

Snake River Skies

The Newsletter of the Magic Valley Astronomical Society
July 2014

Membership Meeting Astronomy Day

Saturday July 12th 2014
7:00pm at the
Herrett Center for Arts & Science
College of Southern Idaho
Public Star Party follows the
Annual Picnic at Centennial Obs.

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Magic Valley Astronomical Society
is a member of the
Astronomical League

Message from the President – Robert Mayer

Colleagues,

If there was any doubt, summer is now upon us. July figures to be a busy month. The main event is the annual MVAS barbecue on July 12th at 7 p.m. As has been done in past years, members are asked to bring a side dish or dessert. MVAS will provide the meat and soft drinks.

A couple of star parties are also in the works. July 26th will be our annual Pomerelle Star Party, with daytime events including water bottle rockets and solar viewing, and nighttime viewing on the top. Help is also encouraged, but it will be just as helpful to let your friends and neighbors know to enhance our publicity efforts.

In May, we had a positive experience over at the Hagerman Fossil Beds National Monument. Leaders there have asked that we come one more time this year. A handful has already volunteered to go over on July 19th, but we can always use more help.

Clear Views,

Rob Mayer

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July Overview

- The length of the day shortens by 46 minutes this month
- Earthshine on the moon is visible in the evening on the 1st and again in the morning starting on the 22nd

7/1 Mercury is stationary.

7/2 Venus is 4 degrees north of the first-magnitude star Aldebaran (Alpha Tauri)

7/4 The Earth is at aphelion (152,093,481 kilometers or 94,506,462 miles from the Sun); Pluto (magnitude +14.1, apparent size 0.1") is at opposition; 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 22:13

7/6 Mercury is at its greatest heliocentric latitude south today; Mars is 0.2 degree south of the Moon, with an occultation occurring in the northern half of South America, the west coast of Central America, and the Hawaiian Islands; asteroid 4 Vesta is 0.2 degree south of asteroid 1 Ceres.

7/8 Saturn is 0.4 degree north of the Moon.

7/12 Mercury is at greatest western elongation (21 degrees); Mars is 1.4 degrees north of the first-magnitude star Spica (Alpha Virginis).

7/15 Mercury is 3 degrees south of the bright open cluster M35 in Gemini; Neptune is 5 degrees south of the Moon.

7/18 Uranus is 1.4 degrees south of the Moon.

7/20 Venus is 1.5 degrees south of M35; the Curtiss Cross, an X-shaped illumination effect located between the craters Parry and Gambart, is predicted to occur. Apollo 11 Lunar Module "Eagle" lands on the Moon 45-years ago.

7/21 Saturn is stationary. Apollo 11 Astronauts Neil A. Armstrong and Buzz Aldrin become the first humans to step foot on our celestial neighbor, the Moon.

7/22 Uranus is stationary; the Moon is 1.8 degrees north of the first-magnitude star Aldebaran (Alpha Tauri).

7/24 Venus is 4 degrees north of the Moon. Jupiter is in conjunction with the Sun.

7/25 Mercury is at the ascending node today; Mercury is 5 degrees north of the Moon.



7/29 Mercury is at perihelion today.

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.

Brightness, apparent size, illumination, distance from the Earth in astronomical units, and location data for the planets and Pluto on July 1st: Mercury (+2.5 magnitude, 10.5", 11% illuminated, 0.64 a.u., Gemini), Venus (-3.9 magnitude, 12.0", 85% illuminated, 1.39 a.u., Taurus), Mars (0.0 magnitude, 9.5", 88% illuminated, 0.99 a.u., Virgo), Jupiter (-1.8 magnitude, 31.7", 100% illuminated, 6.22 a.u., Gemini), Saturn (+0.4 magnitude, 17.9", 100% illuminated, 9.26 a.u., Libra), Uranus (+5.8 magnitude, 3.5", 100% illuminated, 19.87 a.u. on July 16, Pisces), Neptune (+7.8 magnitude, 2.3", 100% illuminated, 29.23 a.u. on July 16, Aquarius), and Pluto (+14.0 magnitude, 0.1", 100% illuminated, 31.69 a.u. on July 16, Sagittarius).

