



# Snake River Skies

The Monthly Newsletter of the  
Magic Valley Astronomical Society  
August 2013



www.mvastro.org

## Membership Meeting

Saturday, August 10<sup>th</sup>

No meeting if not going to  
Castle Rocks SP meet  
at the Centennial  
Observatory



## Board of Directors

Robert Mayer, President  
[mayerrbrt@gmail.com](mailto:mayerrbrt@gmail.com)  
208-312-1203

Jim Hoggatt, Vice President  
[jhog@cableone.net](mailto:jhog@cableone.net)  
208-420-7690

Gary Leavitt, Secretary  
[leavittg@cableone.net](mailto:leavittg@cableone.net)  
208-731-7476

Jim Tubbs, Treasurer /  
ALCOR  
[jtubbs015@msn.com](mailto:jtubbs015@msn.com)  
208-404-2999

David Olsen, Newsletter Ed  
[editor@mvastro.org](mailto:editor@mvastro.org)

Rick Widmer, Webmaster  
[rick@developersdesk.com](mailto:rick@developersdesk.com)

Colleagues,

I hope the summer has been treating you well. This is the time of year that keeps us at MVAS hopping. Just last week we had a small star party at the Magic Valley Aeromodelers' airstrip, and had a blast. That was just a couple of weeks after a very successful time at Thorn Creek Ridge. Others have been helping out with solar viewing at the Centennial Observatory or are out traveling. Our own Jon Mills' evening skyscapes are regularly featured on the Facebook page of Idaho Magazine, and his work was included in the August issue, where he was kind enough to mention MVAS. Meanwhile, supernova notices are popping up, and Jim Tubbs has been keeping us apprised and providing us with shots.

And we're not done. One of the major highlights of the MVAS summer is the two-day star party at Castle Rocks State Park, Aug. 9-10. Several members have already announced their intentions of going, but if you're still undecided, come on down. These are some of the best skies in Idaho, and you never know what kind of audience you will get. A couple of years ago, I got to listen to a man describe to his wife the Jupiter he was seeing in my humble scope -- in French.





The date itself means no meeting at the Herrett Center, and will require volunteers to help cover for Chris Anderson at the Centennial Observatory. Volunteers have graciously stepped up already, and we will be sure to give them credit in the next newsletter.

Clear skies and Good Views,  
Rob Mayer

## In this Issue

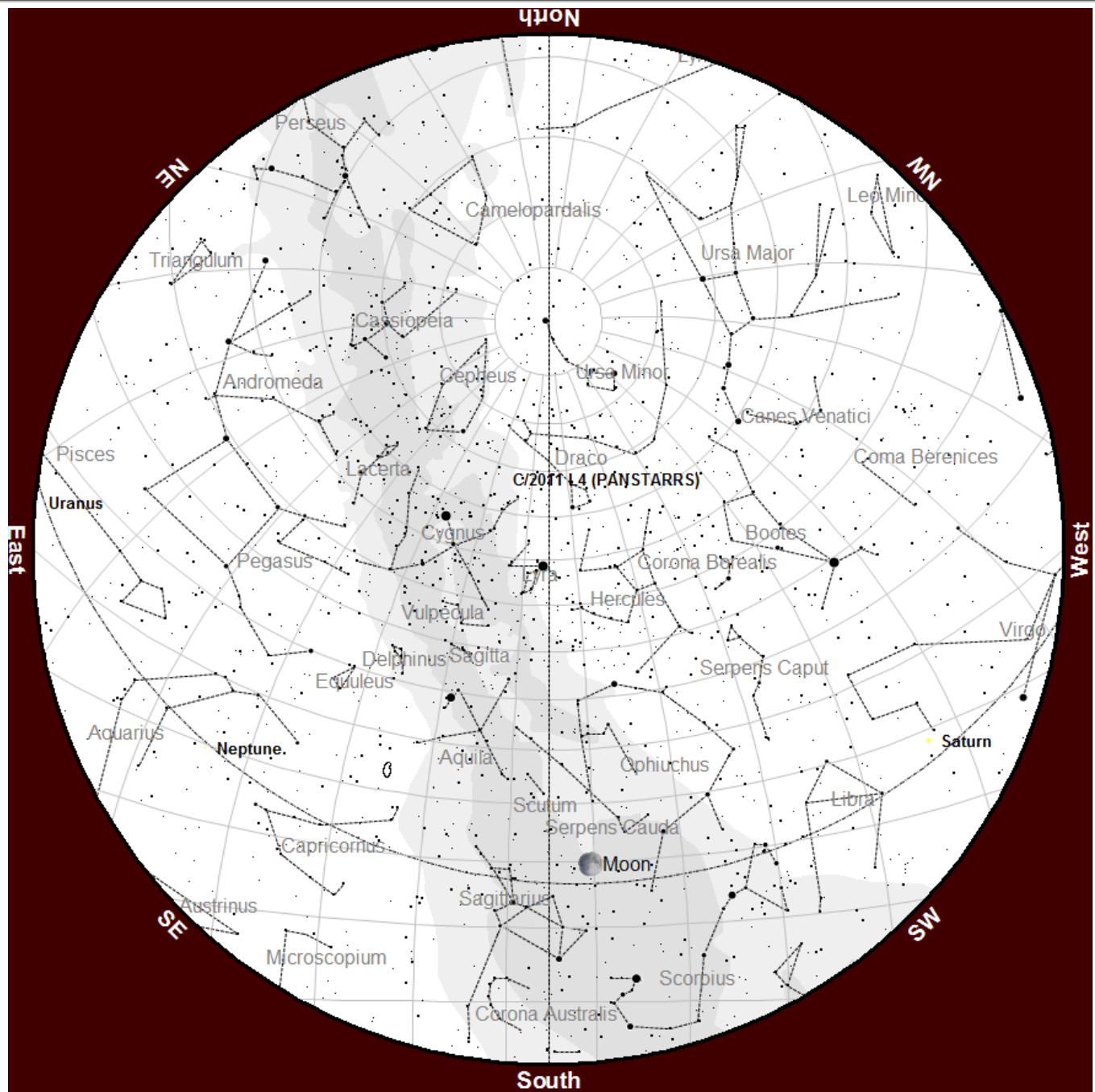
President's Message	Page	1
Calendar	Page	2
Planisphere for August	Page	3
Solar System Highlights	Page	4
Idaho Skies for August	Page	5 - 7
The Clusters of Scutum by Steve Bell	Page	8 - 9
City of Rocks Star Party	Page	10
Trivia Time / Deep Sky Highlight	Page	11
NASA Space Place	Page	12
Observatories / Planetariums	Page	13
About the Magic Valley Astronomical Society	Page	14

