

WEEKLY STARGAZERS' NEWSLETTER

by Dr. Bob

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These are the notes that I use for the weekly radio broadcast on Rome Radio Station WLAQ AM 1410 and FM 96.9. The program airs at 7:50 a.m. each Tuesday morning. The radio station also has a live FaceBook broadcast at the same time: WLAQ-Rome. Send questions to: ryoung@highlands.edu

OBSERVATION PERIOD:

06/25/24 – 07/01/24

FUN FACT OF THE WEEK

Speeding up and slowing down in orbits about the Earth works just opposite to what you might expect. The larger a spacecraft's orbit, the longer the spacecraft takes to travel around the Earth. If you wanted to pass a spacecraft just ahead of you, you would have to fire your thrusters **forward** to slow the spacecraft down into a lower energy orbit, where you will travel more quickly around the Earth. The "passing lane" in orbits is always lower.

MOON FOR THE WEEK:

The Moon will be Third Quarter on Friday, 6/28/24. The Moon will waning during the week as it goes from Full Moon toward Third Quarter and will be seen low in the sky before sunrise in the Eastern predawn sky.



As you watch the Moon day by day, you will see that it moves 12.2 degrees further East, each day as it crosses the celestial sphere.

Sun in View:

The Sun rises at 06:30 (6:30 a.m.) this week and sets at 20:57 (8:57 p.m.)

This means that the Sun is above the horizon for Sun is "up" for 14 hrs. and 27 minutes.

The Sun climbs to an altitude of 79.1 degrees again this week.. The Sun is in the constellation Gemini, the Twins. Compare this week's altitude to when the Sun rises to only 32.3 degrees on December 21st. This week the Earth's range to the Sun is 1.016 AUs. The Earth is still slowly distancing itself from the Sun as we head toward Summer and reach aphelion on July 4th.

The Sun is at Summer Solstice on June 20th, this is the longest day of the year and the Sun is as high in the sky as it will get all year long, 79.2 degrees above the Southern Horizon as it crosses the meridian.

PLANETS

Mercury: This week Mercury rises in the East at 7:20 a.m. which is about an hour after the Sun. Mercury sets about an hour after the Sun so you might get a good look at it in the evening sky.

Venus rises in the East at 6:55 a.m. which is also about 15 minutes after the Sun. Venus follows the Sun by 20 minutes in the evening. It will be too low to see this week.

Mars rises in the East at 3:24 a.m. which is more than 3.0 hours before the Sun so Mars is a wonderful object in the predawn sky. Look for its amber hue.

Jupiter rises in the East at 4:48 a.m. which is more than two hour before the Sun. Look low on the eastern horizon before sunrise to see this planet.

Saturn rises in the East at 1:09 a.m. which is a little more that 5 hours before the Sun. Saturn is an easy target in the predawn sky.

MARS ROVER PERSEVERANCE

To get regular and current updates on the progress of NASA's Perseverance rover on Mars, go to the website:

<https://www.space.com/news/live/mars-perseverance-rover-update>

SATELLITES FOR THE WEEK (ISS PASSES)

25 Jun	-2.5	04:00:19	40°	NE	04:00:19	40°	NE	04:02:35	10°	NE	visible
25 Jun	-1.0	05:35:26	10°	NW	05:36:30	11°	NNW	05:37:34	10°	N	visible
26 Jun	-0.7	03:13:53	14°	ENE	03:13:53	14°	ENE	03:14:24	10°	ENE	visible
26 Jun	-1.4	04:46:47	13°	WNW	04:48:07	16°	NNW	04:50:20	10°	N	visible
27 Jun	-1.8	04:00:16	24°	NNW	04:00:16	24°	NNW	04:02:37	10°	NNE	visible

STAR PATTERNS IN THE SKY

The constellation of the week is Lyra the Harp

Lyra is just east of Hercules, the constellation with the Keystone asterism we looked at last week.

The harp is one of my favorite constellations because it is the home of the famous Double-Double star, just northeast of Vega.

Lyra is one of 48 listed by the 2nd century astronomer Ptolemy, and is one of the 88 constellations recognized by the International Astronomical Union.

Its principal star, Vega is on the corner of the Summer Triangle, is one of the brightest stars in the sky.

Lyra is visible from the northern hemisphere from spring through autumn, and nearly overhead, in temperate latitudes, during the summer months

Although it is small, it is the home of a number of wonderful objects. My favorite is M57, also known as the "Ring Nebula"

The Ring Nebula has a diameter of one light-year (5.86 trillion miles) and is at a distance of 2,000 light-years from Earth.

It is one of the best known planetary nebulae and the second to be discovered; its integrated magnitude is 8.8

SPACE HISTORY OF THE WEEK

June 25, 1997:

Progress resupply spacecraft was attempting to dock with Mir Space Station when it struck a solar array and punctured the resupply ship's skin. The cause of the collision had to do with a reluctance of interested parties to share detailed information for hatch and docking valve mechanism to NASA for safe docking.

At the time, a resupply ship arrived to Mir Space Station every three months to replenish needed material for the astronauts in Mir. On March 23, 2001 Mir Space Station de-orbited into the Earth's atmosphere. As a matter of interest, I hosted a small Mir Star Party at the Clocktower on March 20, 2001 where we watched it pass over head in one of its last Earth orbits before reentry. My son Chasen made the front of the Rome paper. There was a big picture of him looking through a telescope sitting on my knee.

June 26, 1730

Charles Messier was born a French astronomer most notable for publishing an astronomical catalogue consisting of nebulae and star clusters that came to be known as the 110 "Messier objects". The purpose of the catalogue was to help astronomical observers, in particular comet hunters such as himself, distinguish between permanent and transient visually diffuse objects in the sky.

June 30, 1908:

The Tuguska meteor impact levels hundreds of miles of the Siberian forest. It is classified as an impact event even though the object is believed to have burst in the air rather than hit the surface.

Different studies have yielded widely varying estimates of the impacting object's size, on the order of 60 m (200 ft) to 190 m (620 ft).

It is the largest impact event on Earth in recorded history.

It is estimated that the Tunguska explosion knocked down some 80 million trees over an area of 2,150 square kilometres (830 sq mi), and that the shock wave from the blast would have measured 5.0 on the Richter scale.

QUESTION OF THE WEEK

“I keep hearing a number for star and planet brightness. How is star brightness determined?” Trever M.

The brightness scale used to indicate magnitude originates in the Hellenistic practice of dividing stars visible to the naked eye into six magnitudes.

The brightest stars in the night sky were said to be of first magnitude ($m = 1$), whereas the faintest were of sixth magnitude ($m = 6$), the limit of human visual perception (without the aid of a telescope).

In 1856, Norman Robert Pogson formalized the system by defining a first magnitude star as a star that is 100 times as bright as a sixth-magnitude star, thereby establishing the logarithmic scale still in use today.

This implies that a star of magnitude m is 2.512 times as bright as a star of magnitude $m+1$. This figure, the fifth root of 100 became known as Pogson's Ratio.

2.512 5th power equals 100

Little Dipper is often used as a measure of how dark our skies are.

Polaris is 2.0 End of bowl is 2.1 Bottom of bowl 3.1

Handle and inner bowl stars range 5.0 to 4.2

If you can see all of the 7 stars in the little dipper, you have good dark skies.