Snake River Skies

The Monthly Newsletter of the Magic Valley Astronomical Society

June Highlights

June 1st **First Summer Solar Session.** Observe the Sun Safely view sunspots and the solar atmosphere through special filtered telescopes. 1:30 pm to 3:30 pm Stargazer's Deck Centennial Observatory - Herrett Center.

June 3-4th **Craters of the Moon Star Party** at Craters of the Moon Nat'l Mon. near Arco, ID For more information visit www.ifastro.org

June 11th **Monthly Meeting** and **Observing Session.** Meeting begins at 7:00 pm and stargazing at 9:15 pm at the Herrett Center.

Message from the Editor

Unseasonably wet weather and cooler temperatures than we are normally used this time of the year has left many local farmers, ranchers and even amateur astronomers frustrated.

If you feel you are lacking some serious scope time, then don't worry there are several events coming up this summer starting June 1st is the return of the annual Summer Solar Sessions at the Herrett Center. Beginning at 1:30 pm to 3:30 pm on the stargazer's deck at the Centennial Observatory where you can join host Chris Anderson as he sets up various telescopes with special filters for safe solar viewing. You can also observe daytime visible bright stars while at the Centennial Observatory. These sessions will continue through the Labor Day weekend.

Next on the list will be the annual Craters of the Moon Star Party over the weekend of June 3rd and 4th at the caves parking lot at Craters of the Moon.

Our monthly meeting will be held on Saturday, the 11th of June at 7:00 pm followed by our monthly star party at the Centennial Observatory at 9:15. Remember to check the club website for more details on any event listed here.

Image: Sun setting and cloudy skies over the Snake River Canyon looking east from the Perrine Bridge north of Twin Falls, ID Credit © 5/2011SSElliott

MVAS Memberships

Member
Astronomical League

Night Sky Network

Welcome to the Magic Valley Astronomical Society

Welcome to the society and hello. We hope you have a good time, enjoy the hobby, & bring good skies with you.

We hold indoor meetings each month at the Herrett Center for Arts & Science College of Southern Idaho campus in Twin Falls, ID, USA . Our meetings start at 7:00 pm on the second Saturday of the month. There will always be a very interesting program, class or presentation at these meetings, as well as good fellowship. There is always something new to learn.

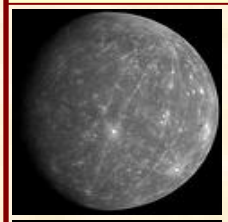
Following our meetings we have a star party (weather permitting) at the Centennial Observatory, also at the Herrett Center.

Our star parties are free and you don't have to bring your own telescope. Telescopes are also set up outside on the stargazer's deck. Star Parties are held year round, so please dress accordingly as the Observatory is not heated, nor air conditioned.

Wishing you dark skies and clear nights!

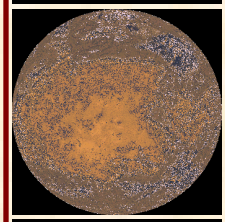
MVAS Board

June Celestial Sky Events



Mercury will fade and dip into the sunrise glare early in the month. Around the 12th it goes behind the Sun and will be completely invisible. On the 13th at 0h UT. The planet passes into the evening sky.

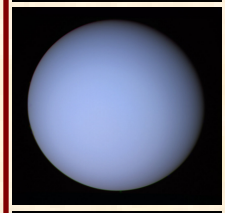
Venus will be sinking lower into the morning eastern horizon this month. Venus will not be too good of a telescope target. .



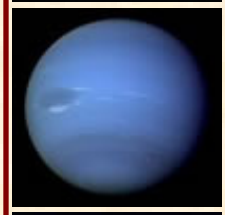
Mars will be low above the horizon in the morning glare. It will be shinning at magnitude 1.3. The best time to look for it would be just before the glare of sunrise.

Jupiter will be a good target in the predawn sky this month. Very early in the month it will rise around two hours before sunrise. By the end of the month it will rise around four hours before sunrise.

Saturn will still be a great target this month. It is fading in brightness and height so this would a good month to observe it. The best time would be right as it gets dark when it is still fairly high. Look for the rings 7° - 8° edge on.



Uranus will be above Jupiter in Pisces. It will be about halfway between Jupiter and Neptune, close to the celestial equator. It will rise after midnight and be reasonably high in the predawn sky just as it starts to lighten.



Neptune will be in Aquarius in the morning eastern sky this month. It will be at its best in the hours before the sky starts to lighten. By the end of the month it will rise before midnight.

Moon Information

1 New Moon
2 Greatest N. Declination (+23.4°)
9 First Quarter
12 Moon at Perigee
15 Full Moon - Strawberry Moon
15 Greatest S. Declination (-23.4°)
23 Last Quarter
24 Moon at Apogee
29 Greatest N. Declination (+23.4°)

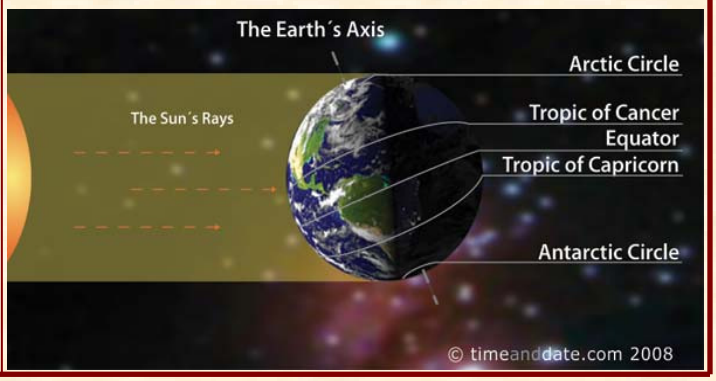
Sky Events

1 **Double Shadow Transit** on Jupiter.
2 **Mercury** near the Pleiades (morning sky)
3 **Double Shadow Transit** on Jupiter.
3 **Neptune** appears stationary.
5 **Double Shadow Transit** on Jupiter.
6 **Moon near Beehive cluster** (evening sky)
7 **Moon near Regulus** (evening sky)
8 **Double Shadow Transit** on Jupiter.
9 **Venus near the Pleiades** (18° from Sun, morn. sky)
10 **Moon near Saturn** (evening sky)
10 **Double Shadow Transit** on Jupiter.
11 **Moon near Spica** (evening sky)
14 **Moon near Antares** (evening sky)
15 **Double Shadow Transit** on Jupiter.
19 **Double Shadow Transit** on Jupiter.
21 **Mars 4.3° SSE of the Pleiades** (29° from Sun)
21 **June Solstice** (Summer) at 13:17 MDT
22 **Double Shadow Transit** on Jupiter.
26 **Double Shadow Transit** on Jupiter.
26 **Moon near Jupiter** (60° from Sun, morning sky)
28 **Moon near the Pleiades** (36° from Sun, morning sky)
28 **Moon near Mars** (30° from the Sun)

