Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

Saturday, July 9th 2016
7:00pm at the
Herrett Center for Arts & Science
College of Southern Idaho.

Public Star Party Follows at the Centennial Observatory

Club Officers

Robert Mayer, President
Julyerrbrt@gmail.com
208-312-1203

Paul McClain, Vice President
plmccln@gmail.com

Gary Leavitt, Secretary
leavittg@cableone.net
208-731-7476

Jim Tubbs, Treasurer / ALCOR
jtubbs015@msn.com
208-404-2999

David Olsen, Newsletter Editor
editor@mvastro.org

Rick Widmer, Webmaster
rick@developersdesk.com

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,

It's that time of year again, the annual MVAS Barbeque. Slated for Saturday, July 9 at the Herrett Center patio, the event is chance for members to get together and enjoy good food and company. MVAS will provide the main course and the drinks; all we ask of you is to bring a side dish or dessert of your choice. We look forward to seeing you there.

The next few weeks, however, will mean just more than food. At the end of June, a couple of members went down and held a star party at the Winecup-Gamble Ranch in Nevada, and Saturday, July 2, will feature our annual star party at Pomerelle. This year we will make last year's experiment permanent by moving viewing down to the lodge. If going up to the top of the mountain has always been a concern of yours, we've permanently removed it.

Lastly, we are prepping for our annual highlight -- the star party at the City of Rocks. That's set for August 5th and 6th. Contact Gary Leavitt (see the last page of this newsletter for contact information) about getting a campsite if you're interested in volunteering.

