## Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

January 2022

**President's Message** 

Happy New Year all! So many new and fun things are on the agenda for our club this year. First, we have set up some interesting programs beginning Saturday the 8th at the Herrett Center Library at 7pm. Jay Hartwell will conduct a presentation on Night Vision and Averted Vision. Upcoming programs will feature Tim Frazier, Dr. Candace Wright and Rick Hull. Celestial events this year include two Blood Moon total Lunar Eclipses. One in May and the other in November. And anyone willing to brave some of these current frigid temps, the Quadrantids Meteor Showers peak on January the 4<sup>th.</sup> One other thing to mention is the James Webb Telescope. If you missed it, the launch was successful on December 25<sup>th</sup> from French Guiana. I've attached an excellent article from the October Astronomy Magazine, which previews the program. Hope you enjoy and have a great New Year.

#### Best, Gary Leavitt

https://www.astronomy.com/magazine/news/2021/10/the-james-webb-space-telescope-lives

Membership Meeting - Cancelled -

Centennial Observatory See Inside for Details

Faulkner Planetarium See Inside for Details www.mvastro.org

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

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### January 2022 Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 New Year's Day
2 New Moon Lunation 1225	3	4	5	6	7	8 Centennial Observatory Public Star Party 6:00p – 9:00p
9 First Quarter Moon	10	11 Centennial Observatory Telescope Tuesday 6:15p – 9:00p	12	13	14	15
16	17 Martin Luther King Jr. Day Full Wolf Moon	18	19	20	21	22 Twin Falls Parks & Rec Cabin Fever Day Solar Viewing 11:00a - 2:00p
23	24	25 Centennial Observatory Telescope Tuesday 6:30p – 9:00p Last Quarter Moon	26	27	28	29
30	31					

# Boise State Physics First Friday Astronomy Friday, January 7th

In the Shadows of Asteroids: Stellar Occultation Observations at the College of Southern Idaho



Chris Anderson College of Southern Idaho https://guondam.csi.edu/dir.asp?canderson

Lectures start 7:30p MT Attend virtually: <u>boi.st/astrobroncoslive</u> or Register to attend in-person: firstfridayastro.eventbrite.com Events are open to the public and donation-supported. Donate at <u>boi.st/givetoastronomy</u>.

Did you miss Chris's talk? Watch it here: <u>https://www.youtube.com/watch?v=lcZgFsgK0JQ</u>

#### The Night Sky This Month – December 2021



Northern winter stars towards Taurus and Orion showing the dark outlines of the Taurus Molecular Cloud.

"And now we welcome the New Year, full of things that have never been."- Rainer Maria Rilke

Happy New Year! It's chilly in my part of the world, about -28°C as the Sun sets on New Years' Eve, and far too cold for astronomical electronics. But I'm still heading outside for a short visual observing session with a grab-and-go telescope: the winter stars are too beautiful to pass up. This month begins with four bright planets in the evening sky, and indeed the entire year is a promising time for planet watchers as all the major planets line up in the morning sky through June and eventually move to the evening sky. This month also holds promise for the Quadrantid meteor shower. And brave and skilled observers might try to see Venus, at its closest approach in more than a century, pass just five degrees from the Sun. Here's what to see in the night sky this month!

Aquarius		, Altair
Jupiter		Aquila
Fomalhaut	Saturn Moon Capricornus	
Piscis Austrinus	Mercury	
A REAL PROPERTY AND INCOME.	A NUMBER OF	Venus
Contraction of the	sw	

The crescent Moon along with Venus, Mercury, Jupiter, and Saturn in the southwestern sky after sunset on Jan. 4 2022.

**1 January 2022.** Begin the year with a look at four bright planets in the southwestern sky after sunset. Venus shines brightest but lies low over the horizon with Mercury not much higher to the east. Saturn and Jupiter lie considerably higher to the northeast with a spacing of about 40 degrees between Jupiter and Venus. Venus plunges quickly each day towards the Sun on its way to inferior conjunction next week. It quickly reappears in the morning sky later in the month. Mercury rises a little higher and reaches greatest eastern elongation on the 7<sup>th</sup>. Jupiter and Saturn slowly move towards the Sun as January wears on.

