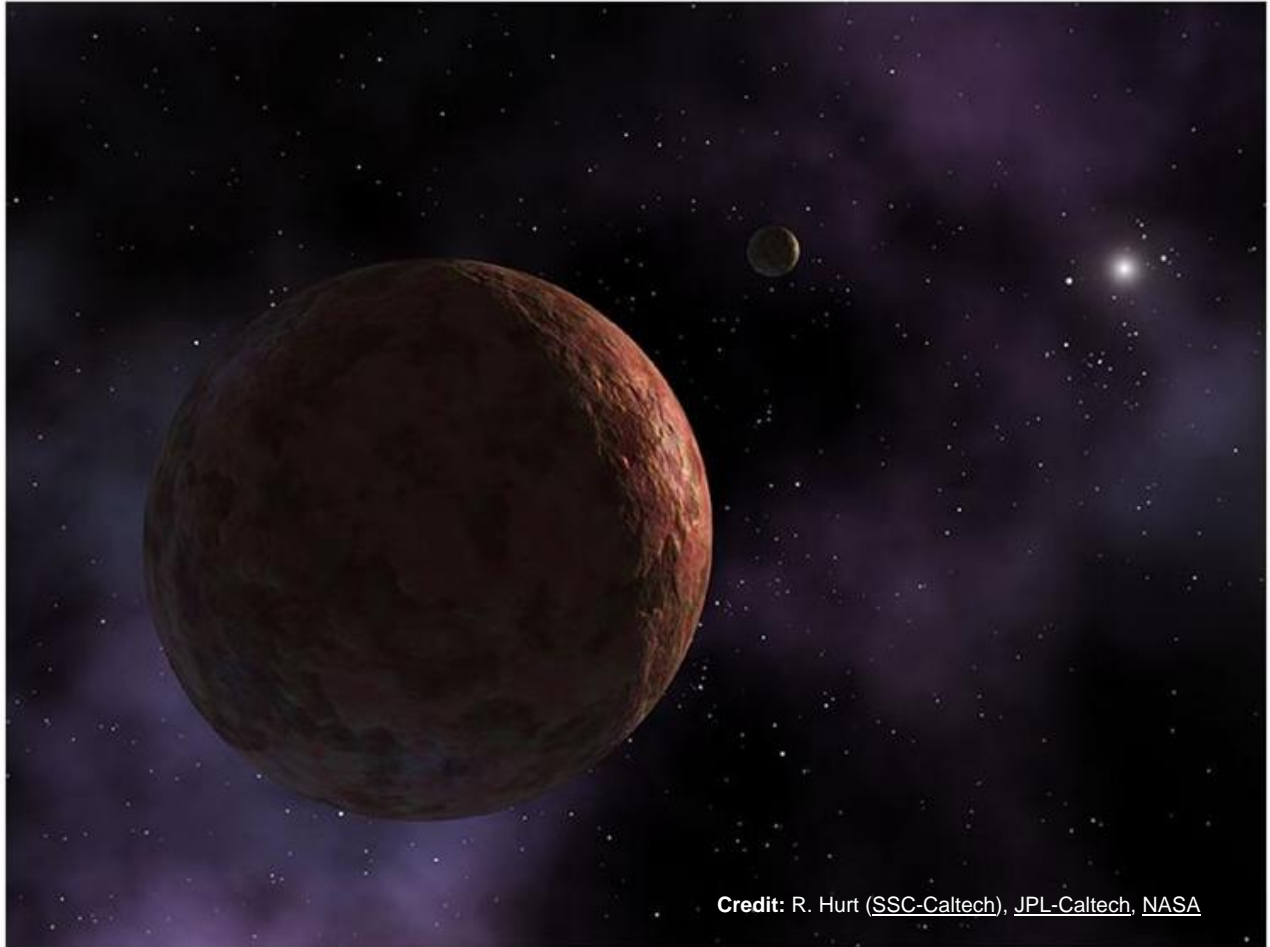


Sky **WAA** tch

The Monthly Publication of the Westchester Amateur Astronomers

August 2008



Credit: R. Hurt (SSC-Caltech), JPL-Caltech, NASA

New Dwarf Planet

Recently discovered Makemake, shown in this artist's conception, is one of the largest objects known in the outer Solar System. Pronounced MAH-kay MAH-kay, this Kuiper belt object is only slightly smaller than Pluto, orbits the Sun only slightly further out than Pluto, and appears only slightly dimmer than Pluto. Makemake, however, has an orbit much more tilted to the ecliptic plane of the planets than Pluto. Discovered in 2005, Makemake has been recently classified as a dwarf planet under the new subcategory plutoid, making Makemake the third cataloged plutoid after Pluto and Eris.

