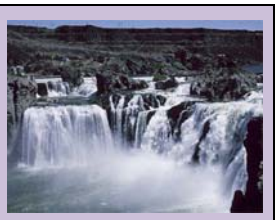
# Snake River Skies

The Monthly Newsletter of the
Magic Valley Astronomical Society
April 2013



www.mvastro.org

Membership Meeting

Saturday, April 13th at the Herrett Center

Dr. Paul Verhage will be the Guest Speaker.

Join us at 7:00 pm

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## President's Message

Colleagues,

The weather's warming up, and that means more of us are bringing out the telescopes. Already we've heard reports and seen images of Comet PANSTARRS, and by the time you read this, we might have already had a Messier Marathon. That's scheduled for April 5th; currently we've planned for Jerome Gun Club – sunsets at 8:30 p.m. – But we'll keep each other updated in case there are changes.

For the regular MVAS meeting, Our guest speaker will be, Dr. Paul Verhage, PhD, from the Boise Astronomical Society Dr. Verhage is a former United States Air Force officer, college network administrator, and a high school physics and electronics instructor. Dr. Verhage recently completed his PhD in Education at the University of Kansas. His dissertation investigated the effects of the BalloonSat on student attitudes toward science. He currently teaches physics and earth science at Centennial High School for the Meridian School District.

On the side, he designs and builds robotic and science projects and then write extensively about them. Dr. Verhage continues helping schools design, build, and launch near space experiments. At the end of April, he will teach a robotics class with community education. The class will teach eight families how to build a robot.

Dr. Verhage's talk will be: "Space is Hard, Near Space Is Not Nearly as Hard."

And at the end of the month, there's Astronomy Day at the Herrett Center on April 20. Later that night we'll be out in Twin Falls with our scopes for Sidewalk Astronomy as well. Stay tuned on Facebook and over the club's e-mail for final details.

One last thing: No matter what you do this month, if it's astronomy-related, would you let us know? We'd love to hear about your latest discoveries, finds, and achievements.

