CACHE VALLEY ASTRONOMICAL SOCIETY

Cache Valley Clear Skies

The Journal of the Cache Valley Astronomical Society

CVAS Executive Committee

Pres – Dell Vance - (435) 938-8328
avteam.dell@gmail.com

Vice Pres- Layne Pedersen – (801) 463-1701
laynepedersen@gmail.com

Treasurer- Brad Kropp - (435) 755-0877

Secretary – Dale Hooper - (435) 563-0608
dchooper5@gmail.com

Loaner Scope Coordinator/NSN Coordinator –
Garrett Smith – GarrettGillSmith@gmail.com

Past President, Webmaster, Librarian –
Tom Westre – (435) 787-6380 twestre45@aol.com

Public Relations – Lyle Johnson -
lyledj@aol.com

Vol. 5 Number 8 April 2018 www.cvas-utahskies.org

Meeting Announcement

Our April meeting will be held on the **fourth Wednesday, April 28, 2018 at 7pm in room 840 of the main BATC campus.** We have room 840 for the rest of this year. Enter on the east side of the building located at 1301 North 600 West.

Our featured speaker this month is club member Dale Hooper. He will be sharing with us a presentation about Uranus and Neptune – The Ice Giants.

Astro-Imaging Special Interest Group

The Astro-Imaging SIG meet this month at Jeff Clayton's home, 177 E. Hyrum Blvd, Hyrum, UT at 7pm on April 12th. Please contact Tom at 435-787-6380 for more information.

The President's Corner
By Dell Vance, CVAS President

March came and went. It was a good month and the weather is getting warmer. It gets you into the mood to get out and observe the stars. There have been a few nights, late in March, that were great to do just that. Unfortunately, I missed all of them for one

reason or another. I am getting excited to build an observatory that I can keep my telescope set up in, so the observing opportunities are a little more convenient. I know your saying to yourself, "He has a 6" SCT, what is he talking about?" It is not so much the moving the telescope to the site, as it is the setting everything up and getting the alignment. It usually takes about 15 to 20 minutes. That is not bad this time of the year, but in the colder weather, that is about half the time that I can stand the cold. (Actually, I just want to be like the cool astronomers in our club that have their own observatory.)

We did have a great month for the club. The CVAS Meeting in March was on the King of the Planets, Jupiter. Garrett Smith, CVAS Loaner Telescope Coordinator and Night Sky Network Representative,

made the presentation and did a great job of getting the entire audience involved. I especially liked the "Magic School Bus". The information was concise and had a good pace to it. He also helped us get an idea of the distance between the various planets in our Solar System. Over all it was very well done. Thanks again Garrett!

This month we have another great meeting planned. Dale Hooper, CVAS Secretary & Newsletter Editor, will present information on the gas giants, Uranus and Neptune. They are beautiful planets to catch in your telescopes. We even have some club members that have taken photos of them. They are tough to capture. It should be a great event for you and your families. Be sure to invite your friends.
We have the best season to get out and see the skies. The weather is warmer, the skies get dark at a reasonable time, and we live in the greatest valley. What more could you ask for? So lets get out and have a celestial experience.

Thanks again for your support.

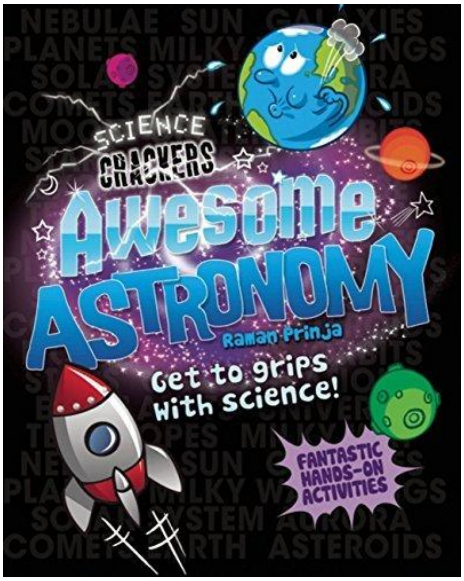
Clear skies!

