Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting
Saturday, December 12th 2014
7:00pm at the
Herrett Center for Arts & Science
College of Southern Idaho.
Public Star Party Follows at the Centennial Obs.

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Astronomical Society is a member of the Astronomical League

M-51 imaged by Rick Widmer & Ken Tomason

President's Message

Colleagues,

With the colder temperatures closing in, it's getting closer and closer to the Christmas Party. At 7 p.m. on Saturday, Dec. 12, we'll be meeting in the Herrett Center to engage in the regular winter festivities. As in the past, we'll have the regular "Who Wants to Be a Millionaire?" game as we munch on pot-luck snacks and treats we've all brought.

There will be, however, a change. It is getting harder and harder to get donations for prizes, leading us to something different this year. With that in mind, we would ask you to show up with an astronomy-themed gift of no more than $10 in value. To make the exchange work, we would ask you to please wrap the gift. With the imagination present in our group and the secret exchange system being developed, we should be in for a fun evening.

Clear Views,

Rob Mayer

Moon Rise over the Snake River Canyon & Shoshone Falls © Gary Leavitt MVAS

December Overview

- The moon passes close to Uranus twice this month and Jupiter, Saturn, and Mars once each.
- There are two meteor showers this month, one a little too close to the full moon and the other is a minor shower filled with fainter meteors.
- The moon passes close to two nice star clusters this month.
- The moon passes close to Jupiter at a time when its major satellites are well-placed to observe in a spotting scope.

12/2 Uranus is 1.2 degrees south of the Moon.
12/3 Asteroid 23 Thalia (magnitude +9.2) is at opposition.
12/4 The year's earliest end of evening twilight at 40 degrees north latitude occurs today
12/6 The Moon is 1.4 degrees north of the first-magnitude star Spica (Alpha Virginis);
12/7 The earliest sunset of the year at 40 degrees north latitude occurs today.
12/8 Mercury is at aphelion today; Mercury is in superior conjunction.
12/9 A double Galilean satellite shadow transit will be observable. Jupiter is stationary.
12/10 Asteroid 1 Ceres is in conjunction with the Sun.
12/12 Mars is at perihelion today; Jupiter is 5 degrees north of the Moon; a double Galilean satellite shadow transit begins; the Moon is at apogee, subtending 29° 32" from a distance of 404,581 kilometers (251,395 miles).
12/14 The peak of the Geminid meteor shower (100 to 120 per hour).
12/15 The Curtiss Cross, an X-shaped illumination effect located between the craters Parry and Gambart, is predicted to occur at 10:57 GMT
12/16 A double Galilean satellite shadow transit will be visible.
12/19 Saturn is 1.5 degrees south of the Moon.
12/21 The shortest day of the year at 40 degrees north latitude occurs today.
12/22 Uranus is stationary; the peak of the Ursid meteor shower (10 per hour).
12/23 Venus is 6 degrees south of the Moon.
12/24 The Moon is at perigee, subtending 32'46" from a distance of 364,797 kilometers (226,674 miles)
12/25 Mars is 6 degrees south of the Moon.
12/26 Venus is at aphelion today; Neptune is 4 degrees south of the Moon.
12/28 First Quarter Moon occurs.
12/29 Mercury is at its greatest heliocentric latitude south today; 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 occur. Uranus is 1.0 degree south of the Moon.

Tycho Brahe, Johannes Kepler, Isaac Newton, and Arthur Eddington were born in December. Giovanni Cassini discovered the Saturnian satellite Rhea on December 23, 1672.

Top ten deep-sky objects for December: M34, M45, M77, NGC 869, NGC 884, NGC 891, NGC 1023, NGC 1232, NGC 1332, NGC 1360

Challenge deep-sky object for December: Van Den Bergh 14 and 15 (Camelopardalis)

The objects listed above are located between 2:00 and 4:00 hours of right ascension.

Notable carbon star for December: U Camelopardalis

Van Den Bergh 14 and 15 in Camelopardalis © 2014 Thomas V. Davis, www.tvdavisastropics.com

Calendar for December

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6 Full Moon Cold Moon 
7	8	9	10	11	12	13 General Membership Mtg. and Christmas Party 19:00 Herrett Center
14 Last Quarter Moon 	15	16	17	18	19	20
21	22 New Moon 	23	24	25 Christmas 	26	27
28 First Quarter Moon 	29	30	31 New Year's Eve 			