## Calendar for August

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	 New Moon	7	8	<b>City of Rocks            Castle Rocks            Star Party            Lodge House            Almo, ID</b>	<b>City of Rocks            Castle Rocks            Star Party            Lodge House            Almo, ID</b>
11	12	13	 First Quarter Moon	15	16	17
18	19	20	 Full Moon	22	23	24
25	26	27		29	30	31

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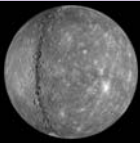





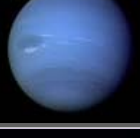




## Planisphere for August



Planisphere should be used as a guide for the month of August, mid-month, end of astronomical twilight (21:47) Planisphere is provided as a courtesy from Chris Anderson, Coordinator, Centennial Observatory, Herrett Center for Arts & Science - College of Southern Idaho, Twin Falls, ID

Be Safe, Get Out There, and Explore Your Universe!

## Solar System Highlights

	<p><b>Mercury</b> is just past greatest elongation in the west and becoming brighter, during the first half of August, Mercury is well placed in the dawn twilight for astronomers in the Northern Hemisphere. On the 5<sup>th</sup> Mercury lies between Pollux and the waning crescent Moon. By mid-month, Mercury vanishes into the morning twilight and reaches superior conjunction on the 24<sup>th</sup>.</p>
	<p><b>Venus</b> is in the west evening sky, but hugging the horizon for northern observers because of the shallow angle of the ecliptic. The waxing crescent Moon passes 5° S. of Venus on the evening of the 9<sup>th</sup>. At mid-month Venus lies very close to the Autumnal Equinox.</p>
	<p><b>Mars</b> can be spotted low in the east just before sunrise. The planet is at its dimmest and appears too small for any features to show on its tiny, 4 arcseconds globe. Nevertheless, Mars is interesting for the company it keeps, which includes Mercury, Jupiter and Gemini's twin stars, Castor and Pollux. The waning crescent Moon passes 5° S of Mars on the 4<sup>th</sup>.</p>
	<p><b>Jupiter</b> is low on the ENE morning sky, in Gemini. Jupiter rises in the east around 3 A.M. local daylight time in mid-August. You will have no problem identifying the gas giant, which gleams at magnitude -2 and easily outshines every other point of light in the morning sky. The waning crescent Moon resides in that part of the sky on the 3<sup>rd</sup>, 4<sup>th</sup>, and 31<sup>st</sup>.</p>
	<p><b>Saturn</b> is slowly leaving our skies. During August, you can see it easily rather low in the southwest as early as 30 to 40 minutes after sunset. Titan glows at 8th magnitude and shows up through any telescope. Titan lies north of Saturn on August 2<sup>nd</sup> and 18<sup>th</sup> and south of the planet on August 10 and 26. Tethys, Dione, and Rhea, glow at 10th magnitude and show up relatively easily through 6" instruments</p>
	<p><b>Uranus</b>, the ice-giant planet shines at magnitude +5.8 (it is a borderline naked eye object under dark skies) and currently lies among the dim background stars of Pisces the Fish, near the constellation's southern border. To locate Uranus look 15° to Algenib's south. Uranus should now be centered in your eyepiece's field.</p>
	<p><b>Neptune</b> reaches opposition on the night of August 26-27, so it resides highest in the south around the middle of the night. Binoculars will help show the 8th-magnitude planet, which lies in the sparsely populated constellation Aquarius, 1° due west of Sigma Aquarii. A good medium-size telescope at moderately high power should reveal the tiny (2.5 arcseconds) disk of Neptune.</p>
	<p><b>Pluto</b> wanders far from the ecliptic, where the major planets reside. It lies in northwestern Sagittarius following a number of years in Ophiuchus and Serpens. Look for it due southeast of the conspicuous open star cluster M25 at the following distances: 2° 2' (August 1); 1° 50' (August 15); and 1° 41' (August 31). Pluto glows at magnitude +14, and as a result, it is a challenge to spot. An 8-inch telescope on a perfect night brings Pluto to the edge of visibility. You will have better results with a 10" scope or larger.</p>
	<p><b>Asteroid 7 Iris</b> lies in western Aquarius, close to 3rd-magnitude Beta Aquarii, the brightest star of the constellation. It glows at magnitude +8 and reaches opposition on August 16. As such, it is just in the range of most binoculars, and locating it with a 4-inch telescope from your backyard is straightforward.</p>
	<p><b>Comet C/2012 F6 Lemmon</b> can now be seen both after sunset and before sunrise, all on the same night. Look for it high in the northern evening sky, then get up the next morning, and spot it in the northwest just before daybreak. At the start of August, Comet Lemmon lies 2° east of the 3rd-magnitude star Beta Cephei, but by month's end it moves 1° south of yellow-hued Delta Draconis. More info pg. 7.</p>
	<p><b>Perseid meteor shower</b> ranks among the most famous because it occurs during the warm nights of August. This shower never fails to provide an impressive display, even though it declined in strength since 1992, when the parent comet 109P Swift-Tuttle passed closest to Earth. This year peak activity comes Sunday night (August 11-12), under optimal conditions, with the Moon out of the sky. From mid-northern latitudes, the waxing crescent sets around 10 P.M. local daylight time the previous evening.</p>