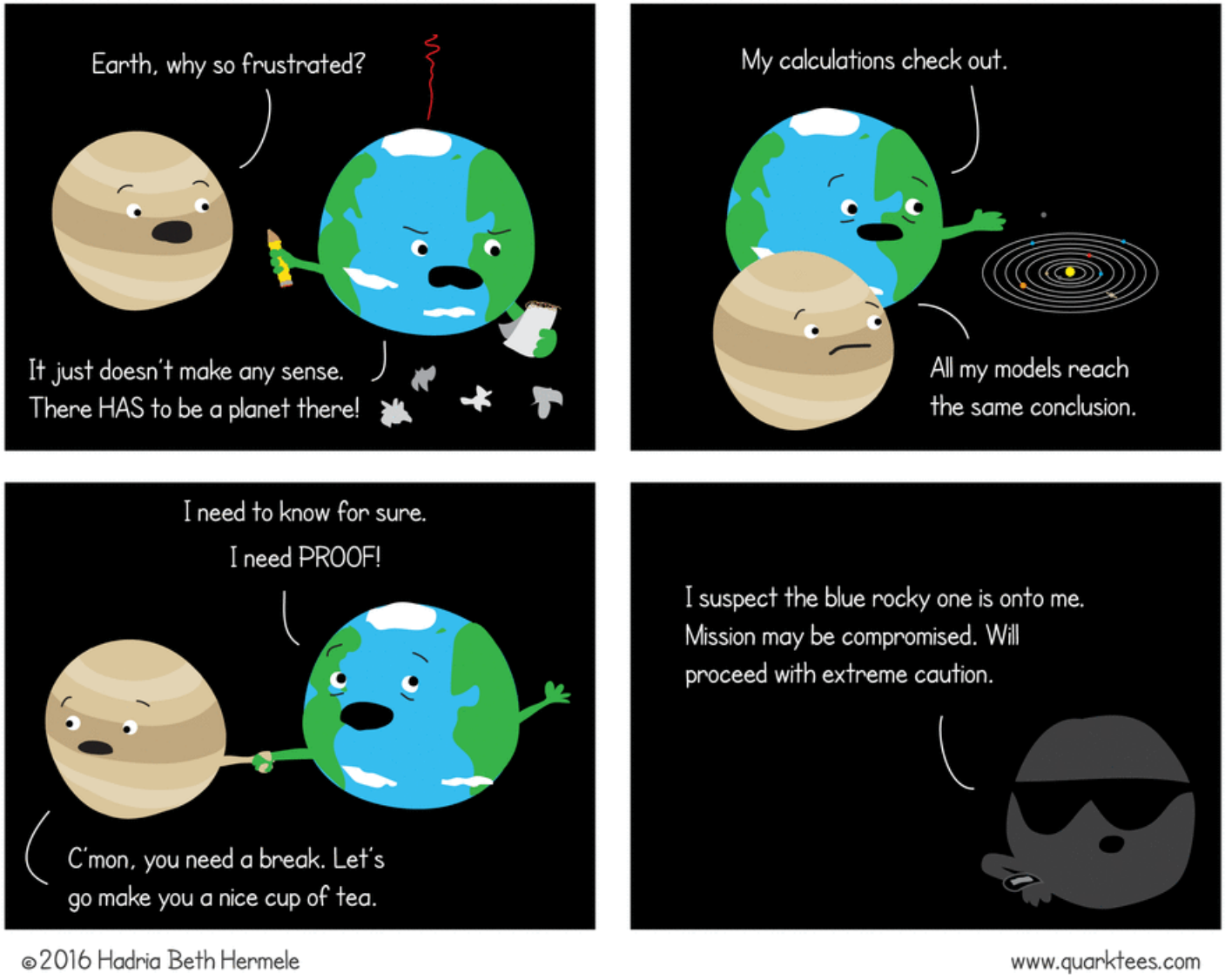
Until then, clear views,

Robert Mayer

Calendars for March

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 Canada Day 	2 Pomerelle Mt. Star Party Albion, ID 
3	4 Independence Day New Moon Lunation 1157 	5	6	7	8	9 General Membership mtg. at the Herrett Center 7:00p Public Star Party at the Observatory
10	11	12 First Quarter 55% Visible 	13	14	15	16
17	18	19 Full Moon Buck Moon 	20	21	22	23
24	25	26 Last Quarter 56% Visible 	27	28	29	30
31						

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



This comic appears courtesy of Hadria Beth Hermele. It has been reprinted with permission of the artist for more information visit the artist's website www.quarktees.com

NASA's JUNO mission will reach orbit and achieve Jupiter Orbital Insertion on July 4th 2016.

Celestial Calendar

All times, unless otherwise noted, are UT (subtract 6-hours and, when appropriate, one day for MDT

7/1 Mercury is 0.36 degree south of the bright open cluster M35 in Gemini (approximately 7 degrees from the Sun) at 1:00; the Moon reaches perigee at a distance of 365,983 kilometers (227,411 miles) at 6:40; the Moon is 8.9 degrees south of the bright open cluster M45 in Taurus at 12:00
7/2 The midpoint of 2016 occurs today; the Moon is 0.4 degree north of the first-magnitude star Aldebaran (Alpha Tauri), with an occultation occurring in Japan, China, southern Russia, the Middle East, southeastern Europe, and northeastern Africa, at 11:00; Mercury is at perihelion at 16:00
7/3 The Moon is 5.7 degrees south of M35 (10 degrees from the Sun) at 17:00
7/4 The Earth is at aphelion
7/7 Mercury is in superior conjunction at 3:00; Pluto (magnitude +14.1, apparent size 0.1") is at opposition at 16:00
7/8 The Moon is 1.8 degrees south of the first-magnitude star Regulus (Alpha Leonis) at 0:00
7/9 The Moon is 0.9 degree south of Jupiter, with an occultation occurring in far southern Africa, southern Madagascar, and eastern Antarctica, at 3:00
7/11 Venus is at perihelion at 2:00; the Lunar X, also known as the Werner or Purbach Cross, an X-shaped illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to occur at 23:18;
7/12 Mercury is at its greatest heliocentric latitude north at 21:00
7/13 The Moon reaches apogee at a distance of 404,269 kilometers (251,201 miles) at 5:24
7/16 Uranus is at western quadrature at 13:00; Mercury (magnitude -0.1) is 0.6 degree north of Venus (magnitude -3.9) at 17:00
7/17 Mercury is 0.5 degree north of the center of the bright open cluster M44 (the Beehive Cluster or Praesepe) (12 degrees from the Sun) at 20:00
7/18 Venus is 0.04 degree north of the center of M44 (11 degrees from the Sun) at 9:00
7/20 The Sun enters Cancer at 13:00
7/23 The Moon is 1.1 degree north of Neptune, with an occultation occurring in far northern Scandinavia, Iceland, Greenland, and eastern and central North America, at 6:00
7/26 The Moon is 3 degrees south of Uranus at 4:00; Last Quarter Moon occurs at 23:00
7/27 The Moon reaches perigee at a distance of 369,662 kilometers (229,698 miles) at 11:37
7/28 The Curtiss Cross, an X-shaped illumination effect located between the craters Parry and Gambart, is predicted to occur at 2:05; the Moon is 9.1 degrees south of M45 (66 degrees from the Sun) at 18:00; the Southern Delta Aquarid meteor shower (15 per hour) peaks at 20:00
7/29 The Moon is 0.3 degree north of Aldebaran, with an occultation occurring in northern Africa, southern Europe, the eastern United States, the Caribbean, and central America, at 11:00
7/30 Uranus is stationary in right ascension at 2:00; Mercury (magnitude -0.2) is 0.3 degree north of Regulus (magnitude +1.4) at 17:00
7/31 The Moon is 5.8 degrees south of M35 (36 degrees from the Sun) at 1:00