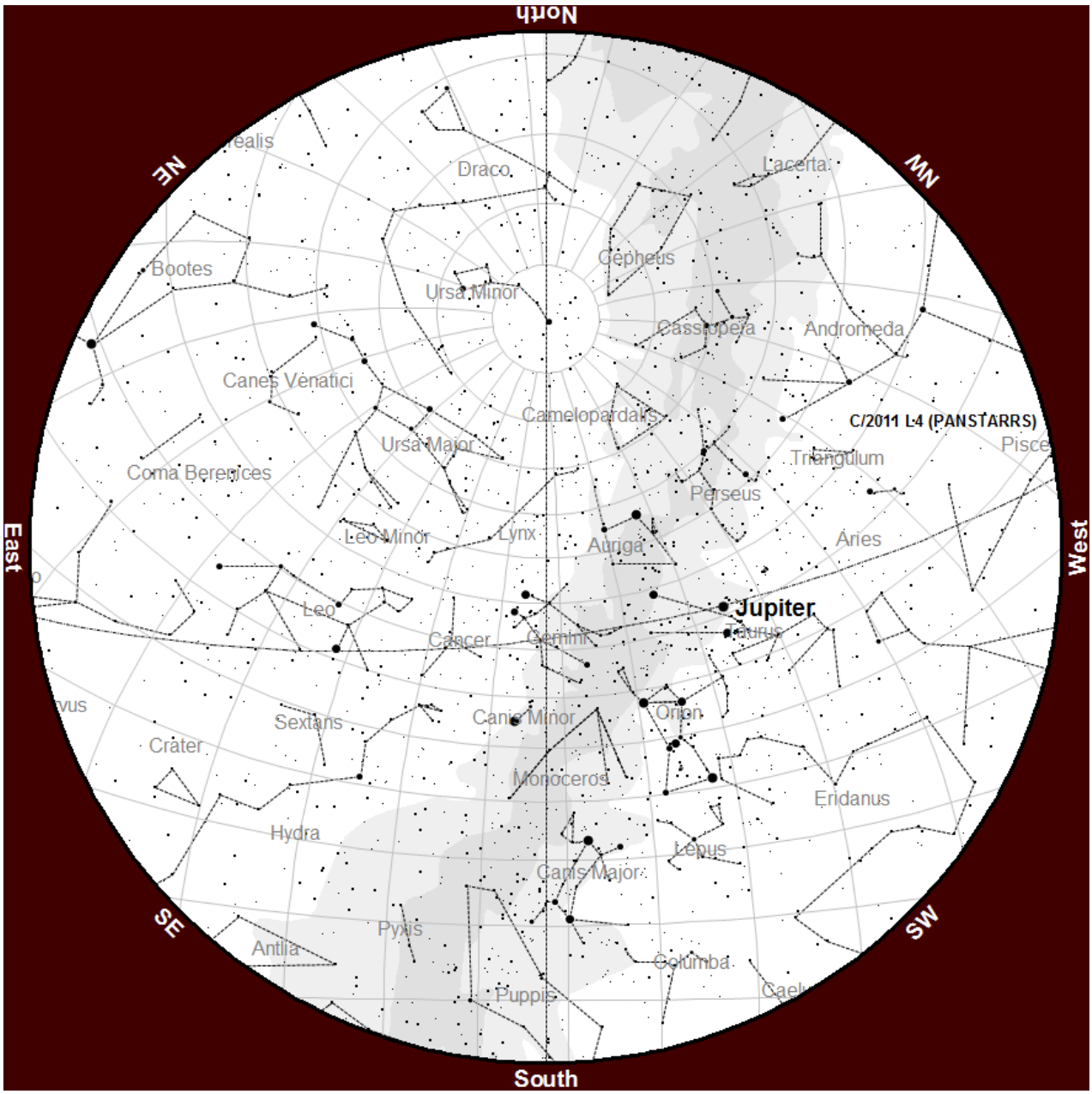
Best Wishes,
Robert Mayer, President

**In this Issue**

## Calendar for April

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|
| | 1<br>April Fool's<br>Moon Greatest S. Elongation -20.2°<br>  | 2 | 3<br>Last Quarter Moon at 14:53 pm<br>  | 4 | 5 | 6 |
| 7 | 8 | 9 | 10<br>New Moon at 3:35 am<br>  | 11 | 12<br>**Yuri's Night**<br>  | 13<br>Membership Meeting at the Herrett Center<br>7:00pm Stargazing following the Mtg. Centennial Observatory. |
| 14 | 15<br>Moon Greatest N. Elongation +20.2°<br>  | 16 | 17 | 18<br>First Quarter Moon at 6:31 am<br>  | 19 | 20<br>Astronomy Day Events at Centennial Observatory & Faulkner Planetarium |
| 21 | 22<br>Earth Day<br>  | 23 | 24 | 25<br>Full Moon at 13:57<br>Seed Moon<br>  | 26 | 27 |
| 28<br>Moon Greatest S. Elongation -20.2°<br>  | 29 | 30 | | | | |

## Planisphere for April



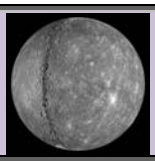
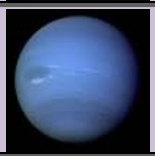
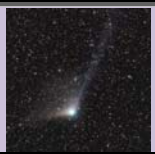

Planisphere should be used as a guide for the month of April, mid-month, end of astronomical twilight (9:15 PM) Planisphere is provided as a courtesy from Chris Anderson, Coordinator, Centennial Observatory, Herrett Center for Arts & Science - College of Southern Idaho, Twin Falls, ID

## Trivia Time

Launched 32-years ago on April 12th, the first Space Shuttle (Columbia STS-1) brought in a different era of space exploration. Today, NASA, prepares for a return to space with the Orion Capsule with Exploration Flight Test (EFT)-1, which will be the first chance engineers get to test Orion's design in space. Flying atop a United Launch Alliance Delta IV rocket, the spacecraft will be pressurized as it would be if astronauts were onboard. It will orbit the Earth twice on a track that will take it more than 3,600 miles above us, about 15 times higher than the International Space Station.

From that height, Orion will be steered to a re-entry at speeds of about 20,000 mph, slamming into the atmosphere to test whether the heat shield will protect the spacecraft adequately. Speeds like this have not been seen in over 40-years since the end of the Apollo Moon program in 1972.

