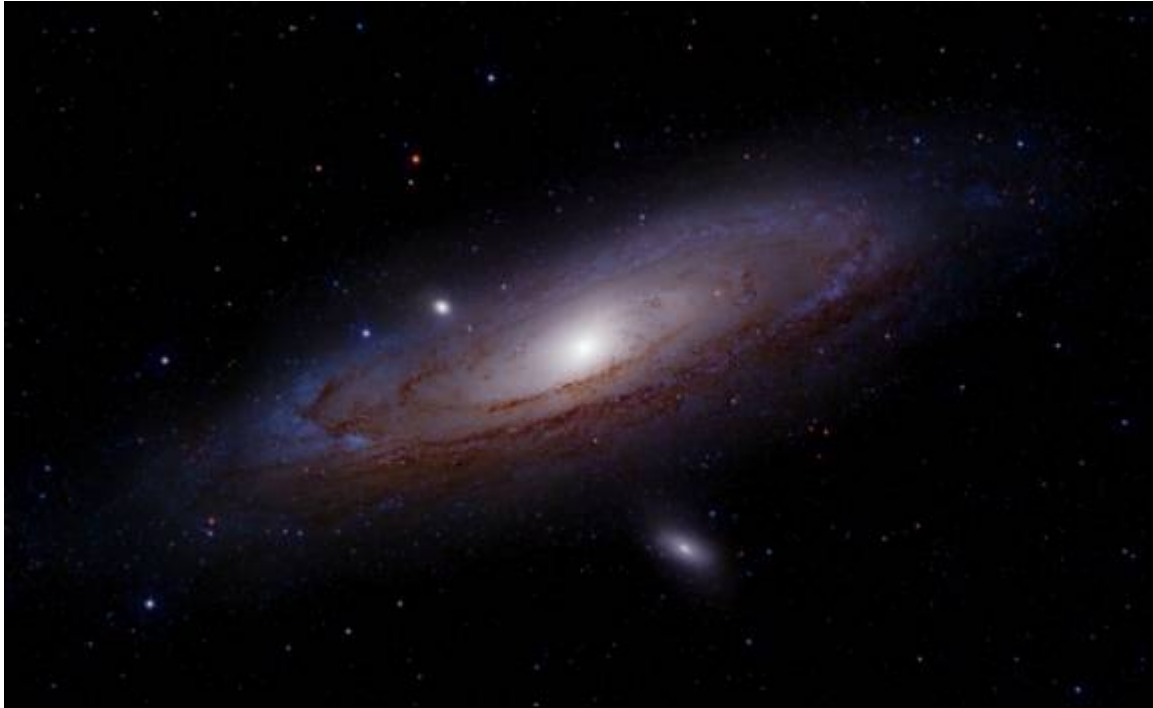


# Sky **WAA** tch

*The Monthly Publication of the Westchester Amateur Astronomers*

*March 2008*



## **Majestic Andromeda**

Rick Bria and Ted Schimenti took this image of the Andromeda Galaxy (M31) at the Round Hill Observatory. It's a luminance layered (LL-RGB) assembly taken with the FSQ106mm refractor. LRGB stacks of 58, 41, 46, and 48, four-minute sub-exposures were used. The L images were taken unbinned @ 3.5 arc-seconds per pixel, and were guided. The RGB images were binned 2X2, and unguided.

### **Some M31 Facts:**

Andromeda is the nearest major spiral galaxy to our own Milky Way. Our Galaxy is thought to look much like it, and have about 80% of its mass. Even though it is 'only' 3 million light years away, much about M31 remains unknown, including how the center of Andromeda acquired two nuclei (two giant black holes.)

Also in the image are two of its satellite galaxies, M32 (lower right of center) and M110 (just above and left of center) as well as a sprinkling of foreground stars throughout the image from our own Milky Way galaxy.

Notes Rick: Just think, for a moment, of the depth of the image. After the foreground stars of our galaxy (about 40 thousand light years away?) there is almost complete emptiness between here and Andromeda. It's rather humbling isn't it?

The Andromeda galaxy is on a collision course with our Milky Way. It is approaching us at about 80 miles per second, and is predicted to collide with us some 2-3 billion years from now.

