

Sky **WAA** tch

The Monthly Publication of the Westchester Amateur Astronomers

July 2009



WAA Members at Trailside

Despite the clouds, WAA members enjoyed the Annual WAA picnic at the Trailside Museum on June 13th. Thanks to Charlie, Darryl and Doug for their shopping and culinary efforts. Photos courtesy of Mike Virsinger

Events for July 2009

Editors Note: There will be no monthly meeting for July or August at the Andrus Planetarium. Our next meeting will be the Amateur Night in September. See below for details on the Starway to Heaven.

➤ Monthly Meetings

“WAA Amateur Night”

Friday September 4th, 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.

➤ Starway to Heaven

Saturday, July 18th, 9:00-11:00PM

Meadow Picnic Area, Ward Pound Ridge Reservation, Cross River

This is our scheduled Starway to Heaven observing date for July, weather permitting. Free and open to the public. The scheduled rain/cloud date is July 25th.

Renewing Members. . .

Doug Baum, Pound Ridge, NY
Kevin Doherty, White Plains, NY
Charles Gibson, Scarsdale, NY
John James, Sunnyside, NY
Frank Jones, New Rochelle, NY
David Klaus, Yorktown Heights, NY
John Paladini, Mahopac, NY
Mario & Gertrude Palmieri, Cortlandt Manor, NY
Steven Petersen, White Plains, NY
Kevin and Dick Shaw, Yonkers, 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/>.



New Discovery

A highlight of WAA Picnic was the conjecture surrounding the above object. While superficially resembling a hamburger, the object is actually thought to be the first independent discovery of “dark matter,” that elusive substance posited by scientists to explain the observed excessive angular velocity in galaxies. Confirmation by NASA is pending.

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

The Cool Chemistry of Alien Life

Alien life on distant worlds—what would it be like? For millennia people could only wonder, but now NASA's Spitzer Space Telescope is producing some hard data. It turns out that life around certain kinds of stars would likely be very different from life as we know it.

Using Spitzer, astronomers have discovered the organic chemical acetylene in the planet-forming discs surrounding 17 M-dwarf stars. It's the first time any chemical has been detected around one of these small, cool stars. However, scientists are more intrigued by what was *not* there: a chemical called hydrogen cyanide (HCN), an important building block for life as we know it.

"The fact that we do not detect hydrogen cyanide around cool stars suggests that prebiotic chemistry may unfold differently on planets orbiting cool stars," says Ilaria Pascucci, lead scientist for the Spitzer observations and an astrophysicist at Johns Hopkins University in Baltimore, Maryland.

That's because HCN is the basic component for making adenine, one of the four information-carrying chemicals in DNA. All known life on Earth is based on DNA, but without adenine available, life in a dwarf-star solar system would have to make do without it. "You cannot make adenine in another way," Pascucci explains. "You need hydrogen cyanide."

M-dwarf and brown dwarf stars emit far less ultraviolet light than larger, hotter stars such as our sun. Pascucci thinks this difference could explain the lack of HCN around dwarf stars. For HCN to form, molecules of nitrogen must first be split into individual nitrogen atoms. But the triple bond holding molecular nitrogen together is very strong. High-energy ultraviolet photons can break this bond, but the lower-energy photons from M-dwarf stars cannot.

"Other nitrogen-bearing molecules are going to be affected by this same chemistry," Pascucci

says, possibly including the precursors to amino acids and thus proteins.

To search for HCN, Pascucci's team looked at data from Spitzer, which observes the universe at infrared wavelengths. Planet-forming discs around M-dwarf stars have very faint infrared emissions, but Spitzer is sensitive enough to detect them.

HCN's distinctive 14-micron emission band was absent in the infrared spectra of the M-dwarf stars, but Spitzer did detect HCN in the spectra of 44 hotter, sun-like stars.

