CACHE VALLEY ASTRONOMICAL SOCIETY

Cache Valley Clear Skies

The Journal of the Cache Valley Astronomical Society

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Total Solar Eclipse Countdown:
208 days (as of January 25th)

Total Solar Eclipse Image courtesy NASA

Meeting Announcement

Our monthly meeting will be held on Wednesday, January 25th in the Bonneville Room at the Logan Library at 7:00pm. **Please note that this is the fourth Wednesday. We intend to standardize on the fourth Wednesday going forward. It appears that we will have better access to the Bonneville Room this way.**

This is our annual "Show and Tell" meeting. Bring one to several of your favorite recent astronomy related acquisitions.

The **Bino Support Workshop** is set for **January 10th at 7pm**, at Ned Miller's workshop located at: Keystone Cabinets, 10 West 300 North, Hyrum. (See more info below).

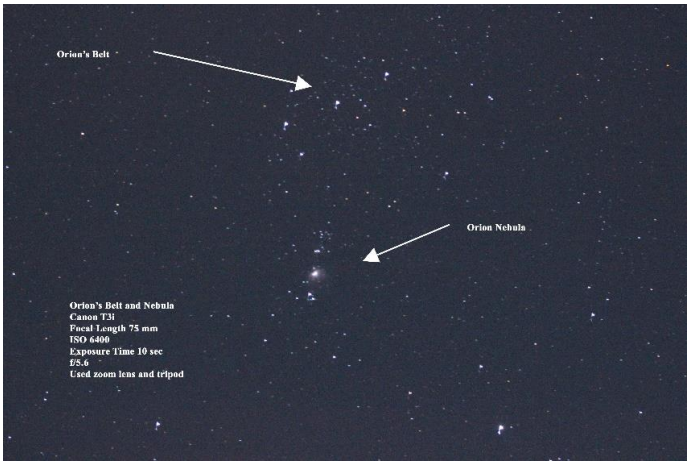
The President's Corner
By Dell Vance, CVAS President

We made another trip around the sun and what a year it was. The CVAS did a lot of outreach this last year with visits to schools, the Bear Lake support, Young Women Camps, and even public star parties at Macey's. For those that were involved in these

events, it seems like we did a lot. I want to thank all those that supported the club in these endeavors and hope that each of us will get involved at whatever level that we can.

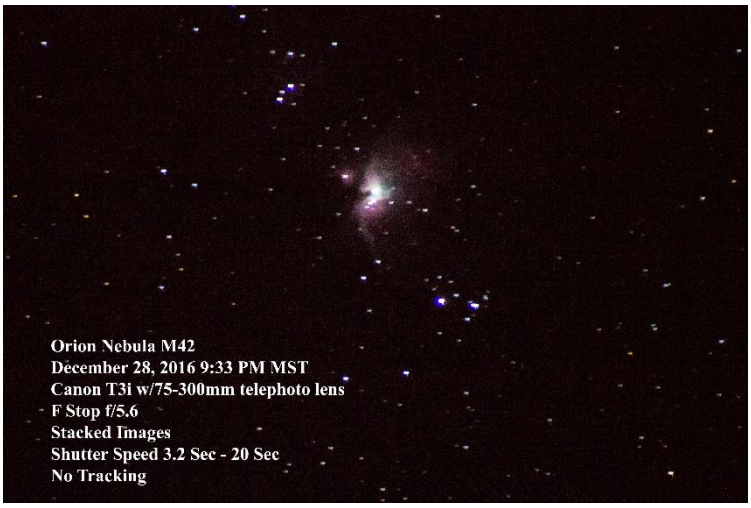
Last month Dr. Hollis Johnson presented information on the Star of Bethlehem and what it may have been. It was very well received. We had about 30 people in attendance on a very snowy night. It was great to see the participation at this event. Dr. Johnson did a great job in explaining the possibilities and the pros and cons of each scenario. Door prizes were given out including the first CVAS T-shirt with the club logo on it.

