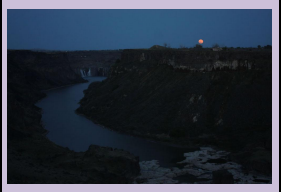
Snake River Skies

The Monthly Newsletter of the
Magic Valley Astronomical Society
January 2014



www.mvastro.org

Membership Meeting

Telescope Clinic
Saturday,
January 11th
Herrett Center
Join us at 7:00 pm

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Letter from the President Rob Mayer

Colleagues,

The last time you were reading this newsletter, the comet ISON had just broke up. While it wasn't the Comet of the Century, those who did watch it break up can still attest that it was a fascinating opportunity to gain insight into celestial mechanics. That, however, was more than a month ago, and technically – by the time you read this – in another year. We hope 2014 will provide as many great astronomical opportunities as 2013 did.

January, in fact, does have an opportunity coming up. Saturday, January 11, will be the annual telescope clinic, and we need you. Presentations on the workings, history and future of the telescope will be on the agenda, and the public is invited to come and even bring their telescopes in a bid to get some valuable pointers from members. This is a great chance to help guide someone into the hobby of a lifetime, perhaps even steer a younger visitor into a new career. Your presence and encouragement may ensure that some poor telescope won't be relegated to the attic in six months. We hope to see you there at 7 p.m. in the Rick Allen Room.

In addition to the clinic, we have some great news. Paul McClain has agreed to serve as chair of the Star Party committee. Paul has really been a big help in bringing back the club-only star parties, and I suspect he'll be building on last year's visits to the Jerome Gun Club and Thorn Creek Ridge.

Lastly, plans are underway to set up another MVAS-Night-At-The-Planetarium. We as a board hope to have an announcement later this month about when we'll be ready – as a group -- to check out the new planetarium equipment at CSI.

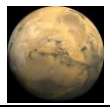
Clear Views

Robert Mayer

In this Issue

President's Message	Page	1
Calendar	Page	2
Moon Phases for January	Page	3
Planisphere for January	Page	4
Solar System Highlights	Page	5
Idaho Skies for January / Space News	Page	6 - 9
Deep Sky Highlight Satellites of M31	Page	10 - 11
NASA Space Place	Page	12
Observatories / Faulkner Planetarium	Page	13
About the Magic Valley Astronomical Society	Page	14

Calendar for January

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 New Year's Day Moon is at perigee 	2 Mars is at aphelion 	3 Quadrantid meteor shower is at peak	4 Club Star Party Dedication Point Earth at Perihelion 
5 Jupiter is at opposition 	6	7 Moon is 3° north of Uranus 	8	9	10	11 Monthly Membership Meeting Herrett Center 7:00pm Public Star Party Centennial Observatory
12	13	14	15 Moon is at apogee 	16	17	18
19	20 Martin Luther King Day	21	22	23 Moon is 3.9° south of Mars 	24	25
26 Moon is 0.6° south of Saturn 	27	28 Moon is 2.2° south of Venus 	29	30 Moon is at perigee 	31 Mercury is at greatest eastern elongation, 18.4° east of the Sun	