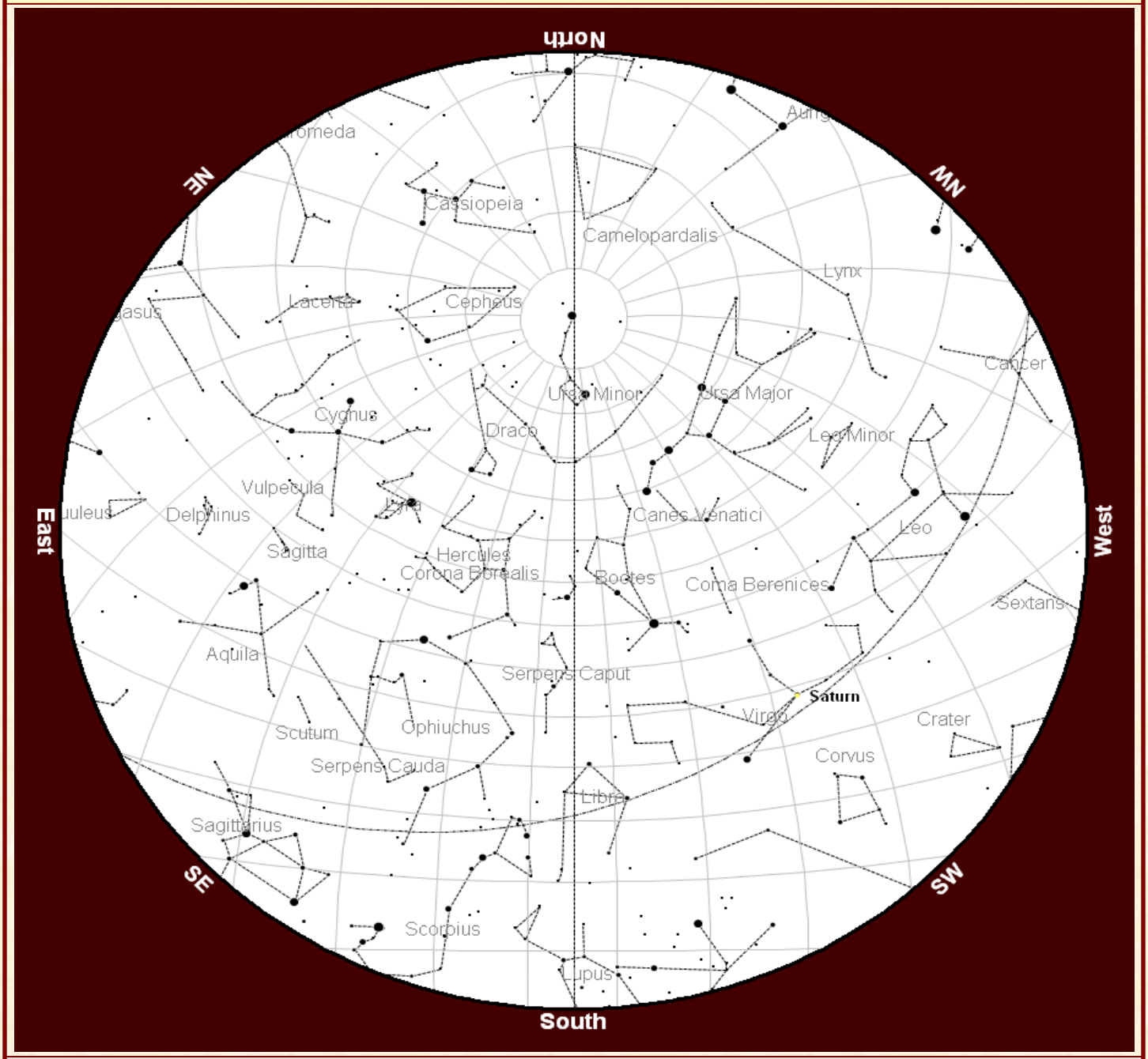
Summer Solstice

The Summer solstice occurs when the sun is at its furthest point from the equator – it reaches its northernmost point and the earth's North Pole tilts directly towards the sun, at about 23.5 degrees. The Summer solstice day has the longest hours of daylight for those living north of the Tropic of Cancer. Those living or travelling to the north of the Arctic Circle are able to see the "midnight sun", where the sun remains visible throughout the night, while those living or travelling south of the Antarctic Circle will not see sun during this time of the year. For those living near the equator, the sun does not shift up and down in the sky as much compared with other geographical locations away from the equator during this time of the year. This means that the length of day temperature does not vary as much.

Image: Shows an example of what happens during the June solstice. Illustration is not to scale



Planisphere for June



Did You Know?

On the morning of 16 June 1963, Valentina Tereshkova, became the first woman and civilian in space. Selected from a pool of over 400 applicants Valentina made her historic flight aboard Vostok 6. She was only honorarily inducted into the USSR Air Force as a condition on joining the Cosmonaut Corps. During her three-day mission, she performed various tests on herself to collect data on the female body's reaction to spaceflight. Even though there were plans for further flights by women, it took 19 years until the second woman, Svetlana Savitskaya , flew into space. None of the other four in Tereshkova's early group ever flew, and in October 1969 the pioneering female cosmonaut group was dissolved.

Image: Valentina Tereshkova and NASA astronaut Catherine Coleman at the Gagarin Cosmonaut Training Center in December 2010. Credit: NASA/ Mike Fossum

The Symbolism of the Logo of the Centennial

Article by Chris Anderson

The Centennial Observatory opened on May 22, 2004 housing what was then the largest wheelchair-accessible public telescope in the world. The facility's official logo (fig. 1) debuted at the observatory's fifth anniversary celebration in 2009, and has appeared on all printed observatory publications ever since. But few are aware of the symbolism incorporated into the logo's design.