As I explained in last month's Newsletter, the cold weather changes my approach to astronomy. I have been reading magazine articles on astronomy and just couldn't take it anymore. So, I pulled out my binoculars and camera and did my astronomy in 10-15 min sessions. My focus was on Orion's Nebula. I took a quick picture in late October of the nebula and again in December. I found a few tricks to help with the pictures. I increased the focal length from 75 mm to 300 mm, reduced the exposure time, and stacked some of the pictures to get the December photo. I am amazed at what you can do with just a camera and a tripod.



Orion's Belt and Nebula (Taken in October) - Courtesy Dell Vance

Lyle Johnson is so right when he explains there are several different ways to enjoy astronomy. The tools we have now are so exciting to use and give such positive results. It gets me excited to do observations even in the cold weather. Of course, as the temperatures drop, so will the length of my short sessions. In the future, I plan to do short sessions with my telescope tracking the stars (because I can leave it out there tracking away while I go inside to warm up) with my camera on top taking longer exposures. I'll see what happens and let you know what I learn.



Orion Nebula (M42) Taken in December - Courtesy Dell Vance

Our January CVAS meeting is scheduled for Wednesday, January 25, 2017, in the Bonneville Room at the Logan Library. This is our annual meeting where everyone can bring a favorite astronomy item that they have picked-up last year (maybe even a Christmas gift) that they can show the club and tell what they think about this item. We usually get a wide variety of items. It is fun to see what others are doing and how they are growing in this great hobby.

We also have our binocular support frame workshop scheduled for January 10th at Ned Miller's workplace. This should be a great opportunity for us to build a very helpful tool that we can use with our binoculars. Be sure to get in touch with Ned if you have questions about how to get to his workshop or what we will be able to do there.

Well that is about it for me. I hope each of you had a very Merry Christmas and the New Year is treating right. Be sure to come out to our events and share your experiences.

Clear Skies!

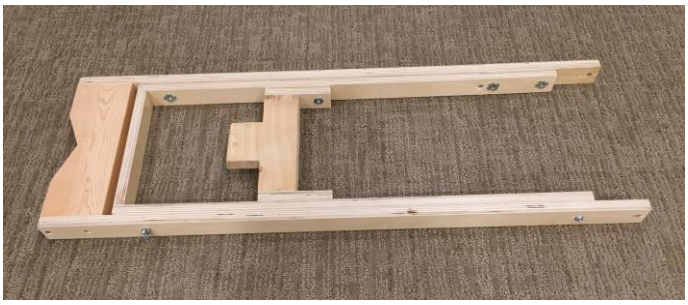
Binocular Support Workshop

As mentioned above, we are having a workshop to build binocular supports on January 10th at 7pm at Ned Miller's workshop which is located at Keystone Cabinets, 10 West 300 North, Hyrum.

As demonstrated at a previous meeting, these supports really help to stabilize the view when you are observing through mid-sized binoculars.

Below are a couple pictures from Ned which show the support with binoculars attached as well as a photo which shows them folded for storage. This workshop should be a lot of fun and will help us to get better use out of our binoculars.

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



Binocular Support (shown folded for storage) - Courtesy Ned Miller

CVAS members will be able to purchase the support frames for the cost of the materials. Visitors are also welcome to build or purchase support frames, but they will be marked up 25%. So, be sure to talk to Ned if you haven't already paid your dues.

CVAS Loaner Telescope

CVAS provides a 10 inch Dobsonian telescope to club members.

Contact Brad Kropp to make arrangements to use this telescope.

Brad can be contacted by email at brad.kropp@usu.edu.