For more information, see <http://antwrp.gsfc.nasa.gov/apod/ap080716.html>.

Events for August 2008

Editors 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 our Annual Telescope workshop.

➤ *Monthly Meetings*

WAA Amateur Night.

Friday September 5, 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, September 20th, 8:30-11:00PM

Meadow Picnic Area, Ward Pound Ridge Reservation, Cross River

The Telescope Workshop replaces the Starway to Heaven for August. Our next scheduled Starway to Heaven observing date is on September 20th, weather permitting. Free and open to the public. The scheduled rain/cloud date is September 27th

➤ *“Telescope Workshop”*

Saturday, August 2nd, 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.

➤ *“Camp Morty”*

August 8th, 8:00-11:00 pm

Camp Morty, Hawley Rd, North Salem

Come help show some young campers the stars.
Directions: From Cross Rivers (6+ miles from

Ward Pound Reservation). Go past 121 south (Route to Ward Pound Reservation) 0.6 miles. Take 121 north 4.5 miles. Turn right on Hawley Rd 0.9 miles. Address: Hawley Road, NY 10560

Renewing Members. . .

Kevin Doherty, White Plains, NY

Robert Fath, Scarsdale, NY

Matthew Fiorillo, Bedford, NY

Matt Ganis, Carmel, NY

Alex Halimou, Pleasantville, NY

Amelia Lawrence, Millwood, NY

Barbara Moroch, Tarrytown, NY

Lydia Marie Petrosino, Bronxville, NY

Theodore Plotkin, Somers, NY

Terry Pratt, Scarsdale, NY

Dick Shaw, Yonkers, NY

Kevin Shaw, Yonkers, NY

Robin Stuart, Valhalla, NY

Ihor Szkolar, White Plains, 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/>.

CHECK IT OUT

Most amateurs are familiar with the Cloudy Nights website as a source for product reviews and insightful articles. Cloudy Nights has recently reviewed WAA member, Doug Baum's, new project, BIPH, the binocular photon machine. Go to:

http://www.cloudynights.com:80/item.php?item_id=1834.

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; Vice President: Michael Virsinger Vice President Programs (lectures): Pat Mahon; Treasurer: Doug Baum; Vice President Membership: Karen Seiter; Vice President Field Events: David Butler; Newsletter: Tom Boustead.

Articles and Photos Gallery

Death of a Supergiant

By all outward appearances, the red supergiant appeared normal. But below the surface, hidden from probing eyes, its core had already collapsed into an ultra-dense neutron star, sending a shock wave racing outward from the star's center at around 50 million kilometers per hour.

The shock wave superheated the plasma in its path to almost a million degrees Kelvin, causing the star to emit high-energy ultraviolet (UV) radiation. About six hours later, the shock wave reached the star's surface, causing it to explode in a Type IIP supernova named SNLS-04D2dc.

Long before the explosion's visible light was detected by telescopes on Earth, NASA's Galaxy Evolution Explorer (GALEX) space telescope captured the earlier pulse of UV light — scientists' first glimpse of a star entering its death throes. "This UV light has traveled through the star at the moment of its death but before it was blown apart," explains Kevin Schawinski, the University of Oxford astrophysicist who led the observation. "So this light encodes some information about the state of the star the moment it died."

