

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:

11/29/22 – 12/05/22

FUN FACT OF THE WEEK:

NASA has discovered that there is “rain” falling from Saturn’s rings onto the surface of the planet. NASA reports that the rains is not just a light sprinkle -- the rings rain down roughly 22,000 pounds (10,000 kilograms) of material per second. One of the odd things about this is, there are not clouds from which the rain falls.

MOON FOR THE WEEK:

The Moon is First Quarter on Wednesday (11/30). This is the time when the Moon is due South at sunset. The right side of the Moon is illuminated at the Moon is waxing toward the Full Moon.



The Moon is increasing its distance from the Earth as it heads toward apogee later in a week or so. The Moon is currently 365,475 kms from the Earth.

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

HORIZON TO HORIZON PLANET VIEW

The sun rises at 7:25 a.m. (EDT) and sets at 5:31 p.m. (EDT). This means that there are 10 hrs. 6 mins of daylight hours compared to 10 hrs. 14 min of daylight hours last week. The Sun is in the **constellation Scorpius**.

Scorpius is one of the zodiac constellations, first catalogued by the Greek astronomer Ptolemy in the 2nd century. Scorpius pre-dates the Greeks, and is one of the oldest constellations known. The Sumerians called it “the scorpion,” about 5,000 years ago.

The constellation is easy to find in the sky because it is located near the center of the Milky Way. It contains a number of notable stars and deep sky objects, including the bright stars Antares and Shaula, the Butterfly Cluster (Messier 6), the Ptolemy Cluster (Messier 7), Cat’s Paw Nebula (NGC 6334), the Butterfly Nebula (NGC 6302), and the War and Peace Nebula (NGC 6357)

The Earth is now 0.987 AUs from the Sun. Last week it was 0.989 AUs from the Sun. 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 1.49×10^8 kms or 0.92×10^8 miles.

The Sun will reach an altitude of 34.5 degrees altitude as it crosses the meridian around noon. Last week it was at an altitude of 35.7 degrees.

The Planets:

Mercury rises at 8:32 a.m. This is 40 minutes after the Sun. This means it is still too close to the Sun to be seen.

Venus rises at 8:11 a.m. which is about 20 minutes before Mercury. With Venus and mercury so close they are nearly in conjunction!

Mars with its two moons (Phobos and Deimos) will be up all night long, setting in the West at 8:44 a.m. By 1:32 a.m. it crosses the meridian, so it is high in the South before sunrise.

Jupiter rises in the East at 2:16 p.m. Jupiter crosses the **meridian at 8:10 p.m.** Jupiter is a very bright planet and easy to view with the naked eye. If you have a pair of binoculars, you can see four of the brightest moons: Io, Callisto, Ganymede, and Europa. Jupiter is more than 1,000 times larger than the Earth. This huge planet has 79 moons orbiting it in a regular pattern.

Saturn rises at 12:29 p.m. and can be seen dimly at sunset close to the meridian. At 5:42 p.m. Saturn crosses the Meridian and as the skies darken, it will become much easier to spot to the right of Jupiter. This **Ringed Planet** has the most moons of any planet in the solar system, 82 moons. The Cassini spacecraft found many new interesting facts about Saturn never been known before.

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)

02 Dec	-1.3	18:53:00	10°	N	18:53:20	11°	N	18:53:20	11°	N	visible
03 Dec	-0.7	19:39:45	10°	NW	19:39:51	11°	NW	19:39:51	11°	NW	visible
04 Dec	-2.7	18:51:10	10°	NNW	18:53:39	29°	NNE	18:53:39	29°	NNE	visible

CELESTIAL FEATURE OF THE WEEK:

Double Cluster in Perseus, the Hero

This is a beautiful double grouping of stars that will fill the field of view in your binoculars. Binocular stargazing is a very rewarding and fun activity. I like to use a pair of 15 x 70s but most any pair will work very nicely. Typically, you might have a pair of 7 x 50s. These are vastly the most common pair you will find that people own.

To view the Double Cluster, go out around 10 p.m. and look to the north. First locate the “M” of Cassiopeia. Cassiopeia is directly over the North Star and will form an “M”. To the east (or right) of Cassiopeia, you will see the “Y” shape of Perseus, the hero.

Between these two constellations is a fuzzy patch to the naked eye. If you point your binoculars toward this area, you will see the double cluster.

Characteristics of the Double Cluster include:

The two clusters are designated NGC 869 and NGC 884

(NGC: New General Catalogue compiled 1880s by Dreyer)

They are about 7,300 ly away

They are sometimes called the Sword Handle or Perseus.

They have a diameter 70 ly each

NGC 869 has about 400 stars in it

NGC 884 has about 300 stars in it

They are approaching our position at a rate of 26 miles / sec

We are in no danger from this Double Cluster, remember that a light year is about 6 trillion miles! So at that rate, it will take 200 million years for it to get close to our Sun.

SPACE HISTORY OF THE WEEK

As I was looking through the space history of the week, it occurred to me that there were an unusual number of rocket launches this week than what I normally see. On December 2nd there were 5 separate launches:

1988 STS-27 Atlantis

1990 STS-35 Columbia

1992 STS-53 Discovery

1993 STS-61 Endeavour

The 4th had almost as many launches.

QUESTION OF THE WEEK

Why is the east coast, and particularly Florida, a good place to launch rockets? Brad M.

Sixty years ago, Florida's "Space Coast" was born with the launch of a rocket called Bumper 8 on July 24, 1960, from what was then called Long Range Proving Ground Base on Cape Canaveral.

After World War II, when military rocket technology was just beginning, rockets were launched from White Sands Test Facility in New Mexico. But the technology was outgrowing the test range there.

The total length of range at White Sands was about 100 miles so everything they launched had to go straight up, and slightly to the north so the radar and telemetry stations would be able to see the rockets to track them. As the technology and distance increased, they needed a place to fire off rockets that would not end up dropping debris on populated areas.

There are two important reasons that Cape Canaveral is a good launch site: near equator and on the east coast.

First, it is about as close to the equator as we can get and be in the USA. This is important because rocket scientists use the spin of the Earth to help boost the rocket in space. At the equator, the Earth is spinning at the rate of about 1,000 miles per hour compared to the stars. This is from east to west velocity which helps accelerate the rocket into space.

To get a rocket into orbit, the rocket must go at least 17,500 miles per hour (orbital velocity). Incidentally, to leave completely the Earth and go into deep space, the rocket must travel at least 25,000 miles per hour (escape velocity).

Secondly, it is important for a launch site to be located on the east coast. Since the rockets are aimed toward the east to utilize the Earth's rotation to their advantage, the rockets travel over water as they head off into space rather than going over land and populated areas.