

Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

March 2021

Membership Meeting

See President's Message for March

Centennial Observatory

Due to the need to maintain social distance during the Covid-19 pandemic, access to the observatory dome is one small group at a time.

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

Colleagues,

It was a momentous February, and that's an understatement. Just a few minutes before 2 p.m. MST on Thursday, Feb. 18th, NASA successfully landed the Perseverance Rover. Within moments, the first images -- taken through glass lens caps -- were available to the world. Two days later, NASA officials used Perseverance's microphone to record the first ever sounds of Mars. Heard over the buzz of the rover's camera was a gust of wind. Our science has evolved since the first rover that scientists were able to determine the speed.

Last year marked the 50th anniversary of Apollo 13. One of the more notable features of that mission was the fact that after two successful moon landings, America had become a bit casual about its space missions, relegating the standard in-flight broadcasts to the country to past prime time -- less than two years after the early Apollo orbital missions had won an Emmy.

With 49 missions to Mars, one would think the world would develop that same casual attitude. After all, the Chinese and United Arab Emirates had just put missions in orbit around Mars just a few days before. But it was clear that we have now developed an attitude of not taking things for granted. After all, the first six missions from 1960 to 1964 were failures, with the streak broken by Mariner 4 in 1964. Lately, there has been a good run, but no one has forgotten what it takes. The memory of Mars Polar Finder in 1999 is still fresh in some scientists' minds, and it was just in 2016 when ESA's latest attempt failed. Pulling off the landing would require every program, every calculation to allow the lander to reach safety.

And yet it ended up being the most accurate landing in history of Mars exploration. And yet, things have only begun, as it's time for the science to begin.

For this month's meeting, we won't have enough data yet to give you an update. However, we will give you a guided tour of our solar system in terms of the most recent research missions. Spend an hour with us in a review. The Zoom link will be sent out the day before the meeting. We'll see you 7 p.m. Saturday, March 13th.







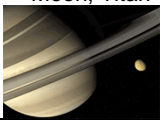





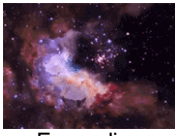

Until then,
Clear Views,
Rob Mayer



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Be Careful – Be Safe – Get Out There – Explore Your Universe

March 2021 Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 1966: USSR's Venera 3 reached Venus's surface becoming the first planet to make contact with another planet	2 1972: Pioneer 10 launched to Jupiter 	3 1959: Pioneer 4 escaped Earth's gravity and entered solar orbit. Best Visibility of the Mars-Pleiades M45 conjunction.	4 1978: Landsat 3 launched on the 5 th 	5 Boise State University 1 st Friday Astronomy Event See page 3 for details	6 1979: Voyager 1 flew by Jupiter on the 5 th . Voyager 1 would also take the Pale Blue Dot image of Earth. Last Quarter Moon
7	8	9	10	11	12 New Moon  Visible 0% Age: 22.6 Days on the 13 th	13 MVAS General Meeting see president's msg. for details Centennial Observatory Public Star Party 6:15p - 9:00p
14 Daylight Saving Time begins. 	15 1929: Edwin Hubble published his paper on the expanding universe.	16 1926: Robert Goddard launched first liquid-fueled rocket.	17 St. Patrick's Day 	18 1781: Charles Messier discovered 8 galaxies in the Coma Virgo region, including M88, the 1 st Spiral Galaxy	19 March 18, 1965: Alexei A. Leonov, Soviet cosmonaut, became first man to walk in space.	20
21 First Quarter Moon  Visible 50% ↑ Age: 7.29 Days	22	23	24 March 25, 1655: Christiaan Huygens discovered Saturn's largest Moon, Titan 	25 Boise State University Dept. of Physics Virtual Planetarium Show Information below on page 3.	26 March 27, 1969: Mariner 7 launched toward Mars 	27 "Earth Hour" Telescope Viewing 
28 Crow Full Moon  Visible 100% Age: 14.43 Days	29 1974: Mariner 10 made its first flyby of Mercury, returning the first pictures of the planet!	30	31 1966: Luna 10, first spacecraft to orbit the Moon, launched by the USSR 	 M88	 Expanding Universe	 Robert Goddard's Rocket

Inside this issue!

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Observatory and Planetarium Events



The Herrett Center has re-opened, with [COVID-19 safety protocols](#) for your protection. Check out our [reopening video message](#) and we hope to see you soon!

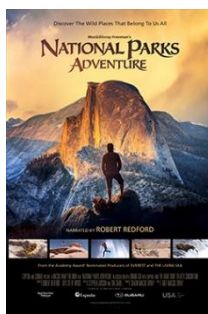
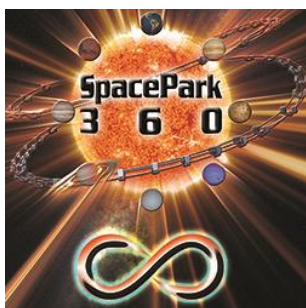


Centennial Observatory Upcoming Events

Event	Place	Date	Time	Admission
Monthly Free Star Party	Centennial Observatory	Saturday, March 13 th , 2021	6:15 to 9:00 PM	FREE
"Earth Hour" Telescope Viewing	Centennial Observatory	Saturday, March 27 th , 2021	8:30 to 9:30 PM	FREE

Due to the need to maintain social distance during the Covid-19 pandemic, access to the observatory dome is one small group at a time. Contact the Herrett Center 208-732-6655 for more info.

Faulkner Planetarium



[Now Showing!](#)

Visit the Herrett Center Video [Vault](#)

Boise State Physics First Friday Astronomy Friday, Mar 5th Psyche: Journey to a Metallic World



Prof. Lindy Elkins-Tanton,
School Of Earth and Space Exploration,
Arizona State Univ.

Online lecture begins 7:30pm MT
<http://www.astrojack.com/ffa-psyche>

Donate at give.boisestate.edu/astronomy

Thursday, March 25th

BSU Dept. of Physics presents a Virtual Planetarium show

This evening's program will be hosted by the Department of Physics and will start at 7:30 pm.