## Solar System Highlights

| | |
|---|---|
|  | **Mercury** shines at magnitude +0 and is visible in the morning twilight, far to the lower left of Altair, the brightest star in the constellation Aquila. From midnorthern latitudes it stands just a few degrees above the eastern horizon, and could prove to be a difficult target even for binoculars or small telescopes. |
|  | **Venus** is lost in the solar glare as it moves from the morning sky to the evening sky. It will return to view in early May, low above the western horizon just after sunset. |
|  | **Mars** is immersed in the evening twilight, setting just minutes after the Sun. It will return to view in early June, low in the morning sky. |
|  | **Jupiter** lies in Taurus the Bull, close to Aldebaran, the brightest star in the constellation and one of the brightest in the nighttime sky. It glows brightly at magnitude -2 and is visible in the west as evening twilight fades. |
|  | **Saturn** will come to opposition on the night of April 28. The planet rises in the east around 9 P.M. local daylight time and by the beginning of dawn it is fairly high in the southwest. |
|  | **Uranus** reached conjunction with the Sun on March 28 and remains out of sight until mid-May. |
|  | **Neptune** Seek out Neptune just before dawn, in central Aquarius, 1° northwest of the 5th-magnitude star Sigma Aquarii. The distant world lies 2.8 billion miles from Earth and glows dimly at magnitude +7.9. A 4-inch diameter telescope is probably the minimum required to see the planet and resolve its disk, only 2.4" across. |
|  | **Pluto** The dwarf planet Pluto lies in northern Sagittarius and is highest above the southern horizon just before dawn. Search for it under a dark, moonless sky. Pluto glows at magnitude +14, and as a result, it is a challenge to spot. An 8-inch telescope on a perfect night brings Pluto to the edge of visibility. |
|  | **Asteroid** The main belt asteroid 14 Irene slices through Coma Berenices this month and appears at its best in the late evening. To find this 105- mile-wide space rock, start with the 5th-magnitude star 6 Coma Berenices. The star lies a little closer to Denebola (Beta Leonis) than the halfway point to Epsilon Virginis. |
|  | **Comets** C/2012 L2 LINEAR is a byproduct of the automated LINEAR (Lincoln Near-Earth Asteroid Research) minor planet survey. Discovered far beyond the orbit of Mars on June 1, 2012, this comet will pass 140 million miles from our star at perihelion, on May 9. |
|  | **Meteors** The Lyrid shower is the oldest meteor shower for which observations have been found. Recorded sightings go back more than 2,000 years, when the shower was much more abundant. Despite the low annual rate, the Lyrids have the capacity for impressive displays - over 50 falling stars per hour. This last happened in 1982, when the rate unexpectedly reached 90 meteors per hour. Astronomers predict this could be a very high year for the Lyrid shower. |

## Idaho Skies for April

**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 streetastro@gmail.com. Check the Idaho Skies Twitter page for notices and images at www.twitter.com/IdahoSkies.**

This month look for the star Regulus. Regulus is the Lucida of the constellation of Leo the Lion and its name is Latin for, "Little King". Because of its location within the constellation, the star represents the heart of Leo the Lion. The star is the 25th brightest star in the heavens and 77 light years away. If you were born in 1936, then Regulus is your birthday star this year since the light you see tonight left in the year you were born.

Regulus is larger than our sun and has a mass 3-1/2 times greater. Its extra mass causes the star to consume its supply of hydrogen at a faster rate than the sun. As a result, Regulus shines 240 times brighter than our sun. If viewed from Regulus, our sun would be so dim that we could not see it without the aid of a telescope. However, Regulus is easily seen in town. Regulus has a faint companion star that orbits it in a 130,000 year long orbit. This faint star is actually two stars in orbit around each other. It only takes this pair 1,000 years to complete one orbit around each other.

The constellation of Leo passes overhead at 9:00 PM in early April and 8:00 PM in late April. When you see Leo, you will probably first notice its backwards question mark of stars. The question mark, or sickle of Leo, consists of six stars and opens towards the west. The question mark represents the head and neck of Leo, with Leo's head looking to the west. The bottom star of this question mark is Regulus. East of the sickle of Leo are his hind quarters and it is represented by three stars forming a triangle pointing east. The moon is a convenient guide to Leo on the 21st when it will be directly beneath the constellation.

