In their very small astronomy section I found a pristine copy of *Comets, Popular Culture and the Birth of Cosmology* by Sara Schechner Genuth, published in 1997 by Princeton University Press. At the time, Ms. Genuth was a resident scholar at the Dibner Library of the History of Science and Technology at the Smithsonian Institution and had previously been Curator of the vast History of Astronomy Collection of Chicago's Adler Planetarium.



Halley's Comet in the Bayeux Tapestry (The text translates as "These [people] are looking in wonder at the star.")

The ancients observed comets with alarm, assuming that they were portents of calamitous events: war, famine, the death of kings. One of them, now known to be Halley's Comet, appeared in April 1066, just after the coronation of the Anglo-Saxon Harold Godwinson as King of England. The comet was taken, as usual, as an evil omen, and indeed at the Battle of Hastings on October 14, 1066, Harold was killed and England conquered. The comet was sewn into the Bayeux Tapestry, which accurately tells the entire story of the Norman Conquest, including showing the hapless Harold being dispatched with arrow in his eye. It's definitely worth a trip to Normandy to see this astonishing 950 year-old historic relic for yourself.

The physical nature of comets was of course a complete mystery. Although they were thought by some to be planets, Aristotle recognized in the 4th century BC that they often did not travel in the zodiac and decided that they were sub-lunar, the result of hot, dry "exhalations" catching fire in the atmosphere. His view dominated until the 16th century, when Tycho Brahe showed that the comet of 1577 was at least four times more distant than the moon. Over the next 100 years, the true nature of cometary orbits, but not the true nature of comets, was established.



The comet of 1577 over Nuremberg, from a popular "broadside" published that year

Genuth's study is well-written and scholarly, with 85 pages of references and a 41-page bibliography. I was not surprised to learn that it was an expanded version of her 1988 doctoral thesis. She tracks how the understanding of comets evolved in Western thought, influenced by the differentiation of "popular" and "elite" cultural classes. She notes that the superstitious view of comets held sway for both educated and uneducated alike (or as she describes, "high" and "low" culture) until the 16th century when, as science began to take shape, "high" culture started to discard the naive attributions of comets as harbingers of doom. Nevertheless, nascent scientific thought still harbored quasi-superstitious views about the nature of comets, in particular giving them a putative role in the mechanics and chemistry of the solar system. Newton and Halley viewed comets as essential to the recirculation of matter between the sun and the planets, and Genuth shows that this conception owes much to, and isn't that distant from, earlier views of the nature of comets.

Although the book had an academic birth, is heavily referenced and the author's points closely argued, it is an excellent read and incredibly informative. It is helped by many illustrations from rare original sources that assist the reader to understand how comets were presented to an

increasingly literate and aware public. It's probably hard to find, but that's why you should never pass up the opportunity to browse used bookstores.

I finished the book while still in Los Angeles on the outbound leg of the trip, and so needed something to occupy me on the flight to Hawaii. On a walk one morning on the Third Street pedestrian mall in Santa Monica, we stopped at a large Barnes & Noble. There I spied Ken Jennings' 2011 book *Maphead*, published by Scribner. The book is subtitled "Charting the wide, weird world of geography wonks" and being a maphead myself (as I suspect most of you are) I was irresistibly drawn to this book. Once again, the kismet of bookstore browsing!

Jennings' name might be familiar to you. He's the genius who spent 6 months on *Jeopardy* in 2004 vanquishing all comers with his command of fact and trivia. His book is filled with a vast armada of facts and observations, which he is capable of interrelating in the most interesting ways. He's a charming and personable writer who keeps you irresistibly plugged in to the subject, which is seemingly the entire world of maps and geography. His topics range from maps themselves, to the often scandalous world of rare map dealers (and rare map crooks), to geographic illiteracy, to games people play with maps and geography and to the transformation of maps into the digital age and what that means for them as tools and as art.

