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:
10/18/22 – 10/24/22

FUN FACT OF THE WEEK:
Unlike a solid planet, the Sun has a **differential rate** of rotation. The Sun takes 25 days to rotate at the equator and 36 days at the poles.

STAR PARTY , October 28th or 29th: Georgia Highlands (GHC) and Georgia Youth Science and Technology Center (GYSTC) will cohost a star party on Friday evening (10/28) with a cloud-out session on Saturday (10/29) at the Bishop Observatory. The session will begin at sunset and will feature a waxing crescent Moon, Saturn, Jupiter, and other special celestial objects. Go to the QR code for special directions about the star party.

Special Feature of the Week – Orionid Meteor Shower
This week, the 2022 Orionid meteor shower peaks on the night of October 20-21. The Orionids are an average meteor shower compared to others, typically with 10 to 20 meteors per hour at its peak when seen from a very dark site.

This shower occurs when Earth is passing through the stream of debris left behind by **Comet Halley**, the parent comet of the Orionid shower.

More meteors are likely to occur later in the night as the leading edge of the Earth passes through the comet's debris trail. This year they coincide with a lunar phase just after a waning quarter Moon, which will make them somewhat harder to see especially near the Moon when it is up starting at

2:52 a.m. None the less, if the sky is clear, go out and see what you can see before the moon rises, it is worth the effort.

MOON FOR THE WEEK:

The Moon will be **New** today (10/24). The Moon will be phasing from Third Quarter to New during the week. This means that during the first of the week, the Moon will be rising at midnight and by sunrise it will be crossing the meridian at sunrise. By the end of the week it will rise just before sunrise. The best time to view the Moon will be early in the day as the Moon will be setting about midday. As you observe the Moon, you will be able to see the features to the western side (left side) and its features.

During the week the Moon will be getting closer as it moves from Apogee toward **Perigee**. Currently, the Moon is 403,384 kms (250,651 miles) from the Earth and is getting closer. At perigee, on October 29th, the Moon will be 368,291 kms (228,845 miles).

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

HORIZON TO HORIZON PLANET VIEW

The sun rises at 7:49 a.m. (EDT) and sets at 7:03 p.m. (EDT). This means that there is 11 hrs. 14 minutes of daylight hours this week compared to 11 hrs. 28 minutes last week or 14 minutes fewer minutes daylight than last week. The Sun is still in the **constellation Virgo**, the Maiden. The Earth is now 0.996 AUs from the Sun. Last week it was 0.998 AUs from the sun, which is closer than last week. As we have discussed, the Earth is getting closer and closer to the Sun until the Earth reaches perihelion on January 4th.

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 45.9 degrees altitude when it crosses the **meridian** as compared to 49.9 degrees altitude last week.

The Planets:
Mercury rises at 6:46 a.m. That is about 1 hour before the Sun. Look for it low on the Eastern horizon before sunrise.

Venus (Earth's Twin) rises at 7:46 a.m. which is 3 minutes before the Sun. Venus is too close to the horizon at sunrise to view.

Mars rises in the East at 10:14 p.m. The Red Planet will be up all night long. By 5:25 a.m. it crosses the meridian, so it is high in the South before sunrise.

Jupiter rises in the East at 5:55 p.m. Jupiter crosses the **meridian at 12:00** midnight. This planet is visible all night long. You can see this planet as soon as the Sun sets. Jupiter sets a little after sunset. Jupiter is the largest planet in the Solar System. If you have a pair of binoculars, you can easily see the four Galilean Moons and cloud belts in the surface of the planet. Once thought that Jupiter had the most moons. Now, Jupiter is second only to Saturn in it count of moons, 79.

Saturn rises at 3:59 p.m. and can be seen all night long. Leading Jupiter in the nightly procession, Saturn is one of the best objects to be seen with a small telescope. The **Ringed Planet** crosses the meridian at 9:11 p.m. making this planet in a perfect location to study. Saturn will set in the western sky at 2:28 a.m. As was mentioned, Saturn has the beautiful ring system and has 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):

20 Oct	-3.9	06:59:05	10°	SW	07:02:25	81°	NW	07:05:46	10°	NE	visible
21 Oct	-3.0	06:13:17	43°	SSE	06:13:51	48°	SE	06:17:05	10°	ENE	visible

22 Oct	-0.5	05:27:24	14°	E	05:27:24	14°	E	05:28:05	10°	ENE	visible
22 Oct	-2.6	07:00:20	18°	WNW	07:01:57	26°	NW	07:04:50	10°	NNE	visible
23 Oct	-2.6	06:14:13	33°	N	06:14:13	33°	N	06:16:25	10°	NE	visible

CELESTIAL FEATURE OF THE WEEK:

Aries (meaning "ram") is the first astrological sign in the zodiac, spanning the first 30 degrees of celestial longitude. Under the tropical zodiac, the Sun transits this sign mostly between March 21 and April 19 each year.

Best time for seeing Aries the Ram. The best time to behold the Mighty Ram is at the opposite end of the year, when the Earth is on the other side of the sun. In late October, this constellation rises in the east at sunset, reaches its highest point in the sky at midnight and sets in the west at sunrise.

The arc stars of Aries are fairly easy to spot between these two signposts: the Pleiades star cluster to the east and the Square of Pegasus to the west.