Calendar

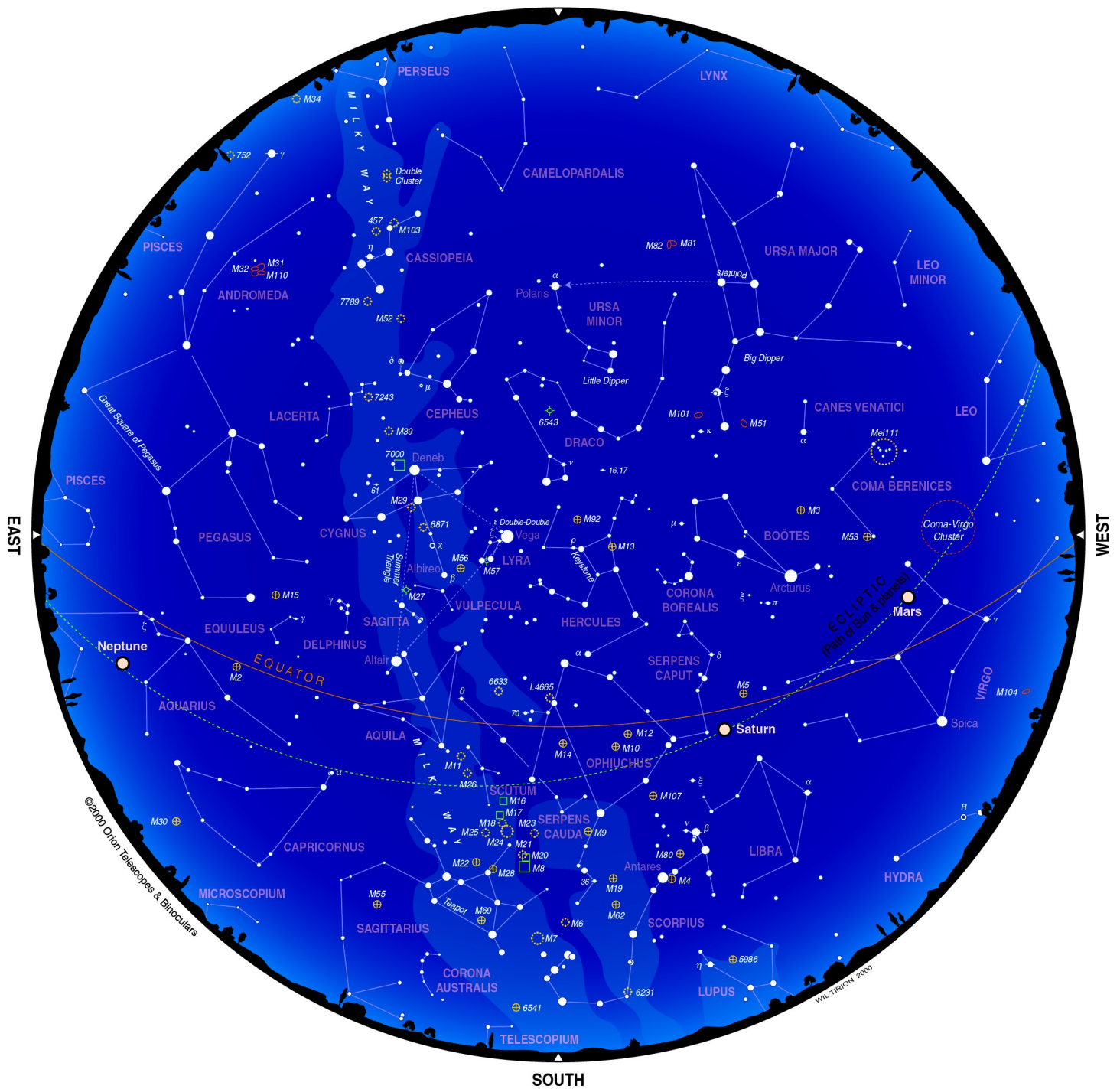
July 2014

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4  Independence Day	5  First Quarter Moon 51% Visible
6	7	8	9	10	11 General Membership Mtg at 19:00 Herrett Center Kinney Ct. Picnic Social Yum! On Saturday	12  Full Moon 100% Visible
13  Moon is at Perigee	14	15	16	17	18  Last Quarter Moon On Saturday	19
20	21	22	23	24	25  New Moon 1% Visible On Saturday	26
27	28  Moon is at Apogee	29	30	31		

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Planisphere

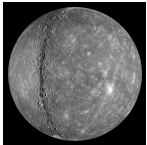





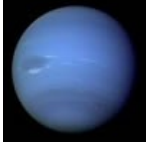

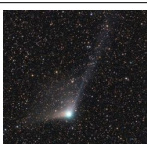
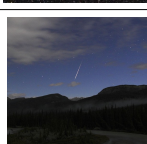
NORTH



SOUTH

Be Safe – Get Out There – Explore Your Universe!