I share with Jennings the experience of becoming fascinated by maps in early childhood. I suspect that many of you made a special bond with maps early on as well. My 7th birthday present, which I still have, was a precision "map wheel", a device that one rolls along a map to help calculate distances. Its faces have yellowed over the last half century, but it still works. Whether my parents got it for me merely to play with ("Shut up and go read your maps") or to cleverly

stimulate my ability to calculate the ratios necessary to translate the tool's measurements into miles, based on the map's scale, I don't know. The device is archaic: there are digital versions as well as sites such as Mapquest and Google Maps, but they made those free gas station maps, of which I had dozens, come alive as I plotted various routes all over the US. It was a way of making the outside world accessible, almost visible, to a kid who didn't leave the Bronx very often.



Happy Birthday, 1954

I'm irresistibly drawn to maps whenever they are displayed in books or on walls. An acquaintance owns a fine restaurant in Vail, Colorado, with tables inlaid with large nautical maps (it was a prosaic Chart House before it became the excellent Billy's Island Grill), and I have to admit that each time we eat there I spend much of dinner ogling perhaps the coast of Argentina or islands in the Caribbean out of the corner of my eye. Maps are useful, artistic, even addictive, promises of new experiences and exciting adventures.

Although *Maphead* isn't strictly an astronomy book, the visual-geometric way of looking at the

world is so natural and even essential to astronomy that I am absolutely certain that you will find it enlightening and fun.

I finished this book while still in Hawaii and so I needed something for the plane trip back to San Francisco. Because the small Kona Airport didn't have a decent bookshop, I did some research and found there was one in the Kona town, a few miles further down the road. It turned out to be the rather amazing [Kona Bay Books](#), an unassuming 6,000 square foot warehouse with a superb selection of used books on every subject. It's hard to figure how they got all these books to Hawaii. The science section had hundreds of excellent titles, mostly in fine condition. There were even two pristine copies of the smaller version of Michael Light's *Full Moon*, containing the digitized Apollo photographs and to my mind one of the greatest photography books ever published, a must-have for every astronomer and space travel buff. These are the same photographs that are displayed in the Rose Center. If my luggage wasn't near maximum weight from mounts and scopes I took to the Transit, I would have brought them home and given them to friends (I have the original edition, which is physically a bit larger). They were only \$12 each! Hotel rooms and wing nuts may be expensive on Hawaii (I spent \$1.56 at the well-stocked Ace Hardware in Kona for a 4 mm wing nut I needed for one of my tripods) but used books certainly aren't.

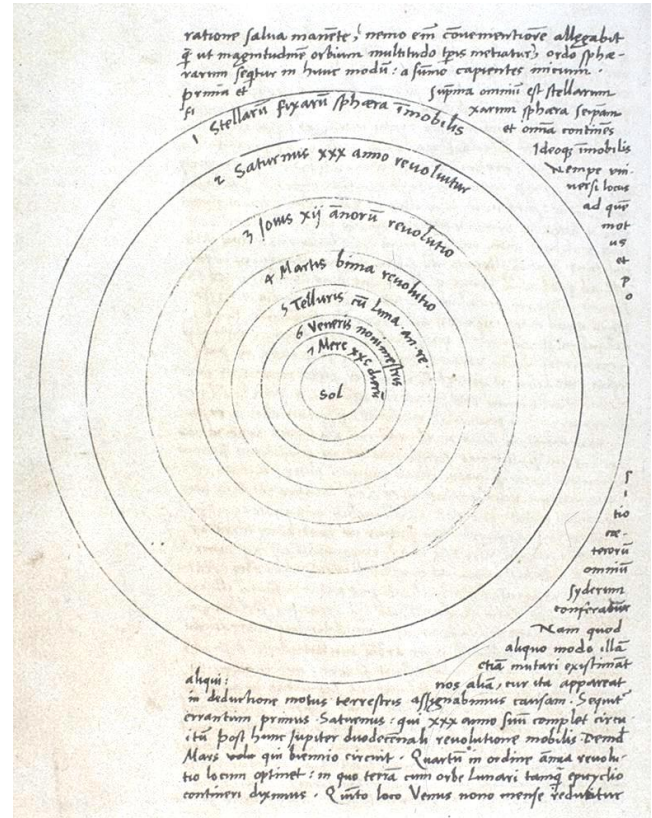
I wanted something (physically) light, and sure enough here was a paperback copy of Harvard professor [Owen Gingerich's](#) *The Book Nobody Read* (Penguin, 2005). Dava Sobel mentioned this work in her presentation on Copernicus to WAA last December. Besides being my old schoolmate, Dava is a friend of Gingerich's, and already knowing his reputation as a scholar, astronomer, teacher and writer, I grabbed the book for \$7.50, half its cover price.