Friedrich Bessel was born this month.

The first photograph of a star, namely Vega, was taken on July 17, 1850.

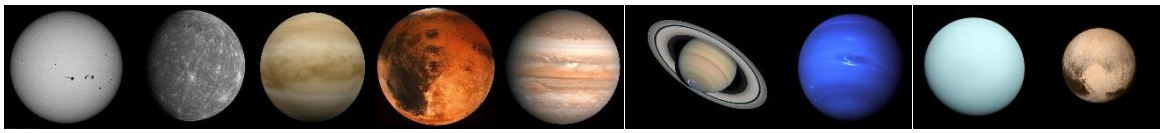
The first photograph of a total solar eclipse was taken on July 28, 1851.

Apollo 11 launched on July 16th 1969 this month with the Moon landing on the 20th of July. The mission concluded on July 24th 1969 by a landing in the Pacific Ocean.

Viking 1 landed on Mars on July 20th 1976


First footprint on the Moon Credit: NASA

The Sun, the Moon, & the Planets



The Moon is 25.9 days old, is illuminated 15.8 %, subtends 32.4 arc minutes, and is located in Taurus on July 1st at 0:00 UT. The Moon is at its greatest northern declination of +18.7 degrees on July 4th and +18.5 degrees on July 31st and its greatest southern declination of -18.6 degrees on July 18th. Longitudinal libration is at a maximum of +6.0 degrees on July 7th and a minimum of -4.7 degrees on July 20th. Latitudinal libration is at a maximum of +6.5 degrees on July 3rd and +6.7 degrees on July 30th and a minimum of -6.7 degrees on July 17th. New Moon takes place on July 4th. The Moon occults Jupiter, Neptune, and Aldebaran from various parts of the world this month. See http://www.lunar-occ...ota/iotandx.htm for information on these and other lunar occultations taking place in July. Visit http://saberdoesthes...does-the-stars/ for tips on spotting extreme crescent Moons. Times and dates for the lunar light rays predicted to occur in July are available at http://www.lunar-occ...o/rays/rays.htm

The Sun is located in Gemini on July 1st. The Earth is farthest from the Sun on July 4th, when it is 3.3% more distant than it was at perihelion and 1.7% farther than its average distance. The Sun enters Cancer on July 20th.

Mercury, Venus, and Jupiter are located in the west and Mars and Saturn in the south during the evening. At midnight, Mars and Saturn are in the southwest and Neptune in the southeast. In the morning, Uranus can be found in the southeast and Neptune in the south.

Mercury is visible in evening twilight, Mars transits the meridian at 9:00 p.m. local daylight time and sets at 2:00 a.m. local daylight time, Jupiter sets at 11:00 p.m. local daylight time, and Saturn transits the meridian at 10:00 p.m. local daylight time and sets at 3:00 a.m. local daylight time for observers at latitude 40 degrees north. Mercury is at perihelion on July 2nd. It reaches superior conjunction on July 7th. Mercury and Venus are in conjunction on July 16th. Mercury passes 0.3 degree north of Regulus on July 30th, the closest approach of a planet to a first-magnitude star in 2016.

Venus is at perihelion on July 11th. It is visible in the evening sky late in the month. Mercury (magnitude -0.6) lies three degrees to the upper left of Venus (magnitude -3.9) 30 minutes after sunset on July 21st.

