

Sky **WAA** tch

The Monthly Publication of the Westchester Amateur Astronomers

April 2007



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A Blue Crescent Moon from Space

Astronauts on the International Space Station took this image of a crescent Moon poised over a sea of clouds. The Moon takes on a blue hue owing to light scattering induced by the Earth's atmosphere. Note also how the atmosphere deflects moonlight and so causes the lower portion of the Moon to seemingly disappear in the Photo. For details and a high-resolution image, go to NASA's Astronomy Picture of the Day at: <http://antwrp.gsfc.nasa.gov/apod/ap070320.html>.

This Month's issue of *SkyWaatch* has a bit of a lunar theme. Dave Butler has an observing report on the Lunar Eclipse. Dana Thompson discusses the "Lunar X" while John Paladini offers up a nice image of the lunar crescent. Also Matt Ganis' Almanac highlights an interesting panorama formed by Venus, the Moon and the Pleiades on April 19th.

ASTRONOMY DAY at the Hudson River Museum, Yonkers

Sunday, April 22, 2007, 12:00-5:00 PM
Free with museum admission

Come see a Retro Rocker round up; Hear the Sounds of Outer Space, Paint a planet, Make a sundial, Cook up a comet and more interesting and exciting activities

Serving the Amateur Community Since 1983

Events for April 2007

➤ **Monthly Meeting**

**“Energy Technologies for Earth
And Other Planets”**

Friday April 6, 8:00pm

Hudson River Museum, Yonkers

Professor Steve Greenbaum will speak on energy technologies. Professor Greenbaum is from Hunter College and his research concerns the evaluation of materials being developed for fuel cells and lithium batteries—two technologies undergoing rapid growth.

➤ **“Starway to Heaven”**

Saturday, April, 14, 8-11:00pm

**Meadow Picnic Area, Ward Pound Ridge
Reservation, Cross River**

This is our scheduled observing date for April, weather permitting. Free and open to the public. The scheduled rain/cloud date is April 21st.

➤ **Upcoming Events**

**Rescheduled Vernal Equinox Star party
Thursday, April 19**

**Quaker Ridge Elementary School
125 Weaver Street, Scarsdale, 8 pm.**

A large group of students will be waiting for us to show them the Moon, planets and spring constellations. Meet and set up telescopes at the back parking lot. Rain date: April 20.

Family Stargazers' Night

Tuesday, April 24

Family Stargazers' Night

George Washington Elementary School

3634 Lexington Avenue, Mohegan Lake, 8 pm.

Our annual observing night for the children and parents of George Washington Elementary School is one of our best-attended and fun events of the year. We will set up our telescopes behind the left side of the school building. Rain date: April 26.

New Members...

Chiara Taylor, Greenwich, CT
Anne Wagner, Tarrytown, NY

Renewing Members...

James Cobb, Tarrytown, NY
Paul Alimena, Rye, NY
Tom & Maxine Baker, Chappaqua, NY
Raymond Bloch, Yonkers, NY
Rick Bria, Greenwich, CT
Pat & Mike Gondek, Bethel, CT
Jonathan Gumowitz, White Plains, NY
David Klaus, Yorktown Heights, NY
Martin Lee, Yonkers, NY
Gerald Mannarino, White Plains, NY
Alex Meleney, Greenwich, CT
Richard Romney, Chappaqua, NY
Karen Seiter, Larchmont, NY
Cliff Wattlely, Ridgefield, CT
Nancy Weisberg, Scarsdale, NY
Lori Wood, Bethel, CT

16th Annual Northeast Astronomy Forum

Saturday, April 28, 8:30am to 6pm

Sunday, April 29, 10am to 6pm

**Rockland Community College,
145 College Road, Suffern, NY**

America's premier astronomy expo will feature more than 80 on-site vendors, world-renowned speakers, workshops, solar observing, STARLAB planetarium shows, getting-started classes, and events for kids.

Tickets: \$15.00 for adults or \$25.00 for both days. Directions: N.Y. State Thruway, Exit 14B, Airmont Road North to Highview Road and left at College Road. www.rocklandastronomy.com/neaf.htm

The WAA will have a booth at this year's forum and we need club members to assist with the Friday evening set up, Sunday breakdown, and to sit at the booth during the show. Please talk with Charlie Gibson or Mike Virsinger if you would like to help us out.

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.