2 Jan. New Moon, 18:33 UT

**3-4 Jan.** The brief but sometimes intense Quadrantid meteor shower peaks under ideal conditions with the Moon barely past new. The Quadrantids averages about 25-40 meteors in dark sky but it can feature more than 100 meteors per hour in a good year. The predicted time of the peak of the shower is 21h Universal Time on January 3. But look anytime on the night of the 3<sup>rd</sup> and into the early morning of the 4<sup>th</sup>, especially in the morning when the radiant is higher in the sky. The Quadrantids take their name from the defunct northern constellation Quadrans Muralis. They can appear anywhere in the sky, but the radiant lies just north of the bright star Arcturus in the northeastern sky in the pre-dawn hours or just over the north-northwestern horizon after evening twilight. The shower strongly favors northern-hemisphere observers.

**4 Jan.** At 7h Universal Time, Earth lies at perihelion, its closest approach to the Sun in its orbit, at a distance of 147,105,052 km.

4-5 Jan. Look for a lovely slender crescent Moon in the southwest along with Mercury, Jupiter, and Saturn after sunset.

9 Jan. First Quarter Moon, 18:11 UT



A razor-thin crescent Venus on June 2nd, 2012, four days before the transit of Venus. Image credit and copyright Mario Weigand (<u>www.skytrip.de</u>).

**9 Jan.** Venus reaches inferior conjunction. The planet lies nearly 5 degrees north of the Sun today and displays a razorthin disk about 62.8" across. Observation with a telescope is possible, though the difficulties and potential dangers (of accidentally exposing your eye to the Sun) cannot be overestimated. <u>This blog post by expert observer Ronald Stoyan</u> gives you some tips about how to see this event. At inferior conjunction today, Venus lies closer to Earth than at any time in more than a century at a distance of just 39,763,000 km.

12 Jan. Look again to the southwestern horizon after sunset to see Mercury and Saturn about 5 degrees apart.

17 Jan. Full Moon, 23:48 UT



Mars, the Moon, and Venus in the southeastern sky before sunrise on January 29, 2022.

25 Jan. Last Quarter Moon, 13:41 UT

**29 Jan.** By the end of the month, bright planets are just getting started in the morning sky with many more alignments and conjunctions to come from now through June. Today, Mars and a slender crescent Moon lie just over the southwestern horizon. The pair lie about 4 degrees apart above the 'Teapot' of Sagittarius. Binoculars help improve the view. Mars presents a tiny disk in a telescope and shines at magnitude +1.4, nearly as faint as it ever gets. Some 12 degrees to the upper left of Mars sits bright Venus which has just emerged into the morning sky for much of the rest of the year.

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Highlights: Comet Journal, Martian Landers, Meteor Showers, Perihelion, Planet Plotting, January Moon

**Focus Constellations:** Ursa Minor, Ursa Major, Draco, Cygnus, Cepheus, Cassiopeia, Perseus, Camelopardalis, Gemini, Auriga, Taurus, Perseus, Andromeda, Pegasus, Pisces, Aries

**Comet Journals:** Comet 67P/Churyumov-Gerasimenko (2021) is in Cancer at 8th magnitude in January. It was at perihelion on November 3 and was closest to Earth on November 12. C/2021 A1 (Leonard) is a long period (80,000 years) comet. It was closest to Earth on December 12, and is at perihelion on January 3, 2022. It is currently at 4th magnitude in Microscopium, but had outbursts in December which temporarily elevated it to 3rd magnitude. Find the comet on the SW dusk horizon below and slightly south of Jupiter. C/2019 L3 (ATLAS) is in Gemini at 9th magnitude in January. Atlas reaches perihelion on January 9 and will be closest to Earth on January 6. Comet 19P/Borrelly (2022) is an evening comet which moves from Cetus to Pisces in January and may reach magnitude 8 in January. It was closest to Earth on December 11 and will reach perihelion on February 1.

**Mars Landers:** Perseverance landed in Jezero Crater which appears to be an old impact crater which later filled with lava, creating a floor comprised of igneous rock composed (in part) of olivine and pyroxene. The floor was later occupied by a lake created by a river which flowed into the crater through a gap carved in the crater wall. The river deposited a delta which is a target for investigation due to at least one shale layer formed from muds which may well have contained organic molecules.