Two Comets to Keep an Eye on as the New Year Begins

By Tom Westre

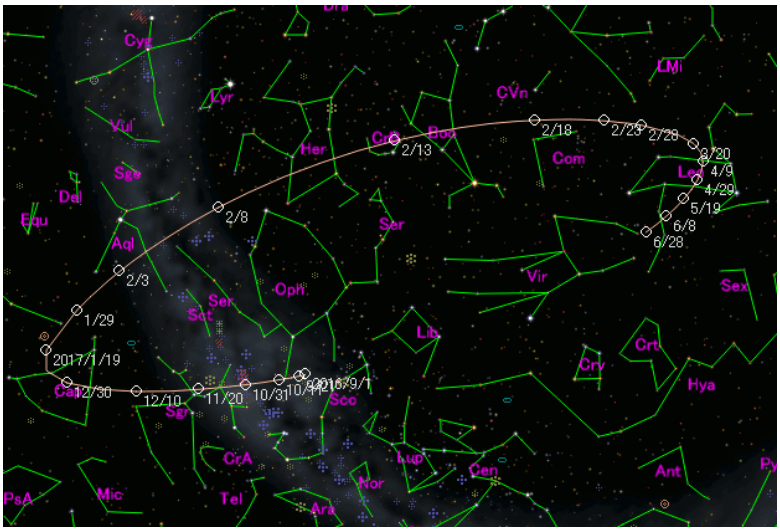
Comet 45P/Honda-Mrkos-Pajdušáková is in the west after sunset now. It's been there for a few weeks and will be over New Years. Comet 45P/Honda-Mrkos-Pajdušáková is currently estimated at 6th magnitude. That's barely within the limit for visibility with the unaided eye. A diffuse object, like a comet, at that brightness will be even tougher to see. You will need an extremely dark sky (a tough sky to find in the twilight direction, shortly after sunset) and likely optical aid (at least binoculars, probably a telescope) to see this comet.

A very bright planet Venus is in the same part of the sky. Many will likely look westward after sunset, see Venus, and think they're seeing the comet.

45P/Honda-Mrkos-Pajdusakova

It brightened very rapidly as predicted. Now it is very bright as 7.8 mag (Dec. 22, Piotr Guzik). It will approach to the earth down to 0.08 a.u. to the earth in mid-February, and it is expected to be observable at 6 mag in good condition. It keeps very low in the evening sky for a while. It will be unobservable temporarily in January. Then it is observable in good condition after mid-February.

Date	R.A (2000)	Dec (2000)	m1	Best Time (A, h)
Dec 24	20 37.71	-20 53.4	8.0	18:24 (55, 11)
Dec. 31	20 56.91	-19 7.1	7.2	18:28 (59, 10)

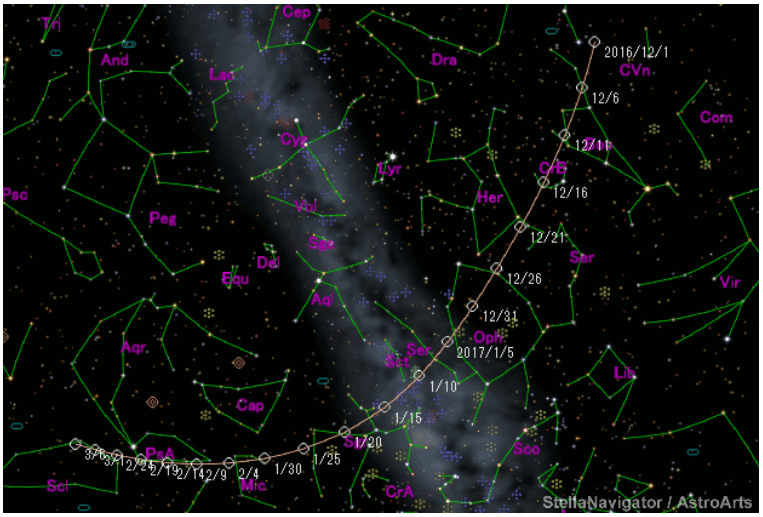


C/2016 U1 (NEOWISE)

Comet, C/2016 U1 NEOWISE, may become visible in binoculars.

As seen from the northern hemisphere during the first week of 2017, comet C/2016 U1 NEOWISE will be in the southeastern sky shortly before dawn. It is moving farther south each day and it will reach its closest point to the sun, inside the orbit of Mercury, on Jan. 14, before heading back out to the outer reaches of the solar system for an orbit lasting thousands of years.

