Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

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

Public Star Party Follows at the Centennial Observatory Club Officers

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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 Colleagues,

It's that time of year: The City of Rocks Star Party. Set for Friday, Aug. 5th, and Saturday, Aug. 6th, the event is the gem of the MVAS year. As we've done every year, we will hold solar viewing at the Smoky Mountain Campground, followed by a potluck there at the campground. Again, MVAS will provide the main course and beverages.

President's Message

After the potluck, the party moves over to the corral by the bunkhouse over at Castle Rocks, with deep sky viewing beginning sometime after 9 p.m. This is a chance to dig into some of the darkest skies in the west.

Some members have already reserved campsites, but for those who are thinking of dropping by at the last minute, we have room for you at the bunkhouse, and would love to have to come by.

The following Saturday will be the regular MVAS meeting. Please check E-mail or Facebook for updates on our guest speaker that day.

Until then, clear views, Robert Mayer



https://herrett.csi.edu/astronomy/observatory/City_of_Rocks_Star_Party_2016.asp

Calendars for August

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2 New Moon Lunation 1158	3	4	5 City Rocks Castle Rocks Star Party Almo, ID	6 City Rocks Castle Rocks Star Party Almo, ID
7	8	9	10	11	12	13 MVAS General Mtg. 7:00pm at the CSI Herrett Center Main Campus Twin Falls
14	15	16	17 Full Moon Sturgeon Moon	18	19	20
21	22	23	24	25 Last Quarter 47% Visible	26	27
28	29	30	31			

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Celestial Calendar

All times, unless otherwise noted, are UT

8/1 The astronomical cross-quarter day known as Lammas or Lughnasadh occurs today; Venus is at its greatest latitude north of the ecliptic plain (3.4 degrees) at 13:00

8/2 Comet 9/P Tempel is at perihelion (1.54 astronomical units from the Sun) at 13:00; the Moon is 4.3 degrees south of the bright open cluster M44 in Cancer (approximately 3 degrees from the Sun) at 15:00;

8/4 Venus is 2.8 degrees north-northeast of the Moon at 5:00; the Moon is 1.6 degrees south-southwest of the first-magnitude star Regulus (Alpha Leonis) at 8:00; Mercury is 0.54 degree north of the Moon. **8/5** Mercury is at the descending node at 7:00; the Moon is at the ascending node at 7:49; Venus (magnitude -3.8) is 1.1 degrees north-northeast of Regulus (magnitude +1.4) at 9:00

8/6 Jupiter is 0.22 degree northeast of the Moon.

8/8 The Moon is 5.5 degrees north-northeast of the first-magnitude star Spica (Alpha Virginis) at 16:00

8/9 Mars (magnitude -0.5) is in heliocentric conjunction with Pluto (magnitude +14.2) at 16:00

8/10 The Moon is at apogee, subtending 29' 34" from a distance of 404,262 kilometers (251,197 miles), at 0:00; the Sun enters the constellation of Leo at 8:00; the Lunar X, also known as the Werner or Purbach Cross, an X-shaped clair-obscur illumination effect involving various ridges and crater rims located between the craters La Caille, Blanchinus, and Purbach, is predicted to occur at 10:55;

8/12 Mars is 8.0 degrees south of the Moon at 1:00; Saturn is 3.6 degrees south of the Moon at 13:00; the Moon is 9.8 degrees north of the first-magnitude star Antares (Alpha Scorpii) at 13:00; the peak of the Perseid meteor shower (a zenithal hourly rate of 150 or more per hour) occurs at 13:00

8/13 Saturn is stationary in right ascension at 18:00

8/14 A double Galilean shadow transit (Ganymede's shadow follows lo's) begins at 7:32

8/15 Mercury is at aphelion (0.47 astronomical units from the Sun) at 16:00

8/16 Mercury is at greatest eastern elongation (27.4 degrees) at 21:00

8/18 Full Moon (known as the Fruit, Grain, Green Corn, or Sturgeon Moon) occurs at 9:27

8/19 Neptune is 1.0 degree south-southeast of the Moon, the Moon is at the descending node at 14:16

