

Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

Saturday, September 10th 2016
7:00pm at the
Herrett Center for Arts & Science
College of Southern Idaho.

Public Star Party Follows at the
Centennial Observatory

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Magic Valley Astronomical Society is a
member of the Astronomical League



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

President's Message

Colleagues,

We're finishing up prime viewing time. Last month, we held the City of Rocks Star Party, and this month, we have a couple of big ones looming.

Friday and Saturday, Sept. 2-3: The Craters of the Moon Star Party, sponsored by the Idaho Falls Astronomical Society, is always a favorite.

IFAS always welcomes our presence at the Caves Parking lot for what promises to be spectacular viewing. Be aware, however, that the campground is unavailable due to upgrades that should create better access for larger RVs.





Sept. 30 and Oct. 1 (Again, a Friday and a Saturday): The Idaho Star Party, sponsored by the Boise Astronomical Society, will not only feature dark skies, access to the 25" Newtonian, but also vendors and speakers. Be aware that a \$25 fee is required to attend the programs, and that you'll have to check with the state park for camping.

If these are too big for you, be aware that MVAS will be operating a small star party at Hagerman on Oct. 1. In addition, there is talk of a smaller star party at the Jerome Gun Club for interested parties Sept. 2. Stay tuned for more.

Clear Views,

Rob Mayer

Calendars for August

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 New Moon Lunation 1159 	2	3
4	5 Labor Day 	6	7	8	9 First Quarter Moon 51% Visible 	10
11	12	13	14	15	16 Full Moon 100% Visible 	17
18	19	20	21	22	23 Last Quarter 50% Visible 	24
25	26	27	28	29	30 Idaho Star Party Bruneau S.P. Bruneau, ID 	1 Idaho Star Party Bruneau S.P. Bruneau, ID 