Photos and Observing Reports

Lunar Eclipse viewing

By Dave Butler

March 3 - Total Lunar Eclipse

At 4pm, two hours before viewing was to start, I went outside. It was totally overcast with a few drops of rain. It was supposed to get worse as the night progressed. However, by 6pm the sky was almost clear except the eastern horizon had thin clouds. So I went over to Phoenix House, a place I had setup viewing several times. This was of course unscheduled; so I was sure to be stopped. The moon was a dim orange chocolate low on the horizon with the lower left area somewhat brighter than the upper right. Few students could come out, most were in a meeting, but they were informed and could view after the meeting. Meantime the Moon was getting brighter as it rose. The lower left edge formed a rim of gold sometime before 6:50. Later it was replaced with a bright white crescent as the moon started to leave the shadow of the earth. The bright white light reflected off the sky giving a second image for at least ten minutes. By this time more students had joined. Venus, Sirius, Betelgeuse, Orion's sword were pointed out to them. One spotted the Seven Sisters and could see 6 stars in it. We were standing between a row of lights on both side of the road. The moon became increasingly white as the shadow of the earth covered less area. The brown area was a little hard to see for some. Binoculars were used at times and a few used them to see the Orion Nebula. The Moon became totally full shortly after 8pm. The sky was getting cloudy now.

Starway to Heaven viewing

By Dave Butler

February 27

Usually the monthly viewings are on moonless nights. Saturn and the Moon are very good targets, but most deep sky targets just don't look very good with a lit moon anywhere in the night sky. The temperature was above freezing and the winds were minimal. A guard at the gate was in a car. The car in front of me turned around and left. Five cars showed up for the viewing. Targets included Open cluster M103 (looks like a Christmas tree), Double Star Castor, Saturn, the Moon, the Orion Nebula, the Eskimo Nebula, Double Star Rigel, and the galaxy pair M81/M82. Most scopes were small, an 80mm short focus refractor on an equatorial mount, two 6 inch computer go-to scopes and my 8 inch LX90. All who brought a smaller scope owned a larger scope. Harry didn't have time to pack it, and cool down time was a worry for another. I find that 1/2 hour is enough cool down time for all but photographic work. A nice Frenchman, who showed his young son how to use an equatorial mount, lent

me his Tele Vue Nagler 22mm to view the Double Cluster and the Orion Nebula. This 82-degree FOV eyepiece was parfocal with my Meade 8-24mm zoom eyepiece and my Celestron 32mm eyepiece. It gave a slightly larger AFOV than my 32mm eyepiece, but at 91x vs. 62.5x the background was much darker. The eyepiece showed nebula structure through the whole 0.9-degree field of view, the contrast was simply breathtaking. He asked his son how many stars could he see in Pleiades (he saw 6) and pointed to the naked eye double Alcor and Mizar. I looked at Saturn through the scope after the son centered it. The viewing ended after about 2 1/2 hours. My highlight was looking through his 460 dollar lens well worth the look, but its cost is almost equal to my zoom + 30mm + 2" 36mm + the weight balance system.

Subway Astronomy

By Bob Kelly

As I stand on the subway platform at Morris Park in the Bronx, the southern end of the downtown platform offers a view of the eastern and southern sky. Today the moon is low and waning as it slips toward its partial eclipse of the sun on March 19th for Asia and Alaska. But the moon is only a transient of this sky. To its upper right is the next brightest object in the early morning sky, Jupiter. It's nice to set aside the problems that await me at the other end of the subway journey and think about a machine the size of a kitchen table speeding away from Jupiter, having used a tiny amount of the momentum of the giant planet to set its path to encounter Pluto 10 years from now. For the New Horizons probe, it's half a billion miles from Earth now and three and a half billion more miles further away to the orbit of Pluto.

Jupiter will be the brightest object in the morning sky for a few months. It will move slowly to the west, higher in the sky each morning until it becomes an evening sky object in May. So take advantage of the newfound early morning darkness to catch Jupiter before sunrise.

Many elevated subway and commuter train platforms north and east of the city give a view of the eastern or southern sky in the morning. Check it out the next clear and dark morning and you'll see that the darkness isn't so absolute. Then you'll have a friend in the morning sky to cheer you until the days grow long enough to have the sunrise on your trip to work. As for myself, my wife and I get up so early that the sun isn't up yet, until the longest days of summer. So I enjoy our newfound morning dark sky, so I can visit with the morning planets. Worst of all to me is twilight, with no stars but not enough light to wake me up!

