SNAKE RIVER SKIES

October 2009 Newsletter

Monthly Meeting

The October Monthly Meeting will be held on the 10th of the Month in the Rick Allen Room of the Herrett Center, College of Southern Idaho. This Month's Speaker will be Dr. Irwin Horowitz from the Boise Astronomical Society. Dr. Horowitz will be presenting his famous talk on "Solar Eclipses." Please join us at 7:00 p.m. for Dr. Horowitz's talk.

Teaser inside.

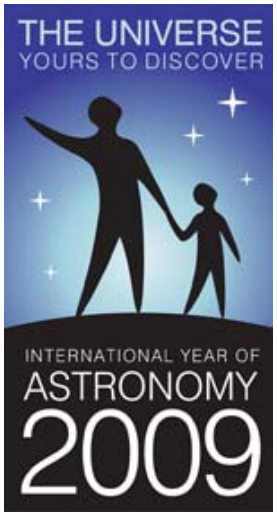


Image Credits top of this page: M51 by Rick Widmer & Ken Thomason (club members) Shoshone Falls, Idaho's Niagara, from an unknown source.

Let's kick up some Moon Dust

NASA Returns to the Moon

The Lunar CRater Observation and Sensing Satellite (LCROSS), launched on 18 June 2009, is an impactor spacecraft which is intended to look for water at the Lunar South Pole. The Centaur upper stage of its Atlas V carrier rocket will impact Cabeus crater at around 11:30 UTC on 9 October, followed shortly by the LCROSS spacecraft itself.

On 28 September 2009, NASA selected Cabeus proper as the impact target for the LCROSS mission, switching targets from satellite crater Cabeus A. NASA made the change after reviewing the latest data gathered by other lunar exploration craft, which indicated that Cabeus proper had a higher concentration of hydrogen than Cabeus A. Cabeus is a lunar crater that is located about 100 km from the south pole of the Moon. At this location the crater is seen obliquely from Earth and it is almost perpetually in deep shadow due to lack of sunlight. Hence, not much detail can be seen of this crater, even from orbit. It lies to the west of the crater Malapert and to the south-southwest of Newton.

The south polar region of the Moon was surveyed by the Lunar Prospector spacecraft and a hydrogen signature was detected. Potential sources for this hydrogen include water deposits from comet or meteorite impacts, the solar wind or out gassing. This crater is sufficiently large that the temperature within the shaded region is below 100° K. This would allow water ice to remain on or near the crater surface for billions of years without sublimating.

In the Early morning hours, the Centennial Observatory will open for viewing of this historic event. The Herrett Telescope will be set-up to "view" the impact via the Stellacam camera with the image being sent to the Faulkner Planetarium. The doors open for viewing at 4:30 am and the Faulkner Planetarium will open at 5:00 am. Impact is scheduled for 5:31 am. Following the impact there will be a continental breakfast held in the Rick Allen room. Menu: Fresh fruit, assorted muffins, Danish pastries, bagels w/ cream cheese, scones, croissants, hard-boiled eggs, coffee, tea, fruit juice.

Seating is limited: Admission: $8 for ages 12+, $4 for children under 12. Advance reservations are recommended. Please contact the Herrett Center (208) 732-6655 or you may call Kristi Cederstrom, events coordinator at (208) 732-6657.

Get your tickets now.

Image: NASA Atlas V Centaur Rocket carrying the LRO/ LCROSS package into space is lifting-off. NASA Files.

World Space Week and White House Star Party

On the evening of Wednesday, 7 October 2009, President Barack Obama and the First Lady will host a star gazing event for middle school students at the White House. The White House Star Party is intended to "highlight the President's commitment to science, engineering and math education as the foundation of this nation's global technological and economic leadership and to express his support for astronomy in particular- for its capacity to promote a greater awareness of our place in the universe, expand human knowledge, and inspire the next generation by showing them the beauty and mysteries of the night sky," states a release from the White House Press Secretary.

An awards ceremony for the National Medal of Science and the National Medal of Technology and Innovation will be held at the White House on the same day. The evening festivities offer an opportunity to applaud technological progress while cherishing the disappearing heritage of a starry night sky.

Observation of Jupiter, the Moon, and the DC starscape from over 20 telescopes set up on the White House lawn will be complemented by hands-on learning activities. President Obama plans to open the event with a live address expected to begin at 8:00 pm EDT. The President's remarks will be streamed via the official White House Web site, http://www.whitehouse.gov.