Participation is FREE but you must register to attend. Navigate to <http://boi.st/thirdthursday> to sign up, and you may leave a question for the moderator. You will be contacted the week before the event and provided with the Zoom link.



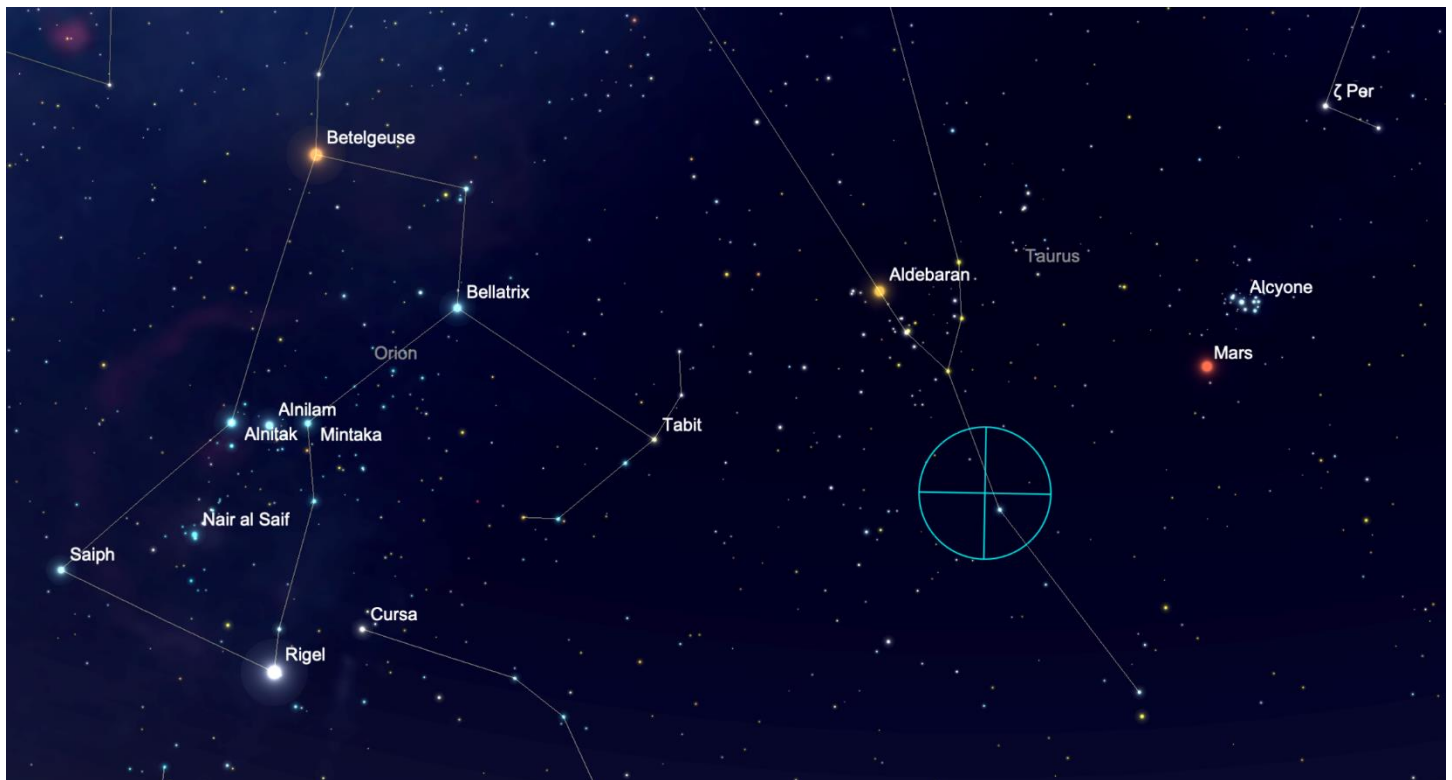


Celestial Calendar

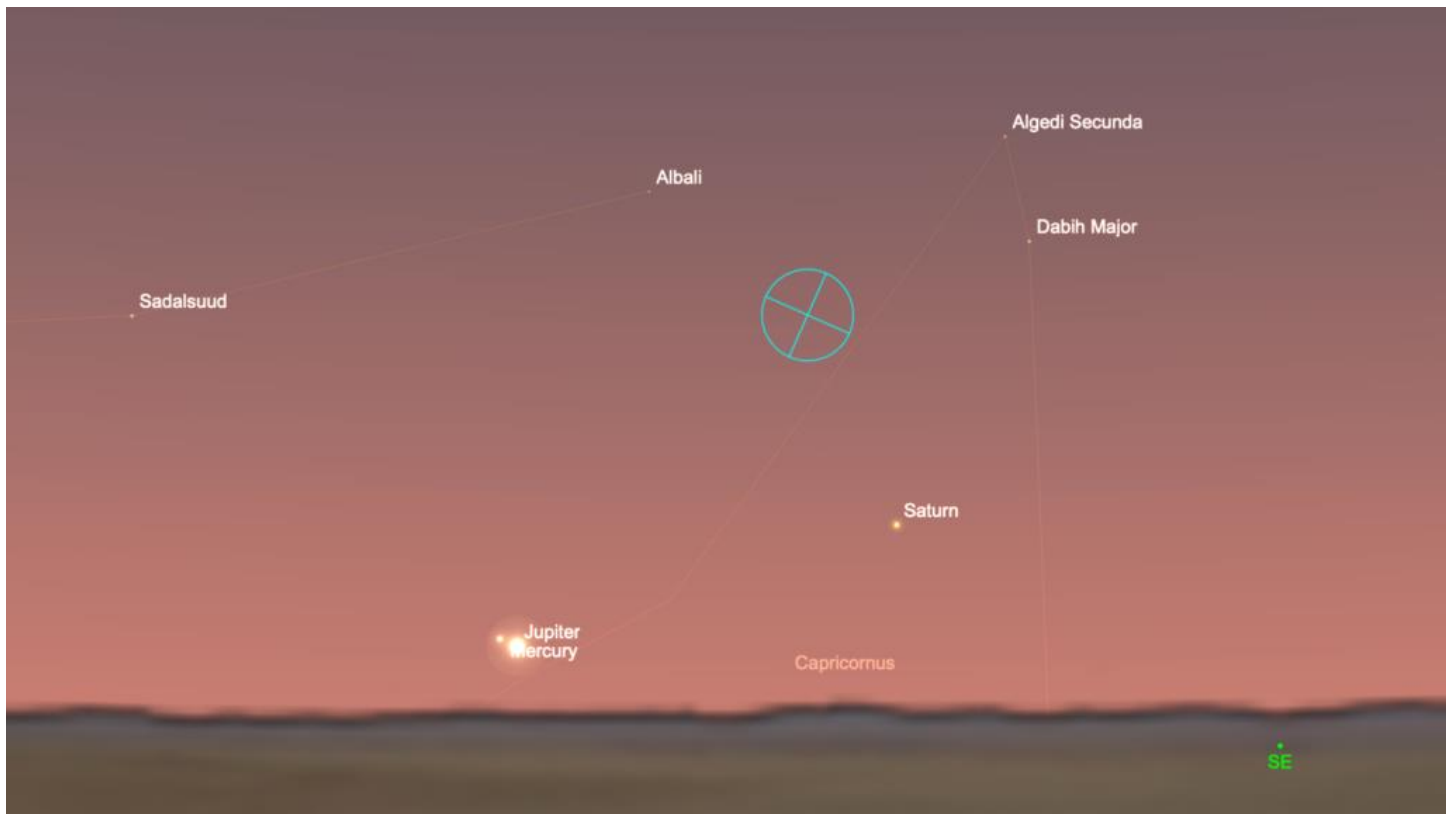
- 3/2 The Moon is at perigee, subtending 32' 42" from a distance of 365,423 kilometers (227,063 miles), at 5:18
- 3/3 Mercury is at the descending node through the ecliptic plane at 17:00
- 3/4 Asteroid 4 Vesta (magnitude +5.8) is at opposition in Leo at 18:00
- 3/5 Mercury is 0.3 degrees north of Jupiter at 7:00; the Moon is 5.0 degrees north-northeast of the first-magnitude star Antares (Alpha Scorpii) at 17:00
- 3/6 The Moon is at the descending node (longitude 255.4 degrees) at 1:00; Last Quarter Moon occurs at 1:30; Mercury is at greatest western elongation (27.3 degrees) at 11:00
- 3/7 The Curtiss Cross, an X-shaped clair-obscure illumination effect located between the craters Parry and Gambart, is predicted to be visible at 11:44
- 3/10 The Moon is 3.6 degrees southeast of Saturn at 1:00; the Moon is 3.9 degrees southeast of Jupiter at 18:00; the Moon, Mercury, and Jupiter lie within a circle with a diameter of 5.3 degrees at 22:00
- 3/11 Neptune is in conjunction with the Sun (30.919 astronomical units from the Earth, latitude -1.1 degrees) at 0:00; the Moon is 3.5 degrees southeast of Mercury at 4:00; the Sun enters Pisces, at longitude 351.6 degrees on the ecliptic, at 23:00
- 3/13 The Moon is 3.6 degrees southeast of Venus at 4:00; the Moon, Venus, and Neptune lie within a circle with a diameter of 3.9 degrees at 6:00; the Moon is 3.9 degrees southeast of Neptune at 7:00; New Moon (lunation 1215) occurs at 10:21
- 3/14 Daylight Saving Time (DST) begins today; Mercury is at aphelion (0.4667 astronomical units from the Sun) at 2:00; Venus is 0.4 degrees southeast of Neptune at 5:00; Venus is at its southernmost latitude from the ecliptic plane (-3.4 degrees) at 8:00