Kidstronomy Corner

by Bonnie Schenk-Darrington

In this column, I would like to review astronomy books, games, and toys for kids. If you like it, tell Dale, and I will write more.

To get started, I went to the kids' section of my local library and chose about eight children's astronomy books. The idea was that I would look at them all in more detail at home, and choose the best two to review. When I got them home, my 8-year-old son rifled the library bag to see what I'd brought. "Mom," he asked, "why did you get so many space books?" I explained what I was up to and told him he could read anything that looked interesting to him. He almost immediately settled upon . . .



Prinja, Raman. 2011. *Awesome Astronomy* (Science Crackers series). Irvine, CA: QEB Publishing.
Ages 8 – 12
$9.26 on Amazon.com
https://www.amazon.com/Awesome-Astronomy-Fantastic-Hands-Activities/dp/1682970248/ref=sr_1_1?ie=UTF8&qid=1522473056&sr=8-1&keywords=astronomy+science+crackers


(3 1/2 out of 5 planets)

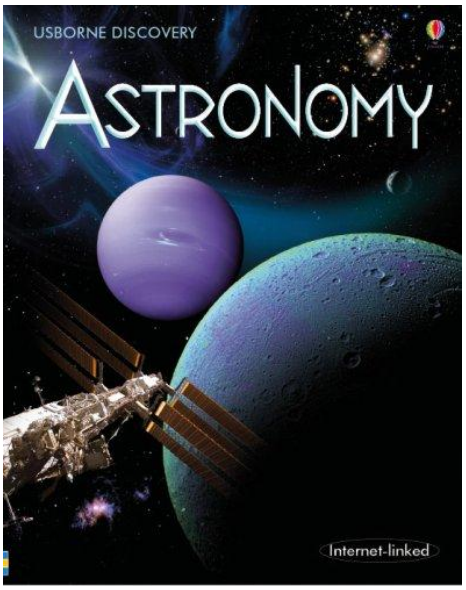
Within 5 minutes, he was helping himself to the card stock and paper plates, getting out the markers, and starting on a project. I asked what he was doing, and he showed me that the book explained how to make a solar system mobile. Over the next couple of days, I was not able to pry the book from his chubby little hands! By the time I got it back, I was dying with curiosity at what made it so gripping.

The book's presentation is engaging, if a little cluttered, combining real-life photos with colorful cartoons and short, readable blurbs of text. Each chapter consists of a 2-page spread on subjects like "What Is Astronomy?"; "Full Moon to No Moon"; and "A Zoo of Stars." Subheadings include things kids might wonder about, like, "What's up with Pluto?"; "What's in a name?" (about how moon craters are named); and "Goldilocks Planets." Craft projects are sprinkled throughout the book, showing how to make a flip book showing moon phases, or a cool paper comet, among other things. The

photographs are excellent, and the cartoon illustrations are funny and eye-catching. There are both a glossary and and an index. The book is very readable and would probably engage kids who aren't terribly interested in astronomy, like my son. The age range on Amazon says ages 8-12 years, but my son had no trouble with the book at all, and he is in one of the middle reading groups at school. I don't think he read the book word for word, but it's easy to pick and choose your favorite subjects in the book.

That said, I felt the the material was presented in a scattered and sensational way. The book's text consists more of interesting tidbits rather than any coherent presentation for someone who really wants to learn more about astronomy. So, in an astronomy banquet, this book would be more of an appetizer than anything else.

I give this book 3 1/2 out of 5 planets, but when I asked Dane to rate it, he gave it 5.



Firth, Rachel. 2008. *Astronomy* (Usborne Discovery series.) London: Usborne.
Ages 9+
$10.45 on Amazon.com
https://www.amazon.com/Astronomy-Stuart-Atkinson-Woodcock-Rachel/dp/0746099088/ref=tmm_hrd_swatch_0?_encoding=UTF8&qid=1522473324&sr=1-4-catcorr

4 1/2 out of 5 planets

I chose this book because I felt it made an interesting contrast with *Awesome Astronomy*. This is a book for a kid who is more interested in the nuts and bolts of how astronomical discoveries are made, and not just in consuming cool factoids.

