Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

Saturday, February 13th 2016
7:00pm at the
Herrett Center for Arts & Science
College of Southern Idaho.

Public Star Party Follows at the Centennial Observatory

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Magic Valley Astronomical Society is a member of the Astronomical League

M-51 imaged by
Rick Widmer &
Ken Thomason
Herrett Telescope
Shotwell Camera

President's Message

Colleagues,

The weather continues to mystify, but we here at the Magic Valley Astronomical Society are prepared for anything. Take this month's activities:

On Saturday, Feb. 6, at 7 p.m., it's MVAS night at the Faulkner Planetarium. This is our annual visit as a group. We'll be catching the "Edge of Darkness" show, which will examine -- to quote the CSI website -- "the spaces between—and beyond—the Solar System's largest bodies (the sun and planets)," with particular focus on the Dawn, Rosetta, and New Horizons missions. Cost is $6 a ticket.

The following Saturday is the regular MVAS meeting, and again it's a way to deal with the strange weather. Tim Frazier went to Australia late in 2015 -- where it was summer there -- to take in some stunning astrophotography. And he got more, much more than just the grand globular cluster 47 Tucanae. Come on by and see the set-up of a lifetime for an astrophotographer normally north of the equator.

And I also want to put out one last reminder about the Friday, March 4th event at the City of Rocks. The Lodge is reserved for a members-only star party, and there's still space available to spend the night in the lodge -- but if you haven't contacted me, please hurry. A few members have already staked out their spots.

(For those of you who are interested, I went to the Lodge a week ago and discovered that City of Rocks' Wi-Fi now extends to the Lodge, so if you can't get away from your technology, come up and join us!)

Clear Views,
Robert Mayer

Calendars for February

Event Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 Last Quarter 47% Visible 	2 Groundhog Day 	3	4	5	6 MVAS night at the Faulkner Planetarium at 7:00p
7	8 New Moon Lunation 1152 	9 Mardi Gras 	10	11	12 Lincoln's Birthday 	13 General Membership mtg. at the Herrett Center 7:00p
14 Valentine's Day 	15 President's Day First Quarter 53% Visible 	16	17	18	19	20
21	22 Washington's Birthday Full Snow Moon 	23	24	25	26	27
28	29					

Snake River Skies is the Newsletter of the Magic Valley Astronomical Society and is published electronically once a month.

February Celestial Calendar and Trivia

All times, unless otherwise noted, are Universal Time Coordinate (subtract seven hours and, when appropriate, one calendar day for MST)

