

Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

Saturday, December 10th 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,

It's time for our annual Christmas party. On Saturday, Dec. 10th, we'll all meet in the Rick Allen Room of the Herrett Center for the festivities. We have a potluck in terms of snacks and treats, followed by a gift exchange -- so bring a snack or treat to share as well as an astronomy-related gift of no more than \$10. The evening will be concluded with our annual game. We look forward to seeing you there.

There are also a couple of other notes for this time of year:

1. Last March, we tried out a private star party at the Lodge of the City of Rocks. While that event was clouded out, it was still a great opportunity to get together. With that in mind, the board has set Friday, Feb. 24, 2017, for the next effort. There is room for six to eight people at the Lodge, and if that's full, we'll book the bunkhouse as well. To help defray the cost, we ask that each member who plans on attending pay \$20. We want to get reservations in relatively soon, so please let me know if you are planning on attending.







2. The Centennial Observatory will be busy this month. We invite you to check in with Chris Anderson about helping out at Telescope Tuesdays, and Chris also has lined out a few occultations that sound inviting.

And as always, if you get out, let us know what you found. We as a group got out to the Jerome Gun Club in early November and found the experience clearly rewarding.

Until then,
Clear Views,
Rob Mayer

Event Calendar

December 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7 First Quarter 52% Visible Age: 8-days 	8	9	10 MVAS General Mtg. 7:00pm at the CSI Herrett Center Main Campus Twin Falls
11	12	13	14 Full Moon 100% Visible Age: 15-days  The Cold Moon	15	16	17
18	19	20	21 Winter Solstice 	22	23	24 Christmas Eve
25 Christmas 	26	27	28	29 New Moon Lunation 1161 1% Visible 	30	31 New Year's Eve 

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

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Celestial Calendar

The Sky This Month – December 2016

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

- 12/1 Neptune is at eastern quadrature at 1:00; Mercury is 7.1 degrees south of the Moon at 5:00; Mercury is at its greatest heliocentric latitude south (-7.0 degrees) at 21:00
- 12/2 Mercury is at its greatest declination south (-25.8 degrees) for the year at 17:00
- 12/3 Asteroid 4 Vesta is stationary at 4:00; Venus is 5.8 degrees south of the Moon at 11:00
- 12/4 The earliest end of evening twilight at 40 degrees north takes place today
- 12/5 Mars is 2.9 degrees south-southeast of the Moon at 9:00
- 12/6 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 16:36; the Moon is at the descending node at 17:37; Neptune is 0.67 degree south-southeast of the Moon, with an occultation taking place in western Europe, Iceland, Greenland, southern and eastern Canada, the United States, and Central America, at 22:00
- 12/7 The earliest sunset of the year at 40 degrees north latitude occurs at 16:35
- 12/9 Uranus is 2.9 degrees north-northwest of the Moon at 21:00
- 12/10 Saturn is in conjunction with the Sun at 12:00
- 12/11 Mercury is at greatest eastern elongation (20.8 degrees) at 4:00
- 12/12 The Moon is 9.0 degrees south-southeast of the bright open cluster M45 in Taurus at 13:00; the moon is at perigee, subtending 33'20" from a distance of 358,461 kilometers (222,737 miles), at 23:29
- 12/13 The Moon is 0.47 degree north-northwest of the first-magnitude star Aldebaran (Alpha Tauri), with an occultation taking place in northwest Africa, far western Europe, far southern Greenland, southern and eastern Canada, the United States, and northern Mexico, at 4:00
- 12/14 The peak of the Geminid meteor shower (100 to 120 per hour) occurs at 0:00; Full Moon (known as the Before Yule, Cold, Long Nights, and Oak Moon) occurs at 0:05; the Moon is 5.4 degrees south of the bright open cluster M35 in Gemini at 16:00
- 12/15 Asteroid 1 Ceres is stationary in right ascension at 7:00
- 12/17 The Moon is 3.7 degrees south of the bright open cluster M44 (the Beehive Cluster or Praesepe) in Cancer at 3:00
- 12/18 The Sun enters Sagittarius at 2:00; the Moon is 0.98 degree south-southwest of the first-magnitude star Regulus (Alpha Leonis), with an occultation taking place in far southern Australia and portions of Antarctica, at 18:00
- 12/19 The Moon is at the ascending node at 4:47; Mercury is stationary in right ascension at 7:00
- 12/20 Mercury is 1.9 degrees southwest of Pluto at 12:00; Mercury is at the ascending node at 23:00
- 12/21 Winter solstice in the northern hemisphere occurs at 10:44
- 12/22 Mars (10.2 degrees heliocentric longitude) and Jupiter (190.2 degrees heliocentric longitude) are at heliocentric opposition at 6:00; the peak of the Ursid meteor shower (10 per hour) occurs at 9:00; Jupiter is 2.3 degrees south-southwest of the Moon at 18:00; the Curtiss Cross, an X-shaped clair-obscure illumination effect located between the craters Parry and Gambart, is predicted to occur at 18:27
- 12/24 The equation of time equals zero at 22:00
- 12/25 The Moon is at apogee, subtending 29'26" from a distance of 405,870 kilometers (252,196 miles), at 5:55; Mercury is at perihelion (0.31 a.u. from the Sun) at 15:00
- 12/27 The Moon is 3.6 degrees north of Saturn at 21:00
- 12/28 Jupiter is at its greatest heliocentric latitude north (1.3 degrees) at 5:00; Mercury is in inferior conjunction at 19:00
- 12/29 The Moon is at its southernmost declination (-18.96 degrees) of the year at 2:00; Mercury is 1.8 degrees south of the Moon at 5:00; Uranus is stationary in right ascension at 16:00
- 12/31 Comet 45P/Honda-Mrkos-Pajdušáková is at perihelion (0.53 a.u. from the Sun) at 4:00