**Idaho Skies for August**

**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 [streetastro@gmail.com](mailto:streetastro@gmail.com). Check the Idaho Skies Twitter page for notices and images at [www.twitter.com/IdahoSkies](http://www.twitter.com/IdahoSkies).**

This month look for the star Rasalhague in the constellation of Ophiuchus the Serpent Bearer. Rasalhague is the brightest star of this large and dim constellation, which has the shape of a simple house and reaches nearly to the zenith. Ophiuchus is located in the south, just above Scorpius on August evenings and Rasalhague is the star at the top of the constellation.

In Greek myth, Ophiuchus is Asclepius the healer. He was born to a mortal mother and his father was the Greek god Apollo. In his youth, Asclepius was raised by Chiron the centaur. It was Chiron who trained his adopted son to become a healer. Asclepius became such a great healer that he brought several of his dead patients back to life. To prevent him from exercising god-like powers, Zeus hurled a thunderbolt and killed Asclepius. His father, Apollo complained about the death of his son, so Zeus made Asclepius immortal and placed him in the sky as Ophiuchus.

Rasalhague (also called Alpha Ophiuchi and 55 Ophiuchi) is Arabic for "the Head of the Serpent Collector." The star is 47 light years away. Therefore, the light you see from Rasalhague tonight left in 1966. Rasalhague is a double star, but its companion is so close that even telescopes can't resolve them as separate stars. Rasalhague is spectral type A5 (white in color) and has a surface temperature of 18,000 degrees (compared to 5,800 degrees for the sun). That makes Rasalhague twice as hot as and 25 times brighter than our sun. Rasalhague recently (in stellar years) stopped converting hydrogen into helium. Its higher core temperature is now permitting the star to generate energy by fusing the helium ash in its core into carbon and oxygen.

#### August 1 – 7

Our best views of Mercury occur during the first half of the month. That's because Mercury reached greatest western elongation back on July 30<sup>th</sup>. Greatest western elongation is when Mercury is at its greatest angle away from the sun in the eastern morning sky. Since Mercury has just past greatest elongation, it's approaching the sun again. However, the sun is rising later each morning. Therefore, Mercury's distance above the horizon prior to sunrise remains nearly unchanged for several days. So look for Mercury low in the east-northeast for the next two weeks.

The moon is just above Aldebaran on the morning of the 1<sup>st</sup>. Their separation is just over two degrees, or four lunar diameters. Aldebaran is the orange eye of Taurus the Bull and will appear together with the moon in your binoculars.

The moon is a waning crescent on the 3<sup>rd</sup>, the same day that it makes a close approach to Jupiter. Jupiter will be obvious; it will be the bright star to the left of the moon. They both will fit within the field of view of your binoculars.

The next day, the moon passes close to Mars. Look for them on the morning of the 4<sup>th</sup> at 5:45 AM. Mars will be yellowish-orange star located to the upper left of the moon. The very thin crescent moon should display a strong Earthshine in your binoculars. Mars won't be very bright, but give it several more months.

What is Earthshine? Earthshine is sunlight reflecting from the moon. However, before the sun's light reached the moon, it first reflected off of Earth. This reflected Earth light faintly illuminates the dark portion of the moon. If an astronaut was standing on that portion of the moon, it would be night time because the sun had not risen yet. However, overhead would be Earth. Earth would appear as a nearly full blue-white disk four times larger than the moon appears in our sky and many times brighter. Earth is brighter for two reasons. First, as just mentioned it appears larger than the moon. More importantly however is the fact that Earth is approximately three times more reflective of the sun's light than the moon. So, instead of the ground being pitch black to our astronaut standing on the moon, Earth would illuminate the moon's surface more brightly than the full moon illuminates the Earth's surface.

If you're planning to visit Nebraska this month, then you might want to know that the Nebraska Star Party takes place near Valentine from the 4<sup>th</sup> to 9<sup>th</sup>. Valentine is just a 15 hour drive from Boise and 13 hours from Twin Falls.

The Perseids meteor shower is the best meteor shower of the summer. While it doesn't peak for another week, the meteor rate is increasing noticeably this week. Your chances of seeing meteors increases after midnight and Perseids meteors will appear to originate from the northeast.

The moon is new on the 6<sup>th</sup>. Expect dark skies for this year's Perseids meteor shower. Yippee!



The Oregon star party runs from the 6<sup>th</sup> to the 11<sup>th</sup>. The Oregon Star Party is among the most popular star parties in the Pacific Northwest and it takes place in dark skies near the town of Prineville, Oregon. You can find out more from its website, [www.oregonstarparty.org](http://www.oregonstarparty.org).

### August 8 – 14

On the morning of the 8<sup>th</sup>, Mercury forms a straight line with the stars Castor and Pollux, the brightest stars of Gemini the Twins. You'll need to go outside a little before 6:00 AM in order to see this. Much earlier than 6:00 AM and Mercury will not have risen high enough to see and a little after 6:00 AM and the sun will start brightening the sky too much to see Mercury clearly. Castor, Pollux, and Mercury appear very low in the east-northeast.

