

Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

May 2020

Membership Meeting

See President's Message for June

Centennial Observatory

Closed: See Website for Details

Faulkner Planetarium

Closed: See Website 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

MVAS President's Message

Colleagues,

There's good news and bad news. After further discussion with both administration at the Hagerman Fossil Beds National Monument and the Herrett Center, we're going to cancel the June star party at Oregon Trail Overlook. The party for the Fall is still scheduled, and we're reviewing the City of Rocks Star Party plans as well. In addition, CSI opening plans have made it clear that the Herrett Center won't be open for our June meeting. Keep your fingers crossed about June.

Fortunately, just as I write this, Professor Brian Jackson of Boise State University contacted me about the First Friday sessions they are holding. These are informative talks given over YouTube by various experts in the field. Check out further information in the newsletter. I've also received word that the Boise Astronomical Society is coming up with something, so keep your eyes open.

I hope you are keeping busy without the need to meet, and ask you to submit photos and logs to give us an idea what's out there. Gary Leavitt and I have both independently seen Comet PANSTARRS 2017/C2 in Ursa Major over Memorial Day weekend. His shots are an example of the rewards of patience and attention to detail. In my case, my view came after scouting for sites south of Twin Falls that allowed me to both handle social distancing as well as getting away from the Twin Falls' skies. I found a spot about 10 miles south of Twin Falls, and was rewarded with remarkable views. If you haven't gotten out to see the remarkable phase Venus is in right now, please do so. Mercury is also out there for your viewing pleasure.

My view of the comet had a touching connection to it. While what I saw was merely confirmation that a comet was there, it was through my grandfather's 4" f/11 Criterion Dynascope, purchased in the late 1950s. The Dynascope had cheap eyepieces and a rickety cast iron mount that could pinch the webbing between the thumb and the forefinger. It's seen better days, but with new eyepieces and Idaho skies, I was able to pull in the prize. It's nice to know a scope reminding me of someone who helped me get started has seen the transit of Venus, imaged the moon, pulled in almost 75 Messier objects, and now two comets. The other was Comet Lulin in 2009. And that's one of the joys we overlook in astronomy – how it can connect generations. When you share your logs with us, or your photos, you enhance that opportunity.


As I left for home after that session, the ISS was finishing up a pass, and Scorpius was just starting to rise. Earlier that evening, I caught M57 and M13. That means that the summer season is beginning its approach, which means we can all find a way of sharing. If you need a telescope to get going, contact me about using one of the MVAS loaner scopes.

Clear Views,

Rob Mayer

Calendar

June 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5 Strawberry Moon  Visible 100% Age: 14.43 Days	6 BSU First Friday
7	8	9	10	11	12 Boise Astro. General Mtg. Via Zoom Video Begins at 7:30p	13 MVAS Meeting Cancelled. Public Star Party Cancelled Last Quarter Moon
14 Flag Day 	15	16	17	18	19	20 Summer Solstice at 15:43h 
21 Father's Day 	22	23	24	25	26	27
28 New Moon	29	30				
28 First Quarter Moon  Visible 52% ↑ Age: 7.55 Days						

