

Sky **WAA** *tch*

The Monthly Publication of the Westchester Amateur Astronomers

October 2009



North America Nebula

Doug Baum captured this tri-color narrowband image of the North American Nebula in the Hubble Palette. The Hubble Palette color mapping scheme is H-alpha in Green, Sulfur II in Red and ionized OIII in Blue. The image scale is 2.47 arc seconds per pixel. The total Exposure is 4.75 hours. Doug used a Takahashi FSQ-106 EDXII telescope and a QSI 532wsg CCD Camera.

The North America Nebula (aka NGC 7000) is an emission nebula in Cygnus. Its estimated distance is 1800 light years.

Events for October 2009

➤ **Monthly Meetings**

“NASA Kepler Mission”

Friday October 2nd, 7:30PM

Andrus Planetarium

Hudson River Museum, Yonkers

Join us for WAA's first teleconference—a visual presentation of NASA's Kepler Mission. Kepler is surveying our region of the Milky Way galaxy to discover Earth-size and smaller planets in or near the habitable zone for life. Our guest speaker is NASA scientist Doug Caldwell. Doug is an expert on one of the most promising schemes for finding small worlds far beyond our solar system: looking for the slight dimming of a star caused when a planet crosses between it and us. Doug currently serves as the Instrument Scientist for Kepler. Free and open to public.

“What Astrophotography Teaches Us about Astronomy”

Friday November 6th, 7:30PM

Andrus Planetarium

Hudson River Museum, Yonkers

Our speaker is Ruben Kier, author of “The 100 Best Astrophotography Targets: A Monthly Guide to CCD Imaging for Amateur Telescopes.” Ruben has contributed to *Sky and Telescope* and *Astronomy* magazines. Free and open to the public.

➤ **Starway to Heaven**

Saturday, October 17th, 8:00-10:00PM

Meadow Picnic Area, Ward Pound Ridge Reservation, Cross River

This is our scheduled Starway to Heaven observing date for October, weather permitting. Free and open to the public. The scheduled rain/cloud date is October 24th.

New Members. . .

Matthew Wilkes, Katonah

Renewing Members. . .

Mike and Ann Cefola, Scarsdale

Joe Geller, Hartsdale

Bill Newell, Mt. Vernon

Glen and Patricia Lalli, White Plains

Terry Pratt, Scarsdale

Steve Petersen, White Plains



Bob Kelly took this image of the almost full Moon and Jupiter over church spires in Niagara Falls, NY Wednesday evening Sept. 2nd, a 5-sec exposure with a Canon A40.

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: Mike Virsinger; Vice President: Charlie Gibson; Vice President Programs (lectures): Pat Mahon; Treasurer: Doug Baum; Vice President Membership: Paul Alimena; Vice President Field Events: David Butler; Newsletter: Tom Boustead.

Articles and Photos

Spitzer, the Sequel

The Spitzer Space Telescope is getting a second chance at life.

The liquid helium “lifeblood” that flows through the telescope has finally run out, bringing Spitzer’s primary mission to an end. But a new phase of this infrared telescope’s exploration of the universe is just beginning.

Even without liquid helium, which cooled the telescope to about 2 degrees above absolute zero (-271°C), Spitzer will continue to do important research—some of which couldn’t easily be done during its primary mission. For example, scientists will use Spitzer’s “second life” to explore the rate of expansion of the universe, study variable stars, and search for near-Earth asteroids that could pose a threat to our planet.