8/20 Mercury (magnitude +0.5) is 3.8 degrees southwest of Jupiter (magnitude -1.7) at 6:00; Asteroid 2 Pallas (magnitude +9.2) is at opposition at 6:00

8/22 The Moon is at perigee, subtending nearly 32' 34" from a distance of 367,050 kilometers (228,074 miles), at 1:00; Uranus is 2.9 degrees north-northwest of the Moon at 11:00

8/24 Mars (magnitude -0.4) is 1.8 degrees north of Antares (magnitude +1.0) at 15:00; Mars (magnitude -0.4) is 4.4 degrees south of Saturn (magnitude +0.5) at 16:00

8/25 The Moon is 0.22 degree north-northeast of the first-magnitude star Aldebaran (Alpha Tauri).

8/26 The Curtiss Cross, an X-shaped clair-obscur illumination effect located between the craters Parry and Gambart, is predicted to occur at 13:19

8/27 The Moon is 5.9 degrees south of the bright open cluster M35 in Gemini (62 degrees from the Sun) at 7:00; Venus (magnitude -3.8) is 0.07 degree north-northeast of Jupiter (magnitude -1.7), the closest appulse of two major planets in 2016, at 22:00

8/28 Mercury (magnitude +1.0) is 5.0 degrees south-southwest of Venus (magnitude -3.8) at 20:00

8.29 The Moon is 4.3 degrees south of M44 (29 degrees from the Sun) at 22:00

8/30 Mercury is stationary in right ascension at 1:00

8/31 The Moon is 1.6° south-southwest of Regulus (approximately 9 degrees from the Sun) at 16:00

John Flamsteed and Maria Mitchell were born this month. The gibbous phase of Mars was first observed by Francesco Fontana on August 24, 1738. William Herschel discovered Enceladus on August 28, 1789. Asaph Hall discovered Deimos on August 11, 1877 and Phobos on August 17, 1877.

Since the waxing gibbous Moon sets by approximately 1:00 a.m. local daylight time, the peak of the Perseid meteor shower on August 12th is not adversely affected by moonlight this year. Comet 109P/Swift-Tuttle is the source of Perseid meteors. The zenithal hourly rate may be exceptionally high this year, reaching a maximum of 150 or more meteors per hour, due to gravitational perturbations of the cometary debris stream by Jupiter.

The Sun, the Moon, & the Planets



The Moon is 27.6 days old, is illuminated 4.2%, subtends 31.6 arc minutes, and is located in Gemini on August 1st at 0:00 UT. The Moon is at its greatest northern declination on August 27th (+18.3 degrees) and its greatest southern declination on August 15th (-18.4 degrees). Longitudinal libration is at a maximum of +5.3 degrees on August 3rd and +5.5 degrees on August 30th and a minimum of -5.3 on August 16th. Latitudinal libration is at a maximum of +5.5 degrees on August 30th and a minimum of -6.8 degrees on August 13th. The Moon is at apogee on August 10th and perigee on August 22nd. New Moon (i.e., the dark of the Moon) occurs on August 2st. The Moon passes 0.54 degree south of Mercury on August 4th, 2.8 degrees south-southwest of Venus on August 4th, 0.22 degree southwest of Jupiter on August 6th, 8.0 degrees north of Mars on August 12th; 3.6 degrees north of Saturn on August 22nd. The Moon occults Mercury on August 4th, Jupiter on August 6th, Neptune on August 19th, and 2.9 degrees south-southeast of Uranus on August 22nd. The Moon occults Mercury on August 4th, Jupiter on August 6th, Neptune on August 19th, and Aldebaran on August 25th from certain parts of the world.

The Sun is located in Cancer on August 1st. It enters the constellation of Leo on August 10th.

Brightness, apparent size, illumination, distance from the Earth in astronomical units, and location data for the planets and Pluto on August 1: Mercury (magnitude -0.2, 5.9", 72% illuminated, 1.13 a.u., Leo), Venus (magnitude -3.8, 10.1", 96% illuminated, 1.65 a.u., Leo), Mars (magnitude -0.8, 13.0", 87% illuminated, 0.72 a.u., Libra), Jupiter (magnitude -1.7, 32.1", 100% illuminated, 6.15 a.u., Leo), Saturn (magnitude +0.3, 17.5", 100% illuminated, 9.48 a.u., Ophiuchus), Uranus (magnitude +5.8, 3.6", 100% illuminated, 19.44 a.u. on August 16th, Pisces), Neptune (magnitude +7.8, 2.4", 100% illuminated, 29.00 a.u. on August 16th, Aquarius), and Pluto (magnitude +14.2, 0.1", 100% illuminated, 32.36 a.u. on August 16th, Sagittarius).