Tycho Brahe, Johannes Kepler, Isaac Newton, and Arthur Eddington were born in December.

Giovanni Cassini discovered the Saturnian satellite Rhea on December 23, 1672.

The Sun, the Moon, & the Planets



The Moon is 1.5 days old, is illuminated 2.1%, subtends 29.52 arc minutes, and is located in Ophiuchus on December 1st at 0:00 UT. Large tides will take place on December 13th through December 16th. Full Moon occurs on December 14th. Due to the position of the ecliptic, the Moon reaches its highest point in the sky for the year in December. It attains its greatest northern declination (+18.9 degrees) for the month on December 15th and its greatest southern declinations (-18.9 degrees) on December 2nd and (-18.9 degrees) on December 29th. Longitudinal libration is at a maximum of +7.5 degrees on December 19th and a minimum of -7.1 degrees on December 7th. Latitudinal libration is at a maximum of +6.5 degrees on December 13th and a minimum of -6.6 degrees on December 27th. The Moon occults Neptune on December 6th, the first-magnitude star Aldebaran on December 13th, and the first-magnitude star Regulus on December 18th from certain parts of the world. New Moon occurs on December 29th.

The Sun is located in Ophiuchus, a non-traditional constellation of the zodiac, on December 1st. Sol enters Sagittarius on December 18th. Winter solstice for the northern hemisphere occurs when the Sun is farthest south for the year on December 21st. It is the shortest "day" of the year (9 hours and 20 minutes at latitude 40 degrees north).