Solar System at a Glance

	Mercury is at its greatest heliocentric latitude south on July 6th. It reaches greatest western elongation on July 12th. On July 15th, Mercury passes three degrees south of the bright open cluster M35 in Gemini. The speediest planet is at the ascending node on July 25th. It reaches perihelion on the 29th. By month's end, Mercury shrinks to an angular diameter of 5.3 arc seconds but increases in illumination from 11 to 92% and brightens from magnitude +2.5 to magnitude -1.4.
	Venus increases in illuminated extent from 85 to 92%, while its angular size decreases from 12.0 to 10.8 arc seconds. Its brightness drops slightly to magnitude -3.8, the dimmest the planet will be for 2014. Mercury and Venus are separated by less than seven degrees from July 12th to July 20th. An appulse takes place on July 16th, when Mercury lies just over six degrees to the east of Venus. Venus lies 1.5 degrees south of M35 on July 20th.
	Mars fades from magnitude 0.0 to +0.4 and shrinks to 7.9 arc seconds in apparent size, as it heads eastward through Virgo this month. It reaches eastern quadrature on July 19th. As a result, the planet displays a somewhat gibbous phase during July.
	Jupiter disappears into the glare of the Sun early this month. It reaches conjunction with the Sun on July 24th.
	Saturn rings span 40 arc seconds and are inclined by this year's minimum angle of 21 degrees. The disk of the planet subtends 18 arc seconds at the equator. Saturn is stationary in right ascension on July 21st and afterwards resumes direct or eastward motion. Saturn's odd satellite Iapetus lies to the west of the planet and shines at tenth magnitude early this month.
	Uranus can be found about two degrees south of the fourth-magnitude star Epsilon Piscium. The seventh planet is stationary on July 22nd. It then begins to retrograde, moving westward with respect to the fixed stars, a change in apparent motion that results from the faster-moving Earth overtaking Uranus.
	Pluto reaches opposition on July 4th. The dwarf planet lies within 30 arc minutes of the fifth-magnitude star 29 Sagittarii this month.
	Asteroid Asteroids 1 Ceres (magnitude +8.4) and 4 Vesta (magnitude +7.1) are on a southeastward course through north-central Virgo this month. They are separated by only 19 arc minutes on the evening of July 1st. By July 4th, the gap between the two "minor planets" decreases to only ten arc minutes.
	Comets Comet C/2012 K1 (PanSTARRS) will be lost in evening twilight. The comet may reach seventh magnitude, as it heads southwestward through northwestern Leo in the vicinity of the fourth-magnitude star Mu Leonis and the third-magnitude star Epsilon Leonis.
	Meteors Moonlight will not interfere with the July 29th peak of this year's Southern Delta Aquarid meteor shower. The other minor meteor showers with southern radiants occurring this month are the Alpha Capricornids, the Piscis Austrinids, and the Northern Delta Aquarids.

Idaho Skies is a column for beginning amateur astronomers and those interested in astronomy. Suggestions about the column are gladly accepted by the columnist, at nearsys@gmail.com

This month look for the Keystone of Hercules. The Keystone consists of four stars arranged in a keystone, or truncated triangle shape. The Keystone represents the body of the hero Hercules. His arms and legs are arranged such that he is upside down and kneeling.

Find the Keystone by first locating Vega, the brilliant blue-white star located nearly overhead just after dark. From Vega, look 16 degrees to the west-southwest for keystone pattern of four stars. Sixteen degrees is about the width of your hand and extended thumb when viewed from your outstretched arm.

The stars of the Keystone, clockwise from the upper left are Pi, Eta, Zeta, and Epsilon Herculis. Although the Keystone appears flat against the sky, it's actually three-dimensional. Pi is 370 light years, Eta 112 light years, Zeta 35 light years, and Epsilon 163 light years away. However, these distances pale in comparison to the distance to the fuzzy cloud located between Eta and Zeta (the side of the keystone away from Vega). That fuzzy cloud is M-13, the Hercules Globular Cluster and its located 25,000 light years away. In a pair of binoculars, M-13 looks like a fuzzy star. You'll know you're looking at it when all the stars appear as sharp pin points of light, except for this one. M-13 is more impressive through a telescope though. A good telescope will resolve the cluster into a ball of tiny stars immersed in fog. In a large telescope, M-13 looks like a pile of salt on blackest velvet.

July 1 – 7

Earth reaches aphelion at 8:00 PM on the 3rd. Since Earth's orbit about the sun is not perfectly circular, there's a point where Earth is at its greatest distance from the sun. That point is called aphelion. At aphelion, Earth is 94.5 million miles from the Sun. To get a sense of perspective on this distance, it would take nearly 144 years to traverse it in a car traveling at 75 miles per hour.

The Mars Pathfinder (MPF) landed on Mars 17 years ago on the 4th. Mars Pathfinder was our first landing on Mars since 1976 (that's 21 years between Mars landings). While you may not remember the Mars Pathfinder, you no doubt remember the little rover that it carried, Sojourner.

It's the 960th anniversary of the Crab Nebula supernova on July 4th. A supernova explosion marks the end of the life of a massive star. The explosion occurs because the star has no internal source of energy strong enough to support its massive weight. Without that support, the star's core collapses inward. During the ensuing collapse, gravity squeezes the protons and electrons of its atoms into neutrons. The formation of the neutrons puts the brakes on the star's collapse and also sends a blast of neutrinos racing outward through the rest of the collapsing star. The core's rebound and blast of neutrinos blows the star's outer layers away in a tremendous explosion. That explosion can launch a large fraction of the star outward at speeds approaching 1/10th the speed of light.