2/1 Mars is 2.7 degrees south-southwest of the Moon at 10:00
2/2 The astronomical cross-quarter day known as Imbolc, Candlemas, or Groundhog Day occurs today; the Curtiss Cross, an X-shaped Clair-obscure illumination effect located between the craters Parry and Gambart, is predicted to occur at 0:59
2/3 Saturn is 3.5 degrees south of the Moon at 19:00
2/6 Venus is 1.1 degrees south of Pluto at 0:00; Pluto is 3.2 degrees south of the Moon at 6:00; Venus is 4.3 degrees south of the Moon at 7:00; Mercury is 3.8 degrees south of the Moon at 16:00
2/7 Mercury reaches greatest western elongation (25.5 degrees) at 1:00; asteroid 18 Melpomene (magnitude +11.2) is 0.61 degree north of the Moon at 1:00; Mars is at western quadrature at 12:00
2/9 Neptune is 2 degrees south-southeast of the Moon at 23:00
2/10 The Moon is at the descending node at 20:45
2/11 The Moon is at perigee, subtending 33' 35" from a distance of 364,360 kilometers (226,401 miles), at 3:00; Mercury is at minimum libration (0.8 degree) for 2016 at 4:00; Mercury is at the descending node at 8:00; the equation of time is at minimum for 2016 at 22:00
2/12 Uranus is 1.6 degrees north-northwest of the Moon at 15:00
2/13 Mercury (magnitude -0.1) is 4.0 degrees east of Venus (magnitude -3.9) at 3:00
2/14 Venus is at the descending node at 22:00
2/15 The Lunar X (the Purbach or Werner Cross), an X-shaped clair-obscure illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to occur at 2:44; asteroid 5 Astraea (magnitude +8.6) is at opposition at 12:00; the Moon is 8.9 degrees south of the bright open cluster M45 (the Pleiades) in Taurus at 14:00
2/16 The Moon is 0.35 degree north-northwest of the first-magnitude star Aldebaran (Alpha Tauri), with an occultation visible from southeast Asia, southern China, Japan, Hawaii, and the far western United States, at 8:00
2/17 The Sun enters the constellation of Aquarius at 2:00
2/18 The Moon is 6.1 degrees south of the bright open cluster M35 in Gemini at 0:00
2/20 The Moon is 5.0 degrees south of the bright open cluster M44 (the Beehive Cluster or Praesepe) in Cancer at 17:00
2/21 Mercury is at aphelion at 17:00
2/22 The Moon is 2.4 degrees south-southwest of the first-magnitude star Regulus (Alpha Leonis) at 12:00; Full Moon (known as the Hunger, Snow, or Storm Moon) occurs at 18:20; a double Galilean shadow transit (Io's shadow follows Europa's shadow) begins at 20:41
2/24 Jupiter is 1.6 degrees north-northeast of the Moon at 3:00; the Moon is at the ascending node at 6:13
2/26 A double Galilean shadow transit (Io's shadow follows Europa's shadow) begins at 9:38; the Moon is 4.9 degrees north-northeast of the first-magnitude star Spica (Alpha Virginis) at 23:00
2/27 Mars and Uranus are at heliocentric opposition at 1:00; the Moon is at apogee, subtending 29' 31" from a distance of 405,383 kilometers (251,893 miles), at 3:00
2/28 Neptune is in conjunction with the Sun at 16:00
2/29 Leap Day; Mars is 3.5 degrees south of the Moon at 20:00; a double Galilean shadow transit (Io's shadow follows Europa's shadow) begins at 22:34

Nicolas Copernicus (1473-1543), Galileo Galilei (1564-1642), and Clyde Tombaugh (1906-1997) were born this month.

Clyde Tombaugh discovered Pluto on February 18, 1930. Gerald Kuiper discovered the Uranian satellite Miranda (magnitude +15.8) on February 16, 1948. Supernova 1987A was discovered by Ian Shelton, Oscar Duhalde, and Albert Jones on February 23, 1987. PSR B1919+21, the first pulsar, was discovered by Jocelyn Bell Burnell and Antony Hewish on February 24, 1967.

The zodiacal light is visible in the western sky about 80 minutes after sunset from dark locations and is best seen from February 6th to February 20th.

The famous eclipsing variable star Algol (Beta Persei) is at a minimum, decreasing in magnitude from 2.1 to 3.4, on February 1st, 4th, 7th, 10th, 13th, 16th, 19th, 22nd, 24th, and 27th. Consult http://www.skyandtel...watching-tools/

Sun & the Planets

The Sun is located in the constellation of Capricornus on February 1st. It enters Aquarius on February 17th.

Uranus and Neptune can be seen in the southwest in the evening sky. Jupiter is in the southeast at midnight. In the morning sky, Mercury and Venus lie in the southeast, Mars and Saturn in the south, and Jupiter in the west.

At midmonth, Mercury is visible during morning twilight, Venus rises at 6:00 a.m., Mars rises at 1:00 a.m. and transits at 6:00 a.m., Jupiter rises at 7:00 p.m. and transits at 2:00 a.m., and Saturn rises at 2:00 a.m. local time for observers at latitude 40 degrees north.

Mercury is present in the morning sky this month. The speediest planet is 3.8 degrees south of the waning crescent Moon on February 6th. It reaches greatest western elongation on February 7th and is at the descending node on February 11th. Mercury is at aphelion (0.4667 astronomical units from the Sun) on February 21st.

Venus decreases in apparent size by 1.2 arc seconds but increases in illumination by 6% this month. A quasi-conjunction involving Venus, Mercury, and the waning crescent Moon takes place on the morning of February 6th. Venus is 4.3 degrees south of the Moon on that date. A quasi-conjunction between Venus and Mercury occurs on February 13th.

