

## 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](mailto:avteam.dell@gmail.com)

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

Treasurer- Ned Miller - (435) 757-9035  
[nedmiller2008@gmail.com](mailto:nedmiller2008@gmail.com)

Public Relations – Lyle Johnson  
[lyledj@aol.com](mailto:lyledj@aol.com)

Secretary – Dale Hooper - (435) 563-0608  
[dchooper5@gmail.com](mailto:dchooper5@gmail.com)

Librarian – Tom Westre  
Loaner Scope Coordinator – Brad Kropp –  
[brad.kropp@usu.edu](mailto:brad.kropp@usu.edu)  
Webmaster – Tom Westre

Past President – Tom Westre – (435) 787-6380  
[twestre45@aol.com](mailto:twestre45@aol.com)

---

Vol. 4 Number 3

November 2016

[www.cvas-utahskies.org](http://www.cvas-utahskies.org)

---

### Meeting Announcement

Our monthly meeting will be held on Wednesday, November 16th in the Old Juniper Room at the Logan Library at 7:00pm. Please note that this is a different room than one we normally meet in. Our meeting topic will be **Buying Your First Telescope**. This will hopefully help you as you choose a first telescope for yourself or someone else.

Remember also that dues of \$20 for the 2016 – 2017 year should be paid as soon as possible.

**Total Solar Eclipse Countdown:**  
278 days (as of November 16<sup>th</sup>)



Total Solar Eclipse Image courtesy NASA

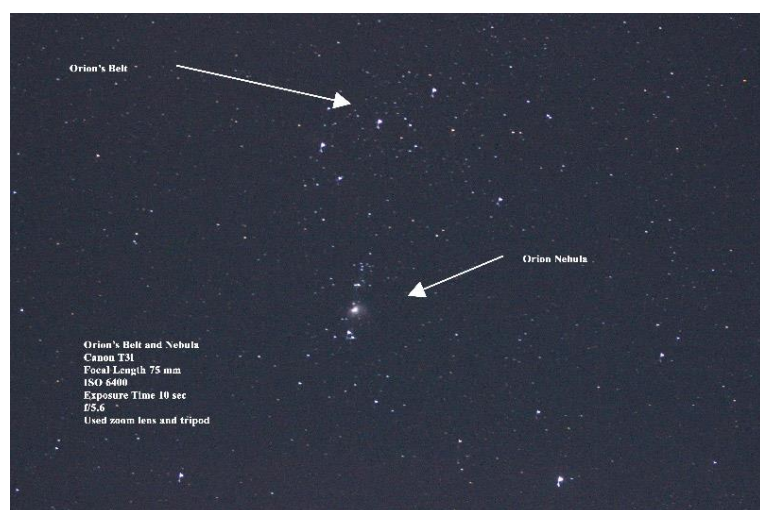
### The President's Corner By Dell Vance, CVAS President



November is here! The weather is starting to change and the opportunities for getting out to observe the stars comfortably are getting fewer. The CVAS Meeting in October dealt with using binoculars for looking at the stars. Lyle Johnson did a great job, as usual, in explaining what you can see with binoculars and how to use them. Ned Miller and Byron Ray showed us some types of binocular supports that can be used and offered to help us have

a workshop to build our own. It was well received and we are in the process of setting up a date to hold the workshop.

I used my binoculars and support frame to look at the stars several times in October. On colder nights or early in the morning before sunrise, it is convenient to grab my binoculars and go out to see what I can find. This often inspires me to go get my camera and take a picture of the skies. I just used a telephoto lens and a tripod to get these shots. Here is one I took early one morning of Orion's Belt and the Nebula. It is amazing what you can see even without a telescope.



### Orion's Sword and the Orion Nebula - courtesy Dell Vance

I am looking forward to working with Ned and the group to make a better binocular support, as that may be my main means of observing during the winter. I don't use my telescope much when it gets below freezing.

Tom Westre and I had the opportunity to visit with Preston Junior High School youth in October and introduce them to telescopes and astronomy. We were also able to have a Star Party with them to show them the Moon, planets and some deep sky objects. It was well received and I had a "Blast".