Brightness, apparent size, illumination, distance from the Earth in astronomical units (a.u.), and location data for the planets and Pluto on December 1st: Mercury (magnitude -0.5, 5.5", 83% illuminated, 1.22 a.u., Sagittarius), Venus (magnitude -4.2, 16.8", 69% illuminated, 0.99 a.u., Sagittarius), Mars (magnitude +0.6, 6.5", 88% illuminated, 1.44 a.u., Capricornus), Jupiter (magnitude -1.8, 32.9", 99% illuminated, 6.00 a.u., Virgo), Saturn (magnitude +0.5, 15.1", 100% illuminated, 11.02 a.u., Ophiuchus), Uranus (magnitude +5.8, 3.6", 100% illuminated, 19.49 a.u. on December 16th, Pisces), Neptune (magnitude +7.9, 2.3", 100% illuminated, 30.19 a.u. on December 16th, Aquarius), and Pluto (magnitude +14.3, 0.1", 100% illuminated, 34.14 a.u. on December 16th, Sagittarius).

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

At midmonth, **Mercury** is visible during evening twilight, Venus sets at 8:00 p.m. local time, Mars sets at 10:00 p.m. local time, and Jupiter rises at 2:00 a.m. local time for observers at latitude 40 degrees north.

Mercury is well placed in the early evening sky from December 1st through December 19th. The speediest planet is at its greatest heliocentric latitude south on December 1st, reaches greatest eastern elongation on December 11th, and is stationary in right ascension on December 19th. Mercury is at the ascending node on December 20th and is in inferior conjunction with the Sun on December 28th.

As the distance between Venus and the Earth decreases, **Venus** continues to brighten and grow in apparent size, while decreasing in the degree to which it is illuminated. The brightest planet lies 5.8 degrees south of the Moon on December 3rd. Venus leaves Sagittarius and enters Capricornus on December 12th.

Mars departs Capricornus and enters Aquarius on December 15th. The Red Planet drops below six arc seconds in apparent diameter by month's end.

Jupiter rises at approximately 2:30 a.m. local time early in the month and at 1:00 a.m. local time at the end of December. It increases in apparent size from 32.9 arc seconds to 35.4 arc seconds this month. The gas giant lies 2.0 degrees south of the twenty-three-day-old Moon on December 22nd. Jupiter is at its greatest heliocentric latitude north on December 28th. Ganymede emerges from Jupiter's shadow for observers in western North America at 12:02 UT (4:02 a.m. PST) and is occulted by the planet at 13:24 UT (5:24 a.m. PST) on December 3rd. Callisto passes due north of Jupiter's disk on the morning of December 11th. Galilean satellite transits take place on the mornings of December 14th (Ganymede followed later by Io) and December 17th (Europa).

Saturn is in conjunction with the Sun on December 10th and consequently is not visible until the very end of the month. It rises almost 90 minutes before sunrise on December 31st.

Uranus (magnitude +5.8) is located less than one degree east of the fifth-magnitude star Zeta Piscium for the entire month. It sets after midnight. The planet is positioned 52 arc minutes from the star on December 1st and just 35 arc minutes from it by the end of the month. It lies 2.9 degrees north-northwest of the Moon on December 9th. Uranus is stationary on December 29th and resumes direct or prograde (eastern) motion on the same day.

Neptune sets in the late evening. The ice giant is at eastern quadrature on December 1st and is occulted by the Moon on December 6th. Neptune (magnitude +7.9, 2.2 arc seconds in apparent diameter) and Mars (magnitude +0.9, 5.7 arc seconds in apparent diameter) undergo a historically close conjunction in Aquarius on December 31st. The two planets will be 9.8 arc minutes apart for observers on the East Coast and just 1.3 arc minutes for observers in Hawaii one hour prior to the time that they set. It will be the closest the two planets have been in more than 700 years.

See <http://www.curtrenz.com/uranep.html> for additional information on Uranus and Neptune.

Finder charts for Uranus and Neptune appear on page 50 of the October issue of Sky & Telescope. A finder chart for Uranus also appears on page 49 of the December issue of Sky & Telescope. Online finder charts for the two planets can be found at <http://www.nakedeyep...com/uranus.htm> and <http://www.nakedeyep...com/neptune.htm> and also at http://www.skyandtel...6_Finders.pdf

Click on <http://www.skyandtel...watching-tools/> for JavaScript utilities that will illustrate the positions of the five brightest satellites of Uranus and the position of Triton, Neptune's brightest satellite.

