Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

March 2023

Membership Meeting
Saturday, March 11th, at 7:00 pm at the Herrett Center for Arts and Science
Centennial Observatory
See Inside for Details
Faulkner Planetarium
See inside for Details
www.mvastro.org

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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

As we wait with baited breadth for the warmer days of Spring to appear, let's turn our focus to two events coming shortly: An annular and a total solar eclipse. The annular takes place on Saturday Oct 14, 2023, and the total solar eclipse is scheduled for April 8, 2024. Annular eclipses are exciting and fun. I was able to witness and image at the last one near Cedar City, UT on May 20, 2012. An estimated 5000+ on-lookers were spread out over a large field all singing Johnny Cash's legendary song "Ring of Fire." I won't forget that one! This year's path begins in Oregon just north of Coos Bay at 9:13am, PDT. It passes just south of Elko, NV and continues through central Utah, Colorado, New Mexico, and leaves the U.S. at Corpus Christi, TX at 12:03 CDT.

Unfortunately, Idaho will miss this one except for a tiny brush at the extreme S.W. corner. The next big one, a Total Solar Eclipse, is scheduled for April 8, 2024. It will come up through Mexico and into Texas, then thru the Midwest and into Ohio, New York and Maine. And I'm hearing some places are already sold out for that one. Down the road, the next total Solar Eclipse involving the U.S. won't occur until Aug 2044 {a very limited one) and another one, like 2017, in Aug 2045.

Gary Leavitt, President
MVAS

The Night Sky This Month – March 2023

Orion, Canis Major, and Taurus setting in the southwestern sky in March.

(Looking for last month's 'Night Sky'? Find it at this link…)

Venus and Jupiter steal the show with a spectacular conjunction as March gets underway. Venus then moves higher each night and grazes the Moon later in the month and enjoys a conjunction with Uranus as March comes to a close. Jupiter moves sunward for the season and makes a close approach with a thin crescent Moon. And the Sun crosses the celestial equator marking a change of seasons and days and nights of equal length. Here's what to see in the night sky this month…

1 March 2023. The month begins with a spectacular conjunction of Venus and Jupiter in the western sky after sunset. The two planets lie just half a degree apart and near no bright stars, so you can't miss them as they emerge in the darkening sky. Brighter Venus, just northwest of Jupiter, shines at magnitude -4.0 and spans 12 arc-seconds. Jupiter, dimmer but larger, shines at magnitude -2.1 with a disk about 34 arc-seconds across. A small telescope with a suitable eyepiece shows both in the same field of view. In the coming days, Jupiter continues its westward motion towards the Sun while Venus moves higher each day until June.

7 March. Full Moon, 12:40 UT

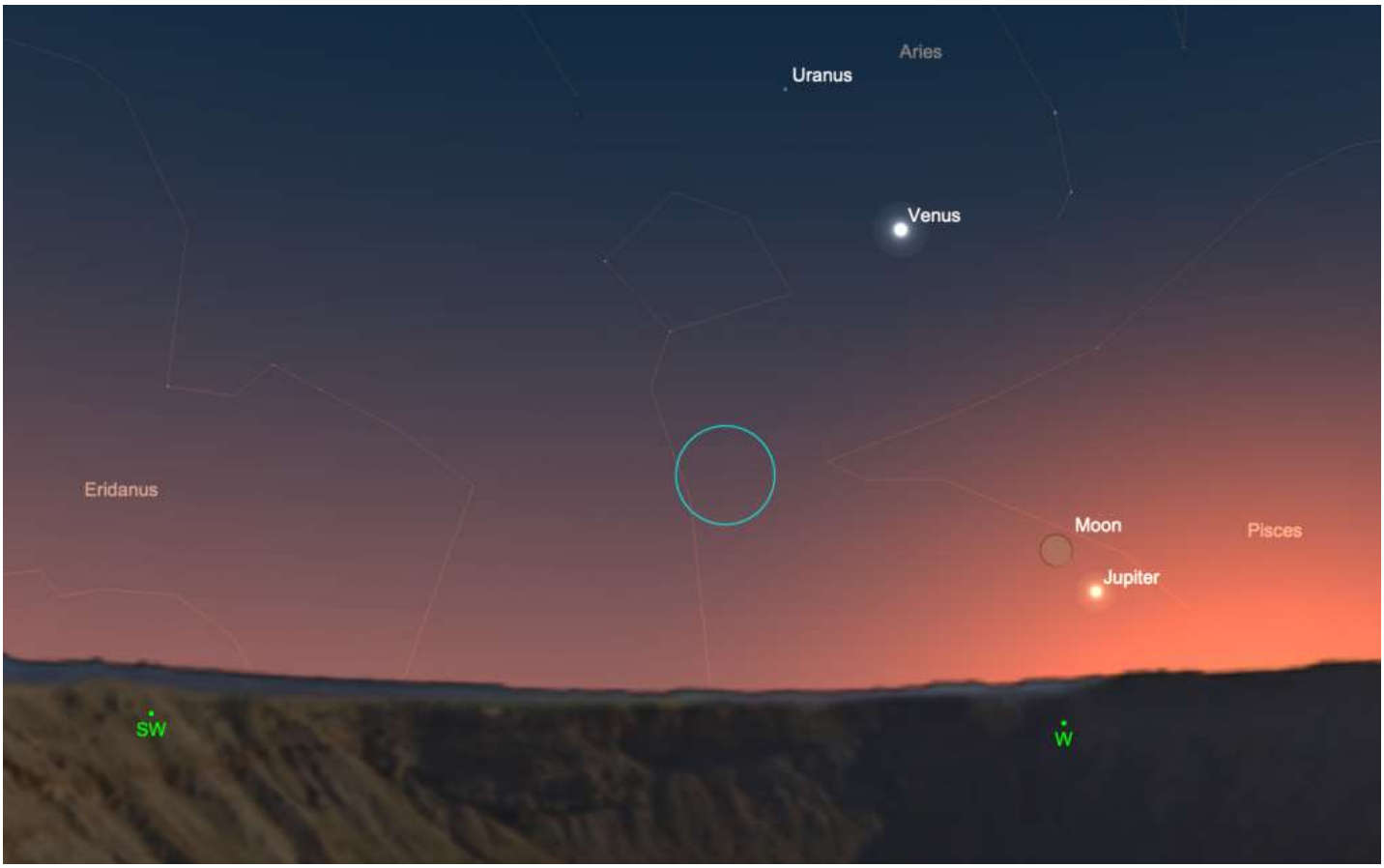
9-23 March. As the Moon moves out of the way in the evening sky, northern observers far from city lights can spot the zodiacal light in the western sky after sunset. This whitish wedge-shaped glow emerges at a steep angle to the western horizon this time of year. It's caused by sunlight reflected by fine dust grains along the plane of the solar system. The zodiacal light is brightest closer to the Sun, so look for the zodiacal light about half an hour after the end of evening twilight as it extends towards the constellation Taurus.