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

June Celestial Calendar by Dave Mitsky

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

- 6/1 Mars and Saturn are at heliocentric conjunction (longitude 297.1 degrees) at 18:00
- 6/2 The Moon is 6.8 degrees north-northeast of the first-magnitude star Spica (Alpha Virginis) at 8:00
- 6/3 The Moon is at perigee, subtending 32' 48" from a distance of 364,366 kilometers (226,406 miles), at 3:38; Venus is at inferior conjunction with the Sun (0.289 astronomical units from the Earth and latitude 0.19 degrees) at 18:00
- 6/4 A double Galilean satellite shadow transit (Ganymede's shadow precedes Europa's) begins at 11:21; Mercury is at its greatest eastern elongation (24 degrees) at 13:00
- 6/5 The Moon is 6.3 degrees north-northeast of the first-magnitude star Antares (Alpha Scorpii) Venus is at the descending node through the ecliptic plane at 19:00; Full Moon, known as the Rose or Strawberry Moon, occurs at 19:12
- 6/6 The Moon is at the descending node (longitude 269.1 degrees) at 18:00; Mars is at western quadrature (90 degrees from the Sun) at 19:00
- 6/8 The Moon is 2.2 degrees southeast of Jupiter at 19:00; the Moon, Jupiter, and Saturn lie within a circle with a diameter of 5.1 degrees at 22:00
- 6/9 The Moon is 2.7 degrees southeast of Saturn at 4:00
- 6/11 A double Galilean satellite shadow transit (Europa's shadow precedes Ganymede's) begins at 14:33
- 6/12 The equation of time, which yields the difference between mean solar time and apparent solar time, equals 0 at 15:00; Mercury is at the descending node through the ecliptic plane at 19:00; Venus is 4.2 degrees north-northwest of the first-magnitude star Aldebaran (Alpha Tauri) at 21:00
- 6/13 The earliest sunrise of the year at latitude 40 degrees north occurs today; the Moon, Mars, and Neptune lie within a circle with a diameter of 4.2 degrees at 2:00; the Moon is 2.5 degrees southeast of Mars at 3:00; the Moon is 4.2 degrees southeast of Neptune at 4:00; Last Quarter Moon occurs at 6:24; Mars (magnitude -0.2) is 1.6 degrees southeast of Neptune (magnitude +7.9) at 13:00
- 6/14 The Curtiss Cross, an X-shaped clair-obscure illumination effect located between the craters Parry and Gambart, is predicted to be visible at 15:02
- 6/15 The Moon is at apogee, subtending 29' 32" from a distance of 404,595 kilometers (251,404 miles), at 00:57
- 6/17 The earliest morning twilight of the year at latitude 40 degrees north occurs today; the Moon is 3.6 degrees southeast of Uranus at 5:00; Mercury is stationary, with retrograde (western) motion to begin, at 20:00
- 6/18 A double Galilean satellite shadow transit (Ganymede's shadow precedes Europa's) begins at 18:33; the Moon is 6.6 degrees southeast of the bright open cluster M45 (the Pleiades or Subaru) in Taurus at 23:00
- 6/19 The Moon is 0.7 degrees north of Venus, with an occultation taking place in northern Mongolia, northern and central Russia, northwestern Europe, Greenland, northern and eastern Canada, the Canary Islands, and the Azores, at 9:00; the Moon, Venus, and Aldebaran lie within a circle with a diameter of 4.9 degrees at 11:00; the Moon is 3.7 degrees north of Aldebaran at 17:00
- 6/20 The middle of the eclipse season (i.e., the Sun is at same longitude as the Moon's ascending node of 89.2 degrees) occurs at 1:00; Venus is 8.9 degrees southeast of M45 at 12:00; the northern hemisphere summer solstice occurs at 21:44; the Sun's longitude is 90 degrees at 21:44
- 6/21 The Moon is at the ascending node (longitude 89.1 degrees) at 4:00; an annular solar eclipse visible from parts of Africa, Asia, and the western Pacific begins at 3:46; New Moon (lunation 1206) occurs at 6:41; the Sun enters the constellation of Gemini, at longitude 90.4 degrees on the ecliptic, at 9:00; the Moon is 0.7 degrees southeast of the bright open cluster M35 in Gemini at 11:00
- 6/22 The Moon is 3.9 degrees north of Mercury at 8:00; the Moon is 8.1 degrees south of the first-magnitude star Castor (Alpha Geminorum) at 22:00
- 6/23 The Moon is 4.5 degrees south of the first-magnitude star Pollux (Beta Geminorum) at 2:00; Mercury is at aphelion (0.4667 astronomical units from the Sun) at 4:00; Neptune is stationary at 18:00
- 6/24 The latest evening twilight of the year at latitude 40 degrees north occurs today; the Moon is 2.0 degrees north-northeast of the bright open cluster M44 (the Beehive Cluster or Praesepe) in Cancer at 3:00; Venus is stationary, with prograde (eastern) motion to begin, at 18:00
- 6/25 The Moon is 4.2 degrees north-northeast of the first-magnitude star Regulus (Alpha Leonis) at 18:00
- 6/27 The latest sunset of the year at latitude 40 degrees north occurs today
- 6/28 The Purbach Cross or Lunar X, an X-shaped clair-obscure illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to be fully formed at 1:52; asteroid 7 Iris (magnitude +7.9) is at opposition at 2:00; First Quarter Moon occurs at 8:16
- 6/29 The Moon is 6.8 degrees north-northeast of Spica at 14:00
- 6/30 The Moon is at perigee, subtending 32' 23" from a distance of 368,958 kilometers (229,260 miles), at 2:13

Giovanni Cassini (1625-1712), John Dollond (1706-1761), Charles Messier (1730-1817), William Lassell (1799-1880), George Ellery Hale (1868-1938), and Carolyn Shoemaker (1929) were born this month.

The Sun, the Moon, & the Planets



The Moon is 9.1 days old, is illuminated 69.2%, subtends 32.9 arc minutes, and is located in Virgo on June 1st at 0:00 UT. The Moon is at its greatest northern declination of +24.1 degrees on June 22nd and at its greatest southern declination of -24.0 degrees on June 8th. Longitudinal libration is at a maximum of +5.9 degrees on June 9th and a minimum of -5.1 degrees on June 22nd. Latitudinal libration is at a maximum of +6.9 degrees on June 14th and a minimum of -6.7 degrees on June 1st and -6.8 degrees on June 28th. Favorable librations for the following craters occur on the indicated dates: Scott on June 3rd, Helmholtz on June 4th, Gibbs on June 6th, and Desargues on June 17th. The Moon is at perigee (a distance of 57.13 Earth-radii) on June 3rd and (a distance of 57.85 Earth-radii) on June 30th and at apogee (a distance of 63.44 Earth-radii) on June 15th. New Moon occurs on June 21st. The Moon occults Venus on June 19th from certain parts of the world. Browse <http://www.lunar-occultations.com/iota/iotandx.htm> for information on occultation events. Visit <https://saberdoesthestars.wordpress.com/2011/07/05/saber-does-the-stars/> for tips on spotting extreme crescent Moons and <http://www.curtrenz.com/moon06.html> for Full Moon data. Consult <http://time.unitarium.com/moon/where.html> or download <http://www.ap-i.net/avl/en/start> for current information on the Moon. See <https://svs.gsfc.nasa.gov/4768> for a lunar phase and libration calculator and <https://svs.gsfc.nasa.gov/4768> for the Lunar Reconnaissance Orbiter Camera (LROC) Quickmap. Click on https://www.calendar-12.com/moon_calendar/2020/june 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-occultations.com/rlo/rays/rays.htm>

The Moon, Jupiter, and Saturn lie within a circle with a diameter of 5.1 degrees on June 8th. On June 13th, the Moon, Mars, and Neptune lie within a circle with a diameter of 4.2 degrees. The Moon, Venus, and Aldebaran lie within a circle with a diameter of 4.9 degrees on June 19th.

The Sun is located in Taurus on June 1st. It enters Gemini on June 21st. The Sun reaches its farthest position north for the year on June 20th. There are 15 hours and one minute of daylight at latitude 40 degrees north on June 20th, the day of the summer solstice.

