

# 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:

09/24/24 – 09/30/24

## FUN FACT OF THE WEEK

The Solar Cycle: Sunspots increase and decrease through an average cycle of 11 years. Dating back to 1749, we have experienced 24 full solar cycles where the number of sunspots have gone from a minimum, to a maximum and back to the next minimum, through approximate 11 year cycles. We are now well into the 25th cycle.

The peak of this Solar Cycle 25 sunspot activity is expected in 2025. Solar Cycle 24 was average in length, at 11 years, and had the 4th-smallest intensity since regular record keeping began with Solar Cycle 1 in 1755.

Sunspots tend to occur in pairs that have magnetic fields pointing in opposite directions. A typical spot consists of a dark region called the umbra, surrounded by a lighter region known as the penumbra. The sunspots appear relatively dark because the surrounding surface of the Sun is about 10,000 degrees F, while the umbra is about 6,300 degrees F. Sunspots are quite large as an average size is about the same size as the Earth.

## MOON FOR THE WEEK:

The Moon is at Third Quarter today, Tuesday, September 24<sup>th</sup>.

The Moon will be along the meridian at sunrise, due South. As we have discussed before, the Moon moves 15 degrees eastward daily. The Moon will wane all week long as it heads toward New next week. During the waning portion of the phases of the Moon, the right side will be illuminated.



The Moon was just at perigee last Wednesday, September 18<sup>th</sup> so it will begin its journey away from the Earth for the next couple of weeks. Currently, the Moon is 382,869 km from the Earth.

### **The Sun --**

The Sun rises at 07:31 hrs (7:31 a.m.) this week and sets at 19:34 hrs (7:34 p.m.)

This means that the Sun is above the horizon for Sun is “up” for 12 hrs. and 3 minutes. Clearly the days are getting shorter and Sunday was at the Autumnal Equinox. In addition to the days getting shorter, the Sun does not get as high as it did a few weeks ago. The Sun climbs to an altitude of 54.9 degrees this week. The Sun is still in the constellation Virgo, the Maiden.

The Earth is currently 1.0027 AUs from the Sun, closer than last week. Remember the closest approach the Earth makes to the Sun is at Perihelion around January 2-3 each year; about two weeks following the Winter Solstice. Until then, the Earth will continuously be getting closer to the Sun.

### **PLANETS**

**Mercury:** This week Mercury rises in the East around 6:56 a.m. and sets at 19:22 (7:22 p.m.) Since the planet rises about about 30 minutes before the Sun, you might get a glimpse of it before sunrise but it will probably be too bright to spot it.

**Venus** rises in the East at 9:51 a.m. and sets in the west at 20:50 (8:50 p.m.). It sets about an hour and a half after sunset. You should easily be able to see Venus in the early evening sky low on the western horizon. When you can see Venus in the evening, it is called the Evening Star.

**Mars** rises in the East at 1:08 a.m. which is more than 5.5 hours before the Sun, making Mars is wonderful object in the predawn sky. Look for its amber hue in the early predawn sky. Mars is in the constellation Taurus.

**Jupiter** rises in the East at 11:45 p.m. Jupiter is a good object all night long. Look low on the eastern horizon before mid-night to see this planet. You will notice that Jupiter and Mars are very close together with Jupiter leading Mars. It should

be very bright in the sky. If you have a pair of binoculars, you should be able to see the four Galilean Moon (Io, Europa, Ganymede, and Callisto).

**Saturn** rises in the East around 7:00 p.m. This means that you can see Saturn practically all night long, from sunset until sunrise. Saturn is an easy target in the late night sky until the early morning.

The evening sky holds Saturn, Jupiter, and Mars. If you get out between 2 a.m and 4 a.m. you will see this string of pearls... Saturn to the West, and Jupiter and Mars to the East.

**MARS ROVER PERSEVERANCE**

To get regular and current updates on the progress of NASA's Perseverance 5rover on Mars, go to the websitehis :

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

**Satellites of the Week:**

<a href="#">30 Sep</a>	-3.6	20:59:39	10°	NW	21:02:55	70°	WSW	21:02:55	70°	WSW	visible
<a href="#">01 Oct</a>	-3.7	20:10:58	10°	NW	20:14:16	57°	NE	20:16:39	17°	ESE	visible

Monday 9/30

Tuesday 10/01

**STAR PATTERN IN THE SKY**

**Libra** is the seventh astrological sign in the Zodiac.

Under the tropical zodiac, Sun transits this area on average between (northern autumnal equinox) September 23 and October 22.

Under the sidereal zodiac, the sun currently transits the constellation of Libra from approximately October 16 to November 17.

The symbol of the scales is based on the Scales of Justice held by Themis, the Greek personification of divine law and custom. She became the inspiration for modern depictions of Lady Justice.

The ruling planet of Libra is Venus. Libra is the only constellation in the sky represented by an inanimate object. The other eleven signs are represented either as an animal or mythological characters throughout history.

Libra is one of the three zodiac air signs, the others being Gemini and Aquarius. The sign of Libra is symbolized by the gryphon, a mythological creature with the head, wings and talons of an eagle and hind legs of a lion. According to the Romans in the First Century, Libra was a constellation they idolized.

## **SPACE HISTORY OF THE WEEK**

### **September 23, 1846: JG Galle discovers Neptune**

Neptune is the 8<sup>th</sup> planet from the Sun and has 14 moons.

It is referred to as one of the 4 Gas Giants (Jupiter, Saturn, Uranus, Neptune).

