

# 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

Etowah GYSTC  
Website QR code



**OBSERVATION PERIOD:**  
12/20/22 – 12/26/22

## **FUN FACT OF THE WEEK:**

**A FULL NASA SPACE SUIT COSTS \$12,000,000.** While the entire suit costs a cool \$12m, 70% of that cost is for the backpack and control module. However, the space suits that NASA uses were built in 1974. **If these were priced by today's pricing, they would cost an estimated 150 million dollars!**

## **STAR PATTERNS IN THE SKY**

**The Ursids meteor shower** is expected to peak on the night of December 23 and early morning hours of December 24. A Waxing Crescent Moon will make it easy for Northern Hemisphere residents to see the shooting stars.

The Ursids commenced on Dec. 17 and will remain active until Dec. 26, giving star gazers several opportunities to spot a shooting star

The Ursids shower is a December meteor shower.

The Ursids meteor shower is active annually between December 17 and December 24. The shower usually peaks around December 23. At its peak, observers may be able to view as many as 10 meteors in an hour.

The shower is named the Ursids because the meteors seem to radiate from the direction of the constellation Ursa Minor in the sky.

The Ursids are associated with the comet, 8P/Tuttle, also sometimes known as Mechain-Tuttle's Comet.

## **MOON FOR THE WEEK:**

The Moon will be New on Friday, December 23<sup>rd</sup>. Watch as the Moon wanes from 3<sup>rd</sup> Quarter to New in the early predawn sky.

This week the Moon is decreasing its distance from the Earth as it heads toward perigee on Saturday, December 24<sup>th</sup>. The Moon will be 358,270 kms from the Earth.

To convert kms to miles, multiply kms by 0.62 miles/km.

## **HORIZON TO HORIZON PLANET VIEW**

The sun rises at 7:42 a.m. (EDT) and sets at 5:34 p.m. (EDT). This means that there are 9 hrs. 59 mins of daylight hours compared to 10 hrs. 6 min of daylight hours last week.

The Sun is in the **constellation Sagittarius**. Sagittarius is one of the constellations of the zodiac and is located in the Southern celestial hemisphere. It is one of the 48 constellations listed by the 2nd-century astronomer Ptolemy and remains one of the 88 modern constellations. Its name is Latin for "archer". Sagittarius is commonly represented as a centaur pulling back a bow. It lies between Scorpius and Ophiuchus to the west and Capricornus and Microscopium to the east.

The center of the Milky Way lies in the westernmost part of Sagittarius.

The Earth is now 0.984 AUs from the Sun. Last week it was 0.985 AUs from the Sun. The Earth reaches perihelion, its closest approach to the Sun, on January 4<sup>th</sup>.

As a review, one Astronomical Unit is about 93 million miles. Thus, the current distance to the Sun is  $1.49 \times 10^8$  kms or  $0.92 \times 10^8$  miles.

The Sun will reach an altitude of 32.3 degrees altitude as it crosses the meridian around noon. Last week it was at an altitude of 33.3 degrees.

## **The Planets:**

**Mercury** rises at 9:15 a.m. This is 90 minutes after sunrise. The planet sets 80 minutes after the Sun. This means that you can begin to see the planet low in western sky after sunset.

**Venus** rises at 8:49 a.m. which is about 60 minutes after sunset. Venus is also very low in the western horizon at sunset and you might get a brief glimpse of it before it sets.

**Mars** rises up in the eastern horizon at 4:14 p.m. and will be up all night long, The Red Planet crosses the meridian at 11:24 p.m., just before mid-night. Look for this planet and its 2 moons.

**Jupiter** rises in the East at 12:52 p.m. It crosses the **meridian at 6:47 p.m.** This huge planet is very bright and easy to spot with the naked eye. If you have a pair of binoculars, you can see four of the brightest moons: Io, Callisto, Ganymede, and Europa. Jupiter is more than 1,000 times larger than the Earth. This huge planet has 79 moons orbiting it in a regular pattern.

**Saturn** rises at 11:07 a.m. and can be seen dimly at sunset close to the meridian. At 4:22 p.m. Saturn crosses the Meridian and as the skies darken, it will become much easier to spot to the right (west) of Jupiter. The **Ringed Planet** has 82 moons, the most moons of any planet in the solar system.

### 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)

<a href="#">20 Dec</a>	-3.3	06:00:33	50°	NNE	06:00:33	50°	NNE	06:03:14	10°	NE	visible
<a href="#">21 Dec</a>	-1.9	06:47:53	15°	NW	06:48:27	15°	NNW	06:50:31	10°	N	visible
<a href="#">22 Dec</a>	-1.3	06:01:57	13°	NNE	06:01:57	13°	NNE	06:02:33	10°	NNE	visible

## **CELESTIAL FEATURE OF THE WEEK:**

### **Canis Major, Big Dog**

is a constellation in the southern celestial hemisphere. In the second century, it was included in Ptolemy's 48 constellations, and is counted among the 88 modern constellations.

Its name is Latin for "greater dog" in contrast to Canis Minor, the "lesser dog"; both figures are commonly represented as following the constellation of Orion the hunter through the sky. The Milky Way passes through Canis Major and several open clusters lie within its borders, most notably M41.

Canis Major contains Sirius, the brightest star in the night sky, known as the "dog star". It is bright because of its proximity to the Solar System.

The red hypergiant VY Canis Majoris is one of the largest stars known... 2 billion times larger than the Sun.

The smallest star in Canis Major is the neutron star RX J0720.4-3125 has a radius of a mere 5 km.

## **SPACE HISTORY OF THE WEEK**

Christmas day, 1642, Isaac Newton was born English physicist and mathematician who is widely recognized as one of the most influential scientists of all time and a key figure in the scientific revolution. His book, "Mathematical Principles of Natural Philosophy", first published in 1687, laid the foundations for classical mechanics.

Newton's Principia formulated the laws of motion and universal gravitation, which dominated scientists' view of the physical universe for the next three centuries.

By deriving Kepler's laws of planetary motion from his mathematical description of gravity, and then using the same principles to account for the trajectories of comets, the tides, the precession of the equinoxes, and other phenomena.

Newton removed the last doubts about the validity of the heliocentric model of the Solar System. This work also demonstrated that the motion of objects on Earth and of celestial bodies could be described by the same principles.

Newton built the first practical reflecting telescope and developed a theory of color based on the observation that a prism decomposes white light into the many colors of the visible spectrum.

Laws of Motion:

1st Inertia.....object in motion.....

2nd law is momentum...  $\text{mass} * \text{velocity}$  is conserved

3rd law.... Equal and opposite forces act on an object

### **QUESTION OF THE WEEK:**

**You mentioned the Ursid Meteor Shower earlier, how many Meteor showers are there? Lucy J.**

Of course, there are meteors every night all year long. The difference is, some come from specific sources such as the tail of a passing comet, like the two we discussed this month: Geminid (parent source minor planet 3200 Phanethon) and Ursid Meteor shower (Comet 8P/Tuttle).

The meteor showers that are given official names are given in the International Astronomical Union's list of meteor showers... the list includes 41 showers throughout the year.

The vast majority of meteor showers come from comets but a couple from minor planets.