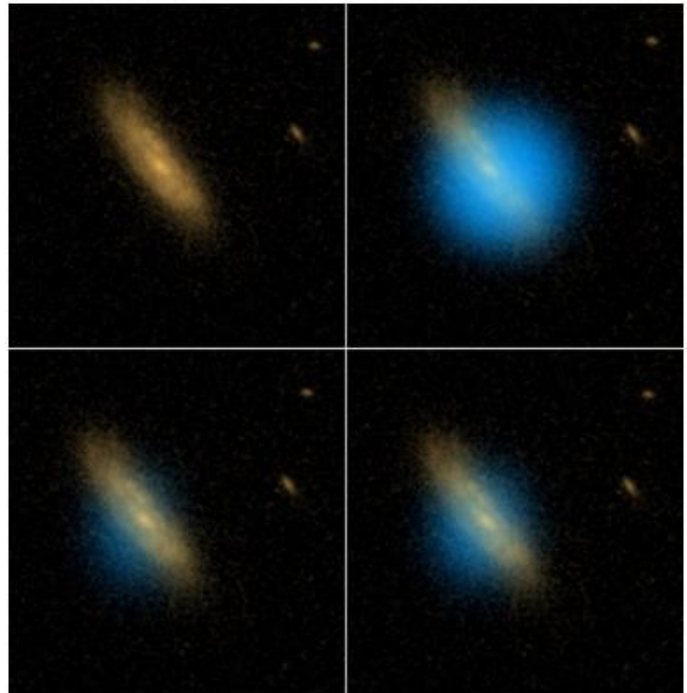
And that's exactly why astronomers are so excited. Observing the beautiful nebula left behind by a supernova doesn't reveal much about what the star was like before it exploded; most of the evidence has been obliterated. Information encoded in these UV "pre-flashes" could offer scientists an unprecedented window into the innards of stars on the verge of exploding.

In this case, Schawinski and his colleagues calculated that just before its death, the star was 500 to 1000 times larger in diameter than our sun, confirming that the star was in fact a red supergiant. "We've been able to tell you the size of a star that died in a galaxy several billion light-years away," Schawinski marvels.

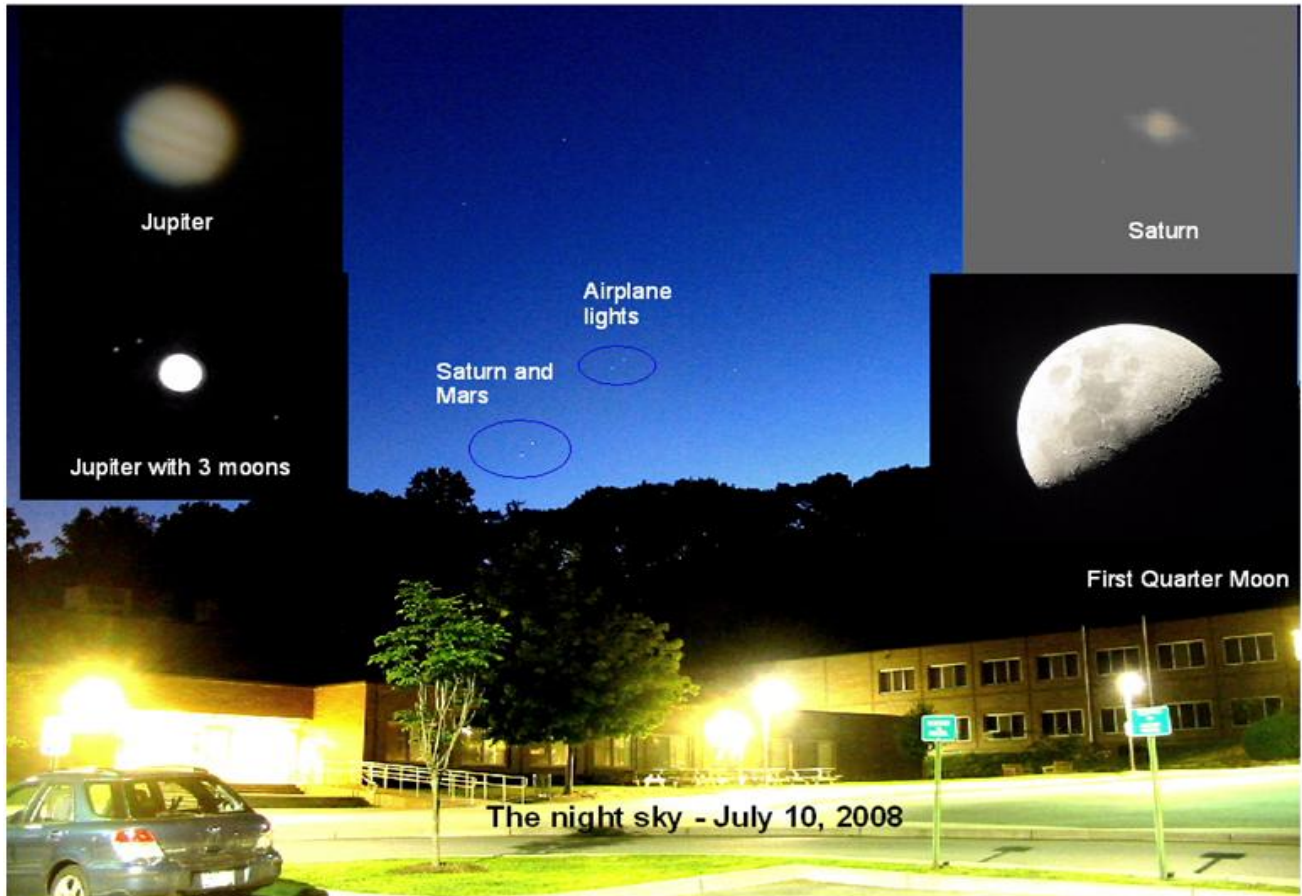
"GALEX has played a very important role in actually seeing this for a few reasons," Schawinski says. First, GALEX is a space telescope, so it can see far-UV light that's blocked by Earth's atmosphere. Also, GALEX is designed to take a broad view of the sky. Its relatively small 20-inch primary mirror gives it a wide, 1.2-degree field of view, making it more likely to catch the UV flash preceding a supernova.