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

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Celestial Calendar

The Sky This Month – September 2016

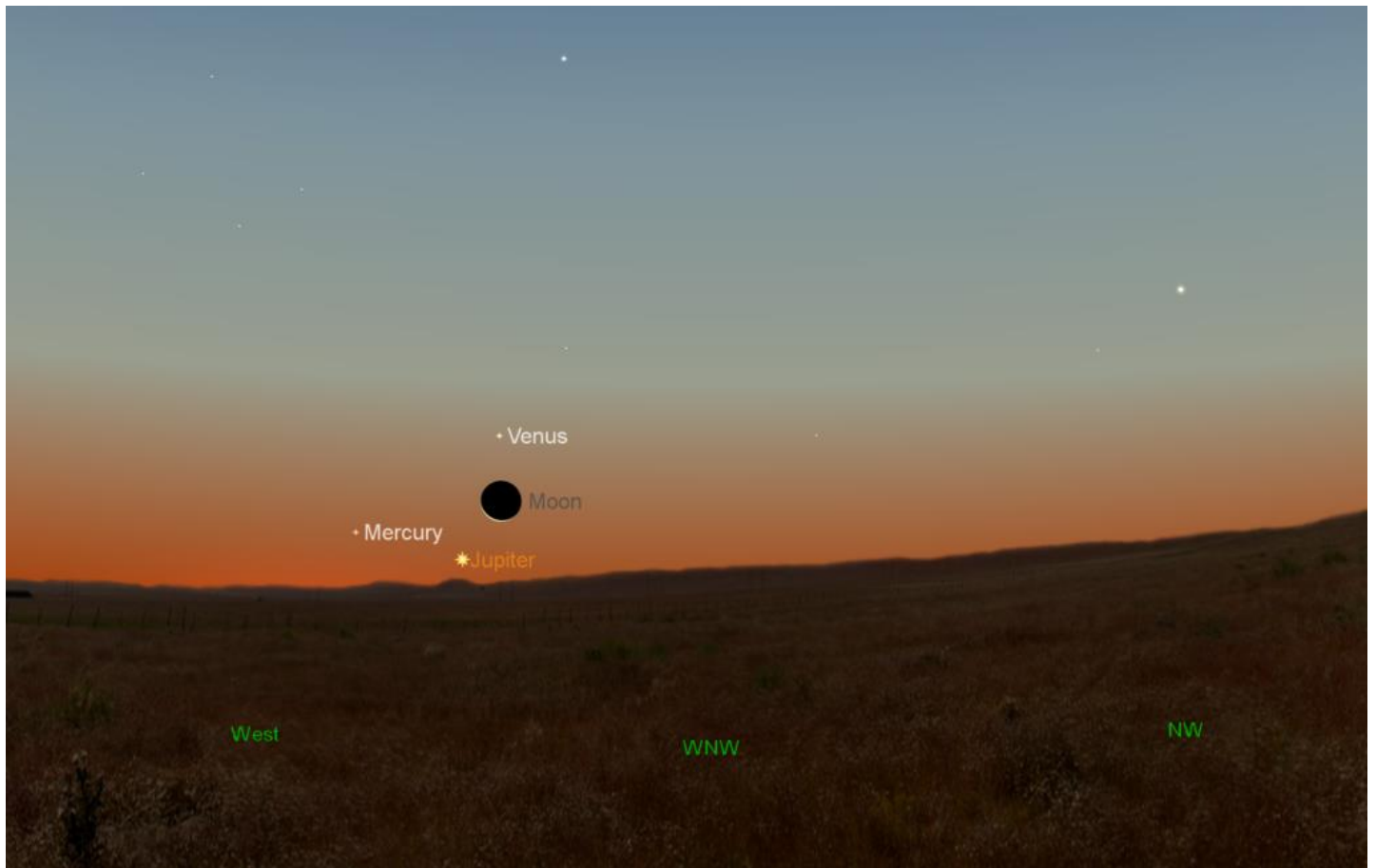


The zodiacal light as seen from La Silla, Chile (credit: ESO).

Jupiter finally fades from view this month but it goes out in style, attended in the west after sunset by brilliant Venus and, at the beginning of the month, by a slender crescent Moon. Mars lingers in the starry sky of Scorpius and Sagittarius, and finally starts to move eastward and pull away from Saturn and Antares. And the Sun reaches the September equinox and marks the changing of the seasons. Here's what to see in the night sky this month...

2 Sept. The planet Neptune reaches opposition and rises in the east as the Sun sets in the west.

3 Sept. Look in the western sky after sunset for a very slender crescent Moon, brilliant Venus, and fading Jupiter arranged in a photogenic diagonal. Observers in the southern hemisphere will also see Mercury join the show (see below).



Mercury, Venus, Jupiter, and the waxing crescent Moon as seen in the western sky after sunset from 35 degrees SOUTH latitude on Sept. 3, 2016.

9 Sept. Look for the waxing crescent Moon near the bright star Antares and the planets Saturn and Mars. The congregation is visible well over the southern and southwestern horizons for northern-hemisphere observers. In the southern hemisphere, the spectacle is visible nearly overhead. Mars moves eastward this month into Sagittarius and fades from magnitude -0.3 to $+0.1$. The ochre-hued planet still outshines Saturn and Antares through September.

12 Sept. Mercury reaches superior conjunction and is lost in the glare of the Sun.

15 Sept. Look for the planet Neptune about one degree south of the nearly-full Moon.

22 Sept. The Sun crosses the celestial equator moving south. This is the September equinox. It marks the beginning of autumn in the northern hemisphere and the beginning of spring in the southern hemisphere.