"Lunar X"

By Mr. Dana Thompson

I am looking for the oldest observation of the "Lunar X" that forms on the dark side of the terminator, close to the First-Quarter Moon. I'm trying to find the oldest photograph, drawing or observation log, etc. I am not trying to make this into a "face on Mars" theme, but rather, just gathering facts on what I consider an interesting interplay between shadows and sunlight on the Moon's surface.

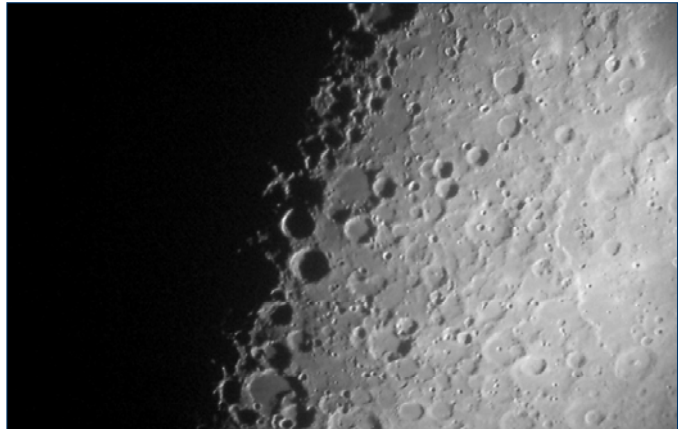
As the terminator slowly moves over the crater Werner, light from the lunar sunrise begins to illuminate some of the highest lunar topography in the region between the craters La Caille, Purbach, and Blanchinus. The "X" feature is fully formed from the sunlight illuminating specific crater walls and ridges and stands out in obvious contrast to the dark side of the terminator. This unique lunar event, or should I say optical event, lasts for about two hours before being totally surrounded by light. At which time the lower topography of the area is illuminated and the "X" transitions back into "hiding."

My latest photograph of the event is from the evening of January 25, 2007 from Hebron, Ohio.

I first observed the event when I was just 15 years old, on June 12, 1978. However, at that time, the afocal photographs that I took through my 60mm refractor telescope were not in focus. In spring of 2005 I made my way back into amateur astronomy and hope to have a role in the gathering of information on this topic and share it with other people interested in lunar observing and photography. On September 10, 2005, I was able to observe and photograph the event in its "late stages." Since that date, I have observed and photographed it several times. All my lunar photographs are taken using the afocal method, as I strive to do what I wasn't able to do almost 30 years ago.

I find it hard to believe that this event has gone virtually unnoticed before my observation in June 1978 and then some. My efforts fell short in 1978; attempts by other astronomers possibly ended in the same manner or the person(s) may not have given the same thought to the feature as I had. I wonder if you might be able to help me find out when it was first recorded. Any information you could provide would be appreciated. Or, just help me spread the word. At the least, it is a challenge of sorts to even observe the Lunar X, as it cannot be seen every month from the same location on Earth.

The earliest photo that I have found so far, was taken by Lick Observatory, and was in "The Times Moon Atlas" from 1969. The actual picture was taken May 6, 1938. This "7-day" Moon photo can still be purchased from Lick Observatory.



Here are the times for the "Lunar X" for 2007: May 24, 05:16 UT; July 22, 02:43 UT; Sept 19, 00:01 UT; Nov 17, 01:16 UT (this is figured with a Sun altitude over crater Werner at 0.8). You just need to check and see if the Moon will still be "up" in your area around these times (and for an hour or two afterwards). Looks like 2007 is going to be a good year, as long as the Moon doesn't set before the "X" actually forms.

▼ Spring Time Moon

John Paladini took this image of a 5.7% Moon with 3-inch Jaegers f/5 scope. It's a 0.177-second exposure using a Meade Lunar Planetary Imager. Notes John: One side shows nice sunbeams through mountains.



Honduran Sky

By Bob Kelly

Around the end of February, my wife, Carol, and I went to Honduras in Central America to visit my daughter who is teaching for a year in a bilingual school. Honduras is a beautiful country with ancient ruins and tropical jungles. From their latitude of about 15 degrees north, Orion stands almost overhead. I had trouble finding the Moon at first. Then I looked in the northern sky and found it. The Moon looked upside down with the Sea of Tranquility to my left as it passed north of the Zenith. Later in the week, on the north coast of Honduras, we saw the Sun drop straight down into the western horizon, not at an angle like it does here in the temperate latitudes. Carol was very impressed that the tropical Sun set so quickly that she could see it moving.