14 March. Look for the last quarter Moon about 4° east of Antares in the southeastern sky before sunrise.

15 March. Last Quarter Moon, 02:08 UT

20 March. The Sun passes the celestial equator moving north at 20:24 UT. This marks the beginning of spring in the northern hemisphere and autumn in the southern hemisphere.

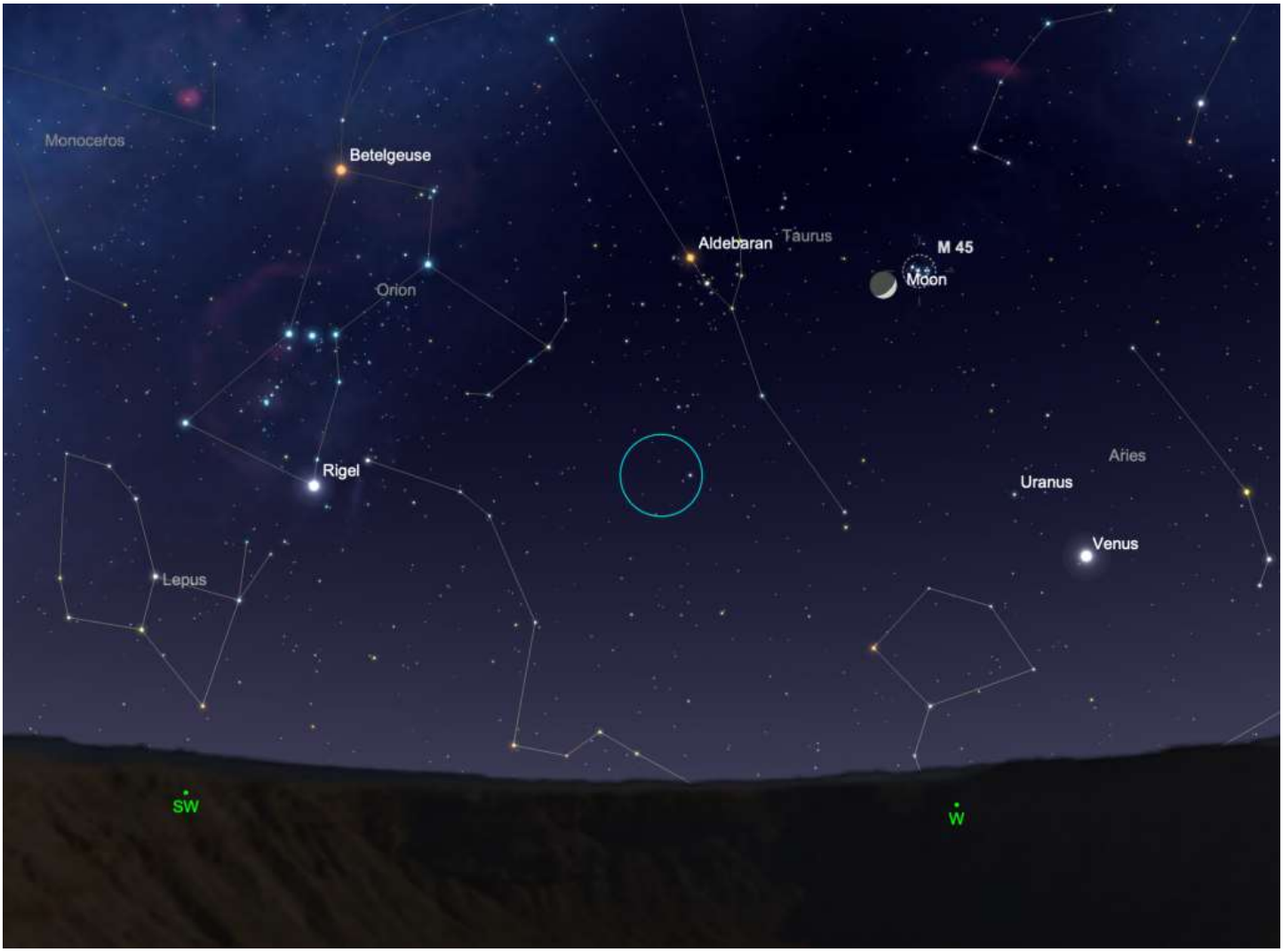
21 March. New Moon, 17:23 UT



Jupiter passes near a thin crescent Moon, just 2% lit, in the western sky after sunset on March 22, 2023.