Date	R.A (2000)	Dec (2000)	m1	Best Time (A, h)
Dec 24	16 47.88	13 55.9	8.7	5:34 (266, 20)
Dec. 31	17 24.43	2 18.5	7.8	5:37 (275, 12)



It brightened rapidly. Now it is very bright as 8.5 mag (Dec. 23, Piotr Guzik). It will approach to the sun down to 0.3 a.u. on Jan. 14. It may brighten up to 6 mag. In the Northern Hemisphere, it keeps observable in the morning sky until early January while the comet will be brightening. It is not observable at all in the Southern Hemisphere.

Mars and Neptune Conjunction

By Tom Westre

Mars and Neptune will make a close approach to each other December 31, 2016, passing within 0°01' of each other.

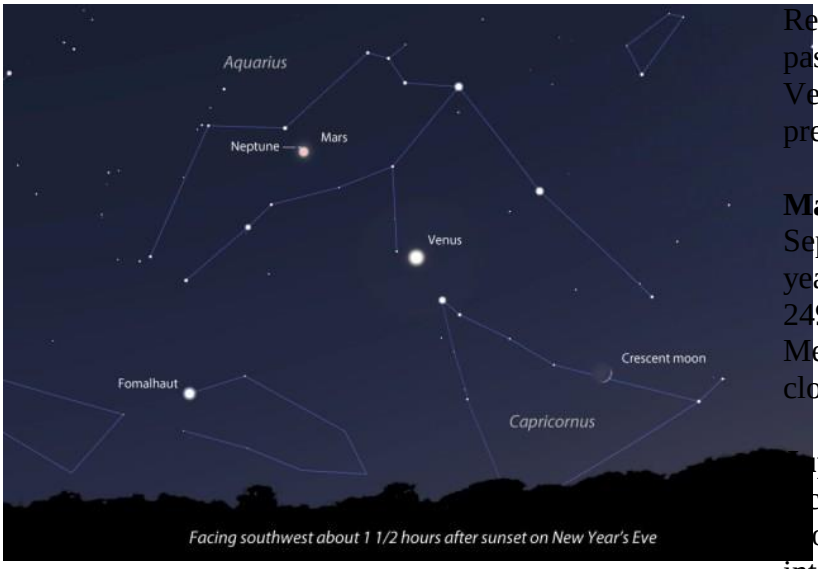
From Utah, the pair will become visible at around 17:48 (MST) as the dusk sky fades, 37° above your south-western horizon. They will then sink towards the horizon, setting 4 hours and 52 minutes after the Sun at 22:02.

Mars will be at mag 0.5, and Neptune at mag 7.9, both in the constellation Aquarius.

The pair will be close enough to fit within the field of view of a telescope, but will also be visible through a pair of binoculars.

At around the same time, the two objects will also share the same right ascension – called a conjunction.

What a great way to end an old year and begin a new year. Clear Skies!!!



Bob King; source: Stellarium

Observing Events for 2017

By Tom Westre

This article is based on several websites giving an overview of astronomical events for 2017. I hope you find it useful in planning for this year.

When	Event
Feb 10th	Penumbral Eclipse of the moon
Winter to Early Spring—Venus show	Jan to Feb Evening observation. Sets four hours after sunset. Drops back to sun in March. May it transitions to morning sky.
March 4th	Occultation of Aldebaran by the moon in the evening.
June through October	Saturn ring system open, tilted as far toward earth as it can get 27 degrees. Spectacular. Best since 2003. Stays until October 17.
August 21st	Total Eclipse of the Sun

Planets through 2017

By Tom Westre

Mercury: March 23 to April 8 Brightest easy to see in evening. September 6 to September 20. Brightest in Morning sky.

Venus: Jan 30 to March 1 - Brightest in evening sky. February 17 - Greatest brightness. April 15 to May 14 - Brightest in Morning sky. April 30 - Greatest brightness. September 20 - Venus north of Regulus in morning predawn. October 5 - Venus passes ¼ degree North of Mars. November 13 - Venus Passes 0.3 degrees North of Jupiter in predawn sky.