It was first published in Britain, so all measurements are given in the metric system first; that's not necessarily a minus because the metric system is used by all scientists worldwide. It's not a bad thing to expect kids to come to grips with it.

Astronomy is a great book for explaining difficult concepts. Please keep in mind that I am a massive newbie to astronomy, but this book taught me all sorts of things I've often wondered about. I've been trying to wrap my mind around why we only ever see one side of the moon from earth for some time now, and this book's explanation (p. 17) has brought me to about a 95 percent understanding of that phenomenon. Other concepts this book explains succinctly and excellently include the following: how to use binoculars and telescopes to view the night sky, and how they work (pp. 8 – 11); a diagram showing how constellations look 2-dimensional from the earth, though the stars might actually be really far apart from each other in 3 dimensions (p. 24); the retrograde motion of planets (p. 35); and why Uranus is tilted so far on its axis (p. 40). There are also 8 pages of basic star maps for both the northern and southern hemispheres. This got me excited, and made me want to go to the southern hemisphere to look at the stars there.

The book ranges far and wide in topic. Besides the subjects I've mentioned above, types of stars, galaxies, comets, asteroids, nebulae, aurorae—all are introduced. The book has both a glossary and an index.

The downside to this book is that it's a little out-of-date. Pluto is still a planet—not a dwarf planet—in this book, though its small size is mentioned (p. 41). If this feels like a mark against the book to you, you might want to find something more recent. I really found this book to be interesting and easy to understand, though—a very good introduction for a child who is interested in optics, space, and physics. The subject matter really covered all the main

subject areas of astronomy. The book says it's for ages 9 and up; I think a 9-year-old who is a good reader could cope well with it, but it might be better suited for a 10- or 11-year-old. My little boy didn't particularly evidence any interest in this book, but it might also have been a little too sophisticated for him. He has been to multiple star parties and enjoyed them, so I hope to make a convert of him yet!

I give it 4 1/2 out of 5 planets.

CVAS Loaner Telescope

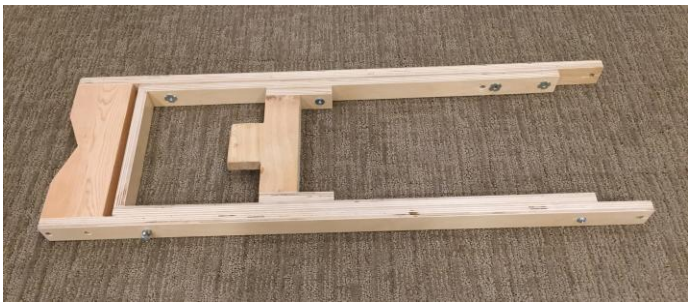
CVAS provides a 10 inch Dobsonian telescope to club members. Contact Garrett Smith to make arrangements to use this telescope. Garrett can be contacted by email at GarrettGillSmith@gmail.com.

Binocular Supports

The club now has available a number of mostly completed binocular supports. These supports are being sold to club members at cost. These supports just need the binocular attachment – which is tailored to the type of binocular being mounted.

Please contact Ned Miller or Dell Vance if you are interested in purchasing a binocular support. The images below show what they look like with binoculars attached as well as an image showing them folded for storage.

