

WHAT'S UP IN MAY

By Bernie Reim

The month of May is named after Maia, the Roman goddess of the earth. Even though the official Earth Day was at the end of last month, May is really the month when we become more aware of the earth once again here in this part of the northern hemisphere.

The young and tender green leaves of hundreds of varieties will soon be appearing on all of our billions of living trees and our entire landscape will slowly transform itself from barrenness into myriad and subtle new shades of green as our great earth awakens once more in response to more direct sunshine as this hemisphere tilts more and more towards our life-giving sun, like a giant plant seeking the sun.

This will be a great month to venture outside again to get reacquainted with our night sky if you haven't kept up with it over the winter and early spring. There are plenty of interesting highlights to enjoy and appreciate this month as you look up and take in the bigger picture of where all of us really are in space along with the true and rare beauty of the planet on which we all live.

The recent great success of the Artemis 2 lunar mission gave all of us new insights into our amazing home as we were able to see the earth, moon, and sun through the eyes of the 4 astronauts that just returned from there safely. Hopefully that will reignite similar new visions and perspectives and many practical and useful applications similar to and even going beyond all the lasting benefits that we received from the first Apollo lunar missions starting in December of 1968, before we ever even landed on the moon. It is especially important now to gain new and sustainable reasons to have hope for the future of humanity in the face of all the terrible events now transpiring on this tiny planetary home of ours.

Those 4 astronauts saw and photographed things no humans had ever seen before and traveled farther from Earth than any humans had ever done in our entire 200,000- year history of modern humans. They saw and photographed a solar eclipse as the moon perfectly lined up in front of the sun for a short time as they were orbiting the far side of the moon. Stars and planets were visible in that image and the sky got even darker than it gets on the earth during a total solar eclipse.

Another great image of the earth showed the planet Venus in the upper left and a nice glow around that part of the earth extending a few degrees into space. This was the zodiacal light which is always there but not usually visible from the surface of the earth. The zodiacal light because it is the sunlight bouncing off trillions of tiny dust particles trapped in the ecliptic plane of our solar system left there by comets as they keep orbiting the sun. That particular image also showed a nice display of aurora australis, or southern lights near the South Pole of the earth.

They also got some similar images of the beautiful blue marble of the earth rising over the gray and barren limb of the moon that the astronauts aboard Apollo 8 got around Christmas of 1968. Edgar Mitchell was the 5th human to walk on the moon in February of 1971. Apollo 14 got him there along with Alan Shepard and Stuart Roosa. It was the last mission to not use the lunar rover. The last 3, Apollo 15,16, and 17 did get to drive around on the moon. Edgar Mitchell went on to found the Institute of Noetic Sciences which does research on the nature of consciousness itself.

Here are two of his many deeply insightful and well -expressed quotes. “We went to the moon as technicians and returned as humanitarians.” “Suddenly, from behind the rim of the moon, in long, slow-motion moments of immense majesty, there emerges a sparkling blue and white jewel, a light, delicate, sky-blue sphere laced with slowly swirling veils of white, rising gradually like a small pearl in a thick sea of black mystery. It takes more than a moment to fully realize this is Earth...home. My view of our planet was a glimpse of divinity.”

If more of us could attain such a profound experience of our one and only home planet, then we would respect it and each other much more deeply and work harder to solve our problems which will seem smaller and less significant in the face of such a cosmic immensity to which we all belong. Attaining such a breathtaking new spiritual perspective will transform our understanding of our precious planet and indeed humanity’s place in the universe. The best part is that we don’t even have to go to the moon to do this. All 8.38 billion of us currently sharing this tiny planet are already astronauts aboard Spaceship Earth with important roles to play throughout all the stages of our lives.

The highlights this month include Jupiter and Venus still acting as the “stars” of the night. Just a couple of months ago Venus was setting right at sunset in the west as Jupiter was rising higher in the east. Now Venus has traversed nearly half the sky to catch up with the much slower-moving Jupiter. Venus will enter the same constellation that Jupiter is in on May 19 to within 20 degrees of Jupiter. Then it continues to get closer and closer and it will end the month just 8 degrees apart. This will set up a really nice conjunction in June of our two brightest planets.