# Events for March 2008

## ➤ *Monthly Meetings*

### "Astrophysics Is Easy"

Friday, March 7, 8:00PM

Andrus Planetarium

Hudson River Museum, Yonkers

Would you like to SEE even MORE of this VAST UNIVERSE? Then come and OPEN the EYES of your MIND with Dr. Mike Inglis (astronomer and award winning educator) as he guides us, using his latest publication.

***Astrophysics Is Easy***. Free and open to the public.

### "400th Anniversary of the Optical Telescope "

Friday, April 4, 8:00PM

Andrus Planetarium

Hudson River Museum, Yonkers

A lecture by Alan Witzgall. More details next month. Free and open to the public.

## ➤ *Starway to Heaven*

Saturday, March 1, 7:00-9:00PM

Meadow Picnic Area, Ward Pound Ridge Reservation, Cross River

This is our scheduled observing date for March, weather permitting. Free and open to the public. The scheduled rain/cloud date is March 8.

### *New Members. . .*

Sridhar Mani, Riverdale, NY  
Krystl Maybank, Yonkers, NY  
Thad Nguyen, Katonah, NY

### *Renewing Members. . .*

Byron Collie, Croton-on-Hudson, NY  
Jerry Mannarino, White Plains, NY

Richard Romney, Chappaqua, NY  
Cliff Wattlely, Ridgefield, CT

## FOR SALE

**Takahashi Mewlon 250 complete system: It has the EM-200 Temma 2 go-to mount, with both an extra tube weight and mount counterweight. Scope is about a year old and does have two small marks on the OTA but otherwise it is in excellent condition both optically and functionally and is available with all the accessories, software and manuals Takahashi provided.**

**The sales price is \$8500. Note--the full system retails at \$11K with a 6 to 9 month waiting list.**

**Photos available. If interested, contact Graeme Hutton at 914-560-6183.**

**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 and Photos Gallery

## *Invisible Spiral Arms*

by Patrick Barry

At one time or another, we've all stared at beautiful images of spiral galaxies, daydreaming about the billions of stars and countless worlds they contain. What mysteries—and even life forms—must lurk within those vast disks?

Now consider this: many of the galaxies you've seen are actually much larger than they appear. NASA's Galaxy Evolution Explorer, a space telescope that "sees" invisible, ultraviolet light, has revealed that roughly 20 percent of nearby galaxies have spiral arms that extends far beyond the galaxies' apparent edges. Some of these galaxies are more than three times larger than they appear in images taken by ordinary visible-light telescopes.

"Astronomers have been observing some of these galaxies for many, many years, and all that time, there was a whole side to these galaxies that they simply couldn't see," says Patrick Morrissey, an astronomer at Caltech in Pasadena, California, who collaborates at JPL.

The extended arms of these galaxies are too dim in visible light for most telescopes to detect, but they emit a greater amount of UV light. Also, the cosmic background is much darker at UV wavelengths than it is for visible light. "Because the sky is essentially black in the UV, far-UV enables you to see these very faint arms around the outsides of galaxies," Morrissey explains.

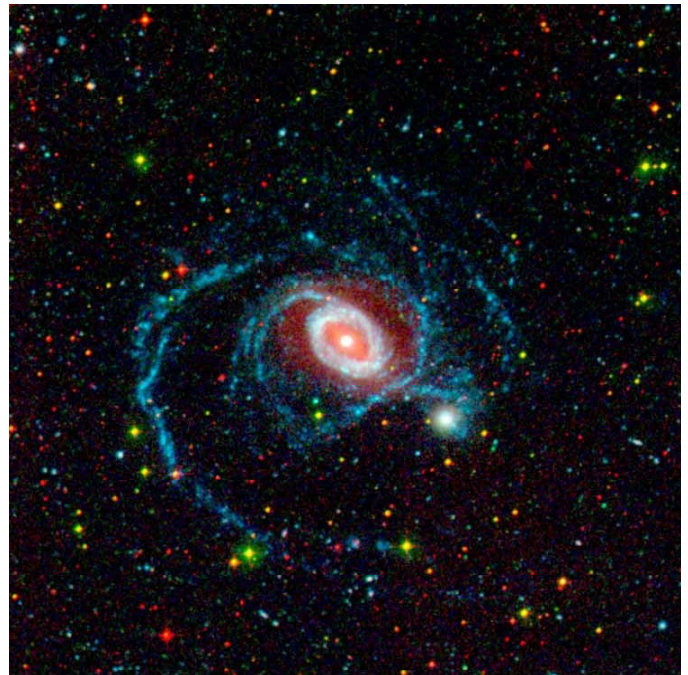
These "invisible arms" are made of mostly young stars shining brightly at UV wavelengths. Why UV? Because the stars are so hot. Young stars burn their nuclear fuel with impetuous speed, making them hotter and bluer than older, cooler stars such as the sun. (Think of a candle: blue flames are hotter than red ones.) Ultraviolet is a sort of "ultra-blue" that reveals the youngest, hottest stars of all.