Fig. 1 – The Centennial Observatory's logo, designed in 2009.

The name "Centennial Observatory" is itself symbolic of the fact that the facility opened in 2004, one hundred years after the founding of Twin Falls. Coincidentally, like the town where he spent the majority of his life, Herrett Center founder Norman Herrett was also born in 1904. So the observatory's opening coincided with Norm's centenary year, as well as the community's.

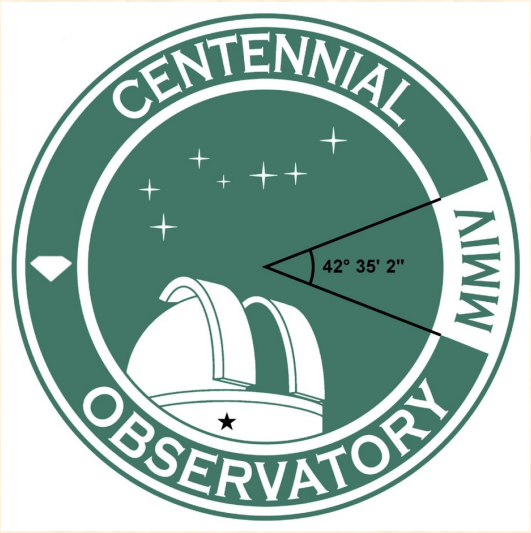


Fig. 2 – The latitude angle and the (hidden) locations of Polaris and the 24" Herrett Telescope.

In the logo, "Centennial Observatory" appears in white against a teal background with a gap on the right side—making a letter "C." This letter serves a dual purpose:

1) C is the Roman numeral for 100 (Latin "centum," echoed in the observatory's opening year rendered in the C's gap)

2) The C, together with its white background (an "O"), makes the Centennial Observatory's initials (C.O.), one atop the other.

Furthermore, as measured from the center of the logo, the gap in the C subtends an angle of 42 degrees, 35 minutes, 2 seconds (fig. 2), corresponding to the observatory's latitude (or, if you prefer, the declination of the local zenith).

The dome in the logo is modeled after the actual dome (a 6-meter Observa-Dome), similar to the illustration on the dome manufacturer's logo (fig. 3). Although the 24" telescope is not visible through the slit, its position is implied: Relative to the Big Dipper overhead, Polaris would lie hidden behind the dome, in line with the intersection of the telescope's polar and declination axes, if they were visible (Polaris's position is marked with a black, five-pointed star in fig. 2). This alignment of Polaris and telescope would only be possible from ground level, looking north and upward, hinting at the observatory's second floor location at the south end of the museum.

Fig. 3 – The logo of Observa-Dome, manufacturer of the Centennial Observatory's 6-meter dome.

Silhouetted against the C on the far left is a diamond, a nod to the Center's roots. Norm built the museum adjacent to his successful jewelry store in order to display artifacts collected on his personal travels, as well as to showcase local artists. The diamond also represents the acknowledgement Norm's protégés received upon graduation from "student lecturer" to "teacher:" Five years after their first solo planetarium presentation, an inset diamond was added to their gold student lecturer pin (fig. 4).

Fig. 4 – A gold pin awarded to Norman Herrett's student lecturers after their first solo planetarium presentation. The diamond was added after five years of solo lectures. (Courtesy of Nick Peterson.)

Continued on the next page.

The Symbolism of the Logo of the Centennial Observatory

The Big Dipper's upside-down orientation occurred at 10:00 PM MDT on May 22, 2004, the observatory's opening night. The Big Dipper was chosen, over other constellations or asterisms, for its distance.

In 2004, the most accurate measurement of the distance to Alkaid (η Ursae Majoris, at the end of the Dipper's handle) was 100.7 light years, as determined by the HIPPARCOS astrometry satellite (fig. 5). The accuracy of the measurement could only narrow the true distance down to somewhere between 98.45 and 103.1 l.y. So, according to HIPPARCOS, Alkaid was the brightest star in the northern sky lying approximately 100 light years away, making it a logical choice as a "centennial" star.

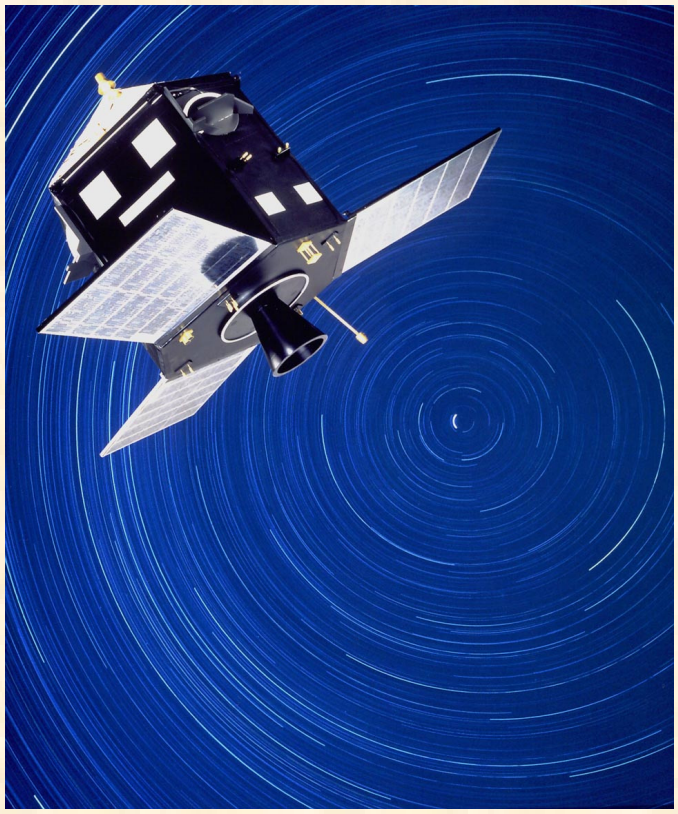


Fig. 5 – The HIPPARCOS (HIgh Precision PARallax COllecting Satellite) mission measured distances to stars within 1000 l.y. (brighter than mag. 9.0) with the highest precision to date.