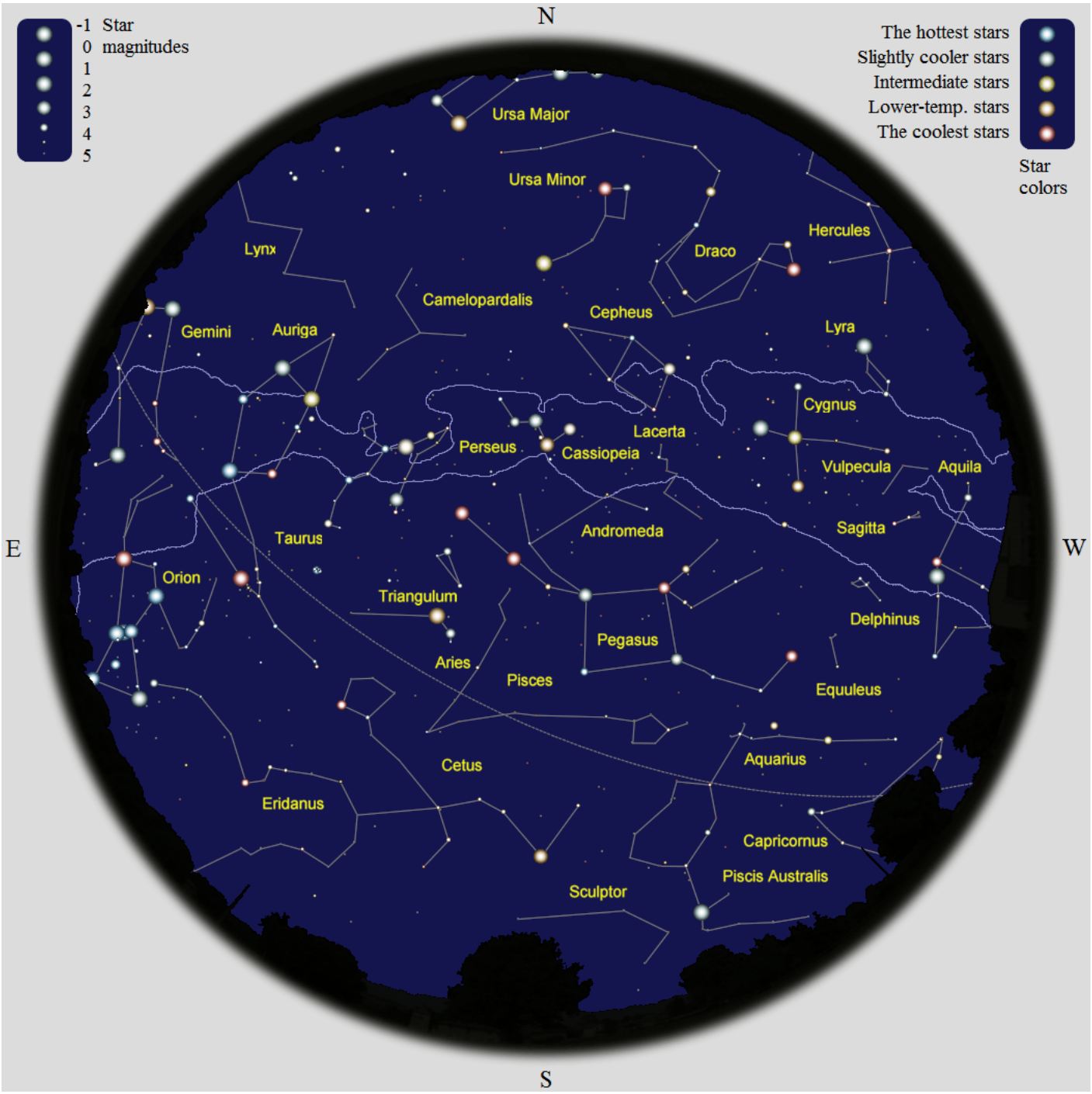
 The image of M51 image is explained on the back page. The Shoshone Falls on the Snake River in Idaho; a prominent landmark feature in the Magic Valley near Twin Falls, ID

Moon Phases for January 2014

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1  New Visible: 1% ↑	2  New Visible: 2%	3  Waxing crescent Visible: 7%	4  Waxing crescent Visible: 14%
5  Waxing crescent Visible: 23%	6  Waxing crescent Visible: 33%	7  First quarter Visible: 43%	8  First quarter Visible: 54%	9  First quarter Visible: 64%	10  Waxing gibbous Visible: 73%	11  Waxing gibbous Visible:82%
12  Waxing gibbous Visible: 89%	13  Waxing gibbous Visible: 94%	14  Waxing gibbous Visible: 98%	15  Full moon Visible: 100%	16  Full moon Visible: 100%	17  Full moon Visible: 99%	18  Waning gibbous Visible:96%
19  Waning gibbous Visible: 91%	20  Waning gibbous Visible: 85%	21  Waning gibbous Visible: 77%	22  Waning gibbous Visible: 68%	23  Last quarter Visible: 58%	24  Last quarter Visible: 47%	25  Last quarter Visible:37%
26  Waning crescent Visible: 26%	27  Waning crescent Visible: 17%	28  Waning crescent Visible: 9%	29  Waning crescent Visible: 9%	30  New Visible1% ↓	31  New Visible: 1% ↑	

Editor's Note: The Moon phases calendar above is a small highlight of some changes that you will see in the coming newsletters.

Planisphere for November



Be Safe, Get Out There, and Explore Your Universe!

Solar System Highlights

Mercury By the end of the month, however, it will set almost ninety minutes after the Sun and will be easily identified some 10° above the southwestern horizon. Through a telescope, on the 15th, Mercury shows a disk 5 arcseconds in diameter and 94-percent illuminated. By the 31st, the planet appears 7 arcseconds across and 53-percent lit.

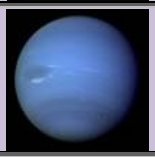
Venus As January opens, the planet can be spotted nearly 10° above the southwestern horizon 30 minutes after sunset. After passing 5° north of the Sun at inferior conjunction on January 11, Venus switches to the morning sky. By mid-month, the brilliant world comes up in the southeast a full hour before the Sun, and by the 31st, this gap increases to two hours.

Mars rises around midnight local time on New Year's Eve and nearly two hours earlier by month's end. The best time to look, however, is just before dawn, when the planet is much higher in the south. Mars begins the month in western Virgo, close to Gamma Virginis, but its eastward motion carries it within 5° of Spica (Virgo's leading star) on the 31st.

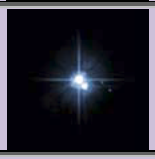
Jupiter The giant planet reaches opposition and peak visibility on January 5, among the background stars of the constellation Gemini the Twins. Jupiter climbs in the east shortly after sunset, remains visible all night and looks stunning through a telescope.

