



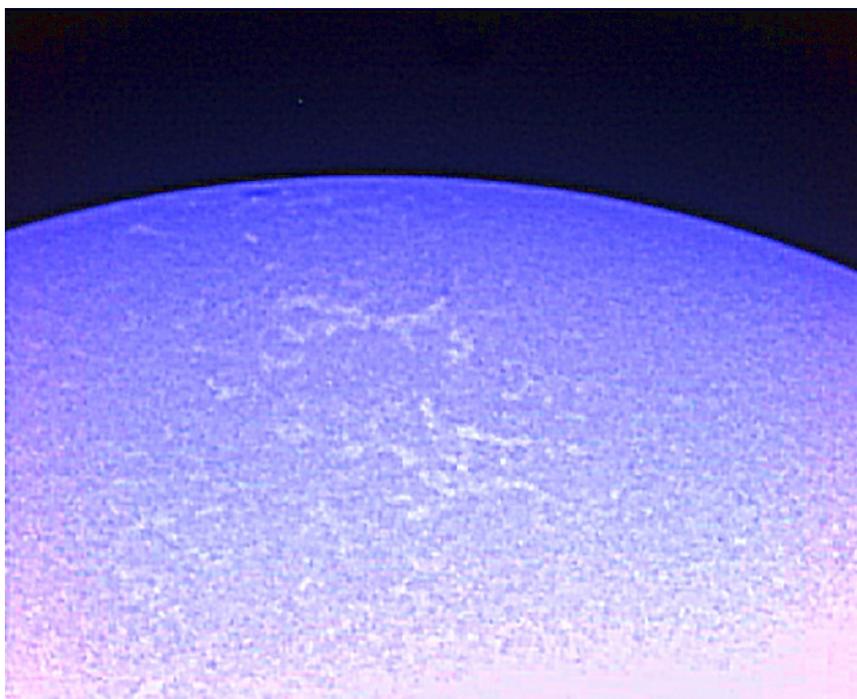
June 2006

Westchester Amateur Astronomers, Inc.



◀ Messier 106 by Ted Schimenti and Rick Bria from the Round Hill Observatory. This image is a stack of 24, 6-minute images taken with the automation program ACP. Technically, this is the best processing of an image done thus far. Rick is really starting to get the “feel” for the tools in PhotoshopCS and how to treat the different image zones separately. It is said that after a few moves in Chess, the amount of different possible moves becomes almost infinitely high. The same can be said for astro-image processing. With new software being released all the time, it's hard to establish a single “recipe.” But ... they are getting close. M106 was processed in MaximDLCCD, AIP4Win2 and PhotoshopCS.

The ultraviolet Sun captured by John Paladini using a Celestron Neximager. This image is a stack of 70, 1/100-second exposures using a 6-inch, f/8 telescope and an Omega Optical ultraviolet filter (390-nanometers) near the calcium K and H lines. Haze in sky messed up the contrast a little. UV needs a very clear sky. ▶



WANTED: Newsletter Editor. Interested in doing the editing and layout of the monthly WAA newsletter? Contact the club.

Events for June

1-877-456-5778 (toll free) for last-minute changes, announcements, weather cancellations, questions, or visit www.westchesterastronomers.org



Near the solar telescopes at the Northeast Astronomy Forum are (left to right): Darryl, Pat, Charlie, Mike V., Mike C., Jennifer, Jimmy and Warren. Photo by Mike Gondek.

Saturday, June 3

► **15th Annual WAA Picnic**

Trailside Museum, Ward Pound Ridge Reservation, 2:00 – 6:00 p.m.

The club will provide the hotdogs, hamburgers and soda. Members are encouraged to bring snacks, salads, desserts, side dishes – you name it. If you want to help with the setup you can arrive an hour earlier. Our monthly “Starway to Heaven” will follow the picnic at sunset. The picnic is for WAA members, their families and guests. Rain date: June 17.

Saturday, June 3

► **Starway to Heaven**

Meadow Picnic Area, Ward Pound Ridge Reservation, 8:30 – 11:30 p.m.

A perfect night to observe the craters and mountains of a 1st-Quarter Moon, the belts of Jupiter and the rings of majestic Saturn. Come join the fun. Free and open to the public. Cloud date: June 17.