Pluto, the dwarf planet will not be visible again until next year.

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

Asteroids



The dwarf planet/asteroid 1 Ceres glides northeastward through Cetus during December. It decreases in brightness from magnitude +8.1 to magnitude +8.6 as the month progresses. Ceres lies about three degrees to the east of 42 Ceti (magnitude +5.6) during the first half of the month. Asteroid 68 Leto (magnitude +10.6) is at opposition on December 20th and 22 Kalliope (magnitude +10.0) on December 26th. For information on this year's bright asteroids and upcoming asteroid occultation events, consult <http://www.curtrenz.com/asteroids.html> and <http://asteroidoccultation.com/> respectively.

Comets



Comet 45/P Honda-Mrkos- Pajdušáková heads northeastward through Capricornus during the second half of the month. On December 15th, this periodic comet, which passes into the inner solar system every 5.25 years, is about 15 degrees above the horizon one hour after sunset. The ninth-magnitude globular cluster M75 in Sagittarius lies 1.5 degrees north-northwest of the comet on that date. Comet 45/P Honda-Mrkos-Pajdušáková may brighten to eighth magnitude as December winds down. Visit <http://cometchasing.skyhound.com/> and <http://www.aerith.ne...t/future-n.html> for additional information on comets that are visible this month.

Meteors



Unfortunately, the peak of December 14th's Geminid meteor shower coincides with Full Moon this year. The Geminids, which are associated with the Palladian asteroid, or possible cometary nucleus, 3200 Phaethon, have become the most reliable meteor shower of the year. Geminid meteors appear to originate from a radiant that's just northwest of Castor (Alpha Geminorum). That radiant lies almost at the zenith at 2:00 a.m. local time. The Ursids, a normally minor meteor shower, peak on the morning of December 22nd. Moonlight from a waxing gibbous Moon will interfere with observing the shower. The radiant is located close to Kochab (Beta Ursa Minoris), some 15 degrees from the north celestial pole.

Carbon Star



Notable carbon star for December: U Camelopardalis, or **U Cam**, is located 1500 light years away in the constellation of Camelopardalis, near the North Celestial Pole. Right Ascension: 03^h 41^m 48.17393^s Declination: +62° 38' 54.3906"

The Deep Sky



One hundred deep-sky objects for December: NGC 891 (Andromeda); IC 342, K6, St23, Tom 5 (Camelopardalis); Be65, IC 1848, K4, Mel15, NGC 896, NGC 1027, St2, Tr3 (Cassiopeia); M77, NGC 788, NGC 835, NGC 864, NGC 908, NGC 936, NGC 955, NGC 958, NGC 1015, NGC 1016, NGC 1022, NGC 1042, NGC 1052, NGC 1055, NGC 1087, NGC 1094 (Cetus); IC 2006, NGC 1084, NGC 1140, NGC 1187, NGC 1199, NGC 1209, NGC 1232, NGC 1291, NGC 1300, NGC 1309, NGC 1332, NGC 1337, NGC 1353, NGC 1357, NGC 1395, NGC 1400, NGC 1407, NGC 1421, NGC 1426, NGC 1440, NGC 1452, NGC 1453, NGC 1461 (Eridanus); NGC 1079, NGC 1097, NGC 1201, NGC 1292, NGC 1316 (Fornax I Galaxy Cluster), NGC 1317, NGC 1326, NGC 1344, NGC 1350, NGC 1360, NGC 1365, NGC 1371, NGC 1374, NGC 1379, NGC 1380, NGC 1381, NGC 1387, NGC 1398, NGC 1404, NGC 1406, NGC 1425 (Fornax); Bas10, Cz8, IC 351, IC 2003, K5, Mel 20, M34, NGC 869, NGC 884, NGC 957, NGC 1023, NGC 1058, NGC 1161, NGC 1245, NGC 1275 (Perseus I Galaxy Cluster), NGC 1333, NGC 1342, NGC 1444, Tr2 (Perseus); M45 (Taurus); NGC 777, NGC 784, NGC 890, NGC 925, NGC 949, NGC 959, NGC 978A/B (Triangulum)