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

At midmonth, Mercury is visible in evening twilight, Venus sets at 9:00 p.m. local daylight time, Mars sets at midnight, Jupiter sets at 9:00 p.m. local daylight time, and Saturn sets at 1:00 a.m. local daylight time for observers at latitude 40 degrees north.

Mercury undergoes its best apparition of 2016 for observers in the southern hemisphere this month. It is at the descending node on August 5th and is at greatest elongation east on August 16th. Mercury lies 3.8 degrees southwest of Jupiter on August 20th and 5.0 degrees south-southwest of Venus on August 28th. The speediest planet dims from magnitude -0.2 to magnitude +1.1 but increases in apparent size from 5.9 to 9.5 arc seconds this month.

Venus passes just 4.2 arc minutes north-northeast of Jupiter, on the afternoon of August 27th, the closest the two brightest planets have been since May of 2000. Mercury joins Venus and Jupiter in a triple conjunction on that date.

Mars shrinks from an apparent size of 13.0 arc seconds to 10.5 arc seconds during August and dims from magnitude -0.8 to magnitude -0.3. The Red Planet departs Libra and enters Scorpius in early August. Mars passes just to the south of the second-magnitude variable star Delta Scorpii on August 9th. It moves into Ophiuchus on August 21st but returns to Scorpius after August 27th. On August 24th, Mars passes 1.8 degrees north of Antares, creating a six degree line with Saturn to the north as it joins Saturn in conjunction.

Jupiter (magnitude -1.7), Mercury (magnitude -0.1), Regulus (magnitude +1.4), and Venus (magnitude -3.9) form a line almost 27 degrees long in the western sky after sunset on August 1st. Jupiter enters Virgo on August 9th. On August 28th, Mercury, Venus, and Jupiter fit within a 5.07-degree diameter circle. Jupiter is in conjunction with the Sun next month.

Saturn subtends 17 arc seconds in angular size this month. Its rings are inclined by 26 degrees and span 39 arc seconds. Over the course of the month, it decreases in brightness from magnitude +0.3 to magnitude +0.5. On August 13th, Saturn ends its retrograde motion. Eighth-magnitude Titan, Saturn's largest satellite, is due north of the planet on August 8th and August 24th and due south on August 15th and August 31st. The peculiar satellite lapetus shines at eleventh magnitude as it passes 2.1 arc minutes due south of Saturn on August 18th. It brightens to approximately tenth magnitude by August 31th when it is 7 arc minutes distant from Saturn.

Uranus is located 2.5 degrees north of the fifth-magnitude star Mu Piscium for the entire month. It rises prior to 11:00 p.m. local daylight time.

Neptune is situated 0.6 degree south of the fourth-magnitude star Lambda Aquarii on August 1st, by the end of the month, the eighth planet lies 1.2 degrees southwest of that star.

Pluto is situated not far to the southwest of the third-magnitude star Pi Sagittarii, which is part of the Sagittarius Teaspoon asterism. The dwarf planet is highest in altitude in the late evening. Articles on locating and observing Pluto are available on pages 48 and 49 of the July issue of *Sky & Telescope* and pages 64 and 65 of the July issue of *Astronomy*.