- 3/17 The Moon is 2.5 degrees southeast of Uranus at 5:00
- 3/18 The Moon is at apogee, subtending 29' 29" from a distance of 405,253 kilometers (251,812 miles), at 5:03
- 3/19 The Moon is 5.2 degrees southeast of the bright open cluster M45 (the Pleiades or Subaru) in Taurus at 2:00; the Moon is 1.9 degrees southeast of Mars at 20:00; the Moon is 5.1 degrees north of the first-magnitude star Aldebaran (Alpha Tauri) at 20:00
- 3/20 The Moon is at the ascending node (longitude 73.6 degrees) at 4:00; the northern hemisphere vernal equinox occurs at 9:37; the longitude of the sun is 0.0 degrees at 9:37; the Lunar X (the Purbach or Werner Cross), an X-shaped illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to be visible at 22:09
- 3/21 Mars is 6.9 degrees north of Aldebaran at 8:00; First Quarter Moon occurs at 14:40; the Moon is 0.7 degrees north of the bright open cluster M35 in Gemini at 17:00
- 3/23 The Moon is 7.0 degrees south of the first-magnitude star Castor (Alpha Geminorum) at 6:00; the Moon is 3.4 degrees south of the first-magnitude star Pollux (Beta Geminorum) at 11:00
- 3/24 The Moon is 2.8 deg. north-northeast of the bright open cluster M44 (Beehive Cluster / Praesepe) in Cancer at 12:00
- 3/26 The Moon is 4.5 degrees north-northeast of the first-magnitude star Regulus (Alpha Leonis) at 4:00; Venus is in superior conjunction with the Sun (1.723 astronomical units from the Earth, latitude -3.2 degrees) at 6:00
- 3/28 Full Moon (known as the Crow, Lenten, and Sap Moon) occurs at 18:48
- 3/29 Venus is at its brightest (magnitude -3.9) at 2:00; the Moon is 5.9 degrees north-northeast of the first-magnitude star Spica (Alpha Virginis) at 21:00
- 3/30 Mercury is 1.3 degrees southeast of Neptune at 4:00; the Moon is at perigee, subtending 33' 10" from a distance of 360,312 kilometers (223,886 miles), at 6:00

Nicolas-Louis de Lacaille (1713-1762), Caroline Herschel (1750-1848), Josef von Fraunhofer (1787-1826), John Herschel (1792-1871), Percival Lowell (1855-1916), Albert Einstein (1879-1955), and Walter Baade (1893-1960) were born this month.