Conception of the White House Star Party gives thanks to International Year of Astronomy White House Star Party Organizing Committee, consisting of representatives from the American Astronomical Society, Astronomers Without Borders, the National Optical Astronomical Observatory, the United States Naval Observatory, and the International Dark-Sky Association.

Numerous astronomical celebrations will take place this month. The star party will occur during World Space Week, declared in 1999 by the United Nations General Assembly. Held this year from 04-10 October, World Space Week is under the guidance of the UN Committee on the Peaceful Uses of Outer Space (COPUOS) and the UN Office for Outer Space Affairs.

Article by Kim Patten IDA
kim@darksky.org

Welcome to the Astronomical Society

Welcome to the club and hello. We hope you have a good time, enjoy the hobby, and bring good skies with you. We hold indoor meetings each month at the Herrett Center ot the College of Southern Idaho Campus in Twin Falls, ID, USA.

Our meetings start at 7:00pm on the second Saturday of the month. There will always be a very interesting program, class or presentation at these meetings, as well as good fellowship. There is always something new to learn. Following our meetings we have a star party at the Centennial Observatory also at the Herrett Center. Our star parties are free and you don't have to bring your own telescope. Telescopes are also set up outside on the stargazer's deck. Star Parties are year round, so please dress accordingly as the Observatory is not heated, nor air conditioned.

Wishing you dark skies and clear nights! The MVAS Board.

Meade ETX-LS is available for purchase from the Herrett Center Store. Contact Chris Anderson for more information.

208-732-6663

Winter Time Skies

During the preparation of this newsletter it has already snowed in most of southern Idaho. Temperatures are most certainly dropping and that means clear cold skies are ahead of us. The club will still co-host star parties with the Centennial Observatory, but the observatory is not heated. Please be aware of this when you, your family and friends visit. Too many times people have been poorly dressed and have left a star party early seeking warmth. Most visitors don't realize until it's too late they will be standing around with very little movement. So please dress warmly for your comfort and safety. More information is found on our website.

Image: Desert Aurora

The Solar Eclipse of July 2009

The solar eclipse of July 22, 2009 was the longest total solar eclipse of the 21st century, lasting as much as 6 minutes and 39 seconds in some places. It caused tourist interest in eastern China, Nepal and India. In some parts of the continent, the moon completely blocked out the sun for more than six-and-a-half minutes. The eclipse - the longest since July 1991 - was visible in India, Nepal, Burma, Bangladesh, Bhutan and China. There won't be a longer eclipse than that day for another 123 years (June 13, 2132).

In ancient times, and in some cultures today, solar eclipses have been attributed to supernatural causes. Total solar eclipses can be frightening for people who are unaware of their astronomical explanation, as the Sun seems to disappear in the middle of the day and the sky darkens in a matter of minutes. Indeed in the countries most affected by the solar eclipse there is still a lot of superstition and July's was no exception.

For more information about solar eclipses please join the society as we welcome Dr. Irwin Horowitz from the Boise Astronomical Society and their club president, on Saturday the 10th of October at 7:00 pm in the Rick Allen room of the Herrett Center on the campus of the College of Southern Idaho. Dr. Horowitz has always made an impressive presentation and we understand this is one will be even better.

Image: Turkey and Cyprus as imaged from the ISS during a 2006 Solar Eclipse—NASA

The Moon in Human Anatomy

The lunula or lunulae (pl.) (nail moon), is the crescent-shaped whitish area of the bed of a fingernail or toenail. The lunula is the visible part of the nail matrix.

The lunula can show the health of a body, and the nail itself are good places to find warning signs of certain diseases such as liver disease, kidney disease, heart problems and lung diseases. Any color differences or unusual lines may indicate some type of disease or insufficiency. However, vertical lines on one's fingernails are normal as one ages.

Lunular anomalies include changes in form, structure or color. Lunular dysmorphologic features (anomalies in form) can be characterized by macrolunula, microlunula or anolunula, and nonconvex lunula.

Sadly, if you bruise the nail, it is still a bruise and not a lunula eclipse. The technical term for this is ecchymosis.

Image: Wikimedia Commons General Use License.

Viewing the Moon by Norman Herrett

Two months before he died, Norman Herrett wrote a letter to then CSI president Dr. James Taylor. In it, he spelled out his recommendations for what should be done with his telescopes:

"Telescopes are an individual thing and not practical for public use. However, everyone should have the experience of a good look at the moon for at least 5 minutes in their life time. It is a dimension and feeling that is unexplainable. Pictures or TV can't give this feeling, awareness, or experience of true dimension. A person will not forget seeing our closest neighbor, the moon.