Saturn lies a good 30° high in the southeast as dawn begins, and gets a little higher every morning. The ringed planet resides among the background stars of the constellation Libra and remains within 5° of 3rd-magnitude Alpha Librae all month. Through a telescope, Saturn sports an angular size of 16 arcseconds, while the rings span 37 arcseconds.

Uranus remains visible until near midnight local time this month, but it is highest in the south and best observed around 6 P.M. local time in early January. At magnitude +5.8, the planet is bright enough to see with the naked eye in a really dark sky. Telescopes will reveal its pale bluish or greenish disk, just 3.4 arcseconds wide.



Neptune in central Aquarius close to 5th-magnitude Sigma Aquarii, is well placed for telescopic observing in the early evening. The distant planet then lies due southwest and about a third of the way up from the horizon to the zenith. Neptune shines at magnitude +7.9 and appears a tiny 2.4 arcseconds wide.



Pluto the dwarf planet rises shortly before the Sun and is in too bright a sky to be seen in most amateur telescopes.

Asteroid This month, asteroid **7 Iris** provides an opportunity to test your observing skills - spotting it requires a lot of patience and a dark-sky observing site, far from city lights. The asteroid shines at magnitude +10 and pierces the Circlet asterism in Pisces the Fish. This region lies in the southwest after darkness falls, below the conspicuous Great Square of Pegasus.

Comets C/2013 R1 Lovejoy is magnitude +5.5 and moves through Hercules where it is positioned well for mid-northern observers just before dawn. By January 14, the comet shifts into Ophiuchus, where it spends the rest of the month. C/2012 X1 Linear should remain around 8th or 9th magnitude, making it an easy target for 6-inch telescopes. The comet cuts through the constellation Ophiuchus, and rises about two hours before the start of astronomical twilight for mid-northern observers.

Meteors: The **Quadrantids**, a major annual meteor shower, are visible from December 28 through January 12. The peak of activity is much sharper than that of most showers, lasting only a few hours; this year, the peak should arrive in the predawn hours of January 3rd.

Idaho Skies Volume 8 Number 1

This month look for the star Alcyone, the brightest star in the Pleiades star cluster. Astronomers call the Pleiades M-45 and many people known it as the Seven Sisters.

Although we call it the Seven Sisters, most people only see six stars in the Pleiades. The seven sisters of mythology were the daughters of the titans, Atlas and his wife Pleione. The six stars most people see, in order of brightness are named Alcyone, Electra, Maia, Atlas, Merope, and Taygeta. The first known mention of the Pleiades is by the writer Hesiod around 1000 BC.

Through a pair of 10X50 binoculars, the brightest portion of the Pleiades occupies about 1/5th of the field of view. When the fainter surrounding stars are included, the Pleiades fill closer to 1/4th of the field of view. In moderately light polluted skies, people can easily see 20 stars in the cluster in their binoculars.

In long duration exposures, a blue cloud of dust surrounding the stars becomes visible. The stars and bright blue-white frosting makes the Pleiades look like some fantastic piece of jewelry. Contrary to popular belief however, the cloud is not the remains of the cluster's birth nebula. It happens to be an independent cloud of dust and gas through which the cluster is currently drifting. Recent findings have determined that the cloud is actually two separate clouds passing each other just as the Pleiades are passing through the area.

The Pleiades are 369 light years away. Therefore, the light you see tonight left the star cluster in the year 1645. There are some 500 stars in this galactic cluster and they formed 100 million years ago, or during the hey-day of the dinosaurs. In time, the stars of this cluster will drift a part, as their mutual gravity is too weak to hold the cluster together.

January Overview

- The Quadrantid meteor shower peaks early on the morning of the 4th.
- Jupiter reaches opposition on the 5th
- First quarter moon on the 7th
- Venus approaches too close to the sun to be seen by the second week of January
- Full moon on the 15th
- The gibbous moon covers 7th magnitude HIP 54260 on the 20th
- The moon and Spica appear very close together on the 23rd
- Mercury makes an appearance in the evening sky the last week of the month
- The moon appears close to Antares on the 26th

January 1 – 7

The 2nd would have been Isaac Asimov's 94th birthday. Asimov is primarily known for his science and science fiction books. He published his first science fiction story when he was 19 years old. Over the course of his life, he wrote over 500 books covering virtually every topic from mystery stories to the Bible. Isaac Asimov died in 1992 from complications from a prior heart surgery in 1983.

Ten years ago on the 2nd, the 660 pound Stardust spacecraft flew past the comet, Wild 2 at a distance of 146 miles. As it flew past, Stardust's extended badminton racket of aerogel blocks collected over one million specks of comet dust. Aerogel was required to stop and hold onto the comet dust because at their 2.7 mile per second (13,400 mph) impact speed, other materials would have vaporized the cometary material on impact. On January 16, 2006, the Stardust reentry capsule returned to Earth with its comet samples and parachuted safely inside the Utah Test and Training Range.