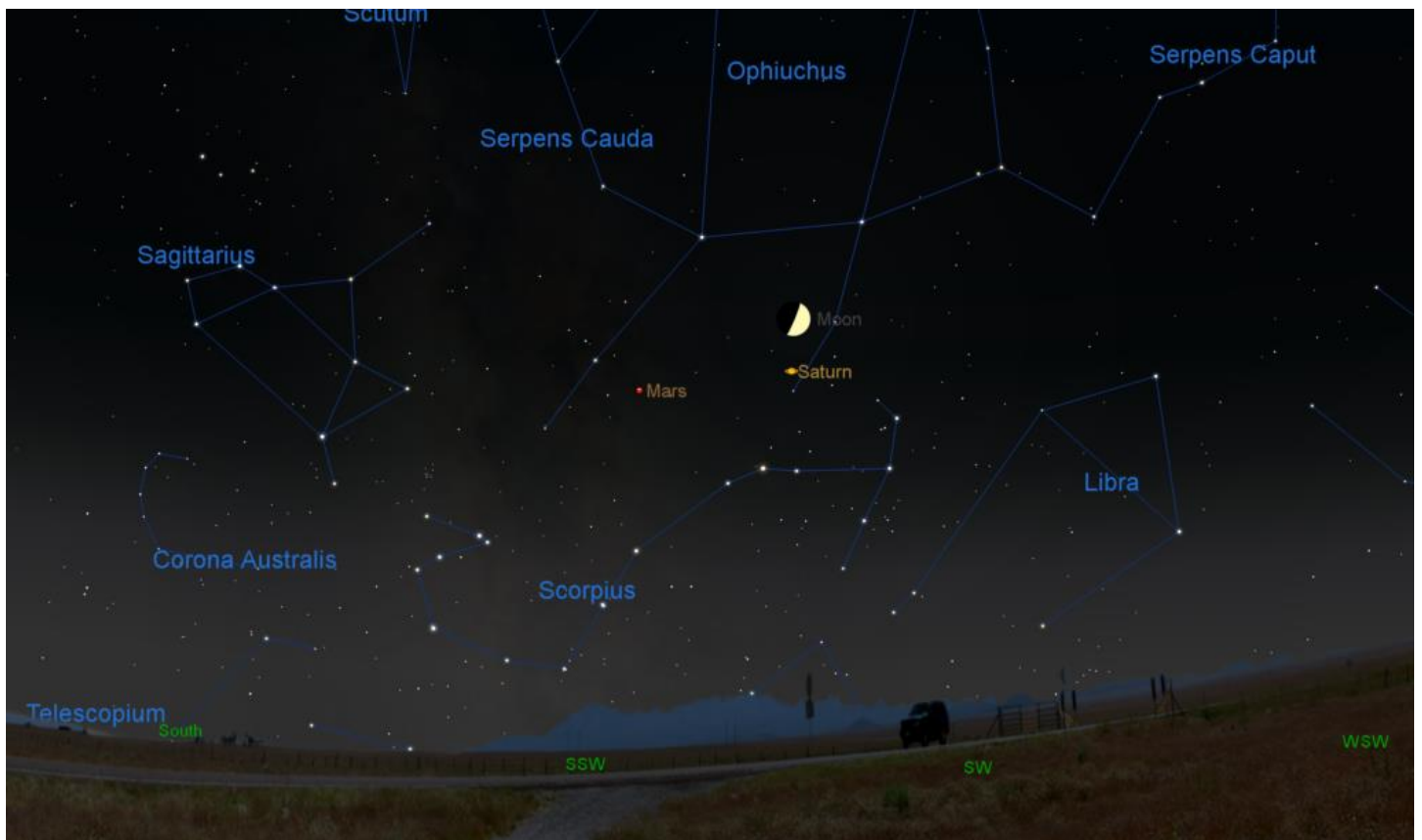
26 Sept. After putting on a splendid show over the past many months, Jupiter reaches superior conjunction with the Sun. It will reappear in the morning sky in the first weeks of October.