The very thin waxing crescent moon is located five degrees away from Venus on the evening of the 9<sup>th</sup>. Look low in the west, as the moon is only three days old. This ought to be an attractive site in your binoculars. However, the sky will not get truly dark before they set. If you have difficulty finding the moon, then look to the lower left of brilliant Venus to find the moon.

There's a third nearby star party this month. On August 9<sup>th</sup> and 10<sup>th</sup>, visitors to Yellowstone National Park can attend the Stars over Yellowstone. It's a monthly star party held at the Madison campground in Yellowstone and presented by the Southern Montana Astronomical Society. This month's star party also includes a presentation about the Van Allen Radiation Belts.

The night of the 11<sup>th</sup> and morning of the 12<sup>th</sup> is the peak of the Perseid meteor shower. The shower is best viewed after midnight when our place on Earth is turned towards Earth's direction of travel around the sun. This is similar to driving into a snow storm; the rate of snowfall is greatest when the car's direction of travel is into the direction that the snow is falling. Perseid meteors will appear to radiate from the northeast. This is a very dependable shower with many bright meteors. Some of which will flare.

136 years ago on the 12<sup>th</sup>, astronomer Asaph Hall detected a small star-like object close to the planet Mars. It was a rock eight miles across orbiting the planet. This was the first satellite of Mars discovered. Some people were not very surprised to discover that Mars had a moon and many were expecting astronomers to discover a second satellite, which they eventually did. This is because they saw that two satellites around Mars fit a geometric progression between Earth with one satellite and Jupiter with four satellites. The story of Gulliver's Travels by Swift makes mention of this fact. Today we know that Jupiter has far more than four satellites and the fact that Mars has two satellites is just a coincidence.

Hall named his discovery Deimos, after one of the twin sons of the god Mars. The name in Latin means terror. Deimos is a small moon and it contains very little in the way of metals. Its bulk density is between low density rock and ice. Because of its small size and low density, a 12 mile per hour sprint is enough to launch your self from the surface of Deimos and into an eternal orbit around Mars.

Our moon appears close to Spica and Saturn on the nights of the 11<sup>th</sup> and 12<sup>th</sup> respectively. Both objects will be around three degrees from the moon on their night of closest approach. The best time to look for both of these close approaches is between 10:15 and 10:45 PM. Any later and the moon will have set.

The moon reaches the first quarter phase on the 14<sup>th</sup>. As always, this is a great phase for observing the moon with binoculars or telescope.

### August 15 – 21

The waxing gibbous moon is centered in the Milky Way on the night of the 16<sup>th</sup>. Search the sky all around the moon with your binoculars and you will find clusters of star and clouds of glowing gas (nebula). While binoculars are fine for this, a low power telescope with a wide field of view is even better.

Mars passes its closest to Pollux, the brightest star in Gemini on the 17<sup>th</sup>. If you have the time, you should start your observations of Mars one week earlier. You will notice that the stars of Gemini appear higher every morning, but that Mars appears to remain nearly stationary with respect to the horizon. In time, Earth will begin catching up to Mars and it will appear in the evening sky rather in the morning sky.

The moon is full on the 20<sup>th</sup>. The full moon in August is called the Dog Days or Sturgeon Moon.

### August 22 – 31

The last quarter moon is next to the Hyades star cluster on the morning of the 28<sup>th</sup>. Look in the east after midnight (the morning of the 28<sup>th</sup>) to see this grouping. They'll be close enough together that they will fit within your binoculars at the

same time. The Pleiades star cluster, which is even more popular than the Hyades, is above the moon and farther away from it than the Hyades are.

The waning crescent moon and Jupiter forms a nice binocular pair on the morning of the 31<sup>st</sup>. Recall that this duo passed close to each other on the morning of the 3<sup>rd</sup>. This time Jupiter and the moon will be a degree closer and visible in darker skies.

### This Month's Sources

This column is a compilation of other peoples' notes. I would like to acknowledge the following sources this month.

Deimos, [http://en.m.wikipedia.org/wiki/Deimos\\_\(moon\)](http://en.m.wikipedia.org/wiki/Deimos_(moon))

Observer's Handbook 2013, Chapman, David, The Royal Astronomical Society of Canada

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

Southwest Montana Astronomical Society, <http://smas.org>

The Old Farmer's Almanac 2013, Dublin, NH

Dark Skies and Bright Stars,  
Your Interstellar Guide  
Dr. Paul Verhage, PhD

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More Comets from page 4:

Comet Lemmon: The most recent magnitude estimates put the comet at around 9th magnitude, making it an easy target for 6-inch telescopes, even in suburban skies. In the coming weeks, Comet Lemmon will get progressively dimmer, as it heads back out into the outer fringes of the solar system once again. Because the comet moves on an extremely long elliptical orbit, it will not return for another 11,000 years!

Comet **C/2012 S1 ISON**, discovered in September 2012 by two Russian astronomers, is expected to become a spectacular naked eye object during November and December this year. While it is hard to predict just how bright the comet will be, the media hyped ISON as the coming "Comet of the Century". Whether the comet will meet expectations or fizzle out still remains to be seen. The facts are that Comet ISON brightened hardly at all from January through May, when it became lost in the glare of the Sun. This lead astronomers to believe that the comet will develop more slowly than initially forecasted, but prospects for a spectacular display still remain. Around mid-August, ISON will finally appear in a dark sky before dawn. Observers with 8-inch or larger telescopes should spot it very low above the eastern horizon, however, the comet will appear only as a faint fuzz around magnitude +10 or +11.