For more on the planets and how to locate them, see http://www.nakedeyeplanets.com/ Online finder charts for Uranus and Neptune can be found at http://www.nakedeyeplanets.com/ Online finder charts for Uranus and Neptune can be found at http://www.nakedeyeplanets.com/ Online finder charts for Uranus and Neptune can be found at http://www.nakedeyeplanets.com/ Online finder charts for Uranus and http://www.nakedeyeplanets.com/ on http://www.nakedeyeplanets.com/uranus.htm and http://www.nakedeyeplanets.com/neptune.htm and http://www.nakedeyep...com/neptune.htm and <a hr



Asteroid 2 Pallas shines at ninth magnitude as it travels southwestward through western Pegasus. This main belt asteroid is located three degrees north-northwest of the second-magnitude star Enif (Epsilon Pegasi) on August 1st, and passes between Enif and the bright globular cluster M15 on August 10th. Pallas lies less than two degrees south of M15 on August 16th. The third most massive asteroid shines at magnitude +9.2 when it reaches opposition on August 20th. Other asteroids brighter than eleventh magnitude reaching opposition this month include 20 Massalia on August 1st, 19 Fortuna on August 10th, 349 Dembowska on August 11th, 85 Io on August 12th, 56 Melete on August 14th, 532 Herculina on August 23rd, and 17 Thetis on August 24th. For information on asteroid occultations taking place this month, see http://www.asteroido.../2016_08_si.htm



Comet 9P/Tempel glows at eleventh magnitude as it heads southeastward through Virgo this month. The periodic comet is at perihelion on August 2nd and lies a bit more than one degree north of the sixth-magnitude star 86 Virginis on that date. For further information on comets visible this month, browse http://cometchasing.skyhound.com/ and http://www.aerith.ne...t/future-n.html



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.



Notable carbon star for August: V Aquilae: Right Ascension: 19^h 04^m 24.155^s / Declination: -05° 41' 05.44" Mag. 6.78



Sixty binary and multiple stars for August: 5 Aquilae, Struve 2404, 11 Aquilae, Struve 2426, 15 Aquilae, Struve 2449, 23 Aquilae, Struve 2532, Pi Aquilae, 57 Aquilae (Aquila); Beta Cygni (Albireo), 16 Cygni, Delta Cygni, 17 Cygni (Cygnus); 41 & 40 Draconis, 39 Draconis, Struve 2348, Sigma Draconis, Struve 2573, Epsilon Draconis (Draco); 95 Herculis, 100 Herculis, Struve 2289, Struve 2411 (Hercules); Struve 2349, Struve 2372, Epsilon-1 & Epsilon-2 Lyrae (the Double-Double), Zeta-2 Lyrae, Beta Lyrae, Otto Struve 525, Struve 2470 & Struve 2474 (the Other Double-Double) (Lyra); 67 Ophiuchi, 69 Ophiuchi, 70 Ophiuchi, Struve 2276, 74 Ophiuchi (Ophiuchus); Mu Sagittarii, Eta Sagittarii, 21 Sagittarii, Zeta Sagittarii, H N 119, 52 Sagittarii, 54 Sagittarii (Sagittarius); Struve 2306, Delta Scuti, Struve 2373 (Scutum); Struve 2296, Struve 2303, 59 Serpentis, Theta Serpentis (Serpens Cauda); Struve 2445, Struve 2455, Struve 2457, 4 Vupeculae, Struve 2521, Struve 2523, Struve 2540, Struve 2586, Otto Struve 388, Struve 2599 (Vulpecula)

Top ten binocular deep-sky objects for August: Cr 399, IC 4756, M8, M11, M17, M22, M24, M25, M27, NGC 6633 (IC 4756 and NGC 6633 are collectively known as the Binocular Double Cluster)

Top ten deep-sky objects for August: M8, M11, M16, M17, M20, M22, M24, M27, M55, M57

Challenge deep-sky object for August: Abell 53 (Aquila): Right Ascension: 19:06:45.8 / Declination:



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://www.

Free larger star maps for August can be downloaded at: <u>http://www.telescope...thly-Star-Chart</u>



