

Sky **WAA** tch

The Monthly Publication of the Westchester Amateur Astronomers

November 2006



◀ Here Is Another Lunar Study

Rick Bria took this lunar photo at the Round Hill Observatory on October 2, 2006. Just past first quarter, this view shows shadow details in the craters of the terminator. Says Rick: "I had to really shrink this image, shot binned 1X1, which started out 8000 X 8000 . . . It looks like you can almost step in and walk around in the original image." It has been said that Astronomers were the first to walk on the Moon, with their eyes, and with their minds.

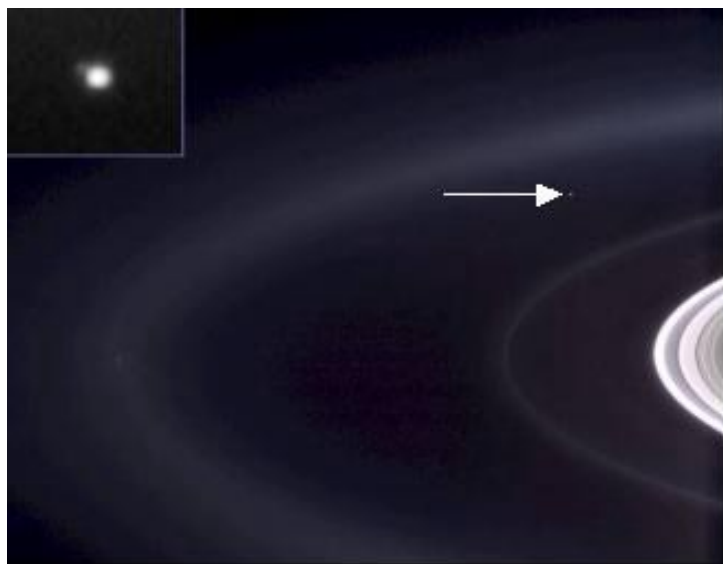
You Are There ▶

Here's looking at you, courtesy of NASA's Cassini Saturn probe. The tiny dot, shot through Saturn's rings, is the Earth. The inset above-left is a magnified shot of the Earth; the asymmetric bulge is the Earth's moon.

At:

<http://antwrp.gsfc.nasa.gov/apod/ap060927.html>

You are encouraged to send your photos and sketches for inclusion in the Newsletter to info@westchesterastronomers.org.



Serving the Amateur Community Since 1983

Events for November 2006

➤ **Transit of Mercury**

Wednesday, November 8, 2 p.m.
Hudson River Museum, Yonkers

The next transit of Mercury won't happen until the year 2016, so catch a transit while you can at the Hudson River Museum. Weather permitting, the Museum invites WAA members to set up their telescopes (with white-light or H-alpha filters) for the public starting at 2 p.m. Stop by even if you don't own a telescope. If the sky doesn't cooperate we will follow the transit via Internet video from inside the Andrus Planetarium.

➤ **Monthly Meeting**

"Technology Transfer: From Undersea to Outer Space and Into Your Local Hospital"
Friday, November 10, 8:00PM
Hudson River Museum, Yonkers

Glen Butler, President and CEO of Life Support Technologies, Inc. gives a talk on technology transfers. Glenn runs a company that trains divers in undersea salvage and has worked with NASA astronauts in simulated zero gravity environments. The lecture is free and open to the public. Join us at 7 p.m. for our social hour or a free planetarium show before the meeting.

➤ **"Starway to Heaven"**

Saturday, November 11, 7-10:00PM
Meadow Picnic Area, Ward Pound Ridge
Reservation, Cross River

This is our scheduled observing date for November, weather permitting. Free and open to the public. Rain/Cloud date will be November 18.

Call: 1-877-456-5778 (toll free) for announcements, weather cancellations, or questions. Also, don't forget to periodically visit the WAA website at: <http://www.westchesterastronomers.org/>.

➤ **Leonid Meteor Shower**

Saturday, November 18, 7 p.m. – Midnight. The Meadow Picnic Area, Ward Pound Ridge Reservation, Cross River

The Leonids will peak around 11:45 p.m. Saturday night and astronomers predict a possible outburst for this year. East Coast observers might see a part of this display as earth-grazing meteors dash across the night sky as the radiant, in the constellation Leo, rises at 11 p.m. Find out whether their prediction is true, bundle up and stop by The Meadow for a night of observing.