Like Perseverence, Curiosity Rover found organic molecules on Mars and is continuing its search for more to provide scientists data so they can better assess the likelihood of current or ancient Martian life. The search is being expanded by looking for organic salts. "In our efforts to characterize indigenous Martian organic matter, we must contend with a near-surface record that has been substantially altered by radiation and oxidation," notes an opening section in Lewis et al.'s paper in the Journal of Geophysical Research: Planets. "Under such conditions, much of the surficial organic record on Mars may have decomposed into organic salts, which are challenging for flight instruments to conclusively identify." "If organic salts are widespread on the Martian surface, their composition and distribution could offer insight into the less-altered organic record at depth, and they may play an important role in near-surface carbon cycling and habitability."

**Meteor Showers:** The Quadrantid Meteor Shower in early January is one of the better showers of the year and the Delta Cancrids is a minor shower in mid-January. January 3: Quadrantids Active January 1 – 5. Radiant 15h20m +49°. ZHR 60 to 200. 41 km/sec. Waxing Crescent Moon. Progenitor: Near-Earth asteroid (196256) 2003 EH1 January 17: Delta Cancrids Active January 1 – 24. Radiant 8h40m +20°. ZHR 4. 28 km/sec. Full Moon. Progenitor: Unknown, orbit is similar to that of asteroid 2001 YB5.

**Perihelion:** The Earth reaches perihelion at 91.4 million miles on the 4th at 2:00AM EST. Although this is the closest approach to the Sun of the year, we experience winter because the northern hemisphere is tipped away from the Sun. Combining close approach with winter causes a milder winter than if winter occurred at aphelion. Winter in the Southern Hemisphere does occur at aphelion but that hemisphere benefits from temperature moderation due to ocean area dominating that of the continents.

Planet	Constellation(s)	Magnitude	Planet Passages	Time	Date
Sun	Sagittarius - Capricornus	-26.5	New Moon	11:33PM MST	1/2
Mercury	Sagittarius	-0.7 to +1.5	Max. East Elongation Inferior Conjunction	4:00AM MST 3:00AM MST	1/7 1/23
Venus	Sagittarius	-4.2 to -4.5	Inferior Conjunction	8:00PM MST	1/8
Mars	Ophiuchus, Sagittarius	+1.5 to +1.4			
Jupiter	Aquarius	-2.0 to -1.9			
Saturn	Aquarius	0.7			
Uranus	Aries	+5.7 to +5.8			
Neptune	Aquarius	7.9			

**Planet Plotting**: In early January, a waxing crescent and gibbous Moon climbs a ladder in the southwestern dusk sky comprised of an alignment of Venus (-4.2 to -4.5) and Mercury (0.7 to +1.5) in Sagittarius, Saturn (0.7), Jupiter (-2.0 to - 1.9), and Neptune (+7.9) in Aquarius and Uranus (5.7 to 5.8) in Aries. Venus sets quickly after sunset in the first few days and reaches inferior conjunction with the Sun on the 8th. In the last half of the month, it reappears in the southeastern predawn sky, rising earlier and getting brighter each morning as its crescent waxes. Mercury is above Venus after sunset and ascends to maximum eastern elongation from the Sun of 19° on the 7th when it is 3.4° from Saturn. It will then descend to reach its inferior conjunction with the Sun on the 23rd and will reappear in the southeastern predawn sky below Venus at the end of the month. Saturn, Jupiter, Neptune, and Uranus complete the January alignment, stretching from the horizon to 60° altitude. Mars (+1.5 to +1.4) in Ophiuchus and Sagittarius rises before 6:00AM EST and brightens slightly in January.

January Moon: The New Moon of January on the 2nd at 1:33PM EST is the start of Lunation 1225 which ends 29.47 days later with the New Moon of February 1 at 12:56AM EST. The Full Moon of January is on the 17th at 6:48PM EST. It is called "Old Moon" or "Moon after Yule". In colonial America it was the "Winter Moon" and was named the "Wolf Moon" in Medieval England. Celts called it "Quiet Moon" and the Chinese call it "Holiday Moon". Of the 13 Grandmother Moons during each year, Anishnaabe (Odawa and Ojibwe) people of northern Michigan call it "Manidoo-Giizis" (Spirit Moon). The associated cultural teaching that explains the cycle of life and nature for the 1st Moon of Creation and the year is: "manifested through the Northern Lights. It is a time to honor the silence and realize our place within all of Great Mystery's creatures."