On January 3rd, a nice meteor shower named the Quadrantids reaches it peak. Quadrantid meteors appear to radiate from low in the northeast, at a point just below the bowl of the Big Dipper. The shower is best observed after midnight, so you'll actually be watching it on the morning of the 4th. Expect to see 45 meteors per hour from this shower in dark skies. However, don't expect to see many bright meteors, as most Quadrantids are faint. The best way to watch this shower is to lie back on a lawn chair, inside a warm sleeping bag, and look straight up.

Isaac Newton celebrates his 371st birthday on the 4th. When Newton was born in 1643, the Western world was still using the Julian calendar, which pushes his actual birthday back to our modern Christmas Day. Newton is best known for his discovery of how gravity works. While on an extended break from the university (the plague running through London that year), Newton observed an apple fall from a tree. He wondered if the force that brought an apple to the ground could also

explain the movement of the Moon around the Earth. Using an estimate of the distance between the Earth and Moon and the Moon's orbital period around the Earth, Newton estimated how fast the Moon must be falling towards the Earth in order to remain in orbit. The moon's rate of fall closely matched that created by a force that dropped off by the square of the distance. Today we call such forces $1/R^2$ forces and they include forces like magnetism and electric fields. Newton's development of calculus later proved that planets can only travel in circular and elliptical orbits under the influence of a $1/R^2$ force, just as we observe the planets do today.

Earth reaches perihelion on January 4th. That day we'll be about 3 million miles closer to the sun than in July. That also means Earth's orbital speed will be at its greatest today. That greater speed means the northern hemisphere's winter is several days shorter than its summer.

Jupiter reaches opposition on the 5th. Opposition is a point in space opposite the sun, relative to Earth's position in space. At opposition, a planet beyond Earth is its closest to Earth. This means the planet is at its largest and brightest in our sky. It also means the planet rises near sunset. Look in the low west after it gets dark for brilliant Jupiter.

One of the most momentous events in the history of astronomy occurred 404 years ago beginning on the 7th. In 1610, the physicist and new astronomer, Galileo Galilei, discovered the four large moons of Jupiter. Up until this time, most learned people believed all heavenly bodies orbited around the Earth. This view of the world, which we call the geocentric model made sense because no one could imagine how a heavy and massive Earth could travel at fantastic speeds around the sun. Also they couldn't understand how the universe could have more than one center of motion. "If other planets had moons," they would ask, "then how could the moons remain in orbit around their planet while the planet orbited around the Sun? Wouldn't the planet leave its moon's behind?" Since no one felt Earth move or spin, our planet's place at the center of the universe was assured.

Galileo's observations of the four large moons of Jupiter showed that there was indeed more than one center of motion in the universe - regardless of whether you believed the sun or Earth to be the center of the universe. That observation, along with the observed phases of Venus, cleared the way for some astronomers to accept Copernicus' heliocentric or sun-centered model of the universe. It would be another 200 years before there was no doubt of the correctness of the heliocentric model.

You can see the Galileo's satellites yourself with a small telescope or a pair of binoculars. You need to hold the binoculars steady against something, like a tree. Jupiter rises in the east-northeast at 6:00 PM at the beginning of the month and by 4:00 PM by the end of the month.

January 8 – 14

The 8th is the 46th anniversary of the Soviet's launch of Luna 21. Luna 21 soft landed on the moon carrying a robotic passenger named Lunokhod 2. This moon rover was a four feet tall and required a team of five drivers back on Earth to control it. Onboard television cameras provided its Earth-crew with a 360 degree panorama around the rover, permitting them to safely operate it in spite of the three second delay that comes from communicating with the moon. The eight-wheeled vehicle drove at two speeds; 0.6 and 1.2 mph but still managed to travel nearly 22 miles across the lunar surface before failing. It returned 80,000 television pictures, measured the lunar magnetic field, and tested the strength of the lunar soil (regolith).

Happy birthday Stephen Hawking! He celebrates his 74th birthday on the 8th. Did you know Hawking was born 300 years to the day after Galileo died? We know Hawking for his work in Cosmology. His focus has been on uniting the Theory of Relativity with Quantum Mechanics. Successfully doing so would explain how gravity behaves on the scale of subatomic particles and the behavior of the early universe. A result of his work shows that black holes are not really black. They slowly emit radiation and eventually evaporate away in time. Like trillions of years.

Sergei Pavlovich Korolev was born 109 years ago on the 12th. You may not be familiar with the name of Korolev, but you are familiar with his work. Because of him, we raced the Soviet Union to the moon and won. Korolev designed the world's first inter-continental ballistic missile. After demonstrating that it could carry a warhead over 6,000 miles, he converted it into the first rocket capable of putting a satellite into space. His rocket eventually launched Sputnik 1 and Yuri Gagarin into orbit. Russia is still using a variant of his rocket, the R-7 today and that makes it the most successful rocket in history.