Westchester Amateur Astronomers, Inc., a 501(c)3 organization open to people of all ages with the desire to learn more about astronomy. Mailing address: 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: Meadow Picnic Area, Ward Pound Ridge Reservation, Routes 121 and 35, Cross River.

Tuesday, June 6

► **Fahnestock Starparty**

Taconic Outdoor Education Center, 75 Mountain Laurel Lane, Cold Spring, 8:30 – 10:00 p.m.

We will be doing a small starparty with the 4th Grade Students from The Putnam Valley Elementary School at Clarence Fahnestock Memorial State Park. Fahnestock is a wonderful dark-sky location in our area and well worth the drive to Putnam County. Directions: Taconic Parkway to Fahnestock State Park/Cold Spring exit, Route 301 west. Proceed 3-1/2 miles and turn left onto Dennytown Road. Proceed 1/4 mile and turn right onto Indian Brook Road. Proceed 1/4 mile and turn left onto Mountain Laurel Lane. Turn right at the intersection to get to the Highland Lodge.

Friday, June 9

► **Astronomy Software for Amateurs**

Hudson River Museum, 8:00 p.m.

The WAA Lecture Series presents Matt Ganis, Senior Technical Staff Member at IBM and Adjunct Professor of Astronomy and Computer Science at Pace University. Free and open to the public. Join us for our social hour or a planetarium show starting before the meeting at 7 p.m.

Annual Membership: \$25.00 per family and includes discounts on subscriptions to *Sky & Telescope* and *Astronomy* magazines. Officers: Mike Cefola, President; Robert Davidson, Senior Vice Pres.; Michael Virsinger, Treasurer; Karen Seiter, Secretary; George Klaus, Vice Pres. Field Events; Charles Gibson, Vice Pres. Programs; Barbara Moroch, Vice Pres. Communications. Newsletter: Dick Shaw. Webmaster: Robert Davidson.

Photo Gallery

Have a few astro-images or pictures of WAA events? Send them in and we'll post them on the web or publish them on this page.



◀ John Paladini, trying to reproduce telescopes of old, ground a lens using 1/4-inch-thick window glass. The lens is 5 inches in diameter, but masked down to increase f/ratio and reduce aberrations. ▼ Projected image of the Sun focuses 24.5 feet from lens. Photos: John Paladini.



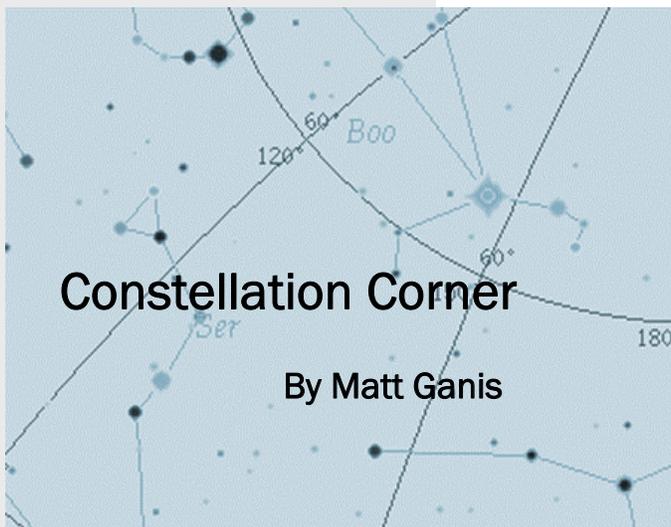
◀ Dan Butler and Doug Towers with eager astronomers at the Kensico School's Space Carnival in April. Bill Newell and Bob Davidson are off camera with the club's 20-inch Obsession telescope. Thanks to George Klaus for setting this event up and to his daughter Katie for helping out. Photo: R.D.

Infrared Jupiter using a Celestron 925 Schmidt-Cassegrain Telescope and a Meade Lunar Planetary Imager (LPI) with IR filter (780-850 nanometers) by John Paladini. ▶



Warren Lindholm looking at the clouds just moments before a downpour during the Annual Shad Festival at Croton Point Park on May 21. Photo: R.D. ▶





This month, let's have a look at the constellation Cancer. I've mentioned it several times in the almanac column, so I think maybe a little background on this relatively faint constellation is in order.