With these advantages, GALEX is uniquely equipped to catch a supernova before it explodes. "Just when we like to see it," Schawinski says. For more information, visit www.galex.caltech.edu,

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



Sequence of images shows supernova start to finish. The top left image shows the galaxy before the supernova. At top right, the bright red UV flash called the shock breakout indicates a red supergiant has collapsed. At bottom left, moments later, the flash is mostly gone. As the debris expands, it heats up again and becomes brighter (bottom right). The supernova became 10 times the size of the original over the following few days, thus becoming visible to supernova hunters.



Putting it Together

Bob Kelly compiled the above composite at the Ardsley Middle School on July 10th. Upper left depicts bands of clouds on Jupiter. Bob used a Canon A40 camera on his 8-inch dob with a 10 mm eyepiece and 3x camera zoom, 1/60-sec exposure. He cropped and brightened the image in Photoshop Elements. Below that is Jupiter with three of its four brightest moons--a 1/30-sec exposure brightened with Photoshop Elements to bring out the moons. Notice how Bob had to give up the banding to capture the moons. Says Bob: "I know there's software that can get both on the same page, but I'm not up to that yet." The Composite, including images of the Moon and Saturn, were combined in Lotus Freelance and converted to jpeg.



Lunar Mosaic

Also on July 10th, Bob Kelly compiled this mosaic of 4 photos of the lunar sunrise, (first quarter moon), with a 10mm eyepiece (which gave 70x on his 8 inch dob), a 1/60-sec exposure with his Canon A40 with 3x zoom. He combined the images using manual panorama with Photoshop Elements 6.0

Constellation Corner

by Matt Ganis

While the typical theme of this column is "Stars" or "Constellations," I thought I'd change things up a bit and have a look at our nearest celestial neighbor, the Moon.

Although we call it simply "the Moon", it is associated with the Roman goddess Luna, who was goddess of the hunt. It is the sixth largest moon in the Solar System, and has been Earth's partner for most of the planet's known history. Although it has been lighting our dark nights for so long, its origins are mostly unknown. Some believe the Moon was formed when a gigantic asteroid smashed into the Earth. The resulting impact flung molten material far out into space where it cooled and formed the Moon we see today. Others believe it was a wandering planetoid captured by the Earth's gravitational pull, or perhaps even a piece of the newly forming Earth that broke off to form the satellite. Interestingly, the Moon is the only planetary body whose surface can be seen from Earth with the naked eye.