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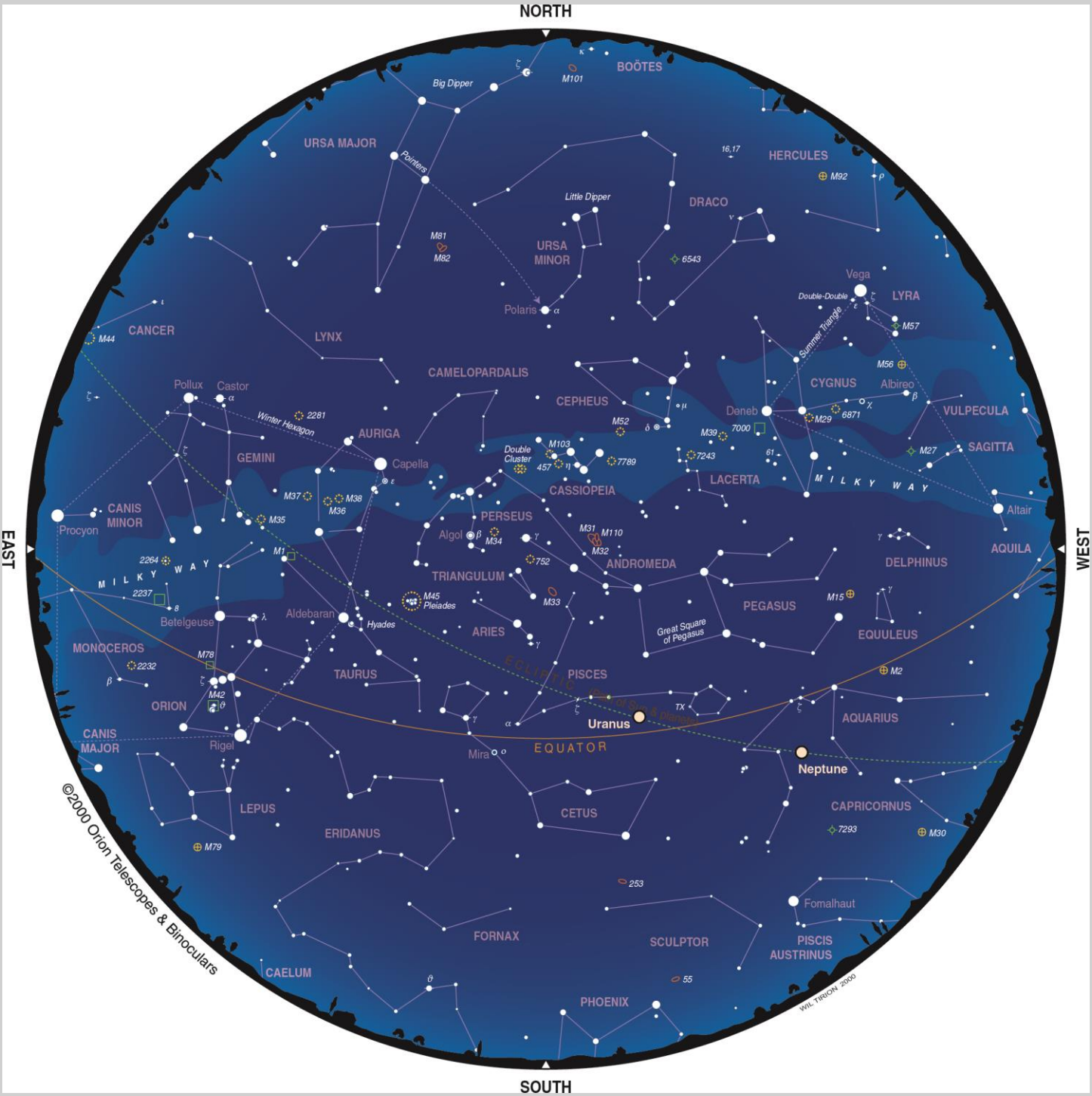
Planisphere for December

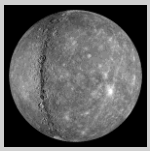
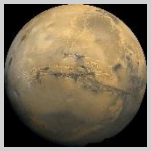
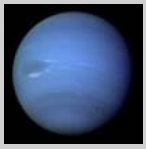


This Planisphere is available in a larger format online using this link:

http://www.telescope.com/assets/images/starcharts/2014-12-starchart_col.jpg

Be Safe – Get Out There – Explore Your Universe

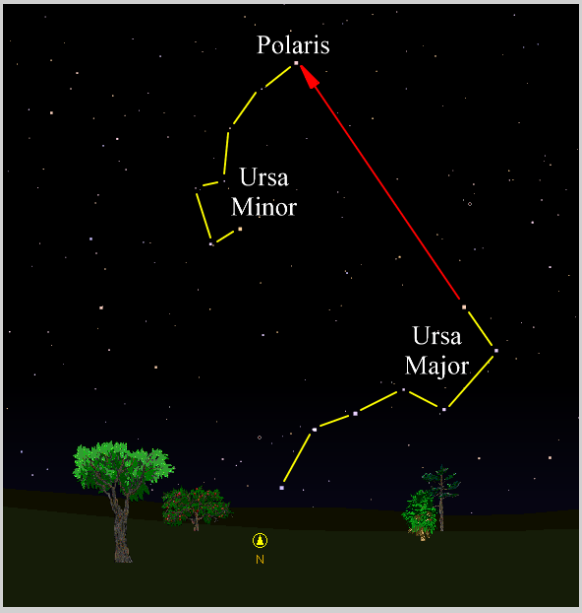
Solar System

	**Mercury** reappears low in the southwest during evening twilight at month's end. The speediest planet is at aphelion and is in superior conjunction on December 8th.
	**Venus** reappears low in the southwest during evening twilight in early December. The brightest planet is positioned six degrees south of the Moon on December 23rd and reaches aphelion three days later.
	**Mars** enters Capricornus on December 4th and is at perihelion on December 12th. The Red Planet is six degrees south of the Moon on December 25th. Mars is located three degrees west of the brightest star in Capricornus, Delta Capricorni (magnitude +2.8), by the end of the month.
	**Jupiter** is stationary and then commences retrograde (western) motion on December 9th. It is 5 degrees north of the Moon on December 12th. Double Galilean satellite shadow transits take place on December 9th, December 12th, and December 16th.
	**Saturn** is 1.5 degrees south of the Moon on December 19th. It is positioned 20 degrees above the southeastern horizon one hour before sunrise by the end of the month. On December 31st, Saturn's rings subtend 35 arc seconds and are inclined by 25 degrees.
	**Uranus** located 3.3 degrees south of the fourth-magnitude star Delta Piscium for the entire month. The sixth-magnitude K-type star 96 Piscium lies one degree north-northeast of the planet. Uranus is occulted by the Moon in some parts of the northern hemisphere on December 2nd and December 29th.
	**Neptune** During December, Neptune can be found less than one degree west of the fifth-magnitude star Sigma Aquarii. The eighth planet sets before 9:00 p.m. local time by the end of the month.
	**Pluto** The dwarf planet Pluto is not visible again until next year.
	**Asteroid** 23 Thalia glides northwestward through northwestern Taurus. It reaches opposition on December 3rd. The ninth-magnitude main belt asteroid passes directly by an eighth-magnitude field star on the night of December 11th.
	**Comets** For current information on comets visit: http://cometchasing.skyhound.com/