When the Crab Nebula supernova became visible, Chinese astronomers reported the appearance of a new star where they had seen one before. They also reported that the star remained visible for another year. However, it wasn't just the Chinese that recorded the explosion. Some Native Americans apparently recorded this star in pictographs in the American desert southwest. Europe, in the grips of its medieval period made no record of this event.

On the night of the 5th, the first quarter moon appears between Mars and Spica. Mars is the brighter orangish star on the right of the moon and Spica the whiter star on the left. The moon will be in its most perfect phase for binocular observing. Unfortunately, Mars isn't a binocular object.

July 8 – 14

The moon passes over Saturn on the afternoon of the 7th. In Chile and Argentina, they actually see the moon cover Saturn in what astronomers call an occultation. In Idaho, we only see the moon and Saturn separated by an angular distance of 1.3 degrees, or less than three times the moon's apparent diameter.

There's a "Super Moon" on the 12th. That night, the moon becomes full just a few hours before reaching its closest point to Earth. As a result, the full moon will be slightly larger and brighter than usual. You can detect this difference from the norm if you take a photograph of the moon with your digital camera and compare the image to one taken of the full moon in January 2015. Be sure to write down your camera's settings, that way you can create the identical conditions for the next image. We'll get three more Super Moons this year.

July 15 – 21

Idaho has an opportunity to see the innermost planet for several mornings, with the 16th being the best morning. To find Mercury, first find the Morning Star (Venus) in the low northeast at 5:15 AM. Just below and left of Venus is a fainter star and that's Mercury. Mercury will be easy to find if you have a clear horizon. Unfortunately, Mercury doesn't climb very high above the horizon this month.

The moon is located just below Aries the Ram on the morning of the 19th. To locate Aries, follow the terminator of the moon northward as it takes you to a flat triangle of three stars. Astronomers named the brightest star of Aries, Alpha Arietis, but you can call it Hamal. Hamal is just under 50 light years away, so if you were born in 1964, Hamal is your birthday star this year.

Thirty eight years ago on the 20th, the first successful spacecraft landing on Mars occurred on Chryse Planitia, or the Plain of Gold. Viking 1 was a two part spacecraft consisting of an orbiter and lander. When Viking 1 arrived in Martian orbit, its cameras determined that the selected landing site was too dangerous for the lander. So the pair remained docked in Martian orbit until engineers located a safer landing site.

The Viking 1 lander was nuclear powered and remained operating on Mars for six years. It would have continued studying the planet longer had JPL not made mistake uploading new commands to the lander's memory. That error left Viking 1 unable to point its antenna properly at Earth. Still, Viking 1 determined there were no obvious signs of life on Mars and as a result, there was some reluctance to go back to the planet for further study.

Did you know that Viking 1 was not the first attempt to land on Mars? In May 1971 the Soviet Union launched two spacecraft, Mars 2 and Mars 3 on missions to both orbit and land on Mars. The Mars 2 lander crashed due to a failure of its landing system and Mars 3 only transmitted for 20 seconds after soft landing.

Where were you on July 20, 1969? The astronauts of Apollo 11 landed on the moon that day. After a six hour rest (who could rest after landing on the moon), Armstrong and Aldrin spent 2.5 hours exploring the moon's surface immediately surrounding their lander, Eagle. They safely returned to Earth on the 24th with 47 pounds of lunar rock and dust.

The moon passes close to the Pleiades star cluster on the morning of the 21st and the Hyades star cluster on the morning of the 22nd. The Pleiades and Hyades are examples of loose groupings of stars called galactic star clusters. The other type of star cluster is a globular cluster and they appear as a densely packed ball of stars. The stars in a galactic star clusters tend to be young, only on the order of tens to hundreds of millions of years old. Because of their recent birth, they are rich in elements heavier than helium. Globular clusters on the other hand may be the innermost cores of dwarf galaxies. The stars in them formed before the universe was enriched in heavier elements.

July 22 – 31

Like the vast majority of orbits in our solar system, the moon's orbit around Earth is not a perfect circle. Closed orbits that are not perfect circles are called elliptical. Think of them as perfect ovals. The moon's orbit deviates such that at it's closest to Earth (perigee) the distance between the center of the moon and center of Earth is 225,291 miles. At its farthest (apogee), the moon is 26,619 miles farther away. Due to gravitation interaction with the sun, the distances of apogee and perigee vary from month to month. On the 28th, the apogee of the moon's orbit is its greatest for the year, some 700 miles farther away than usual.

The 28th is the 50th anniversary of the launch of the unmanned spacecraft Ranger 7 and its destination was the moon. What makes Ranger 7 important is that the previous six failed. Since the art of powered landing had not been perfected, the Ranger series of spacecraft were designed to crash into the Moon. However, not all was lost; during their kamikaze descent, they returned video images of the lunar surface. After a three day coast to the moon, Ranger 7 transmitted over 4,000 pictures before crashing into the Moon at a speed of 5,800 mph.