Completed Binocular Support (with binos attached) - Courtesy Ned Miller



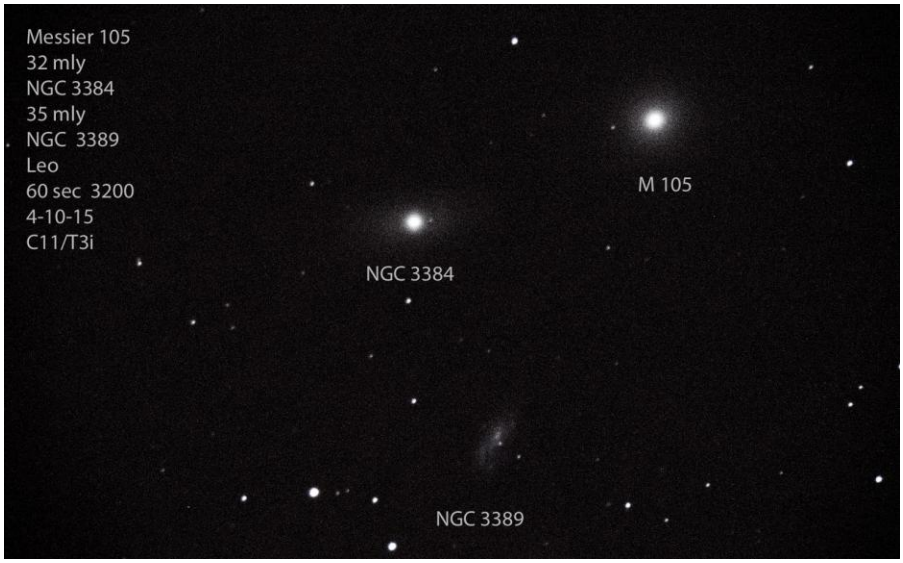
Binocular support (folded for storage) - Courtesy Ned Miller

April Deep Sky Challenge: Messier 105, NGC 3384 & NGC 3389. Leo Galaxy Triplet

By Tom Westre

I am including the Sky Challenge to encourage visual and photographic observing. This month I am including one Messier galaxy (M105) and two nearby NGC galaxies (3384 and 3389). Two of the galaxies are part of the Leo I Galaxy Group while one is lines up by chance with the other two galaxies. If hope this article inspires you to go out and observe these galaxies. Let me know your results. Each time we view these objects our appreciation for the starry heavens increases and our skills improve.

Messier 105 is the dominant member of the Leo I Group and is the closest elliptical galaxy to us. The lenticular galaxy NGC 3384 lies to the left of M 105. It is also a member of the Leo I Group along with two other notable members, M 95 and M 96 (not shown). The spiral galaxy at the bottom center is NGC 3389 and is twice as far away and is not a member of the group. In this photo north is to the top.



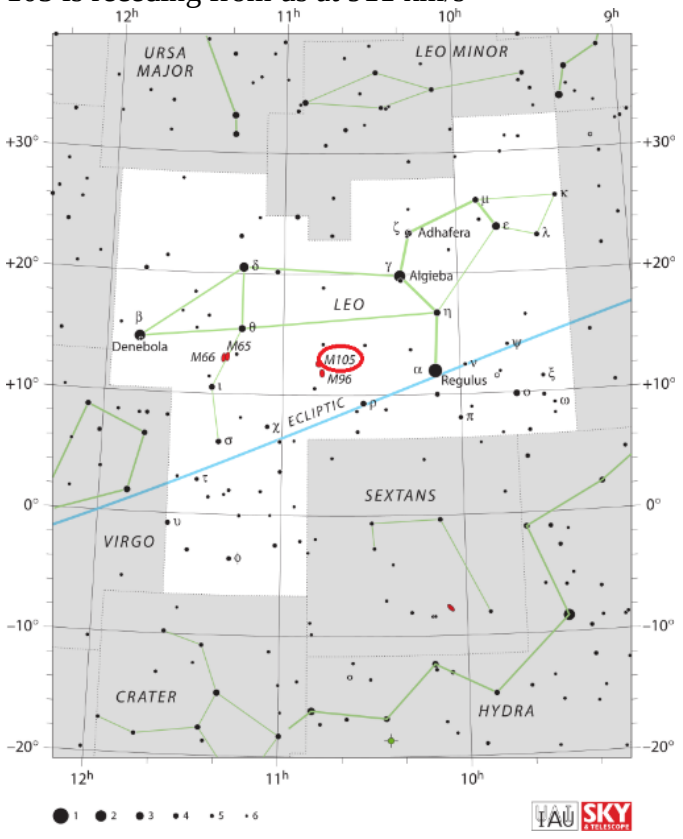
Two fairly bright galaxies can be seen in the area near M 105.

NGC 3384. Magnitude 10.9 is a barred lenticular galaxy. Distance 35 million light years.

