

WEEKLY STARGAZERS' NEWSLETTER

by Dr. Bob

Volume 6, Issue 22

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:

06/07/22 – 06/13/22

FUN FACT of the Week:

If the Sun were the size of a regulation basketball, the **closest star**, by a scale ratio, would be 456 miles away from the basketball. That is from Rome, GA to Orlando Florida! The furthest planet from the Sun in the Solar System, Neptune, would be 274 feet away from the basketball and the closest planet, Mercury, would be only 3.53 feet from the basketball. Earth would be 9.11 feet from the basketball.

MOON FOR THE WEEK:

The Moon will be First Quarter on Tuesday, May 7th (today). This means that the Moon will be across the meridian as the Sun sets in the evening.



During the week, the Moon has been getting a bit closer to the Earth as it makes its way around in its orbit. If you have a very discerning eye, you might be able to tell the difference in its angular size. One way to detect the difference in size is to make a disc “standard” that you can measure the angular size of the Moon. For example, if you place a disc at the end of a meter stick and look at the Moon against the disc, you might be able to see the difference in its size compared to the disc, (standard). If we build this correctly, we might also be able to measure the difference in distance to the Moon during apogee and perigee.

The current distance to the Moon is 395,502 kms (245,753 miles) away from the Earth and getting slightly closer. The angular measure is 30.21 minutes of arc. On the 14th, at perigee, the Moon will be 357,432 kms (222,098 miles) away with an angular measure of 33.43 minutes of arc. The angular difference is a 10 percent change which might be observable with a simple crude tool.

For anyone interested, I will type a set of plans that you can use to make and use this a disc standard to measure the Moon in the Etowah GYSTC Website. As the Moon orbits the Earth, it goes in an elliptical orbit, where is sometimes is close and sometime further way from the Earth.

HORIZON TO HORIZON PLANET VIEW

The sun rises at 6:29 a.m. (EDT) and sets at 8:50 p.m. (EDT). This week the Sun will be “up” 4 minutes longer than last week. Notice that the change in length of day is slowing down. It is hard to believe but in two weeks, we will be at the Summer Solstice, longest number of daylight hours, and the Sun will begin retreating again.

For now, the Sun is still in the constellation Taurus the Bull and the Earth is still retreating away from the Sun as it makes it way in its orbit. Currently the Earth is 1.0148 AUs (94,331,553 miles) as compared to last week’s distance of 1.014 AUs (94,257,189 miles). This is an astonishing difference of 74,364 miles further away from the Sun than last week.

This week, the Sun is 78.4 degrees above the horizon at the meridian, which is higher than last week (77.6 degrees). The days are clearly longer and it is hard to go to sleep when the Sun is still up in the evenings. This and the seasons are all caused by the tilt of the Earth’s axis, 23.5 degrees.

The Planets:

There is quite a beautiful parade of planets in the pre-dawn sky. At 1:13 a.m., Saturn rises. At 2:58 a.m., Jupiter rises in the East. At 3:12 a.m., Mars rises in the East. An hour and half later at 4:38 a.m., Venus rises in the East. Finally, taking the last position of the train of planets, Mercury rises at 5:37 a.m. Then an hour later, the Sun pops up in the early morning sky. If you have a good low eastern horizon, this week should be a good time to view all five (5) naked eye

planets in the pre-dawn sky. Except for Mercury, they will all be easy to spot. Do not give up on Mercury, it is worth the extra effort to spot it, when you can. If you have been following this weekly issue, you can easily see how Mars and Jupiter have crossed paths and are separating quickly now.

I love how the planets are almost equidistance from each other in the morning sky, making quite a necklace of celestial pearls.

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):

Unfortunately, this is one of those weeks where the International Space Station is not above the horizon during the 90-minute window before sunrise or after sunset where we can see it. We will keep trying week, by week.

STAR PATTERNS IN THE SKY

Telescopium

Telescopium was introduced in 1751–52 by Nicolas-Louis de Lacaille with the French name "le Telescope", representing a celestial telescope, in recognition of Galileo's Optic Tube Telescope. Nicolas-Louis de Lacaille observed and catalogued 10,000 southern stars during a two-year stay at the Cape of Good Hope, southern tip of Africa.

During his stay, he devised 14 new constellations in generally uncharted regions of the Southern Celestial Hemisphere and borrowing some stars from neighboring constellations. These constellations are not visible from Europe and so had not been studied much.

All but one of the constellations he named represented important instruments of the Age of Enlightenment.

Covering 40 degrees of the night sky, the telescope stretched out northwards between Sagittarius and Scorpius. Lacaille had Latinized its name to Telescopium by 1763.

SPACE HISTORY OF THE WEEK

June 9th:1812 Johann Gottfried Galle was born

(9 June 1812 – 10 July 1910) was a German astronomer from Radis, Germany, at the Berlin Observatory who, on 23 September 1846, with the assistance of student Heinrich Louis d'Arrest, was the first person to view the planet Neptune and know what he was looking at. Urbain Le Verrier had predicted the existence and position of Neptune, and sent the coordinates to Galle, asking him to verify. Galle found Neptune in the same night he received Le Verrier's letter, within 1° of the predicted position. The discovery of Neptune is widely regarded as a dramatic validation of celestial mechanics, and is one of the most remarkable moments of 19th century science.