27 Sept. The bright star Regulus has reappeared in the morning sky and lies just 6° from the waning crescent Moon.

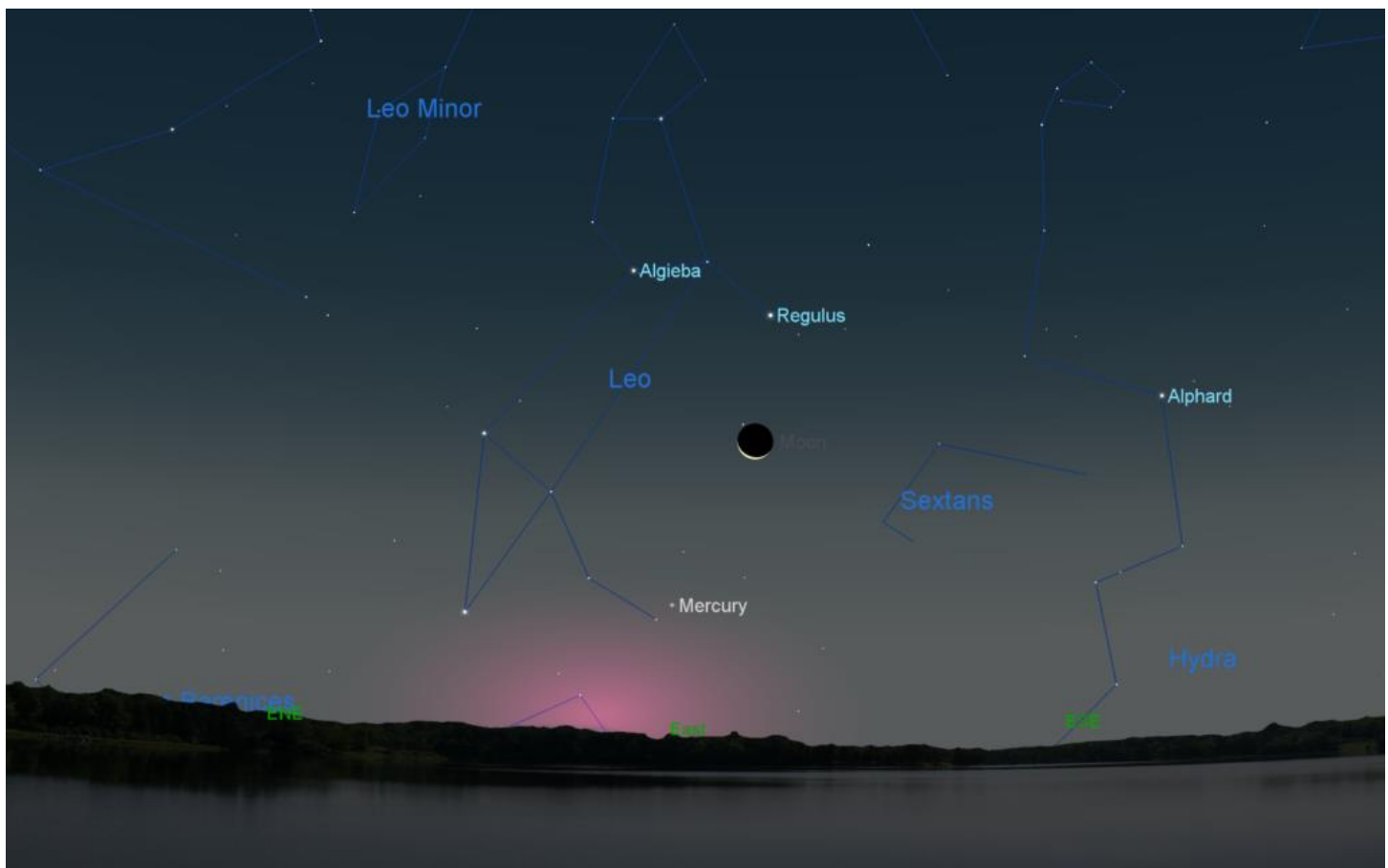
28 Sept. Look for the planet Mars just 1.5° south of the Lagoon Nebula, M8, one of the brightest emission nebulae in the sky.

28 Sept. Mercury reaches greatest western elongation, about 18° from the Sun. Northern observers can look for the planet low on the eastern horizon an hour before sunrise.

29 Sept. This is the time of year to look for the zodiacal light in the hours before dawn. This eerie white pyramid of light is caused by sunlight scattered off tiny particles floating around the plane of the solar system.



The nearly first-quarter Moon joins the bright star Antares in Scorpius and the planets Mars and Saturn on September 8, 2016 as seen looking southwest at 9 pm local time.



Mercury and the Moon in the eastern sky before sunrise on Sept. 28, 2016. The constellation Leo and its brightest star Regulus also reappear in the eastern morning sky.