"That's the basic idea behind the Galaxy Evolution Explorer in the first place. By observing the UV glow of young stars, we can see where star formation is active," Morrissey says.

The discovery of these extended arms provides fresh clues for scientists about how some galaxies form and evolve, a hot question right now in

astronomy. For example, a burst of star formation so far from the galaxies' denser centers may have started because of the gravity of neighboring galaxies that passed too close. But in many cases, the neighboring galaxies have not themselves sprouted extended arms, an observation that remains to be explained. The Galaxy Evolution Explorer reveals one mystery after another! "How much else is out there that we don't know about?" Morrissey asks. "It makes you wonder."

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



*In this image of galaxy NGC 1512, red represents its visible light appearance, the glow coming from older stars, while the bluish-white ring and the long, blue spiral arms show the galaxy as the Galaxy Evolution Explorer sees it in ultraviolet, tracing primarily younger stars.*

*(Credit: NASA/JPL-Caltech/DSS/GALEX).*



### ◀ Lunar Eclipse

John Paladini took this image of the February 20<sup>th</sup> Lunar Eclipse using an ETX 90 on a Canon camera



### ◀ Looking Up

Bob Kelly took this image of the Boston skyline on January 31, capturing Venus, Jupiter and the bright lights of the City. (1/2-second Canon A40 F4.8 3x zoom lens)



### ◀ Crater Bullialdus

Bob Kelly captured the Bullialdus crater on February 16<sup>th</sup>, using a Canon A40 through 8-in Dob, 1/60 sec F4.8. Note the white-ringed "ghost" craters, observes Bob that were almost completely filled in by lava that formed the nearby flatter "Mare" areas. This tells us that Bullialdus is younger than the Mare lava flows and the ghost craters are older than the flows that covered them. Two of Tycho's rays streak through the scene.

# Constellation Corner:

by Matt Ganis

Taurus is one of the oldest constellations in our skies and was particularly noteworthy in ancient astronomy because it marked the vernal equinox during the years of 4000 to 1700BC. In Greek mythology the creature immortalized the form that was taken by Jupiter in his seduction of Europa. The young woman, encouraged by the tameness of the bull, mounted it as it mingled with a herd on the sea-shore, whereupon it swam into the sea and swept her away to the island of Crete. Some myths also claim that this is the reason that only the front part of the bull is depicted in the constellation since its hind quarters are supposedly hidden by the waves. To the Roman's Taurus was a sacred animal of Bacchus -- god of wine. During the annual wine festival to Bacchus dancing girls, representing the Hyades and the Pleiades, would dance around a bull strewn with flowers.

In our skies the Pleiades are located to the northwest of Taurus, effectively on the back of the great beast. In mythology, they are the seven daughters of Atlas and the Nymph Pleione (the origin of cluster's name). The sisters are Alcyone, Maia, Electra, Merope, Taygeta, Celaeno, and Sterope. Alcyone, the eldest and most beautiful sister is represented as the brightest star in the cluster. This bright star is the spot that marked the Vernal Equinox in the time of the Greeks. Because Alcyone marked the beginning of Spring, warm balmy gentle days became known as halcyon days.