NGC 3389 is a magnitude 12.4 spiral galaxy. A 10 inch telescope may be needed to see.

Messier 105 was discovered by Charles Messier's colleague Pierre Mechain on March 24, 1781 a few days after he found nearby galaxies M95 and M96. M 105 was not included in the original Messier Catalog but was added in 1947 with M106 and M107.

Messier 105 (NGC 3379). Distance 32 million light years. Magnitude 10.2 Diameter 54,000 light years Contains 40 billion stars.
Difficult in binoculars, easier to find in telescopes at least 3 inch, an 8 inch reveals a larger object.
Messier 105 can be located along a line from Regulus in Leo to Denebola 24 degrees to the east and a little north of Regulus. Near M95and M96. M 105 is receding from us at 911 km/s



IAU and Sky & Tel – Roger Sinnott & Rick Fienberg

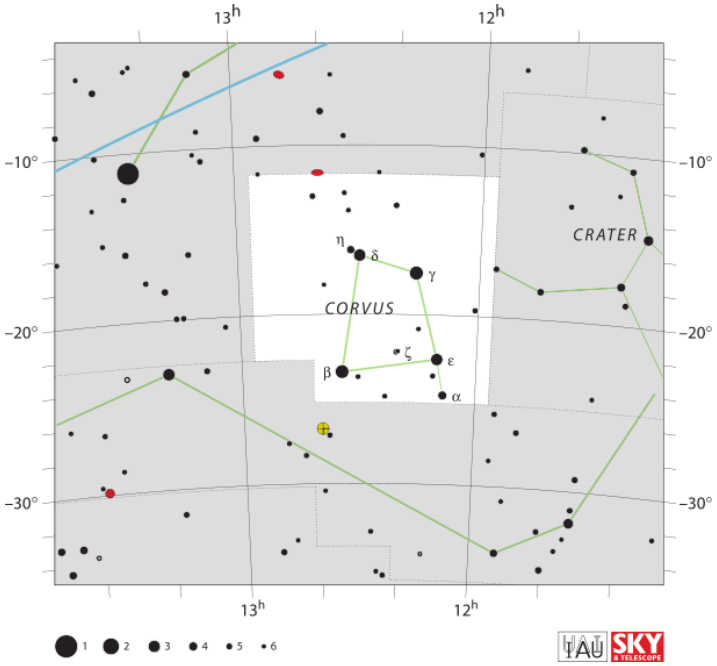
I imaged this trio with a Celestron 11 inch SCT with a f6.3 focal reducer, on a Celestron CGEM mount. The image was taken with a Canon T3i DSLR. Single exposure of 60 seconds ISO 3200. Imaged April 10, 2015. The image was taken at my home in Nibley, Utah.