Looking Through the Eyepiece

Binocular Universe by Phil Harrington The Double Cluster and Friends

Of the dozens of open star clusters that dot the autumn sky, none is more popular among binocular stargazers than NGC 869 and NGC 884, the famous **Double Cluster** in Perseus. Even from suburban backyards, this striking pair can be seen with the naked eye as a faint, elongated smudge of light about halfway between the "W" of Cassiopeia and the northern "tip" of Perseus. If you have trouble spotting it, scan through your binoculars along a line extending from Gamma (ã) Cassiopeiae, the center star of the W, through Ruchbah [Delta (ä) Cassiopeiae] and continuing toward the southeast. Maintain a straight course and you will see both clusters as two tiny clumps of stars. Few autumn clusters compare to either NGC 869 or NGC 884 singularly, but when you add both together, the field literally overflows with stars. Unlike many star clusters, however, which need telescopes to be seen at their best, NGC 869 and 884 are just as wonderful through binoculars. In fact, in my opinion, while they are still impressive through telescopes, the narrower views of most telescopes sacrifice the area's overall beauty. Seven- to 10x binoculars resolve each cluster into a tight knot of white stars against a star-strewn backdrop. Higher-power giant binoculars only improve the view by increasing resolution as well as heightening the radiance of the many colorful red supergiant suns that are scattered across the region.

Recently, I had a chance to watch the clusters through a pair of monstrous 100-mm binoculars as they just rose above some far off pine trees. The field teemed with stardust, spilling over and around the distant pines. The view was magnificent, creating a magical moment that could never be captured in an image, but whose image is forever filed away in my mind's astronomical photo album.

Whoever discovered the Double Cluster is lost to history, although we do know that their combined presence attracted the eyes of stargazers as far back as the second century B.C., when Hipparchus made mention of them in his notes. Messier apparently knew of the Double Cluster, but never recorded them in his catalog. Why he ignored them, but included M40 (a double star in Ursa Major) and M73 (a four-star asterism in Aquarius), is difficult to understand. Are the two clusters actually physically linked to one another? They almost certainly have some mutual gravitational effect, since NGC 869 (the westernmost cluster) is 7,100 light years away, while NGC 884 is slightly farther at 7,400 light years. Both are primarily composed of hot type-A and type-B supergiant, super luminous stars. Some 200 suns call NGC 869 home, while NGC 884 is made up of about 150 stars. Several red supergiants are seen in NGC 884, but are conspicuously absent in NGC 869.



The Double Cluster (NGC 869 and NGC 884 / h and Chi Persei) in Perseus



The Double Cluster (below center) and Stock 2 (circled, above center) are captured beautifully in this sketch by Rony De Laet (rodelaet in the CN forums). Notice how the very faint stars of Stock 2 form a stick figure of a human, in this case oriented sideways. Note: The Editor thinks Stock 2 (above) looks like Burning Man lying on his side.



Finder chart from TUBA, www.philharrington.net/tuba.htm

Take a long, careful look at the stars in Stock 2. Let your imagination run wild for a moment. See any pattern among them? Careful scrutiny will show that the stars seem to fall into four distinctive threads curving away from the center. My buddy John Davis from Amherst , Massachusetts , mentioned to me more than 20 years ago that the brighter stars almost look like a headless stick figure flexing his muscles, christening it the "Muscleman Cluster." His legs stretch out in two straight lines to the east, while his flexing arms curve to the west, above his long, albeit headless neck. Others remark that the pattern is more reminiscent of a pirouetting ballerina, again sans head. Muscleman or ballerina not withstanding, the next time you are drinking in the beauty of the Double Cluster, be sure to swing northward and spot Stock 2 in the same field of view.

Object	Con	Type	R.A		Dec		Mag	Size/Sep/	Notes
			(2000)			Period			
Stock 23	Cam	OC	3 1	6.3	+60	2		15'	*TUB page 99*
M103	Cas	OC	1 3	3.2	+60	42	7.4	6'	*TUB page 114* NGC 581
654	Cas	OC	1 4	4.1	+61	53	6.5	5'	
659	Cas	OC	1 4-	4.2	+60	42	7.9	5'	
663	Cas	OC	1 4	6	+61	15	7.1	16'	
Stock 5	Cas	OC	2 4	.5	+64	26		15'	
Stock 2	Cas	OC	2 1	5	+59	16	4.4	60'	*TUB page 114-115* Muscleman Cluster
OSS 26	Cas	**	2 1	9.7	+60	2	6.9,7.4	63*	200° (1925)
Mrk 6	Cas	OC	2 2	9.6	+60	39	7.1	4.5'	
IC 1805	Cas	OC	2 33	2.7	+61	27	6.5	22'	
1027	Cas	OC	2 4:	2.7	+61	33	6.7	20'	*TUB page 115*
IC 1848	Cas	OC	2 5	1.2	+60	26	6.5	12'	
Cr 33	Cas	OC	2 5	9.3	+60	24	5.9p	40'	
Cr 34	Cas	OC	3 0	.9	+60	25	6.8p	25'	
Tr 3	Cas	OC	3 1:	1.8	+63	15	7.0p	23'	
IZ	Per	Vr	1 33	2.1	+54	1	7.8-9.0p	3.688 days	Eclipsing Binary
744	Per	OC	1 5	8.4	+55	29	7.9	11'	
KK	Per	Vr	2 10	0.3	+56	34	6.6-7.8		Irregular
869	Per	OC	2 1	9	+57	9	4.3	30'	*TUB page 199-200* Double Cluster (h Per)
884	Per	OC	2 23	2.4	+57	7	4.4	30'	*TUB page 199-200* Double Cluster (Chi Per
S	Per	Vr	2 23	2.9	+58	35	7.9-11.5		Semi-Regular
957	Per	OC	2 3	3.6	+57	32	7.6	11'	MARINA HARDE COMPANY
Tr 2	Per	OC	2 3	7.3	+55	59	5.9	20'	*TUB page 200-201*