All times, unless otherwise noted, are UT (subtract seven hours and, when appropriate, one calendar day for MST)

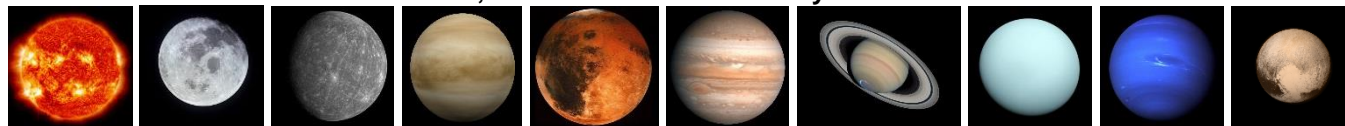


Mars passes less than 3 degrees from the Pleiades star cluster on March 2-3, 2021. Circle + crosshairs shows a 5-degree field of view.



Jupiter and Mercury less than half a degree apart in the morning sky on March 5, 2021. Circle + crosshairs shows a 2-degree field of view.

Our Sun, the Moon and the Solar System Planets



Titan, Saturn's largest satellite, was discovered on March 25, 1655 by the Dutch astronomer Christiaan Huygens. The English astronomer Edward Pigott discovered the spiral galaxy M63 (the Black Eye Galaxy) on March 23, 1779. The English astronomer Sir William Herschel discovered Uranus on March 13, 1781. The grand design spiral galaxy M101 was discovered by the French astronomer Pierre Méchain on March 27, 1781. Asteroid 2 Pallas was discovered by the German astronomer Heinrich Wilhelm Matthias Olbers on March 28, 1802. Asteroid 4 Vesta was discovered by Heinrich Wilhelm Matthias Olbers on March 29, 1807. The first photograph of the Moon was taken on March 23, 1840. The Czech astronomer Luboš Kohoutek discovered Comet C/1973 E1 (Kohoutek) on March 7, 1973. The rings of Uranus were discovered on March 10, 1977. The Spanish amateur astronomer Francisco Garcia Diaz discovered supernova SN 1993 in the spiral galaxy M81 (Bode's Galaxy) on March 28th, 1993.

The zodiacal light should be visible in the western sky after sunset from dark locations for two weeks starting on March 1st and again for two weeks starting on March 30th.

The Moon is 17.0 days old, is illuminated 97.2%, subtends 32.6 arc minutes, and is located in the constellation of Virgo at 0:00 UT on March 1st. The Moon attains its greatest northern declination (+25.2 degrees) for the month on March 22nd and greatest southern declination (-25.1 degrees) on March 8th. Longitudinal libration is at a maximum of +5.0 degrees on March 10th. It's at a minimum of -7.3 degrees on March 24th. Latitudinal libration is at a maximum of +6.6 degrees on March 13th and a minimum of -6.6 degrees on March 27th. Favorable librations occur for the following craters: Bailly (March 1st), Drygalski (March 2nd), Pingré (March 28th), and Hausen (March 29th). The Curtiss Cross occurs on March 7th and the Lunar X on March 20th. The Lunar X is discussed in an article appearing on page 50 of the March 2021 issue of Sky & Telescope. New Moon occurs on March 13th. The Moon is at perigee (at a distance 57.29 Earth-radii) on March 2nd and at apogee (at a distance 63.54 Earth-radii) on March 18th. Browse <http://www.lunar-occ...ota/iotandx.htm> for information on lunar occultation events. Visit <https://saberdoesthe...does-the-stars/> for tips on spotting extreme crescent Moons and <https://curtrenz.com/moon.html> for Full Moon and other lunar data. Consult <http://time.unitariu...moon/where.html> for current information on the Moon. Visit <http://www.ap-i.net/avl/en/start> to download the free Virtual Moon Atlas. Browse <https://skyandtelesc...ads/MoonMap.pdf> for a lunar map. See <https://svs.gsfc.nasa.gov/4768> for a lunar phase and libration calculator and <https://quickmap.lro...2vIBvAXwF1SizSg> for the Lunar Reconnaissance Orbiter Camera (LROC) Quickmap. Click on <https://www.calendar...ndar/2021/march> for a lunar phase calendar for this month. Times and dates for the lunar crater light rays predicted to occur this month are available at <http://www.lunar-occ...o/rays/rays.htm>

The Sun is in Aquarius on March 1st at 0:00 UT. It enters Pisces on March 11th. The Sun crosses the celestial equator at 10:37 UT on March 20th, bringing spring to the northern hemisphere. At the equinox, the Sun is located in Aries and has a longitude of zero degrees.

Brightness, apparent size, illumination, distance from the Earth in astronomical units, and location data for the planets and Pluto on March 1st: Mercury (magnitude +0.2, 7.8", 47%, 0.86 a.u., Capricornus), Venus (magnitude -3.9, 9.8", 99%, 1.70 a.u., Aquarius), Mars (magnitude +0.9, 6.4", 90%, 1.47 a.u., Taurus), Jupiter (magnitude -2.0, 33.0", 100%, 5.97 a.u., Capricornus), Saturn (magnitude +0.7, 15.4", 100% illuminated, 10.80 a.u., Capricornus), Uranus (magnitude +5.8, 3.4", 100% illuminated, 20.48 a.u. on March 16th, Aries), Neptune (magnitude +8.0, 2.2", 100% illuminated, 30.92 a.u. on March 16th, Aquarius), and Pluto (magnitude +14.4, 0.1", 100% illuminated, 34.73 a.u. on March 16th, Sagittarius).