Mars increases in apparent size from 6.8 to 8.6 arc seconds and brightens to magnitude +0.3 during February. The Red Planet is 2.7 degrees south-southeast of the Last Quarter Moon on February 1st. Mars is 1.1 degrees north of the third-magnitude star Zubenelgenubi (Alpha Librae) as February begins. Mars is at western quadrature on February 7th.

Jupiter grows two arc seconds in apparent size as it retrogrades through southeastern Leo this month. It lies 1.6 degrees north-northeast of the waning gibbous Moon on the night of February 23th (February 24th UT). Click on http://www.skyandtel...watching-tools/

Saturn lies 21 degrees south of the celestial equator in the non-zodiacal constellation of Ophiuchus. The Ringed Planet is 3.5 degrees south of the Moon on February 3rd. At mid-month, Saturn's rings span 37 arc seconds and are inclined 26 degrees from edge-on. Saturn rises at approximately 1:30 a.m. local time by the end of February. For information on the satellites of Saturn, browse http://www.skyandtel...watching-tools/

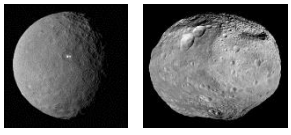
As February begins, Uranus can be found two degrees due south of the fourth-magnitude star Epsilon Piscium in southern Pisces. The seventh planet heads slowly northeast as the month progresses. Uranus is 1.6 degrees north-northwest of the waxing crescent Moon on February 12th.

Neptune disappears from view after the first week of February. It lies about three degrees southwest of the fourth-magnitude star Lambda Aquarii. Neptune is 2 degrees south-southeast of the young waxing crescent Moon on the night of February 9th (February 10th UT). It's in conjunction with the Sun on February 28th.

See http://www.curtrenz.com/uranep.html for additional information on the two outer planets.

The dwarf planet Pluto is not visible this month.

Asteroids



Asteroid 4 Vesta travels northwestward through southern Pisces. The eighth-magnitude asteroid lies about five degrees south of Uranus on February 1st. Asteroid 5 Astraea (magnitude +8.6) reaches opposition in Leo on February 15th. Click on https://in-the-sky.o...15_15_100_2.png for a finder chart. Other fairly bright asteroids coming to opposition this month include 40 Harmonia (magnitude +9.7) on February 5th and 52 Europa (magnitude +10.0) on February 13th.

Comets

Comet C/2013 US10 (Catalina) glides southwestward through Camelopardalis for most of the month. It passes close to the North Celestial Pole in early February. On February 13th, the comet lies about three degrees to the east of IC 342, a faint face-on spiral galaxy. Comet Catalina passes just one half of a degree to the east of the planetary nebula NGC 1501 on February 24th. The open cluster NGC 1502 and the attractive chain of stars comprising the asterism known as Kemble's Cascade (Kemble 1) lie nearby. See January's SkyWatcher issue for more information on Kemble's Cascade.

Meteors

There are no major showers this month in the northern hemisphere.

Carbon Star

Notable carbon star for February: BL Orionis (Orion) RA $06^{h}\,25^{m}\,28.18$ / Dec +14° 43' 19.2"

The Deep Sky

Ten binocular deep-sky objects for Feb: M35, M41, M46, M47, M50, M93, NGC 2244, NGC 2264, NGC 2301, NGC 2360

Top ten deep-sky objects for February: M35, M41, M46, M47, M50, M93, NGC 2261, NGC 2362, NGC 2392, NGC 2403

Challenge deep-sky object for February: IC 443, the Jellyfish Nebula in Gemini. RA: $06^{h}\,17^{m}\,13^{s}$ / Dec: +22° 31′ 05″

The objects listed above are located between 6:00 and 8:00 hours of right ascension.

ISS

Information on Iridium flares and passes of the ISS, the Tiangong-1, the X-37B, the HST, and other satellites can be found at http://www.heavens-above.com/ Receive ISS Pass alerts via e-mail http://www.calsky.com/ or receive texts and e-mails direct from NASA http://spotthestation.nasa.gov/

Star Maps for February can be downloaded at http://www.skymaps.com/downloads.html / http://www.telescope...thly-Star-Chart

