



Cache Valley Clear Skies

The Journal of the Cache Valley Astronomical Society



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www.cvas-utahskies.org

Meeting Announcement

Our October meeting will be held **Wednesday, December 12 at 7 pm in Room 824 of the main BTC Campus.** Enter on the east side of the building located at 1301 North 600 West. Our speaker will be James Coburn the Physics Lab Supervisor at USU. He will be doing a presentation on comets.

Special Announcements

We Need Your Questions!!

Do you have questions about telescopes, mounts or eyepieces? We are having a panel discussion in January covering those topics. You can send us your questions now, and give our experts time to prepare an answer, or come with your questions then.

Finally, A Month with No Star Parties

There are currently no star parties scheduled for the month of December.

The President's Corner By Dell Vance, CVAS President



President's Corner By Dell Vance

November was a good month for CVAS. We had a couple of “Cool” Star Parties for elementary students and their families. I don’t think any of our Star Parties for schools were cancelled due to weather this year. That is fantastic considering most of them had cloudy skies or bad weather forecasted prior to the events. We also had great support from our members at these events. The word of mouth is

working well to help us in our outreach efforts. Schools are passing around to other schools, our willingness to help them in the area of astronomy.

Another great event in November is that we have had success in placing a couple of Library Telescopes. We met with Emily Coltrin, Director of the Hyrum Library, and have arranged to set up a telescope for their library on December 3, 2018. We have also contacted the Smithfield Library and have a meeting scheduled for December 6th to discuss the program with them as well. We are now starting to reach out to other companies to donate telescopes to the other libraries in the valley.

Our monthly meeting was November 28th and had an attendance of about 31 people. Dr. Lowell Morris presented information about how ancient Indians used the sun and moon as calendars that helped them in their planting of crops. It was interesting how accurate their calculations were. It was a very informative presentation.

In December, the meeting will be on the 12th and Dr. James Coburn, USU Professor of Physics, will discuss Comets. We are sure this will be a very interesting presentation as we currently have comet 46P make an appearance. Be sure to have your friends and family out to this discussion.

In January we will have a Panel Discussion about telescopes, eyepieces and mounts. This will be your chance to ask questions of the panel about what their experience has been with different equipment. If you would like to give us your question now we can make sure that it is addressed at this meeting.

I had an opportunity last week to use my telescope to do some solar observations. I decided to see if I could find Mars during the daytime. I was very successful. It reminded me that there are always opportunities and resources to enjoy this great hobby of ours. Be sure to try new things.

Thanks again for your great support.
Clear Skies!

Kidstronomy Corner

By Bonnie Schenk-Darrington

Well, my friends, December is here, and we are all trying to come up with some gifts for our kids and grandkids. You all know that books are my favorite gifts, and I've given you lots of suggestions for books over the past months. Rather than write straight-up reviews this month, I thought I would instead focus on some fun possibilities for Christmas gifts for children and teens.

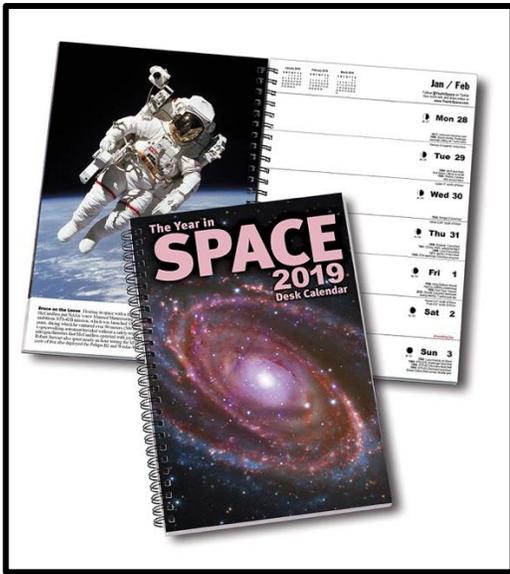
Rotating Star Nightlight



Pictured: Wedna 360 Rotating Galaxy Night Light
[\\$14.99 on Amazon.com](#)

I bought this night light for Alannah last Christmas. I wondered if she would feel it was too young for her (she was 16) but she loved it! She doesn't use it every night because she feels that it's a bit bright and sometimes keeps her awake. Other times, it puts her right to sleep, though. Please note that the stars are not configured in real constellations. They are just random. Still, it's a fun and pretty effect. This nightlight has lasted well for us, but some of the Amazon ratings for it were a bit low. It might be worth your while to check out an alternative or two.