Mr. Herrett would no doubt be proud to learn of the capabilities of the telescope that bears his name.

Mr. Herrett at the controls of his hand-built planetarium image source unknown.—CSI .

Message from the President—Terry Wofford

Recently, it came to the boards attention that Chris Anderson, Centennial Observatory Manger and Production Specialist Faulkner Planetarium at the Herrett Center was named the employee of the year for 2008 at the College of Southern Idaho.

In honor of this recognition the College has offered a trip to any conference Chris would like to attend. The conference suggested to Chris was the International Planetarium Society conference the 26th-30th of June 2010 in Alexandria, Egypt. Yes, I have the city and country correct.

After a conversation with the College President, Dr. Jerry Beck, Ed.D, Dr. Beck concluded that the trip was feasible if Chris were to raise the money in part himself.

No formal declaration of monies in a specific amount to be raised was offered by Dr. Beck, however, after research Chris decided that the sum of monies needed was to be between $1000-$1500. Chris then conveyed this to Dr. Beck.

Dr. Beck clearly informed Chris that if he were to somehow raise that amount of money then the College would certainly do their part in helping Chris get to this conference.

After a conversation with a couple of Board members, club secretary, Rick Widmer, made the suggestion the club raise the money to support Chris.

Rick made the very first pledge which was then matched in part by the members of the board.

At the fall picnic at the Hartwell's, I had planned to bring up the fund raiser for Chris Anderson, but very few people attended, I was only able to mention the fund raiser to the Hartwell's. The Hartwell's have also made a pledge.

If you would like to pledge a donation to support Chris Anderson, then please let a board member know.

Thank you,

Terry Wofford, President
Magic Valley Astronomical Society

Our Changing View of the Moon

By Andrea Thompson Space.com writer.

The moon, so bright and large in the sky compared to other celestial objects, has captured the attention of humans at least since the dawn of consciousness. Over these eras, mankind's view of the moon has evolved, from the more mystical image of it as a god, to the thought it was covered in seas and vegetation. Most recently, it's been viewed as a dry and dusty wasteland.

Recent findings of water on the lunar surface could spur yet another shift in the way we see our orbiting companion. The moon appears in early art thousands of years ago, showing that early man was as enthralled by its eerie glow as later philosophers and scientists.

The moon, like the sun and the five planets visible to the naked eye, was wrapped into the mythology of many ancient cultures, and considered a deity by some — to the Egyptians it was Thoth, to the Greeks, Artemis, and to the Hindus, Chandra.

Artemis was the twin sister of the sun god Apollo, and in Hellenic tradition she held sway over childbirth, fertility and the hunt. Stags were sacred to Artemis, and in many myths, she punished or killed those who harmed them, such as the warrior Agamemnon.

Thoth was portrayed as a wise counselor who solved many disputes and was also credited by the Egyptians as the inventor of writing and the 365-day calendar.

The Hindus explained lunar (and solar) eclipses with Rahu the snake, who swallowed the celestial orbs, making them go dark.

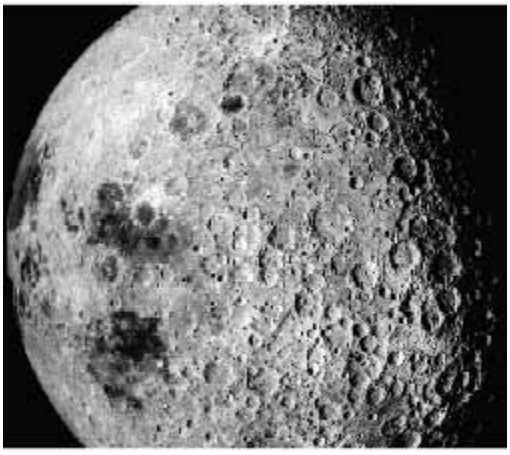
The moon was the basis of several ancient calendars and used in determining astrological happenings.

The cycle of the moon's waxing and waning was tracked by many cultures and helped give rise to the modern month (the rough time it takes to go from full moon to new moon and back again), as well the name of the second day of the week, Monday.

Continued on page 6.

Image:

The Moon always presents one face to Earth. Astronauts have seen the far side, though. This Apollo 16 image shows the eastern edge of the near side (left) and the heavily cratered far side. Astronomers think the difference is due to the crust being thicker on the far side—NASA



Sky Calendar – October 2009

4 **Full Moon** at 6:11 UT.