Brightness, apparent size, illumination, distance from the Earth in astronomical units, and location data for the planets and Pluto on June 1st: Mercury (+0.1, 7.6", 45% illuminated, 0.89 a.u., Gemini), Venus (not visible, 57.6", 0% illuminated, 0.29 a.u., Taurus), Mars (magnitude 0.0, 9.3", 85% illuminated, 1.01 a.u., Aquarius), Jupiter (magnitude -2.6, 44.7", 100% illuminated, 4.41 a.u., Sagittarius), Saturn (magnitude +0.4, 17.8", 100% illuminated, 9.34 a.u., Capricornus), Uranus on June 16th (magnitude +5.9, 3.4", 100% illuminated, 20.49 a.u., Aries), Neptune on June 16th (magnitude +7.9, 2.3", 100% illuminated, 29.84 a.u., Aquarius), and Pluto on June 16th (magnitude +14.3, 0.1", 100% illuminated, 33.31 a.u., Sagittarius).

Mercury is in the west in the evening sky. Venus and Uranus can be found in the east, Mars and Neptune in the southeast, and Jupiter and Saturn can be found in the south in the morning sky.

Mercury increases in apparent size from 7.6 to 12.0 arc seconds but dims in brightness from magnitude +0.1 to +3.0. It attains a greatest eastern elongation of 24 degrees on June 4th. On that date, the speediest planet will shine at magnitude +0.4, subtend 8 arc seconds, will be illuminated 36%, and will set nearly two hours after sunset. By June 13th, it will be illuminated only 19%. Mercury will be visible in the evening sky until the middle of June.

Venus is at inferior conjunction on June 3rd. It will pass just 0.2 degrees from the Sun. Afterwards, Venus enters the morning sky. The 51-arc-second-in-diameter, 8%-illuminated planet will be occulted by a waning crescent Moon from certain parts of the world on the morning of June 19th. Venus lies near Melotte 25 (the Hyades) and is eight degrees in altitude one hour before sunrise on June 30th.

During June, **Mars** brightens from magnitude 0.0 to magnitude -0.5 and grows in apparent size from 9.3 to 11.4 arc seconds. Its altitude increases from 28 degrees on June 1st to 39 degrees on June 30th for mid-northern hemisphere observers. By month's end, it rises not long after 12:30 a.m. DST. Mars and Saturn are at heliocentric conjunction on June 1st. Mars is at western quadrature on June 6th. As a result, the planet is illuminated only 84% and appears distinctly gibbous. On June 10th, Mars subtends 10 arc seconds, a bit less than one half of its maximum angular size at opposition on October 6th. The Last Quarter Moon passes 2.5 degrees southeast of Mars on June 13th. On June 24th, the Red Planet departs Aquarius and enters southern Pisces. Syrtis Major, a dark triangular region on the surface of Mars, will be visible by late June. An article on observing Mars appears on pages 48 and 49 of the June issue of Sky & Telescope. Consult the Mars Profiler at <https://skyandtelescope.org/observing/mars-which-side-is-visible/> to identify Martian surface features.

Jupiter rises before midnight local DST. It brightens marginally to magnitude -2.7 and gains 2.5 arc seconds in angular size during June. Saturn lies 4.8 degrees east of Jupiter on June 1st. The two retrograding gas giants are in quasi-conjunction throughout June. The gap between Saturn and Jupiter increases to six degrees by the end of the month. The nearly Full Moon passes two degrees southeast of Jupiter on June 8th. As Io's shadow begins to transit Jupiter on June 14th, Callisto is eclipsed by the planet's shadow beginning at 5:17 UT. On June 15th, Ganymede goes into eclipse at 0:40 UT, as Io and its shadow are transiting Jupiter. Browse <http://www.skyandtelescope.com/observing/interactive-sky-watching-tools/> or http://www.projectpluto.com/jeve_grs.htm in order to determine transit times of Jupiter's central meridian by the Great Red Spot. GRS transit times are also available on pages 50 and 51 of the June 2020 issue of Sky & Telescope. Javascript Jupiter at <http://www.shallowsky.com/jupiter/> shows Galilean satellite events. Data on the Galilean satellite events can also be found on page 51 of the June 2020 issue of Sky & Telescope and at <https://www.projectpluto.com/jevent.htm#jun> and <http://www.skyandtelescope.com/observing/interactive-sky-watching-tools/>

This month **Saturn** increases in brightness from magnitude +0.4 to magnitude +0.2 and in apparent size from 17.8 arc seconds to 18.3 arc seconds, while its rings span 41 arc seconds and are inclined more than 20 degrees. It rises about 15 minutes after Jupiter rises. Saturn and Mars are at heliocentric conjunction on June 1st. The waxing crescent Moon passes south of Saturn on June 9th. Eighth-magnitude Titan passes due north of Saturn on June 14th and June 30th and due south of the planet on June 6th and June 22nd. Iapetus shines at magnitude 10.9 when it is 10.2 arc minutes due west of the planet. This peculiar satellite is located 54 arc minutes north of Saturn when it reaches superior conjunction on June 20th. For information on Saturn's satellites, browse <http://www.skyandtelescope.com/observing/interactive-sky-watching-tools/>

Uranus emerges from morning twilight but remains a difficult target. The waning crescent Moon passes five degrees south of Uranus on June 17th. A finder chart is available at <http://www.nakedeyeplanets.com/uranus.htm#finderchart>

Neptune lies 3.5 degree east-northeast of the fourth-magnitude star Phi Aquarii this month and close to a sixth-magnitude field star. Mars passes less than two degrees southeast of Neptune on the morning of June 13th. The Last Quarter Moon passes four degrees south of Neptune on June 13th. Neptune reaches a stationary point on June 23rd. See <http://www.nakedeyeplanets.com/neptune.htm#finderchart> for a finder chart.

Pluto lies four arc minutes south of HIP 97251, a ninth-magnitude field star, on June 1st. The dwarf planet is located 41.3 arc minutes due south of Jupiter by June 29th. A finder chart can be found at page 243 of the RASC Observer's Handbook 2020.