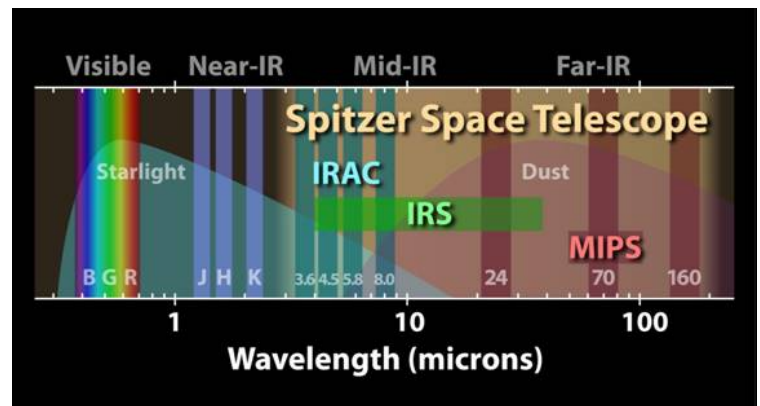
“We always knew that a ‘warm phase’ of the mission was a possibility, but it became ever more exciting scientifically as we started to plan for it seriously,” says JPL’s Michael Werner, Project Scientist for Spitzer. “Spitzer is just going on and on like the Energizer bunny.” Launched in August 2003 as the last of NASA’s four Great Observatories, Spitzer specializes in observing infrared light, which is invisible to normal, optical telescopes. That gives Spitzer the power to see relatively dark, cool objects such as planet-forming discs or nearby asteroids. These objects are too cold to emit light at visible wavelengths, but they’re still warm enough to emit infrared light.

In fact, all warm objects “glow” with infrared light—even telescopes. That’s why Spitzer had to be cooled with liquid helium to such a low temperature. Otherwise, it would be blinded by its own infrared glow. As the helium expires, Spitzer will warm to about 30 degrees above absolute zero (-243°C). At that temperature, the telescope will begin emitting long-wavelength infrared light, but two of its short-wavelength sensors will still work perfectly. And with more telescope time available for the remaining sensors, mission managers can

more easily schedule new research proposals designed for those sensors. For example, scientists have recently realized how to use infrared observations to improve our measurements of the rate of expansion of the universe. And interest in tracking near-Earth objects has grown in recent years—a task for which Spitzer is well suited.

“Science has progressed, and people always have new ideas,” Werner says. In its second life, Spitzer will help turn those ideas into new discoveries.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with NASA.



The “warm mission” of the Spitzer Space Telescope will still be able to use two sensors in its Infrared Array Camera (IRAC) to continue its observations of the infrared universe.

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/>.

September 19th 2009: Starway to Heaven

By Dave Butler

It was a great night for viewing with better than average seeing and excellent transparency. I viewed a number of globular clusters: M22 was the largest and most dense making for quite a beautiful view. M13 was very bright but not as dense; M92 was quite dense a nice image; M15 had a dense but small core and was the least impressive of the group.

The BIPH does a great job in brightening Globular Clusters and dimmer open cluster like the Wild Duck. Almost all galaxies are brightened with it, but the optimum power varies greatly with galaxies. So sometimes you can see more without it. With an H-Alpha filter at F10, I viewed the Swan, Lagoon, Triad and the Eagle Nebula. You see a lot more with the BIPH than without it. Adding a reducer helps the Eagle and the Trifid.

There were about 20 people at Picnic Area with our club being well represented and even an 11 inch Celestron. Karen mentioned that there would be a transit across Jupiter starting at 9PM. Visually the Red spot and two of Jupiter's moons could be seen early in the evening. Later I saw the shadow of IO crossing Jupiter. John Paladini took out his Celestron NextStar Webcam and a good 2.5x Barlow and hooked up his laptop to the Webcam and inserted it into my 8 inch LX90. The FOV of the picture is only 138 arc seconds by 104 arc seconds. The first shot didn't stay on the screen long enough to get enough exposures. That picture showed IO just touching Jupiter. When I tried to center it on the screen, I lost the image. After three tries John was able to do his magic. Focusing using the shadow of IO, he adjusted the exposure, taking about 1000 images, sorting them by quality, clipping the poorer ones off, adjusting brightness and increasing contrast to sharpen the image. If you increase the brightness on the image, IO appears to the left of Jupiter. The image is as viewed from a telescope with a diagonal.