Club Bits

Renewing Members...

Lawrence Faltz, Larchmont, NY
Raymond Johnson, Clinton, NY
Bob Kelly, Ardsley, NY
Hans Minnich, Bronx, NY
Robert Rehrey, Yonkers, NY
Tim Tillson, Valhalla, NY

Classified...

FOR SALE: Nexstar 8 with tripod, Pelican hardcase, various Televue eyepieces and other accessories.\$ 1,100.00
Call: 914-588-1866.

Westchester Amateur Astronomers, Inc., a 501(c)(3) organization, is open to people of all ages with the desire to learn more about astronomy. The Mailing address is: P.O. Box 44, Valhalla, New York 10595. Phone: 1 -877-456-5778. Meetings: Andrus Planetarium, Hudson River Museum of Westchester, 511 Warburton Ave., Yonkers. Observing at Ward Pound Ridge Reservation, Routes 35 and 121 South, Cross River. Annual membership: \$25 per family, and includes discounts on *Sky & Telescope* and *Astronomy* magazine subscriptions. Officers: Mike Cefola, President; Robert Davidson, Senior Vice Pres.; Mike Virsinger, Treasurer; Karen Seiter, Secretary; Charles Gibson; Vice Pres. Programs; Barbara Moroch, Vice Pres. Communications; Newsletter: Tom Boustead; Webmaster: Robert Davidson.

Articles

The Planet in the Machine

By Diane K. Fisher and Tony Phillips

The story goes that a butterfly flapping its wings in Brazil can, over time, cause a tornado in Kansas. The “butterfly effect” is a common term to evoke the complexity of interdependent variables affecting weather around the globe. It alludes to the notion that small changes in initial conditions can cause wildly varying outcomes.

Now imagine millions of butterflies flapping their wings, and flies and crickets and birds. Now you understand why weather is so complex. All kidding aside, insects are not in control. The real “butterfly effect” is driven by, for example, global winds and ocean currents, polar ice (melting and freezing), clouds and rain, and blowing desert dust. All these things interact with one another in bewilderingly complicated ways.

And then there’s the human race. If a butterfly can cause a tornado, what can humans cause with their boundlessly reckless disturbances of initial conditions?

Understanding how it all fits together is a relatively new field *called* Earth system science. Earth system scientists work on building and fine-tuning mathematical models (computer programs) that describe the complex inter-relationships of Earth’s carbon, water, energy, and trace gases as they are exchanged between the terrestrial biosphere and the atmosphere. Ultimately, they hope to understand Earth as an integrated system, and model changes in climate over the next 50-100 years. The better the models, the more accurate and detailed will be the image in the crystal ball.

NASA’s Earth System Science program provides real-world data for these models via a swarm of Earth-observing satellites. The satellites, which go by names like Terra and Aqua, keep an eye on Earth’s land, biosphere, atmosphere, clouds, ice, and oceans. The data they collect are crucial to the modeling efforts.

Some models aim to predict short-term effects—in other words, weather. They may become part of severe weather warning systems and actually save lives. Other models aim to predict long-term effects—or climate. But, long-term predictions are much more difficult and much less likely to be

believed by the general population, since only time can actually prove or disprove their validity. After all, small errors become large errors as the model is left to run into the future. However, as the models are further validated with near- and longer-term data, and as different models converge on a common scenario, they become more and more trustworthy to show us the future while we can still do something about it—we hope.

For more information on NASA’s (and their partners’) Earth missions, visit: science.hq.nasa.gov/missions/earth.html. The Jet Propulsion Laboratory, California Institute of Technology provided this article, under a contract with NASA.



This image may be downloaded at: http://spaceplace.nasa.gov/news_images/cloudsat_3D_clouds.jpg. CloudSat is one of the Earth observing satellites collecting data that will help develop and refine atmospheric circulation models and other types of weather and climate models. Its unique radar system reads the vertical structure of clouds, including liquid water and ice content, and how clouds affect the distribution of the Sun’s energy in the atmosphere. See animation of this simulation at: www.nasa.gov/mission_pages/calipso/multimedia/cloud_calip_mm.html.