The images returned by Ranger 7 showed greater detail about the lunar surface that was possible with any telescope on Earth. Those images were important for planning the upcoming Apollo moon landing missions. And although it may not seem like it today, Ranger 7 was an exciting success for the United States. Recall that this was at a time when the Soviet Union was making all the space firsts.

Four hundred and four years ago on the 30th, Galileo became the first astronomer to observe Saturn's rings through a telescope. Unfortunately, His 20-power telescope was not good enough to show the true nature of the rings. Galileo thought he saw two handles or large moons on opposite sides of Saturn. Adding to his confusion, they disappeared two years later. Then four year later, they reappeared with a slightly different shape. It took decades before Cassini finally figured out that astronomers were seeing rings around Saturn. You can see Saturn's rings tonight though a small telescope or even spotting scope without the confusion Galileo suffered.

The Southern Delta Aquarid meteor shower peaks on the night of the 29th and morning of the 30th. The shower is pretty good, with some 20 meteors per hour visible in dark skies. Better still, the moon is young and it sets before midnight and its light won't interfere with watching meteors. Adding to the shower is the fact that July and August are months with many overlapping meteor showers. So dress warmly and enjoy a shower, meteor shower that is. Any Southern Delta Aquarids will appear to originate from the southeast.

This Month's Sources

Alpha Arietis, http://en.m.wikipedia.org/wiki/Alpha_Arietis

Astronomical Events for 2014, <http://www.universetoday.com/107259/101-astronomical-events-for-2014/>

Mars Program, http://en.wikipedia.org/wiki/Mars_program

Night Sky Explorer

Sky Watch 2014, Sky Publishing Media

Southern Delta Aquariids, http://en.wikipedia.org/wiki/Southern_Delta_Aquariids

Space Calendar, <http://www.jpl.nasa.gov/calendar/>

Viking 1, http://en.wikipedia.org/wiki/Viking_1

Dark Skies and Bright Stars,
Your Interstellar Guide



Deep Sky

Forty binary and multiple stars for July: Eta Draconis, 17 & 16 Draconis, Mu Draconis, Struve 2273, Nu-1 & Nu-2 Draconis, Psi Draconis (Draco); Kappa Herculis, Gamma Herculis, Struve 2063, 56 Herculis, Struve 2120, Alpha Herculis (Ras Algethi), Delta Herculis, Rho Herculis, Mu Herculis (Hercules); Rho Ophiuchi, Lambda Ophiuchi, 36 Ophiuchi, Omicron Ophiuchi, Burnham 126 (ADS 10405), Struve 2166, 53 Ophiuchi, 61 Ophiuchi (Ophiuchus); h5003 (Sagittarius); Xi Scorpii, Struve 1999, Beta Scorpii, Nu Scorpii, 12 Scorpii, Sigma Scorpii, Alpha Scorpii (Antares), h4926 (Scorpius); Struve 2007, 49 Serpentis, Struve 2031 (Serpens Caput); 53 Serpentis, Struve 2204, h4995, h2814 (Serpens Cauda); Epsilon Ursae Minoris (Ursa Minor)

Notable carbon star for July: T Draconis

Sixty-five deep-sky objects for July: NGC 6140, NGC 6236, NGC 6340, NGC 6395, NGC 6412, NGC 6503, NGC 6543 (Draco); IC 4593, M13, M92, NGC 6106, NGC 6166, NGC 6173, NGC 6181, NGC 6207, NGC 6210, NGC 6229, NGC 6482 (Hercules); B61, B62, B63, B64, B72, IC 4634, IC 4665, LDN 42, LDN 1773, M9, M10, M12, M14, M19, M62, M107, NGC 6284, NGC 6287, NGC 6293, NGC 6304, NGC 6309, NGC 6356, NGC 6366, NGC 6369, NGC 6384, NGC 6401, Tr 26 (Ophiuchus); NGC 6440, NGC 6445 (Sagittarius); B50, B55, B56, Cr 316, M4, M6, M7, M80, NGC 6144, NGC 6153, NGC 6192, NGC 6231, NGC 6242, NGC 6302, NGC 6337, NGC 6451 (Scorpius); NGC 6217, NGC 6324 (Ursa Minor)

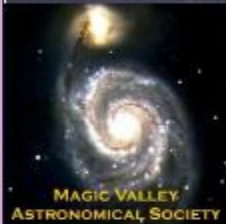
Top ten binocular deep-sky objects for July: IC 4665, LDN 1773, M4, M6, M7, M10, M12, M13, M92, NGC 6231

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)

The objects listed above are located between 16:00 and 18:00 hours of right ascension.

