WEEKLY STARGAZERS' NEWSLETTER

by Dr. Bob

Volume 6, Issue 45

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:
11/15/22 – 11/21/22

FUN FACT OF THE WEEK:
In order for a rocket to go into orbit, it must travel at least 17,500 miles per hour around the Earth.

MOON FOR THE WEEK:
The Moon is in Third Quarter on Thursday 11/16. This is a good time to look at the right side of the Moon as the terminator moves across the surface revealing the craters and other features.

The Moon is at apogee on November 14th. It is 404,921 kms from the Earth at it furthest distance from Earth.

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

HORIZON TO HORIZON PLANET VIEW
The sun rises at 7:13 a.m. (EDT) and sets at 5:37 p.m. (EDT). This means that there is 10 hrs. 24 mins of daylight hours compared to 10 hrs. 36 minutes of daylight hours last week. The Sun is still in the **constellation Libra**.

The Earth is now 0.989 AUs from the Sun compared to 0.9909 AUs from the Sun. The Earth reaches perihelion on January 4th, it closest approach this year.

As a review, one Astronomical Unit is about 93 million miles. Thus, the current distance to the Sun is $1.49X10^8$ kms or $0.92\ x10^8$ miles.

The Sun will reach an altitude of 37.4 degrees altitude when it 39.3 degrees altitude when it crosses the **meridian** as compared to 39.3 degrees altitude last week.

The Planets:
Mercury rises at 7:33 a.m. That is about the same time as the Sun.

Venus (Earth's Twin) rises at 7:43 a.m. which is about 30 minutes after the Sun, but still too close to be visible in the early morning sky.

Mars rises in the East at 7:24 p.m. The Red Planet with its two moons (Phobos and Demos) will be up all night long, setting in the East at 9:50 a.m. By 2:39 a.m. it crosses the meridian, so it is high in the South before sunrise.

Jupiter rises in the East at 3:36 p.m. Jupiter crosses the **meridian at 9:01 p.m.** You can easily see this planet to the East after sunset and virtually all night long. If you have a pair of binoculars, look at it to see the cloud belts and 4 Galilean Moons whirling about it. Of course, there are a total of 79 moons whirling about this huge giant.

Saturn rises at 1:45 p.m. and can be seen dimly at sunset close to the meridian. At 6:31 p.m. Saturn crosses the Meridian and as the skies darken, it will become much easier to spot. The **Ringed Planet** has the most moons of any planet in the solar system, 82 moons.

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):

16 Nov	-3.8	18:50:28	10°	SW	18:53:46	67°	SE	18:54:40	43°	ENE	visible
17 Nov	-2.8	18:02:24	10°	SSW	18:05:25	32°	SE	18:08:25	10°	ENE	visible
17 Nov	-1.4	19:39:33	10°	W	19:41:28	20°	NW	19:41:28	20°	NW	visible
18 Nov	-2.5	18:50:32	10°	WSW	18:53:37	35°	NW	18:55:15	21°	NNE	visible
19 Nov	-3.5	18:01:48	10°	SW	18:05:06	67°	NW	18:08:24	10°	NE	visible

CELESTIAL FEATURE OF THE WEEK:

Leonid Meteor Shower:

The Leonid meteors are debris shed into space by the Tempel-Tuttle comet, which swings through the inner solar system at intervals of 33.25 years. With each visit the comet leaves behind a trail of dust in its wake. Lots of the comet's old dusty trails litter the mid-November part of Earth's orbit and the Earth glides through this debris zone every year.

Occasionally the Earth passes directly through an unusually concentrated dust trail, or filament, which can spark a meteor storm resulting in thousands of meteors per hour. That's what happened in 1999, 2001 and 2002. Since Tempel-Tuttle passed the Sun in 1998, it was in those years immediately following its passage that is when the Leonids put on their best show.

Since then, the comet — and its dense trails of dust — all receded far beyond Earth's orbit and back into the outer regions of the solar system. Tempel-Tuttle arrived at the far end of its elliptical path out near the orbit of Uranus in 2014. As a result, Leonid activity has been rather sparse in recent years. The comet has since turned around and is now slowly approaching the inner solar system, though it's still very far away. It's expected to be closest to the sun again in 2031.

STAR PATTERN IN THE NIGHT SKY
Hyades Cluster in Taurus the Bull

The Hyades also known as Melotte 25 or Collinder 50 is the nearest open cluster to the Solar System and one of the best-studied star clusters.

The distances established by Hubble Space Telescope Hyades cluster consists of a roughly spherical group of hundreds of stars sharing the same age, place of origin, chemical content, and motion through space.

From the perspective of observers on Earth, the Hyades Cluster appears in the constellation Taurus, where its brightest stars form a "V" shape along with the still brighter red giant Aldebaran which is the right eye of Taurus the Bull.

However, Aldebaran is unrelated to the Hyades, as it is located much closer to Earth (hence its apparent brightness) and merely happens to lie along the same line of sight.

SPACE HISTORY OF THE WEEK
1738 November 15: William Herschel was born
German-born British astronomer, composer, and brother of Caroline Herschel. Born in the Electorate of Hanover, Herschel followed his father into the Military Band of Hanover, before migrating to Great Britain in 1757 at the age of nineteen.

Herschel constructed his first large telescope in 1774, after which he spent nine years carrying out sky surveys to investigate double stars. The resolving power of the Herschel telescopes revealed that the nebulae in the Messier catalogue were clusters of stars. Herschel published catalogues of nebulae in 1802 (2,500 objects) and in 1820 (5,000 objects). During an observation on 13 March 1781 he realized that one celestial body he had observed was not a star, but a planet, Uranus.

Herschel pioneered the use of astronomical spectrophotometry as a diagnostic tool, using prisms and temperature measuring equipment to measure the wavelength distribution of stellar spectra.

1923, November 18 Alan Shepard was born
American naval officer and aviator, test pilot, flag officer, one of the original NASA Mercury Seven astronauts, and businessman,

1961 became the second person and the first American to travel into space. This Mercury flight was designed to enter space, but not to achieve orbit.

Ten years later, at age 47 and the oldest astronaut in the program, Shepard commanded the Apollo 14 mission, piloting the lander to the most accurate landing of the Apollo missions.

He became the fifth and oldest person to walk on the Moon, and the only astronaut of the Mercury Seven to walk on the Moon. During the mission, he hit two golf balls on the lunar surface.

The clock was now marching rapidly towards 9:00 am. Two minutes remained on the countdown. Then, another halt was called. Pressures inside the Redstone's liquid oxygen tank had climbed unacceptably high. NASA had two options. It could either reset the pressure valves – which would necessitate a launch scrub – or bleed off some of the pressure by remote control. An irritable Shepard, after almost four hours on his back and now lying in dried-up urine, obviously preferred the second option. "I'm cooler than you are!" he barked. "Why don't you fix your little problem and light this candle?" Those final three words have since gained immortality and truly epitomise the 'right stuff' from which Shepard was cut.

QUESTION OF THE WEEK
I was reading about the Arecibo message sent on Dec 16, 1974 into deep space. Are we really expecting a return message from the Interstellar message broadcast? Antonio S.

Because it will take 25,000 years for the message to reach its intended destination (and an additional 25,000 years for any reply), the Arecibo message was more a demonstration of human technological achievement than a real attempt to enter into a conversation with extraterrestrials.

In fact, the core of M13, to which the message was aimed, will no longer be in that location when the message arrives. However, as the proper motion of M13 is small, the message will still arrive near the center of the cluster.

According to the Cornell News press release of November 12, 1999, the real purpose of the message was not to make contact but to demonstrate the capabilities of newly installed equipment.