Asteroids



Shining at tenth magnitude, **Asteroid 2 Pallas** glides northwestward through Vulpecula this month. It passes less than two degrees north of Collinder 399 (the Coathanger asterism) during the second week of June. Asteroid 7 Iris shines at magnitude +8.9 when it reaches opposition in Sagittarius on June 28th. Asteroids brighter than magnitude +11.0 that reach opposition this month include 85 Io (magnitude +8.9) on June 12th and 56 Melete (magnitude +10.6) on June 28th. Information on asteroid occultations taking place this month is available at http://www.asteroidoccultation.com/2020_06_si.htm

Comets



Comet C/2017 T2 (PanSTARRS) travels southeastward through Ursa Major and Canes Venatici this month. It passes less than a degree to the west of the spiral galaxy M109 in Ursa Major on June 16th. On June 23rd, the comet is located less than a degree west of the spiral galaxy M106 in Canes Venatici. Comet PanSTARRS T2 passes less than one degree west of a third spiral galaxy, NGC 4449, on June 27th. Visit <http://cometchasing.skyhound.com/> and <http://www.aerith.net/comet/future-n.html> for information on comets visible this month.

Meteor Showers



The minor Boötid meteor shower (5 per hour) peaks on the morning of June 27th. The source of Boötid meteors is the periodic comet 7P/Pons-Winnecke. The radiant lies in northern Boötes at right ascension 14 hours 56 minutes, declination 48 degrees. Browse https://in-the-sky.org/news.php?id=20200627_10_100 for additional information.

Orbiting Earth & Miscellaneous



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

An article on the June morning planets can be seen at https://drive.google.com/file/d/1Oua_TdAa_KAbG4YEDFHNn-W_FTzEqVZ2/view

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

A wealth of current 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 <https://stardate.org/nightsky> and <http://astronomy.com/skythisweek> and <http://www.skyandtelescope.com/observing/sky-at-a-glance/>

Free star maps for June can be downloaded at <http://www.skymaps.com/downloads.html> and <https://www.telescope.com/content.jsp?pageName=Monthly-Star-Chart>

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

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.org/features/turnleft/seasonal_skies_april-june.htm

Telrad finder charts for the Messier Catalog and the SAC's 110 Best of the NGC are posted at <http://www.custerobservatory.org/docs/messier2.pdf> and <http://www.saguaroastro.org/content/db/Book110BestNGC.pdf> respectively.

Information pertaining to observing some of the more prominent Messier galaxies can be found at <http://www.cloudynights.com/topic/358295-how-to-locate-some-of-the-major-messier-galaxies-and-helpful-advice-for-novice-amateur-astronomers/>

Stellarium and Cartes du Ciel are two excellent freeware planetarium programs that are available at <http://stellarium.org/> and <https://www.ap-i.net/skychart/en/start>

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

Freeware sky atlases can be downloaded at <http://www.deepskywatch.com/files/deepsky-atlas/Deep-Sky-Hunter-atlas-full.pdf> and <http://astro.mxd120.com/free-star-atlases>

Deep Sky



Forty binary and multiple stars for June: Struve 1812, Kappa Bootis, Otto Struve 279, Iota Bootis, Struve 1825, Struve 1835, Pi Bootis, Epsilon Bootis, Struve 1889, 39 Bootis, Xi Bootis, Struve 1910, Delta Bootis, Mu Bootis (Bootes); Struve 1803 (Canes Venatici); Struve 1932, Struve 1964, Zeta Coronae Borealis, Struve 1973, Otto Struve 302 (Corona Borealis); Struve 1927, Struve 1984, Struve 2054, Eta Draconis, 17-16 Draconis, 17 Draconis (Draco); 54 Hydrae (Hydra); Struve 1919, 5 Serpentis, 6 Serpentis, Struve 1950, Delta Serpentis, Otto Struve 300, Beta Serpentis, Struve 1985 (Serpens Caput); Struve 1831 (Ursa Major); Pi-1 Ursae Minoris (Ursa Minor); Struve 1802, Struve 1833, Phi Virginis (Virgo)

Notable carbon star for June: V Coronae Borealis

Fifty deep-sky objects for June: NGC 5466, NGC 5676, NGC 5689 (Bootes); M102 (NGC 5866), NGC 5678, NGC 5879, NGC 5905, NGC 5907, NGC 5908, NGC 5949, NGC 5963, NGC 5965, NGC 5982, NGC 5985, NGC 6015 (Draco); NGC 5694 (Hydra); NGC 5728, NGC 5791, NGC 5796, NGC 5812, NGC 5861, NGC 5878, NGC 5897 (Libra); M5, NGC 5921, NGC 5957, NGC 5962, NGC 5970, NGC 5984 (Serpens Caput); M101, NGC 5473, NGC 5474, NGC 5485, NGC 5585, NGC 5631 (Ursa Major); NGC 5566, NGC 5634, NGC 5701, NGC 5713, NGC 5746, NGC 5750, NGC 5775, NGC 5806, NGC 5813, NGC 5831, NGC 5838, NGC 5846, NGC 5850, NGC 5854, NGC 5864 (Virgo)

Top ten deep-sky objects for June: M5, M101, M102, NGC 5566, NGC 5585, NGC 5689, NGC 5746, NGC 5813, NGC 5838, NGC 5907

Top five deep-sky binocular objects for June: M5, M101, M102, NGC 5466, NGC 5907

Challenge deep-sky object for June: Abell 2065

The objects listed above are located between 14:00 and 16:00 hours of right ascension.