6 **Mercury at greatest elongation**, 18° west from Sun (morning sky) at 1h UT. Mag. -0.4, low in the E before sunrise. Brilliant Venus nearby. Mag. -3.9.

7 **Moon near the Pleiades** (morning sky) at 22h UT.

8 **Mercury, Venus and Saturn** (morning sky) within a circle of diameter 5.8° at 7h UT (20° from Sun).

9 **LCROSS Impact** at 5:31h MT Details in this newsletter.

11 **Last Quarter Moon** at 8:56 UT.

12 **Moon very near Mars** (morning sky) at 1h UT. Mag. +0.7.

12 **Moon near Beehive cluster (M44)** (72° from Sun, morning sky) at 18h UT.

13 **Venus 0.52° SSW from Saturn** (22° from Sun, morning sky) at 10h UT. Mags. -3.9 and +1.1.

13 **Moon at perigee** (closest to Earth) at 12h UT (369,067 km; 32.4').

Saturn near Venus Separation of 1/2°

14 **Moon near Regulus** (51° from Sun, morning sky) at 7h UT.

16 **Moon near Saturn** (25° from Sun, morning sky) at 7h UT. Mag. +1.1.

16 **Moon near Venus** (21° from Sun, morning sky) at 14h UT. Mag. -3.9.

18 **New Moon** at 5:32 UT. Start of lunation 1074.

21 **Orionid meteor shower peaks**. Arises from the debris field of Comet Halley. Active from October 2 to November 7. Produces very fast (66 km/sec), generally faint meteors (20 per hour). Observe in the pre-dawn hours of October 21st; radiant located near Orion's "club" asterism. Favorable viewing conditions this year.

21 **Moon very near Antares** (evening sky) at 16h UT.

23 **Jupiter's moons** will occult each other. Occulting is when one body appears to go in front of another. This is somewhat rare. On the night of the 23rd, at 8:31 EDT, Ganymede will occult Europa. This will last only 9 minutes. On the night of the 24th, at 9:18 EDT, Io will occult Europa. This will last around 7 minutes.

25 **Moon at apogee** (farthest from Earth) at 23h UT (distance 404,166 km; angular size 29.6').

26 **First Quarter Moon** at 0:41 UT.

27 **Moon near Jupiter** (evening sky) at 6h UT. Mag. -2.5.

31 **Mars** will cross directly through the Beehive Cluster (M44). The Beehive Cluster is an open cluster so red Mars will appear surrounded by a halo of white stars. It should be a spectacular sight through binoculars or a small telescope.

All times are Universal Time (UT). Clear skies until next month!

The Pleiades is an open star cluster that's visible naked eye and shows up very nice in a pair of Binoculars. The Pleiades debut in the Autumn and become more prominent in the night sky throughout the month of October. The Pleiads are Alcyone, Electra, Celaeno, Maia, Sterope, Merope and Taygete and make-up the constellation of Taurus the Bull. There are many stories which attribute to their origins.

Image M-45 the Pleiades—NASA

Our Changing View of the Moon

The moon has even been blamed for some of the darker forces of human nature, such as temporary insanity. The term lunatic (and "loony") comes from the Latin name for the moon and many criminal and insane behaviors were once blamed on the presence of a full moon.

The full moon was also thought to transform afflicted humans into fearsome werewolves, a more recent mythological creature most common in European tales.

Full moons and lunar eclipses were also seen by some cultures as bad omens. When Christopher Columbus was stranded for a year on what is now Jamaica, during his fourth voyage to the New World, he intimidated the islands natives by correctly predicting a lunar eclipse.

The Man in the Moon — an imaginary figure of a human, face, head or body — has also long been a legend associated with the moon, and is still a feature spotted by children today. In the most commonly-recognized form in the West, the man's eyes are Mare Imbrium and Mare Serenitatis, its nose is Sinus Aestuum, and its open mouth is Mare Nubium and Mare Cognitum. In many European traditions, the figure is a man banished to the moon for some crime — to some Christians, he is Cain, who murdered his brother Abel. To the Norse, he was Maní, who pulled the moon across the sky, while the ancient Chinese saw the figure of a rabbit pounding medicine.

Since Aristotle, the prevailing school of thought held that the heavens were more perfect than the Earth and therefore all celestial bodies, including the moon, were perfectly smooth spheres.