In the evening, Mars and Uranus can be seen in the west. Mars is in the west at midnight. In the morning sky, Mercury and Jupiter are in the east and Saturn is in the southeast.

The Moon, Mercury, and Jupiter lie within a circle with a diameter of 5.3 degrees on the morning of March 10th. On the morning of March 13th, the Moon, Venus, and Neptune lie within a circle with a diameter of 3.9 degrees.

The best morning apparition of **Mercury** of the year for southern hemisphere observers continues this month. The innermost planet disappears from view for mid-northern latitudes after the middle of March. During March, Mercury increases in brightness from magnitude +0.2 to magnitude -0.4, while decreasing in apparent size from 7.8 arc seconds to 5.4 arc seconds. It increases in illumination from 47% to 85%. The speediest planet lies 2.5 degrees west of Jupiter on the morning of March 1st. Mercury rises around 5:25 a.m. local time on that date. It passes just 0.3 degrees north of Jupiter on March 5th. Mercury is at the descending node on March 3rd, reaches greatest western elongation on March 6th, and is at aphelion on March 14th. The waning crescent Moon passes less than four degrees southeast of Mercury on March 11st.

Venus is lost in the glare of the Sun this month. It reaches superior conjunction with the Sun on March 26th.

Mars dims to magnitude +1.3 and decreases in angular size to 5.3 arc seconds by the end of March. The Red Planet is located about three degrees due south of M45 as the month begins. During the third week of March, Mars passes north of Melotte 25 (the Hyades). The waxing crescent Moon passes two degrees southeast of Mars on March 19th. Mars lies seven degrees due north of Aldebaran on March 22nd. It passes close to the open cluster NGC 1746 on March 31st.

Jupiter increases in brightness slightly from magnitude -2.0 to magnitude -2.1 and grows in apparent size from 33.0 arc seconds to 34.7 arc seconds this month. Its elongation from the Sun doubles during March. The largest planet rises shortly after 5:30 a.m. local time on the first day of March. Jupiter and Mercury undergo a very close conjunction on March 5th. The waning crescent Moon passes about four degrees south of Jupiter on the morning of March 10th. The shadow of Io transits Jupiter on the morning of March 24th. Data on Galilean satellite events is available online at <http://www.shallowsky.com/jupiter/> and <https://skyandtelescop...watching-tools/> and on page 51 of the March 2021 issue of Sky & Telescope. Click on <http://www.skyandtel...watching-tools/> or consult pages 50 and 51 of the March 2021 issue of Sky & Telescope to determine transit times of the central meridian by the Great Red Spot. Additional information on Jupiter can be found at <https://curtrenz.com/jupiter.html>

During March, **Saturn's** brightness and angular size change very little. Its elongation from the Sun increases from 33 degrees to 60 degrees this month. Saturn rises about 5:10 a.m. local time on March 1st. The waning crescent Moon passes about four degrees south of the Ringed Planet on the morning of March 10th. Click on <https://curtrenz.com/saturn.html> for a wealth of information on Saturn. For information on the major satellites of Saturn, browse <https://skyandtelescop...watching-tools/>

Uranus is located 3.3 degrees from 29 Arietis on March 1st. By month's end, that distance decreases to 2 degrees. A young crescent Moon passes 3.3 degrees south of the seventh planet on the night of March 16th. See <http://www.curtrenz.com/uranep.html> for additional information on Uranus. A finder chart for Uranus can be found at <http://www.nakedeyep...com/uranus.htm>

Click on <https://skyandtelescop...watching-tools/> for JavaScript utilities that will illustrate the positions of the five brightest satellites of Uranus.

Neptune is in conjunction with the Sun on March 11th and will not be visible again until April.

Pluto is not a viable target this month.

For more on the planets and how to locate them, browse <http://www.nakedeyeplanets.com/>

A summary on the planets for March can be found at <https://skynews.ca/m...ts-at-a-glance/>

Asteroids



Asteroid 4 Vesta shines at sixth magnitude as it heads northwestward through Leo this month. The main belt asteroid passes approximately two degrees north of the spiral galaxies M65, M66, and NGC 3628 (the Leo Triplet) on March 1st. Vesta reaches opposition on March 4th. On that night, it lies 1.3 degrees northeast of the third-magnitude star Chertan (Theta Leonis). Vesta passes 2.1 degrees due east of 51 Leonis (magnitude +5.5) on March 31st. An article on Vesta that includes a finder chart appears on pages 48 and 49 of the March 2021 issue of Sky & Telescope. Asteroid 116 Sirona (magnitude +10.7) reaches opposition in Leo on March 10th. The eleventh-magnitude barred spiral galaxy NGC 3705 lies to the west of the asteroid on that date. Consult http://britastro.org...s_asteroid.html for finder charts and <http://www.curtrenz.com/asteroids.html> to learn more about a select number of asteroids.

Comets



Comet C/2020 R4 (Atlas) travels northwestward through Capricornus and Aquila during March. The Kuiper Belt comet is located about three degrees northwest of the ninth-magnitude globular cluster M72 on March 1st. The fourth-magnitude optical double star Algedi (Alpha Capricorni) lies to the southwest. Visit <http://cometchasing.skyhound.com/> and <http://www.aerith.net/future-n.html> and <https://cobs.si/> for additional information on this and other comets visible this month.

Meteor Showers



As seen from the northern hemisphere, March is the slowest month of the year for meteor activity. No major annual showers are active and only a few very weak minor showers produce activity this month.

Earth & Miscellaneous



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

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

The graphic at <https://www.timeanddate.com/planets/distance> displays the apparent and comparative sizes of the planets, along with their magnitudes and distances, for a given date and time.