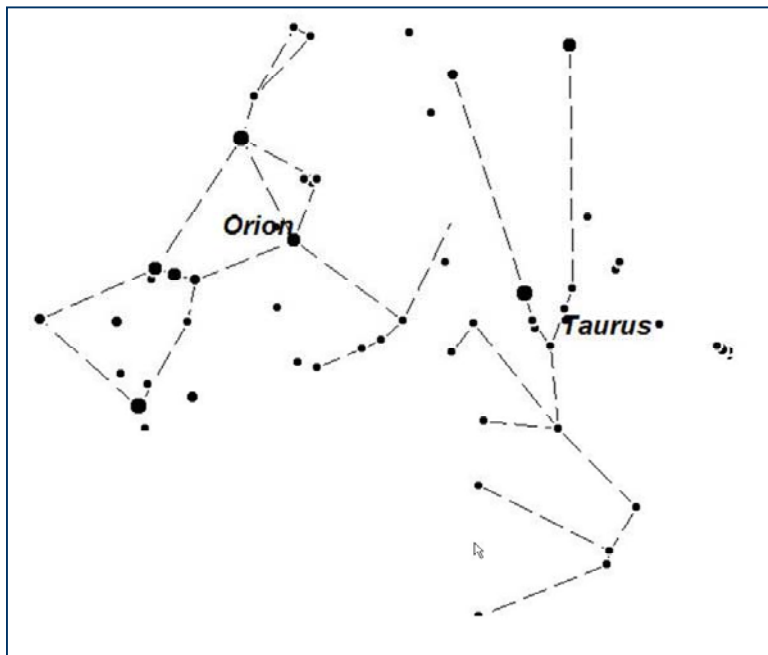
The Hyades were half sisters of the Pleiades - daughters of Atlas and Aethra. There were supposed to be seven sisters here, but to the naked eye only five stars appear. Actually, if the myth of the rampaging bull is to be credited, perhaps the two lost sisters were trampled because the bull's horns are right on top of the Hyades.

Both the Hyades and the Pleiades are beautiful regions to observe in binoculars. Hundreds of sparkling stars shine against the blackness of space. Aldebaran the brightest star of the constellation, however, is not a member of the Hyades but rather a foreground star some 65 light-years distant, where the real members of the Hyades lie about 130 light-years away.

Just northwest of the "lower horn" of the bull is the first of Messier's objects: M1, the Crab Nebula. Messier was so intrigued by it, that on the night of September 12, 1758 he began his catalogue - the purpose of which was to keep observers from

mistaking such objects for comets. The Crab Nebula is the result of a supernova explosion. The supernova occurred in the year 1054 AD and was observed by astronomers around the world. The exploding star remained brighter than Venus for 23 days - easily seen during the day!

So how does Orion fit into this picture? Well, no good soap opera would be complete without another forlorn lover. Orion, the mighty hunter, stands by the river Eridanus and is accompanied by his faithful dogs, Canis Major and Canis Minor. Together they are hunting various celestial animals, including Lepus the rabbit (at the feet of Orion) and Taurus, the bull (who is in effect charging at Orion). According to Greek mythology, Orion was in love with Merope, one of the Seven Sisters but Merope would have nothing to do with him. As the story goes, Orion fell in love with Merope and wanted to



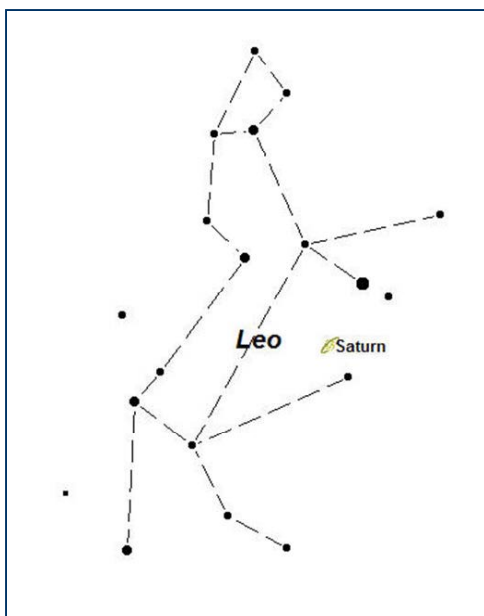
marry her, but her father, the King of Chios, refused to consent to the marriage. Because of Orion's violent attempt to take Merope, he was blinded and cast out onto the beach. Perhaps it's Taurus the Bull that attempts to protect her from Orion's revenge.