Galileo Galilei challenged this notion when he trained his telescope on Earth's satellite and sketched its surface. As he wrote in his 1610 treatise The Starry Messenger, Galileo saw that the moon's surface was in fact rough and rocky with dark, flat, low-lying regions and brighter highlands. (Though Englishman Thomas Harriot is actually credited with the first maps of the lunar surface.)

Early astronomers could see the light and dark areas of the moon, and though the former were continents, while the dark regions were seas. It was even though well into the 19th century that the moon had vegetation and possibly even moon beings.

No astronomers ever believed the notion that has entered pop culture that the moon is made of green cheese. The phrase comes from an old proverb that makes fun of the overly-credulous, namely those that see the reflection of the moon in the water and think it is a wheel of green (or young) cheese.

The craters covering the lunar surface were not widely recognized to be the results of impacts until well into the 20th century. Astronomer and geologist Eugene Shoemaker brought the principles of geology to the study of the moon

Telescopic observations of the moon continued over the centuries, but scientists were left with only the limited view their Earth-bound perspective could provide.

Apollo answers

Once the era of rocket-powered space travel was ushered in, scientists could get information from a much closer vantage point.

Satellites sent up into space took more and better pictures of the lunar surface. In 1959, the Soviet Union's Luna 3 probe gave mankind it's first look at the far side of the moon.

But even with this better view, the moon was still something that most thought of as a distant body in the sky, untouchable to man.

Continued on the next page

Images: (Upper left) The moon as seen from the Galileo Spacecraft 350,000 miles away.

Moon super imposed mosaic by Kitt Peak Observatory—NASA

Our Changing View of the Moon-Continued

The Apollo landings changed all that and gave humanity it's first up-close look at the lunar surface. The 12 Apollo astronauts that landed on the moon photographed, sampled and explored the gray, dusty terrain.

All told, these missions brought back to Earth about 840 pounds (381 kg) of lunar rocks, which scientists zapped and examined to learn more about the moon's makeup. With the Apollo missions, "we answered so many fundamental questions," said planetary geologist Larry Taylor of the University of Tennessee, Knoxville.

From these missions, scientists learned that the dark lunar maria (Latin for "seas") were never actually seas, as was thought by the ancient astronomers, but instead were composed of basalts, a type of volcanic rock. The brighter highlands though turned out to be made of the mineral plagioclase feldspar, a common rock-building mineral on the Earth as well.

The astronauts' experience also showed that the lunar environment was as "hostile as can be," Taylor said, with temperatures soaring during the day and plummeting again at night, as well as "a better vacuum than we can do in our labs" here on Earth.

The possibility of life existing on the moon held even through the first moon landing. The Apollo 11 astronauts were quarantined for several days to make sure they hadn't brought back any germs from the moon or space.

Understanding what the moon was made of also helped scientists develop a theory of how it formed. The leading theory now: The collision of a Mars-sized object with the Earth broke off chunks of molten material that eventually coalesced and cooled into the moon.

"And that was really revolutionary," Taylor said.

Image of a moon boot print by an Apollo 12 astronaut—NASA

Before the collision theory began to hold sway, other explanations for the moon's formation included fission of the Earth by centrifugal forces (the severed chunk leaving behind a large basin, usually named as the Pacific Ocean); capture of the moon after it formed elsewhere and wandered into the Earth's neighborhood; and formation at the same time as the Earth from the primordial accretion disk around the sun. With the end of the Apollo program, interest in the moon tapered off until more recent missions.

The new view

The science and understanding that came out of the Apollo program painted the moon as a long-dead, static body, and interest shifted to other destinations in our solar system, particularly Mars, with its enticing prospect as a suitable habitat for alien life.

The United States finally returned to the moon with the Clementine spacecraft in 1994 and the Lunar Prospector in 1998. Lunar Prospector turned up interesting signals that seemed to indicate the presence of hydrogen near the lunar poles — a possible sign of water trapped in permanently shadowed craters where scientists had suspected it could exist.

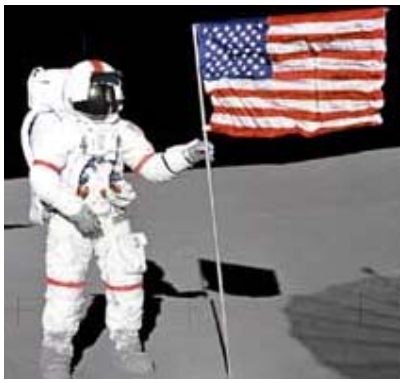
To further investigate the prospect of frozen water in polar cold traps, NASA developed and launched the Lunar Reconnaissance Orbiter (LRO) and its partner LCROSS impactor. LRO's mission is to map the lunar surface, while LCROSS slams into one of the polar craters to see if the ejecta debris shows signs of the water ice.