It is now known to be composed mostly of supercritical water with deep oceans.

Neptune is about 58 times the volume of Earth.

### **September 23, 1962: The TV program The Jetsons” premiered.**

For TV buffs, we can report that the animated futuristic program Jetsons made their premier.

The Jetsons is an American animated sitcom produced by Hanna-Barbera Productions. It originally aired in prime time from September 23, 1962 to March 17, 1963 on ABC, then later aired in reruns via syndication.

New episodes were produced from 1985 to 1987 as part of The Funtastic World of Hanna-Barbera block. It was Hanna-Barbera's Space Age counterpart to Stone Age The Flintstones.

**September 29, 2001: First satellite launch from Alaska Kodiak Launch Complex.**

KLC is the newest commercial launch complex in the United States, located on Narrow Cape, of Kodiak Island, Alaska, approximately 41 miles south of the city of Kodiak and 250 miles south of Anchorage.

The advantage of the location is a wide-open launch corridor and an unobstructed down-range flight path. The location is ideal for launching expendable launch vehicles with payloads requiring low-Earth polar sun-synchronous orbits.

**September 29, 1925: Paul Beattie MacCready was born:**

Paul Beattie MacCready was an American engineer and inventor who invented not only the first human-powered flying machines, but also the first solar-powered aircraft to make sustained flights. On 23 Aug 1977, the pedal-powered aircraft, the *Gossamer Condor* successfully flew a 1.15 mile figure-8 course to demonstrate sustained, maneuverable manpowered flight, for which he won the £50,000 (\$95,000) Kremer Prize. MacCready designed the *Condor* with Dr. Peter Lissamen. Its frame was made of thin aluminum tubes, covered with mylar plastic supported with stainless steel wire. In 1979, the *Gossamer Albatross* won the second Kremer Prize for making a flight across the English Channel

**QUESTION OF THE WEEK**

**Someone told me that they heard that there are really 13 signs of the zodiac. What is she talking about? Is this true and what are the 13 signs of the zodiac? Marie L.**

The Zodiac is the ring of constellations that the Sun seems to pass through each year as the Earth orbits around it. Contrary to popular belief, there are actually 13 zodiacal constellations, if you pay attention to the way astronomers define them.

In addition to Capricornus, Aquarius, Pisces, Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpius, and Sagittarius, the Sun also passes through Ophiuchus.

While you're at it, ask them to explain why all the "Signs of the Zodiac" are off by about one month. (hint: astrology was invented more than 2000 years ago and the precession of the Earth's pole has caused changes in the positions of the stars since then)

The path the Sun follows is called the ecliptic. The ecliptic plane is the plane defined by the Earth's orbit around the Sun. All of the planets orbit very near the ecliptic plane, so you will usually find all of them in zodiacal constellations.

Notice that in astronomy, it is Scorpius, not Scorpio and Capricornus, not Capricorn. These are the official names for the constellations.

## **SPACE HISTORY OF THE WEEK**

### **September 21, 1866: HG Wells was Born**

He was a prolific English writer in many genres, including the novel, history, politics, social commentary, and textbooks and rules for war games.

Wells is now best remembered for his science fiction novels and is called a "father of science fiction", along with Jules Verne.

His most notable science fiction works include *The Time Machine* (1895), *The Island of Doctor Moreau* (1896), *The Invisible Man* (1897), and *The War of the Worlds* (1898).

He was nominated for the Nobel Prize in Literature four times.

### **September 22, 1990: Pioneer 10 reaches 50 AUs from Sun**

Pioneer 10 (originally designated Pioneer F) is an American space probe, weighing 258 kilograms (569 pounds), that completed the first mission to the planet Jupiter.

Pioneer 10 became the first spacecraft to achieve escape velocity from the Solar System. This space exploration project was conducted by the NASA Ames Research Center in California, and the space probe was manufactured by TRW Inc.

Pioneer 10 was assembled around a hexagonal bus with a 2.74 meters (9 ft 0 in) diameter parabolic dish high-gain antenna, and the spacecraft was spin stabilized around the axis of the antenna. Its electric power was supplied by four radioisotope thermoelectric generators that provided a combined 155 watts at launch.

It was launched on March 3, 1972, by an Atlas-Centaur expendable vehicle from Cape Canaveral, Florida.

Currently it is 116.84 AUs from the sun, in the constellation Taurus, the Bull. It is 16.18 light hours from the earth.

### **September 23, 1846: JG Galle discovers Neptune.. 170th anniversary**

Neptune is one of the four Gas Giants in our solar system and is the 7th planet from the sun.

### **September 23, 1962: The TV program *The Jetsons*” premiered.**

For TV buffs, we can report that the animated futuristic program *Jetsons* made their premier.

## **QUESTION OF THE WEEK**

**What does it mean when they say light-year? Is the time of light somehow different than other years? Devon B.**

This is a great question. First of all, a light-year is a unit of measure of distance. It is how far light travels in a year: 6 trillion miles or 9.5 trillion Kms (that is 12 zeros).

Ok, why use light-year instead of miles or kilometers. I think the equivalent I just gave you tells the story. Working with numbers that START with 12 zeros is a clue. It is like measuring the distance between Rome and Atlanta in inches. Say Atlanta is 65 miles, that would be about 4 million inches.... Not a very useful unit of measure.

Distance to the nearest star would be 24 trillion miles instead of 4 light-years.

Distance to the edge of our home galaxy is 240,000,000,000,000,000,000

240 followed by 18 zeros

**240 quintillion**

Instead of 30,000 light-years