Cancer, the Crab, played a minor role in the story of the Twelve Labors of Hercules. While Hercules was busy fighting Hydra (the multi-headed monster) the goddess Hera, who disliked Hercules, sent the Crab to distract him. The Crab grabbed onto the hero's foot with its claws, but barely breaking the rhythm of his great battle with Hydra, Hercules crushed the crab with his foot. Hera, grateful for the little monster's heroic (but pitiful) effort, gave it a place in the sky. But, because Cancer failed to defeat Hercules, the gods did not give Cancer bright stars to mark the constellation. In fact, it is very faint with no stars brighter than 4th magnitude. Cancer is famous despite itself due to its Zodiacal origins. The constellation is the fourth Sign of the Zodiac, deriving its name from the Latin "cancer" ... literally "the crab." Being a zodiacal constellation, it lies on the ecliptic (the apparent path of the sun among the stars during a year) and because it's on the ecliptic, all of the planets will pass through the constellation at some point in time.

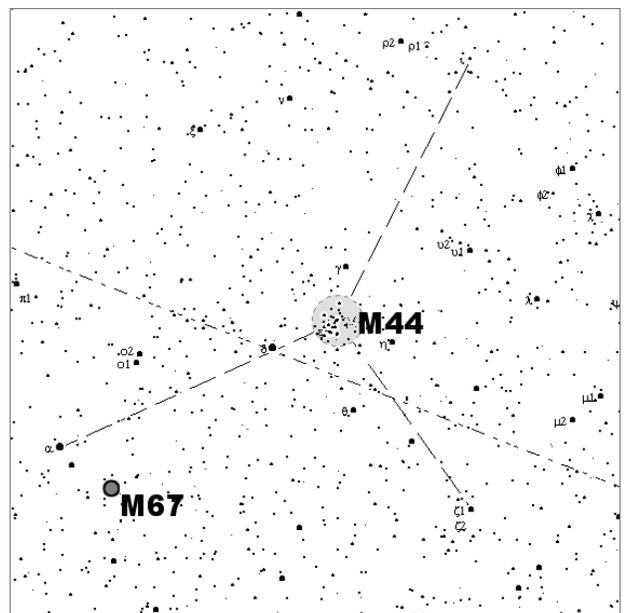
There isn't much "activity" in the area of Cancer, but it is home to one of more famous star clusters. M44 is better known by the name the Beehive Cluster, or the Latin, Praesepe, which not only means a hive but also a crib, or manger. This is a bright open cluster clearly visible to the naked eye on a dark night, and best appreciated with binoculars or small scope. One of the largest clusters, its 1.5 degree size is equivalent to three full moons end-to-end. Its distance is calculated at between 520-590 light years.

This grouping is so large it was well known in antiquity, when it was thought to be a nebula. Galileo was the first to study the stars of Cancer with a telescope. He counted over forty members, putting to rest the idea of its nebulousity and introducing the idea of star clusters. There are over three hundred stars in the Beehive. It has been estimated that over a hundred of its stars are brighter than our Sun, and in fact if the Sun were a member of this group, it would be a very modest member indeed, at about 10.9 magnitude.

Another (sometimes overlooked) open cluster located in the constellation is M67. This object is one of the oldest known open clusters with an estimated age of about 3.2 billion years (newer estimates indicate an age of 4.0 billion years). This is still less than the age of our Solar System, but open clusters usually get dispersed much faster. It has been calculated that M67 is expected to exist as a cluster for about another 5 billion years.

Finding the constellation of Cancer is pretty easy, even though it's somewhat dim. If you start at Regulus in Leo and look toward the constellation of Gemini, you'll find Cancer almost exactly between them. An imaginary line (actually the ecliptic) will run from Regulus, through the center of Cancer and then into the belt of Pollux (the twin on the left side).

So get the binoculars out and have a look. You don't have much time at this time of year since the constellation will fall below the horizon around 9pm by month's end. But you know what, I have a feeling it'll be back in the sky in another 6 months for us. 😊



Not a Moment Wasted

by Dr. Tony Phillips

The Ring Nebula. Check. M13. Check. Next up: The Whirlpool galaxy.