### April 1 – 7

The moon is at last quarter on the 2nd. Most people don't spend time observing the last quarter phase. Therefore, it you have the chance, spend a few minutes early on the morning of the 2nd observing this phase. Through your binoculars you'll notice that the last quarter moon is covered with large Maria and marked with several bright craters. These craters include Copernicus, Kepler, and Aristarchus. All three craters are named after astronomers who advocated for the sun-centered universe. Father Giovanni Battista Riccioli, who was not a fan of the heliocentric theory, named the Maria surrounding these craters with names implying less than ideal weather. Therefore Copernicus, Kepler, and Aristarchus are located in the Ocean of Storms and the Sea of Rains.

Speaking of craters, Galileo is responsible for giving these depressions this name. Since they had a cup-shaped appearance, he named them after the Greek term for the cup or vessel used to mix wine and water. This also explains the name given to the constellation of Crater, which is depicted as a fancy cup on star maps. It wasn't until the 1960s that astronomers and geologists finally settled on an explanation for the formation of craters. Since the impact of large craters was not observed during human history, many astronomers and geologists initially thought lunar volcanic activity was the cause of moon craters. Instrumental in the modern understanding of crater formation was geologist Eugene Shoemaker.

April 5th is the 40th anniversary of the launch of Pioneer 11. This spacecraft is a 569 pound robotic explorer of the outer solar system. Initially Pioneer 11 was only targeted to fly pass Jupiter. However, after the successful encounter by its predecessor, Pioneer 10, Pioneer 11 was targeted for Saturn after its Jupiter encounter. During its flyby of Saturn in 1979, the spacecraft narrowly avoided a collision with the moon Epimetheus, an unknown satellite back in 1979. Because of Jupiter's distance from the sun, Pioneer 11 relied on nuclear power rather than solar cells. The power came from the nuclear decay of plutonium and initially produced 155 watts of power. That's enough power to light two 600 watt light bulbs (plus some change). Since launch, too much plutonium has decayed and Pioneer 11 can no longer function. The last time NASA heard from this spacecraft was in 1995. Today this dead spacecraft is 8 billion miles from the sun, far beyond the orbit of Pluto.

### April 8 – 14

The moon is new on the 10th. If you are looking for dark skies to enjoy the many galaxies overhead during April nights, now is the time to do so.

On April 12, 1961, Yuri Gagarin became the first person to orbit Earth. In recognition of this historic event, every April 12th is called Yuri's Night. The day is billed as a world space party. Check out the website http://yurisnight.net to see if there's an event near you.

Let the moon guide you to Jupiter. On the evening of the 14th, Jupiter appears as a bright star just west of the four-day old moon. The crescent moon and Jupiter are close enough together that you will be able to observe see them together in your binoculars. Once you find Jupiter, steady your binoculars on a tree or car. Then you'll see next to Jupiter a line of three fainter stars. These are the planet's four largest satellites (in a small telescope you can see all four, but probably not in binoculars). The most distant and therefore easiest satellite to see satellite is Callisto. Next in line and closer to Jupiter is Ganymede, the largest satellite in the solar system. Closer still to Jupiter is Europa and Io, with Io being slightly closer than Europa.

**April 15 – 21**

The week of April 15th to 21st is Astronomy Week. If you have a telescope, please share a view of the heavens with your friends and neighbors. There's additional information at http://www.astroleague.org/al/astroday/astroday.html.
The moon is at first quarter on the 18th. This would be the perfect astronomical object to share with your neighbors, if you have a telescope.

**April 22 – 31**

The Lyrid meteor shower peaks on the night of the 21st and 22nd. Since it's been over three months since our last good meteor shower, the Lyrids make a great break from the drought, even though it's not a particularly strong shower.

The radiant of the Lyrids appears beneath the bright star Vega, which rises by 8:00 PM. However, the moon is a waxing gibbous that night and won't set until after 4:00 AM. Therefore, your best view will occur very early on the morning of the 22nd. A day or two earlier should still present a decent number of meteors and the moon will set earlier to boot. You can expect to see around 10 swift meteors per hour from this shower, if you observe from a location with dark skies.