Mars: January 1 to June 6 Evening sky. September 11 to December 31 Morning sky. Off year, dim. At Aphelion (farthest) on October 7. 249 million miles from Sun. September 16 Mars and Mercury morning sky. October 5 Mars and Venus close approach.

Jupiter: January 1 to April 6 Morning. April 7 to October 6 Evening. November 13 to December 31 - Morning. November 15 - Jupiter crosses from Virgo into Libra. September 12 - Jupiter passes north of Spica. November 13 - Jupiter close to Venus, 1/3 degree.

Saturn: Jan 1 in Ophiuchus. February 22 - crosses into Sagittarius. May 18 - retrogrades back to Ophiuchus. November 18 - crosses back to

Sagittarius. January 1 to June 14 - Morning. June 15 to December 4 - Evening.

Uranus: Magnitude + 5.7 in Pisces. January 1 to March 29 - Evening. April 30 to October 18 - Morning. October 19 to December 31- Evening. February 26 - Mars passes 0.6 degrees from Uranus.

Neptune: Magnitude + 7.8 in Aquarius. January 1 to February 15 - Evening. March 18 to September 4 - Morning. September 5 to December 31 - Evening. January 12 - Venus 0.4 degrees from Neptune.

CVAS Membership Benefits & Information

CVAS Benefits – Membership in the Cache Valley Astronomical Society (CVAS) includes invitations to all of the club meetings and star parties, each member will receive an email copy of the monthly newsletter "The Cache Valley Clear Skies," CVAS maintains a website (cvas-utahskies.org) for the benefit of members and public. Members are invited to submit articles to the newsletter as well as images/astrophotography to the newsletter and website. Only members may vote in CVAS elections or be eligible for CVAS drawings.

The Executive Committee is discussing the possibility of obtaining magazine discounts to Sky and Telescope and/or Astronomy for members. We will provide more Information about this in the near future.

Another consideration is membership in the Astronomical League. There are some benefits to the club and membership as a result. More information will be forthcoming on this topic.

CVAS Library.

Tom Westre is putting together a list of astronomy related books in a lending library for members only. We always value any items you would like to donate to this library. A copy of these materials will be included on the club website and a future newsletter. You will be able to contact Tom to borrow or donate materials.

CVAS also has a ten inch Dobsonian telescope which can be loaned out to club members. Brad Kropp can be contacted if any member wishes to use this telescope.

Joining or Renewing with CVAS

CVAS dues are $20 a year, a fantastic bargain. Dues are payable in September. If you have not paid your dues yet for 2016-2017 please send or bring a check to our treasurer to resubscribe, to keep the club financially solvent, and to continue to receive great membership benefits.

Make check payable to CVAS and send to**:**

Ned Miller
480 N 400 E
Providence, Utah 84332

Spotlight on Eridanus, the River

By Dale Hooper

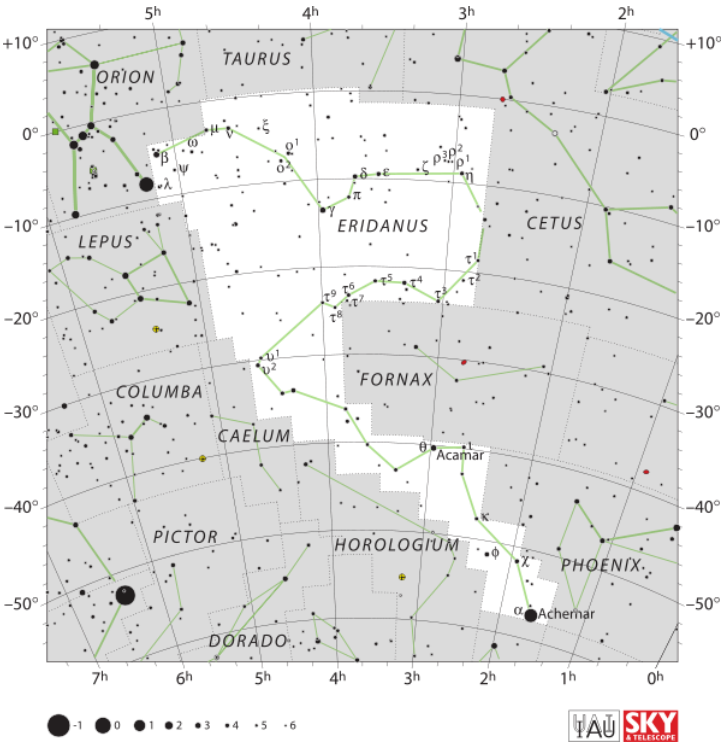
I admit that what really influenced my decision to focus on this constellation this month is the **Deep-Sky Wonders** article in the January 2017 issue of ***Sky & Telescope*** magazine (pages 54 – 56) by Sue French, which also focuses on this large constellation. Her article provides a lot more detail about many of the objects in our list.