Idaho Skies for December

Vol. 8 No. 12

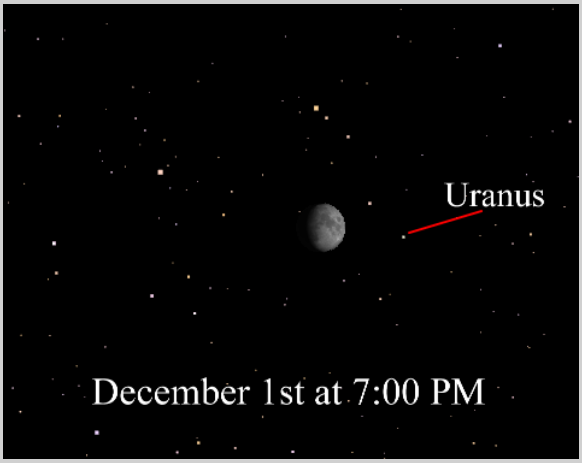
Idaho Skies is a column for beginning amateur astronomers and those interested in astronomy. Suggestions about the column are gladly accepted by the columnist, at nearsys@gmail.com



This month look for the star Polaris, the Lucida (brightest star) of Ursa Minor the Little Bear. Polaris is also known as Alpha Ursa Minoris, The North Star, The Pole Star, and The Lode Star. Polaris is the guide to true north (as opposed to magnetic north) so it appears nearly straight up to anyone standing on the North Pole. Polaris is not the brightest star in the sky nor is it exactly true north. Polaris is actually the 40th brightest star in the sky and ¾ of a degree (1-1/2 moon diameters) away from the point of true north in the sky. In long duration photographs, Polaris makes a tiny little circle around the true North Pole. Polaris is the star marking the end of the Little Dipper's handle.

Polaris is a bit hotter than our sun and older. It's at the point in its life where it is fusing helium in its core and fusing hydrogen in a shell above its core. This makes Polaris slightly unstable and its outer layers pulsate in size and slightly in brightest. At 430 light years away, you're seeing light from Polaris that was emitted in the year 1584.

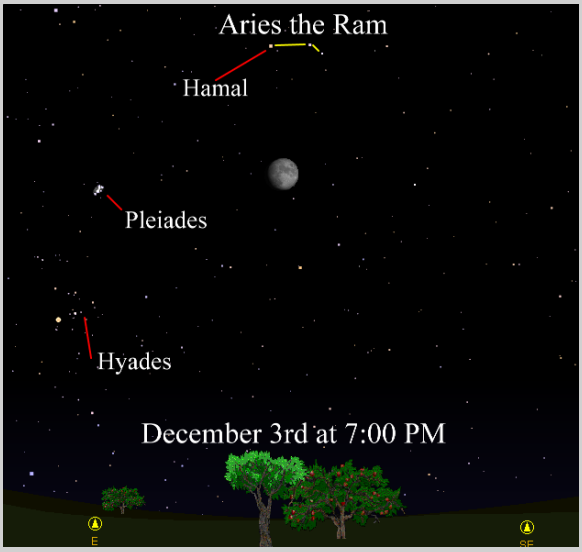
Polaris is an easy star to find since most people can locate the Big Dipper in the sky. The two stars at the end of the Big Dipper's bowl are called the Pointers and a line drawn up from the Pointers just about runs into Polaris.



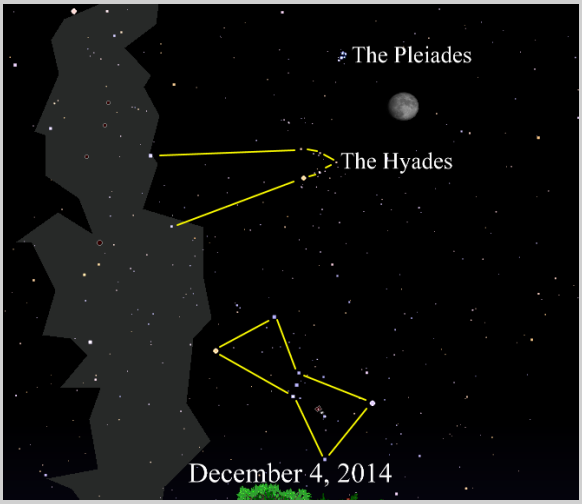
December 1 – 7

The moon helps locate the seventh planet, Uranus on the night of the 1st. At 7:00 PM, look for two stars located on the right side of the moon that form a triangle with the moon. The star closest the moon forms the top of the triangle and is the brightest of the pair. This is 96 Piscium. Twice as far away from the moon and slightly fainter is Uranus forming the bottom right of the triangle. The moon, 96 Piscium, and Uranus fit within half of your binocular's field of view.