8th annual
**Pomerelle Mtn.
Star Party**



Pomerelle Mountain Resort

12 mi. south of Albion, ID; turn west off State Hwy 77

Saturday, July 26th, 2014

- 3:00 - 5:30 p.m. — **Solar viewing** (safe views of the Sun with filtered telescopes)
- 3:00 - 5:30 p.m. — **Make and launch your own water bottle rocket**
- 7:30 - 8:30 p.m. — Night sky talk: **"Idaho Summer Skies"**
- 8:30 p.m. - 12:00 a.m. — **Lift rides to telescopes** atop the mountain (weather permitting): \$8 for ages 12+, \$5 for ages 7-12, free for 6 and under with adult accompaniment

Please dress for nighttime mountain temperatures!

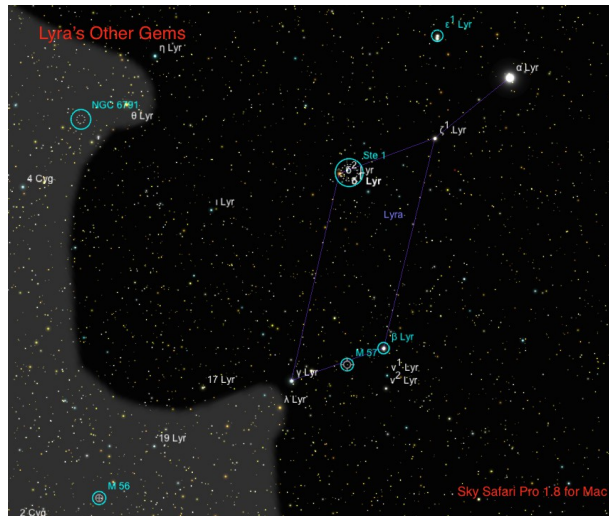
Info: Pomerelle: (208) 673-5525; Herrett Center: (208) 732-6655

Sponsored by Pomerelle Mountain Resort, the Magic Valley Astronomical Society, and the College of Southern Idaho's Centennial Observatory.

Lyra – More Than the Ring

Steve Bell

Whenever anyone thinks of observing in Lyra, the Ring Nebula, Messier 57, is always the first object to come to mind. There are, however, some other bright objects and interesting double stars within the boundary of the lyre.



M57 - The Ring Nebula: Starting with the Ring as our anchor point, this mag 8.8 PN is a perennial favorite of observers. It is visible in almost any aperture and in larger binoculars. It is slightly oval with a size of about 1.4 x 1.1 arcmin. Through a ubiquitous 8" SCT at 147X, it appeared slightly oval and about 1/12 FOV, with the center "hole" obvious with direct vision.

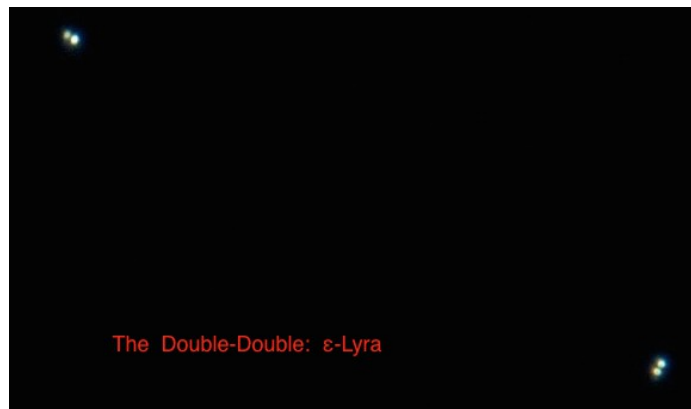


Steph 1: Moving to the NE corner of the Lyra parallelogram, we find the optical double $\delta 1$ - $\delta 2$ Lyra. This pair shows a strong color contrast (yellow-blue white). Situated in the vicinity, including a chain running between $\delta 1$ and $\delta 2$, is the hard to distinguish open cluster Stephenson 1. Its main distinction is that it is a very pretty star field.



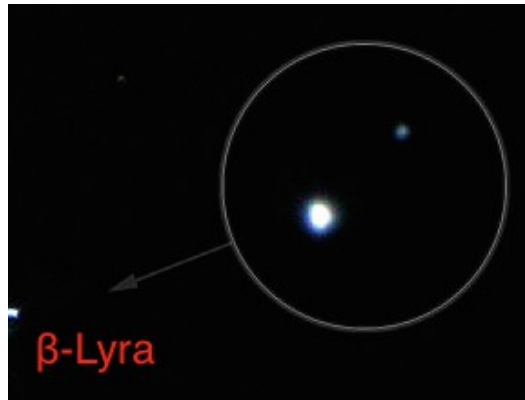
Through an 8" SCT at 83X, this cluster was large, loose and need lower magnification. It was highlighted by the $\delta 1$ - $\delta 2$ pair and its color contrast, yellow-orange for $\delta 1$ and purplish-white for $\delta 2$.

ϵ -Lyra, the Double Double: This well-known multiple star system, often used to test seeing, forms the 90° vertex of a triangle formed by δ and α -Lyra (Vega). The first split is easily accomplished at low magnification (8x50 finder). Splitting each of the components generally requires 175X+.