The star chart here shows several other open clusters lying in wait, as you can see from the list above. All are smaller and fainter than the spectacular Double Cluster, but are still well worth hunting down.

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Looking Through the Eyepiece Part II

Going Deep in the Snake's Head By <u>Brian Ventrudo</u>

The constellation Serpens Caput, the Snake's Head, lies well off the band of the Milky Way and holds relatively few deepsky sights. But it's not completely barren. Let's have a look at three targets in this ancient constellation for stargazers equipped with modest optics and an urge to see something good.

Let's start off with an easy sight: the very top of the Snake's head. This triangular arrangement of stars just south of the semicircular <u>constellation Corona Borealis</u> consists of the stars iota (I), kappa (κ), beta (β), and gamma (γ) Serpentis. The brightest of these stars is close to magnitude 3.5, so they're easily seen in all but the most light-polluted skies. The zigzag of the snake's neck moves south from the little head. Grab your binoculars and inspect the lovely cloud of 5th and 6th-magnitude stars that surround the head in a sparse halo about 5° across. The halo sharpens slightly to a wedge of stars to the west and south of the head that comes to an apex at the 5th-magnitude red-orange star tau¹ (τ ¹) Serpentis, one of eight stars west of the snake's head to have the tau designation. To my knowledge, the stars in the halo around the snake's head are unrelated. But they present a pleasing view in an otherwise sparse region.



A view of the three stops on this tour of Serpens: the area around the head, globular cluster M5, and the double star 5 Serpentis, which in this image is the yellow star just to the lower left of M5.

Now let's go deeper to see the showpiece of Serpens Caput, the spectacular globular cluster Messier 5 (M5). The 5thmagnitude cluster is located about 7.5° southwest of Unukalhai, α Serpentis, and the brightest star in Serpens Caput. M5 is easy to spot in a finder scope or binoculars as a round fuzzy glow.

This cluster is a splendid object in a telescope, the bigger the scope the better. Many stargazers, me included, find M5 more spectacular than the better-known globular cluster M13 in Hercules. In an 8" scope at 100x, you see tight sparkling core and innumerable tiny stars spraying throughout the halo in lines and arcs. Many see in this cluster an "electric spark" that seems to emanate from the core. Most observers agree the cluster is perceptibly non-circular, or at least non-symmetric, with the core appearing somewhat brighter to the north At 13 billion years of age, M5 is one of the oldest globular clusters. And it's one of the largest, at 130 light years across. The cluster is 24,000 light years away.

Now to the last object on the tour, the double star 5 Serpentis, a slightly more challenging sight in a small telescope. Look for this bright star just south of M5 within the same low-power field of view. The star is also known as Σ 1930. The primary is magnitude 5, easily visible to the eye in dark sky. The companion shines at magnitude 10 and lies about 11" to the northeast. That makes for a widely-split star, and it would be an easy star to split if the primary didn't vastly outshine the secondary. The difference in brightness makes this a good challenge of your observing skills. A small scope can split the stars at 70-80x or more, but again, the brighter star tends to overwhelm the fainter. So you have to look carefully.