Want to find Aries the Ram? It's the flat triangle of stars right above the moon on the evening of the 3rd. Aries is the ram with the golden fleece of Greek mythology.



Some of the best star clusters are among the closest to our solar system and they're visible to us in the Northern hemisphere. Look for two of these star clusters above and below the moon on the evening of the 4th. The Pleiades is the small dipper-shaped cluster of stars above the moon and the Hyades is the larger V-shaped splash of stars below the moon. Both are excellent objects for your binoculars.



The moon's immersed within the Hyades star cluster on the evening of the 5th. When seen separately, one is inclined to think the moon is larger than the star cluster. However tonight, you'll be able to see how much larger the Hyades is than the moon. Use your binoculars for this attractive sight.

The moon is located above Orion the Hunter on the evening of the 6th. A line of faint stars representing his club tops Orion. Those stars give an impression that Orion is about to bat the moon clear out of the sky. Don't forget to scan down the middle star of Orion's Belt for a fuzzy star. That's Orion Nebula.

The Gemini Twins consist of two rows of stars located to the moon's left on the evening of the 7th. The stars are horizontal this early in the evening but appear upright after midnight. The two brighter stars located to the moon's upper left are Castor and Pollux, the names of the twin brothers. Pollux is the slightly brighter of the two stars.

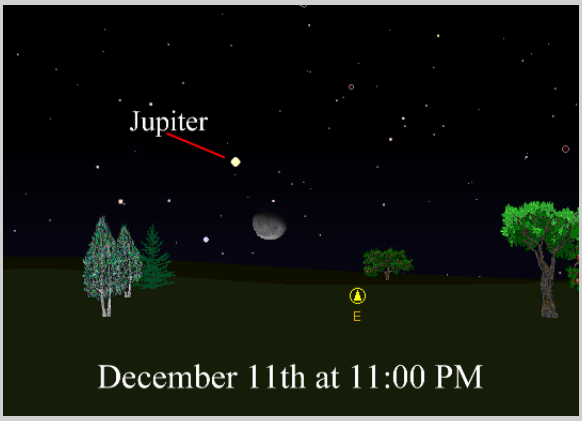
The light of Pollux left 34 years ago. However, Earth is not the only planet to enjoy its light; there's a planet orbiting this star. The light of Castor you see tonight left 51 years ago.

New Horizons wakes up from its hibernation on the 7th. New Horizons is an American spacecraft bound for Pluto and the Kuiper Belt, an icy belt of small bodies located beyond Pluto. This historic mission is the first to visit Pluto, which may look a lot like Triton, the large satellite of Neptune. Closest approach to Pluto occurs in seven months, on July 14th. Soon New Horizons will send better quality images of Pluto than the Hubble space Telescope can. When it arrives, New Horizons will find a small world surrounded by at least five satellites. You can watch this mission unfold at its website, http://www.nasa.gov/mission_pages/newhorizons/main/

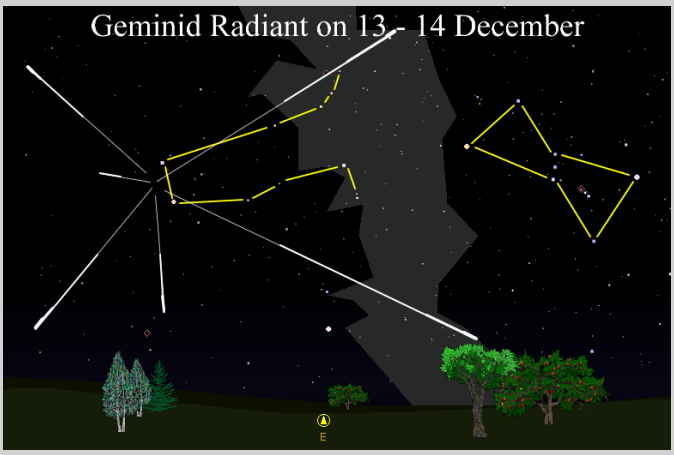
December 8 – 14

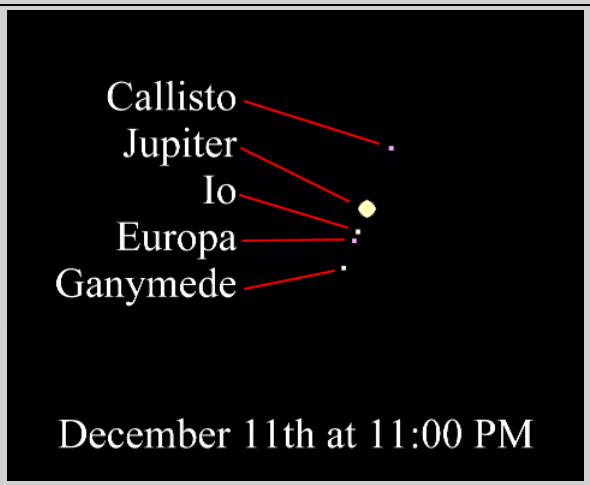
The eighth brightest star in the sky is located to the Moons right on the night of the 9th. The star's name is Procyon and it's the alpha star of the constellation Ursa Minor, the Little Dog. Procyon is one of the brightest stars in the sky because it's only 12 light years away from the Solar System.