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

Information on the celestial events transpiring each week can be found at <http://astronomy.com/skythisweek> and <https://skyandtelescope.org/sky-at-a-glance/>

An informative video discussing astronomical objects worthy of observing each month can be found at <https://hubblesite.org/education/tonights-sky>

Free star maps for this month can be downloaded at <http://www.skymaps.com/downloads.html> and <http://www.telescope-lab.com/thly-Star-Chart>

An online interactive star chart appears at <https://skyandtelescope.org/interactive-sky-chart/>

Deep Sky



The famous eclipsing variable star Algol (Beta Persei) is at a minimum, decreasing in magnitude from 2.1 to 3.4, on March 2nd, 5th, 7th, 10th, 13th, 16th, 19th, 22nd, 25th, 27th, and 30th. Consult <https://skyandtelesc...inima-of-algol/> or page 50 of the March 2021 issue of Sky & Telescope for the times of the eclipses. Favorable dates for observing Algol at mid-eclipse from the eastern United States include March 1st (11:21 p.m. EST or 3:21 UT March 2nd), March 4th (8:10 p.m. EST or 1:10 UT March 5th), and March 24th (10:55 p.m. EDT or 2:55 UT March 23rd). For more on Algol, see <http://stars.astro.i.../sow/Algol.html> and <http://www.solstatio...ars2/algol3.htm>

Data on current supernovae can be found at <http://www.rochester...y.org/snimages/>

It is possible to observe all 109 (or 110) Messier objects during a single night around the time of the vernal equinox, if the Moon phase and local latitude are favorable. For information on running a so-called Messier Marathon, browse <http://messier.seds....n/marathon.html> and <http://www.richardbe...t/marathon.html>

Information on observing some of the more prominent Messier galaxies is available at <http://www.cloudynig...ur-astronomers/>

Finder charts for the Messier objects and other deep-sky objects are posted at <https://freestarcharts.com/messier> and <https://freestarcharts.com/ngc-ic> and <http://www.cambridge...nuary-march.htm>

Telrad finder charts for the Messier Catalog are posted at <http://www.custerobs...cs/messier2.pdf> and <http://www.star-shin...ssierTelrad.htm>

Telrad finder charts for the SAC's 110 Best of the NGC are available at <http://sao64.free.fr...ataloguesac.pdf>

Deep-sky object list generators can be found at <https://dso-browser.com/> and <http://www.virtualcolony.com/sac/> and <https://tonightssky.com/MainPage.php>

Free sky atlases can be downloaded at <http://www.deepskywa...-atlas-full.pdf> and <https://www.cloudyni...ar-charts-r1021> and <https://allans-stuff.com/triatlas/>

Thirty binary and multiple stars for March: Struve 1173, Struve 1181, Struve 1187, Zeta Cancri, 24 Cancri, Phi-2 Cancri, Iota-1 Cancri, Struve 1245, Iota-2 Cancri, 66 Cancri, Struve 1327 (Cancer); Struve 1270, Epsilon Hydrae, 15 Hydrae, 17 Hydrae, Theta Hydrae, 27 Hydrae, Struve 1347, Struve 1357, Struve 1365 (Hydra); 3 Leonis, Struve 1360, 6 Leonis, Omicron Leonis (Leo); Struve 1274, Struve 1282, Struve 1333, 38 Lyncis, Struve 1369 (Lynx); h4046 (Puppis)

Notable carbon star for March: T Cancri (Cancer)

Thirty-five deep-sky objects for March: M44, M67, NGC 2775 (Cancer); Abell 33, M48, NGC 2610, NGC 2642, NGC 2811, NGC 2835, NGC 2855, NGC 2935, NGC 2992, NGC 3052, NGC 3078 (Hydra); NGC 2903, NGC 2916, NGC 2964, NGC 2968, NGC 3020 (Leo); NGC 2859, NGC 3003, NGC 3021 (Leo Minor); NGC 2683 (Lynx); NGC 2567, NGC 2571 (Puppis); M81, M82, NGC 2639, NGC 2654, NGC 2681, NGC 2685, NGC 2742, NGC 2768, NGC 2787, NGC 2841, NGC 2880, NGC 2950, NGC 2976, NGC 2985 (Ursa Major)

Top ten binocular deep-sky objects for March: M44, M48, M67, M81, M82, NGC 2571, NGC 2683, NGC 2841, NGC 2903, NGC 2976

Top ten deep-sky objects for March: M44, M48, M67, M81, M82, NGC 2654, NGC 2683, NGC 2835, NGC 2841, NGC 2903

Challenge deep-sky object for March: Abell 30 (Cancer)

The objects listed above are located between 8:00 and 10:00 hours of right ascension.

NASA Night Sky Notes



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!

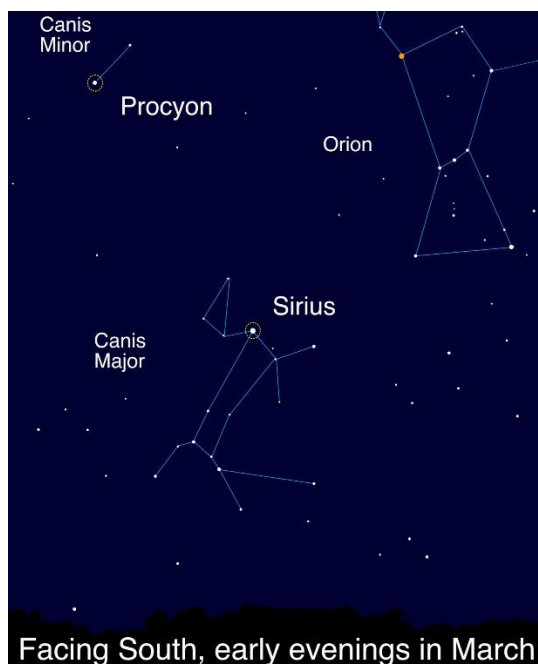
Taking the Dog Stars for a Springtime Walk: Sirius and Procyon

David Prosper

March skies feature many dazzling stars and constellations, glimmering high in the night, but two of the brightest stars are the focus of our attention this month: Sirius and Procyon, the dog stars!