So what can we see on the Moon? Perhaps the most prominent features of the Moon are its numerous craters; the surface has been bombarded continually throughout its history. Since the Moon has no measurable atmosphere and no liquid water, there is no erosion taking place. So the craters on the surface have been preserved for many years. See the Lunar100 Gallery for a tutorial at:

<http://www.shoestringastronomy.com/lunar/lunar100.htm>

Of particular interest are the other prominent features on the Moon: the smooth areas called Maria. The Maria are believed to have been formed by more recent lava flows, which have covered over the older craters. The Maria cover about 16% of the lunar surface, mostly inside immense impact basins. So, although the Moon does not have many volcanic craters, it did experience volcanic activity.

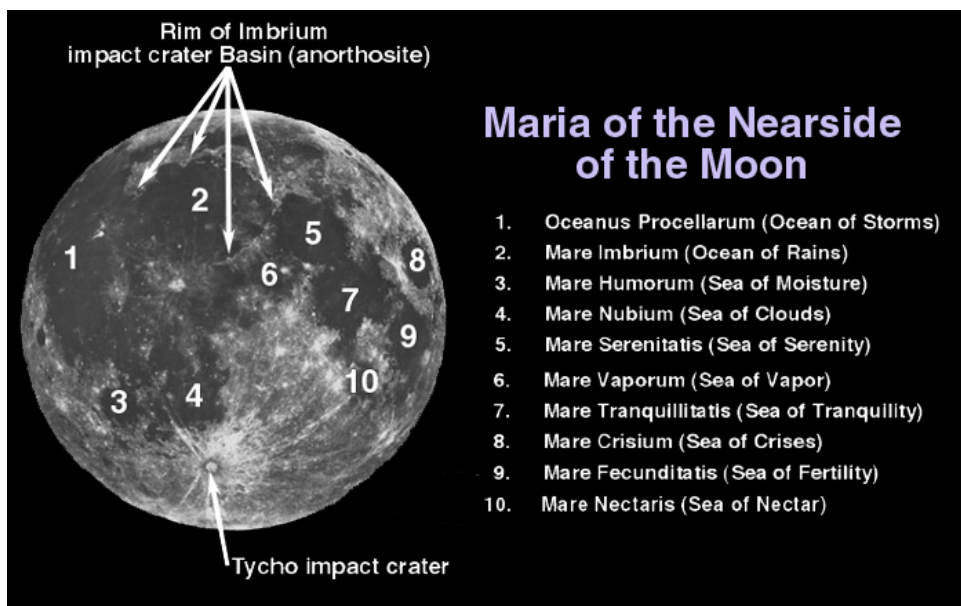
There are also many mountain ranges and rift valleys on the Moon's surface. All of these features have combined to form a unique facial feature known as the "Man in the Moon" that can

be seen if one knows what to look for. This feature, (along with all of the Earth-bound visible features), can be observed every night of the year because the Moon always keeps its same face towards the Earth. This is because its period of rotation and revolution are the same (called a synchronous rotation).

For the Moon, a sidereal month is the time the Moon takes to complete one full revolution around the Earth (with respect to the background stars). However, because the Earth is constantly moving along its orbit about the Sun, the Moon must travel slightly more than 360° to get from one new moon to the next. Thus, the synodic month, or lunar month, is longer than the sidereal month. A sidereal month lasts 27.322 days, while a synodic month lasts 29.531 days.

This cycle is known as the lunar month as seen from Earth. As the Moon orbits the Earth, it appears to change shape as more or less of its sunlit side is visible. When the Moon is on the opposite side of the Earth as the Sun, it appears as a full moon.

So go out on those "moon-filled" nights. Take advantage of the bright moon and get re-acquainted with our closest neighbor.



Almanac

For August 2008 by Matt Ganis

For the 2006 August Almanac column I was complaining it was too hot to even be productive outside, even at night. Last year, I found that I was complaining about too much rain in mid-to-late July. If I were going to complain this year, it would definitely be about the heat and humidity (that just kills my telescope mirror at night) – Now I'm not bringing this up to say I complain too much (though my wife may disagree). I find it interesting that there appears to be a little mini-pattern going on here (hot, then wet, now hot again). I wonder what 2009 will bring. Somebody please remind me to go back and look next year when I write the August column (that is, if they keep me around ;-).