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.nakedeyep...com/uranus.htm> and <http://www.nakedeyep...com/neptune.htm> and also at http://www.skyandtel...p16_Finders.pdf

For information on comets visible this month, browse <http://cometchasing.skyhound.com/>

ISS



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

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

This Month's Sky Chart

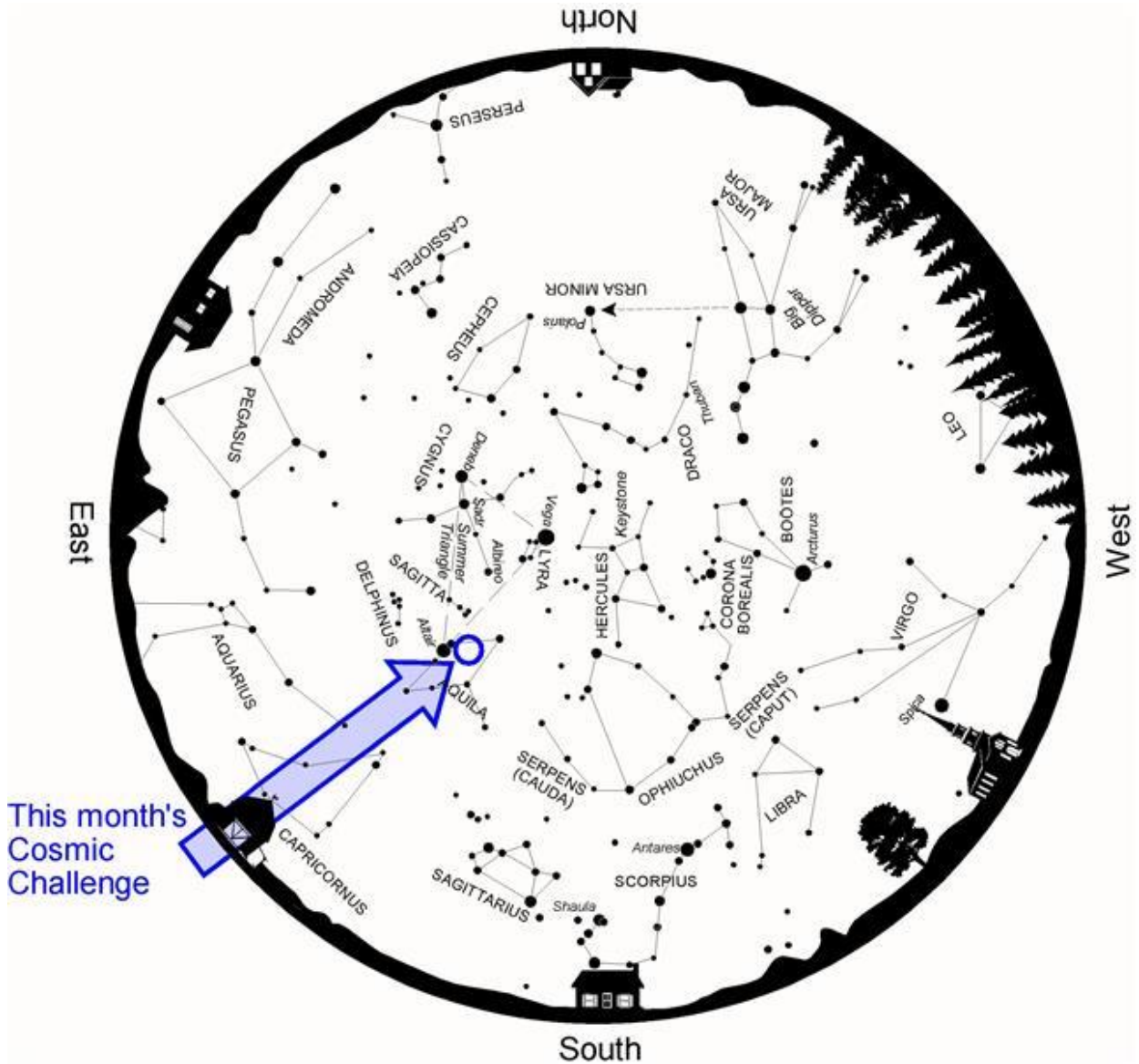