This is a constellation which I have certainly neglected over the years mainly because of its dearth of bright stars, but also since it is mainly viewable when it is fairly cold outside. It is loaded with many reasonably bright galaxies, a very nice planetary nebula (NGC 1535) and the Witch Head nebula, IC 2118 (SNR/reflection nebula) shines by Rigel's reflected light.

Objects which rank at least three stars in *The Night Sky Observer's Guide* (Eridanus is in Volume 2) have been included.

As usual, the table is organized according to increasing Right Ascension values.

IC 2118 Witch Head Nebula - Courtesy HST/NASA



IAU and Sky & Tel - Roger Sinnott & Rick Fienberg

Object	R.A.	Dec.
NGC 1084 (Galaxy mag 10.7)	02h46.0m	-07°35’
NGC 1140 (Galaxy mag 12.5)	02h54.6m	-10°02’
NGC 1187 (Galaxy mag 10.7)	03h02.6m	-22°52’
NGC 1199 (Galaxy mag 11.3)	03h03.6m	-15°37’
NGC 1209 (Galaxy mag 11.4)	03h06.0m	-15°37’
NGC 1232 (Galaxy mag 10.0)	03h09.8m	-20°35’
NGC 1300 (Galaxy mag 10.4)	03h19.7m	-19°25’
NGC 1309 (Galaxy mag 11.5)	03h22.1m	-15°24’
NGC 1332 (Galaxy mag 10.5)	03h26.3m	-21°20’
NGC 1337 (Galaxy mag 11.9)	03h28.1m	-08°23’
NGC 1353 (Galaxy mag 11.4)	03h32.1m	-20°49’
NGC 1357 (Galaxy mag 11.5)	03h32.2m	-13°40’
NGC 1395 (Galaxy mag 9.7)	03h38.5m	-23°02’
NGC 1400 (Galaxy mag 11.0)	03h39.5m	-18°41’
NGC 1407 (Galaxy mag 9.7)	03h40.2m	-18°35’
NGC 1417 (Galaxy mag 12.1)	03h42.0m	-04°42’
NGC 1421 (Galaxy mag 11.4)	03h42.5m	-13°29’
NGC 1426 (Galaxy mag 11.2)	03h42.8m	-22°07’
NGC 1440 (Galaxy mag 11.5)	03h45.0m	-18°16’
NGC 1452 (Galaxy mag 12.1)	03h45.4m	-18°38’
NGC 1453 (Galaxy mag 11.5)	03h46.4m	-03°58’
NGC 1461 (Galaxy mag 11.8)	03h48.5m	-16°24’
IC 2006 (Galaxy mag 11.4)	03h54.1m	-35°59’
NGC 1507 (Galaxy mag 12.3)	04h04.5m	-02°11’
NGC 1518 (Galaxy mag 11.7)	04h06.8m	-21°11’
NGC 1531 (Galaxy mag 12.1)	04h12.0m	-32°51’
NGC 1532 (Galaxy mag 9.9)	04h12.1m	-32°52’
NGC 1537 (Galaxy mag 10.6)	04h13.7m	-31°39’
NGC 1535 (Pl Nebula m9.6)	04h14.2m	-12°44’
NGC 1600 (Galaxy mag 10.9)	04h31.7m	-05°05’
55 Eridani (Double star)	04h43.6m	-08°48’
NGC 1637 (Galaxy mag 10.8)	04h41.5m	-02°51’
NGC 1659 (Galaxy mag 12.5)	04h46.5m	-04°47’
NGC 1667 (Galaxy mag 12.1)	04h48.6m	-06°19’
NGC 1700 (Galaxy mag 11.2)	04h56.9m	-04°52’
IC 2118 (Witch Head Nebula)	05h06.9m	-07°13’