Spica, the brightest star in Virgo, is two degrees above the moon on the evening of the 24th. For a sense of perspective, two degrees is approximately the width your thumb spans when you fully extend your arm. Two degrees is also four times the moon's apparent width in the sky. Therefore, Spica will appear so close to the moon that you can see both together in your binoculars.

The moon is full on the 25th. The full moon in April is often called the Egg Moon. Tonight you'll notice that the moon's light renders the fainter stars invisible. In hazy or humid air, the full moon's light can turn the night sky a shade of light blue.

Although the full moon appears bright, it only reflects 12% of the sunlight shining on it. The moon's lava seas consist of basalt, a very black colored rock. The moon's brighter highlands consist of feldspars which are more reflective to sunlight. However, they can't make up for the less reflective basaltic lunar seas. Astronomers use the term Albedo to describe the reflectivity of astronomical objects. The moon's Albedo is equal to that of old asphalt (fresh asphalt appears even darker). Earth's Albedo on the other hand is 0.37, which means our planet reflects 37% of the sunlight shining on it. That's an average Albedo of course; cloud cover is even reflective when seen from space.

Look for Saturn right above the full moon on the 25th. Saturn appears as a pale yellow-white star. Unlike most stars however, Saturn will not twinkle. You need a telescope in order to see the planet's rings; binoculars are not powerful enough. Saturn and the moon rise by 9 PM. Three nights later Saturn reaches opposition. On the 28th, Saturn is located directly opposite the sun in Earth's sky. This puts Saturn at its closest to Earth. At its distance of 860 million miles, the light you see from Saturn spent an hour and 17 minutes traversing the vacuum of outer space to reach your eye. A car driving at 70 miles per hour would need 1,400 years to reach Saturn at opposition. Carry extra gasoline.

This month's column is a compilation of other peoples' notes. I would like to acknowledge the following sources this month.

A dictionary of modern star names, Sky and Telescope
How the Lunar Craters Got Their Names,
http://moonphases.info/how-the-lunar-craters-got-their-names.html
Lunar Craters, http://en.wikipedia.org/wiki/Lunar_craters
Lyrids, http://meteorshowersonline.com/lyrids.html
Observer's Handbook 2013, The Royal Astronomical Society of Canada
Pioneer 11, http://en.wikipedia.org/wiki/Pioneer_11
Space Calendar, http://www.jpl.nasa.gov/calendar/

Dark Skies and Bright Stars,
Your Interstellar Guide

Image: Idaho Skies; the Full Moon rises above the Snake River Canyon – Twin Falls, Idaho, USA
Pillar Falls (foreground) and Shoshone Falls (back) © 2012 by Gary Leavitt, MVAS.

## Your Daily Dose of Astonishment By Diane K. Fisher

As a person vitally interested in astronomy, you probably have the Astronomy Picture of the Day website at apod.nasa.gov set as favorite link. APOD has been around since practically the beginning of the web. The first APOD appeared unannounced on June 16, 1995. It got 15 hits. The next picture appeared June 20, 1995, and the site has not taken a day off since. Now daily traffic is more like one million hits.

Obviously, someone is responsible for picking, posting, and writing the detailed descriptions for these images. Is it a whole team of people? No. Surprisingly, it is only two men, the same ones who started it and have been doing it ever since. Robert Nemiroff and Jerry Bonnell shared an office at NASA's Goddard Space Flight Center in the early-90s, when the term "World Wide Web" was unknown, but a software program called Mosaic could connect to and display specially coded content on other computers. The office mates thought "we should do something with this."

Thus was conceived the Astronomy Picture of the Day. Now, in addition to the wildly popular English version, over 25 mirror websites in other languages are maintained independently by volunteers. (See http://apod.nasa.gov/apod/lib/about_apod.html for links). An archive of every APOD ever published is at http://apod.nasa.gov/apod/archivepix.html. Dr. Nemiroff also maintains a discussion website at http://asterisk.apod.com/. But how does it get done? Do these guys even have day jobs?