A larger copy of this Sky Chart is available at: <http://tinyurl.com/zkm8dk6>

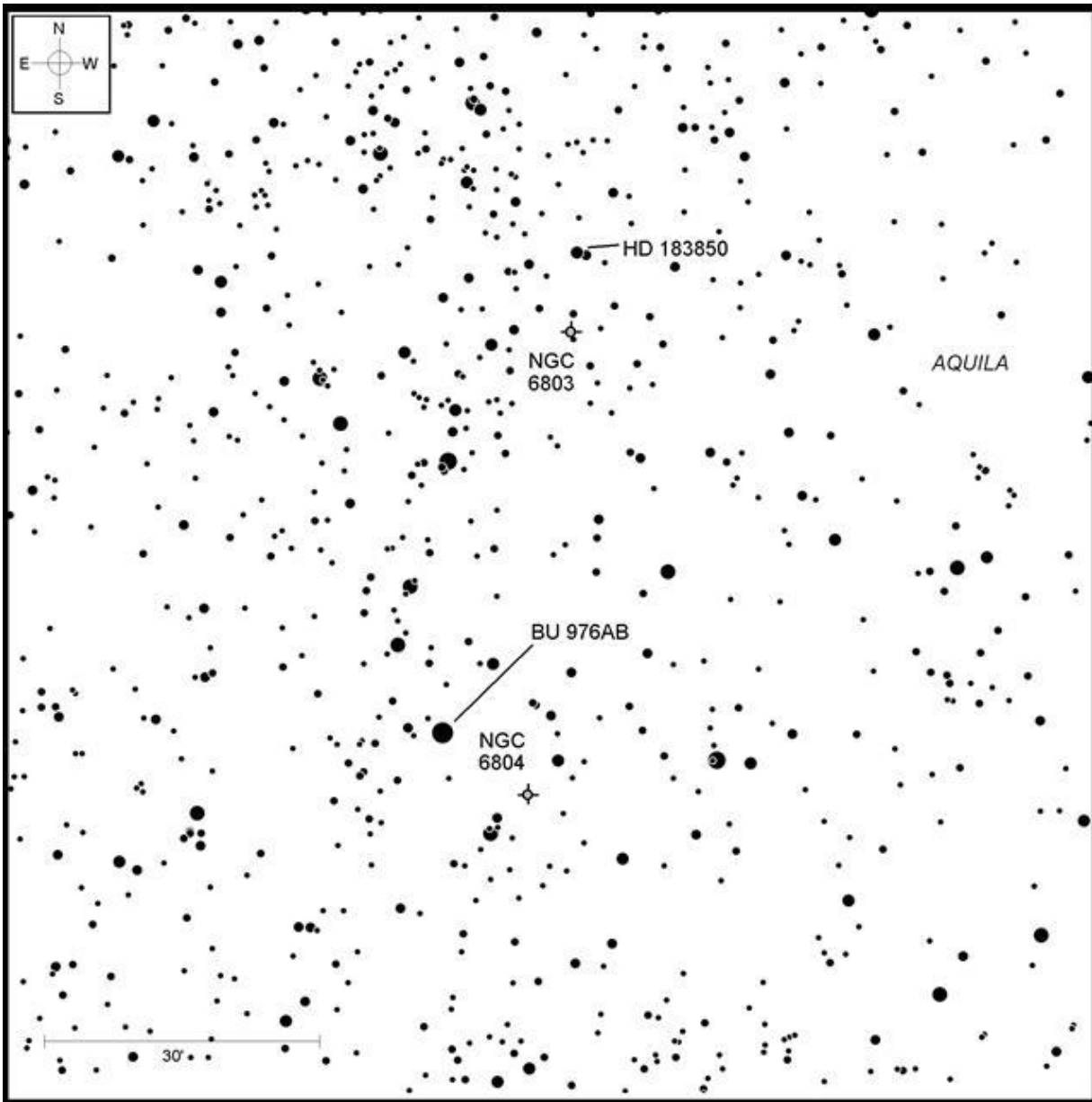
Looking Through the Eyepiece

Cosmic Challenge: NGC 6803 and NGC 6804 by Phil Harrington

Here's a twofer for you, a pair of challenges found within 1° of each other in the constellation Aquila the Eagle. Both of these planetary nebulae present interesting tests for smaller apertures, each in its own way.