Lunar Perigee distance (minimum lunar distance) is 222,471 mi. (56.13 Earth radii) on the 1st at 5:55PM EST. Lunar Apogee (maximum lunar distance) is on January 14 at 4:26AM EST, when the Moon will be at a distance of 252,155 mi. (63.62 Earth radii). The waxing crescent Moon appears to pass the evening planets: Mercury on the 3rd, Saturn on the 4th, Jupiter on the 5th, and Neptune on the 7th. The waxing gibbous Moon will appear to pass Uranus on the 11th. The waning crescent Moon passes Venus and Mars on the 29th and Mercury on the 30th.

Sun	Sagittarius	-26.8	1:33PM EST, 1/2	New	0 Days
Mercury	Capricornus	-0.6	3.0° S, 8:00PM EST, 1/3	Waxing Crescent	1.27 Days
Mercury	Sagittarius	1.8	8.0° S, 7:00PM EST, 1/30	Waning Crescent	0.35 Days
Venus	Sagittarius	-4.5	10.0°S, 9:00PM EST, 1/29	Waning Crescent	27.31 Days
Mars	Sagittarius	1.4	2.0°S, 10:00AM EST, 1/29	Waning Crescent	26.85 Days
Jupiter	Aquarius	-2.0	4.0°S, 7:00PM EST, 1/5	Waxing Crescent	3.23 Days
Saturn	Capricornus	0.7	4.0°S, Noon EST, 1/4	Waxing Crescent	1.94 Days
Uranus	Aries	5.7	1.5°S, 6:00AM EST, 1/11	Waxing Gibbous	8.69 Days
Neptune	Aquarius	7.9	4.0° S, 5:00AM EST, 1/7	Waxing Crescent	4.64 Days

#### **Observatory and Planetarium Events**



#### **Centennial Observatory Upcoming Events**

Event	Place	Date	Time	Admission
Monthly Free Star Party	Centennial Observatory	Saturday, January 8 <sup>th</sup> , 2022	6:00 to 9:00 PM	FREE
Telescope Tuesday	Centennial Observatory	Tuesday, January 11 <sup>th</sup> , 2022	6:15 to 9:00 PM	\$1.50 or free with <u>Faulkner</u> <u>Planetarium</u> admission
Twin Falls Parks & Recreation "Cabin Fever Day" Solar Viewing	Centennial Observatory	Saturday, January 22 <sup>nd</sup> , 2022	11:00 AM to 2:00 PM	FREE
Telescope Tuesday	Centennial Observatory	Tuesday, January 25 <sup>th</sup> , 2022	6:30 to 9:00 PM	\$1.50 or free with <u>Faulkner</u> <u>Planetarium</u> admission

#### Faulkner Planetarium



Now Showing!











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#### NASA Night Sky Notes

#### This article is distributed by NASA Night Sky Network



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#### Hunting the Hunter: Observing Orion

David Prosper

If you are outside on a clear January night, it's hard not to notice one distinctive star pattern above all: **Orion**! While we've covered Orion in earlier articles, we've never discussed observing the constellation as a whole. Perhaps you've received a new telescope, camera, or binoculars, and are eager to test it out. Orion, being large, prominent, and full of interesting, bright objects, is a perfect constellation to test out your new equipment and practice your observing skills - for beginners and seasoned stargazers alike.

In Greek mythology, Orion is a strong hunter, with numerous legends about his adventures. Being such a striking group of stars, cultures from all around the world have many myths about this star pattern. There are so many that we can't list them all here, but you can find a wonderful interactive chart detailing many cultures' legends on the Figures in the Sky website at <u>figuresinthesky.visualcinnamon.com</u>.