Spotlight on Corvus, the Crow

By Dale Hooper

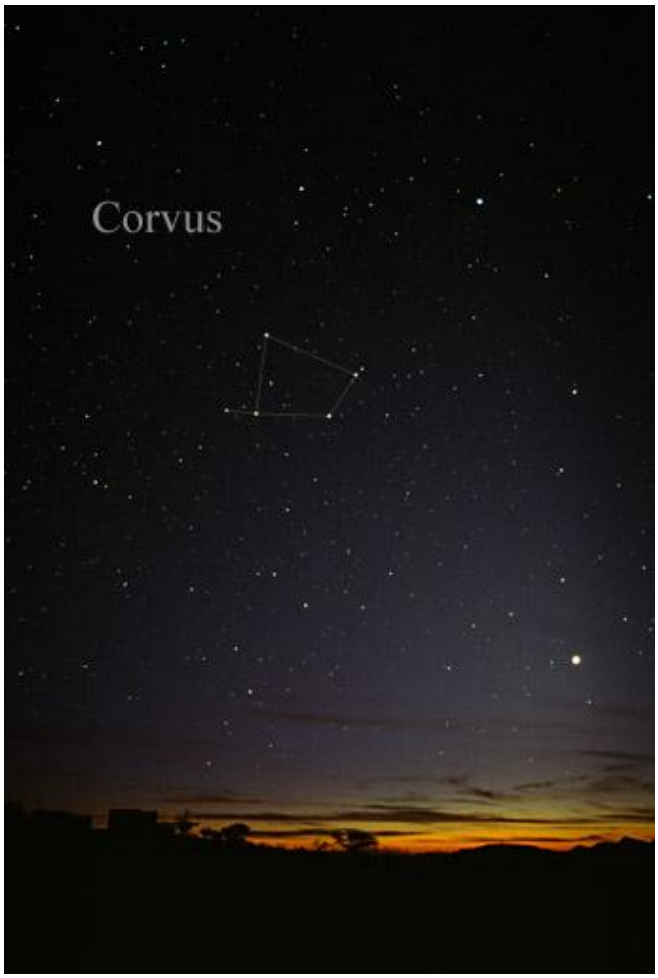
Okay, I confess. If someone had asked me before I was writing about this where the constellation Corvus was – I wouldn't have been able to tell them. But, now noting that it is positioned just below Virgo should give you a hint of what kind of quarry we can find in this constellation. That's it – galaxies. Corvus has a fair number of reasonably bright galaxies. One pair in particular (NGC 4038 and NGC 4039) are a pair of interacting galaxies with a rather interesting shape. Together they have the nickname of the Ring Tail galaxy.

Corvus also contains a goodly number of nice double stars and a Mira variable (R Corvi) which ranges from magnitude 6.7 to 14.4. At maximum it is orange-red in color. Objects which rank at least three stars in *The Night Sky Observer's Guide* (Corvus is in Volume 2) have been included. As usual, the table is organized according to increasing Right Ascension values.



IAU and Sky& Tel - Roger Sinnott & Rick Fienberg

Object	R.A.	Dec.
NGC 4024 (Galaxy mag 11.9)	11h58.5m	-18°21’
NGC 4027 (Galaxy mag 11.2)	11h59.5m	-19°16’
NGC 4033 (Galaxy mag 11.8)	12h00.6m	-17°51’
NGC 4038, 4039 (Interacting galaxies mag 10.5, 10.3)	12h01.9m 12h01.9m	-18°52’ -18°53’
NGC 4050 (Galaxy mag 12.2)	12h02.9m	-16°22’
NGC 4094 (Galaxy mag 11.8)	12h05.9m	-14°32’
β920 (Double star)	12h15.8m	-23°21’
R Corvi (Var. star, m6.7-14.4)	12h19.6m	-19°35’
NGC 4361 (P. Neb mag 10.9)	12h24.5m	-18°48’
NGC 4462 (Galaxy mag 11.9)	12h29.3m	-23°10’
7 Corvi (Double star)	12h29.9m	-16°31’
β28 (Double star)	12h30.1m	-13°24’
Σ1669 (Double star)	12h41.3m	-13°01’
NGC 4782, 4783 (Interacting galaxies mag 11.7, 11.5)	12h54.6m 12h54.6m	-12°34’ -12°33’
NGC 4802 (Galaxy mag 11.8)	12h55.8m	-12°03’



The constellation Corvus as it can be seen with the unaided eye. © T. Credner & S. Kohle, AlltheSky.com - used with permission

CVAS Minutes – March 2018

The March CVAS meeting was held on March 28th at BATC. There were approximately forty-five people in attendance. Dell announced that our April meeting would be held on April 25th and the topic would be Uranus and Neptune given by Dale Hooper. The Astro-Imaging SIG will meet on April 12th at Jeff Clayton’s home. The East Canyon Park is working on becoming a dark sky site and will hold a Blue Moon Star Party on March 31st. The Utah Mars Society will meet at Westminster College on April 14th at 2:15pm.

Dale talked about what to observe in the month of April.

The remainder of the time was turned over to Garrett Smith for our featured presentation on Jupiter – The King of the Planets.