Image: Idaho Skies; the Full Moon rises above the Snake River Canyon – Twin Falls, Idaho, USA  
Pillar Falls (foreground) and Shoshone Falls (back) © 2012 by Gary Leavitt, MVAS.



## The Clusters of Scutum by Steve Bell



Scutum, *The Shield*, is a somewhat obscure constellation lying between Aquila and Sagittarius. It is home to nine open clusters and a globular cluster brighter than magnitude 10 and is worthy of exploration for amateur-size telescopes.

Object	Type	RA	DEC	Mag	Size
M11	Open	18 51 06	-06 16 00	5.8	14
M26	Open	18 45 12	-09 24 00	8	15
NGC6625	Open	18 23 12	-12 03 00	9	0
NGC6649	Open	18 33 30	-10 24 00	8.9	6
NGC6664	Open	18 36 42	-08 13 00	7.8	16
NGC6683	Open	18 42 12	-06 17 00	10	11
NGC6704	Open	18 50 54	-05 12 00	9.2	6
NGC6712	Globular	18 53 06	-08 42 00	8.2	7.2
Tr34	Open	18 39 48	-08 29 00	8.6	7
Tr35	Open	18 42 54	-04 08 00	9.2	9

We will use the two Messier clusters as our points of departure for star hopping.

**M11:** M11 (NGC 6705), the *Wild Duck Cluster*, was discovered by Gottfried Kirch in 1681 and included by Messier in his catalog in 1764. It is one of the richest (~2900 stars) and most compact of known open clusters. Its age is estimated at about 220 million years and is some 6200 light years from the sun.

Through an 8" SCT at 107X it is dense, bright and shows over 100 stars. Cluster was about 1/3 field of view. The bright central star is a foreground star and not part of the cluster.

**NGC6704:** Moving about one degree slightly east of north, you should pick up NGC 6704. This is a smallish cluster, showing approximately 25 stars over 1/10 field of view in a 14" Newtonian at 123X. It was irregular in shape with no particular concentration.

**TR35:** About 2.4 degrees northwest of NGC 6704 is TR35 (Trumpler 35). Through a 9.25" SCT at 181X, this cluster is an arc of 10 stars against a background haze, stretching about 1/8 field of view with a moderate range of star magnitude.

**NGC6683:** Some 2.4 degrees very slightly west of south from TR35 lies NGC 6683. In a 14" Newtonian at 123X, this cluster is small and faint and did not stand out well from the background. It contains maybe 20 stars, all faint. This cluster may not be accessible to smaller scopes.

**NGC6712:** Returning to M11, move about 2.5 degrees in a direction slightly east of south to NGC 6712. This is the only globular cluster in Scutum. Through an 8" SCT at 83X, this globular appears moderately bright, not resolved but very grainy and subtends about 1/10 field of view.

PN IC 1295 is also in the field of view about 0.5 degree ESE. Whether you see the PN will depend on aperture and sky darkness. A narrow band filter will help with visibility for the PN.

**M26:** M26 (NGC 6694) was discovered by Charles Messier in 1764. It lies about 5000 light years from the sun and is about 89 million years old. M26 lies about 2.3 degrees west-southwest of NGC 6712.

Through an 8" SCT at 75X, M26 appears large, loose and irregular, with a scattering of bright stars against a dimmer background. It shows greater than 40 stars in a rectangular to oval shape and is about 1/4 field of view.

**TR34:** About 2 degrees west-northwest of M26 is TR (Trumpler) 34. This is a smallish cluster, irregular, with 15 – 20 stars in a 14" Newtonian at 123X.

**NGC6664:** About one degree along the same line from M26 through TR34 lies NGC 6664. Adjacent to  $\alpha$ -Scuti, this is a moderately large cluster, irregular in shape with no particular concentration. Through an 8" SCT at 83X, it is about 1/3 field of view and comprises about 20 stars.