The British astronomer Edmund Halley discovered M13 on June 1, 1714. The French astronomer Nicolas Louis de Lacaille discovered the globular cluster M55 on June 16, 1752. A transit of the Sun by Venus was observed by Austrian, British, and French astronomers from various parts of the world on June 6, 1761. The French astronomer Charles Messier discovered the globular cluster M14 on June 1st, 1764, the emission and reflection nebula M20 (the Trifid Nebula) on June 5, 1764, and the open cluster M23 on June 20, 1764. The globular cluster M62 was discovered by Charles Messier on June 7, 1771. The French astronomer Pierre Méchain discovered his first deep-sky object, the spiral galaxy M63 (the Sunflower Galaxy), on June 14, 1779. The German/English astronomer William Herschel discovered the globular cluster NGC 6288 on June 24, 1784. Neptune was independently discovered by the British astronomer John Couch Adams on June 5, 1846. The Italian astronomer Giovanni Battista Donati discovered Comet C/1858 L1 (Donati), the first comet to be photographed, on June 2, 1858. A large storm on Saturn was observed by the American astronomer E. E. Barnard. The Tunguska event occurred on June 30, 1908. The largest known solar flare was recorded on June 27, 1984. The Georgian astronomer Givi Kimeridze discovered a Type Ia supernova in the spiral galaxy M58 on June 28, 1989. Namaka, a satellite of the dwarf planet Haumea, was discovered on June 30, 2005. Kerberos, Pluto's fourth satellite, was discovered by the Hubble Space Telescope team on June 28, 2011.



Currents in Space

Did you know...?!?

Long before it was deployed into low-Earth orbit from the International Space Station in Nov. 2017, the tiny ASTERIA spacecraft had a big goal: to prove that a satellite roughly the size of a briefcase could perform some of the complex tasks much larger space observatories use to study exoplanets, or planets outside our solar system. A [new paper](#) soon to be published in the *Astronomical Journal* describes how ASTERIA (short for [Arcsecond Space Telescope Enabling Research in Astrophysics](#)) didn't just demonstrate it could perform those tasks but went above and beyond, detecting the known exoplanet [55 Cancri e](#). Read more [here](#)!

NASA is naming its next-generation space telescope currently under development, the Wide Field Infrared Survey Telescope (WFIRST), in honor of Nancy Grace Roman, NASA's first chief astronomer, who paved the way for space telescopes focused on the broader universe. The newly named Nancy Grace Roman Space Telescope - or Roman Space Telescope, for short - is set to launch in the mid-2020s. It will investigate long-standing astronomical mysteries, such as the force behind the universe's expansion, and search for distant planets beyond our solar system. Read more at this [link](#)

Comet SWAN put on a so-so show in the southern sky last month, but it fizzled on its way north. And yet the tiny Comet C/2017 T2 (PANStarrs), though not terribly bright, makes its way across the bowl of the Big Dipper this month and passes some bright stars and galaxies. [Update \(and a spectacular image\) here](#).

If a comet isn't enough for you, then grab a big scope (or a good camera) and [have a look at the new supernova in the lovely barred spiral galaxy Messier 61](#). If you think things are tough on Earth right now, it was a lot worse on any planets orbiting this (very) distant exploding star about 52 million years ago.

On a brighter note, here's [an astonishing image](#) of a new planet being born.

Some great viewing for a cloudy night: an amazingly [detailed interactive atlas of the Moon](#). Take a little time to learn how to navigate this resource. You will be richly rewarded.

The redoubtable Dr. Ethan Siegel takes you on [a dual-wavelength tour](#) of five of Hubble's best images in visible and infrared light.

For nearly two decades, amateur astrophotographers have been using 'lucky imaging' techniques to capture stunning images of the planets. So imagine what the professionals can see with a really big telescope, in infrared, [on the planet Jupiter](#).

As part of the 100th anniversary of the 'Great Debate', the always interesting Timothy Ferris [muses on the prospects of life in the universe](#).

Wait, what's the 'Great Debate'? It was [an historically important head-to-head debate](#) between the astronomers Heber Curtis and Harlow Shapley in April 1920 about the size and scale of the universe. The winner of the debate? Reason itself. Although later measurements proved Curtis right.

And finally a little astronomy music: [a lovely little folk song by Dr. Brian May](#), of Queen, and a professional astronomer in his own right. I assure you, this will be the best song about Einstein's Special Theory of Relativity you will hear all day.

Gemini 4 (officially **Gemini IV**) was the second crewed spaceflight in NASA's Project Gemini, occurring in June 1965. It was the tenth crewed American spaceflight (including two X-15 flights at altitudes exceeding 100 kilometers (54 nmi)). Astronauts James McDivitt and Ed White circled the Earth 66 times in four days, making it the first US flight to approach the five-day flight of the Soviet Vostok 5. The highlight of the mission was the first spacewalk by an American, during which White floated free outside the spacecraft, tethered to it, for approximately 20 minutes. Both of these accomplishments helped the United States overcome the Soviet Union's early lead in the Space Race.



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Summer Triangle Corner: Vega