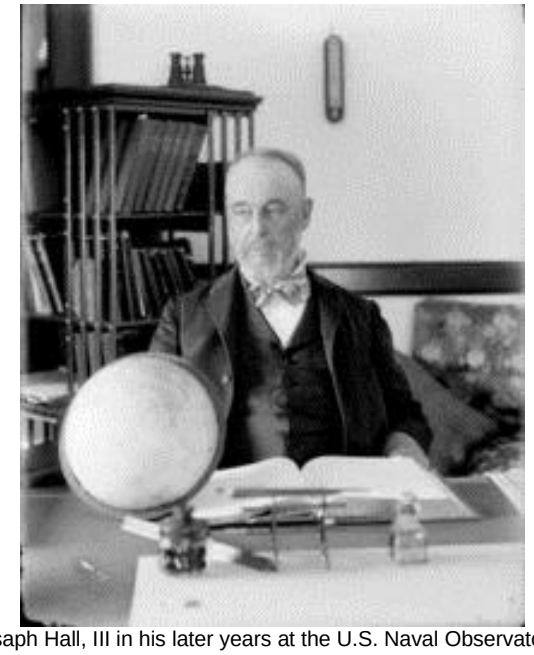
Be Safe – Get Out There – Explore Your Universe

President Lincoln Goes to the Observatory

Many urban stargazers enjoy chance meetings with curious passersby who take an interest in looking through a telescope. But none of us will likely receive the caliber of visitor who twice knocked on the observatory door of a lone astronomer in Washington, D.C. on a warm August night in 1863.

The lone astronomer was Asaph Hall, a self-taught professor of mathematics at the U.S. Naval Observatory. Hall was an amateur stargazer who lacked funds for formal study, taught mathematics for a time, quit teaching to assist at Harvard College Observatory for a meager $3 a week, then leveraged his skill and tenacity to gain a position at the U.S. Naval Observatory. Hall was promoted to full professor of mathematics at the Observatory by order of President Abraham Lincoln in May 1863.

So imagine Hall's surprise when he heard a knock at the trap door that separated the observatory floor from the office below and saw the striking figure of Lincoln himself emerging and walking towards him in the feeble light. The president was accompanied by his personal secretary John Hay (or according to some versions of this story, his Secretary of War, Edwin Stanton). Both had made the 2.5 mile trip from the White House through the dark streets of Washington to look through the observatory's telescope. The astonished Hall treated the president and his secretary to a look at the Moon and the bright star Arcturus through the 9.6-inch refractor.



Asaph Hall, III in his later years at the U.S. Naval Observatory.

Even during the American Civil War, Lincoln was a common sight in the streets of Washington. He shunned formality and security and often greeted casual visitors at the White House or at his small residence in Washington. Said Lincoln: "*It would never do for a president to have guards with drawn sabers at his door, as if he fancied he were, or were trying to be, or were assuming to be, an emperor.*"

The president would occasionally relieve the crushing pressures of the Civil War by indulging his interest in technology and science. Lincoln was a tinkerer with a curious mind and remains the only U.S. president to hold a patent (two actually). But something bothered him after his first visit to the Naval Observatory. So he returned a few nights later—alone—to question Asaph Hall about what he had seen. Lincoln was perplexed by his view of the Moon through the big telescope on his previous visit because it was clearly upside-down compared to the view through his own terrestrial spyglass. Hall explained to the president that astronomical telescopes lacked the extra optics to display right-side-up images. Satisfied with the answer, the president bade the professor farewell and wandered back to the burdens of his office. It's unclear whether they met again.

In 1877, Asaph Hall cemented his fame by using the observatory's 26-inch refractor to discover the two tiny moons of Mars. The names of these moons were chosen from Homer's *Iliad* in which, to stir up trouble, Ares (the Greek name for Mars, the god of war) summoned the gods Phobos (Fear) and Deimos (Dread).

Lincoln met his untimely end less than two years later when, shortly after winning a second term and seeing to the end of the Civil War, he sat with his wife, unprotected, and was shot at point blank range by confederate spy John Wilkes Booth at the Ford Theatre on April 14, 1865. He died the next morning. Fear and dread indeed.

This article was written on December 30, 2015 By Brian Ventrudo reprinted with author's permission.