Sirius is the brightest star in the nighttime sky, in large part because it is one of the closest stars to our solar system at 8.6 light years away. Compared to our Sun, Sirius possesses twice the mass and is much younger. Sirius is estimated to be several hundred *million* years old, just a fraction of the Sun's 4.6 *billion* years. Near Sirius - around the width of a hand with fingers splayed out, held away at arm's length - you'll find Procyon, the 8th brightest star in the night sky. Procyon is another one of our Sun's closest neighbors, though a little farther away than Sirius, 11.5 light years away. While less massive than Sirius, it is much older and unusually luminous for a star of its type, leading astronomers to suspect that it may "soon" - at some point millions of years from now - swell into a giant star as it nears the end of its stellar life. Sirius and Procyon are nicknamed the "Dog Stars," an apt name as they are the brightest stars in their respective constellations - Canis Major and Canis Minor - whose names translate to "Big Dog" and "Little Dog." Not everyone sees them as canine companions. As two of the brightest stars in the sky, they feature prominently in the sky stories of cultures around the world. Sirius also captures the imaginations of people today: when rising or setting near the horizon, its brilliance mixes with our atmosphere's turbulence, causing the star's light to shimmer with wildly flickering color. This vivid, eerie sight was an indication to ancient peoples of changes in the seasons, and even triggers UFO reports in the modern era!

Both of these bright stars have unseen companions: tiny, dense white dwarf stars, the remnants of supermassive companion stars. Interestingly, both of these dim companions were inferred from careful studies of their parent stars' movements in the 1800s, before they were ever directly observed! They are a challenging observation, even with a large telescope, since their parent stars are so very bright that their light overwhelms the much dimmer light of their tiny companions. The white dwarf stars, just like their parent stars, have differences: Sirius B is younger, brighter, and more energetic than Procyon B. Careful observations of these nearby systems over hundreds of years have helped advance the fields of: astrometry, the precise measurement of stars; stellar evolution; and astroseismology, the study of the internal structure of stars via their oscillations. Discover more about our stellar neighborhood at nasa.gov!



Sirius and Procyon, the loyal hunting dogs of nearby Orion the Hunter! What other stories can you imagine for these stars? Learn about "Legends in the Sky" and create your own with this activity: <https://bit.ly/legendsinthesky> Image created with assistance from Stellarium. The "Universe in a Different Light" activity highlights more surprising views of some familiar objects: <http://bit.ly/different-light-nsn>

Phil Harrington's Cosmic Challenge

Zeta (ζ) Cancri March 2021

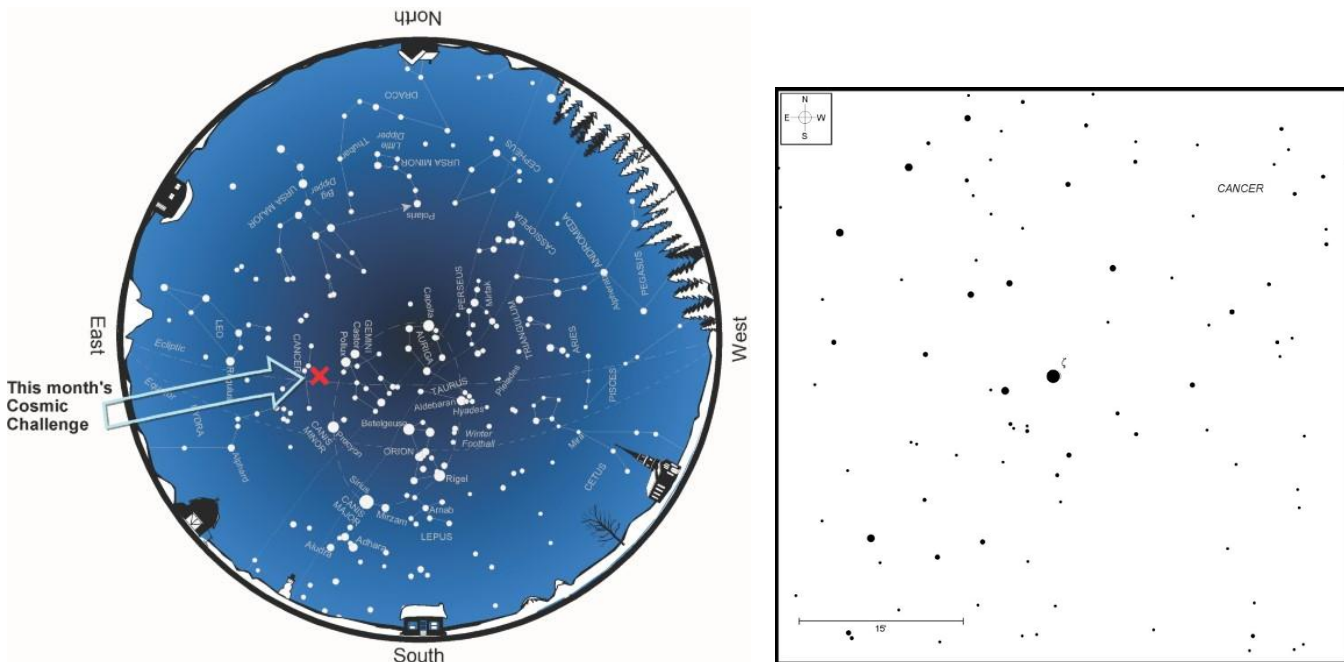
This month's suggested aperture range:



Medium scopes: 6-inch (15cm)
to 9.25-inch (23cm)

Target	Type	Right Ascension	Declination	Const.	Mag	Size
Zeta Cancri	Quadruple star	08 ^h 12 ^m 12.7 ^s	+17° 38' 52"	Cancer	5.6/6.0/6.1/10.0	64"

Although it is one of the faintest constellations along the zodiac, Cancer the Crab hosts a variety of targets to test our mettle during the early spring. Spotting M44, the Beehive Cluster, by eye alone may prove very challenging for suburban observers, while the Crab's underappreciated second open cluster, M67, may also reach naked-eye visibility from more rural environs. While the constellation boasts a variety of challenging galaxies, in the test here, we will try our luck with one of the constellation's prettiest binary stars, Zeta (ζ) Cancri.