You punch in the coordinates and your telescope takes off, slewing across the sky. You tap your feet and stare at the stars. These Messier marathons would go much faster if the telescope didn't take so long to slew. What a waste of time!

Don't tell that to the x-ray astronomers.

"We're putting our slew time to good use," explains Norbert Schartel, project scientist for the European Space Agency's XMM-Newton x-ray telescope. The telescope, named for Sir Isaac Newton, was launched into Earth orbit in 1999. It's now midway through an 11-year mission to study black holes, neutron stars, active galaxies and other violent denizens of the Universe that show up particularly well at x-ray wavelengths.

For the past four years, whenever XMM-Newton slewed from one object to another, astronomers kept the telescope's cameras running, recording whatever might drift through the field of view. The result is a stunning survey of the heavens covering 15% of the entire sky.

Sifting through the data, ESA astronomers have found entire clusters of galaxies unknown before anyone started paying attention to "slew time." Some already-known galaxies have been caught in the act of flaring—a sign, researchers believe, of a central black hole gobbling matter from nearby stars and interstellar clouds. Here in our own galaxy, the 20,000-year-old Vela supernova remnant has been expanding. XMM-Newton has slewed across it many times, tracing its changing contours in exquisite detail.

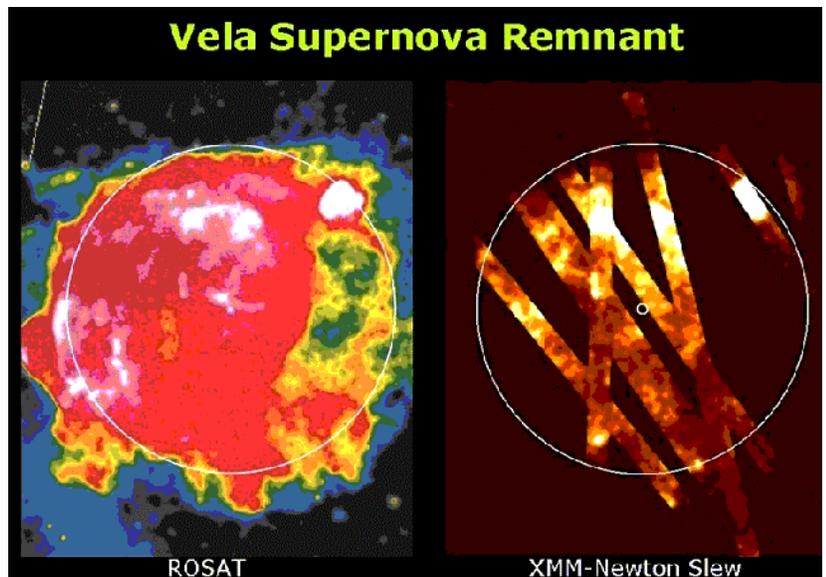
The slew technique works because of XMM-Newton's great sensitivity. It has more collecting area

than any other x-ray telescope in the history of astronomy. Sources flit through the field of view in only 10 seconds, but that's plenty of time in most cases to gather valuable data.

The work is just beginning. Astronomers plan to continue the slew survey, eventually mapping as much as 80% of the entire sky. No one knows how many new clusters will be found or how many black holes might be caught gobbling their neighbors. One thing's for sure: "There *will* be new discoveries," says Schartel.

Tap, tap, tap. The next time you're in the backyard with your telescope, and it takes off for the Whirlpool galaxy, don't just stand there. Try to keep up with the moving eyepiece. Look, you never know what might drift by.

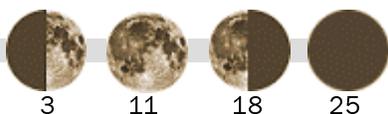
See some of the other XMM-Newton images at <http://sci.esa.int>. For more about XMM-Newton's Education and Public Outreach program, including downloadable classroom materials, go to <http://xmm.sonoma.edu>. Kids can learn about black holes and play "Black Hole Rescue" at The Space Place, <http://spaceplace.nasa.gov/>, under "Games."