We also had a star party at Macey's early in the month and had a lot of activity. The crowds are there and willing to look through the telescopes. We had 5 or 6 telescopes that night. Some of the friends we made came to our meeting as well. These are turning out to be a good exposure for CVAS.

The Executive Committee is working hard to add value to your membership. We encourage you to renew your membership if you haven't already for this year and if you are not a member we invite you to join us.

We are looking forward to this month's meeting to discuss what to look for in buying your first telescope. (Just in time for Christmas). We hope to see you there on November 16<sup>th</sup> at the Logan Library. Until then ...

Clear Skies!

## Benefits of CVAS Membership Join the Cache Valley Astronomical Society



Whether you are an experienced observer or just starting out, membership in the Cache Valley Astronomical Society brings you together with a wonderful group of people who are passionate about all aspects of astronomy.

- **A monthly newsletter, The Cache Valley Clear Skies.**
  - **Using a 10 inch Dobsonian loaner telescope**
  - **Two special Interest groups for those members who want to focus on special interests.**
- 1. Binocular Astronomy**
  - 2. Astrophotography**
- **A website ([cvas-utahskies.org](http://cvas-utahskies.org)) with lots of information**
  - **Borrow books from the CVAS Library**

- **Working with experienced mentors to help you with your new telescope or learn the sky.**
- **A voice in planning club activities and events**
- **Eligible for Nomination to the CVAS Executive Committee**
- **Committee Chairing and Membership in Special Interest Groups (Binocular Astronomy, Astrophotography)**
- **Attendance at club star parties for members**
- **Numerous Public Outreach Opportunities**
- **Email notification of formal and impromptu observing sessions**
- **Voting privileges in Club business matters**
- **A member handbook of club club-by laws and other useful information**

*But the best benefit of all is sharing your passion for astronomy with fellow members of the CVAS. We encourage everyone to fill out the membership form and send it in. You will receive a membership card that allows you to take advantage of all the benefits. The larger our club the more we can accomplish for advancing the hobby of astronomy for ourselves and for the people of Cache Valley.*

*Annual Membership Dues are only \$20.*

## **Special Interest Groups**

Throughout most of the 20<sup>th</sup> century amateur astronomy was mostly about telescope building and visual observing. But the last few decades have seen a vast increase in technology and interest in astronomy among the general public. Equipment that once was available only for the professional astronomer has become available for the amateur.

This explosion in equipment can often be challenging to amateurs. Astronomy clubs can offer help to amateurs as they work through this maze of new technology. The Cache Valley Astronomical Society is planning to assist these needs by setting up a popular method among other clubs by creating SIG's, or Special Interest Groups.

A SIG or Special Interest Group is a group of members that get together formally or informally and focus on one area of Interest or work together on a project. By creating a group that focuses on one area these gatherings can be promoted in the CVAS monthly newsletter and through the clubs website.

Membership in the SIG's can include beginners to advanced members. By working together we can expand our knowledge of Astronomy. Popular topics for SIG's found in many other astronomy clubs include:

- Beginners SIG
- Binocular astronomy
- Astrophotography
- Observing
- Radio Astronomy
- Amateur Telescope Making
- Building a personal observatory
- Cosmology



**October 2016 General Meeting on Binocular Astronomy.  
Presenters were Lyle Johnson and Ned Miller**

The First SIG set up by CVAS is Binocular Astronomy. This group formed after the October meeting. The Topic for October centered on the advantages of binocular astronomy, what can be seen with binoculars and how to build a stabilizer for your binoculars. After the meeting it was decided that those interested would meet to design and build binocular stabilizers. Ned Miller and Lyle Johnson are heading up this group. If you are interested in joining this SIG contact Ned or Lyle.



An Astrophotography SIG is being planned. If you have any interest in joining this group contact Tom Westre.

Any member may join or create a SIG. All we ask is that you present your idea to club president Dell Vance. You will be asked to give an overview of your idea at the CVAS monthly planning meeting. If your idea is accepted you will have the full support of CVAS. SIG's will schedule their meetings at times that don't conflict with the General Monthly meeting. More information will be coming from our newsletter, website and via email.