Although there are not many Deep Sky Objects in Aries, there are several double stars that are fun to pick out and observe with a small telescope.

SPACE HISTORY OF THE WEEK

Oct 21, 1923: first public planetarium show in Munich, Germany.

Originally, the planets travelled along overhead rails, powered by electric motors: the orbit of Saturn was 11.25 m in diameter. 180 stars were projected onto the wall by electric bulbs.

In August 1923, the first (Model I) Zeiss planetarium projected images of the night sky onto the white plaster lining of a 16 m hemispherical concrete dome, erected on the roof of the Zeiss works. The first official public showing was at the Deutsches Museum in Munich on October 21, 1923.

Planetariums did not reach the US until 1934 where the first one was built in Philadelphia, then Griffith Observatory then Hayden Planetarium….

Between 1947 and 1957 the number of US planetariums grew from 5 to over 200!

October 24, 1851: William Lassell discovers two moons of Uranus Umbriel and Ariel.

Uranus, the seventh planet of the Solar System, has 27 known moons, all of which are named after characters from the works of William Shakespeare and Alexander Pope. Uranus's moons are divided into three groups: thirteen inner moons, five major moons, and nine irregular moons. The inner moons are small dark bodies that share common properties and origins with Uranus's rings.

William Herschel discovered the first two moons, Titania and Oberon, in 1787, and the other three ellipsoidal moons were discovered in 1851 by William Lassell (Ariel and Umbriel) and in 1948 by Gerard Kuiper (Miranda).

These five have planetary mass, and so would be considered (dwarf) planets if they were in direct orbit about the Sun. The remaining moons were discovered after 1985, either during the Voyager 2 flyby mission or with the aid of advanced Earth-based telescopes.

QUESTION OF THE WEEK
Why do the stars seem to be brighter during winter nights than during summer nights? Mark L.

This is a sad fact. The skies are in fact clearer on cold winter nights than they are on warm summer nights. Stargazers all over the world try to find ways to keep their equipment sound and their bodies warm during long cold observing sessions in order to see their favorite deep sky objects.

The problem is that warm air holds a lot more moisture than cold air. This extra moisture in the air, although it appears to be invisible, blocks a lot of light coming in from space. It also makes for a very turbulent atmosphere and we often see objects shimmering on warm nights. You can equate this to looking through an empty glass at something as compared to looking through a glass full of clear water. No matter how clear the water, it blocks much of the image.

So, if you wish to do some observing, this is a great time to do it, IF you can bundle up against the cold. There are issues with the cold other than just being painful: If you keep your equipment inside, you will have to let your equipment cool down to the current temperature or you will heat distortions within your equipment.

A compromise is to go out for a little while and come back in the warmth and repeat the process. The problem is, you might forget to come back in if you are seeing some interesting objects…. Good luck and good viewing.

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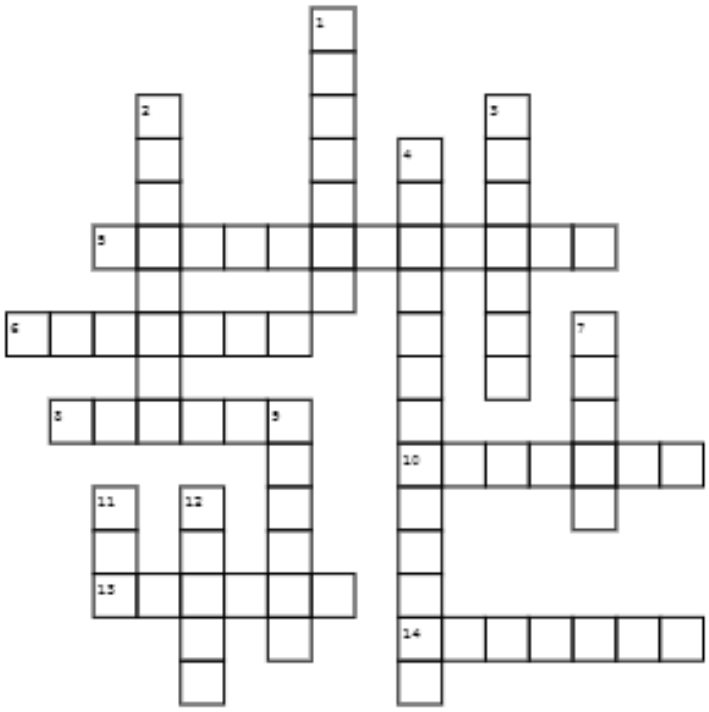
The Stargazers' Newsletter 10-18-22



Down:

1. Which planet rises in the East an hour before the Sun?
2. The line that is directly South where the Sun is highest in the sky during the day.
3. Which planet crosses the meridian at mid-night?
4. What is the name of stellar shapes in the sky, Virgo is one of them.
7. Which constellation is often called the Ram and is the first of the zodiac?
9. What is the name of the comet that causes this month's meteor shower.
11. What phase is the Moon in this week?
12. What makes Saturn special when looking at it through a telescope?

Across:

5. The rate at which the sun spins
6. What distance is the Moon headed toward?
8. Where did the first planetarium show take place?
10. Who discovered the two moons of Uranus Umbriel and Ariel?
13. What season are the stars generally brighter?
14. Meteor shower this week. The _____ meteor shower.