January 15 – 21

The gibbous moon is due south at 3:45 AM on the morning of the 20th. If you have some free time and a pair of binoculars, you can watch the moon cover a 7th magnitude star named HIP 54260. Magnitude 7 is fainter than we can see with our unaided eyes, but bright enough to see in binoculars (from dark skies) or small telescope. The star will disappear on the left side of the moon (to our east) just after 3:45 AM.

One of the most exciting upcoming space missions wakes up from its electronic hibernation on the 20th. Rosetta is a European expedition to study comet 67P/Churyumov-Gerasimenko. Rosetta will fly along side of the comet for two years and observe its changes as it approaches the sun. Six months after rendezvousing with the comet, Rosetta will release its passenger, a three-legged lander named Philae. In order to remain on the comet's low gravity surface once it lands, Philae has two harpoons that act like anchors. The lander will determine the surface material of the comet and drill as much as 20 cm deep into the comet's surface. An onboard chemical laboratory will then analyze the cometary material collected by the lander.

Happy birthday Buzz! Buzz Aldrin is 84 years young on the 20th. Buzz earned a PhD from MIT in Astronautics where his specialty was orbital rendezvous. After graduation, NASA selected him for the Gemini program, which among other things, developed orbital rendezvous techniques for the upcoming Apollo moon landings. Buzz flew into space for his first time on Gemini 12. On that mission, the crew successfully docked with an unmanned Agena rocket and performed an 8 hour space walk. Buzz was the second man to set foot on the Moon when Apollo 11 landed on July 20, 1969.

Mathematician John Couch Adams was born 224 years ago on the 21st. After William Herschel's accidental 1781 discovery of Uranus, astronomers noticed that the planet wasn't orbiting the sun quite as Newton's Laws predicted. Astronomers reasoned that either Newton's Laws failed at large distances from the sun or that an unseen planet was tugging on Uranus. Adams assumed the latter and began calculating the position of an unknown planet beyond Uranus. Before Adams could convince English astronomers to look for the planet in his calculated position, French mathematicians and astronomers did the same thing. Their calculated position was nearly identical to Adam's and they discovered Neptune after less than an hour of searching. We have since learned that Galileo recorded Neptune in his notes about Jupiter's moons, not realizing that the "star" near Jupiter was actually a more distant planet.

January 22 – 31

As the moon rises on January 23rd, the star Spica is located just below it. The moon just missed covering Spica before it rose over Boise. Look for Spica to the right of the rising moon (it rises at 12:30 AM) and Mars a little above the moon. Mars appears about as bright as Spica, but with a noticeable yellow-orange tint.

On January 25, 2004, the Mars Exploration Rover B (AKA Opportunity) landed on Mars. Opportunity is still exploring the red planet today, although its work has been overshadowed by the more recent arrival, Curiosity. Opportunity is currently exploring the rim of 14 mile diameter Endeavour crater. The solar powered rover has traveled over 23 miles across the Martian surface since its landing

If you're out and about at 6:40 AM on Sunday, January 26th, then look for the thin crescent moon in the low southeast. The moon will be above the star Antares, one of the largest stars in our galaxy. Antares is the heart of the constellation Scorpius, the Scorpion. If this star replaced our sun, it would engulf all the inner planets out to Mars.

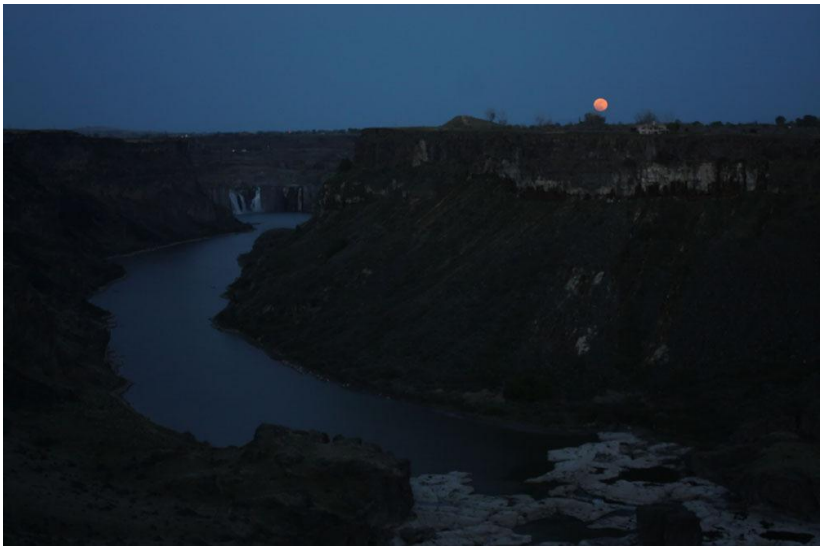
Innermost Mercury reaches its greatest distance from the sun (at least from our perspective) on the 31st. Astronomers call this event its greatest eastern elongation. Although Mercury is 18 degrees away from the sun, a line between Mercury and the sun tilts strongly relative to the horizon. That means Mercury appears only 9 degrees above the horizon at sunrise. If you want to see this tiny planet, then go outside at 6:30 PM and look low in the west-southwest. Mercury will be the only "star" visible near the horizon. For an additional treat, scan to the right of Mercury with your binoculars. Less than a binocular's field of view away from Mercury, you will spy the one day old moon. It will appear as an incredibly thin crescent if your can locate it.