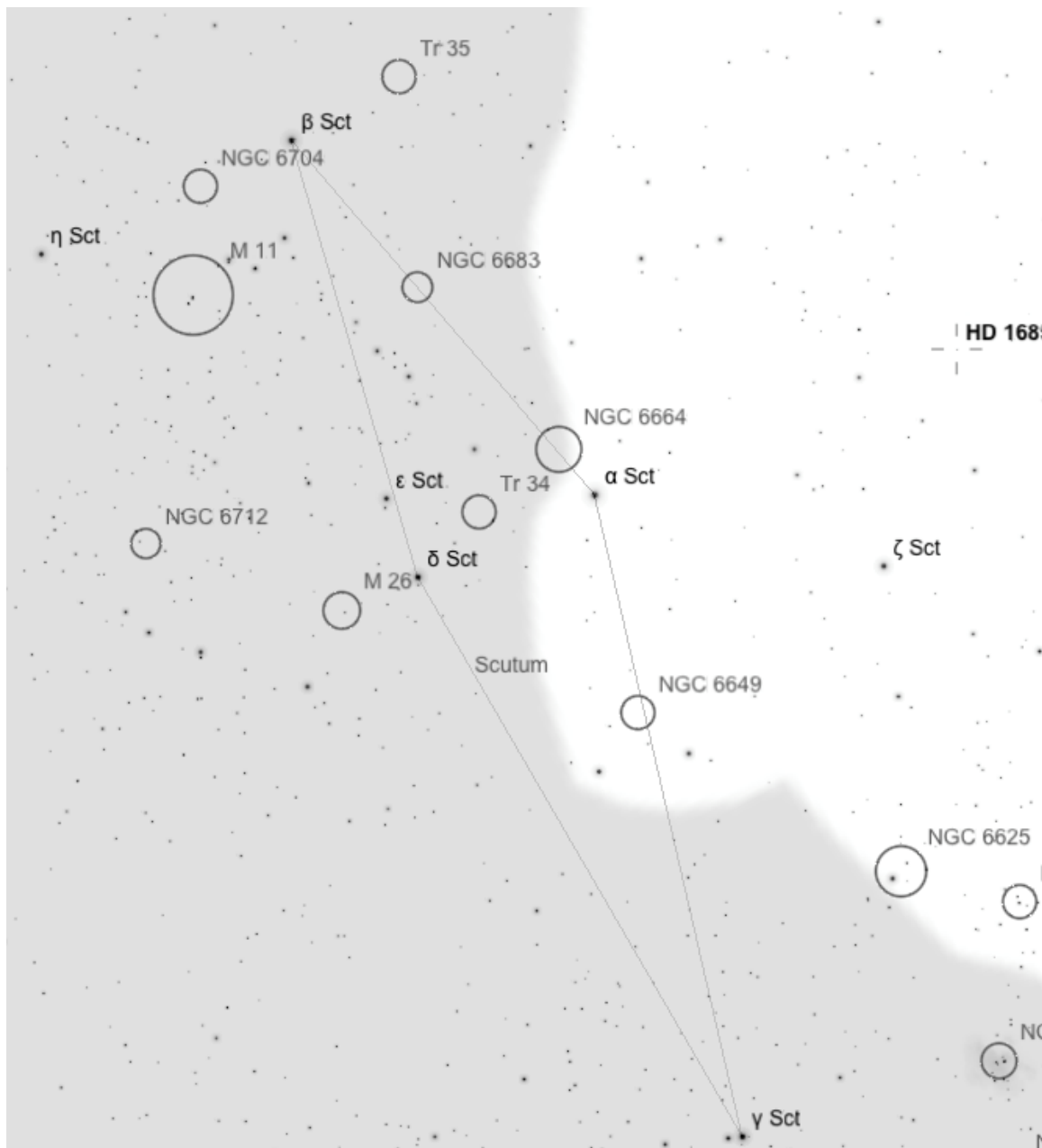


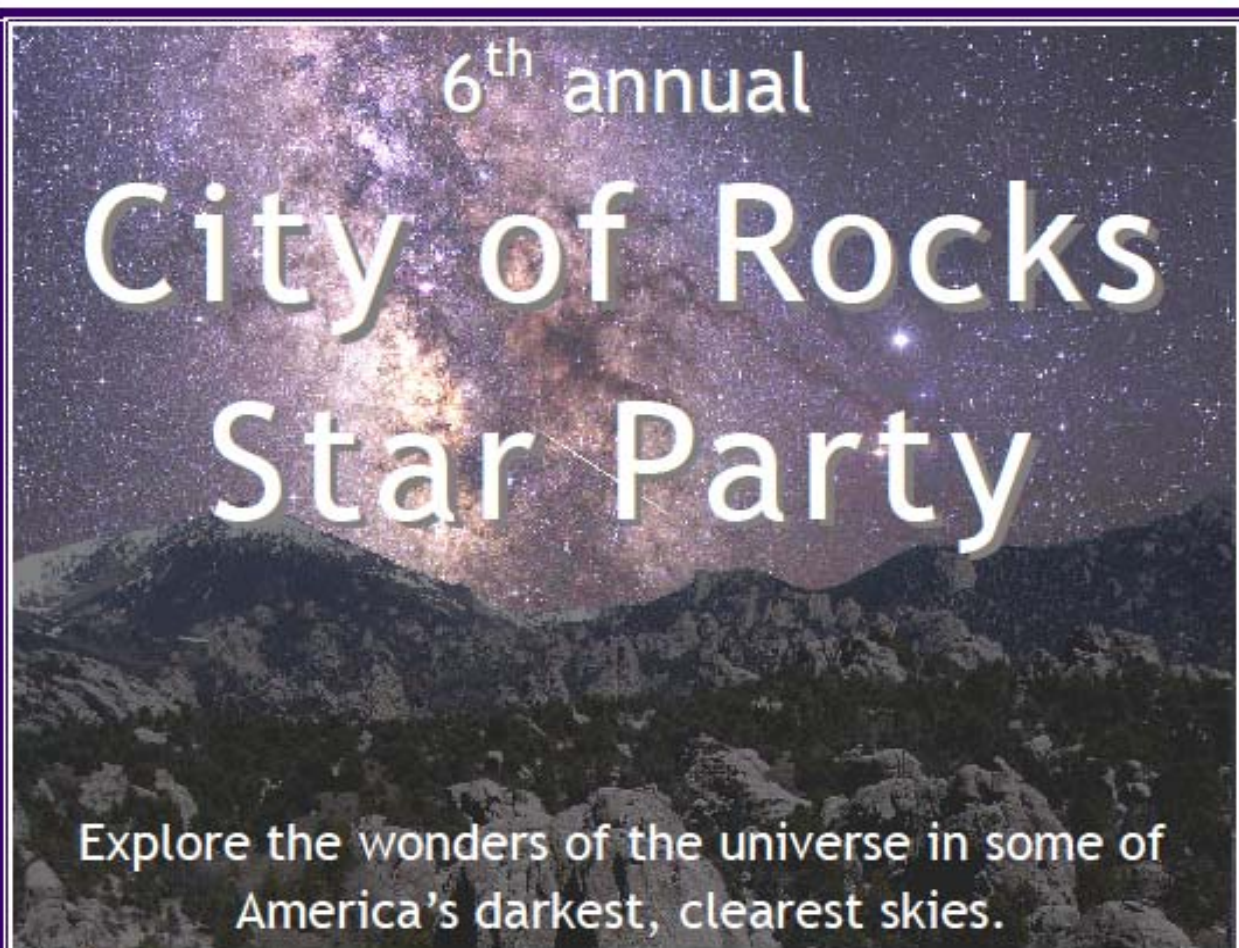
**NGC6649:** Moving approximately 2.6 degrees south-southwest, NGC 6649 comes into view. NGC 6649 is a fairly large cluster in a 14" Newtonian at 178X. It stands out well from the background and is comprised of about 30 stars across about 1/5 the field of view. There is no particular concentration in the cluster, but there is a noticeable trace of nebulosity or unresolved haze.