The title page of the first edition of *De revolutionibus*

The title comes from a comment by Arthur Koestler in his 1959 work *The Sleepwalkers* (see my review in the [May 2011 newsletter](#)) that alleges that Copernicus' seminal *De revolutionibus orbium coelestium*, the 1543 book that presented the heliocentric theory of the solar system, was so arcane and difficult that nobody had actually read it. Copernicus' ideas were already known by the time *De revolutionibus* was published. He had outlined them in a short work, the *Commentolarius*, in 1514. In 1533, another astronomer presented Copernicus' ideas to Pope Clement VII (who was not offended). Copernicus' aide and amanuensis Joachim Rheticus published a summary of Copernicus' work in 1540 as the *Narratio Prima*. So it is possible for astronomers to have learned much about Copernicus' ideas and even his proofs without having slugged through *De*

revolutionibus. As a true scholar, Gingerich must have chafed at the thought that earlier colleagues would have passed on what might be thought of as an academic obligation to go to the prime source.



Copernicus' diagram of the solar system, from the first edition of *De revolutionibus*

To disprove Koestler, Gingerich merely tracked down and examined nearly every existing copy in the world of the first and second editions of the book (580 copies as of last count)! By meticulously examining the copies he showed that many people had actually read it, in particular almost all the important and influential astronomers in the century following its publication. He examined notations made in the margins and end papers, reviewed relevant correspondence in libraries all over the world and checked the provenance of the copies as they were bought and sold over the centuries, or bound and re-bound (in the 16th century, books

were published as unbound folios, with the purchaser responsible for binding). He even made a critical deduction from a pinhole in the center of Copernicus' diagram of the solar system in one of the copies! He described bindings, folio sizes and even the "bite" of individual pieces of type on the paper. Gingerich became the world's expert on this single book and was even called upon to testify in criminal and civil trials, since the rare book world is sadly subject to many thefts and cons.

Gingerich was able to travel all over the world, tying many of his trips to astronomy events and conferences. His stature as a historian of science and his vast network of colleagues allowed him to make the connections necessary to find extant copies in all sorts of out-of-the-way places. After publishing a 432-page monograph in 2002 on the technical details of the various copies, Gingerich wrote *The Book Nobody Read* to tell us about his amazing quest.

For a work so narrowly focused on such an arcane topic, *The Book Nobody Read* is unexpectedly fascinating and personal. I was taken with Gingerich's ability to maintain focus on the quest for over 30 years while still making valuable scientific contributions, teaching at Harvard, writing and serving in a variety of academic organizations.

You don't have to spend several million dollars to examine the first edition of *De revolutionibus*. It's been digitized and is available [on-line](#). There's also an English translation in *On the Shoulders of Giants*, edited by Stephen Hawking (Running Press, 2002), which also contains translations of Galileo's *Dialogues Concerning Two Sciences*, Book 5 of Kepler's *Harmony of the World*, Newton's entire *Principia* and several papers by Einstein, including the seminal papers on special and general relativity. Examining *De revolutionibus* in this format shows it to be indeed a complex and formidable work, one that would be daunting to anyone but the most committed scholar.