I took a photo of Orion, but without context, it looks like it does here at home. Except for the tropical trees and plants, and some pretty purple hues in the sky, Venus in twilight looked pretty much the same even from Bridget's residence in Cofradia. Cofradia is a town of about 5,000 an hour outside of San Pedro Sula, which at 750,000, is the second largest city in Honduras. For a day we were guest teachers at the school where Bridget teaches. The students at the San Jeronimo Bilingual School want to learn English and get more education than the six years of required school in Honduras. In the school library, we set up a gallery of 3-D red/blue photos from across the solar system and showed movies of the Moon landings on a laptop computer. Later, we constructed small cardboard telescopes. I wore my WAA shirt and the students wore their school uniform shirts.



Watching Apollo Moon landing.

The web site for the program that sponsors the school in Cofradia is at:

<http://www.becaschools.org>.



Bridget and Bob Kelly during the telescope-making session



3-D Moon ... you can almost touch it



Early Bird Gets the Worm Or “Black Hole Breakfast”

By Dr. Tony Phillips

We all know that birds eat worms. Every day, millions of birds eat millions of worms. It's going on all around you! But how often have you awakened in the morning, stalked out in the dewy grass, and actually seen a bird having breakfast? Even though we know it happens all the time, a bird gulping a worm is a rare sight.

Just like a black hole gulping a star...

Every day in the Universe, millions of stars fall into millions of black holes. And that's bad news for the stars. Black holes exert terrible tides, and stars that come too close are literally ripped apart as they fall into the gullet of the monster. A long burp of X-rays and ultraviolet radiation signals the meal for all to see.

Yet astronomers rarely catch a black hole in the act. “It's like the problem of the bird and the worm,” says astronomer Christopher Martin of Caltech. “You have to be in the right place at the right time, looking in the right direction and paying attention.”

A great place to look is deep in the cores of galaxies. Most galaxies have massive black holes sitting in their pinwheel centers, with dense swarms of stars all around. An occasional meal is inevitable.

A group of astronomers led by Suvi Gezari of Caltech recently surveyed more than 10,000 galactic cores—and they caught one! In a distant, unnamed elliptical galaxy, a star fell into a central black hole and “burped” a blast of ultraviolet radiation.

“We detected the blast using the Galaxy Evolution Explorer (GALEX), an ultraviolet space telescope,” explains Gezari. Her team reported the observation in the December 2006 issue of *The Astrophysical Journal Letters*. “Other telescopes have seen black holes devouring stars before,” she adds, “but this is the first time we have been able to watch the process from beginning to end.”

The meal began about two years ago. After the initial blast, radiation diminished as the black hole slowly consumed the star. GALEX has monitored the process throughout. Additional data from the Chandra X-ray Observatory, the Canada-France-Hawaii Telescope and the Keck Telescope in Hawaii helped Gezari's team chronicle the event in multiple wavelengths

Studying the process in its entirety “helps us understand how black holes feed and grow in their host galaxies,” notes Martin.



One down, millions to go.

“Now that we know we can observe these events with ultraviolet light,” says Gezari, “we've got a new tool for finding more.”

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

For more on this and other findings of GALEX, see www.galex.caltech.edu.

Constellation Corner:

By Matt Ganis

This month I thought I'd take us through a virtual tour along the ecliptic. Each year the Sun moves eastward in a complete circle around the sky. The ring of 12 constellations that apparently surround the Earth is called the Zodiac, a word meaning 'Circle of the Animals', because these twelve star groups are all named after animals (including people). When the ancients realized that the Sun and Moon also appeared to move through the zodiacal constellations, the belief in Astrology developed.

Astronomy is, of course, the scientific study of the stars, while Astrology is the belief that the position of Sun, Moon and planets can affect people and events on the earth.