Above left: Early evening star map. Credit: Map adapted from [Star Watch](#) by Phil Harrington.

Above right: Finder chart for this month's [Cosmic Challenge](#).

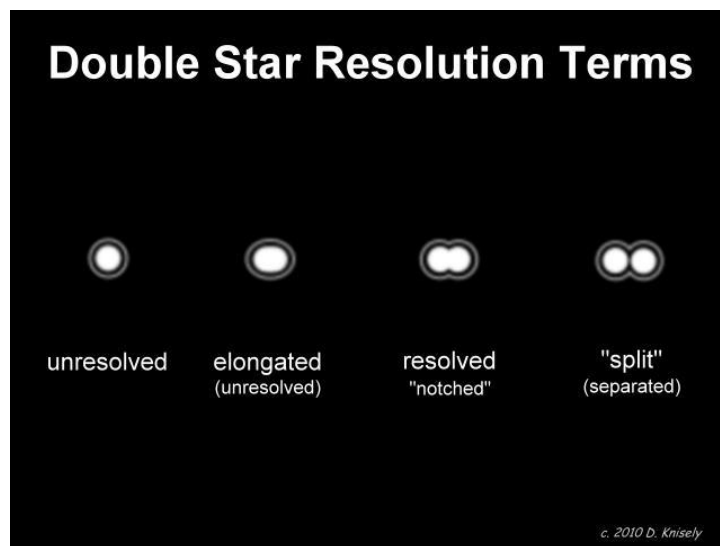
Credit: Chart adapted from [Cosmic Challenge: The Ultimate Observing List for Amateurs](#)

Click on the chart to open a printable PDF version.

Many "best of" lists include Zeta Cancri as a spring showpiece target, so there is a good chance that you have already crossed paths. Zeta's two brightest suns, known as Zeta-1 and Zeta-2, were discovered in 1756 by German physicist/astronomer Johann Tobias Mayer. The Zetas are separated by 5 arc-seconds, which is wide enough to be resolvable through just about any amateur telescope with an aperture 2 inches (5 cm) or larger.

Fifteen years later, the exacting eyes of William Herschel noticed that Zeta-1 was not a solo act, but rather was a tight stellar duet. Known today as Zeta Cancri A and Zeta Cancri B, these two yellow-white main sequence stars have roughly equal luminosities and masses. They shine at magnitudes 5.6 and 6.0, respectively, and take 59.6 years to complete an orbit about their common gravitational center. During that time, their separation varies between 0.6" at periastron (closest separation) and 1.2" at apastron (widest separation). The last apastron occurred just last year, so now is the time to catch them.

Given steady seeing, a 6-inch instrument at 200x or more can resolve Zeta Cancri A and Zeta Cancri B as identical yellowish headlights nearly touching one another. As a hint, the stars are oriented almost exactly north-south at present, although this will change as the stars continue their orbits. Given steady seeing, a 6-inch instrument at 200x or more can resolve Zeta Cancri A and Zeta Cancri B as identical yellowish headlights nearly touching one another. As a hint, the stars are oriented almost exactly north-south at present, although this will change as the stars continue their orbits.



Above left: CN member [evan9162](#) recorded this image in late April 2014 through his 6-inch (15cm) Celestron C6 using a TeleVue 2x Barlow and a Canon T4i DSLR. You can find other images of Zeta Cnc that he took in [this thread](#) from a few years back in the Double Star Observing forum. Above right: Double star resolving terms © 2010 D. Knisely.

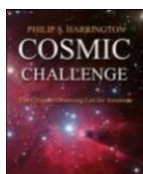
By 1831, Herschel's son John noticed that Zeta-2 was wobbling ever so slightly in its orbit around Zeta-1. Although it was assumed this behavior was caused by a second star orbiting Zeta-2, this unseen companion remained unconfirmed until 2000. That year, photographic observations made with the Canada-France-Hawaii Telescope by J. B. Hutchings, R. F. Griffin, and F. Ménard finally resolved the elusive companion. ([Direct Observation of the Fourth Star in the Zeta Cancri System](#); J. B. Hutchings, R. F. Griffin, and F. Ménard; [Publications of the Astronomical Society of the Pacific](#) 2000 112:772, 833-836).

Subsequently, Zeta-2's two components have been designated as Zeta Cancri C and Zeta Cancri D. The case is still not fully closed, however. Although spectroscopic studies of Zeta-D reveal it to be a red dwarf, its brightness suggests we are looking at not just one, but two dwarf stars that remain too close to resolve even with today's best equipment. A second investigation conducted during a lunar occultation of Zeta in 2000 confirmed that D is in fact a close-set binary. That investigation, appropriately titled "[An Investigation of The Multiple Star Zeta Cnc by a Lunar Occultation](#)," was published by A. Richichi in [Astronomy and Astrophysics](#), v.364, p.225-231 (2000).

Can *any* amateur telescope possibly glimpse Zeta D? Zeta C, a yellow main sequence star, shines at magnitude 6.1, while the newly discovered Zeta-D is a weak 10th magnitude. They are separated by just 0.3 arc-seconds and have an orbital period of 17 years. That challenge may exceed even the largest backyard telescopes, although knowing the persistence of amateur astronomers, I suspect it may only be a matter of time.

Good luck with this month's challenge! And be sure to post your results in this column's discussion [forum](#).

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



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](#). Visit www.philharrington.net to learn more.

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About the Magic Valley Astronomical Society

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 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, 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.