The Perseid meteor shower is probably the most-watched annual meteor shower. It has a very long duration, from about July 15 through August 25th but is most interesting around its peak on August 12th or 13th. The radiant should be above the horizon the entire night for those of us that are north of latitude 32N, but will be fairly low at the end of evening twilight. The evening Perseid rates tend to be fairly low, and the bright Moon makes things worse this year. However, the real meat of the show will come during the predawn hours when the Moon is down and the radiant is high – so all is not lost.

This year, the predawn rates for observers with truly dark skies may exceed 100 meteors per hour (although the West Coast of North will be favored this year), with a nice sprinkling of sporadic and minor shower meteors added to the mix. Adjacent mornings from August 10th through August 13th are well worth watching, although rates will be significantly lower. These meteors are fast and tend to be fairly bright on average so you may be able to catch a glimpse of them for several days.

It might be interesting to have a look at the western horizon around August 10th (just at Sunset). I love when nature helps teach us concepts that are sometimes difficult to grasp. If you take a look at the sky just "below" the constellation Leo, you'll get to see several planets lined up along the Ecliptic (the imaginary path of the Sun in the sky).

Closest to the horizon (perhaps lost in the glare of the setting Sun) is swift little Mercury. The planet won't be in the sky long, setting about 20 minutes after the Sun, but you may be able to get a glimpse



Aug 1



Aug 8



Aug
16

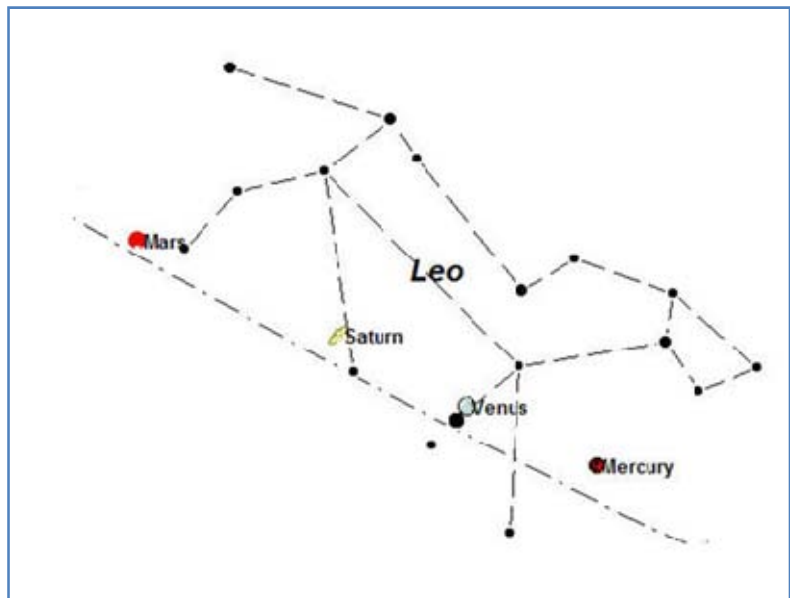


Aug
23

of it. Look for the bright star Regulus only about 1-deg from the little planet.

To the East, about 5 degrees from Mercury (or Regulus), is bright Venus, finally reappearing in our skies. I don't think you'll have any problem finding Venus since it will be shining at a very impressive magnitude -4.0! Like Mercury, Venus is quickly moving to the East during the month, passing by Saturn on the 19th and coming within a few degrees of Mars in early September.

Speaking of Saturn, you can get one of your last views of the ringed beauty this month as the third



planet in line (from the horizon) under Leo. The planet won't set until about 9:30pm, so you should realistically be able to get a quick look. It's bright enough, shining at magnitude of about +0.8.

Completing the "line up", located at the rear foot of the Lion is Mars. It's not very bright, only about +1.8 magnitude, but it should be bright enough to outline the ecliptic clearly enough.

Once you're able to see this cool planetary alignment (incidentally, they will only stay aligned along the ecliptic until about the 20th of the month), have a look in your eastern skies for a great view of Jupiter. You have all night since it won't set until about 4am. But at magnitude of -2.70 it will rival Venus (and the Moon) in our summertime skies!