June 10th: 2003 Mars rover Spirit launched

Spirit was one of a pair of Mars Exploration Rovers (MER): Spirit (MER A) and Opportunity MER B. These probes were sent within a couple weeks of each other to Mars to study the Martian surface and soil. After their nine-year trip, they landed on Mars in 2012 and began their analysis.

June 13th:1983 Pioneer 10 leaves solar system

Pioneer 10 was launched on March 3, 1972, by an Atlas-Centaur expendable vehicle from Cape Canaveral, Florida. Between July 15, 1972, and February 15, 1973, it became the first spacecraft to traverse the asteroid belt. Photography of Jupiter began November 6, 1973, at a range of 25,000,000 km, and a total of about 500 images were transmitted. The closest approach to the planet was on December 4, 1973, at a range of 132,252 km. During the mission, the on-board instruments were used to study the asteroid belt, the environment around Jupiter, the solar wind, cosmic rays, and eventually the far reaches of the solar system and heliosphere. Radio communications were lost with Pioneer 10 on January 23, 2003, because of the loss of electric power for its radio transmitter, with the probe at a distance of 12 billion kilometers (80 AU) from Earth. On 4/25 it crossed the orbit of Pluto. On 6/13 it crossed the orbit of Neptune the furthest

planet and is still going and going and going ... (currently 116.1 AUs away). (1 Astronomical Unit = 92,956,229.4 Miles).

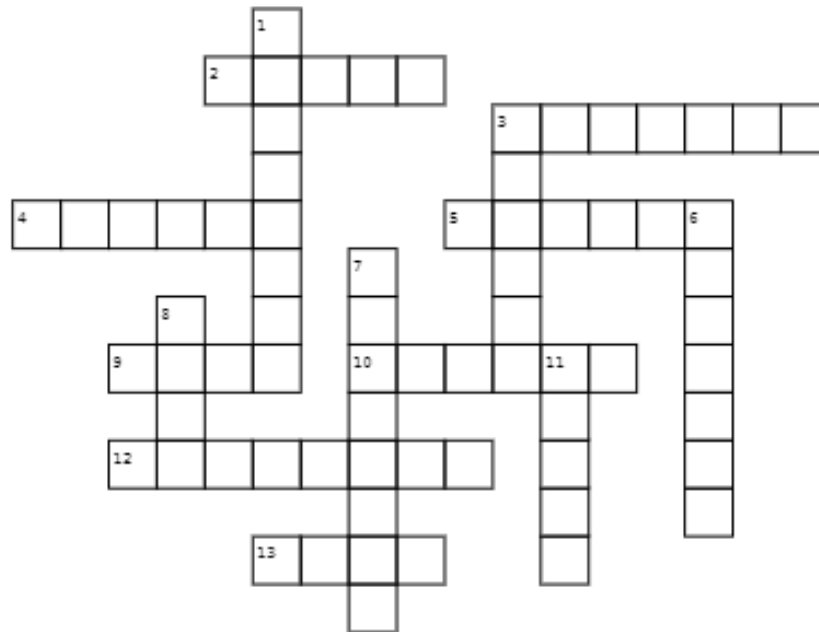
QUESTION OF THE WEEK

Other than Telescopium, are there other constellations named after scientific instruments? Charles T.

That is a great question. Yes there are several constellations named after instruments. Here is a table listing them.

CONSTELLATION	SYMBOL	PRONUNCIATION
Antlia	air pump	ANT . lee . uh
Caelum	the chisel	SEE . lum
Circinus	drawing compass	SIR . sin . us
Fornax	the furnace	FOR . naks
Horologium	the clock	hor . uh . LOW . gee . um
Mensa	table mountain	MEN - sa
Microscopium	microscope	tel - eh - SKO - pee - um
Norma	the level	NOR - ma
Octans	octant celestial nav	OCK - tens
Pictor	painters easel	PICK - tor
Pyxis	the compass	PICK - sis
Recticulum	the lens net	reh - TICK - yuh - lum
Sculptor	sculptors studio	SKULP - tor
Vela	the sail	VEE - la

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Down:

1. What celestial event will take place in a couple weeks? Summer ____
3. What did I call the string of planets that can be seen in the early morning sky this week?
6. What planet was discovered by Heinrich Louis d'Arrest and widely regarded as a dramatic validation of celestial mechanics?
7. Who devised the constellations that are named after scientific instruments in the 1700s?
8. How long did it take the Mars rover to get to Mars? _____ years.
11. If the Sun were size of a basketball, which planet would be 9.11 feet away?

Across:

2. What is the name of the constellation that is named after the scientific instrument, a level?
3. the first spacecraft to traverse the asteroid belt.
4. Name of the Mars rover that was launched June 10th, 2003?
5. What is the first naked-eye planet to rise in the early morning sky this week?
9. How many naked-eye planets can we see in the pre-dawn sky this week?
10. Is the Moon currently getting further away or closer as it orbits the Earth?
12. Where is the Moon tonight at sunset?
13. What is the constellation that is named after a sail?