These are also the two planets that became instantly visible the second it got dark at the new moon precisely covered the sun just over 2 years ago, on April 8 of 2024. As the last blinding flash of the diamond ring effect pierced the sky, a wild and primal cheer reverberated through the crowd of about 5,000 people and then nearly everyone watched in respectful silence or spoke only in whispered tones as we were all instantly pitched into darkness as the moon rapidly crept across the face of our sun for just under 3 very short minutes. All that motion really gave me a good sense of the enormous size and scale and speeds that the sun, earth, and moon are always undergoing.

Saturn and Mars will be morning planets, visible in Pisces the Fish one hour before sunrise low in the eastern sky. They are about 15 degrees apart. Watch as the slender waning crescent moon with earthshine shows up about half way between these two planets.

Comet Temple 2 will be visible in a small telescope as it drifts through Aquila the Eagle just above Sagittarius. It should reach 9th magnitude. The second main highlight this month is the Eta Aquarid meteor shower, only the second good shower for each year. It will be active from April 19 to May 28, but it will peak on the morning of Wednesday, May 6. You could normally expect up to 50 meteors per hour from a dark sky sight with a wide-open field. Not this year.

The moon is full on the first and it will still be pretty full 5 days later on the morning of the 6th. The moon will rise around midnight to wash out most of the meteors after that point. Meteor showers usually get better after midnight, so that is the worst time for the moon to rise during any meteor shower.

You can only expect about 10 an hour before the moon comes up because the radiant in Lyra is still below the horizon. The Eta Aquarids are one of two meteor showers each year created by

Halley's Comet as we pass through its debris trail twice. The other one is the Orionid Meteor shower every October 21, about half a year later.

Try to spot Saturn and Mars in Pisces just to the left and below Aquarius in the morning sky about an hour before sunrise if you are still up looking for the Eta Aquarids. Saturn now rises around 4 am and Mars shortly thereafter. They are both getting a little higher and brighter each day as we are catching up with them in our respective orbits around the sun.

Look for the phases of Venus and the rings of Saturn through a small telescope with at least 35 power. Venus will shrink from 88% lit at the beginning of the month down to just 80% at the end of May. Venus will shine at magnitude minus 3.9 and Saturn will only shine at 0.9 magnitude, or about 100 times brighter.

Mercury will show up again low in our evening sky on the 25th. It will be only 6 degrees above the horizon and it will shine at magnitude minus 1.1. Five days later it will be ten degrees high and have dimmed a tenth of a magnitude and be 70 percent lit by the sun.

May 1. Full moon is at 1:23 p.m. EDT. This is also known as the Flower, Milk, or Planting Moon.

Jacob Beckenstein was born on this day in 1947 in Mexico. He was an Israeli-American physicist and cosmologist that discovered the Beckenstein bound, which is the upper limit on the thermodynamic entropy that can be contained within a given finite region of space.

May 3. Venus passes 7 degrees north of Aldebaran in Taurus this morning. The moon passes half a degree south of Antares this evening.

May 5. On this day in 1961 Alan Shepard became the first American in space aboard Freedom 7. He did not orbit the earth. He only went up to 117 miles high and he was only there for 15 minutes. He traveled 303 miles and his maximum velocity was 5,134 mph. You have to reach 17,500 mph or 5 miles per second to attain escape velocity from the gravitational field of Earth. John Glenn became the first American to orbit the earth on April 12 of 1961.

May 6. The Eta Aquarid meteor shower peaks this morning.

May 8. Pluto is stationary and will begin its retrograde motion this morning in Capricorn. Since it takes 248 years for just one orbit of this distant dwarf planet, Pluto spends nearly 21 years in each of our 12 zodiac constellations. Pluto is about 4 billion miles away on the average or 6 hours at the speed of light. Pluto has the most elliptical orbit of all of our planets and the steepest angle of inclination to the ecliptic plane of our solar system, which is 17 degrees. Pluto is the closest and largest of millions of Kuiper Belt objects located well beyond Neptune, which is a region filled with icy bodies and remnants from the solar system's formation 4.6 billion years ago. About 100,000 of these objects are larger than 100 km in diameter, which is 62 miles.

May 9. Last quarter moon is at 5:10 p.m.

May 10. Cecilia Payne-Gaposchkin was born on this day in 1900 in England. She helped unlock some of the secrets of stars and was part of the famous Harvard Computers that developed the spectral classification system for stars.