However, that same year astronomer Floor van Leeuwen discovered a systematic error in the way HIPPARCOS measured distances. Correcting for this error, Van Leeuwen published an improved version of the HIPPARCOS catalog in 2007. The refined distance to Alkaid is 103.9 light years (with measurement uncertainty allowing maximum and minimum distances of 103.2 and 104.7 light years, respectively). Thus, if rounding to the nearest light year, Alkaid is out of the running as a contender for centennial star. (In van Leeuwen's catalog, the brightest northern hemisphere star lying between 99.5 and 100.5 light years distant is SAO 111291, a 5.96 magnitude star in Taurus, barely visible to the unaided, dark-adapted eye under a dark, moonless sky.) Ruchbah (δ Cas, mag. 2.71) and Edasich (ι Dra, mag. 3.46) are the brightest northern hemisphere stars roughly 100 l.y. away. Ruchbah is 99.41 l.y. distant, with an error range from 98.99 to 99.84 l.y.; Edasich is 101.2 l.y., with error range from 100.9 to 101.5 l.y. Such is the nature of scientific inquiry—at the time Alkaid was chosen as the observatory's "mascot," the error bars on its distance were too large to be certain that its status as the "brightest star 100 light years away" would persist in perpetuity.

Finally, the logo's stars were chosen to mimic the style of the Skidi Pawnee star map (fig. 6). Now in the collection of Chicago's Field Museum, this leather map is the best-preserved Native American illustration of the sky, dating from between 1600 and 1800 AD. Several constellations (in a highly stylized form) can be recognized on the map, drawn with four-pointed stars whose narrow points taper at the tips. The stars are scaled by brightness, just as on the ancient map. Using these stars—instead of the ubiquitous five-pointed stars of modern flags—seemed appropriate, given the high esteem with which Norm held Native American culture.

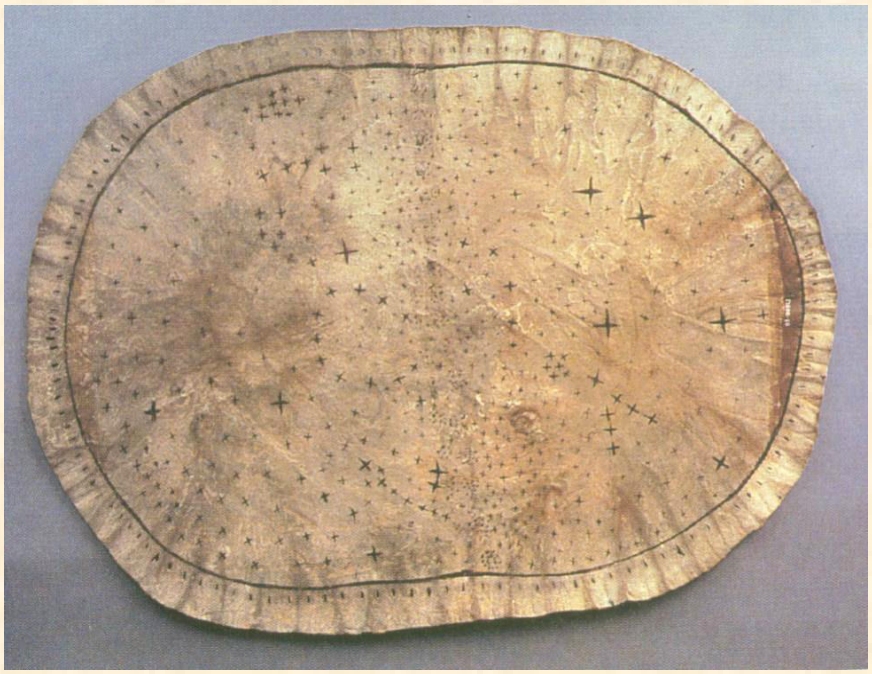


Fig. 6 - The Skidi Pawnee Star Map. Easily recognized star patterns on the 22" by 15" leather map include the Big and Little Dippers (upper left of center), Coma Berenices (the cluster of small stars at upper left), the Milky Way (vertical through the center), and the line from Sirius (at lower right) through Orion's Belt and Aldebaran, to the Pleiades (lower right of center).

Looking through the Eyepiece - Observing the Moon

The Moon is all too often dismissed by amateur astronomers as a nuisance, a source of light pollution that spoils an otherwise clear dark night. In fact there are no celestial objects other than the Sun that can even remotely compete with old Luna when she rides high and bright in the night sky.

For people devoted to the observation of deep sky objects the Moon means the end of observing for the night, or hours of waiting for the Moon to set. Or clear nights with no observing at all. Of course, a better way to think about the Moon is to see it as a source of observing opportunities, especially for smaller telescopes. The Moon is an entire world hanging above our heads, an alien planet that can be studied at a level of detail that Mars, Jupiter, or Saturn cannot come close to matching. The Moon is worth the time and effort to observe and study. Look at it this way. The Moon is not going to go away. So if you can't beat it, observe it!

Observing the Moon is all about learning your way around an alien landscape. When you learn terrestrial geography you learn to recognize features such as mountains, lakes, rivers, and canyons. Our approach to taking a better look at the Moon will parallel this idea, and although some geographical features (mountains) are recognizably similar to their Earthly counterparts, others (such as craters) are like nothing you will see here. This is because the Moon is airless, with no weather, and consequently no weathering or erosion. Earth's impact craters, with a few rare exceptions, have been obscured, if not obliterated, by these processes. The craters on the Moon have remained relatively unchanged for billions of years.

Yet, for all its apparent changelessness, the Moon never looks quite the same from one observing session to the next. The progression of phases of the Moon changes the angle of sunlight for any given feature from night to night, and libration tips first one limb (edge) of the lunar disk we can see toward us, then the other.

There are other aspects of the Moon's orbit around the Earth that also affect the angle of sunlight and the shadows the sun casts across the lunar surface. Due to these varying influences, the angles of shadows are never entirely the same from one month of phases to the next. Although it is possible to become very familiar with the lunar surface, it is unlikely you would ever observe it in exactly the same way twice in one lifetime. (The books in the reference list at the end of this section contain detailed descriptions of phenomena such as phases and libration.) This section of the program is perfectly suited to observations made at home. Lunar observing is not much affected by light pollution, and can even be done when high, thin clouds cover the sky. (Be sure to look for rings around the Moon when this happens.) You don't need dark skies, so you won't need to drive anywhere in particular to set up the telescope. You don't even need to be dark adapted, so you can read a lunar map or guide book with an ordinary flashlight. Observing the Moon certainly has its advantages.

