

Sky **WAA** tch

The Monthly Publication of the Westchester Amateur Astronomers

August 2007



◀ The Whirlpool

Last March, Rick Bria and Ted Schimenti provided us with a black-and-white image of M51 in Canes Venatici, arguably the best face-on galaxy for amateur viewing. Here's Rick and Ted's recent color version using the LLRGB technique (luminance layered) described last month.

M51 is 50,000 light-years across and is one of the nearer galaxies outside of our Local Group at 15 million light years.



◀ Planetary Line-up

Bob Kelly took this image of Saturn, the crescent Moon and Venus on June 18th after sunset at the Ardsley Middle School. He used his electronic Canon A40--no zoom; the exposure was 3 seconds, with sensitivity at ISO 100.

If you're trying to visualize the Ecliptic, this photo should help.

Events for August 2007

➤ Monthly Meetings

Editor's Note: There will be no monthly meeting for August at the Andrus Planetarium. Our next meeting will be the Amateur Night in September. See below for details on our Annual Telescope workshop.

WAA Amateur Night.

Friday September 7, 8:00PM

Andrus Planetarium

Hudson River Museum, Yonkers

WAA members will showcase their astrophotos and equipment. 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.

➤ "Telescope Workshop"

Saturday, August 4th, 7:00-11pm

Meadow Picnic Area, Ward Pound Ridge Reservation, Cross River

This is our annual workshop for members and the public who might need help in setting up, collimating and using their telescopes.

CANCELLATION NOTICE:

Camp Astronomy previously scheduled for Camp Ramah in the Berkshires has been canceled.

Club Bits

New Members...

Douglas Baum, White Plains, NY

Renewing Members...

Robert Fath, Scarsdale, NY
Matthew Fiorillo, White Plains, NY
Joe Geller, Hartsdale, NY
Charlie Gibson, Scarsdale, NY
Tony Kim, South Salem, NY
Amelia Lawrence, Millwood, NY
Michael Rinaldi, Scarsdale, NY
Mandira Roy, Hastings-on-Hudson, NY
Joe Sestito, Hawthorne, NY
Kevin and Dick Shaw, Yonkers, NY
Timothy Tillson, Valhalla, NY

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/>.



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 is \$25 per family, and includes discounts on *Sky & Telescope* and *Astronomy* magazine subscriptions. Officers: President: Charlie Gibson; Senior Vice President: Pat Mahon; Secretary: Barbara Moroch; Treasurer: Michael Virsinger; Vice President Membership: Karen Seiter; Vice President Programs: John James; Vice President Field Events: David Butler; Newsletter: Tom Boustead; Webmaster: Robert Davidson.

Articles

Omit Needless Bytes!

by Patrick Barry and Tony Phillips

Now is an exciting time for space enthusiasts. In the history of the Space Age, there have never been so many missions “out there” at once. NASA has, for example, robots on Mars, satellites orbiting Mars, a spacecraft circling Saturn, probes en route to Pluto and Mercury—and four spacecraft, the two Voyagers and the two Pioneers, are exiting the solar system altogether. It’s wonderful, but it is also creating a challenge.

The Deep Space Network that NASA uses to communicate with distant probes is becoming overtaxed. Status reports and data transmissions are coming in from all over the solar system—and there’s only so much time to listen. Expanding the network would be expensive, so it would be nice if these probes could learn to communicate with greater brevity. But how?

Solving problems like this is why NASA created the New Millennium Program (NMP). The goal of NMP is to flight-test experimental hardware and software for future space missions. In 1998, for instance, NMP launched an experimental spacecraft called Deep Space 1 that carried a suite of new technologies, including a new kind of communication system known as Beacon Monitor.

The system leverages the fact that for most of a probe’s long voyage to a distant planet or asteroid or comet, it’s not doing very much. There’s little to

report. During that time, mission scientists usually only need to know whether the spacecraft is in good health.

“If you don’t need to transmit a full data stream, if you only need some basic state information, then you can use a much simpler transmission system,” notes Henry Hotz, an engineer at NASA’s Jet Propulsion Laboratory who worked on Beacon Monitor for Deep Space 1. So instead of beaming back complete data about the spacecraft’s operation, Beacon Monitor uses sophisticated software in the probe’s onboard computer to boil that data down to a single “diagnosis.” It then uses a low-power antenna to transmit that diagnosis as one of four simple radio tones, signifying “all clear,” “need some attention whenever you can,” “need attention soon,” or “I’m in big trouble—need attention right now!”