Space Calendar



2019 *The Year in Space* Desk Calendar: [\\$14.95 on Amazon.com](#)

Everyone needs a calendar, and I have to say, I like these so much, I might buy one of these and keep it for myself!

Planetary Jewelry



9-Planet Bracelet: [\\$24.95 on Amazon.com](#)



August • 2019						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29	30	31	1	2	3
4	5 Annular eclipse of Mercury visible from Africa, Europe, Asia, Australia, and the Pacific Oceans	6	7	8	9 Perseid meteor shower	10
11	12 Mars closest to Earth since 1974	13	14	15	16	17
18	19	20	21	22	23	24
25	26 Annular eclipse of Mercury visible from Africa, Europe, Asia, Australia, and the Pacific Oceans	27	28	29	30	31
1	2	3	4	5	July 2019 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	September 2019 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

2019 *Space* Calendar: [\\$9.42 on Amazon.com](#)



Solar Orbit Necklace: [\\$29.99 on Thinkgeek.com](#)

I actually bought the bracelet for Alannah 2 Christmases ago. It comes in 8-inch and 9-inch bracelets. For an older teen, use the 9-inch. It has been good quality and lasted well. The solar necklace is on her wish list this year.

Space Wall Stickers



Pictured: Roommates Wall Decal [\\$9.99 on Amazon.com](#)

There are tons of great space stickers out there, besides these. Both boys and girls enjoy using glow-in-the-dark stars to make their own constellations on their walls and ceilings. These planet, spacecraft, and alien stickers are a ton of fun, too. We have peeled them off the ceiling and repositioned them once, with no ill effects to stickers or ceiling.

Space-Themed Games



Pictured: Copernicus MMY: Moons and Planets Game [\\$17.52 on Amazon.com](#)

The Darrington family likes board games and card games, so Santa frequently leaves us one under the Christmas tree. I reviewed the games *Xtronaut* and *Mad Libs from Outer Space* in the June 2018 issue of *Clear Skies*. Either of those games is a fun one to play with the family. *MMRY* is another good one we've been enjoying. It's just a basic memory game, but all the cards are round and feature supercool photographs of planets and moons that were taken by NASA spacecraft. There's a small guidebook with information about each one. Dane has been playing with this one by himself, with his siblings, and with his stuffed animals for over a month now.

Tickets/Gift Card to Clark Planetarium Shows



<https://slco.org/clark-planetarium/>

Price varies.

I don't make it down to the Clark half as much as I want to. Did you know they have an IMAX theatre, dome theatre, cosmic light shows, and movies? Their offerings are amazingly varied, with a great variety of nonfiction, fiction, and music-laser shows. They have cool exhibits and a gift shop, too. If you feel like your young friend already has a ton of *stuff*, why not go have an amazing experience together instead?

Space/Sci-Fi Movie or Movie Marathon

Price varies.

Santa likes to bring us some DVDs each year, also, because he knows the Darringtons love to break out the popcorn and hot chocolate and have a movie marathon. You could give a DVD to a child or teen with some microwave popcorn and a bow attached. Or, you can plan a Netflix binge for all your favorite little astronomers. Keep the kids' ages in mind and choose appropriate content for their maturity level. Fortunately, there are both serious and goofy space adventures available for every age group. Here are just a few suggestions to get you started:

- *2001: A Space Odyssey*, 1968, G
- *Apollo 13*, 1995, PG
- *Contact*, 1997, PG
- *Ender's Game*, 2013, PG-13
- *E.T., the Extra-terrestrial*, 1982, PG
- *Hidden Figures*, 2016, PG
- *The Martian*, 2015, PG-13
- *Muppets from Space*, 1999, G
- *Planet 51*, 2009, PG
- *The Space Between Us*, 2017, PG-13
- *Titan A.E.*, 2000, PG
- *Treasure Planet*, 2002, PG
- *Star Wars* or *Star Trek* movie marathon—we have done this several Christmas breaks in a row!