To learn the features of the Moon you will need some way to identify those features. The best and least expensive way to acquire a good lunar reference map is to download the Virtual Moon Atlas (http://www.astrosurf.com/avl/UK_index.html). This is a very flexible and user friendly reference, and it is available free of charge. If you do not use a laptop out of doors while observing, see the listing at the end of this section for printed references and maps.

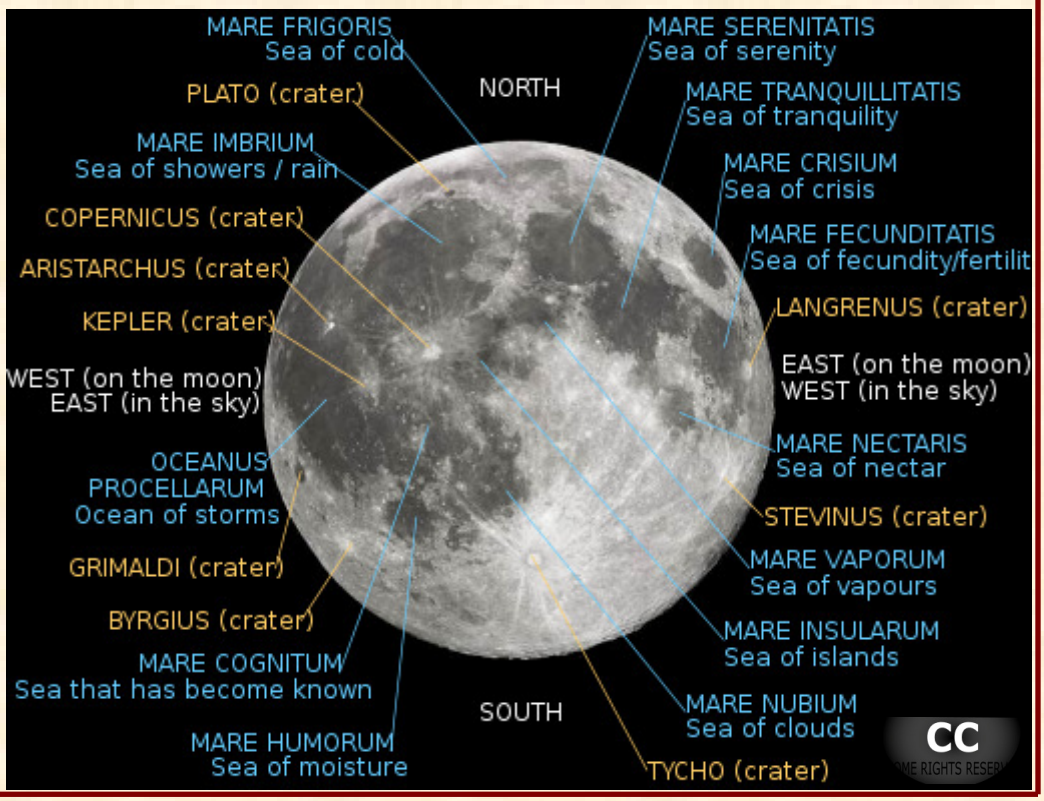


Image: Various Moon names easily identified by the naked eye. Full Moon taken from Dragør, Denmark. Captions later added. All work by Peter Freiman; permission to use under Creative Commons Attribution-ShareAlike 3.0 Unported (CC BY-SA 3.0) license.

Looking through the Eyepiece - Observing the Moon

Viewing lunar features is very much dependent on seeing conditions. Under conditions of poor seeing the Moon can look like it is under water, and finer details will be lost to the rippling effect of atmospheric turbulence. This is a special problem in summer and early autumn when the heat built up by the ground (and surrounding buildings) is being re-radiated back into space. You will also be viewing the Moon from latitude 42° north latitude (latitude of Twin Falls, ID), Because the influence of seeing conditions can be so influential in whether or not you see details on the Moon you'll need to record of the seeing conditions on the night you observe. (Transparency is rarely an issue, unless clouds actually cover the Moon, of course.) However, the Pickering Scale used when viewing stars and deep-sky objects (DSOs) does not apply well to a large, bright objects such as the Moon. The seeing scale used for the Moon (and the brighter planets) was developed by the Greek astronomer E.M. Antoniadi and has five levels:

I = Perfectly calm, no quivering.
II = Slight undulations, with long periods on calm conditions.
III = Moderate seeing, with considerable distortion followed by short periods of steady
seeing.
IV = Poor seeing, with nearly constant trembling or waviness.
V = Very bad seeing, with even major features rarely (or never) clearly seen.

Observing tools
Generally, the Moon can be viewed even with the naked eye; however it may be more enjoyable with optical instruments. The primary lunar surface features detectable to the naked eye are the Luna Maria or "seas", large basaltic plains which form the familiar "Man in the Moon" and other figures seen by many people who take a glance at a full moon. The Maria covers about 35% of the surface. The contrast between the less reflective dark gray Maria and the more reflective gray/white lunar highlands is easily visible without optical aid. Under good viewing conditions, those with keen eyesight may also be able to see some of the following features:

1. Bright region around crater Copernicus
2. Most of the Mare's
3. Bright Region around Kepler
4. Riphean Mountains

Many other objects are easily visible, but for brevity; they will not be included.

Another interesting phenomenon visible with the naked eye is Earthshine. Best visible shortly before or after new moon (during the waning and waxing crescent phases respectively), Earthshine is the faint glow of the non-illuminated (night) side of the Moon caused by sunlight reflecting off the surface of Earth (which would appear nearly full to an observer situated on the Moon at this time) and onto the night side of the Moon. By the time the Moon reaches first quarter however, the sunlight illuminated portion of the Moon becomes far too bright for Earthshine to be seen with the naked eye however it can still be observed with either

Earthshine reflecting off the Moon over Helsinki, FI. The bright region at left is directly illuminated by the Sun, while the rest of the Moon is faintly illuminated by light reflected off the Earth. The star visible on the right is Beta Tauri Credit: Ilmari Karonen Creative Commons Attribution-ShareAlike license used.

Binoculars or a small telescope.

Binoculars are commonly used by those just beginning to observe the Moon and many experienced amateur astronomers prefer the view in binoculars to a telescopic view due to the larger field of view. Their high level of portability makes them the simplest device used to see more detail on the surface beyond naked eye observing.