# Almanac

For March 2008 by Matt Ganis

Everybody's heard that "March comes in like a Lion and leaves like a Lamb". But did you know that the phrase has its origins in the constellations of Leo, the Lion, and Aries, the ram or lamb? Look at the positions of these constellations in the sky at the beginning and end of the month. If you go outside at the start of the month, you'll find Leo cresting the eastern horizon (entering our month) and Aires the Ram on the western horizon, making its exit--kind of interesting, no?

So let's start with Leo this month. Located about 5 degrees to the east of the bright star, Regulus, is the majestic planet: Saturn. The beautiful planet shines at an impressive +0.15 magnitude at the start of the month, but gradually fades as the month progresses. It will still be fairly bright, glowing at



+0.30 magnitude by month's end as it continues to allow its rings to open toward us. As noted, the planet is only about 5 degrees from the first magnitude star Regulus (located at the bottom of the sickle in Leo). This seeming bright star

(located approximately 77.5 light years from Earth) is actually a multiple star system comprised of a hot, bright, bluish-white star with a pair of small, faint companions. The pair orbits the much-larger star with a period of over 130,000 years at a distance of about 4,200 Astronomical Units.

Mars is still quite high in our evening skies, occupying space in the constellation of Gemini. The little red planet shines at a magnitude of +0.80. It's pretty easy to find too. Look for Orion, and follow his right arm (the one that's raised with a club) – he's pointing right at it! Watch Mars starting on March 1st as it approaches a close conjunction with M35. At the beginning of the month the two objects are separated by about 3 ½ degrees and by



Mar 7



Mar 14



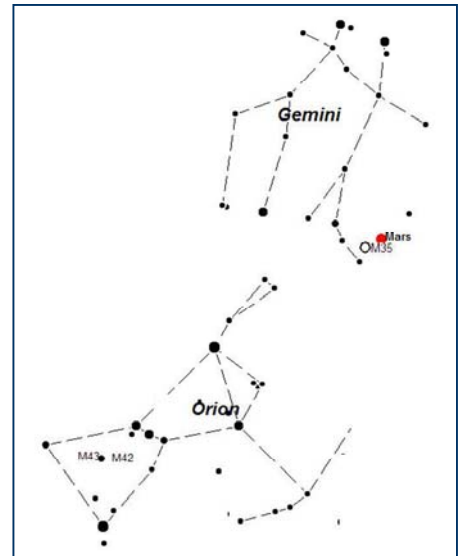
Mar 21



Mar 29

March 10th they come within about 1-½ degrees of each other. The "speedy" little planet continues to zip past the cluster increasing the separation between the two to a little over 8 degrees by month's end.

For you early morning observers, Jupiter makes it appearance into our skies around 2am – early enough to allow it to climb high in skies well before sunrise for a quick look. I would think anytime after 3am would work well. The planet is literally a beacon in the sky, blaring at a magnitude of -2.20. It's so bright that you may think it was Venus (which rises only 30 minutes before the Sun).



On March 20 at precisely 1:48am EDT the Sun will cross directly over the Earth's equator. This moment is known as the vernal equinox in the Northern Hemisphere. For the Southern Hemisphere, this is the moment of the autumnal equinox. During the course of a year the Earth completes one orbit around the Sun. To us on Earth we see this as the Sun moving against the background of stars through the year, along an imaginary line which we call the ecliptic. This defines the plane in which the Earth and most of the other planets orbit around the Sun. The celestial equator is the projection of the Earth's equator onto the sky. As the Sun moves in its apparent track along the ecliptic it spends half the year above the equator (Summer time in the north) and half the year below the equator (winter for the north). The Sun will therefore appear to cross the equator twice in a year and that point is called the equinox (the vernal in March and the Autumnal in September). So as the month progresses, does the month "come in" like a Lion or Lamb? Let's all root for the lamb!