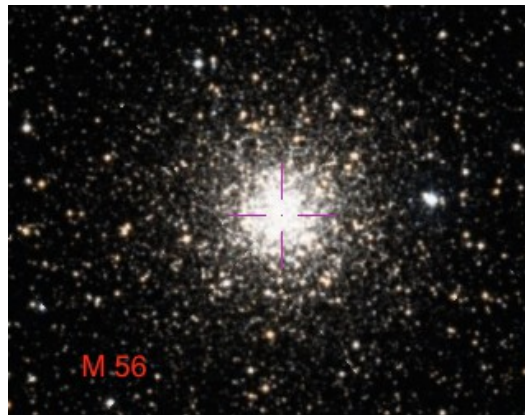


Through a 4" refractor at 190X all four stars appeared a slightly yellowish white and were cleanly split on a night of slightly above average seeing. The primary easy split ($\epsilon 1$ - $\epsilon 2$) is two stars mag 5.0 and 5.9 at 208" separation. $\epsilon 1$ then splits into two stars mag 4.7 and 6.2 with a 2.8" separation. $\epsilon 2$ splits into two stars mag 5.1 and 5.5 with a 2.2" separation. ϵ -Lyra is about 162 light years from the sun.

β -Lyra: β -Lyra, also known as Sheliak (remember the Star Trek Next Generation episode with the Sheliak), is a true binary on the SW corner of the Lyra parallelogram. It is about 960 light years from the sun and consists of mag 3.5 and 8.7 stars separated by 46". This is an interesting system in that one star is cannibalizing mass from the other and is an eclipsing variable star. Through a 4" refractor at 100X, the pair was wide, showing a significant magnitude delta and significant color contrast, with the primary very yellow and the secondary blue-white.

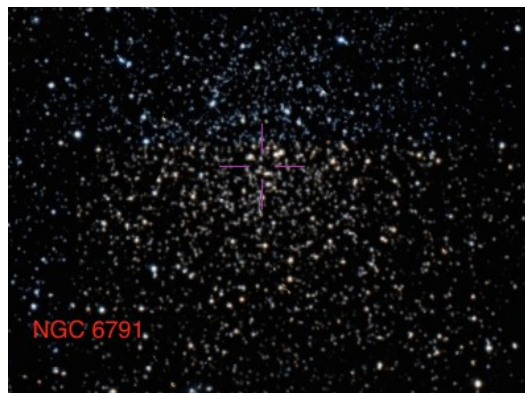


Messier 56: This nice little globular cluster is often overlooked. It lies on a line between γ -Lyra and β -Cyg (Albireo), a bit more than halfway (4.5° from γ , 3.8° from Albireo). This mag 8.3 globular cluster is about 33,000 light years from the sun. It was discovered by Messier in 1779.



Through an 8" SCT at 145X, M56 appeared approximately circular, about 1/10 field of view and was granular, but not fully resolved.

NGC 6791: This nice open cluster is a seldom-observed object, probably due to the lack of bright stars for star hopping. It lies about 5.5° slightly south of east from δ -Lyra.

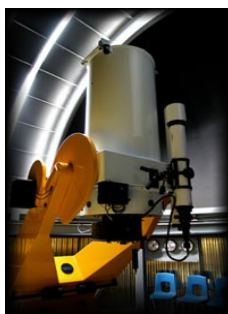


At magnitude 9.5, it is fairly dim, but with a diameter of $10'$, it is fairly easy to detect. NGC 6791 lies about 19,000 light years from the sun. Through an 8" SCT at 145X, it had a lenticular shape, occupied close to half the FOV with better than two dozen stars on an unresolved background. Larger apertures will greatly improve its appearance.

Observatories & Planetarium

Centennial Observatory – Herrett Center – Twin Falls, ID

The observatory features one of the world's largest fully wheelchair-accessible public telescopes. The main instrument is the Norman Herrett telescope, a 24" Ritchey-Chretien reflector on a computer-controlled fork mount, manufactured by DFM Engineering of Longmont, Colorado, USA.