**NGC6625:** Some 2.7 degrees west-southwest of NGC 6649 lies our last cluster in Scutum, NGC 6625. Through a 14" Newtonian at 59X, this cluster is large, filling roughly ¼ field of view. It is bright and split into two sections with a void in the middle. The 50 stars in the cluster have multiple brightness levels, with a bright foreground star.

There are many other bright clusters in the surrounding area as you descend into Serpens and Sagittarius. This is a very rich area as you move toward the galactic center along the Milky Way's spine.

### Scutum Clusters

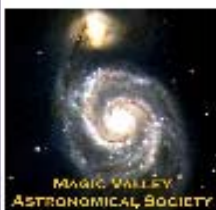




## Castle Rocks State Park

Two miles north of Almo, ID (1 hr. S. of Burley)

**Friday, Aug. 9<sup>th</sup> & Saturday, Aug. 10<sup>th</sup>, 2013**



- 2:00-6:00 p.m. — **Solar viewing** (safe views of the Sun with filtered telescopes), Smoky Mtn. Campground, Castle Rocks State Park
- 9:00 p.m. — **Star party** (telescope viewing), Lodge site, Castle Rocks State Park



Telescopes provided. Free admission—park day use fees apply.

Hosted by: Idaho Dept. of Parks & Recreation, Magic Valley Astronomical Society, and the College of Southern Idaho's Centennial Observatory



## Trivia Time

Some gold medal winners at the Sochi Winter Olympics are set to be rewarded for their out-of-this-world performances with extra medals embedded with meteorite fragments, Russian officials have announced. The special medals are on offer to athletes who win their events on February 15, 2014, the one-year anniversary of a meteorite strike that injured 1,600 people, smashing windows and causing other damage in the Russian city of Chelyabinsk.

Chunks of that very space rock are to be chipped off and inserted into the medals; Chelyabinsk Region Culture Minister Alexei Betekhtin was quoted as saying in a statement. "We will hand out our medals to all the athletes who will win gold on that day, because both the meteorite strike and the Olympic Games are the global events," Betekhtin said.

Several scientific expeditions collected the meteorite shards, which were found to be formed from common chondrite. Seven sets of medals are on offer on February 15.



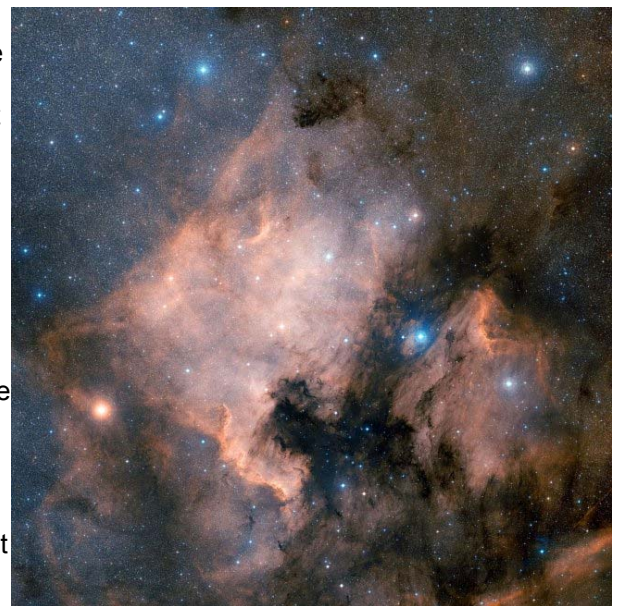
## Deep Sky Highlight

Cygnus, sometimes known as the Northern Cross, is a prominent constellation of the northern skies representing a swan flying along the Milky Way. On summer nights, Cygnus shines in the east during the evening, sweeps high overhead after midnight, and swings to the west by dawn.

Just 3° east of Cygnus' brightest star, first-magnitude Deneb, lies a truly spectacular emission nebula. NGC 7000, more commonly called the **North America Nebula** after its resemblance to Earth's continent, is known to most amateur astronomers, yet only a few have actually seen it.

This is probably due to the misconception that the nebula is only visible in long exposure photographs; this is not the case. In fact, under good conditions, NGC 7000 is visible to the naked eye as an enhancement of the Milky Way. However, dark skies are definitely a must.

If all the light coming from NGC 7000 were emitted by a point source, it would appear as a magnitude +4 star in our sky. Of course, in reality the light from the nebula is spread over two square degrees in the sky, so its brightness is quite dim (and nothing like a 4th-magnitude star). If the sky at your observing location is less than perfect, 7x50 binoculars or a wide-field telescope equipped with UHC or OIII filters will make the nebula easier to discern.



NGC 7000, the North America Nebula, spans about 50 light years and lies 1,500 light years away toward the constellation Cygnus (the Swan or the Northern Cross).



