WEEKLY STARGAZERS' NEWSLETTER

by Dr. Bob

Volume 6, Issue 24

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:
06/21/22 – 06/27/22

FUN FACT of the Week:
All of the planets in the solar system spin counterclockwise except Venus and Uranus. Venus spins clockwise and Uranus spins like a pinwheel.

MOON FOR THE WEEK:

The Moon was in Third Quarter yesterday, Monday, June 20th. This week is one of those weeks where there is not a specific phase during the week; the phases straddle the Tuesday – Monday week that this newsletter operates on. When the Moon is in Third Quarter, it rises in the East at midnight and by sunrise it crosses the meridian, high in the south. This means that you can see the Moon during the daylight hours to the right (west) of the Sun.

Currently the Moon's range from the Earth is 357,432 kms (222,098 miles). Amazingly, this is 27,389 kms (17,019 miles) further away than it was last week on June 14th, when the Moon was at Perigee.

Today, the angular measure of the Moon is 31.05 minutes of arc. This is 2.38 minutes of arc **smaller** than it was last week. Of course, this is caused by the fact that the Moon is in an elliptical orbit about the Earth and is further away.

HORIZON TO HORIZON PLANET VIEW

The sun rises at 6:29 a.m. (EDT) and sets at 8:56 p.m. (EDT). Again this week, the Sun is above the horizon longer than the previous week by about 3 minutes. Today is the longest day of the year. We have 14 hrs. 27 mins. worth of daylight hours!

This week the Sun appears to be in the constellation Gemini, the Twins, as seen from Earth. Additionally, the Earth is still increasing its distance from the Sun, it is heading toward Aphelion. Currently, the Earth is 1.0163 AUs (94,470,987 mi) which is 0.008 AUs (74,365 mi) further away than last week. While this is a huge difference, week by week, the change in distance is diminishing.

Today, the Sun is 79.2 degrees above the horizon as it crosses the meridian, which is higher than it was last week at 79.0 degrees. In fact, it is a high in the sky as it is going to be this year!

It is hard to believe but after today, the days will begin to get shorter. These changes and the resulting season changes are caused by the tilt of the Earth's axis, 23.5 degrees.

The Planets:

We have been calling the morning planets, a string of planets. This is because we can see all 5 (five) naked-eye planets in a line from the eastern horizon. Mercury begins and Saturn finishes the string. The order to planetary appearances in the eastern sky are as follows. Saturn rises at 12:17 a.m. Then Jupiter rises at 2:08 a.m. The next planet in the parade is The Red Planet, Mars, it rises at 2:44 a.m. The fourth planet to rise is Venus, it rises at 4:35 a.m. Following the precession is finally, Mercury, it rises at 5:13 a.m. For Mercury, this is a mere 1 hour 16 minutes before the Sun which is why is it a difficult planet to spot, but worth the effort.

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):

The best day to see the ISS is Friday, in the morning.

24 Jun	-3.6	05:52:20	10°	SW	05:55:40	65°	NW	05:59:00	10°	NE	visible
25 Jun	-3.6	05:06:01	31°	SSW	05:07:25	63°	SE	05:10:44	10°	NE	visible
26 Jun	-2.3	04:19:39	30°	ESE	04:19:39	30°	ESE	04:22:13	10°	ENE	visible

STAR PATTERNS IN THE SKY

The Big Dipper. The Big Dipper is one of the most recognizable constellations in the night sky and it in a perfect position for early night viewing.

To see it, look high in the northwest after darkness falls this month, and you'll be greeted by the familiar sight of the Big Dipper. Spoiler Alert! Even though most people think of the Big Dipper as a constellation, technically it is not, it is an asterism. The Dipper is the most conspicuous asterism — a recognizable pattern of stars that doesn't form a complete constellation shape — in the entire sky. It forms the body and tail of Ursa Major, the Great Bear.

Use the Pointers, the two stars at the end of the Dipper's bowl, to find Polaris, which lies due North for everyone north of the equator. Polaris marks the end of the Little Dipper's handle. On June evenings, the relatively faint stars of this dipper arc directly above Polaris.

SPACE HISTORY OF THE WEEK

June 22, 2000: NASA announces evidence of present-day liquid water on Mars.

Following the preliminary findings, new findings in 2015 from NASA's Mars Reconnaissance Orbiter (MRO) provide the strongest evidence yet that liquid water flows intermittently on present-day Mars.

Using an imaging spectrometer on MRO, researchers detected signatures of hydrated minerals on slopes where mysterious streaks are seen on the Red Planet. These darkish streaks appear to ebb and flow over time. They darken and appear to flow down steep slopes during warm seasons, and then fade in cooler seasons. They appear in several locations on Mars when temperatures are above minus 10 degrees Fahrenheit (minus 23 Celsius), and disappear at colder times.