But much to everyone's surprise, it was not LRO and LCROSS that first turned up definitive signs of lunar water, it was a NASA-built instrument on India's Chandrayaan-1 satellite, along with the Cassini and Deep Impact spacecraft.

These probes detected the signature of molecular water stuck to the surface of the planet — how it got there and exactly what form it is in is still a mystery — in very small quantities.

The unexpected discovery is "one of the biggest findings post-Apollo," said Ray Arvidson. It could also be "a shot in the arm to lunar exploration," renewing interest in both robotic and human missions to our satellite, he added.

But whatever future missions are planned, one thing is certain: The existence of water on the moon changes the way we think about our satellite. Instead of a dead, gray rock orbiting the Earth, "it's a dynamic world in our backyard," said Jim Garvin, one that will help us learn more about the solar system we live in.



Alan Shepard (Apollo 14) poses with the American flag, the only Original Mercury Seven astronaut to make it to the Moon.—NASA

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Image credits this page: The moon and saguaro cactus Saguaro N.P.—NASA APOD. “Cartridge in the Moon’s eye” from the 1902 Silent Film “Le Voyage Dans la Lune” (Voyage to the Moon) based upon the Jules Verne novel.

Ten Amazing Facts about the Moon

1. The Moon was created when a rock the size of Mars slammed into Earth, shortly after the solar system began forming about 4.5 billion years ago says the current leading theory thus giving the Earth its spin.

2. The moon always shows us the same face. Long ago, the Earth's gravitational effects slowed the Moon's rotation about its axis. Once the Moon's rotation slowed enough to match its orbital period the effect stabilized. Many of the moons around other planets behave similarly.

3. More than 400 trees on Earth came from the Moon. Well, okay: They came from lunar orbit. Okay, the truth: In 1971, Apollo 14 astronaut Stuart Roosa took a bunch of seeds with him and, while Alan Shepard and Edgar Mitchell were busy sauntering around on the surface, Roosa guarded his seeds. Later, the seeds were germinated on Earth, planted at various sites around the country, and came to be called the Moon trees. Most of them are doing just fine.

4. The Moon is Earth's only natural satellite. Right? Maybe not. In 1999, scientists found that a 3-mile- (5-km-) wide asteroid may be caught in Earth's gravitational grip, thereby becoming a satellite of our planet. Cruithne, as it is called, takes 770 years to complete a horseshoe-shaped orbit around Earth, the scientists say, and it will remain in a suspended state around Earth for at least 5,000 years.

5. The Moon is not round (or spherical). Instead, it's shaped like an egg. If you go outside and look up, one of the small ends is pointing right at you. And the Moon's center of mass is not at the geometric center of the satellite; it's about 1.2 miles (2 kilometers) off-center. Yes, the moon is an egghead.

6. Apollo astronauts used seismometers during their visits to the Moon and discovered that the gray orb isn't a totally dead place, geologically speaking. Small moonquakes, originating several miles (kilometers) below the surface, are thought to be caused by the gravitational pull of Earth.

7. Our Moon is bigger than Pluto. At roughly one-fourth the diameter of Earth, some scientists think the Moon is more like a planet. They refer to the Earth-Moon system as a "double planet." Pluto and its moon Charon are also called a double-planet system by some. Does this mean we’ll be booted out of the planet club too?

8. The Moon's gravity pulls on Earth's oceans. High tide aligns with the Moon as Earth spins underneath. Another high tide occurs on the opposite side of the planet because gravity pulls Earth toward the Moon more than it pulls the water. At full Moon and new Moon, the Sun, Earth and Moon are lined up, producing the higher than normal tides (called *spring tides*, for the way they spring up). When the Moon is at first or last quarter, smaller *neap tides* form. The Moon's 27.32-day orbit around Earth is not quite circular. When the Moon is closest to Earth (called its perigee), spring tides are even higher, and they're called perigean spring tides.

9. A blue moon is two full moons in any calendar month. A blue moon is a full moon that is not timed to the regular monthly pattern. Most years have twelve full moons which occur approximately every month.

10. Jules Verne published his story “From the Earth to the Moon” in 1865. In the story three men are fired from an enormous gun called the Columbiad. The Apollo 11 astronauts were carried to the moon via the “Columbia” Command-Service Module.