For more information on guidelines for a SIG, the club's webpage has information.

### **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](mailto:brad.kropp@usu.edu).



### **Spotlight on Cepheus, the King**

**By Dale Hooper**

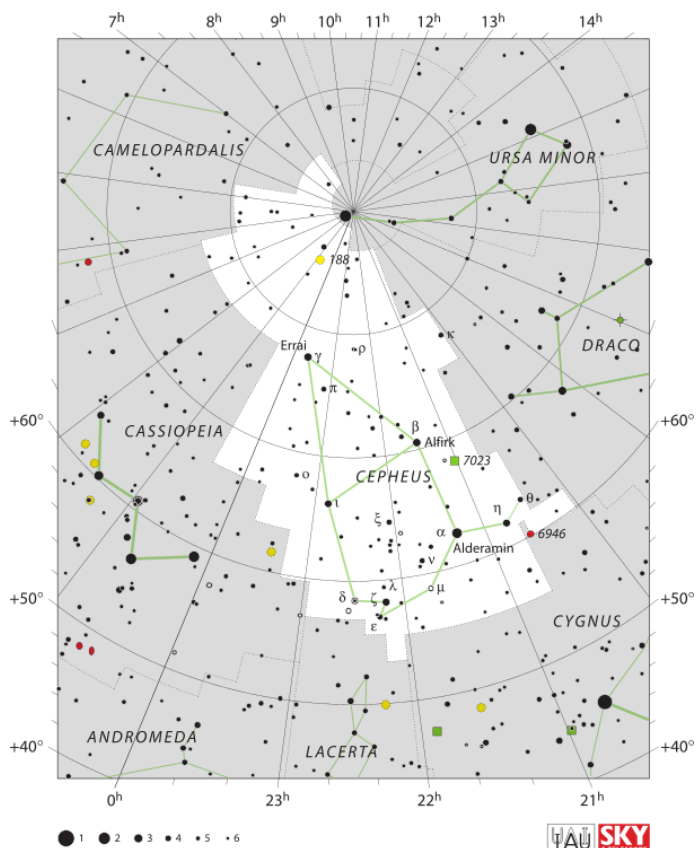
Cepheus the King is a circumpolar constellation, which means that it never sets from our latitude. But this is the time of year that it is highest in the sky so it is a good time to observe it. Cepheus is also linked in Greek mythology to the constellations Cassiopeia, Andromeda, Perseus and Pegasus which are also great constellations to observe right now.

Cepheus contains a variety of objects from dark nebulae to open clusters and galaxies. It is the home of the prototypical Cepheid variable Delta Cephei and it is also the home to one of my favorite stars Mu Cephei which is commonly known as Herschel's Garnet Star.

Mu Cephei is a red supergiant star that is now fusing helium into carbon. It is likely the largest star that can be seen without a telescope.

Objects which rank at least three stars in *The Night Sky Observer's Guide* (Cepheus 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

emission nebula)		
IC 1470 (Emission nebula)	23h05.2m	+60°15'
NGC7510 (Open cluster)	23h11.5m	+60°34'
Markarian 50 (Open cluster)	23h15.3m	+60°28'
NGC 40 (Planetary nebula)	00h13.0m	+72°32'
NGC 2276 (Galaxy mag 11.4)	07h27.0m	+85°45'
NGC 2300 (Galaxy mag 11.0)	07h32.0m	+85°43'

## CVAS Minutes – Oct 2016

Dell Vance conducted the meeting. The club members were reminded that dues of \$20 are now due. Membership forms were made available and they are also found as the last page in the newsletter. Brad Kropp has the loaner telescope available for club members.

Tom Westre gave a brief tutorial of what can currently be seen in the night sky.

The time was then turned over to Lyle Johnson and Ned Miller for the main discussion of Binocular Astronomy. Lyle answered the following questions:

- What can I see from my backyard?
- How do I find objects to observe?
- How do I observe with binoculars?

Lyle also gave us a brief tour of the Universe.

Ned then showed us his design for the binocular holder that club members will have the opportunity to build or purchase. Byron then showed us a foldable version that he has designed.