Dr. Nemiroff has since moved to Michigan Technological University in Houghton, Michigan, where he is professor of astrophysics, both teaching and doing research. Dr. Bonnell is still with NASA, an astrophysicist with the Compton Gamma Ray Observatory Science Support Center at Goddard. APOD is only a very small part of their responsibilities. They do not collaborate, but rather divide up the calendar, and each picks the image, writes the description, and includes the links for the days on his own list. The files are queued up for posting by a "robot" each day. They use the same tools they used at the beginning: Raw HTML code written using the vi text editor in Linux. This simple format has now become such a part of the brand that they would upset all the people and websites and mobile apps that link to their feed if they were to change anything at this point.

Where do they find the images? Candidates are volunteered from large and small observatories, space telescopes (like the Hubble and Spitzer), and independent astronomers and Astro-photographers. The good doctors receive ten images for every one they publish on APOD. But, as Dr. Nemiroff emphasizes, being picked or not picked is no reflection on the value of the image. Some of the selections are picked for their quirkiness. Some are videos instead of images. Some have nothing to do with astronomy at all, like the astonishing August 21, 2012, video of a replicating DNA molecule.
Among the many mobile apps taking advantage of the APOD feed is Space Place Prime, a NASA magazine that updates daily with the best of NASA. It's available free (in iOS only at this time) at the Apple Store.

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

Caption: The January 20, 2013, Astronomy Picture of the Day is one that might fall into the "quirky" category. The object was found at the bottom of the sea aboard a Greek ship that sank in 80 BCE. It is an Antikythera mechanism, a mechanical computer of an accuracy thought impossible for that era. Its wheels and gears create a portable orrery of the sky that predicts star and planet locations as well as lunar and solar eclipses.

## Centennial Observatory and Faulkner Planetarium Events

| Event | Place | Date | Time | Admission |
|---|---|---|---|---|
| International Astronomy Day solar viewing | Centennial Observatory | Saturday, April 20th, 2013 | 10:00 AM to 5:00 PM | FREE |
| International Astronomy Day nighttime telescope viewing | Centennial Observatory | Saturday, April 20th, 2013 | 8:45 PM to midnight | FREE |

Faulkner Planetarium Schedule
Beginning April 2nd, 2013

| Day | Time | Show |
|---|---|---|
| Tuesday | 7:00 | The Planets |
| Friday | 7:00 | The Planets |
| | 8:15 | Lynyrd Skynyrd: Fly On Free Bird |
| Saturday | 2:00 | Lifestyles of the Stars/Live Sky Tour |
| | 4:00 | Blown Away: The Wild World of Weather |
| | 7:00 | The Planets |
| | 8:15 | Altrageous Rock! |

## Bruneau Dunes Observatory

You're invited to star gaze at the Bruneau Dunes Observatory. Beginning Friday, April 5th, the observatory will once again open to the public for the season. Visit http://parksandrecreation.idaho.gov/parks/bruneau-dunes for more information and current schedule of events.

## Deep Sky Highlight

With the passing of the March equinox comes the best time of the year for observing galaxies. On spring evenings, if the skies are clear, we can look beyond the veil of stars in our own Galaxy, the Milky Way. As we peer out into deep space we see countless other galaxies, most of them in the direction of the constellations Virgo and Coma Berenices. This month we are in fact looking at a genuine grouping - the famous Virgo-Coma Cluster of Galaxies, a huge aggregation of systems at a mean distance of around 60 million light-years. The cluster straddles the boundary between Coma Berenices and Virgo, with the weight in the Bowl of Virgo (outlined by Epsilon, Delta, Gamma, Eta and Beta Virginis, and Denebola or Beta Leonis). The Virgo-Coma Cluster is probably the most thoroughly studied cluster of galaxies by virtue of being nearest to our own Galaxy. Observations of it have had an important role in the study of several astrophysical problems. The cluster covers about 10° in the sky (twenty times the diameter of the Full Moon), which implies that its physical diameter is some 10 million light-years.

The central region of the Virgo-Coma Cluster, the closest and best-studied cluster of galaxies.
Credit: Rogelio Bernal Andreo (DeepSkyColors.com)

## Membership Information

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 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.

M-51 viewed in this newsletter was imaged with the Shotwell Camera and the Herrett Telescope at the Centennial Observatory by club members Rick Widmer & Ken Thomason. Unless otherwise stated all photos appear in the public domain and are courtesy of NASA.

Magic Valley Astronomical Society
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"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.

### 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: Contact, the current board for information.

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