22 March. Jupiter remains in the western evening sky after sunset and this evening lies just half a degree west of an extremely thin 2.4-day-old Moon. With the Moon just over 2% lit, binoculars are all but essential to spot the Moon visually in the twilight. The pair also make a compelling target for imagers. Venus lies about 20° to the northeast, and the thickening crescent Moon passes the planet over the next two days.

23-24 March. Look for brilliant Venus just north of a thin crescent Moon in the western sky after sunset.



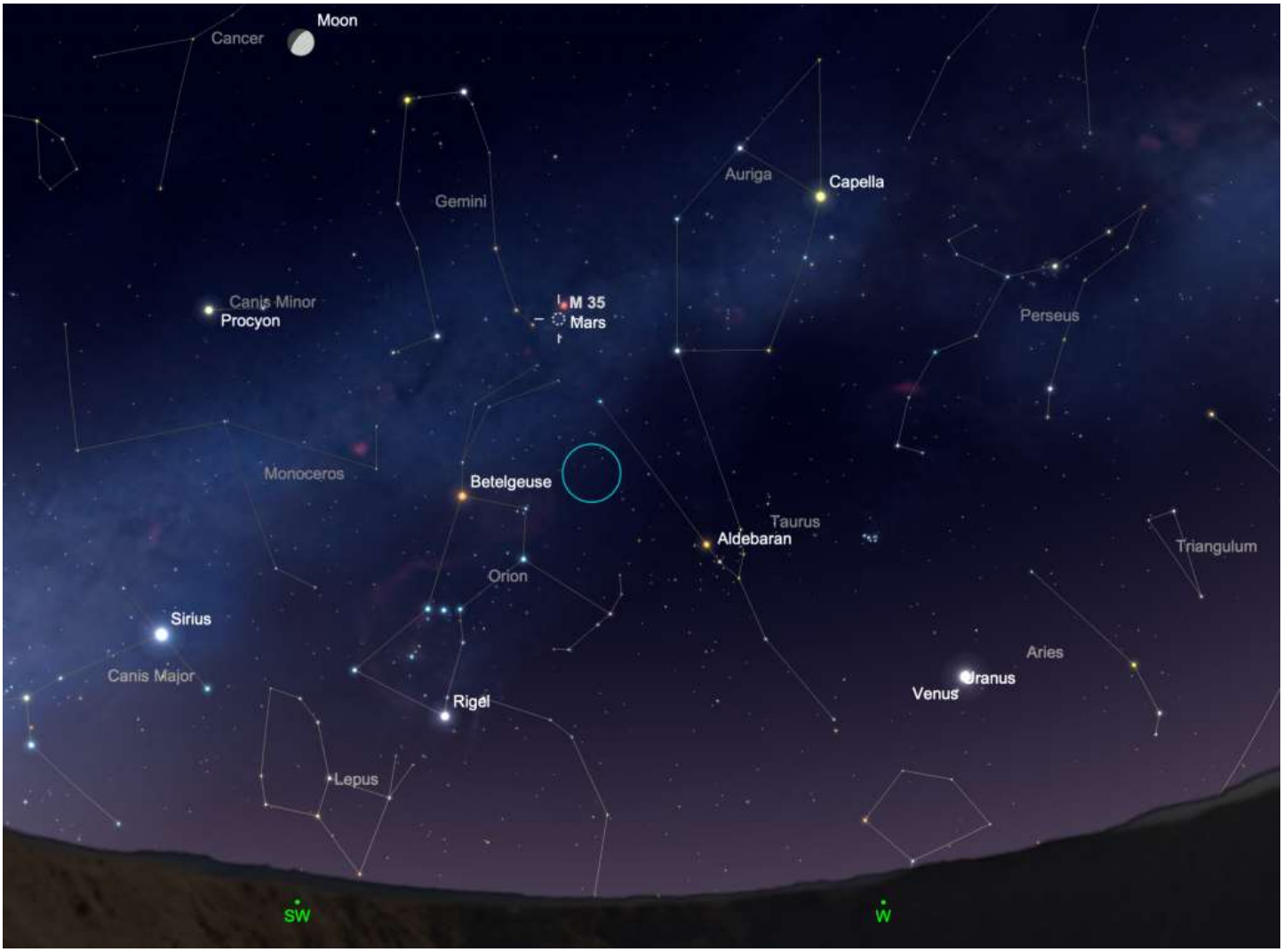
The crescent Moon passes near the Pleiades on March 25, 2023.