Mars fades by almost 40% this month. It shrinks in apparent size from 16.3 to 13.1 arc seconds. The Martian northern hemisphere summer ends early in July. The Red Planet's North Pole is inclined currently by approximately 15 degrees. The prominent surface feature Syrtis Major is near the central meridian early at night by month's end.

Jupiter's reign for this year is coming to an end. The King of the Planets stands only 10 degrees above the horizon an hour after sunset by the end of July. Browse http://www.projectpluto.com/jevent.htm or http://www.skyandtel...watching-tools/ in order to determine Galilean satellite events and Great Red Spot transit times.

In mid-July, **Saturn's** rings span 41 arc seconds and are inclined by 26 degrees. The disk of the planet subtends 18 arc seconds at the equator. Saturn's brightest satellite, eighth-magnitude Titan, passes due north of the planet on July 7th and July 23rd and due south on July 15th and July 31st. The much fainter satellite Iapetus lies 35 arc seconds west of the planet on July 11th, forming a triangle with Dione and Tethys.

Uranus is situated 2.7 degrees of the fourth-magnitude star Zeta Piscium during July. It rises close to midnight. Uranus commences retrograde motion on July 30th.

Neptune is located 29 arc minutes southeast of the fourth-magnitude star Lambda Aquarii at the start of the month. On the night of July 24th/25th, the eighth planet passes 31 arc minutes south of that star.

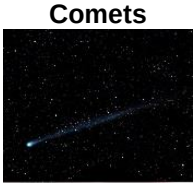
Pluto reaches opposition in northern Sagittarius on July 7th. The fourteenth-magnitude dwarf planet lies approximately 0.2 degree southwest of the third-magnitude star Pi Sagittarii on the night of July 1st. Articles on locating and observing Pluto are available on pages 48 and 49 of the July issue of Sky & Telescope and page 64 and 65 of the July issue of Astronomy.

For more on the planets and how to locate them, browse http://www.nakedeyeplanets.com/

Asteroids

During July, the tenth-magnitude asteroid **7 Iris** loops through northern Scorpius, two to three degrees to the west of the bright binary star Beta Scorpii. Information on asteroid occultations taking place this month is available at http://www.asteroido.../2015_07_si.htm

Comets



Comet C/2013 X1 (PanSTARRS) may shine at eighth magnitude as it heads northwestward through Centaurus this month. On the night of July 23rd, this Oort-Cloud comet passes 0.6 degree west of the fourth-magnitude star c1 Centauri.

Meteors

The duration of the southern Delta Aquarid meteor shower covers the period of July 14 to August 18. The maximum hourly rate typically reaches 15-20. The duration of the northern Delta Aquarid meteor shower covers the period of July 16 to September 10. The maximum hourly rate typically reaches 10. Moonlight will not pose a problem for viewing the peak of this year's Southern Delta Aquarid meteor shower on the morning of July 29th.

Carbon Star

Notable carbon star for July: T Draconis R.A. 17 56 23.2 Declination +58 13 07

The Deep Sky

Top ten binocular deep-sky objects for July: IC 4665, LDN 1773, M4, M6, M7, M10, M12, M13, M92, NGC 6231

Top ten deep-sky objects for July: M4, M6, M7, M10, M12, M13, M92, NGC 6210, NGC 6231, NGC 6543

Challenge deep-sky object for July: NGC 6380 (Scorpius) Right Ascension: $17^h\ 34^m\ 28.4^s$ Declination: −39° 04′ 11″