What sights can you see in Orion? Look above the variable orange-red supergiant "shoulder star" Betelgeuse to find the stars making up Orion's "club," then move across from Betelgeuse towards the bright star Bellatrix (Orion's other "shoulder") and the stars of his bow and arrow - both essential tools for the Hunter. Many interesting sights lie near Orion's "belt" and "sword." Orion's belt is made up of three bright giant stars forming an evenly spaced line: Alnitak, Alnilam, and Mintaka. Move from the belt stars towards the stars Rigel and Saiph (Orion's "feet" or "knees") to arrive at Orion's distinctive Sword, parts of which may appear fuzzy to your unaided eyes. Binoculars reveal that fuzz to be the famed Orion Nebula (M42), perched right next to the star Hatysa! Diving in deeper with a telescope will show star clusters and more cloud detail around the Nebula, and additional magnification brings out further detail inside the nebula itself, including the "baby stars" of the Trapezium and the next-door neighbor nebula M43. Want to dive deeper? Dark skies and a telescope will help to bring out the reflection nebula M78, the Flame Nebula (NGC 2024), along with many star clusters and traces of dark nebula throughout the constellation. Very careful observers under dark clear skies may be able to spot the dark nebula known as the Horsehead, tracing an equine outline below both the Belt and the Flame Nebula. Warning: the Horsehead can be a difficult challenge for many stargazers, but very rewarding.

This is just a taste of the riches found within Orion's star fields and dust clouds; you can study Orion for a lifetime and never feel done with your observations. To be fair, that applies for the sky as a whole, but Orion has a special place for many. New telescopes often focus on one of Orion's treasures for their first test images. You can discover more of NASA's research into Orion's stars - as well as the rest of the cosmos - online at <u>nasa.gov</u>.



Northern Hemisphere observers can find Orion during January evenings in the east/southeast skies. Can you spot the Orion nebula with your naked eye, in Orion's sword? How does it look via binoculars or a telescope? What other details can you discern? Please note that some deep sky objects aren't listed here for clarity's sake. For example, M43, a nebula located directly above M42 and separated by a dark dust lane, is not shown. Orion's Belt and Sword are crowded, since they star-forming regions! You can read more in our November 2019 article Orion: Window into a Stellar Nursery, at <u>bit.ly/orionlight</u>. Image created with assistance from Stellarium.



The inset image is the "first light" photo from the Zwicky Transient Facility, a large survey telescope designed to detect changes in the entire night sky by detecting "transient objects" like comets, supernovae, gamma ray bursts, and asteroids. For many astronomers, amateur and pro alike, Orion is often the "first light" constellation of choice for new equipment! Image Credit: Caltech Optical Observatories

#### Phil Harrington's Cosmic Challenge

#### Horsehead Nebula - Bernard 33

#### This month's suggested aperture range:



3 to 5 inch (76.2mm to 127mm) telescopes (pictured Meade ETX-90EC & ETX-125EC)

Target	Туре	RA	DEC	Const	Mag	Size
Horsehead	Dark	05h	-02° 27.7'	Orion		4'
Nebula (B33)	nebula	41.0m				

Let's kick off the New Year with what many consider to be one of the most difficult visual challenges in the sky. If you listen carefully, you might even hear the strains of the "Mission: Impossible" theme song playing in the background. Of all the deep-sky objects in the winter sky, none carries the mystique of the dark nebula Barnard 33, better known as the Horsehead Nebula.

Lying 1,375 light-years from Earth, the Horsehead is part of the huge Orion Molecular Cloud Complex, which engulfs much of the constellation. It was discovered in 1888 by Williamina Fleming, not visually, but on a photographic plate taken at the Harvard College Observatory. Later, Edward Emerson Barnard added it as entry 33 in his burgeoning <u>Barnard</u> <u>Catalogue of Dark Markings in the Sky</u>, describing it as a "dark mass, diameter 4', on nebulous strip extending south from Delta Orionis." The Horsehead is located 1° due south of Orion's easternmost belt star, Alnitak [Delta ( $\delta$ ) Orionis], making it very easy to pinpoint. But as easy as it is to locate, this "night-mare" is a nightmare to see.



Above: Evening star map showing the location of this month's <u>Cosmic Challenge</u>. Credit: Map adapted from <u>Star Watch</u> by Phil Harrington



Above: Finder chart for this month's <u>Cosmic Challenge</u>. **Credit:** Chart adapted from <u>Cosmic Challenge</u> by Phil Harrington Click on the chart to open a printable PDF version in a new window

The problem is not the object, but rather our eyes. The human eye is a marvelous tool with an incredible range. We can adapt to almost any lighting condition, from very bright to very dark and still find our way around. But when it comes to dim, red deep-sky objects, it's almost worthless. That's the problem here. The Horsehead is visible only because it is situated in front of the red emission nebula, IC 434. And IC 434 is, for all intents and purposes, invisible unless viewed under very dark skies or by using nebula filters, or both.