Members that are interested in building or purchasing the binocular holders provided contact information to Dell Vance. Any others that are interested can also contact Dell. The club will set up a time when we can work on the binocular holders. Ned and his boss have graciously offered to let us use the shop at his business and club members can purchase the holders at cost.

Door prizes were then awarded.

## Upcoming Star Parties

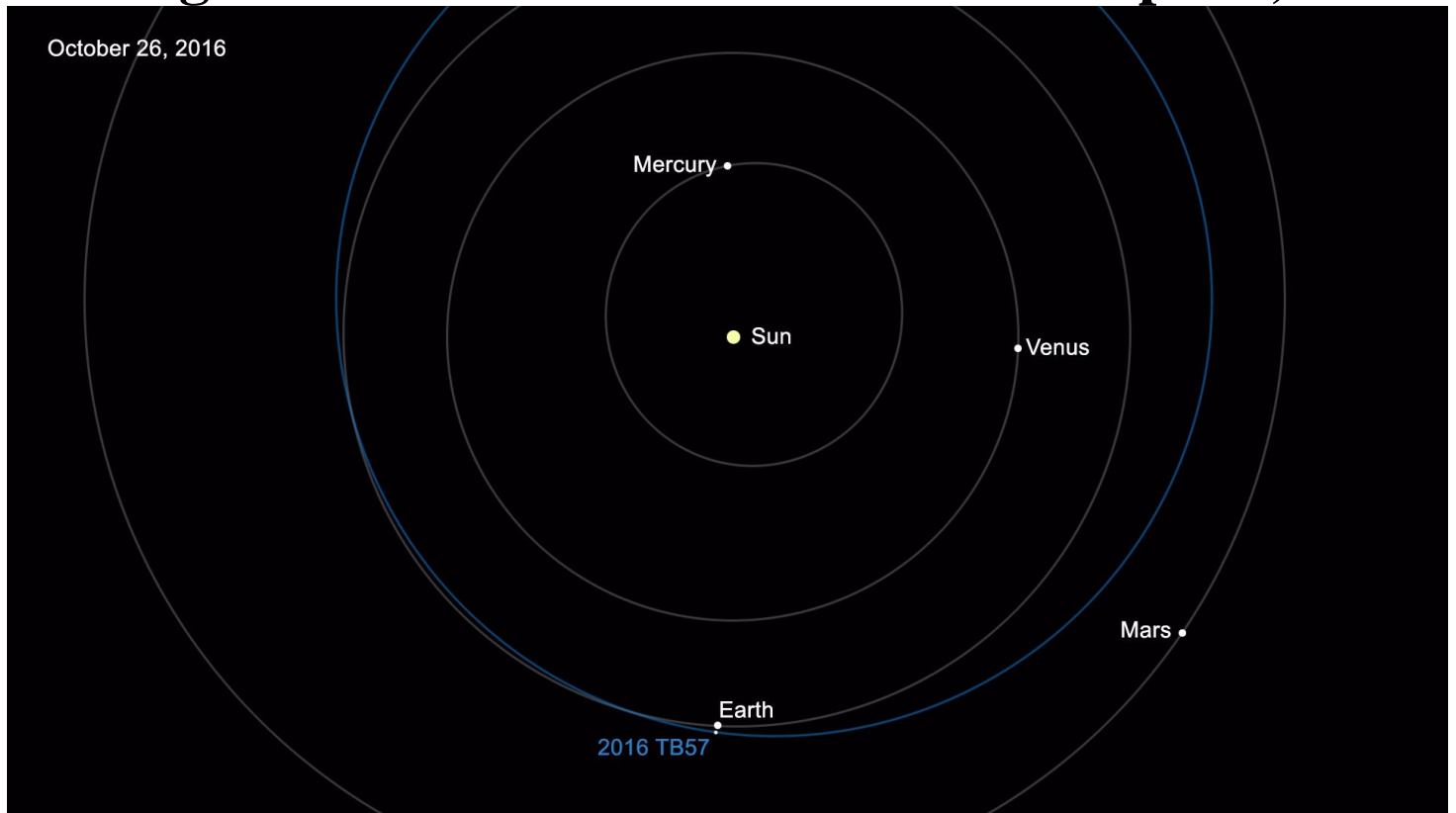
\*\* Tentative End of Star Parties for 2016 \*\*