The primary disadvantage of binoculars is that they cannot be held very steady unless one utilizes a commercial or homemade binocular tripod. The recent introduction of image stabilized binoculars has changed this to some extent; however, cost is still an issue. To some it may be far more desirable to utilize a telescope in which case far more options for observing the Moon exist.

Even a small, well-made telescope will show the observer far more than is visible with the naked eye or small binoculars. Many astronomers use different kinds of filters in order to bring out the contrast of certain surface features. Simple neutral density filters are also common as they can cut down the amount of light reaching the eye by 60–95%, something that is helpful especially when observing a full or gibbous moon so the surface does not appear as washed out.

Continued on the next page:

Looking through the Eyepiece - Observing the Moon

Occultations

An occultation is an astronomical event where a celestial object appears completely hidden by another, closer body (with a greater angular diameter) due to the passage of the closer object directly between the more distant object and the observer. Due to the large apparent size of the Moon, lunar occultation's are quite common and when a bright celestial object is involved, the result is an event that can be easily observed using the naked eye. The Moon almost constantly occults faint stars as it orbits the Earth but because even a young Moon appears immensely brighter than these stars, these events are difficult to observe using amateur telescopes. However, the Moon does frequently occult brighter stars and even planets due to its close proximity to the ecliptic. Four first magnitude stars, Regulus, Spica, Antares, and Aldebaran, are sufficiently close to the ecliptic that they may be occulted by the Moon. In addition, two star clusters visible to the naked eye, the Beehive Cluster and the Pleiades, are often occulted. Depending on one's location on the Earth, there are usually several occultation's' involving naked eye objects every year and many more that can be observed using binoculars or a telescope. Accurate timings (accuracy within a few tenths of a second) of lunar occultation's are scientifically useful in fields such as lunar topography, astrometry, and binary star studies. These timings are regularly obtained by amateur astronomers using readily available instruments to observe the Moon.

Craters

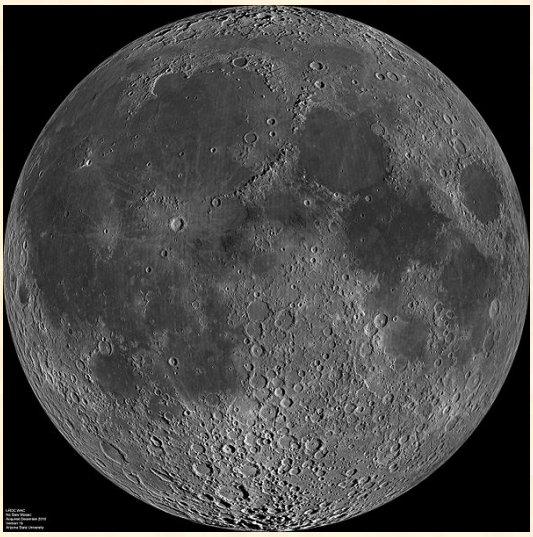
After the dark Maria, the craters of the Moon are its best known features. Even a casual look through a telescope eyepiece of moderate power will reveal that craters come in many sizes and types. Some are rings around smooth, gray floors, while others contain a jumble of cracks and smaller craterlets surrounding a central mountain peak. Although lunar craters are grouped into types (simple, complex, young and old, etc.) you will never find two that are exactly alike.

The craters in the list were selected to give you an idea of this variety, and are ordered according to the day during the lunar cycle (lunation) on which they are most likely give the observer the best possible view. (The selection process was guided by Peter Grego's book *The Moon Observer's Guide*.) This day by day arrangement is merely a guide, and it is not necessary to limit yourself to these days to observe specific features. But on the suggested days - and the days immediately following - the shadow relief that makes features stand out will be at or near its best for those features.

When you observe one of these craters, ask yourselves these questions:

1. Does it look perfectly round, or to some degree oblong?
2. Does the crater overlap other craters? Or is it overlapped *by* other craters?
3. Does the crater contain a central peak?
4. Is the floor smooth and dark or does it have a rough texture?
5. Does the crater contain cracks or other features such as small craterlets?
6. Is the crater rim complete, or is it open in one or more places?

Since the amount of shadow in or around a crater can vary considerably from day to day, and is not precisely the same from one lunation to the next, you may *not* be able to answer all the questions for a given crater on one night. Should that happen note what you were unable to investigate, and why (too much shadow, for example), and you will be able to check that crater off the list. For the most part, though, it should be possible to deal with any given crater in a single night. This is not to say, of course, that you should not try again on a different night for a better look at that crater.through the eyepiece.Explanations of these features, their origins and characteristics, are a bit beyond the scope. improve the view of the brighter planets.



Detailed image of the Moon Credit:
NASA/LRO/Arizona State Univ. /GSFC

A Word About Sketching

Sketching of lunar features can be quite a challenge. Since it is not the goal of this newsletter to turn you into an artist, drawing what you see of the Moon, *with the exception of the very first lunar observing goal,* is optional. Instead, it is your written notes that will fulfill the goals of this section. What you need to take note of will vary slightly depending on the type of lunar feature to be observed, and so for each category there will be a few questions to keep in mind while you observe. The answers you write to those questions will be your formal observations. These answers can be as simple and straightforward as you like, or more elaborate. There is no need to produce an essay, and in fact, some of the questions can be answered with a simple yes or no.

Looking through the Eyepiece - Observing the Moon

The Mountains of the Moon Lunar mountains are, for the most part, the result of impacts. This is especially obvious with the peaks that rise from the centers of many craters. Mountain ranges are often the rims of giant basins that have, in the millennia following the impacts responsible for their formation, filled with lava and become Maria. Isolated mountain peaks are parts of older basin rings poking up through the long-since solidified lavas, like islands lost on a cold sea of stone. Lunar mountains are most easily found and identified when their shadows are longest, such as when the sun is just rising or setting in their vicinity. Observe the same peak on two successive nights and you will see a dramatic change.

For the mountain *ranges* on the list, ask yourself the following questions while you observe them:
1. Does the arc of mountains remain of the same width as curves around the mare associated with it?
2. Does it blend in with the mare, or stop abruptly as if falling in steep cliffs?
3. Does it look like a lot of distinct peaks, or a broad pile of rubble? Or both depending on where you look?
4. Are there craters in the range? (List a couple if your map names them.