Have a great holiday season, everyone!

Spotlight on Triangulum, the Triangle

By Dale Hooper

With most constellations you have to use a bit of imagination to visualize what the constellation represents. Not so with Triangulum, because the name truly stands for what you get. It is a constellation basically formed from three third to fourth magnitude stars which form a triangle. But to be fair it does contain a good number of what excites deep sky aficionados: galaxies.

Triangulum isn't named on our skymap but it is sandwiched between Andromeda, Pisces, Aries and Perseus and it is high in the sky by mid-evening this time of year.

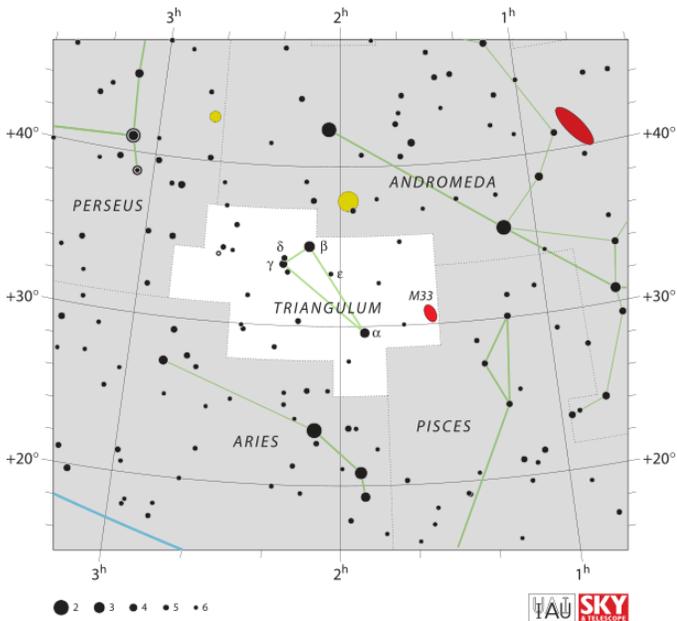
Triangulum is home to the third largest member of the local group of galaxies, M33 or the Pinwheel galaxy. However, it is a face on galaxy which is fairly large and has a rather low surface brightness so averted vision will serve you well when observing it.

In addition to galaxies, Triangulum also has a few decent double stars and a reasonable open cluster.



The constellation Triangulum as it can be seen with the unaided eye.
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Objects which rank at least three stars in *The Night Sky Observer's Guide* (Triangulum is in Volume 1) have been included. However, I also included M33 which only ranks as two stars. As usual, the table is organized according to increasing Right Ascension values.



IAU and Sky & Tel - Roger Sinnott & Rick Fienberg

mag 10.1)		
NGC 949 (Galaxy mag 8.4)	02h30.8m	+37°08'
NGC 959 (Galaxy mag 12.4)	02h32.3m	+35°30'
NGC 978 A-B (Galaxy mag 11.2)	02h34.8m	+32°52'

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.