Infrared astronomy will be a powerful tool for studying other prebiotic chemicals in planet-forming discs, says Pascucci, and the Spitzer Space Telescope is at the forefront of the field. Spitzer can't yet draw us a picture of alien life forms, but it's beginning to tell us what they could—and could not—be made of. "That's pretty wonderful, too," says Pascucci.



Do alien planets around other stars have the right ingredients for a pre-biotic soup?

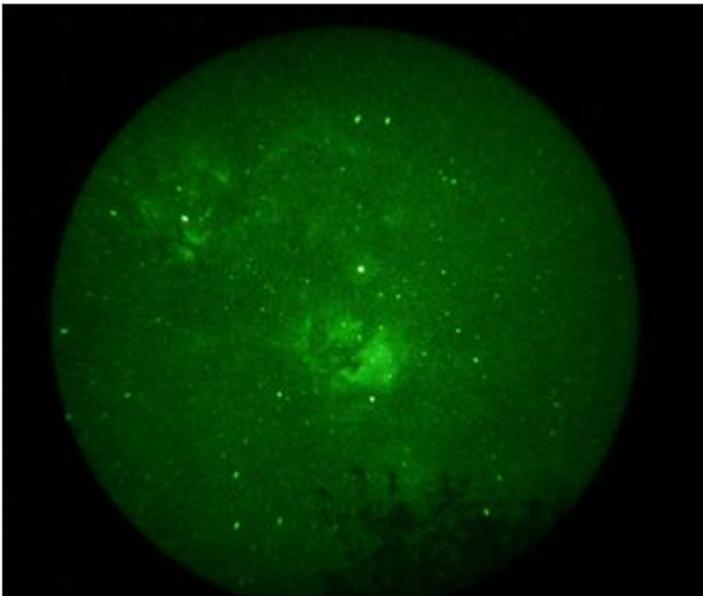
(This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with NASA).

Credit: Susan Stolovy (SSC/Caltech) et al., JPL-Caltech, NASA



← **The Galactic Center**

The center of our Milky Way Galaxy is hidden from the prying eyes of optical telescopes by clouds of obscuring dust and gas. But in this stunning vista, the Spitzer Space Telescope's infrared cameras penetrate much of the dust revealing the stars of the crowded galactic center region. The galactic center lies some 26,000 light-years away, toward the constellation Sagittarius. At that distance, this picture spans about 900 light-years.



← **BIPH Image**

John Paladini took this 1 second image of the North American, Pelican and Butterfly Nebula with his Canon Rebel camera. The image was taken through the eyepiece of the BIPH, the image intensified binoviewer Doug Baum designed and is selling at Night Vision Astronomy. John used a 50mm SLR lens on the nosepiece of the BIPH and pointed it at a flat mirror aimed at the target. This is very wide field. The trees along the bottom of the image give you a reference for the size of the nebula in the sky. **For more on the BIPH, Check out:** <http://nightvisionastronomy.com/>



← **Moon and Antares**

Bob Kelly captured this image of Antares just before it went behind the Moon on Saturday, June 6th at 10:55 pm. The scope was his 8inch DOB set up with a 6mm eyepiece for 200x. Notes Bob: I was concerned the Moon would wash out the star, so I used the highest power eyepiece I had. The camera was set for 1/100 sec at F4.