Top ten binocular deep-sky objects for December: M34, M45, Mel15, Mel20, NGC 869, NGC 884, NGC 1027, NGC 1232, St2, St23

Top ten deep-sky objects for December: M34, M45, M77, NGC 869, NGC 884, NGC 891, NGC 1023, NGC 1232, NGC 1332, NGC 1360

Sky watchers in the Northern Hemisphere see Perseus standing high in the winter sky, in a sparkling region of the Milky Way. The constellation hosts a magnificent array of deep sky wonders, with many fine open star clusters and nebulae. However, despite this rich assortment of deep sky objects, including the famous Double Cluster, only two objects in Perseus – the open cluster **M34** and the planetary nebula M76 – are logged in the famous catalog of 18th-century French comet hunter Charles Messier. M34, this month's deep sky highlight, is easy to find with binoculars and can be glimpsed with the naked eye under ideal sky conditions. The open cluster makes an isosceles triangle with Kappa Persei and Beta Persei, or Algol, the remarkable eclipsing binary star whose brightness fades for a few hours every 2.87 days.

Deep-sky object list generators can be found at <http://www.virtualcolony.com/sac/> & <http://tonightsssky.com/MainPage.php>

ISS



Information on Iridium flares and passes of the ISS, the Tiangong-1, the USAF's X-37B, the HST, and other satellites can be found at <http://www.heavens-above.com/>

Current information on solar system celestial bodies is posted at <http://www.curtrenz.com/astronomy.html> and <http://nineplanets.org/>

Deep-sky object list generators can be found at <http://www.virtualcolony.com/sac/> & <http://tonightsssky.com/MainPage.php>

Club Announcements

For anyone who's interested, here are the asteroid occultations I'm signed up to observe in the coming weeks, in case you'd like to participate. As always, my plan is to be at the observatory no later than 30 min. before the first event of the night/morning, as long as it's not cloudy.

Asteroid Name	Event Date, time	Star mag.	Ast. mag.	Prob.	Stations
(4410) Kamuimintara	Sat 03 Dec, 21:31	12.5	16.5	0.0%	2
(25492) Firnberg	Sat 03 Dec, 21:56	12.4	18.1	1.7%	2
(150654) 2001 DR105	Sat 03 Dec, 22:22	7.1	19.7	0.7%	1
(16555) Nagaomasami	Sat 03 Dec, 23:10	8.8	16.2	1.2%	1
(8146) Jimbell	Sun 04 Dec, 20:14	9.4	15.6	1.4%	6
(247171) 2001 BD15	Thu 08 Dec, 02:17	10	19	0.6%	1
(221) Eos	Thu 08 Dec, 02:20	12.8	12.1	44.4%	3
(47830) 2000 EF111	Thu 08 Dec, 02:32	9.6	20.4	0.1%	1
(152293) 2005 TJ28	Thu 08 Dec, 02:58	9.6	18	0.6%	1
(187) Lamberta	Thu 08 Dec, 03:04	11.9	12.7	0.0%	5
(150) Nuwa	Thu 15 Dec, 05:15	12.9	14.4	36.8%	1
(676) Melitta	Thu 15 Dec, 05:30	12.9	15.8	0.0%	2
(348) May	Sat 17 Dec, 06:20	10.4	14.8	82.1%	1
(398) Admete	Sun 25 Dec, 01:40	10.6	14	47.5%	2
(342) Endymion	Tue 27 Dec, 03:38	11.9	13.4	70.8%	2
(783) Nora	Tue 27 Dec, 04:58	12.7	15.1	32.3%	1
(102) Miriam	Wed 28 Dec, 18:13	13.3	12.7	0.0%	6
(446) Aeternitas	Wed 28 Dec, 18:51	11.9	13.2	49.5%	11
(323) Brucia	Sat 14 Jan, 04:49	10.3	12	14.8%	2
(690) Wratislavia	Sat 14 Jan, 05:12	12.6	12.6	39.8%	1

There are a few other events (mostly lower probability and/or very faint stars) between now and mid-January that I'm considering as well. I'll let you know if I decided to attempt them.