Jupiter and IO courtesy of Dave Butler and John Paladini



What is that strange arc? While imaging the cluster of galaxies Abell 370, astronomers had noted an unusual arc to the right of many cluster galaxies. Although curious, one initial response was to avoid commenting on the arc because nothing like it had ever been noted before. In the mid-1980s, however, better images allowed astronomers to identify the arc as a prototype of a new kind of astrophysical phenomenon -- the gravitational lens. Credit: NASA, ESA, and the Hubble SM4 ERO Team & ST-ECF

Constellation Corner

By Matt Ganis

Well we're quickly approaching the holiday of Halloween. It's a time of year when we look for ghosts and goblins chasing witches and warlocks. So, why should we as astronomers be any different? Shouldn't we see if we can catch a glimpse of these ghoulish wonders?

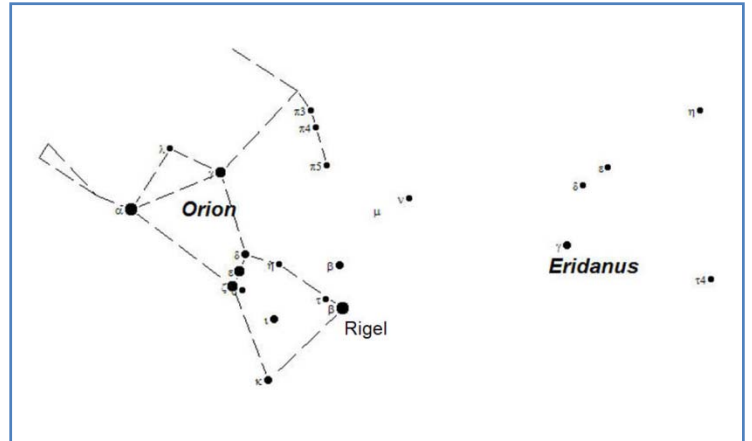
Looking into some various catalogs for anything related to Halloween, I stumbled on the perfect object, IC 2118 or the Witch Head Nebula. As the name implies, this reflection nebula, which is associated with the star Rigel, looks suspiciously like the profile of a Halloween witch, ready to scare the daylight out of a 6 year old. Officially known as IC 2118, it's located in the constellation Orion and glows primarily by light reflected from the star Rigel. The color of this very blue nebula is caused not only by blue color of its star, but also because the dust grains reflect blue light more efficiently than red. A process that is similar to the one that causes Earth's daytime sky to appear blue. Photo courtesy of NASA Picture of the Day:

<http://apod.nasa.gov/apod/ap081031.html>



Rigel is a bluish-white supergiant star that contains over 17 solar masses of material, allowing it to shine with a luminosity about 40,000 times greater than our Sun. Being a supergiant, it is approximately 70 solar radii in diameter, so it occupies a space about as large as the distance from the Sun to Earth. Rigel is located between 700-900 light years from the Earth and is the brightest star in our local area of the Milky Way. The next brightest star is Deneb which is about 3,300 light years away. Rigel's brightness is so intense that the energy given off from the star tends to light up various dust clouds in its vicinity, such as the famous Witch Head Nebula, which is located about 1,000 light years away.

Interestingly, the nebula lies between the very conspicuous constellation Orion and very elusive constellation of Eridanus, the river. Eridanus is a very long, winding constellation that starts at the left foot of Orion in the north, sweeps south of Taurus,



west to the edge of Cetus, and eventually ends far to the south, at the border with Hydrus. As the story goes, Phaethon, the son of Helios the Sun God, pestered his father to allow him to drive the celestial chariot across the skies. Phaethon was encouraged by his sisters and even his own mother, but Helios always refused, knowing that his son was far from ready to assume such an awesome responsibility.