herrett.csi.edu/observatory

Event	Place	Date	Time	Admission
Summer Solar Session #6	Centennial Observatory	Wednesday, July 2 nd , 2014	1:30 to 3:30 PM	FREE
Summer Solar Session #7	Centennial Observatory	Wednesday, July 9 th , 2014	1:30 to 3:30 PM	FREE
Monthly Free Star Party	Centennial Observatory	Saturday, July 12 th , 2014	9:30 PM to midnight	FREE
Summer Solar Session #8	Centennial Observatory	Wednesday, July 16 th , 2014	1:30 to 3:30 PM	FREE
Summer Solar Session #9	Centennial Observatory	Wednesday, July 23 rd , 2014	1:30 to 3:30 PM	FREE
Bimonthly Astronomy Talk : "Stellar Pulsation: Stars with a Heartbeat"	Faulkner Planetarium	Thursday, July 24 th , 2014	8:00 to 9:00 PM	Adults: \$2.50 adults Students (incl. CSI): \$1.50 (Children 6 & under free)
Astronomy Talk Night Telescope Viewing	Centennial Observatory	Thursday, July 24 th , 2014	9:00 to 11:00 PM	\$1.50 (Children 6 & under free) Free to all with paid astronomy talk or planetarium admission
Pomerelle Mountain Star Party (8 th annual)	Pomerelle Mountain Resort	Saturday, July 26 th , 2014	3:00 PM to midnight	Lift ticket req'd for access to mountaintop
Summer Solar Session #10	Centennial Observatory	Wednesday, July 30 th , 2014	1:30 to 3:30 PM	FREE

Earl & Hazel Faulkner Planetarium – Herrett Center – Twin Falls, ID

Opened in November 1995, the Faulkner Planetarium is the largest planetarium theater in Idaho, seating 144 under a 50' dome. It features a state-of-the-art **Digistar 5** full-dome projection system, 10,200 Watt Dolby 5.1 surround audio, and programmable LED dome lighting.

Faulkner Planetarium Show Schedule July 1st – August 2nd

SHOWS

	Astronaut w/Live Sky Tour (ASTRO)ἱ	
	Back to the Moon for Good (B 2 Moon)	
	Flight of the Butterflies (Butterflies)	
	Cosmic Colors: An Adventure Along the Spectrum and Solar Quest (CSMC CLR & SLR QUEST)	
	Earth, Moon & Sun w/Live Sky Tour (EMS)ἱ	
	One World, One Sky: Big Bird's Adventure (Sesame Street)	
	Perfect Little Planet (PLP)	
	Pink Floyd: The Wall (PF THE WALL)	

Tuesday

1:30	2:30	3:30		7:00	8:00
(PLP)	(Butterflies)	(B 2 MOON)		(B 2 MOON)	(Butterflies)

Wednesday

1:30	2:30	3:30			
(CSMC CLR & SLR QUEST)	(Butterflies)	(EMS)ἱ			

Thursday

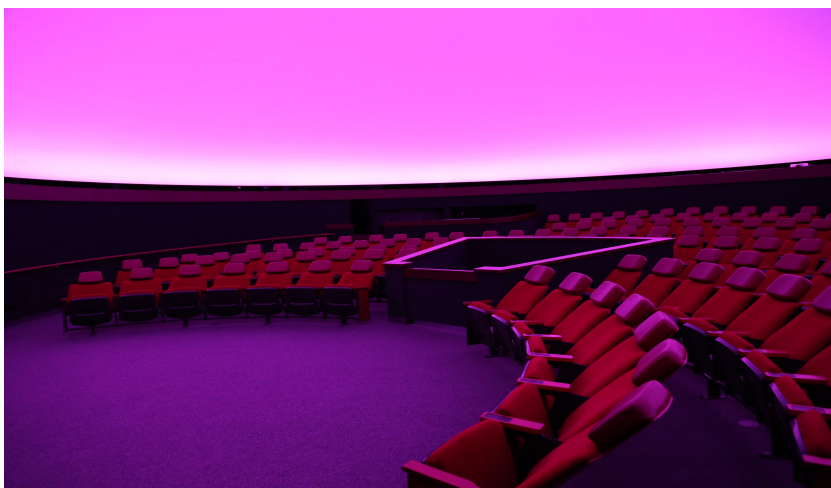
1:30	2:30	3:30			
(Sesame Street)	(Butterflies)	(B 2 MOON)			

Friday

1:30	2:30	3:30		7:00	8:00
(PLP)	(Butterflies)	(EMS)ἱ		(Butterflies)	(PF The Wall)

Saturday

1:30	2:30	3:30	4:30	7:00	8:00
(Sesame Street)	(Butterflies)	(B 2 MOON)	(ASTRO)ἱ	(B 2 MOON)	(PF The Wall)



The Bruneau Observatory is now open Friday and Saturday nights through October 13. Solar viewing begins at 6:30 pm. At 8:30 pm join park staff for an introductory astronomy presentation followed by sky viewing, through a variety of telescopes, until 11:30 pm. Volunteers are always needed to fulfill our clubs commitment at the park.

The Whittenberger Planetarium College of Idaho, Caldwell will be closed May 12 - Aug 31, 2014 for remodel.

About the Magic Valley Astronomical Society

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

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



Membership Benefits:

Sky and Telescope group rates. Subscriptions to this excellent periodical are available at a reduced price of \$32.95. Astronomy Magazine group rates. Subscriptions to this excellent periodical are available at a reduced price of \$34.00. Receive 10% discounts on other selected Astronomy Publications.

For periodical info. and subscriptions Contact Jim Tubbs, Treasurer

Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others. Contact President Robert Mayer, for more information.