Above: Summer star map from [Star Watch](#) by Phil Harrington.



Above: Finder chart for this month's [Cosmic Challenge](#).
 Chart adapted from [Cosmic Challenge](#) by Phil Harrington.
 Click on the chart to open a printable PDF version in a new window.

Despite their closeness to one another in our sky, NGC 6803 and NGC 6804 have no physical relationship and couldn't be farther apart in terms of appearance.

Let's begin with NGC 6803, found a little less than 4° west of Tarazed (Gamma Aquilae). The American astronomer Edward Pickering (1846-1919) was first to lay eyes on this tiny target on September 17, 1882, using the 15-inch refractor at Harvard College Observatory. Pickering is most famous for his work determining characteristics of stars by studying their spectra. Truth be told, much of Pickering's acclaim was due largely to the computational work performed by more than a dozen female astronomers who assisted him. Known in certain politically incorrect circles as "Pickering's Harem," his team of assistants included Annie Jump Cannon, Henrietta Swan Leavitt, Antonia Maury, and even his former maid, Williamina Fleming. Each went on to make many important contributions to the science in her own right.

You'll find NGC 6803 at the end of a meandering line of eight 8th-magnitude stars, just 10' south of the 9th-magnitude double star HD 183850. The problem is telling NGC 6803 apart from the rich surrounding star field, since its tiny disk measures a scant 6" across. Even viewing at 200x through my 4-inch refractor on a night of exceptionally steady seeing, it is still tough to tell which is the planetary and which are just faint surrounding stars without a little help.

Time to call in a narrowband nebula filter, such as a Lumicon UHC or Orion UltraBlock. An Oxygen-III (O-III) filter also works well, although it tends to dim the field far more than a UHC. For minuscule planetaries like NGC 6803, however, don't simply screw the filter into your eyepiece barrel. Instead, center your telescope on the field suspected of containing NGC 6803, hold your filter in between the eyepiece and your eye, and take a careful look. By alternately moving the filter in and out of the optical train, you will see the planetary "blink." Stars, which are broadband emission objects, will dim more noticeably than the planetary, which focuses its energy emissions only in a narrow portion of the visible spectrum. Do this back and forth rapidly, checking each stellar point as you go, and the planetary will have no choice but to reveal itself. After you capture NGC 6803, screw the nebula filter into your eyepiece's barrel to see if you can make out its disk.

Leave the filter in place as we move on to part 2 of this challenge. From NGC 6803, slide 20' southeast to a 7th-magnitude star, and then another 30' due south to the binary star BU 976AB, a close-set pair of 6th-magnitude stars that are a nice resolution test for 3-inch telescopes. NGC 6804 is just 11' to their southwest.

While NGC 6803 is challenging for its tininess, NGC 6804 measures 35" in diameter. That's easily large enough to be distinguishable through my 4-inch refractor at 100x. My notes recall that I saw it "first with averted vision, then directly; a faint, homogenous disk of grayish light floating within a distinctive kite-shaped asterism." Larger apertures add several faint stars immediately around the planetary, producing it a ghostly, faux 3-dimensional effect that is quite striking. These same instruments may also show the nebula's 14th-magnitude central star.

It was probably this appearance, with the nebula framed by those unrelated stars, that led William Herschel to misclassify NGC 6804 as an open cluster when he discovered it in August 1791. Only after it was scrutinized more closely through the 100-inch reflector at Mount Wilson Observatory by Francis Pease in 1917 was its true nature uncovered.



Above: Sketch of NGC 6804 through my 4-inch 4/9.8 refractor at 100x.

These are but two of the 8 planetary nebulae in Aquila that are listed in the New General Catalog. The others are NGCs 6741, 6751, 6772, 6781, 6790, and 6852. Why not try your hand at all and see how many you can find through a small scope? Or a large scope, for that matter!