25 March. The waxing crescent Moon passes about 2° south of the lovely Pleiades star cluster in the western evening sky. The pair fit nicely into a binocular field of view. The Hyades lie about 10° to the southeast of the Moon, and the brilliant stars of winter fill the western and southwestern sky as they take a final bow before giving way to the stars of spring to the east.

28 March. Look for Mars about 2° south of the nearly first-quarter Moon.

29 March. First Quarter Moon, 02:32 UT

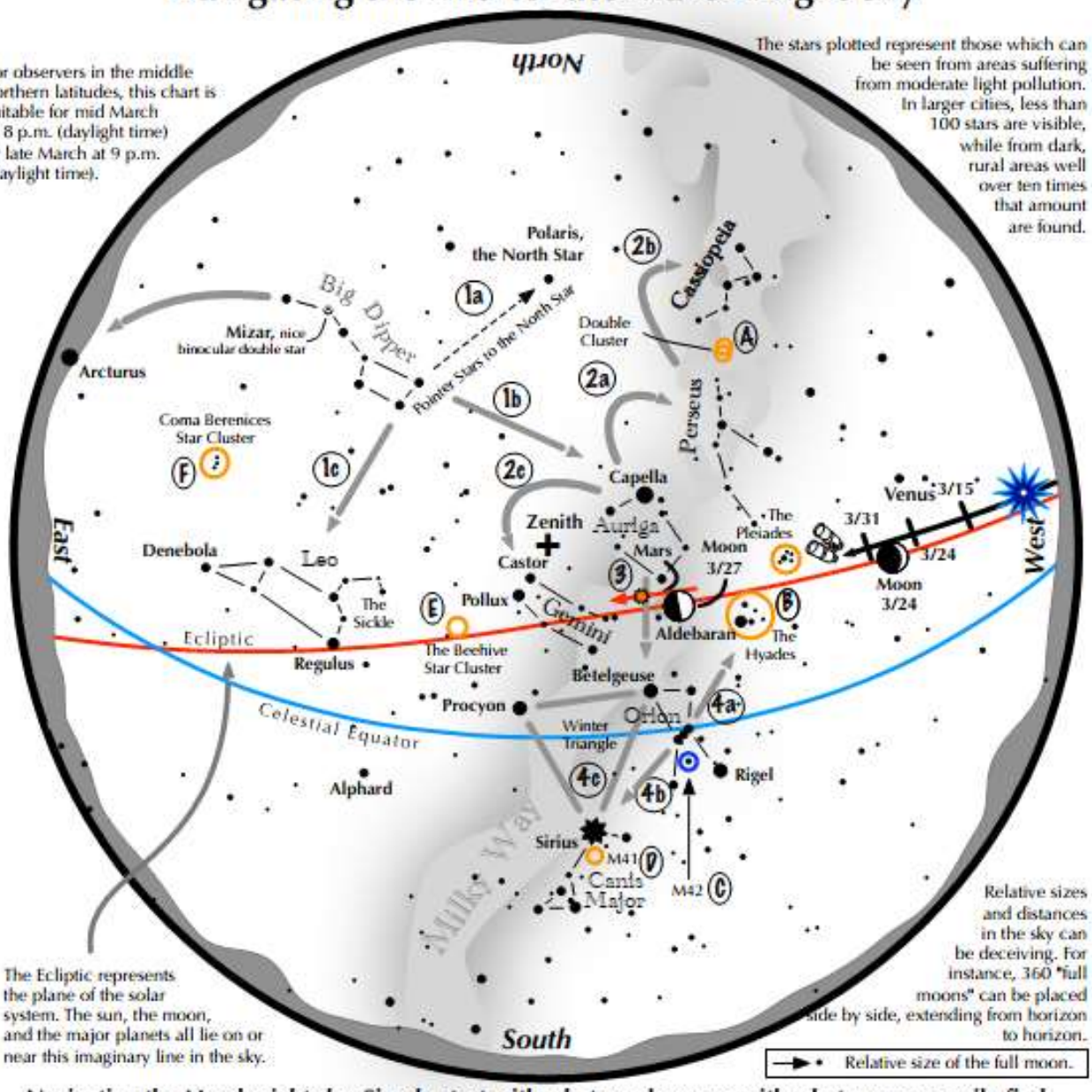
30 March. Mars lies about 1.2° north of the star cluster Messier 35 at the foot of the constellation Gemini in the western sky after sunset.



Mars passes just over a degree from the open star cluster M35 on March 30, 2023.

31 March. Venus continues to light the western evening sky and tonight lies about 1.3° north of far fainter Uranus. The distant ice giant is quickly moving towards the Sun on its way to conjunction in May, so this may be the last chance to see it before it reappears later this year. At magnitude -4.0. Venus outshines everything else in the night sky except for the Moon. Uranus, usually an easy object in binoculars, presents more of a challenge to visual observers as its tiny 3.4 arc-second wide disk is difficult to see in the twilight. The planet shines at magnitude 5.8, about 8,000 times fainter than Venus! Both planets fit in the same field of view of a telescope at low magnification.