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NASA Space Place

Venus and Jupiter prepare for their close-up this August By Ethan Siegel

As Earth speeds along in its annual journey around the Sun, it consistently overtakes the slower-orbiting outer planets, while the inner worlds catch up to and pass Earth periodically. Sometime after an outer world—particularly a slow-moving gas giant—gets passed by Earth, it appears to migrate closer and closer to the Sun, eventually appearing to slip behind it from our perspective. If you've been watching Jupiter this year, it's been doing exactly that, moving consistently from east to west and closer to the Sun ever since May 9th. On the other hand, the inner worlds pass by Earth. They speed away from us, then slip behind the Sun from west to east, re-emerging in Earth's evening skies to the east of the Sun. Of all the planets visible from Earth, the two brightest are Venus and Jupiter, which experience a conjunction from our perspective only about once per year. Normally, Venus and Jupiter will appear separated by approximately 0.5° to 3° at closest approach. This is due to the fact that the Solar System's planets don't all orbit in the same perfect, two-dimensional plane.

But this summer, as Venus emerges from behind the Sun and begins catching up to Earth, Jupiter falls back toward the Sun, from Earth's perspective, at the same time. On August 27th, all three planets—Earth, Venus and Jupiter—will make nearly a perfectly straight line. As a result, Venus and Jupiter, at 9:48 PM Universal time, will appear separated by only 4 arc-minutes, the closest conjunction of naked eye planets since the Venus/Saturn conjunction in 2006. Seen right next to one another, it's startling how much brighter Venus appears than Jupiter; at magnitude -3.80, Venus appears some *eight times brighter than* Jupiter, which is at magnitude -1.53.

Look to the western skies immediately after sunset on August 27th, and the two brightest planets of all—brighter than all the stars—will make a dazzling duo in the twilight sky. As soon as the sun is below the horizon, the pair will be about two fists (at arm's length) to the left of the sun's disappearance and about one fist above a flat horizon. You may need binoculars to find them initially and to separate them. Through a telescope, a large, gibbous Venus will appear no more distant from Jupiter than Callisto, its farthest Galilean satellite. As a bonus, Mercury is nearby as well. At just 5° below and left of the Venus/Jupiter pair, Mercury achieved a distant conjunction with Venus less than 24 hours prior. In 2065, Venus will actually occult Jupiter, passing in front of the planet's disk. Until then, the only comparably close conjunctions between these two worlds occur in 2039 and 2056, meaning this one is worth some special effort—including traveling to get clear skies and a good horizon—to see!



Image credit: E. Siegel, created with Stellarium, of a small section of the western skies as they will appear this August 27th just after sunset from the United States, with Venus and Jupiter separated by less than 6 arc-minutes as shown. Inset shows Venus and Jupiter as they'll appear through a very good amateur telescope, in the same field of view.



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Centennial Observatory and Faulkner Planetarium



Herrett Telescope CSI Centennial Observatory

Event	Place	Date	Time	Admission
Summer Solar Session #10	Centennial Observatory	Wednesday, August 3 rd , 2016	1:30 to 3:30 PM	FREE
<u>City of Rocks Star</u> <u>Party</u>	Castle Rocks State Park, Almo, ID	Friday, August 5 th - Saturday, August 6 th , 2016	2:00 PM to 12:00 AM	FREE
Summer Solar Session #11	Centennial Observatory	Wednesday, August 10 th , 2016	1:30 to 3:30 PM	FREE
Summer Solar Session #11	Centennial Observatory	Wednesday, August 10 th , 2016	1:30 to 3:30 PM	FREE
Monthly Free Star Party	Centennial Observatory	Saturday, August 13 th , 2016	9:00 PM to 12:00 AM	FREE
Summer Solar Session #12	Centennial Observatory	Wednesday, August 17 th , 2016	1:30 to 3:30 PM	FREE
Summer Solar Session #13	Centennial Observatory	Wednesday, August 24 th , 2016	1:30 to 3:30 PM	FREE
Summer Solar Session #14	Centennial Observatory	Wednesday, August 31 st , 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. <u>http://herrett.csi.edu/astronomy/planetarium/showtimes.asp</u>

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.