Roman Pilgrimage

(Part 1)

By Pat Mahon

Under Vega's watchful eye, a Delta 767 dipped its wing eastward, thereby giving credence to a journey long intended--of one seeking an audience with the past of a people long gone, but whose face lingers on in such names as "Patricia". Latin in origin, its translation as patrician describes a person of high birth belonging to one of the citizen families of Ancient Rome.

Five years, and once again I found a terrible irony in the beauty of a September morn. This time it is as I look down upon the anguished face of a man whose body surrendered itself long ago to the dark



Inner Courtyard of villa with Frescoes adjoining Small Shrine



Temple of Apollo with Sundial, Pompeii.

furies of Vesuvius. His skeletal-plaster remains are but one of a population of 25,000 inhabitants of Pompeii whose lives were terminated on that August Day in 79 A.D. Excavations continue to tell the story of this once bustling port of call to many in the ancient world. One need only to follow the ruts etched by chariots into its roads to discover its vibrant past of food bars, bakeries, markets, a finance center, an amphitheatre, as well as its brothels, of which they numbered nine.

Rome's new riches, acquired through trade, were much reflected in what remains of Pompeii's villas. The largest and wealthiest was known as the House of the Fawn. Frescoes of Pompeian life once lined the walls of this great house whereas others lie sequestered in lesser villas. The mosaic doormat still lies out front. Its translation reads: Welcome Guest. I am one, too late.

However devoid of telescopes, Pompeian's were not without their own interface with the heavens. Their streets were such that they optimized the reflection of the full moon and in doing created an early form of streetlight. A temple to Apollo still stands, flanked by a statue of Diana. The outlying walls surround an open courtyard with a sacrificial altar intact, behind which to the side is a podium with a sundial resting upon it.

Pompeii releases her daily visitors with the usual mementos of postcards, books and snapshots. I was dismissed on a more personal note. Upon exiting the Necropolis area, I slipped and down on my left side. It wasn't until a week later at home that I realized I had received something more than a badly bruised knee—I now have a small indented area between my forearm and my left elbow joint.



Rome's Version of the Saturn V Rocket (Courtesy of the Pompeian Red-Light District)

Lacking pain and broken bones, it is still uncanny to have one's vulnerability exposed by a city that presumably died out long ago or has it? However, I would like to reassure WAA's "Bar-Rats" that this slight reconfiguration will not deter me from raising a glass along with them, given any liquid occasion. Simply think of me as a girl with a bit more curve.



Food Vendor Sign to Pompeii's version of Bennigan's

Photo Gallery



◀ Composite M31 and the Moon

John Paladini took these shots of M31 (the great Andromeda galaxy) and the Moon using the same equipment—3-inch jaegers f/5 and Meade Deep Sky Imager—and then merged them with Imerge software. M32, which is an elliptical satellite galaxy of the Andromeda galaxy, is visible to the left and above M31's core.

To emphasize the contrast in John's photo study, think about the dimensions involved: The Moon measures about $\frac{1}{2}$ degree of arc and lies 240,000 miles from Earth. The Andromeda galaxy measures at least 3 degrees of arc (six times that of the Moon) and is a staggering 2.4-2.9 million light-yrs away (a light-yr is approximately 6 trillion miles).



◀ A Department Store Telescope?

John Paladini took this shot of the Flame nebula in Orion (NGC 2024) using a Tasco 4.5 inch f/4 telescope he bought for \$60. This is a stack of 5 1-minute shots using the Meade Deep Sky Imager.

The bright star is Zeta Orion.