Where's Jupiter? It's above the Moon late on the evening of the 11th. Use your binoculars to observe Jupiter and you're likely to see all four of its Galilean satellites. In binoculars and starting at the bottom, you'll see Ganymede, Europa, Io, Jupiter itself and then Callisto. You may have difficulty splitting Io and Europa in binoculars. In a telescope other than a spotting scope, the order of the satellites is backwards.



One of the year's best meteor showers peaks on the night of the 13th and morning of the 14th. Normally the Geminid meteor shower does not disappoint with its plentiful number of yellowish meteors. In dark skies, one can except to see more than a meteor per minute on average. Unfortunately, in 2014 the moon is waxing gibbous tonight. Therefore, its large and bright surface washes out many of the fainter members of the shower. If you have some time and the inclination, dress warmly and spend a little time observing this shower.





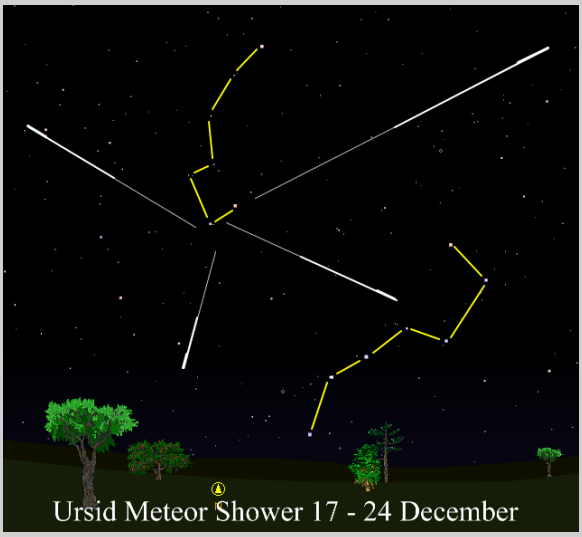
December 15 – 21

The brightest star of Virgo the Maiden is located below the moon on the morning of the 16th. Look for the moon in the low southeast as you drive to work this morning. Spica is the brightest star below the moon.

You can find an easy double star below the moon on the morning of the 18th. The star is names Zubenelgenubi, which means Southern Claw (of the Scorpion) in Arabic. This is surprising since Zubenelgenubi is the brightest star in Libra the Scales. However, if you go back to Greek times, Libra was the claws of Scorpius. This changed some 2,000 years ago when the sun appeared in this part of Scorpius at the autumn equinox. Because the equinox is a time when day and night are equal in length, the Greeks and Romans declawed Scorpius and turned its starry claws into a scale. Use your binoculars on Zubenelgenubi and you'll see two unequally bright stars next to each other. The pair is 77 light years away.

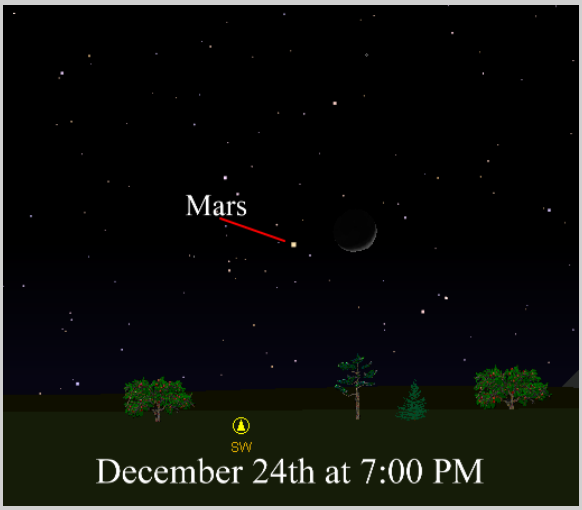
Saturn is a morning planet this month. You can locate it on the 19th if you look for the brightest star below the moon at 7:00 AM. That may be a bit early to look for this planet, but you're sure to be the first on your block to see Saturn. If you have a telescope handy, then point it at Saturn to see its rings; a magnification of as little as 25-power is enough to see them. That means many spotting scopes are up to the task.

The sun reaches its southernmost declination at 5:00 PM on the 21st. Since it appears overhead at 23 degrees south latitude, it's the first day of summer in Australia and the first day of winter for us in the Northern hemisphere. The distance between the sun and Earth has nothing to do with the seasons; they're merely the result of Earth's tilt with respect to its orbital plane around the sun. On the first day of winter in the Northern hemisphere, the sun crosses the sky at its lowest with respect to the horizon and daylight hours are their shortest length. The result is that the sun's light is less intense and warms the surface for its least number of hours for the year. Adding insult to injury, the night lasts it longest, so the ground has its greatest number of hours to radiate its warmth back into the sky. The combination of these three effects creates the coldest days of the year.