Chris Anderson, Coordinator
 Centennial Observatory
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Dimming stars, erupting plasma, and beautiful nebulae

By Marcus Woo

Boasting intricate patterns and translucent colors, planetary nebulae are among the most beautiful sights in the universe. How they got their shapes is complicated, but astronomers think they've solved part of the mystery—with giant blobs of plasma shooting through space at half a million miles per hour.

Planetary nebulae are shells of gas and dust blown off from a dying, giant star. Most nebulae aren't spherical, but can have multiple lobes extending from opposite sides—possibly generated by powerful jets erupting from the star.

Using the Hubble Space Telescope, astronomers discovered blobs of plasma that could form some of these lobes. "We're quite excited about this," says Raghvendra Sahai, an astronomer at NASA's Jet Propulsion Laboratory. "Nobody has really been able to come up with a good argument for why we have multipolar nebulae."

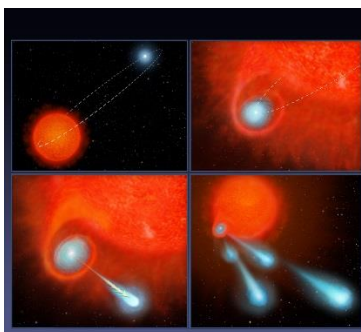
Sahai and his team discovered blobs launching from a red giant star 1,200 light years away, called V Hydrae. The plasma is 17,000 degrees Fahrenheit and spans 40 astronomical units—roughly the distance between the sun and Pluto. The blobs don't erupt continuously, but once every 8.5 years.

The launching pad of these blobs, the researchers propose, is a smaller, unseen star orbiting V Hydrae. The highly elliptical orbit brings the companion star through the outer layers of the red giant at closest approach. The companion's gravity pulls plasma from the red giant. The material settles into a disk as it spirals into the companion star, whose magnetic field channels the plasma out from its poles, hurling it into space. This happens once per orbit—every 8.5 years—at closest approach.

When the red giant exhausts its fuel, it will shrink and get very hot, producing ultraviolet radiation that will excite the shell of gas blown off from it in the past. This shell, with cavities carved in it by the cannon-balls that continue to be launched every 8.5 years, will thus become visible as a beautiful bipolar or multipolar planetary nebula.

The astronomers also discovered that the companion's disk appears to wobble, flinging the cannonballs in one direction during one orbit, and a slightly different one in the next. As a result, every other orbit, the flying blobs block starlight from the red giant, which explains why V Hydrae dims every 17 years. For decades, amateur astronomers have been monitoring this variability, making V Hydrae one of the most well-studied stars.

Because the star fires plasma in the same few directions repeatedly, the blobs would create multiple lobes in the nebula—and a pretty sight for future astronomers.



This four-panel graphic illustrates how the binary-star system V Hydrae is launching balls of plasma into space. Image credit: NASA/ESA/STScI



Centennial Observatory and Faulkner Planetarium



Herrett Telescope CSI Centennial Observatory

Event	Place	Date	Time	Admission
Monthly Free Star Party	Centennial Observatory	Saturday, December 10 th , 2016	6:00 PM to midnight	FREE
Telescope Tuesday	Centennial Observatory	Tuesday, December 13 th , 2016	6:00 to 9:00 PM	\$1.50 or free with Faulkner Planetarium admission or an "I Voted" sticker
Telescope Tuesday	Centennial Observatory	Tuesday, December 27 th , 2016	6:15 to 9:00 PM	\$1.50 or free with Faulkner Planetarium admission

Faulkner Planetarium Show Times

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 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.