M15 ▶

Matt Ganis highlights Pegasus in his **Constellation Corner** that follows. As he points out, the globular cluster—M15—is an interesting object in Pegasus and is visible in almost any scope or through binoculars. It's well worth a trip to Ward's Pound Ridge to see this fine cluster in a double-digit Dob, like one of those that graced the Meadows Picnic area on October 22nd for the October Starway to Heaven. At: <http://antwarp.gsfc.nasa.gov/apod/ap950726.html>



Call for Nominations

It's time to hold our annual elections for the 2007 calendar year . Any current member with an interest in volunteering as an officer is welcome to nominate themselves (or suggest someone else) to the following positions: President, Senior Vice President, Treasurer, Secretary, Vice President Field Events, Vice President Programs and Vice President Communications. Nominations must to be received by November. This is a great opportunity for anyone to combine his or her interest in astronomy with the month -to-month affairs of the club. Please consider running and contact the club.

Constellation Corner:

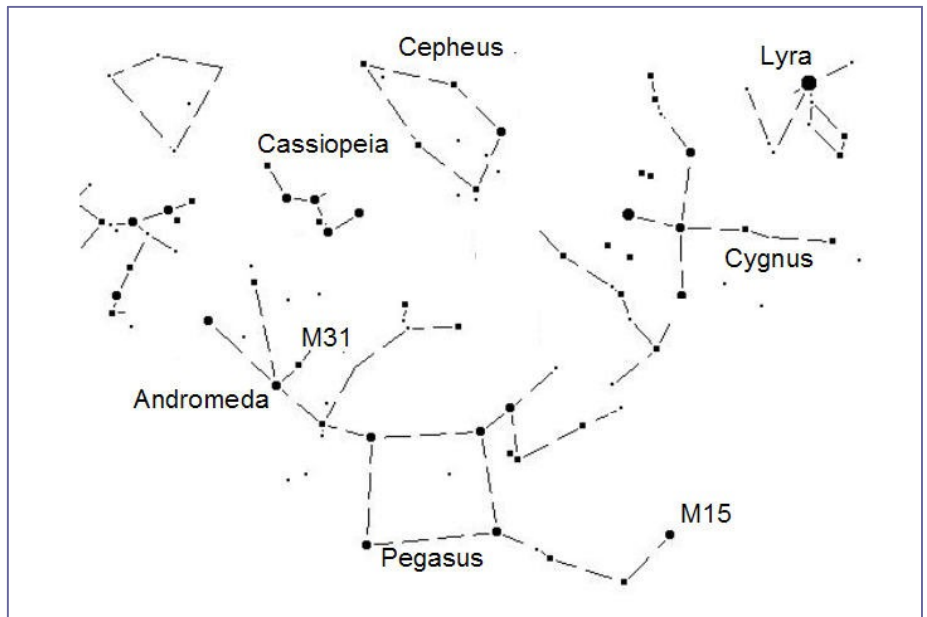
By Matt Ganis

High in our November skies this month, we find the constellation of Pegasus. This month I thought I'd do a tour of this region of the sky.

In Greek mythology Pegasus or the winged horse, is the son of Poseidon, god of the sea, and the Gorgon Medusa. Pegasus sprang from Medusa's neck when she was killed by the hero Perseus. Shortly after its birth, the magic steed struck the ground on Mount Helicon, and on that spot a spring, later sacred to the Muses and believed to be a source for poetic inspiration, began to flow. Many tried to catch and tame the creature, a task that became the obsession of Bellerophon, prince of Corinth. On the advice of a seer, Bellerophon spent a night in the temple of the goddess Athena. As he slept, the goddess appeared to him with a golden bridle and told him that it would enable him to capture Pegasus. When Bellerophon awoke, he found the golden bridle beside him, and with it he easily captured and tamed the winged horse. Pegasus proved to be a great help to Bellerophon and aided the hero in his adventures against the Amazons. Bellerophon was overcome by his own pride, however. When he attempted to fly to the top of Olympus to join the gods, the wise horse threw him leaving Bellerophon to wander about, hated by the gods. Pegasus then found shelter in the Olympian stalls and was entrusted by Zeus with bringing him his lightning and thunderbolts.