Navigating the mid to late March Night Sky



For observers in the middle northern latitudes, this chart is suitable for mid March at 8 p.m. (daylight time) or late March at 9 p.m. (daylight time).

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.

The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

Relative size of the full moon.

Navigating the March night sky: Simply start with what you know or with what you can easily find.

1. Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star. Its top bowl stars point west to Capella in Auriga, nearly overhead. Leo reclines below the Dipper's bowl.
2. From Capella jump northwestward along the Milky Way to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
3. Directly south of Capella stands the constellation of Orion with its three Belt Stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
4. Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius. It is a member of the Winter Triangle.

Binocular Highlights

A: Between the "W" of Cassiopeia and Perseus lies the Double Cluster. **B:** Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **C:** M42 in Orion is a star forming nebula. **D:** Look south of Sirius for the star cluster M41. **E:** M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **F:** Look high in the east for the loose star cluster of Coma Berenices.

This article is distributed by NASA Night Sky Network
The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Spot the Morning and Evening Star: Observe Venus

David Prosper

Venus is usually the brightest planet in our skies, and is called “Earth’s Twin” due to its similar size to Earth and its rocky composition. However, Venus is a nightmare version of our planet, featuring a thick, crushing atmosphere of acidic clouds, greenhouse gasses, howling winds, and intense heat at its surface.
This rocky inner world’s orbit brings it closer to Earth than any of the other planets, and is the second closest to the Sun after Mercury. Like Mercury, Venus orbits between our planet and the Sun, so Earth-based observers can observe Venus in the morning before sunrise, or in the evening after sunset – but never high in the sky in the middle of the evening, unlike the outer planets. Since Venus is so striking in its twilight appearances, the planet features heavily in sky mythologies worldwide. Venus’s bright morning and evening appearances are the origin for its dual nicknames: the Morning Star, and the Evening Star. Some ancient astronomers never made the connection, and assumed the Evening Star and Morning Star were two unrelated objects! Observers can even spot Venus during the daytime, if the sky is very clear and the planet is bright enough. Venus also has phases, similar to the Moon and Mercury. Galileo’s observations of Venus’s phases helped turn the astronomy world upside down in the early 1600s, and you can see them yourself using a telescope or even a surprisingly low-power pair of binoculars. **Warning**: Please be very careful when observing Venus with a telescope in the early morning or daytime. Never allow the Sun to enter your instrument’s field of view, as you could be permanently blinded.

Venus’s other moniker of “Earth’s Twin” is a bit misleading. In terms of their surface temperatures and atmospheres, Venus and Earth are extremely different! The surface of Venus is warmer than that of Mercury, despite Mercury being many millions of miles closer to the Sun. While Mercury is still a scorching 800 degrees Fahrenheit (427 degrees Celsius), Venus is even hotter: 900 degrees Fahrenheit (482 degrees Celsius). The vast amount of carbon dioxide in the thick Venusian atmosphere acts as an insulating blanket that retains much of the Sun’s heat, creating the runaway greenhouse effect that dominates its present-day climate. The Venusian surface is a crushing 90 Earth atmospheres on top of its absurd temperatures. These extreme conditions mean that the mission life of any past Venusian robotic landers were measured in **hours** at best – and usually minutes! However, conditions in Venus’s upper atmosphere may be much more hospitable, with temperatures and pressures at 30 miles (50 km) above the surface that are much more Earth-like in temperature and pressure. Studies of the Venusian atmosphere, including seasonal appearances of dark streaks and faint signals of suggestive chemistry, intrigue researchers with the possibility that some sort of life may persist in its clouds. But far more evidence is needed to confirm such a claim, since non-biological factors like volcanism and other processes could also be the source for these signals.

Venus’s thick sulfuric acid clouds block direct visual observations of its surface from optical telescopes on Earth. Multi-wavelength observations from space probes show evidence of active volcanoes and possibly some sort of plate tectonics, but followup missions will be needed to confirm the presence of active volcanism, plate tectonics, and any possible signs of life. In order to do so, NASA is sending two new missions to Venus by the end of this decade: the orbiter **VERITAS**, which will map the surface in high detail and study the chemistry of its rocks and volcanoes, and **DAVINCI+**, which will study its atmosphere and possible tectonic surface features via a “descent sphere” that will plunge into Venus’s clouds. Follow their development and discover more about Venus at solarsystem.nasa.gov/venus, and of course, continue your exploration of the universe at nasa.gov.