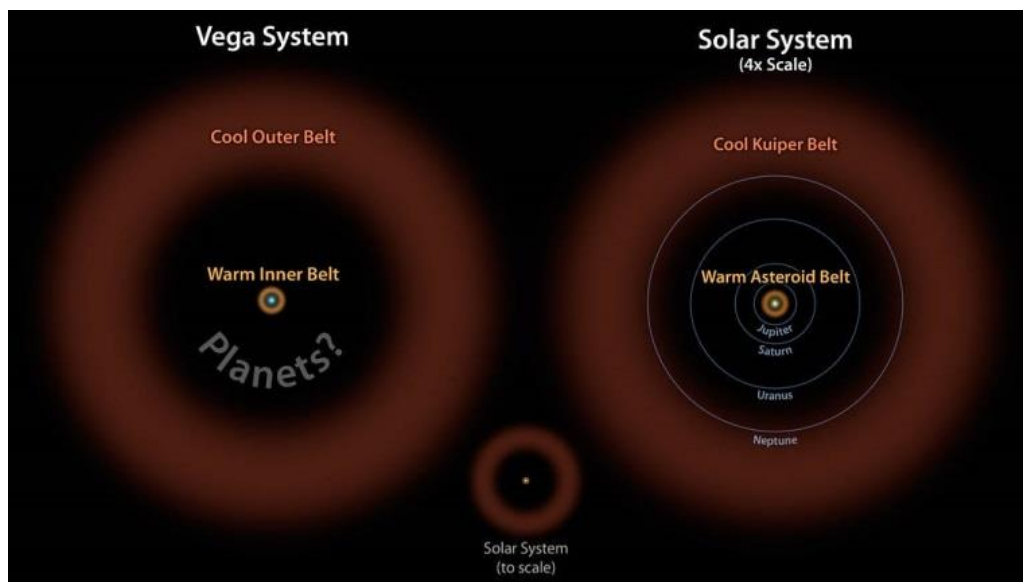
David Prosper and Vivian White

If you live in the Northern Hemisphere and look up during June evenings, you'll see the brilliant star **Vega** shining overhead. Did you know that Vega is one of the most studied stars in our skies? As one of the brightest summer stars, Vega has fascinated astronomers for thousands of years.

Vega is the brightest star in the small Greek constellation of Lyra, the harp. It's also one of the three points of the large "Summer Triangle" asterism, making Vega one of the easiest stars to find for novice stargazers. Ancient humans from 14,000 years ago likely knew Vega for another reason: it was the Earth's northern pole star! Compare Vega's current position with that of the current north star, Polaris, and you can see how much the direction of Earth's axis changes over thousands of years. This slow movement of axial rotation is called **precession**, and in 12,000 years Vega will return to the northern pole star position. Bright Vega has been observed closely since the beginning of modern astronomy and even helped to set the standard for the current magnitude scale used to categorize the brightness of stars. Polaris and Vega have something else in common, besides being once and future pole stars: their brightness varies over time, making them **variable stars**. Variable stars' light can change for many different reasons. Dust, smaller stars, or even planets may block the light we see from the star. Or the star itself might be unstable with active sunspots, expansions, or eruptions changing its brightness. Most stars are so far away that we only record the change in light, and can't see their surface.

NASA's TESS satellite has ultra-sensitive light sensors primed to look for the tiny dimming of starlight caused by transits of extrasolar planets. Their sensitivity also allowed TESS to observe much smaller pulsations in a certain type of variable star's light than previously observed. These observations of **Delta Scuti** variable stars will help astronomers model their complex interiors and make sense of their distinct, seemingly chaotic, pulsations. This is a major contribution towards the field of astroseismology: the study of stellar interiors via observations of how sound waves "sing" as they travel through stars. The findings may help settle the debate over what kind of variable star Vega is. Find more details on this research, including a sonification demo that lets you "hear" the heartbeat of one of these stars, at: bit.ly/DeltaScutiTESS

Interested in learning more about variable stars? Want to observe their changing brightness? Check out the website for the American Association of Variable Star Observers (AAVSO) at aavso.org. You can also find the latest news about Vega and other fascinating stars at nasa.gov.



Vega possesses two debris fields, similar to our own solar system's asteroid and Kuiper belts. Astronomers continue to hunt for planets orbiting Vega, but as of May 2020 none have been confirmed. More info: bit.ly/VegaSystem Credit: NASA/JPL-Caltech

Cosmic Challenge

Rupes Recta (Straight Wall), Huygen's Sword, Birt, and Rima Birt
June 2020 by [Phil Harrington](#)

This month's suggested aperture range:

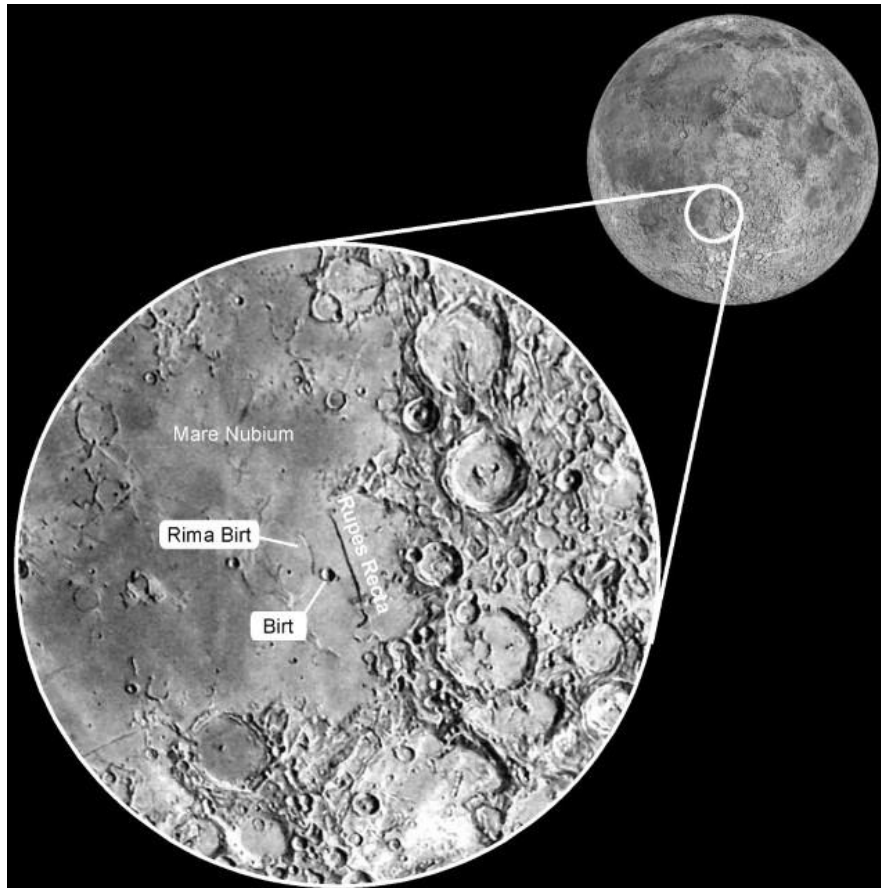


Giant Binoculars
($\geq 70\text{mm}$)

3- to 5-inch
(76-127mm)
telescopes

What is your favorite lunar feature? Maybe it's the mighty craters Copernicus or Tycho. Or could it be the historic Sea of Tranquility? Perhaps you enjoy visiting the rugged southern highlands around Clavius, or the Apennine and Alp Mountains.