After the constant pleading Helios eventually relented and allowed his son to climb into the chariot, drawn by two white horses to off across the skies. But it was instantly apparent that Phaethon was incapable of controlling the horses, which galloped so high in the sky away from the Sun that the earth was close to freezing, then plunged so close to the earth that the fields were burnt. Zeus quickly had enough of this nonsense and sent a thunderbolt, killing the young driver. Phaethon fell into the sacred river Eridanus while his sisters, for having encouraged, were changed into poplar trees which stood along its banks.

So enjoy your Halloween treats and watch out for those witches (and the 6 year old goblins they chase).

Almanac

For October 2009 by Matt Ganis



Oct 4



Oct 11



Oct 18



Oct 25

The nights have been crisp and cool recently – it's a perfect time to get under the stars and practice up on your constellation identification. With the dark, clear skies, you should be able to quickly become reacquainted with old autumn friends.

If what you really want to see are some of the planets, then this isn't the best time of year for you. It's not horrible, but it is slim pickings. Jupiter is still blazing at an impressive magnitude of -2.7. The king of our solar system is located in our South western skies in the constellation of Capricornus. By the time the dark skies roll around, Jupiter has reached its highest point in the sky, but it will stay visible for us until about 2:30am when it finally falls behind the western horizon.

The other "readily" observable planet in our October skies is Mars. The speedy little planet rises around midnight at the start of the month making its Fall appearance in the constellation of Gemini. Around October 12th, Mars, Castor, Pollux and the last quarter moon line up quite nicely in our evening skies.

Mars is on the move however. It's quickly leaving Gemini and making a bee-line to the constellation of Cancer. For those of you out trick-or-treating on October 31st you're in for a great "treat". Between October 30th and November 2nd Mars will pass through M44 (the Beehive cluster) in Cancer. On the 31st, it should be nearly in the center. Now, Mars will be rising about 10:30pm at the end of the month, so maybe this is a last treat for you after putting the kids to bed!

You might be able to catch a glimpse of Venus or Mercury as they rise in the early morning skies. If you decide to observe them, try it around October 4th to 14th. Not only are Mercury and Venus close to each other, but Saturn breaks through the eastern horizon, quickly rising to meet her fellow planets. On the morning of October 8th, there is a very close conjunction of Saturn and Mercury (about 20" separation – that's about 1/3 of a degree). On the morning of the 10th the three planets will be lined up (Mercury closest to the horizon, Saturn in the middle and Venus slightly higher in the sky). Finally on the 13th, there's

another close conjunction but this time between Saturn and Venus where the two women of our solar system are separated by a mere ½ degree in the sky. Should be interesting.

The Orionid meteor shower is expected to reach peak activity this year on October 23rd. October's new Moon perfectly favors the Orionids at their peak this year. The shower's radiant, near the celestial equator, is at a useful elevation by around midnight in either hemisphere, so most of the world can enjoy the shower. The Orionids have been producing rather bright meteors in the recent past,

but it's not expected to continue. However, it may still be worthwhile event this year, last year the shower reached a maximum of 50-60 meteors per hour. If the trend continues, you may still be able to see a few of the brighter meteors, and possibly some fireballs.

One other interesting project might be to try to catch a glimpse of the Zodiacal lights this year. One of the lesser talked about components in our solar system is the interplanetary dust that fills

the void where the planets revolve around the sun. Normally, these microscopic dust particles can only be seen under special circumstances. They tend to be very small and very few and far between, but are numerous enough to cause most of the meteors showers that we see streaking through the night skies. They are also visible as a faint haze along the ecliptic on really dark nights – this is known as the zodiacal light.

The zodiacal light is brightest when we look towards the direction of the sun. The best times of the night are just after evening twilight and just before morning twilight, but even then the light is hard to see. Chances improve at certain times of year when the ecliptic is nearly vertical in the sky, particularly September and October in the morning hours (or February/March in the evening). This year, the best viewing time is about 1-2 hours before sunrise on October 15th – 31st looking toward the eastern horizon.

Well that's all for this month's almanac. Enjoy the conjunctions, the dust and the Halloween candy !!