Object	R.A.	Dec.
Messier 33 (Galaxy mag 5.7)	01h33.9m	+30°39'
NGC 669 (Galaxy mag 12.3)	01h47.2m	+35°33'
NGC 670 (Galaxy mag 12.7)	01h47.4m	+27°53'
NGC 672 (Galaxy mag 10.9)	01h47.9m	+27°26'
Collinder 21 (Open cluster)	01h50.2m	+27°05'
NGC 684 (Galaxy mag 12.3)	01h50.2m	+27°39'
NGC 777 (Galaxy mag 11.4)	02h00.2m	+31°26'
NGC 783 (Galaxy mag 12.1)	02h01.1m	+31°52'
NGC 784 (Galaxy mag 11.7)	02h01.3m	+28°50'
ε Trianguli (Double star)	02h03.0m	+33°17'
ι (Iota) Trianguli (Double star)	02h12.4m	+30°18'
Σ 239 (Double star)	02h17.4m	+28°45'
NGC 890 (Galaxy mag 11.2)	02h22.0m	+33°16'
NGC 925 (Galaxy mag 11.2)	02h27.3m	+33°35'



Historical Highlight

(ed. note – I read an article about the Pulkovo Observatory in the February 1942 Sky & Telescope and thought it was interesting)

The **Pulkovo Astronomical Observatory** is the principal astronomical observatory of the Russian Academy of Sciences, located 19 km south of Saint Petersburg on Pulkovo Heights 75 metres (246 ft) above sea level. It is part of the UNESCO World Heritage Site Historic Centre of Saint Petersburg and Related Groups of Monuments.



The observatory was opened in 1839. Originally, it was a brainchild of the German/Russian astronomer Friedrich Georg Wilhelm von Struve, who would become its first director (in 1861, his son Otto Wilhelm von Struve succeeded him). The architect was Alexander Bryullov. The observatory was equipped with state-of-the-art devices, one of them being the 15-inch (380 mm) aperture refractor, one of the largest refractors in the world at that time. In 1885, the observatory was equipped with 30-inch (760 mm) refractor, which was the biggest usable refractor in the world, until the 36-inch (910 mm) telescope at the Lick Observatory in California a few years later. Both were built by Alvan Clark & Sons in Massachusetts. The principal line of work of the observatory consisted of determination of coordinates of stars and astronomical constants, such as precessions, nutations, aberrations and refractions, and also discovering and measuring double stars. The observatory's activities have also been connected to the geographical study of the territory of Russia and development of navigation. The star catalogues, containing the most precise positions of 374, and then 558 stars, were made for the years 1845, 1865, 1885, 1905 and 1930



Pulkovo Observatory in 1839

By the 50th anniversary of the Observatory, they had built an astrophysical laboratory with a mechanical workshop and installed the Europe's largest refractor, (30 inch). Astrophysical research really gained momentum with the appointment of Feodor Bredikhin as a director of the Observatory in 1890 and transfer of Aristarkh Belopolsky from the Moscow Observatory, an expert in stellar spectroscopy and solar research. In 1923, they installed a big Littrow spectrograph, and in 1940 – a horizontal solar telescope, manufactured at a Leningrad factory. After having received an astrograph in 1894, the observatory began its work on astrophotography. In 1927, the Observatory received a zone astrograph and with its help the Russian astronomers catalogued the stars of the near-polar areas of the sky. Regular observation of movements of celestial poles began with the construction of the zenith telescope in 1904. In 1920, the Observatory started transmitting the exact time by radio signals. The observatory participated in the basic geodesic work, namely in measuring degrees of the arc of the meridian from the Danube to the Arctic Ocean (until 1851), and in triangulation of Spitsbergen in 1899–1901. Military geodesists and hydrographers used to work at the Observatory as interns. The Pulkovo Meridian, which passes through the center of the main building of the Observatory and is located at $30^{\circ}19,6'$ east of Greenwich, was the point of departure for all former geographical maps of Russia.

In order to observe the southern stars that could not be seen on the observatory's latitude, the scientists organized two affiliated observing locations. One of them was an astrophysical station in the Crimean town of Simeiz (Simeiz Observatory), which had been organized on the basis of a private observatory presented to the Pulkovo Observatory by an astronomy lover N. S. Maltsev in 1908. The other was an astrometric station in Nikolaev – a former observatory of the Department of the Navy, (today's Nikolaev Astronomical Observatory).