“These simple tones are much easier to detect from Earth than complex data streams, so the mission needs far less of the network’s valuable time and bandwidth,” says Hotz. After being tested on Deep Space 1, Beacon Monitor was approved for the New Horizons mission, currently on its way to Pluto, beaming back a simple beacon as it goes. Discover more about Beacon Monitor technology, as well as other technologies, on the NMP Technology Validation Reports page: <http://nmp-techval-reports.jpl.nasa.gov>.

The Jet Propulsion Laboratory, California Institute of Technology provided this article, under a contract with the NASA.



This artist's concept shows the New Horizons spacecraft during its planned encounter with Pluto and its moon, Charon. The spacecraft is currently using the Beacon Monitor system on its way to Pluto. *Credit: Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute (JHUAPL/SwRI)*

Observing Report

Transit, Comet, Veils Oh My by Dave Butler

July 14th, Pound Ridge—

The sky was not good. A thin layer of clouds covered most of it, with thicker clouds to the south near Jupiter and below Venus. Venus was about 1/3 lit—bigger than Saturn and almost as big as Jupiter. Venus was very low only about 10 degrees above the horizon when I started. Regulus could be seen in the viewfinder, but a GOTO was required to find Saturn, also about 10 degrees high. Saturn looked classic but none of its moons showed through the clouds.

Jupiter was much lower than last year and so provided fewer details. It showed only 3 moons at this time, but that was to change. Ganymede appeared on the left side of Jupiter above the bands (below the bands on the Newtonian telescope) and moved slowly away from Jupiter.

I learned that a transit was about to start. The transit shadow started on the right side above the bands; it first showed up on a 12-inch Dob as an indentation on the edge. My scope showed a very clear black dot with some diameter. It was clearer on all scopes at low power (83x) on my scope. On the 12-inch 75x and 140x were clear. It took about 2 hours to cross the top of the planet.

Given the conditions, double stars made apt targets—Algieba was an easy split as was Rasalgethi. I tried to split Antares, but its companion, which appeared green, was inside the primary's diffraction ring. So the split could not be confirmed.

Comet C/2006 VZ13 was in Draco; I hadn't entered it in my controls but wrote down its location. My scope went right to it. The sky was not very transparent. Still, the Comet's shape was slightly irregular. It had a surface brightness about the same as the Dumbbell Nebula but was about 1/3 the length. The

Comet's center was only slightly brighter. Several People tried with Binoculars but were not successful. Later Jimmy Gondek captured it, but there was no indication of any color.

Turning to the deep-sky, the Ring Nebula was just like a ring formed by a puff of smoke. The Dumbbell Nebula was large but easy to see. The Cat's Eye Nebula is about 3 minutes from a 10-magnitude star, but much larger than the star. The nebula is almost round but slightly longer on one axis. This planetary nebula is extremely bright; I viewed it at 83x and 250x. Other scopes also viewed the blinking nebular.

Globular Clusters M13, M92, M3, M5 and M56 were all easy to resolve. M71 was irregular and as such didn't look like a globular cluster nor could it be resolved. M4 and M80 were in the clouds.

The only diffuse nebular visible in the Tea Pot area was the Swan Nebula through the thin clouds. It was dimmer than normal but easily visible. I viewed the Black Eye Galaxy and M81 but was not impressed by their brightness so gave up and didn't view the other 6 galaxies on my list.

The best objects of the night were the Eastern and West Veils; two parts of a supernova remnant that are separated by two degrees. A 12-inch scope with an OIII filter gave awesome views. The Eastern Veil showed fine lines of gas that stretched longer than the eyepiece could view. The Western Veil had a lot of wandering threads some close together and others not. To me, the stars appeared blue while the scopes owner saw green—a very impressive sight. I need an OIII filter.

Constellation Corner:

By Matt Ganis

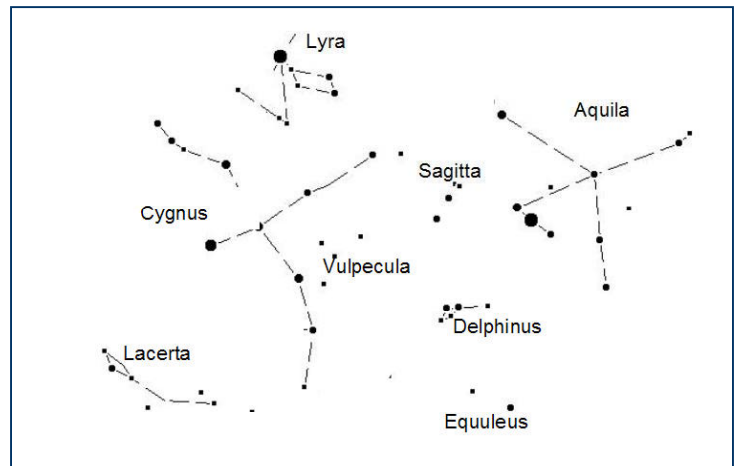
"Big things come in small packages"—or so the saying goes. This may be true in our day-to-day lives, but unfortunately it's not always the case in Astronomy. This month I'd like to take a look at some small constellations in our summer/autumn skies. While they may not be jam-packed with stellar objects, they are interesting nonetheless, if not for their contents, then for their origins/stories.

Taking a look in the region of Cygnus (the Swan) and Aquila (the Eagle) there are a series of tiny constellations that rarely get recognition. I've talked in the past about the Summer triangle (made up of stars from the constellations Cygnus, Aquila and Lyra) but this time, let's look at the region between two of those constellations. Located between Cygnus and Aquila are four tiny constellations: Sagitta, the arrow; Vulpecula, the fox; Delphinus, the Dolphin and Equuleus, the tiny horse. Let's have a look at each of these constellations in order starting from the "top".

Sagitta (the third smallest constellation in our sky) represents the arrow which the Greeks believed was the arrow used by Eros, or Cupid. A neighboring constellation, Aquila, was supposedly guarding the arrow for Eros. A summer constellation, Sagitta is located in the bright eastern section of the Milky Way where an edge of the Great Rift runs west of its alpha and beta stars. (The Great Rift is a band of dust clouds that appears to divide the galaxy into two filaments beginning at the northern end of Cygnus.) Another legend ties the arrow to Prometheus, who had stolen fire from Zeus and was punished by being chained to a mountain top. There an eagle (Aquila?) ate Prometheus' liver each day. Unfortunately for Prometheus, his liver grew back each night and the eagle returned daily to torture him for defying Zeus. The ordeal continued until Heracles shot the eagle with the arrow that Sagitta represents. It is also thought to be an arrow shot by Hercules as he was hunting the two birds, Aquila and Cygnus.

Vulpecula (originally "Vulpecula com Anser" which translated to "Fox with Goose") was invented in the 17th century by the Polish astronomer Hevelius. Vulpecula is a star group without any stories because it was created to fill an otherwise vacant part of the sky. Hevelius reportedly said, "I wished to place a fox and a goose in the space of the sky well fitted to it; because such an animal is very cunning, voracious and fierce. Aquila and Vultur are of the same nature, rapacious and greedy." For

such a small, almost "non-existent" constellation, Vulpecula contains one of the more famous planetary nebulas in our sky, M27—the "Dumbbell" Nebula—the type of nebula our Sun will produce when nuclear fusion stops in its core.



Continuing "south" in the diagram above, we come to the tiny constellation of Delphinus. The four main stars form an asterism known as "Job's Coffin". Interestingly, the names of the two main stars, Alpha Del (Sualocin) and Beta Del (Rotanev) were first mentioned in 1814 in a star catalog, published at the Palermo Observatory in Italy. Read backwards, these two names resolved to Nicolaus Venator, which is the Latin version for the Italian name Niccolò Cacciatore, who was the assistant director of the observatory in this time. Pretty interesting, I always thought the "Name a Star" was a recent phenomenon.

Finally, we reach Equuleus, or "the Little Horse" which is a tiny constellation formed by a "warped square". The constellation is positioned between Delphinus and Pegasus, and is the smallest constellation next to the Southern Cross. Equuleus is associated with the foal Celeris (meaning "swiftness" or "speed") and is the brother of the winged horse Pegasus. Some myths say that Equuleus is the horse struck from Neptune's trident, during the contest between him and Athena when deciding which would be the superior. Because this section of stars rises before Pegasus, it is often called Equus Primus, or the First Horse.

So while it's not easy to observe these small, faint constellations, I thought that some of the stories were interesting nonetheless. I don't suspect that many of the stars can be picked out in our skies, but a good, clear night, it might be worth some time.