For the trip back to New York, I picked up (browsing in a bookstore in San Francisco's Embarcadero) Boris Johnson's *Life of London* (Harper, 2011). I'm a confirmed Londonophile, and this easy-reading book by the city's current mayor describes its surprising history through biographical sketches of some of its most famous citizens, sadly none of them astronomers. It made for a nice (but brief) break from astronomy, and it reminded me I'm due for a revisit to the Royal Observatory in Greenwich on my next trip across the pond.

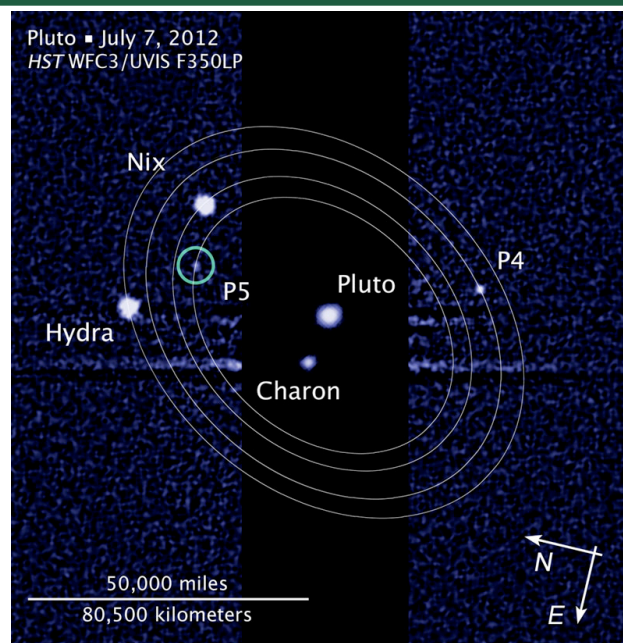
CALL FOR SUBMISSIONS

The *SkyWaatch* is always looking for contributions. Write an article or share your astrophotos, observing reports or book reviews with fellow WAA'ers. Material should be related to astronomy or space science. Send the materials to the [Newsletter](#).



A Familiar Friend . . .

Courtesy of Larry Faltz is this image of the Moon. Notes Larry: this a single, non-stacked image taken 5/27/12 from Playa del Rey, California, using Stellarvue 80 mm f/6 refractor, Canon EOS T3i at prime focus, ISO 1600, 1/1600 sec. Some cropping and a minimal amount of processing in Photoshop.



. . . And a New Acquaintance

A fifth moon has been discovered orbiting Pluto. The moon was discovered earlier this month in images taken by the Hubble Space Telescope. The moon is currently seen as only a small blip that moves around the dwarf planet as the entire system slowly orbits the Sun. The moon, given a temporary designation of S/2012 (134340) 1 or just P5 (as labeled), is estimated to span about 15 kilometers and is likely composed of water-ice.

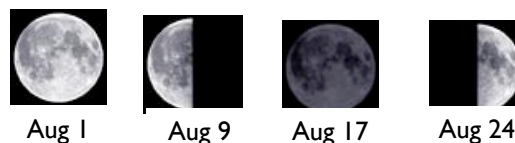
Image Credit: [NASA](#), [ESA](#), Mark Showalter ([SETI Institute](#)).

Almanac

For August 2012 by Bob Kelly

The story goes that August has 31 days because Caesar Augustus stole a few days from February so that his month would have as many days as his next-door neighbor, Julius Caesar. It's just a story, but no matter whose fault it is, the 31 days in August lets us have two full moons – on the 1st and 31st.

There's lots of planetary activity in the dawn and the dusk skies. Let's start with our Prime Time skies, where Mars, Spica and Saturn make a lovely group low in the west after dark, competing with the Olympics during the Neilson ratings' summer sweeps



month. On the 13th and 14th, Mars slips between Saturn and Spica, forming a mis-ordered stop light, with yellowish Saturn on top, reddish Mars in the middle and bluish Spica standing in for green on the bottom. Get your camera – one way to capture the colors is to try taking some of your time exposures slightly out of focus. On the 21st, the Moon joins the scene, completing a keystone formation. While you don't need optical aid to enjoy this view, binoculars can enhance the color differences and gathering up so many bright objects into one binocular view is exhilarating.