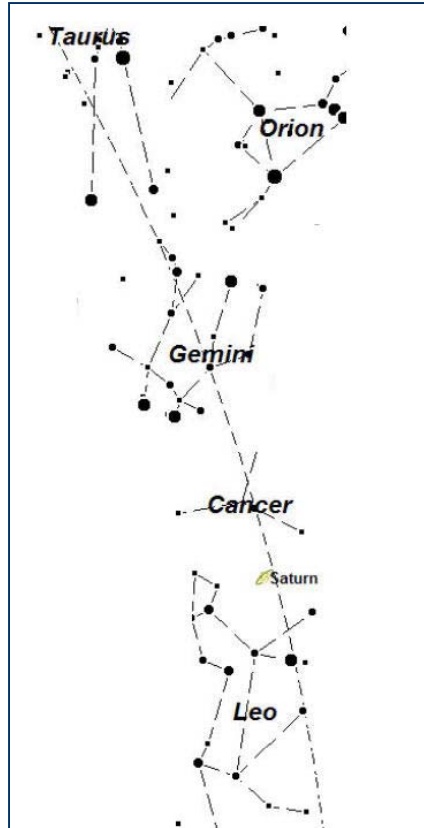
The constellations of the Zodiac, through which the sun, moon and planets appear to move are, Aries the Ram, Taurus the Bull, Gemini the Twins, Cancer the Crab, Leo the Lion, Virgo the Virgin, Libra the Balance, (or Weighing Scales), Scorpius the Scorpion, Sagittarius the Archer, Capricornus the Sea Goat, Aquarius the Water Carrier, and Pisces the Fishes. Contrary to popular belief, there are actually 13 zodiacal constellations with the additional one being Ophiuchus, the Serpent Holder.

At the start of the month, we find the Sun setting in the constellation of Pisces. As the story goes, one day Aphrodite and her son Eros were walking along a riverbank when they sensed the presence of the monstrous god Typhon. They quickly plunged into the river where they took the form of fishes and escaped. Today we still see them as the Northern Fish and the Western Fish of Pisces. There really isn't much of astronomical significance in the constellation, but Pisces does claim the number one position of importance among the twelve constellations of the Zodiac: it contains the Vernal Equinox. Remember, the Vernal Equinox is that point in the sky where the celestial equator crosses the ecliptic with the Sun moving in a northerly direction.

Continuing in an Eastward direction, the ecliptic passes through Aries (A small constellation with only two easily visible stars) toward the constellation Taurus. During the month of April, Aries houses the bright planet Venus in our Western skies.

Upon leaving Aries, we enter into the constellation of Taurus, the Bull. Taurus is easy to spot in the sky.

Located just to the "right" of Orion, its head is marked by the Hyades star cluster (located about 150 light years away) and the bright star Aldebaran marking the "eye" of the Bull. Just above Taurus is the more famed and more distant cluster the Pleiades or "Seven Sisters", located 370 light years away. At the end of the "left" horn of the bull (almost on the ecliptic) is the famous Crab Nebula, a Supernova remnant. This has been in our sky since the year 1054 when a massive star near the tip of the horn exploded.



Continuing our eastward motion through the skies, we move into the constellation of Gemini. It's easy to recognize the two prominent stars of the constellation: Castor and Pollux (the names of the two twins). To the Greeks, Castor and Pollux were the twin sons of Zeus and his mortal wife Leda. Their sister, Helen was referenced in Homer's Iliad as the woman who "launched a thousand ships" in the Trojan war; I suppose that's the origin of the phrase "By Jiminy" where sailors revered the Gemini twins (Helen's brothers) as the Protectors of ships. After Castor's death, Pollux was overwhelmed with grief, and wanted to share his immortality with his twin. Feeling pity for the brothers, Zeus reunited them by placing them together in the heavens.

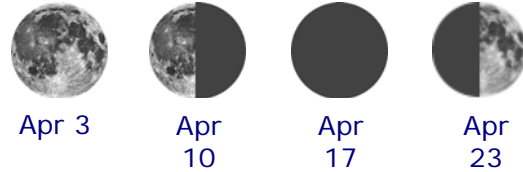
Next stop is the constellation of Cancer, the crab. Currently Saturn occupies the space between Cancer and the next Zodiacal constellation, Leo. Planets

seen in the sky are always near the ecliptic, which means that their orbits are never too far from the plane of the ecliptic. Cancer is home to the famous "Beehive" cluster or M44 (also called Praesepe). Galileo first observed the cluster in his telescope and saw a collection of about 40 stars - today's modern large telescopes reveal about 350 stars. This cluster is located about 577 light years away from us and is estimated to be about 400 million years old.

So before I get a ton of "cards and letters" telling my Libra isn't an animal, it was originally comprised the claws of the Scorpion, but was detached from Scorpius by the Romans to represent the vernal equinox. Today, Libra is associated with the scales held by the goddess of justice, and was added by Julius Caesar at the time of the establishment of the Julian calendar.