Looking in our Zenith this month (maybe slightly to the West) we'll find the winged constellation high in our evening skies. It's hard to miss the Diamond shaped asterism of the "Great Square of Pegasus". The left-hand star of the Square, Alpheratz, is actually in Andromeda, and begins a lovely string of stars in that constellation that goes down and to the left (pointing off to Perseus). Next to Alpheratz (which is about 94 light years distance), pointing in the direction of Cygnus and located about 200 light years from us, is the magnitude +2.0 star, Scheat. Directly "below" Scheat is the star Markhab and with Algenib to it's left (in the diagram above). On a nice clear evening the square looks more like a diamond (a baseball diamond) in the sky than anything else.

There are really two deep sky objects that might be of interest for those of you looking to explore. On the "right" side of Pegasus, under the constellation of Cygnus, look for the bright globular cluster of M15. At a distance of about 33,600 light years and total visual brightness of 6.2 magnitude it has an absolute magnitude of -9.17, or roughly 360,000 times that of our sun. The slightest optical aid, opera glasses or small binoculars, reveal it as a round nebulous object. It appears as a round mottled nebula in 4-inch telescopes, with at best the very brightest stars visible, but otherwise unresolved in a fine star field. In larger telescopes more and more stars become visible the outer parts are resolved, with a more irregular, non-circular outline.



While not part of Pegasus, M31, or the Andromeda galaxy is nearby in the direction of Alpheratz. Located at a distance of 2.4 -2.9 million light-years, M31 or the famous Andromeda galaxy is visible to the naked eye even under moderate conditions.

So for you disappointed Mets and Yankee fans, even though our New York teams didn't make it to the world series, the great square of Pegasus, looming like a large baseball diamond over our heads, reminds us: there is always next year!

Almanac

For November 2006 by Matt Ganis



Nov 5



Nov 12



Nov 20



Nov 28

On November 8th, the planet Mercury will transit the Sun starting about 2:12pm for us here in New York. A transit is the passage of a planet across the Sun's bright disk. At this time, the planet can be seen as a small black disk slowly moving in front of the Sun. The orbits of Mercury and Venus lie inside Earth's orbit, so they are the only planets, which can pass between Earth and Sun to produce a transit. Transits are very rare astronomical events. In the case of Mercury, there are on average thirteen transits each century. A transit of Mercury occurs only if the planet is in inferior conjunction with the Sun (between Earth and Sun) and is also crossing the through Earth's orbital plane (the Ecliptic). During the present period in Earth's history, Mercury's orbit crosses Earth's orbital plane in early May and early November each year. If the Mercury is passing between the Earth and Sun at that time, a transit will be seen.

For those of you that are interested in getting a glimpse of two of the remote planets in our Solar System, you're in luck this month. On the night of November 26th, the moon will be about 3 degrees to the south of Neptune in the constellation of Capricornus. On the night of the 27th, the Moon moves in between Neptune and Uranus (where it's about 9 degrees away) as it travels along the Ecliptic. Then finally on the 28th, as the moon continues it's Eastern progression in Aquarius it's about 5 degrees from Uranus (this time on the "other side" of the planet). Remember, it's daily trek across our sky, the moon appears to move about 15 degrees per day (9 degrees from Uranus on the 27th plus 5 degrees away on the 28th is approximately 15 degrees – OK, I rounded a little when I reported the separations on the various nights).

Saturn rises into our evening skies around midnight at the beginning of the month—which means it will be visible throughout the night (since it will set around 1:45 in the afternoon). By month's end, the planet will rise by 10pm. It's increasing slightly in brightness over the course of the month, when it

starts at a magnitude +0.41 and brightens ever so slightly to +0.3 by month's end.

Comet C/2006 M4 SWAN was discovered in July of 2006 using the SOHO spacecraft, which carries an instrument called SWAN (Solar Wind ANisotropies). It images various parts of the sky, and if a comet is brighter than magnitude 10 and has sufficient gaseous emissions it can be detected with this instrument. Currently M4 SWAN is visible with the naked eye and during the month of November can be found moving through the constellation Hercules. The Comet reached its maximum brightness in late October, but should still be bright enough to be seen with small binoculars or even the naked eye from suburban locations. A telescope will also show a lovely ghostly green tail about one degree long.

So this should be an interesting month for observing. We have an interesting daytime event and then, when the (long) day is done, there are some interesting nighttime objects to keep us observing. Enjoy!