Have a favorite challenge object of your own? I'd love to hear about it, as well as how you did with this month's test. Contact me through my [web site](#) or post to this e-column's discussion forum.

Remember, half of the fun is the thrill of the chase. Game on!

Phil Harrington's Cosmic Challenge is copyright 2016 by Philip S. Harrington. All rights reserved. Reproduction is with permission of the copyright holder. Visit his web site at www.philharrington.net to learn more.

Is there a super-Earth in the Solar System out beyond Neptune?

By Ethan Siegel

When the advent of large telescopes brought us the discoveries of Uranus and then Neptune, they also brought the great hope of a Solar System even richer in terms of large, massive worlds. While the asteroid belt and the Kuiper belt were each found to possess a large number of substantial icy-and-rocky worlds, none of them approached even Earth in size or mass, much less the true giant worlds. Meanwhile, all-sky infrared surveys, sensitive to red dwarfs, brown dwarfs and Jupiter-mass gas giants, were unable to detect anything new that was closer than Proxima Centauri. At the same time, Kepler taught us that super-Earths, planets between Earth and Neptune in size, were the galaxies most common, despite our Solar System having none.

The discovery of Sedna in 2003 turned out to be even more groundbreaking than astronomers realized. Although many Trans-Neptunian Objects (TNOs) were discovered beginning in the 1990s, Sedna had properties all the others didn't. With an extremely eccentric orbit and an aphelion taking it farther from the Sun than any other world known at the time, it represented our first glimpse of the hypothetical Oort cloud: a spherical distribution of bodies ranging from hundreds to tens of thousands of A.U. from the Sun. Since the discovery of Sedna, five other long-period, very eccentric TNOs were found prior to 2016 as well. While you'd expect their orbital parameters to be randomly distributed if they occurred by chance, their orbital orientations with respect to the Sun are clustered extremely narrowly: with less than a 1-in-10,000 chance of such an effect appearing randomly.

Whenever we see a new phenomenon with a surprisingly non-random appearance, our scientific intuition calls out for a physical explanation. Astronomers Konstantin Batygin and Mike Brown provided a compelling possibility earlier this year: perhaps a massive perturbing body very distant from the Sun provided the gravitational "kick" to hurl these objects towards the Sun. A single addition to the Solar System would explain the orbits of all of these long-period TNOs, a planet about 10 times the mass of Earth approximately 200 A.U. from the Sun, referred to as **Planet Nine**. More Sedna-like TNOs with similarly aligned orbits are predicted, and since January of 2016, another was found, with its orbit aligning perfectly with these predictions.

Ten meter class telescopes like Keck and Subaru, plus NASA's NEOWISE mission, are currently searching for this hypothetical, massive world. If it exists, it invites the question of its origin: did it form along with our Solar System, or was it captured from another star's vicinity much more recently? Regardless, if Batygin and Brown are right and this object is real, our Solar System may contain a super-Earth after all.



A possible super-Earth/mini-Neptune world hundreds of times more distant than Earth is from the Sun. Image credit: R. Hurt / Caltech (IPAC)



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Centennial Observatory and Faulkner Planetarium



Herrett Telescope CSI Centennial Observatory

Event	Place	Date	Time	Admission
Astronomy Talk : "The Great American Eclipse—T-minus One Year"	Faulkner Planetarium	Wednesday, September 7 th , 2016	7:30 to 8:30 PM	Adults: \$2.50 Children (7-17) & CSI students: \$1.50 Ages 0-6: FREE
Astronomy Talk Night Telescope Viewing	Centennial Observatory	Wednesday, September 7 th , 2016	8:30 to 10:30 PM	\$1.50 or free with Astronomy Talk admission
Monthly Free Star Party	Centennial Observatory	Saturday, September 10 th , 2016	8:30 PM to midnight	FREE

Faulkner Planetarium Show Times

The schedule has changed for the summer months and may be viewed here.

<http://herrett.csi.edu/astronomy/planetarium/showtimes.asp>

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.