Almanac

For August 2007 by Matt Ganis



Aug 6



Aug 12



Aug 20



Aug 28

It's funny, when I write these articles; I typically look back on the previous years' version to make sure I don't repeat myself (too much). Last year I was "complaining" about it being too hot, this year I'd complain about too much rain. You just can't please an astronomer, can you? ;-)

The legendary Perseid meteor shower peaks in early August (between the 12th and 13th of the month). This year's shower is expected to display the greatest number of meteors on Sunday evening into early Monday morning (August 13th) before dawn. Every year during mid-August, when the Earth passes close to the orbit of the comet Swift-Tuttle, it passes through the material left behind by the comet from its previous visits. This material rams into our atmosphere at approximately 37 miles per second (or about 60 kilometers per second) to create bright streaks of light in our midsummer night skies.

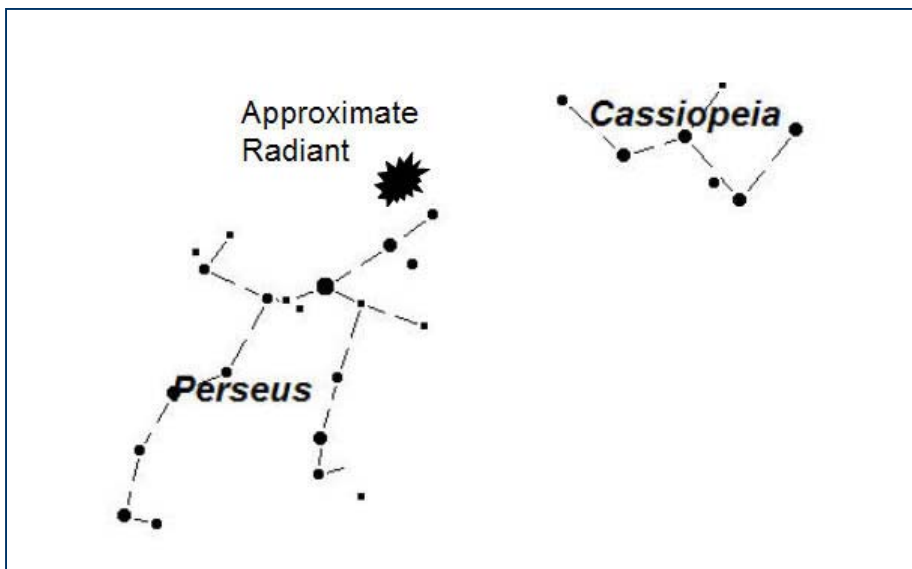
The meteor show should begin between 9:00 and 10:00pm on Sunday, August 12th when the constellation Perseus rises in the northeast. This is the time to look for Perseid Earthgrazers or meteors that approach from the horizon and skim the atmosphere overhead (like a stone skipping the surface of a pond). Earth grazers are long, slow streaks of light and tend to be more colorful than the trails that will occur later in the evening. You won't see a lot of them. If you're lucky, you'll catch one or two, but it's slow enough, they can be quite beautiful.

As the night unfolds, Perseus will climb higher into our sky and the meteor rate will increase. By about 1am on Monday morning, August 13th, dozens of Perseid may be flitting across the sky every hour. The crescendo comes before dawn when rates could exceed a meteor a minute! (The estimate is about 60-90 per hour). Given that the New Moon occurs on August 12th, the stage is set for a fantastic shower (assuming of course Mother Nature cooperates and keeps the rain clouds away).

The brightest planetary object in our August sky is, of course, the planet Jupiter. The (very) bright

planet rises into our eastern skies around 4pm in the afternoon, placing it very high in our southern skies around 9pm. The planet will remain in our skies shining at about magnitude -2.3 until about 1:30am (just in time for the meteor shower).

On another note, for those of you that are planning a west coast vacation at the end of August, you may be in for a treat. In the early hours on the 28th of August we get to witness yet another Lunar eclipse. The times aren't the best for those of us "stuck" on the East coast. The eclipse will officially begin around 4:20am with the Moon hanging just over the western horizon. We'll get to see it go into totality around 5:52 (maybe) depending on the Sun, the brightness of the sky and how much of the



western horizon you can see. We won't be able to watch it come out of the eclipse since the totality ends around 7:23am and the partial eclipse ends at about 8:30am (well after the Moon has fallen below the western horizon). But, like I said, if you happen to be on the West coast, you can catch the full eclipse (from about 1:20am PST when the penumbra is first visible until about 5:24am PST when the partial eclipse ends).

So I hope you catch a few more good nights of summertime star gazing. Keep your fingers crossed that it stays clear for this year's Perseids. Putting on my "glass is half full" hat—maybe it's good that it's raining so much, maybe it'll stay clear for the month of August. I've got my fingers crossed.