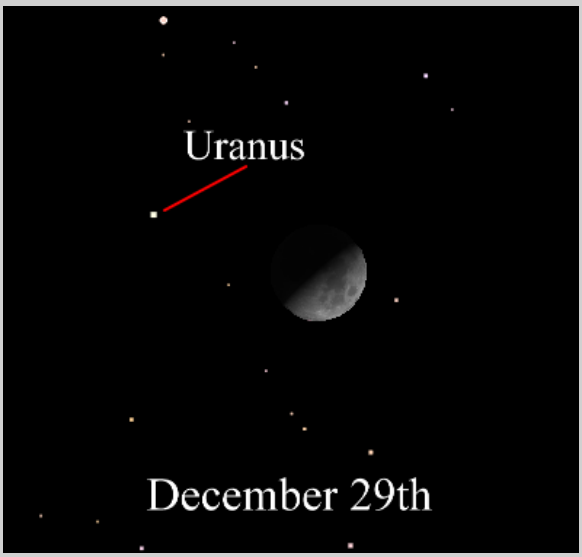


December 22 – 31

A minor meteor shower peaks all night of December 22nd and 23rd. It's the Ursid meteor shower and you can see it radiating out of the high north, near the Little Dipper (or Ursa Major). Usually we don't see more than 10 meteors per hour from this shower; however, it once produced an outburst of 100 meteors per hour. The moon is only one day old tonight, so its light won't interfere if you choose to watch the Ursid meteors. The 23rd presents the opportunity to observe a two-day old moon. This is such a thin crescent moon that most people won't chance upon it unless they know to look for it. Search low in the southwest at around 6:15 PM. You may find a pair of binoculars helpful, but please only use them after the sun has set.



Mars is still in our night sky. You can find the red planet on the 24th if you first find the moon in the low southwest. Mars will be the slightly yellowish star located to the moon's left.



You can easily locate the planet Uranus a second time this month on the 28th. The planet is bright enough to see with the unaided eye, if you know what you're looking for and if the sky is very dark. It's much easier though if you use a pair of binoculars. Center your binoculars on the moon and then look for the brightest star to the Moons lower left. That's Uranus and it will only be two moon diameters away. Don't expect to see anything more than a star, however. Even in a good telescope, Uranus is nothing more than a small lightly-green disk.

By the end of the month, Venus is reappearing as the Evening Star. You might be able to find it in your binoculars if you scan the low southwest after sunset. It's important that you don't attempt scanning the horizon with binoculars until AFTER the sun has set. By mid-January, Venus is higher and easier to see. As an added bonus, Mercury is now following Venus and they will both be close together in mid-January.

This Month's Sources

Astronomical Events for 2014, http://www.universetoday.com/107259/101-astronomical-events-for-2014/
Castor, http://en.wikipedia.org/wiki/Castor_(star); Geminid Meteor Shower, http://meteorshowersonline.com/geminids.html Geminids, (1988) Kronk, G. Meteor Showers, a Descriptive Catalog
Night Sky Explorer
Pioneer 11, http://en.wikipedia.org/wiki/Pioneer_11
Pollux, http://en.wikipedia.org/wiki/Pollux_(star)
Procyon, http://en.m.wikipedia.org/wiki/Procyon
Space Calendar, http://www.jpl.nasa.gov/calendar/
Ursids, (1988) Kronk, G. Meteor Showers, a Descriptive Catalog
Zubenelgenubi is Libra's alpha star, www.earthsky.org/brighhtest-stars/zubenelgenubi-alpha-star-of-libra-the-scales

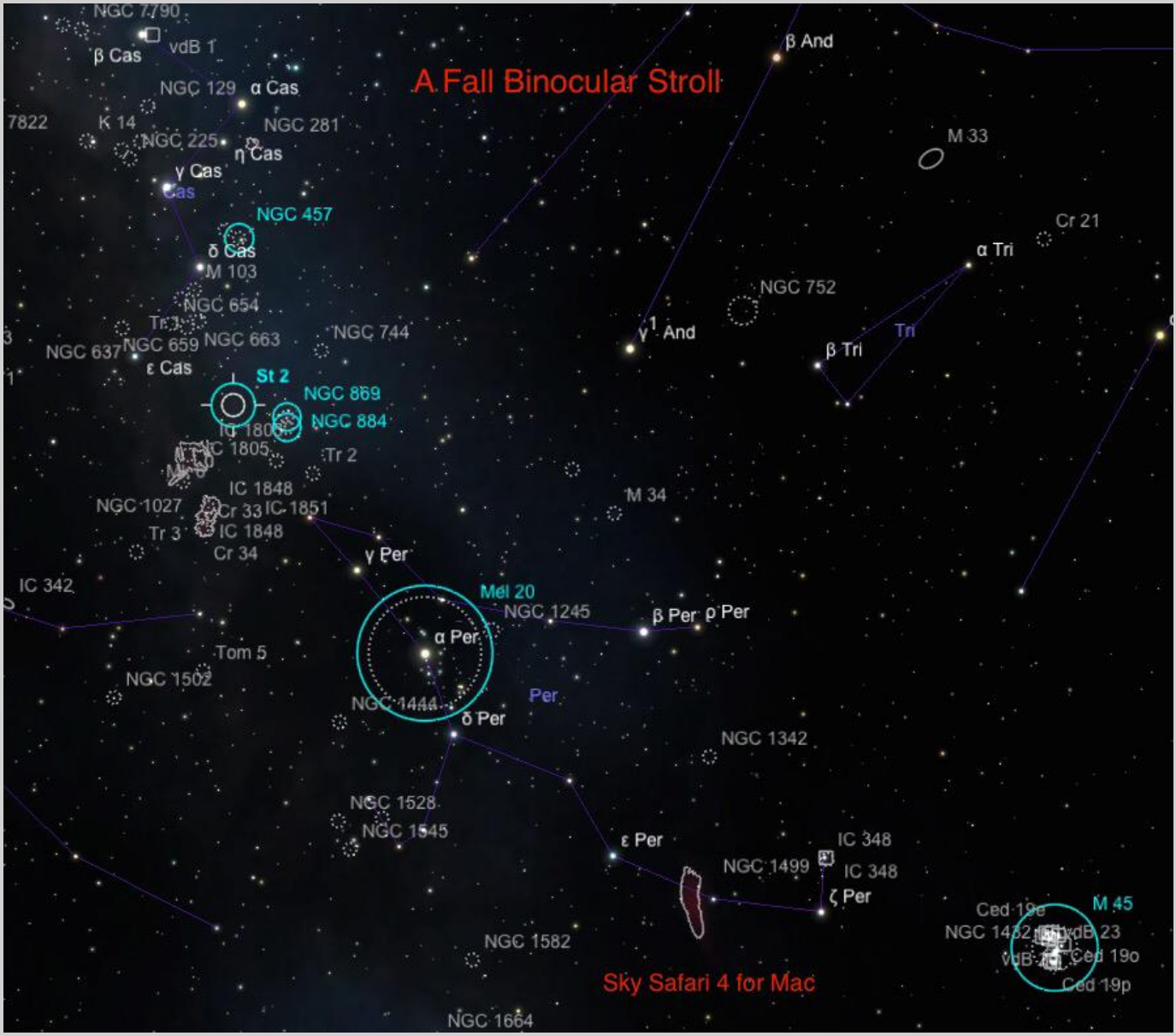
Dark Skies and Bright Stars,
Your Interstellar Guide