United States entered the space age 56 years ago on the 31st. The Jet Propulsion Laboratory in Pasadena and the US Army Arsenal in Huntsville, Alabama lofted the satellite Explorer 1 into orbit using the four stage Juno 1 rocket (a modified Redstone missile). The launched took place at Cape Canaveral, Florida. Explorer 1 weighed 31 pounds and was 81 inches long and 7 inches in diameter. Explorer 1's experiments included Geiger counters, a microphone (to listen to micrometeoroid strikes), a temperature gauge, and radio. Explorer 1 was the third spacecraft in Earth orbit and the first to make an important discovery, the existence of a belt of radiation surrounding Earth. Since physicist James van Allen built the Geiger counters responsible for this discovery, we call the belts the Van Allen belts today. Explorer 1 remained in Earth orbit until 1972 when air friction finally brought it back to Earth.

This Month's Sources

Night Sky Explorer (software)
Space Calendar, http://www.jpl.nasa.gov/calendar/
Stardust (spacecraft), http://en.wikipedia.org/wiki/Stardust_(spacecraft)
In the Sky, http://in-the-sky.org
Earthsky, http://earthsky.org
Philae, http://en.m.wikipedia.or/wiki/Philae_(spacecraft)
Rosetta, http://sci.eas.int/rosetta/
Mars Exploration Rovers, http://marsrovers.jpl.nasa.gov

Dark Skies and Bright Stars,
Your Interstellar Guide
Dr. Paul Verhage, PhD



News

If all goes as planned, NASA may land its first experimental garden on the moon in late 2015.

Scientists at the Ames Research Center in California are putting together the "Lunar Plant Growth Habitat" project with the hopes of sending an automated small greenhouse (complete with turnips, basil and flower seeds) to the moon in an attempt to see if plants will germinate there. NASA is looking at possible private rides to the moon—commercial spacecraft companies are competing to collect the Google Lunar X-Prize—but no decision has been made yet.

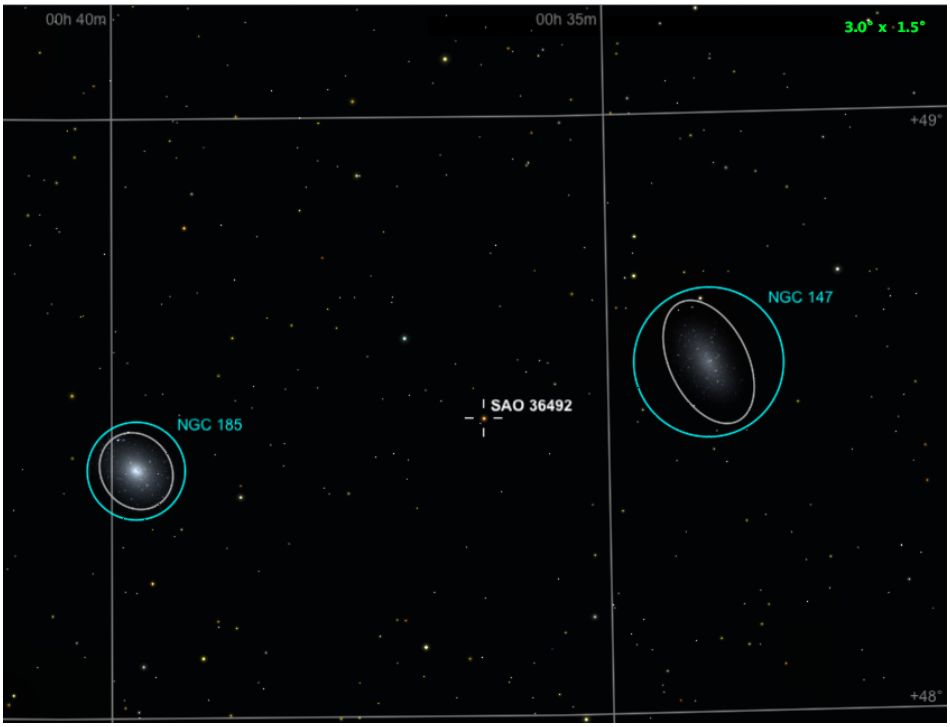
Soon after touching down on the dusty lunar surface, the self-contained habitat would release a spray of water from a reservoir and automatically douse a nutrient-soaked piece of paper. The paper will then drip onto the seeds below—hopefully spurring them to grow. The entire 2.2 pound (1 kilogram) experiment should last only 5 to 10 days, with its progress captured through images beamed back to Earth.

NASA also hopes that this lunar greenhouse experiment will offer a unique outreach opportunity for school kids, and so it plans to equip classrooms with replica gardens.The first life sciences experiment on another world will help pave the way for permanent lunar bases, says NASA.