Constellation Corner

By Matt Ganis

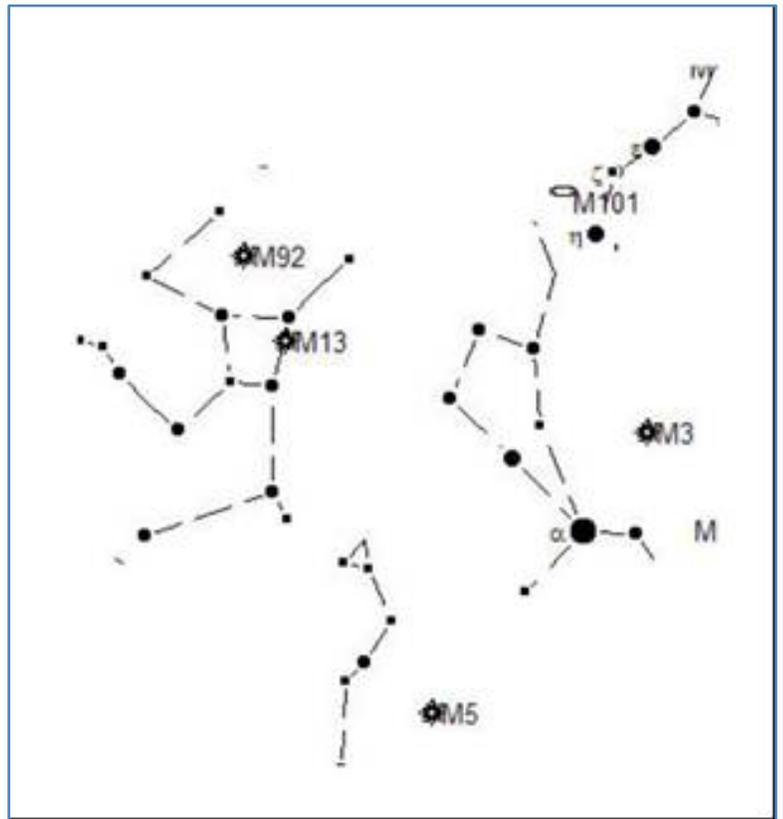
For this month's "Stars" column, I thought it might be interesting do a sort of "mini" Messier marathon (now, when I say "mini" I do mean SMALL). The idea is to look at a few of the more prominent objects in our July skies. I really wanted to pay attention to objects that are more easily observed with smaller telescopes or binoculars, so please don't send me mail about missing your favorite deepsky clusters or nebulae.

If we look in the Zenith sky, we find that the constellation of Bootes is almost directly overhead. If we start at the Alpha star (Arcturus) and look about 12 degrees to the Northwest we come upon Messier object number 3 (M3) in the constellation of Canes Venatici. At a distance of about 34,000 light years, M3 is further away than the Milky Way but still shines at magnitude of +6. and has a luminosity of about 300,000 times that of our sun. Because of this, M3 is usually visible to the naked eye under very good conditions, and is a superb object with even the slightest optical aid like binoculars.

If we start at Arcturus, but this time look to the Southeast (ie, in the opposite direction) about 23 degrees away, we come upon M5. This cluster is thought to be one of the oldest globular clusters, with a computed age of about 13 billion years. Its diameter is about 165 light years, making it also one of the larger globular clusters. Under very good viewing conditions, M5 can just be seen with the naked eye. The globular cluster is easily visible as small fuzzy patch in good binoculars, and a well defined round "nebula" in 3-inch telescopes which is brighter toward the center. Going above a 3" telescope, the brightest stars of magnitude +12.2, can just be resolved; they form curved patterns extending from the central part which are often seen as "spiders".

Looking in a Northerly direction, "above" (and to the left) of Bootes, is the constellation of Hercules. Of course you know I'm going to talk about M13, the Great Hercules Globular Cluster. Located at a distance of over 25,000 light years, the cluster spans an area of space

equivalent to about 145 light years. This massive cluster is thought to contain several 100,000 stars. The age of the cluster is somewhat questionable; however most will put the cluster at about 14 billion years. Towards its center, stars are about 500 times more concentrated than in our solar neighborhood. It interesting to note that the Arecibo message of 1974 (which was designed to communicate



the existence of human life to extraterrestrials) was transmitted toward M13. The reason was that with a higher star density, the chances of a life harboring planet with intelligent life forms were higher.

Almanac

For July 2009 by Matt Ganis



July 7



July 15



July 21



July 28

It's not a bad month to get out under the stars for a little Planetary observing. If these darn clouds would finally clear and the ground would dry up, we might just have a good month of astronomy!