Looking Through the Eyepiece

A Fall Binocular Stroll
Article by Steve Bell

As the weather gets cooler and, especially, during the busy holiday season, I generally try to go with minimal equipment set-up. This month's observing session is short and requires only binoculars or a small, wide-field scope on a grab-and-go set-up.

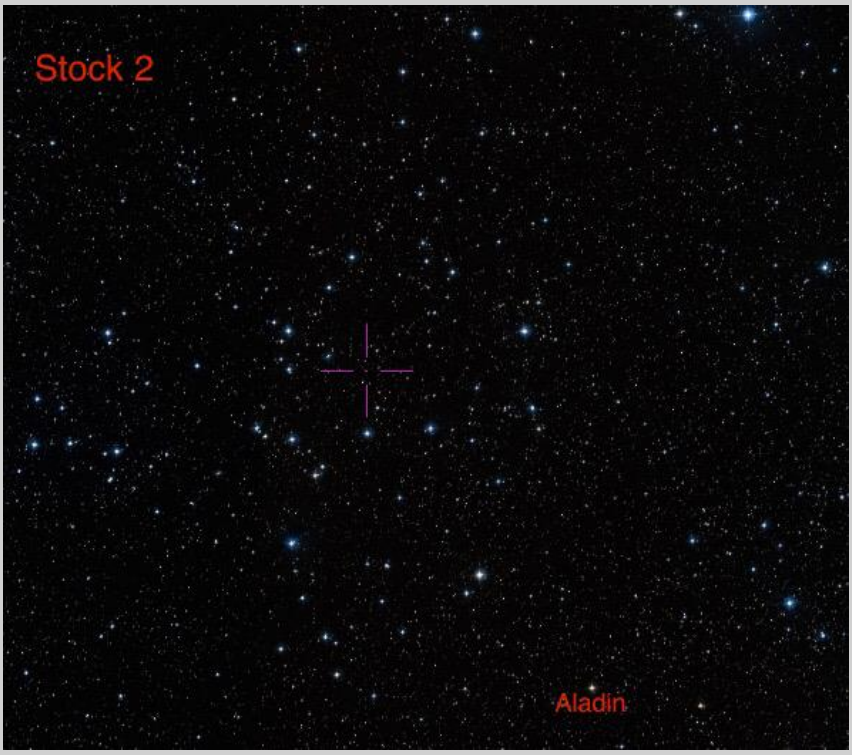
CON	OBJ	RA	DEC	MAG	SIZE
Tau	m45	03 47 00	+24 07 00	1.2	100
Per	ngc884	02 22 30	+57 09 00	6.1	30
Per	ngc869	02 19 06	+57 08 00	5.3	30
Cas	ngc457	01 19 30	+58 17 00	6.4	13
Cam	stock2*	03 16 12	+60 06 00		15



We'll start with the Pleiades, Messier 45. This is one of everyone's favorite clusters and is easily naked-eye visible. Some claim to be able to see seven stars with only their eyes, but most (author included) can see only six. M45 is one of the closest open clusters to the Sun, being some 450 light years distant. Any optical aid rewards the observer with myriad stars. The involved nebulosity is a target for larger scopes and imaging.

Moving from the Pleiades into Perseus, center your field on Mirfak, the brightest star in the constellation. This 2nd magnitudes star is surrounded by several brighter stars against the background. The constitute Melotte 20, the Alpha Persei moving group or cluster. While not tightly enough bound gravitationally to necessarily be called a cluster, this group does share a common proper motion through the sky and thus had a common origin. This group lies at a distance of 600 +/- light years and is striking in 50 mm binoculars.

Visible to the naked eye under dark skies as a hazy spot off Perseus' upraised arm, this pair of open clusters is striking with almost any optical aid. 50 mm binoculars show it to great advantage. In particular, look for the few yellow-orange stars scattered among the blue-white. The color contrast is striking. These two clusters, NGC 869 and NGC 884, are actually at about the same distance (about 7500 light years) and recent research has shown that the duo is surrounded by an extensive halo of stars, so they are gravitationally connected.