If I had to come up with my favorite target, it would have to be a far more modest sight. I always enjoy looking for and at the **Straight Wall**. Best seen 8 days after New Moon, and again on Day 22, the Straight Wall is listed more properly under its official name **Rupes Recta**, or "Straight Fault." While fault lines on Earth are most often associated with plate tectonics, Rupes Recta was formed when a portion of Mare Nubium succumbed to subterranean pressures in the lunar crust and buckled. The area to the west of Rupes Recta sheared off and dropped some 1,000 feet (300 meters) along the fault line that extends for 70 miles from tip to tip. The table above lists the ideal dates for the next few months for viewing this spectacular lunar region.



Above: Finder chart for this month's [Cosmic Challenge](#).
Click on the chart to open a printable PDF version.

Depending on when it is viewed, Rupes Recta will look like a sharp, dark line, or a bright scar in Mare Nubium. On the evening after First Quarter, we see the former appearance as the rising sunlight falling onto the surround mare has yet to caress the fault's westward facing surface. As the Sun climbs higher in Nubium's sky, the shadow grows shorter, causing Rupes Recta to blend into the background.

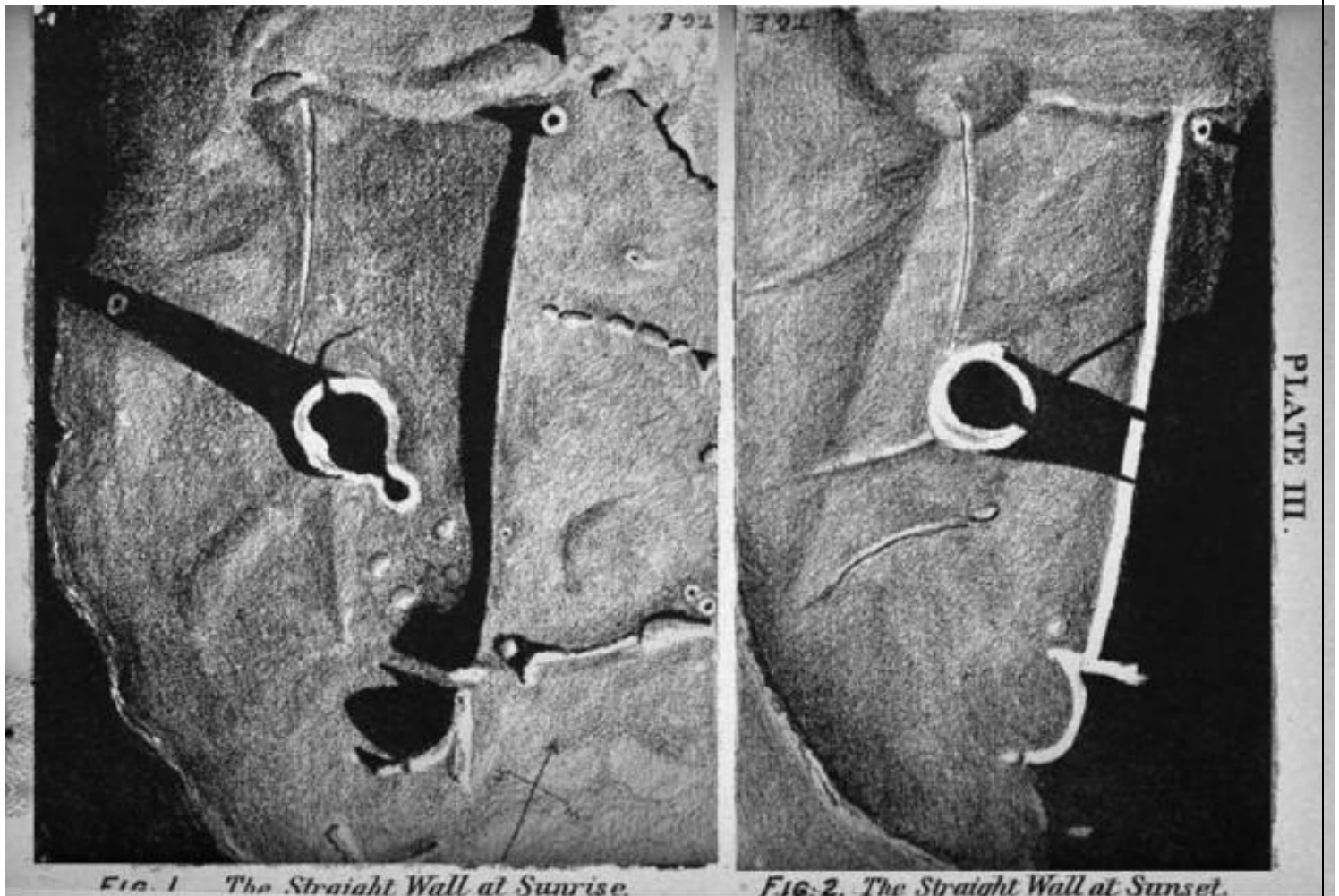
Wait two weeks and return on the night after Last Quarter, as sunset comes to the Sea of Clouds. As the Sun sinks lower in the sky, Mare Nubium darkens in the twilight, but the face of Rupes Recta remains fully sunlit to create a dramatic bright line near the terminator.