“Our quest on Mars has been to ‘follow the water,’ in our search for life in the universe, and now we have convincing science that validates what we’ve long suspected,” said John Grunsfeld, astronaut and associate administrator of NASA’s Science Mission Directorate in Washington. “This is a significant development, as it appears to confirm that water -- albeit briny -- is flowing today on the surface of Mars.”

June 25, 1997: Mir Space Station collided with resupply ship.
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. Russia has decided to dump Mir because the wear and tear that the station has endured over 15 years has made it unfit for further missions.

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.

QUESTION OF THE WEEK

According to last week's question, the stars move. If that is true, how is it that the constellations keep their shape? Would they not change shape over time? Tony M.

You are exactly correct. The stars do move and the constellations do change shape. The problem is, the distances between us and the stars and the distances between the stars is so great, we can barely notice the changing shapes.

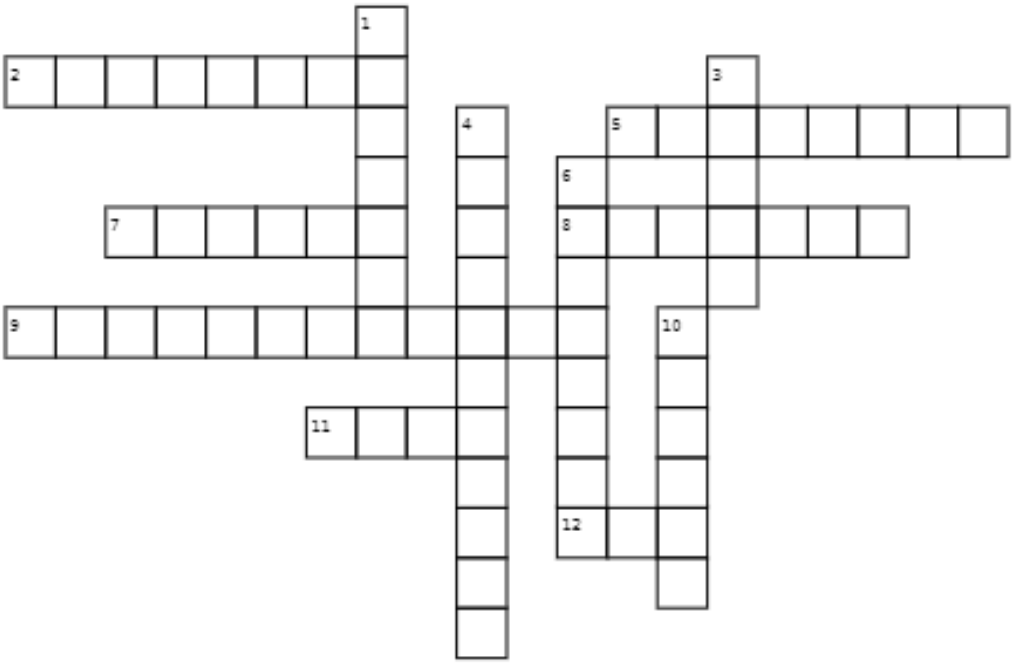
The further you are away from something, the more it has to move in order for you to notice the change. Take for example clouds. If you are on a hilltop and looking at clouds passing closely by, you can see the movement and the shape changes very quickly and easily. Now, look at clouds that are very far away, close to your horizon, you can barely notice that they move and that they are changing shape. Now multiply that situation by a trillion or more times. You can get a sense that stars must move vast distances before you can see the change.

The star that moves most, relative to the other stars, is Barnard's Star. It is a very-low-mass red dwarf about six light-years away from Earth in the constellation of Ophiuchus. It is the fourth-closest known individual star to the Sun and the closest star in the Northern Hemisphere.

The star is named after the American astronomer E. E. Barnard. He was not the first to observe the star but in 1916 he measured its proper motion as 10.3 arcseconds per year, which remains the largest proper motion of any star relative to the Solar System. That means it takes 175 years for it to move a distance equal to the diameter of the moon. This is the fastest moving star by FAR!! Other stars will take 10s of thousands of years to move a fraction of the apparent distance.

Astronomers require their detailed star maps to be upgraded every 10 years. For us, the average observer, one star map will suffice for generations.

The Stargazers' Newletter Crossword - 6-21-22



Down:

1. What French astronomer is noted for looking for comets in the 1700's?
3. Phase that the Moon was in on Monday, June 20th.
4. What is happening to the apparent size of the Moon this week?
6. If the Big Dipper is not a constellation, what do we call it?
10. What is the first planet to rise in the East before Sunrise?

Across:

2. The event that happens with the Sun and Earth today, June 21st.
5. As the Earth is getting further from the Sun, it is heading toward _____.
7. The constellation that the Sun seems to be in as seen from Earth.
8. When does the Moon cross the meridian during 3rd Quarter?
9. What is the name of the last rover to be sent to Mars?
11. On which planet is NASA looking for water?
12. What Russian Space Station deorbited in 2001?