Left is the Vela Supernova Remnant as imaged in X-rays by ROSAT. On the right are some of the slew images obtained by XMM-Newton in its "spare" time.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Almanac for June 2006



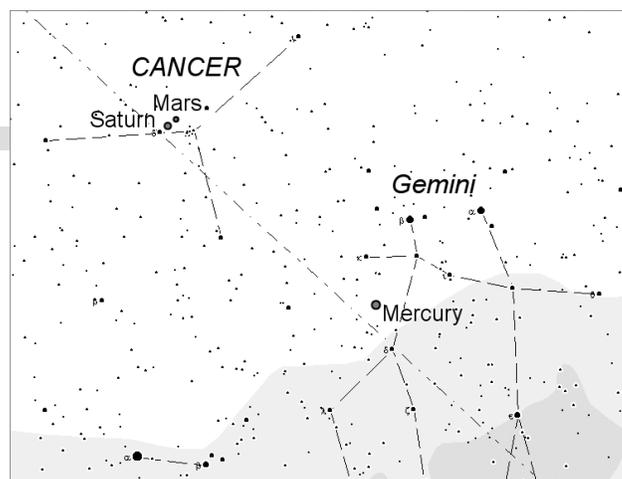
I can't believe it's June already! Where does the time go? One great thing about spring (and now summer) is that getting outside later at night is a little more palatable.

There's an interesting little dance of two planets this month. Looking in the Northwestern skies, you'll find the two planets: Saturn and Mars in the constellation of Cancer. Saturn, located in the heart of the Crab, is still fairly bright, shining at a magnitude of about +0.1. It's still located close to the Beehive cluster, at a distance of less than 1 degree. Be sure to catch it early. Saturn is making a B-line (sorry for the pun) for the western horizon, where it sets at midnight on the 1st but will be below the horizon by 10:20pm at month's end.

At the start of the month, Saturn is located about 8 degrees from the planet Mars – situated directly between Gemini and Cancer. The “Red Planet” is shining weakly at a magnitude of about +1.70. But the swift moving planet is moving toward Cancer and on June 17th will be a mere 0.6 degrees from Saturn, forming a beautiful conjunction. By the end of the month, Mars will have moved past Saturn by 6 degrees.

Watch for Mercury close to the Western horizon, “rising” swiftly to take Mars' place next to Saturn. The swift little planet is pretty bright this month, shining at about -0.03 magnitude. Over the course of the month, the planet rises higher in the sky until about the 20th when it appears to “run out of steam” and begins to fall back to the western horizon, where it sets just before 10pm at the end of the month.

Looking in the Southern skies this month reveals a very bright Jupiter located between the constellations of Libra and Virgo (closer to Libra). The planet shines at a magnitude of -2.45 so I don't think you'll have trouble finding it. On the other end of the spectrum, tiny Pluto reaches opposition on the night of June 16th.



On June 17th, Mars will be a mere 0.6 degrees from Saturn – forming a beautiful conjunction. The view looking east at 9 p.m. Mercury will be 11° above the horizon.

Opposition occurs when a planet farther from the Sun than Earth appears opposite the Sun in the sky – usually it's the best time to observe a planet. The planet only shines at a magnitude of +13.8, so you'll need a pretty big scope (or decent CCD camera) to get a glimpse of the smallest member of our solar system.

While I usually don't mention the Moon in this article, our nearest celestial neighbor seems to be making the rounds this month with several close conjunctions that may be worth noting:

- June 17 - Uranus 0.6° north of Moon (occultation)
- June 22 - Venus 6° south of Moon
- June 27 - Mercury 5° south of Moon
- June 28 - Saturn 3° south of Moon
- June 28 - Mars 2° south of Moon

This year summer begins on June 21st at 8:26 A.M. EDT (12:26 UT). At the solstices the sun's apparent position on the celestial sphere reaches its greatest distance above or below the celestial equator, about 23 1/2° of arc. Here in the Northern Hemisphere the longest day and shortest night of the year occur on this date, marking the beginning of summer.

So enjoy the warm weather and “the dance of the Planets” this month. Just think, after the 21st, it starts to get darker sooner!

– Matt Ganis