## Inventing Astrophotography: Capturing Light Over Time



By Dr. Ethan Siegel

We know that it's a vast Universe out there, with our Milky Way representing just one drop in a cosmic ocean filled with hundreds of billions of galaxies. Yet if you've ever looked through a telescope with your own eyes, unless that telescope was many feet in diameter, you've probably never seen a galaxy's spiral structure for yourself. In fact, the very closest large galaxy to us—Andromeda, M31—wasn't discovered to be a spiral until 1888, despite being clearly visible to the naked eye! This crucial discovery wasn't made at one of the world's great observatories, with a world-class telescope, or even by a professional astronomer; it was made by a humble amateur to whom we all owe a great scientific debt.

Beginning in 1845, with the unveiling of Lord Rosse's 6-foot (1.8 m) aperture telescope, several of the nebulae catalogued by Messier, Herschel and others were discovered to contain an internal spiral structure. The extreme light-gathering power afforded by this new telescope allowed us, for the first time, to see these hitherto undiscovered cosmic constructions. But there was another possible path to such a discovery: rather than collecting vast amounts of light through a giant aperture, you could collect it *over time*, through the newly developed technology of photography. During the latter half of the 19<sup>th</sup> Century, the application of photography to astronomy allowed us to better understand the Sun's corona, the spectra of stars, and to discover stellar and nebulous features too faint to be seen with the human eye.

Working initially with a 7-inch refractor that was later upgraded to a 20-inch reflector, amateur astronomer Isaac Roberts pioneered a number of astrophotography techniques in the early 1880s, including "piggybacking," where his camera/lens system was attached to a larger, equatorially-mounted guide scope, allowing for longer exposure times than ever before. By mounting photographic plates directly at the reflector's prime focus, he was able to completely avoid the light-loss inherent with secondary mirrors. His first photographs were displayed in 1886, showing vast extensions to the known reaches of nebulosity in the Pleiades star cluster and the Orion Nebula.

But his greatest achievement was this 1888 photograph of the Great Nebula in Andromeda, which we now know to be the first-ever photograph of another galaxy, and the first spiral ever discovered that was oriented closer to edge-on (as opposed to face-on) with respect to us. Over a century later, Andromeda looks practically identical, a testament to the tremendous scales involved when considering galaxies. If you can photograph it, you'll see for yourself!

Astrophotography has come a long way, as apparent in the Space Place collection of NASA stars and galaxies posters at <http://spaceplace.nasa.gov/posters/#stars>.



Great Nebula in Andromeda, the first-ever photograph of another galaxy. Image credit: Isaac Roberts, taken December 29, 1888, published in *A Selection of Photographs of Stars, Star-clusters and Nebulae*, Volume II, The Universal Press, London, 1899.


**Observatory and Planetarium Events**


Schedule for Centennial Observatory – Herrett Center  
herrett.csi.edu

Event	Place	Date	Time	Admission
Summer Solar Session #11	Centennial Observatory	Wednesday, August 7 <sup>th</sup> , 2013	1:30 to 3:30 PM	FREE
Sixth annual City of Rocks Star Party - nighttime telescope viewing	Lodge Site, Castle Rocks State Park, Almo, Idaho	Friday, August 9 <sup>th</sup> & Saturday, August 10 <sup>th</sup> , 2013	9:00 PM to midnight	FREE (park day use fees apply)
Monthly Free Star Party	Centennial Observatory	Saturday, August 10 <sup>th</sup> , 2013	9:15 PM to midnight	FREE
Summer Solar Session #12	Centennial Observatory	Wednesday, August 14 <sup>th</sup> , 2013	1:30 to 3:30 PM	FREE
Summer Solar Session #13	Centennial Observatory	Wednesday, August 21 <sup>st</sup> , 2013	1:30 to 3:30 PM	FREE
Summer Solar Session #14	Centennial Observatory	Wednesday, August 28 <sup>th</sup> , 2013	1:30 to 3:30 PM	FREE

Faulkner Planetarium Schedule – Herrett Center Twin Falls

Day	Time	Show
Tuesdays	2:00	Star Signs/Live Sky Tour
	3:30	Lifestyles of the Stars/Live Sky Tour
	7:00	Light Years From Andromeda
	8:15	Pink Floyd: The Wall
Wednesdays	2:00	Planet Patrol: Solar System Stake-Out
	3:30	Dark Matters/Live Sky Tour
Thursdays	2:00	Star Signs/Live Sky Tour
	3:30	Lifestyles of the Stars/Live Sky Tour
Fridays	2:00	Planet Patrol: Solar System Stake-Out
	3:30	Dark Matters/Live Sky Tour
	7:00	Light Years From Andromeda
	8:15	Led Zeppelin: Maximum Volume 1
Saturdays	2:00	Planet Patrol: Solar System Stake-Out
	4:00	Lifestyles of the Stars/Live Sky Tour
	7:00	Light Years From Andromeda
	8:15	Pink Floyd: Dark Side of the Moon



## Membership Information

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](mailto:jtubbs015@msn.com) or home telephone: 736-1989 or mail directly to the treasurer at his home address. 550 Sparks Twin Falls, ID 83301

Donations to our club are always welcome and are even tax deductible. Please contact a board member for details.

M-51 viewed in this newsletter 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.

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

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"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.

### Membership Benefits

Sky and Telescope group rates. Subscriptions to this excellent periodical are available through the MVAS at a reduced price of \$32.95.

Astronomy Magazine group rates. Subscriptions to this excellent periodical are available through the MVAS 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 Library: Contact, the current board for information.

Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others. Contact Rick Widmer, Webmaster for more information.