In my book <u>Touring the Universe through Binoculars</u> (1990: John Wiley and Sons), I stated that "the Horsehead Nebula...is too small and faint to be visible in binoculars." I reasoned that it's tough enough to find it through large backyard telescopes, let alone binoculars. But 31 years ago, at the 1991 Winter Star Party in the Florida Keys, after spending some time observing alongside the late, great Tomm Lorenzin, the talented astronomy author and observer from North Carolina, I found out that I was wrong. Tomm (short for <u>Theurgically Organic Mankind Module</u>) showed me that the Horsehead is indeed visible in giant binoculars!

Here's how we did it. First, we were in an ideal observing site. The Keys' crystal-clear skies and Orion's height above the horizon certainly made a big difference. Next, he taped a pair of hydrogen-beta line filters to the eyepieces of his 10x70

Fujinon binoculars. Finally, we made sure that Alnitak was just outside the northern edge of the field, while nearby Sigma ( $\sigma$ ) Orionis was toward the western edge. Then, with a detailed chart of the area at our side, we looked for a close-set pair of 8th-and 9th-magnitude stars near the center of the field. These coincide with the leading edge of IC 434 and are just west of the Horsehead. With Tomm's help, it took me only a few minutes to pick out both nebulae. Of course, the Horsehead was very small, looking like a thumb viewed from a few dozen feet away, but it was unmistakably there. I repeated the observation in my own 11x80 Unitron binoculars after retaping his filters onto my eyepieces. More recently, and under less ideal conditions, I spotted the Horsehead through my 4-inch (10.2-cm) refractor, as captured in the rendering below.



Above: The Horsehead Nebula (Barnard 33) and IC 434 through the author's 4-inch (10.2-cm) f/9.8 refractor.

Below: Steve Bellavia (CN member <u>StevenBellavia</u>) took this image of the Horsehead and IC 434 using a Borg 90FL refractor and a ZWO ASI 183MM Pro camera. Be sure to visit his <u>Astrobin page</u> for full information on this as well as his other spectacular images.



This is not to say that seeing the Horsehead is a simple task in larger instruments. Nothing could be farther from the truth. Indeed, I can rarely see it from my own backyard observatory using my 18-inch (45.7-cm) reflector with a hydrogenbeta filter in place. So, regardless of the telescope you're using, the Horsehead Nebula is a difficult challenge, one that will test your instrument's quality, the clarity and darkness of your night sky, as well as your skills as an observer. Before I close, just a postscript about Tomm Lorenzin. Those who have been into observing for any length of time have undoubtedly heard of Tomm's self-published atlas/handbook <u>1000+: The Amateur Astronomer's Field Guide to Deep Sky</u>. It's still available on the used book marketplace, such as from <u>addall.com</u> and others, as well as on occasion in the CN Classifieds under <u>Software/Books/Magazines/Etc</u>.

Tomm also created a sequel, bigger and better than the first that he generously released on his web site for free entitled, appropriately, <u>2000+: The Advanced Amateur Astronomer's Field Guide to Deep Sky Observing Database & Sky</u> <u>Atlas</u>. Tomm passed away unexpectedly in 2014, but his family has maintained his online legacy for all to enjoy to this day. If you haven't already, head over there and take a look.

Have a favorite challenge object of your own? I'd love to hear about it, as well as how you did with this month's challenge. Contact me through my <u>website</u> or post to this month's discussion forum. Until next month, remember that half of the fun is the thrill of the chase. Game on!



About the Author: Phil Harrington writes the monthly <u>Binocular Universe</u> column in <u>Astronomy</u> magazine and is the author of 9 books on astronomy, including <u>Cosmic Challenge: The</u> Ultimate Observing List for Amateurs.

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#### About the Magic Valley Astronomical Society

Magic Valley Astronomical Society 550 Sparks St. Twin Falls, ID

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, and \$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.

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.