May 11. Anthony Hewish was born on this day in 1924 in England. He was a physicist and radio astronomer who co-discovered pulsars with Jocelyn Bell Burnell in 1967. They were jokingly called LGM (little green men) back then because their regular pulses could have been created by an alien civilization as signals to others. It turned out that they were "just" rapidly spinning neutron stars that could be explained with a better understanding of physics and stellar evolution with no need to invoke aliens. Hewish got the Nobel Prize in physics for this in 1974, but Jocelyn Bell Burnell should really have received it or at least shared it with Hewish.

May 13. The moon passes 6 degrees north of Saturn this evening.

May 14. Mercury is in superior conjunction with the sun this morning. The moon passes 5 degrees north of Mars. Dwarf planet Ceres is in conjunction with the sun tonight. Our first space station, Skylab, was launched on this day in 1973. It crashed back to Earth in an uncontrolled descent earlier than expected on July 11, 1979. Most of it burned up over the Indian Ocean, but some large chunks of it fell over western Australia, but no one got hurt. It only lasted 6 years because a stronger-than-expected solar wind created too much drag on the atmosphere and they could not re-boost its orbit in time. The new Space Shuttle could have done that, but it was falling behind schedule. The first space shuttle finally made it into space on April 12 of 1981. The Russian space station MIR (which means Peace) lasted 15 years from 1986 to 2001.

May 16. New moon is at 4:01 pm.

May 18. The slender waxing crescent moon passes 3 degrees north of Venus tonight. Omar Khayyam was born on this day in Nishapur, Persia. That is now northeastern Iran. He was a poet, philosopher, mathematician, and astronomer. He was into optics and designing astronomical instruments nearly 600 years before the telescope was even invented. Ancient Persia had a quite advanced culture and civilization even during the Dark Ages. Most of the current individual star names were given them by Persian astronomers.

May 20. The moon passes 3 degrees north of Jupiter tonight.

May 22. Thomas Gold was born on this day in Vienna, Austria. He was an astrophysicist who coined the term "goldilocks zone" to describe the narrow band in space where a planet had to orbit to have any chance of life as we know it to be present. This would be due to that planet having the right temperature for liquid water to permanently exist on its surface.

May 23. The moon passes 0.08 degrees south of Regulus in Leo the Lion this morning. First quarter moon is at 7:11 a.m.

May 28. Milutin Milankovic was born on this day in 1879 in Serbia. He was a mathematician, geophysicist, climatologist, and astronomer. He discovered how 3 long-term natural cycles affect climate change on Earth and help to create our ice ages. They include the tilt or obliquity of Earth which changes from 22.1 to 24.5 degrees over a 41,000-year period. We are tilted at 23.45 degrees now and that angle is slowly decreasing. The next one is the 100,000-year cycle of a slight change in the eccentricity of our elliptical orbit around the sun. The last one is the 26,000-year cycle of the precession of the equinoxes. Those are called the Milankovic cycles. On this day in 1959 Able and Baker became the first primates in space and they returned safely to Earth. Frank Drake was born on this day in 1930 in Chicago. He was an astronomer and astrophysicist who developed the Drake Equation which would give you the likelihood of how many intelligent civilizations there are in our own Milky Way Galaxy. We have about 300 billion stars and about as many planets based on recent discoveries. The very first exoplanet orbiting another star was discovered in 1995. There are now over 6000 confirmed exoplanets in a very small region of space in the constellation of Cygnus the Swan. If you extrapolate that number to the whole galaxy you would get about 300 billion planets.

May 29. On this day in 1919 Sir Arthur Eddington, an English astronomer who was also a Quaker, led a total solar eclipse expedition to a tiny island named Principe off the west coast of Africa. He managed to carefully measure the exact number of degrees that the gravity of our sun displaced or bent the light from a star that was behind the sun during totality. It turned out

to be 1.75 arc seconds, twice as much as Newtonian physics would have predicted. This was the first definitive proof of Einstein's General Theory of Relativity published in November of 1915.

May 31. Martin Schwarzschild was born on this day in 1912 in Germany. He studied stellar dynamics and stellar evolution and discovered interesting aspects of Einstein's General Relativity equations. The event horizon of a black hole, the point of no return, is named the Schwarzschild Radius. The moon passes 0.4 degree south of Antares in Scorpius this morning. The second full moon this month is at 4:45 am. This is called a blue moon and has nothing to do with its color. Sometimes you can see some strange shades of blue and purple during a total lunar eclipse, but that is not why this is called the Blue Moon.