ISS

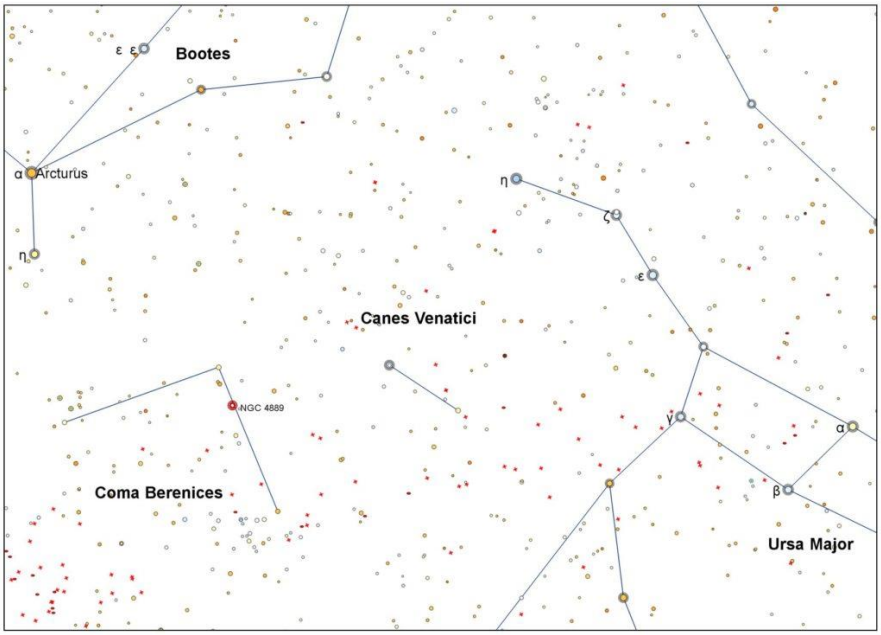
Information on Iridium flares and passes of the ISS, the Tiangong-1, the X-37B, the HST, and other satellites can be found at http://www.heavens-above.com/ Receive ISS Pass alerts via e-mail http://www.calsky.com/ or receive texts and e-mails direct from NASA http://spotthestation.nasa.gov/

Looking Through the Eyepiece

The Coma Cluster of Galaxies
By Brian Ventrudo

The brighter members of the Coma Cluster of Galaxies. The bright elliptical galaxy at left is NGC 4889, and the bright elliptical at right is NGC 4874. The bright foreground star at upper right is HD 112887. Towards Coma Berenices, a tiny constellation between the handle of the Big Dipper and the haunches of the constellation Leo, the Lion, lies in a tiny expanse of sky an assembly of some of the most distant galaxies visible in a backyard telescope. These are the members of the Coma Cluster of Galaxies, a group of more than 1,000 big galaxies located so far away, their starlight left well before the first dinosaurs walked the Earth.

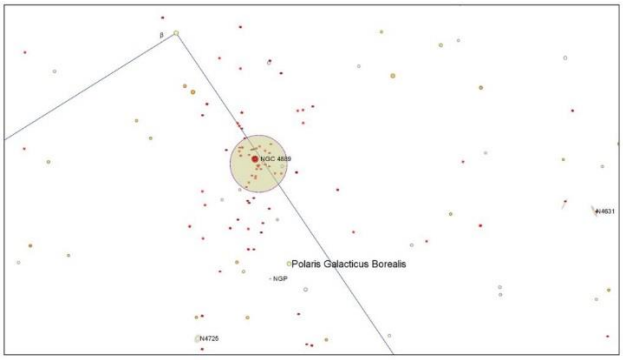
Located at an average distance of about 320 million light years, the thousands of members of the Coma cluster are packed into a space about 20 million light years across, a sardine-can density far greater than our sparse and underpopulated Local Group. It's classified as "rich" or "spherical" galaxy cluster, and its mass anchors a larger agglomeration of galaxy clusters called the Coma Supercluster.



The red circle marking the position of the galaxy NGC4889 (lower left) shows the position of the Coma Cluster of Galaxies in the constellation Coma Berenices. Click on the picture to see a bigger version online.

Unlike the much closer and sparser Virgo galaxy cluster, which has many beautiful spiral galaxies, most members of the Coma cluster are rather featureless elliptical galaxies. This is no accident. The mutual gravitation of the Coma cluster whipsaws its member galaxies at a high speed and pulls them frequently towards the cluster's core where they collide with each other. As the galaxies interact near the cluster's core, their gas and dust gets stripped out before their stars merge into a larger elliptical galaxy. There remain only a few slow-moving spiral galaxies in the cluster's outskirts. The Virgo cluster, by contrast, which is more irregular and less massive than Coma, has a larger fraction of spirals because the galaxies move more slowly and don't collide or interact as often.

More than 80 years ago, the astronomer Fritz Zwicky noted the speed and estimated mass of the galaxies in the Coma cluster. He found something remarkable. The mass of the cluster, which he estimated from the number and brightness of the visible galaxies, was far too low to allow the fast-moving members to remain bound in the cluster. So he deduced the cluster must have more mass, a lot more, that was not detectable with telescopes. This was the first hint at the existence of a weakly interacting material with mass but which emits no light. Zwicky called it "dunkle Materie", German for "dark matter".