Almanac

For April 2007 by Matt Ganis



Hopefully you all made it through the “new” changeover in Daylight Savings Time without a hitch. I know I had some “interesting” problems with computers not moving ahead properly and computer calendars not updating – sigh – messed me up for days. Coupled with the fact that I have to wait at least an extra hour before I can go outside with my telescope, and I didn’t have a great end of the month. Here’s hoping April goes a little smoother.

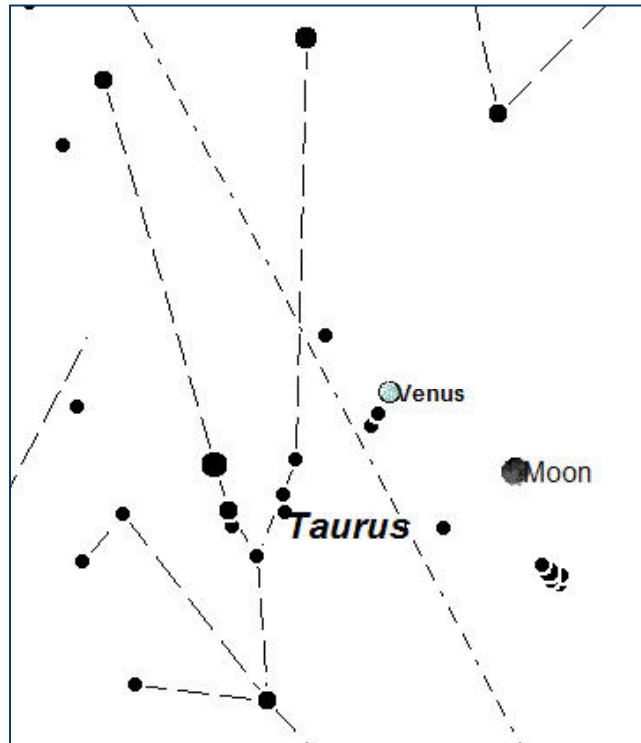
Saturn still dominates our evening skies, not in brightness but in beauty. It’s located just between Leo and Cancer shining at a magnitude of just about +0.0 (see the map in the Constellation Corner column). Saturn is currently retrograding in the western most part of Leo (heading toward Cancer). By about mid-month, it will stop short of officially entering into Cancer, and will continue its normal Eastward motion.

In our Western skies Venus is still putting on a spectacular show. It’s now about 30 degrees above the horizon, well placed for viewing in the early evening. If you have trouble finding this planet, it must be cloudy ;-). You can’t miss this beacon in the sky, shining at a magnitude -4.0! In the telescope, I’ve never found Venus all that exciting, but it is interesting to watch the phases. Right now it’s in a gibbous phase, which is easy to see in my 8 inch Celestron. It’s definitely worth a quick peek.

The 3-day old crescent moon has a nice little interaction with Venus and Pleiades on the evening of the 19th. A very young moon will be in the middle of the still very bright Venus and the Pleiades star cluster. Look for the Moon to be about 5 degrees to the west of Venus and the Pleiades about 3 degrees to the west of the moon. It should make for an interesting little “threesome”.

I don’t know about you, but I’m waiting for the return of Jupiter to my evening skies. I love to

watch for the Red Spot or observe the moons in their various configurations. Well, finally, this month Jupiter will be rising just around midnight into our eastern skies. The planet is escorted into our skies by the 13th zodiacal constellation:



Ophiuchus shining at magnitude of -2.4. Jupiter is just going into its retrograde motion, so it will continue to move in the direction of the star Antares in the constellation of Scorpius throughout the spring.

The Lyrid meteor shower is forecast to be at its best in the predawn hours Sunday and Monday mornings, April 22 and 23. They are actually active from April 16 through the 25th with peak rates occurring about 22:30 Universal Time on April 22 (this is late afternoon for us). The

typical maximum meteor count ranges from about 10 to 20 meteors an hour - that’s about a meteor every few minutes. On the night of maximum activity the Lyrid radiant is actually located in eastern Hercules, seven degrees southwest of the brilliant star Vega (Alpha Lyrae). This area of the sky lies below the horizon during the early evening hours but it attains a decent elevation between midnight and 0100, depending on your latitude. It is best situated high in a dark sky just before the start of morning twilight. The moon may cause some problems since the first quarter moon arrives on the 23rd, but hopefully it won’t be too much of a bother.

One last thing for you early risers--starting about the 23rd of April in the early hours of the morning (4:30 – 5:00am) you may begin watching Mars as it moves past Uranus in the sky. The two planets will come closest on the morning of April 29th when they will be less than a degree apart in the sky.