This month you should be able to have a look at five of the eight (or nine) planets in our Solar System. First, let's have a look at the early risers. At the start of the month Mars leads the "Early morning planet parade". The red planet rises around 2am throughout the whole month and can be found shining at an average +1.0 magnitude. On July 1st the planet is "above" the constellation of Taurus, but as month progresses, Mars will move about 16 degrees into the constellation just slightly to the east of the star Aldebaran.

Following the ecliptic toward the eastern horizon, we come upon Venus, striking a pose at a whopping -4.0 magnitude. On the evening of July 13th look for Venus to pass between the two open clusters of the Pleiades and the Hyades (in Taurus). The bright planet is making a "run" for the eastern horizon as the month progresses, but not without some other interesting conjunctions. On the evening of the 27th, Venus will pass less than 1/2 degree from M1 (the Crab Nebula).

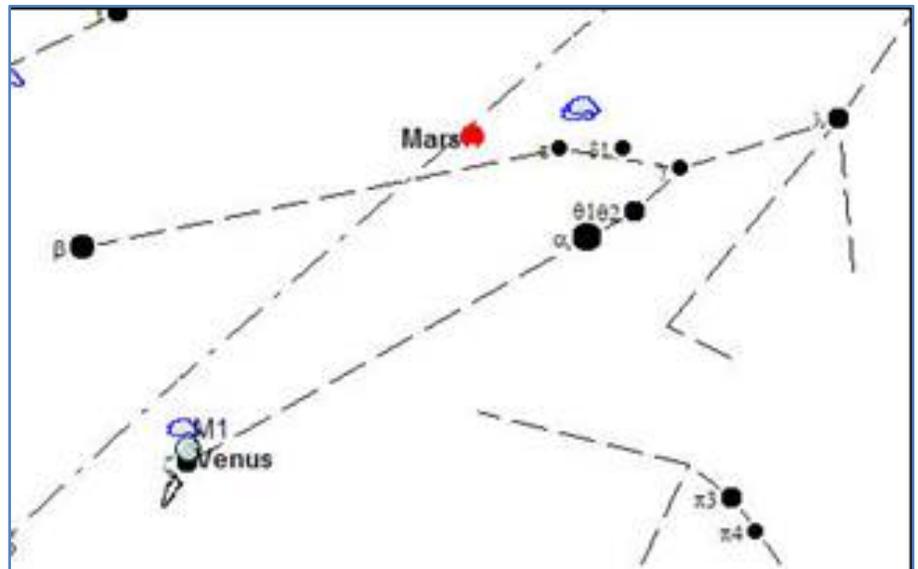
Little Mercury "flirts" with the eastern horizon and finally disappears below it on the 6th of July. If you want a glimpse of Mercury you'll need to quickly get outside by around 4:30am since the Sun will rise about 1 hour later.

Our evening skies contain the two largest planets in the Solar system. Jupiter enters into our evening skies around 11pm. The Giant of our Solar System is fairly bright, shining at a -2.7 magnitude. Neptune can be seen about 1/2 degree from Jupiter although much dimmer (a very faint +7.8 magnitude) so you'll need a telescope to see it. But given the close

proximity of the two planets, you should be able to catch a glimpse of the two planets.

On the other side of the sky, just as Jupiter is rising, you'll find Saturn setting below the western horizon. While Saturn will rise into our skies around 10am (and will therefore be visible in our evening skies as soon as it's dark); this will be your last chance to see it for a several months, so you may want to bid farewell to a good friend.

The Delta Aquarids usually produce about 20 meteors per hour at their peak. The shower will peak this year on July 28 & 29, but meteors can usually be seen from around July 18th through August 18th. The near first quarter moon will set early, providing an excellent



viewing experience after midnight. The radiant point for this shower will be in the constellation Aquarius with the best viewing usually to the east after midnight.