Lying some 2.5 degrees NNW from the Double Cluster is Stock 2, the "Stick Man" or "Muscle Man" Cluster. The stick man asterism can be a little difficult to see at first, so give it time. This cluster is about a degree in diameter, so it shows well in 50 mm binoculars. It actually does look like a headless stick man flexing the biceps. Stock 2 lies roughly 1000 light years from the Sun

Lying 7.2 degrees west of Stock 2 is NGC 457, the Owl or ET Cluster. This smaller cluster isn't shown to best advantage in 7X or 10X 50mm binoculars. The "eyes" are readily seen, but the rest of the cluster is just a hazy spot. The issue isn't so much aperture as magnification. It is readily visible in my 20X glasses, but only the eyes are obvious in my 10X. NGC 457 is some 7900 light years from the Sun.

Observatory and Planetarium

Centennial Observatory at the Herrett Center
College of Southern Idaho – Twin Falls, ID

Event	Place	Date	Time	Admission
Telescope Tuesday	Centennial Observatory	Tuesday, December 9th, 2014	6:00 to 9:00 PM	$1.50 (Children 6 & under free) Free to all with paid planetarium admission
Monthly Free Star Party	Centennial Observatory	Saturday, December 13th, 2014	6:00 PM to midnight	FREE
Telescope Tuesday	Centennial Observatory	Tuesday, December 23rd, 2014	6:00 to 9:00 PM	$1.50 (Children 6 & under free) Free to all with paid planetarium admission

http://herrett.csi.edu/astronomy/observatory/index.asp

Faulkner Planetarium Show Schedule (B) December 21st – 31st

SHOWS

Let It Snow! (SNOW)
Perfect Little Planet (PLANET)
The Longest Night: A Winter's Tale (NIGHT)«
The Star of Bethlehem (STAR)«

Sunday, Dec. 21st					
1:30	2:30	3:30			
(NIGHT)«	(STAR)«	(SNOW)			

Tuesday, Dec. 23rd					
1:30	2:30	3:30	4:30	7:00	8:00
(NIGHT)«	(STAR)«	(SNOW)	(NIGHT)«	(STAR)«	(SNOW)

Wednesday, Dec. 24th					
1:30	2:30	3:30			
(NIGHT)«	(STAR)«	(SNOW)			

Friday, Dec. 26th					
1:30	2:30	3:30	4:30	7:00	8:00
(NIGHT)«	(PLANET)	(SNOW)	(NIGHT)«	(STAR)«	(SNOW)

Saturday, Dec. 27th					
1:30	2:30	3:30	4:30	7:00	8:00
(NIGHT)«	(PLANET)	(SNOW)	(NIGHT)«	(STAR)«	(SNOW)

Sunday, Dec. 28th					
1:30	2:30	3:30			
(NIGHT)«	(PLANET)	(SNOW)			

Tuesday, Dec. 30th					
1:30	2:30	3:30	4:30	7:00	8:00
(NIGHT)«	(PLANET)	(NIGHT)«	(SNOW)	(NIGHT)«	(SNOW)

Wednesday, Dec. 31st					
1:30	2:30	3:30			
(NIGHT)«	(PLANET)	(NIGHT)«			

About the Magic Valley Astronomical Society

Magic Valley Astronomical Society
P.O. Box 445
Kimberly, ID, USA 83341
www.mvastro.org

The Magic Valley Astronomical Society (MVAS) was founded in 1976. The Society is a non-profit [501(c) 3] educational and scientific organization dedicated to bringing together people with an interest in astronomy.
In partnership with the Centennial Observatory, Herrett Center, College of Southern Idaho - Twin Falls; we hold regularly scheduled monthly meetings and observation sessions, at which we share information on current astronomical events, tools and techniques for observation, astrophotography, astronomical computer software, and other topics concerning general astronomy. Members enthusiastically share their telescopes and knowledge of the night sky with all who are interested. In addition to our monthly public star parties we hold members only star parties at various locations throughout the Magic Valley.

MVAS promotes the education of astronomy and the exploration of the night sky along with safe solar observing through our public outreach programs. We provide two types of outreach; public star parties and events open to anyone interested in astronomy, and outreach programs for individual groups and organizations (e.g. schools, churches, scout troops, company events, etc.), setting up at your location. All of our outreach programs are provided by MVAS volunteers at no cost. However, MVAS will gladly accept donations. Donations enable us to continue and improve our public outreach programs.

Membership is not just about personal benefits. Your membership dues support the work that the Magic Valley Astronomical Society does in the community to promote the enjoyment and science of astronomy.
Speakers, public star parties, classes and support for astronomy in schoolrooms, and outreach programs just to name a few of the programs that your membership dues support.
Annual Membership dues will be:
$20.00 for individuals, families,
$10.00 for students.
Contact Treasurer Jim Tubbs for dues information via e-mail: jtubbs015@msn.com

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

Membership Benefits:

Sky and Telescope group rates. Subscriptions to this excellent periodical are available at a reduced price of $32.95.
Astronomy Magazine group rates. Subscriptions to this excellent periodical are available 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 Telescopes: The society currently has three telescopes for loan and would gladly accept others. Contact President Robert Mayer, for more information.

Telescopes are an individual thing and not practical for public use. However, everyone should have the experience of a good look at the moon for at least 5 minutes in their life time. It is a dimension and feeling that is unexplainable. Pictures or TV can't give this feeling, awareness, or experience of true dimension. A person will not forget seeing our closest neighbor, the moon. Norman Herrett in a letter to Dr. J. L. Taylor, president of the College of Southern Idaho, Twin Falls, ID, USA circa 1980.