Venus and Jupiter continue to move closer together in the evening sky this month. Jupiter will continue its descent towards the horizon while Venus will continue to climb and will be visible in the evenings though mid-summer of 2023. It's a great year for Venus fans! *Image created with assistance from Stellarium*

The top layers of Venus's cloud pop in this contrast-enhanced image, reprocessed with modern techniques from Mariner 10 data. *Credit: NASA/JPL-Caltech Source: https://solarsystem.nasa.gov/resources/2524/newly-processed-views-of-venus-from-mariner-10/*

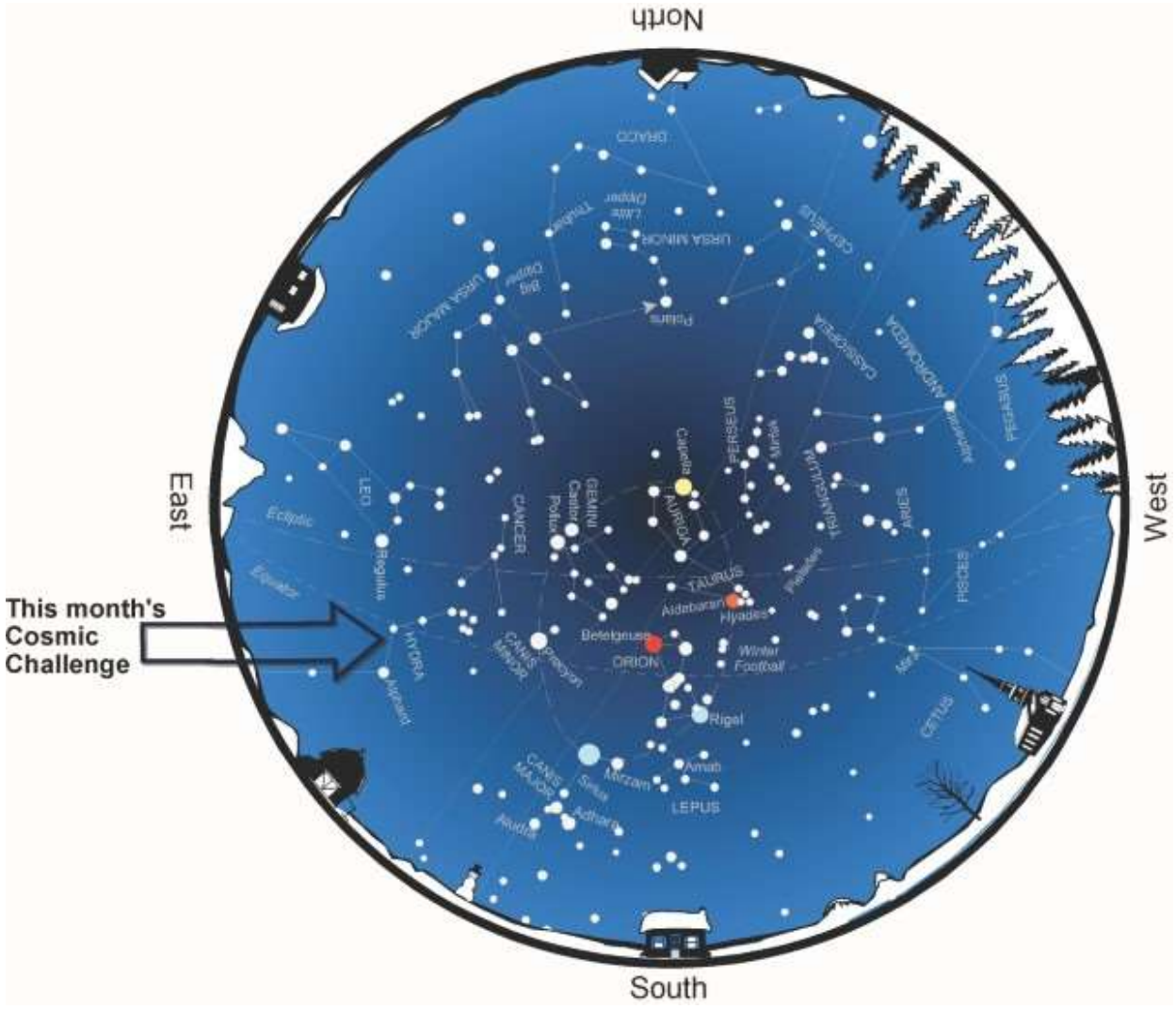
Phil Harrington's Cosmic Challenge

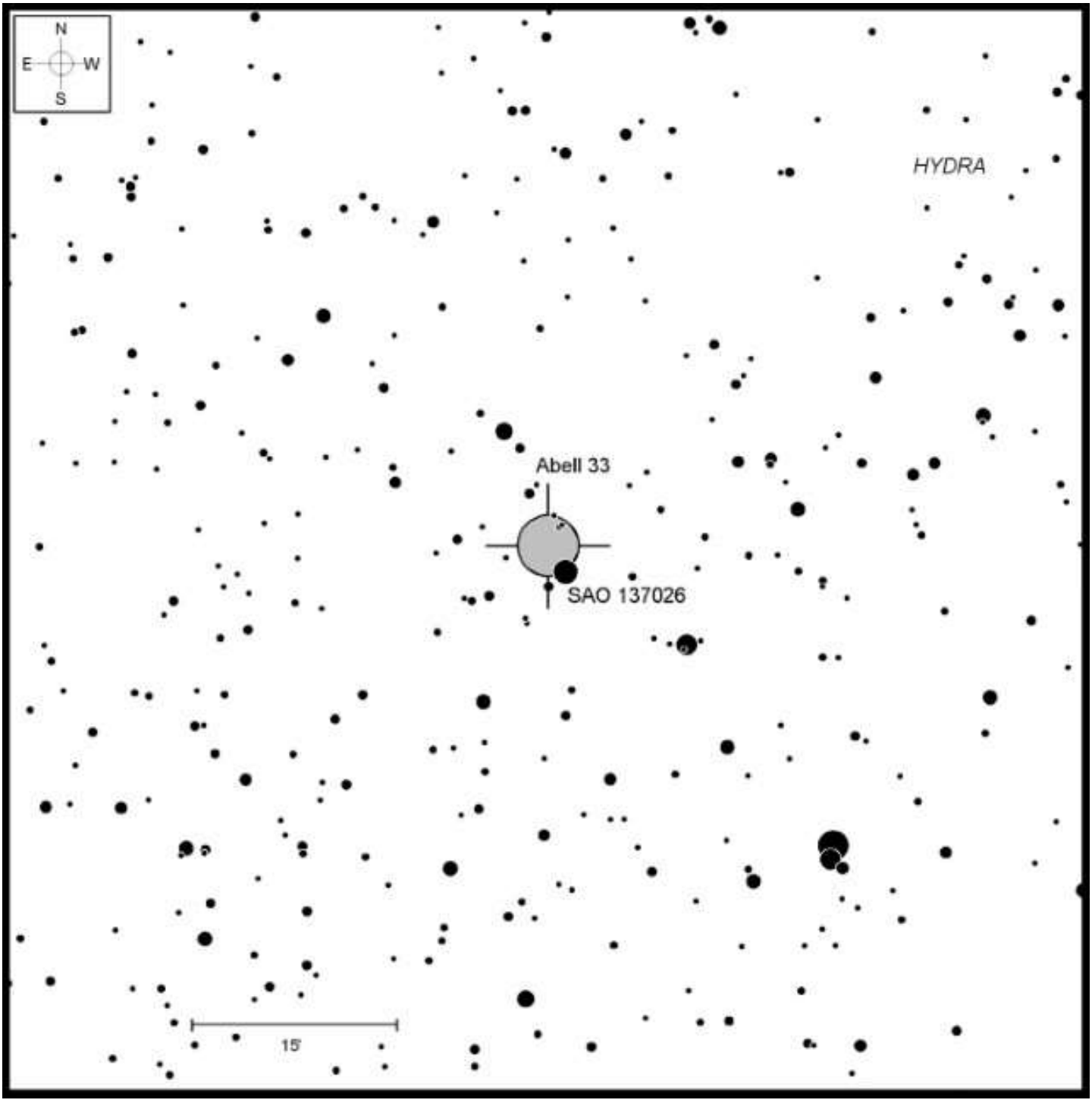
Cosmic Challenge: Abell 33

This month's suggested aperture range:
10-inch (38cm) and up
(featured telescope Orion XT10")

Target	Type	RA	DEC	Constellation	Magnitude	Size
Abell 33	Planetary nebula	09h 39.2m	-02° 48.5'	Hydra	12.9	270"

Several of the challenges I have profiled over the years have involved hunting down tiny planetary nebulae. Many planetaries appear very small as seen from Earth, which can make them difficult to tell apart from surrounding stars. This also works in our favor, however, since their small size focuses all of the available light into small discs with high surface brightnesses. Their existence is also accented nicely by using narrowband and oxygen-III filters, which help suppress light pollution. That's why planetary nebulae are far better targets for urban observers than some other types of deep-sky objects. Image below: Evening star map showing the location of this month's Cosmic Challenge.