Garrett started by having everyone create a fascinating scale model of the solar system by making a number of folds in a long paper. He then proceeded to cover the following ten topics about Jupiter:

1. Jupiter is the heavy weight champion of the planets. It is more massive than all the others combined.
2. It is a massive world made of light elements.
3. Discovery/Name – There is no known discoverer of Jupiter. It is named after the Roman god (Jupiter was the son of Saturn).
4. Short Day/Long Year – Measuring from the location where the pressure is 1 bar is considered the "surface". There gravity is 2.5 times that of the Earth. It rotates in about ten hours and there are twelve Earth years in one Jovian year.
5. Sooo many visitors – There have been nine probe visitors, some for a gravity assist and two orbiters – Galileo and Juno.
6. Juno Mission –
    a. The magnetic field is twice as strong as expected.
    b. Jupiter has a partially dissolved core. It is neither solid nor non-existant.
    c. Belts and zones exist 1860 miles below the "surface".
    d. Has studied the polar storms.
7. Entourage – Jupiter officially has 53 moons and unofficially has 69 moons. Wow!
8. Belts & Zones – The zones are the bright areas and the belts are the dark areas. Each is associated with convection currents. The cool dark areas are going down and the bright areas are warm and are rising.
9. Storms – One giant ongoing storm is the Great Red Spot. It was officially confirmed in 1830. It is currently shrinking but is still the size of two to three Earths.
10. Very photogenic – April 16th through June 4th will be excellent times to observe Jupiter this year. Opposition (when it is opposite from the Sun occurs on May 8th.

Garrett also explained that Juno will be de-orbited into Jupiter at the end of its mission to avoid contaminating any of Jupiter's moons.

Upcoming Star Parties

There are currently no CVAS star parties planned for April 2018.

April 2018 Skies

by Tom Westre

As the weather improves April is a great month to explore the starry skies.

Two international astronomy events are taking place in April. April **is Global Astronomy Month**. Invite your family, friends and neighbors over to share your passion for astronomy. April 15th through April 21st is **the International Dark Sky Week**. We recognize this event by keeping your outdoor lights turned off after sunset to reduce light pollution. This is a chance to appreciate our wonderful night sky without the effects of light pollution.

April 2 – Morning Mars and Saturn conjunction. Mars is about 1 degree below Saturn and can be seen in the same field of view of binoculars or telescope at low magnification. They are located just above the tea-pot shaped constellation of Sagittarius.

April 3 – The waning gibbous moon rises before 11pm local time and is 4 degrees to the upper right of Jupiter in Libra. They are visible all night.

April 8 -- Last Quarter Moon

April 11/12 – Virginid Meteor shower. Generally a weak shower but can produce about 5 meteors per hour.

April 14 -- In the pre-dawn sky the old crescent moon is about 4 degrees to the lower right of Mercury. The morning ecliptic is very shallow and observing will be difficult.

April 15 – About 90 minutes before sunset low in the western sky a young crescent moon is seen six degrees to the lower left of Venus. Both objects can be seen in binoculars. A great photo op.

April 17 – Venus is seen in the western sky in the evening and about 5 degrees north of the moon.

April 18 -- The crescent moon is seen in the evening

western sky as it passes through Taurus. The moon will enter the V-shaped large open star cluster known as the Hyades about 8:30 pm local time.

April 22 -- The Lyrid meteor shower reaches its peak in the pre-dawn skies. The meteors come from comet C/1861 G1 (Thatcher). The shower runs from April 16 to April 25. The shower can produce up to 20 meteors per hour. The first quarter moon sets before midnight and will not interfere with the show.

April 22 -- First Quarter Moon 3: 46 p.m.

April 23 -- The waxing gibbous moon will pass below the large open cluster known as the Beehive, Praesepe, in Cancer and Messier 44. This event will take place between late evening on the 23rd and 2:30 am local time Monday. The moon passes less than 2 degrees below the cluster before it sets in the northwestern sky about 2:35 am.

April 24 – After sunset look for the bright star Regulus about 3 degrees to the right of the waxing gibbous moon.

April 25 – **CVAS Monthly Meeting, 7pm BATC room 840**

April 26 – Mars passes only 1.4 degrees below Pluto in Sagittarius.