During the siege of Leningrad (1941–1944), the Observatory became the target of fierce German air raids and artillery bombardment. All of the buildings were completely destroyed. Under dramatic circumstances, the main instruments were saved and stored safely in Leningrad, including the lens of the destroyed 30-inch refractor, and a significant part of the unique library with manuscripts and important works from the 15th to 19th century. On February 5, 1997, nearly 1,500 of the 3,852 books were destroyed by malicious arson and the rest of the library items were damaged by flames, smoke or water.

Even before the end of the war, the Soviet government made a decision to restore the Observatory. In 1946, it began the construction after having cleared the territory. In May 1954, the Observatory was re-opened, not only having been restored but considerably expanded in terms of instruments, employees and research subjects. New departments had been created, such as the Department of Radio Astronomy and Department of Instrument Making (with its own optical and mechanical workshop). The surviving old instruments were repaired, modernized and put into service once again. Also installed were new instruments, such as the 26-inch (660 mm) refractor, a horizontal meridian device, a photographic polar telescope, a big zenith telescope, stellar interferometer, 2 solar telescopes, coronagraph, a big radio telescope and all kinds of labware. The 65 cm Zeiss refractor was originally intended as a gift from then Chancellor of Germany Adolf Hitler to the Italian Benito Mussolini, but it was not delivered and instead was recovered by the Soviet Union.



The 65 cm Zeiss achromatic refractor of Pulkovo Observatory

The Simeiz station became a part of the new Crimean Astrophysical Observatory of the Soviet Academy of Sciences in 1945. They also built the Kislovodsk Mountain Astronomical Station and a laboratory in Blagoveshchensk. The observatory organized many expeditions for determining differences of longitudes, observing passages of Venus and solar eclipses, and studying astroclimate. In 1962, the Observatory sent an expedition to Chile to observe stars in the southern skies.

(From Wikipedia: https://en.wikipedia.org/wiki/Pulkovo_Observatory)

Upcoming Events and Anniversaries

- Dec 01 - 235th Anniversary (1783), 1st Manned Hydrogen Balloon Flight
- Dec 04 - 40th Anniversary (1978), Pioneer Venus 1, Venus Orbit Insertion
- Dec 07 - Mars Passes 0.03 Degrees From Neptune
- Dec 08 - 110th Anniversary (1908), Mount Wilson 60-inch Telescope First Light
- Dec 08 - 890th Anniversary (1128), 1st Record of a Sunspot Observation by John of Worcester
- Dec 09 - Moon Occults Saturn
- Dec 10 - Moon Occults Pluto
- Dec 11 - Annie Jump Cannon's 155th Birthday (1863)
- Dec 12 - Comet 46P/Wirtanen Perihelion (1.055 AU)
- Dec 13 - Geminids Meteor Shower Peak
- Dec 14 - 5th Anniversary (2013), Chang'e 3, Moon Landing (China)
- Dec 15 - Mercury at Its Greatest Western Elongation (21 Degrees)
- Dec 17 - Asteroid 16425 Chuckyeager Closest Approach to Earth (1.515 AU)
- Dec 17 - 60th Anniversary (1958), Project Mercury Created
- Dec 17 - 115th Anniversary (1903), Wright Brothers' First Airplane Flight
- Dec 19 - Comet 46P/Wirtanen at Opposition (0.079 AU)
- Dec 21 - Winter Solstice, 22:23 UT
- Dec 21 - Mercury Passes 0.9 Degrees from Jupiter
- Dec 21 - 40th Anniversary (1978), Venera 12, Venus Landing
- Dec 21 - 50th Anniversary (1968), Apollo 8 Launch (Frank Borman, Jim Lovell and Bill Anders)
- Dec 22 - Ursids Meteor Shower
- Dec 24 - Deep Space Network's 55th Birthday (1963)
- Dec 24 - James Joule's 200th Birthday (1818)
- Dec 25 - 15th Anniversary (2003), Mars Express, Mars Orbit Insertion
- Dec 25 - 40th Anniversary (1978), Venera 11, Venus Landing

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 Wendell Waters at wendellw57@comcast.net