There are exceptions to every rule, however, and this month's challenge is one. Abell 33 was first spotted by George O. Abell in the 1950s as he and colleagues A.G. Wilson, Robert G. Harrington, and Rudolph Minkowski pored over the then-new Palomar Observatory Sky Survey photographic plates. Abell announced their collaborative discoveries as part of a paper he published in the April 1966 (vol. 144, p.259) issue of Astrophysical Journal entitled Properties of Some Old Planetary Nebulae. In the article's introduction, Abell noted that "these objects are large and faint and are probably at an advanced stage in their evolution as planetary nebulae; all 86 objects…are described as 'planetary nebulae,' with the cognizance of the fact that one or two of them may be improperly identified." Ultimately, four of his list's entries proved to be other types of objects.

Many of the Abell planetary nebulae stand today as some of the ultimate tests for deep-sky observers using the largest backyard scopes. Abell 33, nicknamed the Diamond Ring Planetary Nebula, is one of the easier members of this elite list. It can be detected through a 10-inch (25-cm) telescope from under suburban skies -- with a little help, that is.

Abell 33 is a perfectly spherical blue bubble expanding away from a 15th-magnitude central star. It lies an estimated 2,700 light years away. The central star is evolving into a white dwarf, just as our Sun will eventually. What makes this one unusual is that it appears to be a double star. Whether this is a true binary system or just another chance line-of-sght alignment has yet to be determined.

To spot Abell 33, first zero in on its location within its home constellation of Hydra, the Water Snake. That's actually quite easy to do. From the serpent's pentagonal head, slither southeastward along its winding body, past Theta (θ) Hydrae to Iota (ι) Hydrae. Abell 33 is 1.6° due south of Iota, right next to 7th-magnitude HD 83535 (aka SAO 137026).