The Loneliest Galaxy in the Universe

By Ethan Siegel

Our greatest, largest-scale surveys of the universe have given us an unprecedented view of cosmic structure extending for tens of billions of light years. With the combined effects of normal matter, dark matter, dark energy, neutrinos and radiation all affecting how matter clumps, collapses and separates over time, the great cosmic web we see is in tremendous agreement with our best theories: the Big Bang and General Relativity. Yet this understanding was only possible because of the pioneering work of Edwin Hubble, who identified a large number of galaxies outside of our own, correctly measured their distance (following the work of Vesto Slipher's work measuring their redshifts), and discovered the expanding universe.

But what if the Milky Way weren't located in one of the "strands" of the great cosmic web, where galaxies are plentiful and ubiquitous in many different directions? What if, instead, we were located in one of the great "voids" separating the vast majority of galaxies? It would've taken telescopes and imaging technology far more advanced than Hubble had at his disposal to even detect a single galaxy beyond our own, much less dozens, hundreds or millions, like we have today. While the nearest galaxies to us are only a few million light years distant, there are voids so large that a galaxy located at the center of one might not see another for a hundred times that distance.

While we've readily learned about our place in the universe from observing what's around us, not everyone is as fortunate. In particular, the galaxy MCG+01-02-015 has not a single known galaxy around it for a hundred million light years in all directions. Were you to draw a sphere around the Milky Way with a radius of 100 million light years, we'd find hundreds of thousands of galaxies. But not MCG+01-02-015; it's the loneliest galaxy ever discovered. Our Milky Way, like most galaxies, has been built up by mergers and accretions of many other galaxies over billions of years, having acquired stars and gas from a slew of our former neighbors. But an isolated galaxy like this one has only the matter it was born with to call its own.

Edwin Hubble made his universe-changing discovery using telescope technology from 1917, yet he would have found absolutely zero other galaxies at all were we situated at MCG+01-02-015's location. The first visible galaxy wouldn't have shown up until we had 1960s-level technology, and who knows if we'd have continued looking? If we were such a lonely galaxy, would we have given up the search, and concluded that our galaxy encompassed all of existence? Or would we have continued peering deeper into the void, eventually discovering our unusual location in a vast, expanding universe? For the inhabitants of the loneliest galaxy, we can only hope that they didn't give up the search, and discovered the entire universe.

Image credit: ESA/Hubble & NASA and N. Gorin (STScI); Acknowledgement: Judy Schmidt, of the loneliest void galaxy in the known: MCG+01-02-015.

Note: This month’s article describes a project that is not related to NASA and does not suggest any relationship or endorsement. Its coverage is for general interest and educational purposes. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit **spaceplace.nasa.gov** to explore space and Earth science!

Observatories and Planetariums

Bruneau Dunes Observatory – Bruneau, ID

The observatory is now officially closed for the winter.

CSI Centennial Observatory Twin Falls, ID

Event	Place	Date	Time	Admission
Telescope Tuesday	Centennial Observatory	Tuesday, February 9th, 2016	7:00 to 9:00 PM	$1.50 or free with Faulkner Planetarium admission
Bimonthly Astronomy Talk: "Gravity Wave Astronomy: Listening for Einstein's Echoes"	Faulkner Planetarium	Wednesday, February 10th, 2016	6:30 to 7:30 PM	Adults: $2.50 Children (7-17) & CSI students: $1.50 Ages 0-6: FREE
Astronomy Talk Night Telescope Viewing	Centennial Observatory	Wednesday, February 10th, 2016	7:30 to 9:30 PM	$1.50 or free with Astronomy Talk admission
Monthly Free Star Party	Centennial Observatory	Saturday, February 13th, 2016	7:00 PM to 12:00 AM	FREE
Telescope Tuesday	Centennial Observatory	Tuesday, February 23rd, 2016	7:15 to 9:00 PM	$1.50 or free with Faulkner Planetarium admission

Faulkner Planetarium Show Times (through Memorial Day)	
Tuesdays	7:00 PM
Fridays	7:00 PM 8:00 PM
Saturdays	1:30 PM 2:30 PM 3:30 PM 4:30 PM 7:00 PM 8:00 PM

Now Showing

About the Magic Valley Astronomical Society

Magic Valley Astronomical Society
P.O. Box 445
Kimberly, ID, USA 83341

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

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

Membership Benefits:
Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others please contact President Robert Mayer, for more information on these and other benefits.

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.