Whether viewed at sunrise or sunset, Rupes Recta appears to live up to its popular nickname, the Straight Wall. Looks to the contrary, however, shadow studies indicate that Rupes Recta is not shear cliff at all. Instead, its face rises at a relatively gentle incline between 10° and 15° . It would be a moderately steep hike in a spacesuit, but you could scale it without any of the customary mountaineering gear.

In his 1895 book [The Moon: A Full Description and Map of its Principal Physical Features](#), Thomas Elger described the scene:

The Straight Wall, sometimes called "the railroad," is a remarkable and almost unique formation on the western side of (crater) Birt, extending for about 65 miles from northeast to southwest in a nearly straight line, terminating on the south at a very peculiar mountain group, the shape of which has been compared to a stag's horn, but which perhaps more closely resembles a sword-handle, the wall representing the blade.

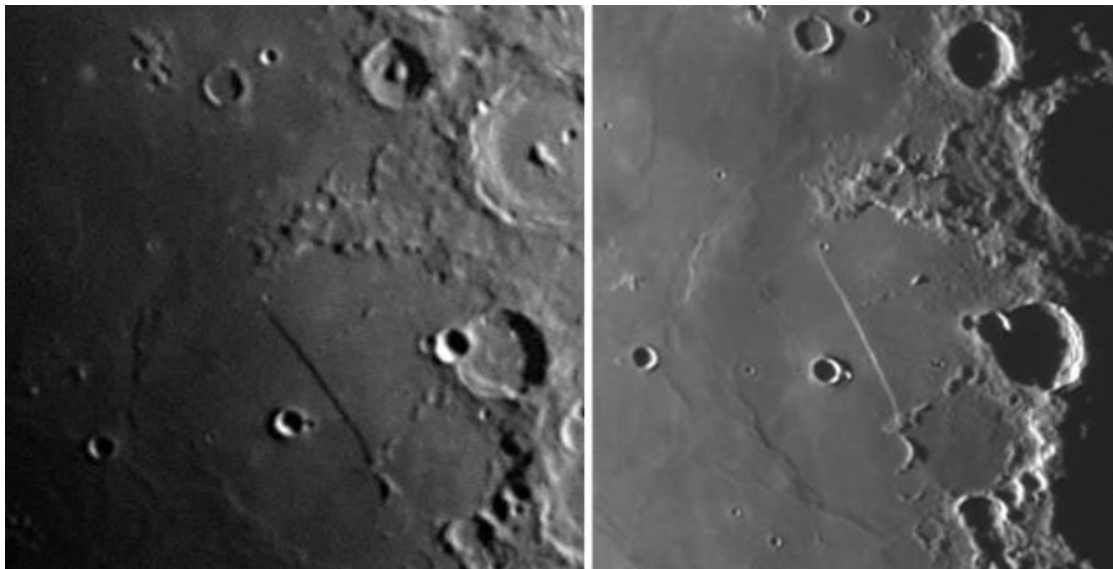
Two years later, Elger published this two-part view of the scene that shows both sunrise and sunset from the region. The illustration accompanied an installment of a regular feature that he wrote for the [Journal of the Liverpool Astronomical Society](#) called *The Moon Surveyed in Common Telescopes*. This particular article, entitled *The Straight Wall Near Thebit and the Neighbourhood*, appeared in the March 1887 issue (vol. 5, part 5).



Above: A rendering of the region as depicted by Thomas Elger. The left sketch shows the area at sunrise 8 days past New Moon, when the face of the "wall" is in shadow, while the right shows it two weeks during the encroaching lunar sunset with the face fully illuminated.

Credit: Journal of the Liverpool Astronomical Society vol. 5, part 5, March 1887

The likeness to a sword and handle, more evident in his right, sunset rendition, is an example of a lunar clair-obscur shadow effect. Just south of Rupes Recta lies a small clump of jumbled terrain and a half-buried crater. The 17th-century astronomer Christiaan Huygens, credited with discovering Rupes Recta, likened the jumble and half-crater to the handle of a sword, with Rupes Recta forming the blade. Although a better allusion is that of a fencer's foil, we know the combined appearance today as **Huygens's Sword**. I wrote an article in the December 2018 issue of *Astronomy* magazine entitled [Observe Shadow Effects on the Moon](#) that discusses this and a dozen other lunar clair-obscur effects.

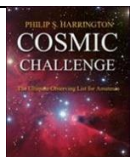


*Left: Sunrise image taken with the author's Vixen 4-inch (102mm) f/10 refractor.
Right: Sunset image taken by Jeff Barton through a Stellarvue 152mm apo refractor. (Credit: [Flickr](#))*

West of Rupes Recta is the perfectly round crater **Birt**, named for William Birt, a 19th-century British astronomer. Birt, spanning some 11 miles in diameter, is joined by a 4-mile diameter crater to its immediate east known as Birt A (although in my mind, I've nicknamed it "Ernie").

By cranking up the magnification to at least 200x, can you also make out a thread-thin rille that starts just west of Birt and curves to the northwest? That's **Rima Birt**, a difficult-to-see tectonic feature that runs roughly parallel to the Straight Wall. Rima Birt spans some 30 miles in length, but is perhaps not even a mile wide. If you look carefully, you may also notice that the rille's northern and southern termini appear slightly distended due to two small craters, Birt E and Birt F, respectively.

Good luck with this month's Cosmic Challenge!
Until next month, 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 nine books on astronomy. Visit his web site at www.philharrington.net to learn more.

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Observatory and Planetarium



NOTICE: Due to the coronavirus, all Observatory events have been canceled until further notice.

**College of Southern Idaho Campus Twin Falls, ID
Faulkner Planetarium / Show Times**

NOTICE: Due to the coronavirus, all planetarium shows have been canceled until further notice.



Visit the Herrett Center Video Vault
https://herrett.csi.edu/video_vault.asp

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.

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.