That star, the diamond in the planetaries nickname, is beautiful in images, like the one below from Yuexiao Shen (CN member syxbach). But that same star is a big problem for visual observers. Abell 33's perfectly round gaseous shell, which spans almost 5 arc-minutes in diameter, just overlaps that star. As a result, the star's glare easily overwhelms the nebula's faint glow, especially if a telescope's or eyepiece's optics are dirty or contaminated.

Above: Sketch of Abell 33 through the author's 18-inch (46-cm) reflector.

Even with clean optics, seeing Abell 33 can be tricky. To improve the odds, many observers move the "diamond" off the edge of the eyepiece field. Problem is offsetting the glare will also bring the target to just inside the field edge where, depending on the eyepiece, distortion may blur it out of existence.

Instead, use an eyepiece fitted with an occulting bar across the center to block the detractor. While no company sells an occulting eyepiece to my knowledge, one is easy enough to make at home. To work correctly, the edge of the occulting bar must appear sharp in view, which means that it must lie at the eyepiece's focal plane. This usually coincides with the field stop near the field lens.

Begin by cutting a thin strip of opaque black photographic tape, no more than a third of the field lens's width and just long enough to span the inside diameter of the eyepiece barrel. (Recommendation: Use a low-power eyepiece with a relatively large field lens, and then insert it into a Barlow lens to get the high magnification needed for the task.) Holding the tape gently with tweezers, carefully lay it into place.

Then, when you aim toward the planetary, hide the star behind the occulting tape before looking for the nebula's faint glow. As a reference, a faint double star is superimposed on the nebula's northwestern edge, while several even fainter points litter the disk itself. With an O-III filter and occulting tape in place, I have been able to spot Abell 33 with direct vision through a 12-inch (30.5-cm) telescope. Remove the tape and filter, and the planetary quickly disappears, even with averted vision.

Spotting the central star, which only rates 15th magnitude, is a difficult chore through 10-inch (25-cm) to 14-inch (36-cm) scopes. Try this trick. Once you spot the nebula with a filter in place, remove the filter. The nebula will disappear, but the unfiltered view is your bet at seeing the central star.

Above: An outstanding view of Abell 33 as captured by Yuexiao Shen (CN member syxbach). Click here for a full size image.

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

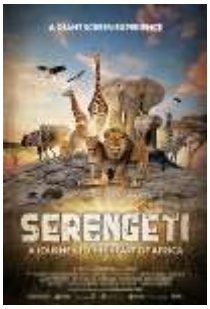
Observatory and Planetarium Events

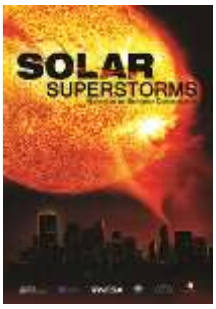
Centennial Observatory Upcoming Events

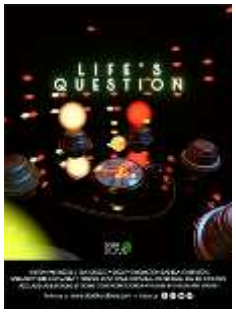
All events are weather permitting.

Event	Place	Date	Time	Admission
Telescope Tuesday	Centennial Observatory	Tuesday, February 28th, 2023	7:15 to 9:00 PM	$1.50 or free with Faulkner Planetarium admission
Close Conjunction of Venus and Jupiter	Centennial Observatory	Wednesday, March 1st, 2023	6:30 to 7:30 PM	FREE
Monthly Free Star Party	Centennial Observatory	Saturday, March 11th, 2023	7:45 to 9:45 PM	FREE
"Earth Hour" Telescope Viewing	Centennial Observatory	Saturday, March 25th, 2023	8:30 to 9:30 PM	FREE

Faulkner Planetarium







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Magic Valley Astronomical Society

550 Sparks St.
Twin Falls, ID

The Magic Valley Astronomical Society (MVAS) was founded in 1976. The Society is a non-profit, 501(c)(3) educational and scientific organization dedicated to bringing together people with an interest in astronomy.

In partnership with the Centennial Observatory, Herrett Center, College of Southern Idaho - Twin Falls, we hold regularly scheduled monthly meetings and observation sessions, at which we share information on current astronomical events, tools and techniques for observation, astrophotography, astronomical computer software, and other topics concerning general astronomy. Members enthusiastically share their telescopes and knowledge of the night sky with all who are interested. In addition to our monthly public star parties we hold members-only star parties at various locations throughout the Magic Valley.

MVAS promotes both 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: (a) public star parties and events open to anyone interested in astronomy; (b) 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, which enable us to 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. Among the programs that your membership dues support are speakers, public star parties, classes and support for astronomy in schoolrooms, and outreach programs, just to name a few.

Annual Membership dues are $20.00 for individuals, families, and $10.00 for students.
Contact Treasurer Jim Tubbs for dues information via e-mail: jtubbs015@msn.com

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

Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others. Please contact President Robert Mayer for more information on these and other benefits.

Telescopes are an individual thing and not practical for public use. However, everyone should have the experience of a good look at the moon for at least 5 minutes in their life time. It is a dimension and feeling that is unexplainable. Pictures or TV can't give this feeling, awareness, or experience of true dimension. A person will not forget seeing our closest neighbor, the moon.

Norman Herrett in a letter to Dr. J. L. Taylor, president of the College of Southern Idaho, Twin Falls, ID, USA.