Picture is Clickable

A closer view of the Coma Cluster showing the brighter members and the brightest Coma galaxy NGC4889. The shaded circle is 1 degree in diameter. So how can you see the Coma cluster? The group lies well overhead for northern observers in the late spring months, and low over the northern horizon for observers in the deep southern hemisphere. But you need a big telescope, at least 8″ (200 mm) aperture, to see even the brightest members. Thousands of galaxies lie within a one-degree field of view, and dozens of the brightest galaxies are accessible visually in a 15″ to 20″ telescope. The brightest, the elliptical galaxy NGC 4889 shines at magnitude 11.5 and its companion, the massive NGC 4874, is just a little fainter. If you can spot this pair, use averted vision to try to see some of the fainter members of this cosmologically important massive group of galaxies.

This month's article appears courtesy of Brian Ventrudo of Cosmic Pursuits. Reprinted with author's permission. For more information click the authors name at the beginning of the article.

Hubble's bubble lights up the interstellar rubble

By Ethan Siegel

When isolated stars like our Sun reach the end of their lives, they're expected to blow off their outer layers in a roughly spherical configuration: a planetary nebula. But the most spectacular bubbles don't come from gas-and-plasma getting expelled into otherwise empty space, but from young, hot stars whose radiation pushes against the gaseous nebulae in which they were born. While most of our Sun's energy is found in the visible part of the spectrum, more massive stars burn at hotter temperatures, producing more ionizing, ultraviolet light, and also at higher luminosities. A star some 40-45 times the mass of the Sun, for example, might emits energy at a rate hundreds of thousands of times as great as our own star.

The Bubble Nebula, discovered in 1787 by William Herschel, is perhaps the classic example of this phenomenon. At a distance of 7,100 light years away in the constellation of Cassiopeia, a molecular gas cloud is actively forming stars, including the massive O-class star BD+60 2522, which itself is a magnitude +8.7 star despite its great distance and its presence in a dusty region of space. Shining with a temperature of 37,500 K and a luminosity nearly 400,000 times that of our Sun, it ionizes and evaporates off all the molecular material within a sphere 7 light years in diameter. The bubble structure itself, when viewed from a dark sky location, can be seen through an amateur telescope with an aperture as small as 8" (20 cm).

As viewed by Hubble, the thickness of the bubble wall is both apparent and spectacular. A star as massive as the one creating this bubble emits stellar winds at approximately 1700 km/s, or 0.6% the speed of light. As those winds slam into the material in the interstellar medium, they push it outwards. The bubble itself appears off-center from the star due to the asymmetry of the surrounding interstellar medium with a greater density of cold gas on the "short" side than on the longer one. The blue color is due to the emission from partially ionized oxygen atoms, while the cooler yellow color highlights the dual presence of hydrogen (red) and nitrogen (green). The star itself at the core of the nebula is currently fusing helium at its center. It is expected to live only another 10 million years or so before dying in a spectacular Type II supernova explosion.

Image credit: NASA, ESA, and the Hubble Heritage Team (STScI/AURA),
of the Bubble Nebula as imaged 229 years after its discovery by William Herschel.

Centennial Observatory and Faulkner Planetarium

Herrett Telescope CSI Centennial Observatory

Event	Place	Date	Time	Admission
Pomerelle Mountain Star Party	Pomerelle Ski Mountain	Saturday, July 2nd, 2016	3:00 PM to 12:00 AM	FREE
Summer Solar Session #6	Centennial Observatory	Wednesday, July 6th, 2016	1:30 to 3:30 PM	FREE
Monthly Free Star Party	Centennial Observatory	Saturday, July 9th, 2016	9:30 PM to 12:00 AM	FREE
Summer Solar Session #7	Centennial Observatory	Wednesday, July 13th, 2016	1:30 to 3:30 PM	FREE
Summer Solar Session #8	Centennial Observatory	Wednesday, July 20th, 2016	1:30 to 3:30 PM	FREE
Summer Solar Session #9	Centennial Observatory	Wednesday, July 27th, 2016	1:30 to 3:30 PM	FREE

Faulkner Planetarium Show Times

The schedule has changed for the summer months and may be viewed here.
http://herrett.csi.edu/astronomy/planetarium/showtimes.asp

To find out what shows are available, and to view trailers click this link:
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 Julyer, 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.