For the isolated peaks on the feature list, consider the following questions in your notes:
1. Is the shadow cast by the mountain sharply pointed or blunt?
2. Is the mountain brighter that the landscape around it?

The Moon is a Bit Cracked and Wrinkled
Given its violent history of asteroid and comet impacts, followed by massive lava flows, it's no surprise that the Moon is a bit of a mess in some regards. A variety of interesting features mark the surface of the Moon as the result of these ancient events. Some of the more interesting, and at times challenging to locate, are the rilles, faults, wrinkle ridges, and valleys.

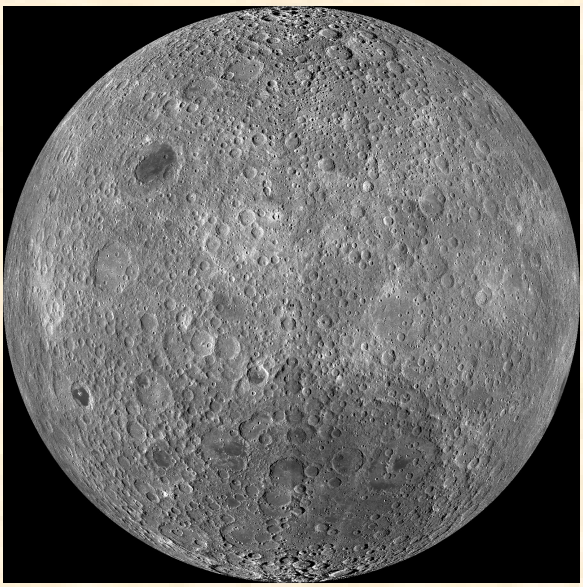
The formal Latin terms are *rupes* for faults, *rimae* for rilles, *dorsa* for wrinkle ridges, and *vallis* for valleys. Some maps use the older Latin words, while others use the modern equivalent, so it's a good idea to be aware of both.

Explanations of these features, their origins and characteristics, are a bit beyond the scope of a workbook of this sort. Both Peter Grego's book and Charles Wood's recent *Modern Moon* do excellent jobs of covering these topics. Examples of each are listed in the lunar feature checklist. Consider the following questions when viewing these features. For the cliff-like scarps or faults (*rupes*), how straight are they, and in what directions do the run? Depending on which day in the lunation you observe a fault it will look either dark (casting a shadow) or bright (Sun shining on the cliff face). Which do you see?

Rilles (*rimae*) are long grooves in the lunar surface, thought to be collapsed lava tubes (caving) from the Moon's more geologically active past. Are there craters near the rilles you observe? Does the rille cut across any craters? Is it straight, angular, or does it twist and turn?

Valleys (*vallis*) on the Moon, unlike most of their counterparts on Earth, are never the result of flowing water. The Alpine Valley is a graben, a block of the landscape that has sunk down between two faults. Schroter's Valley is believed to be a giant lava flow channel. When you observe these two features, briefly describe how they differ from one another. Since the best viewing times for each is separated by several days from the other, you can use a photo of the valley that is *not* in your eyepiece when the observations are made.

Detailed image of a lunar rille. Credit NASA/LRO



Detailed image of the Lunar Farside Credit NASA/LRO

Milky Way Safari

by Dauna Coulter and Dr. Tony Phillips

Safari, anyone? Citizen scientists are invited to join a hunt through the galaxy. As a volunteer for Zooniverse's Milky Way Project, you'll track down exotic creatures like mysterious gas bubbles, twisted green knots of dust and gas, and the notorious “red fuzzies.”

“The project began about four months ago,” says astrophysicist Robert Simpson of Oxford University. “Already, more than 18,000 people are scouting the Milky Way for these quarry.” The volunteers have been scrutinizing infrared images of the Milky Way's inner regions gathered by NASA’s Spitzer Space Telescope. Spitzer's high resolution in infrared helps it pierce the cloaking haze of interstellar gas and dust, revealing strange and beautiful structures invisible to conventional telescopes. The Milky Way Project is helping astronomers catalogue these intriguing features, map our galaxy, and plan future research.

“Participants use drawing tools to flag the objects,” explains Simpson. “So far they've made over a million drawings and classified over 300,000 images.”

Scientists are especially interested in bubble-like objects believed to represent areas of active star formation. “Every bubble signifies hundreds to thousands of young, hot stars. Our volunteers have circled almost 300,000 bubble candidates, and counting,” he says.

Humans are better at this than computers. Computer searches turn up only the objects precisely defined in a program, missing the ones that don't fit a specified mold. A computer would, for example, overlook partial bubbles and those that are skewed into unusual shapes.

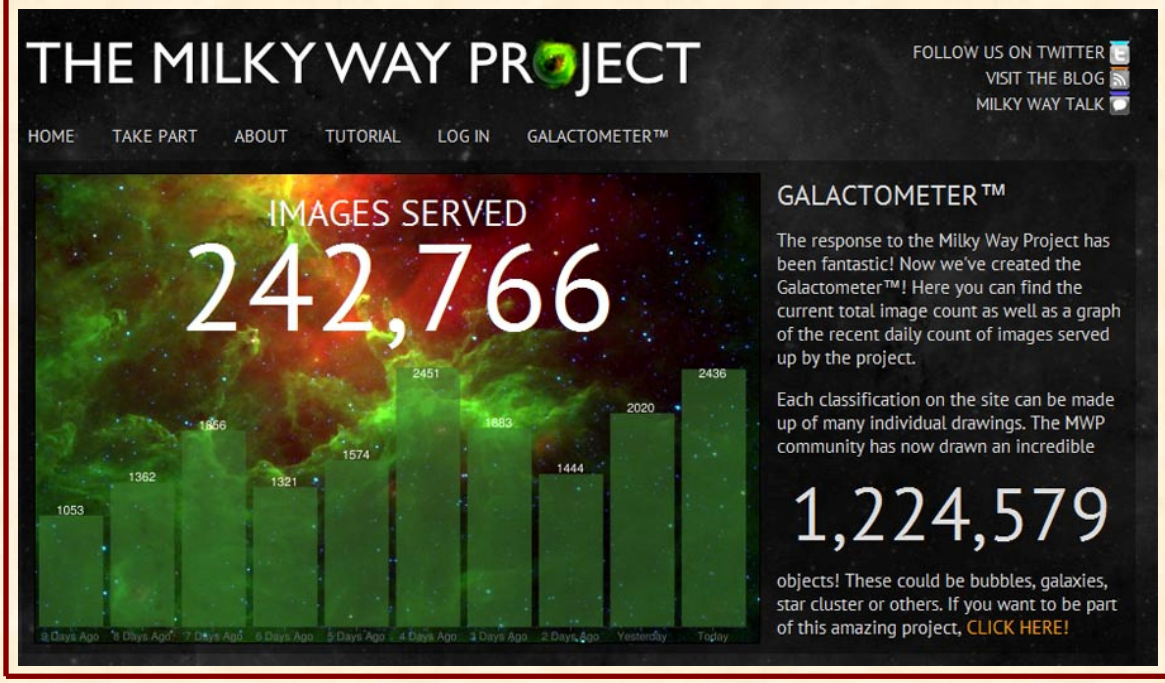
“People are more flexible. They tend to pick out patterns computers don't pick up and find things that just look interesting. They're less precise, but very complementary to computer searches, making it less likely we'll miss structures that deserve a closer look. And just the sheer numbers of eyes on the prize mean more comprehensive coverage.” Along the way the project scientists distill the volunteers' data to eliminate repetitive finds (such as different people spotting the same bubbles) and other distortions.