April 29 – Mercury reaches its widest separation west of the Sun. The ecliptic is very shallow and will make observing the planet difficult.

April 29 -- Full Moon – Pink Moon -- 6:58 pm MDT. Also known as the Sprouting Grass Moon, Egg Moon, or Fish Moon. Located in Virgo.

April 30 -- Look to the west in morning to view the Full Moon and Jupiter separated by only 6 degrees as they set in the west. They will be together all night long.

Planets

Mercury: Reaches inferior conjunction with the Sun and is seen in the predawn skies all month but remains very low in the sky and hard to observe.

Venus: Easily seen in the evening sky in Aries.

Mars: Located in Sagittarius brightens from magnitude +0.3 to -0.4 at the end of the month. As the month progresses Mars rises earlier.

Jupiter: Rises about 10 pm early in the month, dominates the sky evening sky in Libra after Venus has set. Jupiter sets earlier as the month progresses until it disappears after sunset at the end of the month. Look for Jupiter to make an interesting triangle with the stars Zubenelgenubi and Zubeneschamali in Libra. Jupiter will outshine both stars.

Saturn: It rises about 2 a.m. Both Saturn and Mars are close to each other in Sagittarius.

Uranus: Located in Pisces. Reaches conjunction with the Sun on April 18th and is not well placed to observe this month.

Neptune: Located in Aquarius and like Uranus not well placed to observe.

Prominent Constellations for April.

Hyrdra, Leo, Virgo, Bootes, Ursa Major, Corvus.

Messier objects for April:

Auriga: M36, M37, M38
Canes Venatici: M51, M63, M3, M94, M98, M106
Coma Berenices: M53, M64, M85, M91, M99, M100
Hydra: M48, M83, M68
Leo: M65, M66, M95 M96, M105
Ursa Major: M 81, M82, MM97, M108, M109
Virgo: M59, M60, M61, M86, M87, M89, M90, M104

Double Stars

Const	Name	Mag	Sep	RA	Dec
Ursa Major	23	3.7, 8.9	22.7”	09h31.5’	+63°04’
Leo	81	5.6, 9.2	55.7”	11h25.6’	+14°22’
Leo	41 Gamma	2.2, 3.5	4.4”	10h20.0’	+19°51’
Leo	90	6.0, 7.3, 8.7	AB 3.3”, AC 63.1”	11h34.7’	+16°48’
Leo	54	4.5, 6.3	6.5”	10h55.6’	+24°45’

Hydra	N	5.8, 5.9	9.2”	11h32.3’	-29°16’
Comae Berenices	24	5.2, 6.7	20.3”	12h35.1’	+18°23’
Bootes	Kappa	4.5, 6.6	13.4”	14h13.5’	+51°47’
Bootes	Iota	4.9, 7.5	38”	14h16.2’	+51°22”
Bootes	Xi	4.7, 7.0	6.9”	14h51.4’	+19°23’
Bootes	Delta	3.5, 8.7	105”	15h15.5’	+33°19’

CACHE VALLEY ASTRONOMICAL SOCIETY
MEMBERSHIP APPLICATION FORM

Member # _____

NAME:_____ _____ _____
First Middle Initial Last

Address:_____ _____ _____ _____
Street City State Zip Code

Home Phone: _____ **Cell Phone:**_____

Work Phone : _____ **Occupation** :_____

Email Address: _____

How did you learn about CVAS?

_____Website ____Star Party ____CVAS Member ____Other _____

Membership: $20 a year

Tell us about yourself: Do you have a special interest in astronomy? Do you have special skills? Are you willing to volunteer on CVAS projects or attend public outreach star parties? Astro equipment owned.

_____

_____

By signing this application, I acknowledge I have access to the CVAS website, cvas-utahskies.org , and the CVAS Constitution. I agree to abide by the constitution.

Signature: _____ Date:_____

Bring this form to the meeting or Mail Application to:

Brad Kropp, CVAS Treasurer
1573 E 1425 N
Logan, UT 84341

For any questions contact our Treasurer at brad.kropp@usu.edu or our Secretary Dale Hooper at dchooper5@gmail.com