CVAS Minutes – December 2016

It was announced that next month we will begin meeting on the fourth Wednesday in the Bonneville Room. It is hoped that it will be easier to schedule the room on that night. Dale Hooper gave a brief overview of current sky events. There was a good sized crowd of over thirty people in attendance.

Our featured speaker, Dr. Hollis Johnson was introduced to the club. He is an Emeritus Professor of Astronomy and taught at Indiana University from 1963 to 1994. Dr. Johnson’s topic was The Star of Bethlehem.

Dr. Johnson related to us the parallelism between the discussion of Jesus' birth in Matthew and Luke and showed how there are earthly witnesses and heavenly witnesses in both accounts. He discussed important questions about the star such as:

- Who saw the star and when was it seen?
- Who was Herod and why was he troubled?
- Who were the wise men?
- Why did they come?
- Where did they come from?

He discussed the important references in the Old Testament and other scriptures. He then discussed the possibilities for the star: nova, supernova, comet, planets, meteor, aurora or a volcano.

He related specific events which have the possibility of being the star such as Halley's Comet in 11 BC, a triple conjunction of Jupiter and Saturn in 7 to 6 BC, a double occultation of Jupiter by the Moon in 6 BC, a nova in Aquila in 5 BC, a comet in 4 BC and a double conjunction of Venus and Jupiter in 3 to 2 BC.

Dr. Johnson then discussed various circumstances which help to pinpoint when Jesus was born, which helps determine what the star could have been.

Dr. Johnson left the conclusion up to each of us to determine.

Upcoming Star Parties

There are currently no CVAS star parties planned for January 2017.

Upcoming Events

01 Jan	New Year's Day Mars 0.02° south of Neptune Giuseppe Piazzi discovers Ceres (1801)
02 Jan	Neptune 0.4° south of Moon Luna 1 becomes the first craft to leave Earth's gravity (1959)
03 Jan	Mars 0.2° south of Moon Quadrantid meteors Spirit rover lands on Mars (2004)
04 Jan	Earth at perihelion Quadrantid meteors
05 Jan	First quarter Moon
07 Jan	Galileo discovers Io, Europa and Callisto (1610)
09 Jan	Aldebaran 0.4° south of Moon
10 Jan	U.S. Army Signal Corps makes first Radar contact with Moon (1946)
11 Jan	William Herschel discovers Uranus' moons Titania and Oberon (1787)
12 Jan	Full Moon Venus at greatest eastern elongation (47°)
13 Jan	Galileo discovers Ganymede (1610)
14 Jan	Regulus 0.8° north of Moon Huygens lands on Titan (2005)
16 Jan	Martin Luther King Day
19 Jan	Last Quarter Moon Mercury at greatest western elongation (24°)
24 Jan	Voyager 2 flies past Uranus (1986)
25 Jan	Opportunity rover lands on Mars (2004) CVAS club meeting (7pm), Bonneville Room at the Logan Library
27 Jan	New Moon Fire on launch pad kills Apollo 1 crew (1967)
28 Jan	Chinese New Year Johannes Hevelius born (1611) Space shuttle Challenger explodes 73 seconds after liftoff (1986)
30 Jan	Neptune 0.2° south of Moon
31 Jan	Explorer 1 launched, first orbiting American spacecraft (1958)

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:

Ned Miller, CVAS Treasurer
480 N 400 E
Providence, Utah 84332

For any questions contact our Treasurer at nedmiller2008@gmail.com or our Secretary Dale Hooper at dchooper5@gmail.com .