Researchers hope to understand better what effects the extreme lunar environment—like radiation and lower gravity—may have on plant growth. "If we send plants and they thrive, then we probably can. Thriving plants are needed for life support (food, air, water) for colonists." said NASA in a statement on the project's website.

Deep Sky Highlight - Satellites of M31 by Steve Bell

When most observers hear the phrase *Andromeda satellites*, they think of M32 and M110, the two satellite galaxies seen in moderately wide fields when viewing M31. There are two more satellite galaxies, NGC 147 and NGC 185, within the boundaries of Cassiopeia, that are within reach of moderate apertures (~ 8") and are worthy of examination. These are true satellites of M31, being gravitationally bound to M31. These two galaxies are approximately one degree apart (with NGC147 WNW of NGC185) and the pair is roughly seven degrees NNW of M31. Both were discovered by William Herschel.



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M31 Satellites				
ID	RA	DEC	Mag	Size
NGC147	00 33 12	+48 30 00	9.3	12.9
NGC185	00 39 00	+48 20 00	9.2	11.5
M32	00 42 42	+40 51 54	9.1	8.5x6.5
M110	00 40 22	+41 41 07	8.9	19.5x11.5

I have included basic data on M32 and M110 in the table above for comparison. Both NGC147 and NGC185 are brighter than 10th magnitude, but can be moderately difficult visually for smaller apertures due to their extended nature and subsequent lower surface brightness. NGC 185 appears brighter visually than NGC 147.

NGC147 is a dwarf spheroidal galaxy approximately 2.6 million light years distant. Visually, it appears large and faint. Through an 8" SCT at 64X (32 PI), it appeared very faint and difficult to detect with direct vision. Averted vision and motion helped significantly. No detail was noted.

NGC185 is also a dwarf spheroidal galaxy and about a half million light years closer, at approximately 2.1 million light years' distance. It is, in addition, a type 2 Seyfert galaxy with an active nucleus. NGC185 is easier visually, being both brighter and smaller (higher surface brightness) than NGC147. Through a 14" Newtonian at 114X.

NGC185 was oval, NE-SW, about 1/10 field of view and had a broad, slightly brighter core with a stellar nucleus. Through an 8" SCT at 83X it appeared as a dim oval that was brighter toward the middle. Unlike most dwarf spheroidal galaxies, NGC 185 contains young open clusters and has active star formation ongoing.

For those working on Astronomical League observing lists, both galaxies are on the Caldwell List and NGC185 is on the Herschel 400.

Happy galaxy hunting.

Steve

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The Big Picture: GOES-R and the Advanced Baseline Imager

By Kieran Mulvaney

The ability to watch the development of storm systems – ideally in real time, or as close as possible – has been an invaluable benefit of the Geostationary Operational Environmental Satellites (GOES) system, now entering its fortieth year in service. But it has sometimes come with a trade-off: when the equipment on the satellite is focused on such storms, it isn't always able to monitor weather elsewhere.

"Right now, we have this kind of conflict," explains Tim Schmit of NOAA's National Environmental Satellite, Data, and Information Service (NESDIS). "Should we look at the broad scale, or look at the storm scale?" That should change with the upcoming launch of the first of the latest generation of GOES satellites, dubbed the GOES-R series, which will carry aloft a piece of equipment called the Advanced Baseline Imager (ABI).

According to Schmit, who has been working on its development since 1999, the ABI will provide images more frequently, at greater resolution and across more spectral bands (16, compared to five on existing GOES satellites). Perhaps most excitingly, it will also allow simultaneous scanning of both the broader view and not one but two concurrent storm systems or other small-scale patterns, such as wildfires, over areas of 1000km x 1000km.

Although the *spatial* resolution will not be any greater in the smaller areas than in the wider field of view, the significantly greater *temporal* resolution on the smaller scale (providing one image a minute) will allow meteorologists to see weather events unfold almost as if they were watching a movie.

So, for example, the ABI could be pointed at an area of Oklahoma where conditions seem primed for the formation of tornadoes. "And now you start getting one-minute data, so you can see small-scale clouds form, the convergence and growth," says Schmit.

In August, Schmit and colleagues enjoyed a brief taste of how that might look when they turned on the GOES-14 satellite, which serves as an orbiting backup for the existing generation of satellites.

"We were allowed to do some experimental imaging with this one-minute imagery," Schmit explains. "So we were able to simulate the temporal component of what we will get with ABI when it's launched."

The result was some imagery of cloud formation that, while not of the same resolution as the upcoming ABI images, unfolded on the same time scale. You can compare the difference between it and the existing GOES-13 imagery here: http://cimss.ssec.wisc.edu/goes/blog/wp-content/uploads/2013/08/GOES1314_VIS_21AUG2013loop.gif

Learn more about the GOES-R series of satellites here: http://www.goes-r.gov.