The project's main site (http://www.milkywayproject.org) includes links to a blog and a site called Milky Way Talk. Here “hunters” can post comments, chat about images they've found, tag the ones they consider especially intriguing, vote for their favorite images (see the winners at http://talk.milkywayproject.org/collections/CMWS00002u), and more.

Zooniverse invites public participation in science missions both to garner interest in science and to help scientists achieve their goals. More than 400,000 volunteers are involved in their projects at the moment. If you want to help with the Milky Way Project, visit the site, take the tutorial, and … happy hunting!

You can get a preview some of the bubbles at Spitzer’s own web site, http://www.spitzer.caltech.edu/. Kids will enjoy looking for bubbles in space pictures while playing the Spitzer concentration game at http://spaceplace.nasa.gov/spitzer-concentration/.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Special Announcement

2011 Astronomy Festival at Great Basin National Park - Baker, NV

The second annual Great Basin National Park Astronomy Festival will take place July 28 -30, 2011. Join park rangers and experience out of this world family fun, excitement, and learn about day and nighttime astronomy. Here at Great Basin National Park we have some of the best air quality in the nation which translates to clear daytime skies, and incredibly dark night skies. Info: http://www.nps.gov/grba/planyourvisit/2011-astronomy-festival.htm

Don't have your own telescope? There will be many telescopes of different makes, shapes, and sizes for you and your family to look at the sun, stars, planets and other deep sky objects including nebulae and galaxies.

Schedule of Events

Thursday July 28, 2011
12:00PM - 1:00PM - Astronomy 101: Astronomy for Beginners and Everyone
1:00PM - 4:00PM - Sun Telescope Viewing
2:30PM - 3:30PM - *Kid's Program*: Building A Moon Crater!
8:00PM - 9:00PM - Superintendent's Welcome and Ranger Talent Show
9:00PM - *Kid's Program*: Deep Space Observing Certificate!
9:00PM - Telescope Viewing

Friday July 29, 2011
12:00PM - 1:00PM - Astronomy 101: Astronomy for Beginners and Everyone
1:00PM - 4:00PM - Sun Telescope Viewing
2:30PM - 3:30PM - *Kid's Program*: Sol Power!
2:00PM - 3:00PM - Saturn - Lord of the Rings (Presentation)
3:00PM - 4:00PM - Astronomy Science Lecture
8:00PM - 9:00PM - Festival Keynote Speaker - Dr. Tyler Nordgren
9:00PM - *Kid's Program*: Deep Space Observing Certificate!
9:00PM - Telescope Viewing

Saturday July 30, 2011
10:00AM - 11:00AM - Dr. Tyler Nordgren Book Reading and Signing
12:00PM - 1:00PM - Astronomy 101: Astronomy for Beginners and Everyone
1:00PM - 4:00PM - Sun Telescope Viewing
2:30PM - 3:30PM - *Kid's Program*: Planetary Voyage!
2:00PM - 3:00PM - Astronomy Science Lecture
3:00PM - 4:00PM - Astronomy Science Lecture
8:00PM - 9:00PM - Protecting Great Basin's Night Skies (Ranger Presentation)
9:00PM - *Kid's Program*: Deep Space Observing Certificate!
9:00PM - Telescope Viewing

All events are conducted at the Lehman Caves Visitor Center.
Image: Wheeler Peak and the Night Sky at Great Basin National Park Credit: NPS Night Sky Team

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

Images on the front page: 1. Centennial Observatory courtesy of Chris Anderson, Observatory Manager. The Centennial Observatory is located at the Herrett Center for Arts and Science, College of Southern Idaho, Twin Falls, ID, USA. Chris Anderson also provides the Planispheres usually on page 3.
2. Shoshone Falls is a major attraction to the Magic Valley and a prominent landmark on the Snake River. Falls image is used under "public domain;" unknown photographer.
3. M-51 on the front page was imaged with the Shotwell Camera and the Herrett Telescope at the Centennial Observatory by club members Rick Widmer & Ken Thomason. 4. Star explorers image is an open source photo, photographer unknown.

Membership Information

Membership is not just about personal benefits. Your membership dues support the work that the Magic Valley Astronomical Society does in the community to promote the enjoyment and science of astronomy.

Speakers, public star parties, classes and support for astronomy in schoolrooms, and outreach programs just to name a few of the programs that your membership dues support.

Annual Membership dues will be $20.00 for individuals, families, $10.00 for students.

Contact Treasurer Jim Tubbs for dues information via e-mail: jtubbs015@msn.com or home telephone: 736-1989 or mail directly to the treasurer at his home address. 550 Sparks Twin Falls, ID 83301

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

About the Magic Valley Astronomical Society

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.

A moon just past full as seen from Earth's northern hemisphere. Credit NASA

Membership Benefits

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

Astronomy Magazine group rates. Subscriptions to this excellent periodical are available through the MVAS at a reduced price of $34.00

Receive 10% discounts on other selected Astronomy Publications.

For periodical info. and subscriptions Contact Jim Tubbs, Treasurer

Lending Library: Currently we have no books to lend.

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

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