As Saturn gets lower in our evening sky, we'll see fewer details in the rings and fewer of its moons as we look sideways through our thick atmosphere, but it's still a crowd-pleaser. We tried 200x on Mars at the Starway in July – just a fuzzy dot, so not much to see there.

If you want to play 'Which of those faint 14th magnitude dots is Pluto?', this month is the time! Pluto is highest for evening viewing amid the many faint stars of Sagittarius. Use a map, a 10-inch or larger telescope, very dark skies or lots of image-enhancing electronics. A little closer and much brighter, Neptune, at magnitude 7.8 and 2.3 arc seconds wide, finds itself lined up behind the Earth from the Sun's point of view. Uranus, with its opposition upcoming in September, is presently at magnitude 5.8 and 3.5 arc seconds wide. They will both be better placed higher in our Prime Time sky over the next few months.

Even if you won't be trolling the stellar depths for Pluto, Sagittarius' classic teapot shape is worth a closer look as sits up highest at this time of year. Follow the 'steam' from the teapot spout with binoculars or a wide-field telescope to some neat star clusters. A star map makes the trip even more enjoyable. The gibbous Moon overwhelms the view of our fainter friends during the last week of the month.

Meanwhile, in the morning sky, Mercury makes a move to copy Venus' race into the morning sky. Mercury's move is just like Venus', except Venus is brighter (magnitude minus 4.5 vs zero), higher in the sky (at 40 degrees vs. 16) and larger in a telescope (at 24 arc seconds vs. 7.4). Mercury starts out as a crescent during the second week of August and Venus and Mercury reach half-full on the 15th and 16th, when the crescent moon comes by. Both Venus and Mercury come to their greatest distance from the Sun in our sky then at 46 degrees and 19 degrees away and it's a great time to see the members of our inner solar system – a rare event for many people.

Jupiter's belts have made some changes since – again – that rewards the 4am observer.

Asteroids Vesta and Ceres play near the horns of the bull Taurus, near Jupiter and Venus. Vesta is easier to find at magnitude 8.2 and passing within a half degree of Aldebaran on the 5th and 6th. They'll come into the

evening sky in December. The Dawn spacecraft is completing its examination of Vesta and will leave for Ceres on September 8th. (JPL invites you to host your own "Hasta la Vesta" celebration that day.)

Venus' distance from the Sun in the sky is good for those who want to see the crescent Moon pass in front of Venus on the afternoon of Monday the 13th. The occultation occurs just about 4:37pm, just before moonset here in the northeast United States and higher in the sky to the west of us. When Venus goes behind the Moon, they will be only 4 degrees above the WNW horizon. It may be easier and still very cool to find the Moon and Venus close together when they reach their highest point in the southern sky between 9 and 10am. Which of them will be easier to see? Compare the intense brightness of the 0.3 arc minute, half-lit planet vs. the closer, but less reflective 30 arc minute, 15% lit lunar crescent.

Everyone's second favorite summer shower (after showering off beach sand and salt) is the Perseids meteors. They are best in the post-1am darkness on the 12th, when 60 or so bright 'falling stars' can streak across the sky. You can watch a satisfying show any time after 10 or 11pm. But you can catch several bright meteors per hour occur in the evening skies on the 11th or 12th, so it's worth a look if you can't make the morning shift – but the fewer evening meteors is like how fewer raindrops hit the back window of a moving car. The morning side of the Earth faces the direction the Earth is moving and sweeps up more meteors.

The as-big-as-a-family-car Curiosity rover gets dropped off in Gale Crater on Mars just after midnight on the 5th/6th. Everything – aerobraking, parachutes, rockets, and then a long cable to winch the rover down to the surface - has to work during what JPL is calling "7 minutes of terror" - for its one chance to land on the rusty planet.

Bob's blog is at bkellysky.wordpress.com