The Advanced Baseline Imager. Credit: NOAA/NASA

Observatory and Planetarium Events

Schedule for the Centennial Observatory – Herrett Center Twin Falls
herrett.csi.edu

Event	Place	Date	Time	Admission
Bimonthly Astronomy Talk: "Meteor Showers Past, Present, and Future"	Faulkner Planetarium	Friday, January 3rd, 2014	6:00 to 6:45 PM	$2.50 adults $1.50 students (incl. CSI) Free - children 6 & under
Astronomy Talk Night Telescope Viewing	Centennial Observatory	Friday, January 3rd, 2014	7:00 to 9:00 PM	$1.50 per person Free - children 6 & under Free to all with paid astronomy talk admission
Cabin Fever Day Solar Viewing	Centennial Observatory	Saturday, January 4th, 2014	11:00 AM to 2:00 PM	FREE
Monthly Free Star Party	Centennial Observatory	Saturday, January 11th, 2014	6:30 PM to midnight	FREE
Telescope Tuesday	Centennial Observatory	Tuesday, January 14th, 2014	6:30 to 9:00 PM	$1.50 per person Free - children 6 & under
Telescope Tuesday	Centennial Observatory	Tuesday, January 28th, 2014	6:45 to 9:00 PM	$1.50 per person Free - children 6 & under

Faulkner Planetarium – Herrett Center Twin Falls
(All shows are subject to change without notice.)

- Tuesdays
  - 7:00 PM - Violent Universe: Catastrophes of the Cosmos (w/ a live sky tour)
  - 8:00 PM - Sea Monsters: A Prehistoric Adventure
- Fridays
  - 7:00 PM - Perfect Little Planet
  - 8:00 PM - Sea Monsters: A Prehistoric Adventure
- Saturdays
  - 1:30 PM - Perfect Little Planet
  - 2:30 PM - Sea Monsters: A Prehistoric Adventure
  - 3:30 PM - Perfect Little Planet
  - 4:30 PM - Violent Universe: Catastrophes of the Cosmos (w/ a live sky tour)
  - 7:00 PM - Violent Universe: Catastrophes of the Cosmos (w/ a live sky tour)
  - 8:00 PM - Sea Monsters: A Prehistoric Adventure

Please visit the Herrett Center website http://herrett.csi.edu/astronomy/planetarium/showtimes.asp for current show schedule and view show trailers.

Bruneau Dunes Observatory

The Bruneau Dunes Observatory is now closed for the season. We will see you in the spring.

Membership Information

The Magic Valley Astronomical Society (MVAS) was founded in 1976. The Society is a non-profit [501(c) 3] educational and scientific organization dedicated to bringing together people with an interest in astronomy.

In partnership with the Centennial Observatory, Herrett Center, College of Southern Idaho - Twin Falls; we hold regularly scheduled monthly meetings and observation sessions, at which we share information on current astronomical events, tools and techniques for observation, astrophotography, astronomical computer software, and other topics concerning general astronomy. Members enthusiastically share their telescopes and knowledge of the night sky with all who are interested. In addition to our monthly public star parties we hold members only star parties at various locations throughout the Magic Valley.

MVAS promotes the education of astronomy and the exploration of the night sky along with safe solar observing through our public outreach programs. We provide two types of outreach; public star parties and events open to anyone interested in astronomy, and outreach programs for individual groups and organizations (e.g. schools, churches, scout troops, company events, etc.), setting up at your location. All of our outreach programs are provided by MVAS volunteers at no cost. However, MVAS will gladly accept donations. Donations enable us to continue and improve our public outreach programs.

Membership is not just about personal benefits. Your membership dues support the work that the Magic Valley Astronomical Society does in the community to promote the enjoyment and science of astronomy.

Speakers, public star parties, classes and support for astronomy in schoolrooms, and outreach programs just to name a few of the programs that your membership dues support.

Annual Membership dues will be
$20.00 for individuals, families,
$10.00 for students.

Contact Treasurer Jim Tubbs for dues information via e-mail: jtubbs015@msn.com or home telephone: 736-1989 or mail directly to the treasurer at his home address. 550 Sparks Twin Falls, ID 83301

Donations to our club are always welcome and are even tax deductible. Please contact a board member for details.

M-51 viewed in this newsletter was imaged with the Shotwell Camera and the Herrett Telescope at the Centennial Observatory by club members Rick Widmer & Ken Thomason. Unless otherwise stated all photos appear in the public domain and are courtesy of NASA.

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"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. Norman Herrett in a letter to Dr. J. L. Taylor, president of the College of Southern Idaho, Twin Falls, ID, USA circa 1980.

Membership Benefits

Sky and Telescope group rates. Subscriptions to this excellent periodical are available through the MVAS at a reduced price of $32.95.

Astronomy Magazine group rates. Subscriptions to this excellent periodical are available through the MVAS at a reduced price of $34.00

Receive 10% discounts on other selected Astronomy Publications.

For periodical info. and subscriptions Contact Jim Tubbs, Treasurer

Lending Library: Contact, the current board for information.

Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others. Contact Rick Widmer, Webmaster for more information.