Object	R.A.	Dec.
NGC 6939 (Open cluster)	20h31.4m	+60°38'
NGC 6946 (Galaxy mag 8.8)	20h34.8m	+60°09'
NGC 6951 (Galaxy mag 10.7)	20h37.2m	+66°06'
NGC 7023 (Open cluster / reflection nebula)	21h00.5m	+68°10'
IC 1396 (Open cluster / reflection nebula)	21h39.1m	+57°30'
μ Cep (Garnet star)	21h43.5m	+58°47'
NGC 7139 (Planetary nebula)	21h45.9m	+63°49'
NGC 7160 (Open cluster)	21h53.7m	+62°36'
Barnard 169 (Dark nebula)	21h58.9m	+58°47'
Barnard 170 (Dark nebula)	21h58.9m	+58°59'
Barnard 171 (Dark nebula)	22h03.5m	+58°52'
Xi Cephei (Double star)	22h03.8m	+64°38'
Barnard 174 (Dark nebula)	22h07.3m	+59°05'
Barnard 173 (Dark nebula)	22h07.4m	+59°10'
NGC 7235 (Open cluster)	22h16.6m	+57°17'
NGC 7261 (Open cluster)	22h20.4m	+58°05'
Berkeley 94 (Open cluster)	22h27.7m	+55°51'
Delta Cephei (Variable star)	22h29.2m	+58°25'
NGC 7354 (Planetary nebula)	22h40.4m	+61°17'
NGC 7380 (Open cluster /	22h47.0m	+58°06'

## Upcoming Events

02 Nov	Harlow Shapley born (1885)
06 Nov	Daylight Saving Time ends Mars 5° south of Moon
07 Nov	First Quarter Moon
08 Nov	Election Day Edmond Halley born (1656) [Note: Halley's Comet is currently magnitude 25.5 and is located in the constellation Hydra. It is still heading away from the Sun, at a current distance of 3.2 billion miles from the Sun. – source: theskylive.com]
09 Nov	Neptune 1.0° south of Moon
11 Nov	Veterans Day
12 Nov	Uranus 3° north of Moon Voyager 1 flies past Saturn (1980) Philae lands on Comet 67p (2014)
13 Nov	Mariner 9 orbits Mars (1971)
14 Nov	Full Moon (Super Moon, 33.5')
15 Nov	Aldebaran 0.4° south of Moon William Herschel born (1738)
16 Nov	Leonid meteors
17 Nov	Leonid meteors
18 Nov	Leonid meteors Mercury 3° north of Antares
20 Nov	Edwin Hubble born (1889)
21 Nov	Last Quarter Moon
24 Nov	Thanksgiving Day Jupiter 1.9° south of Moon
26 Nov	First photo of a meteor (1885)
29 Nov	New Moon

# Catalog of Known Near-Earth Asteroids Tops 15,000



The 15,000th near-Earth asteroid discovered is designated 2016 TB57. It was discovered on Oct. 13, 2016, by observers at the Mount Lemmon Survey, an element of the NASA-funded Catalina Sky Survey in Tucson, Arizona. Credits: NASA/JPL-Caltech

The number of discovered near-Earth asteroids (NEAs) now tops 15,000, with an average of 30 new discoveries added each week. This milestone marks a 50 percent increase in the number of known NEAs since 2013, when discoveries reached 10,000 in August of that year.

Surveys funded by NASA's [Near Earth Object \(NEO\) Observations Program](#) (NEOs include both asteroids and comets) account for more than 95 percent of discoveries so far.

The 15,000th near-Earth asteroid is designated 2016 TB57. It was discovered on Oct. 13 by observers at the Mount Lemmon Survey, an element of the NASA-funded [Catalina Sky Survey](#) in Tucson, Arizona. 2016 TB57 is a rather small asteroid -- about 50 to 115 feet (16 to 36 meters) in size -- that will come closest to Earth on Oct. 31 at just beyond five times the distance of the moon. It will safely pass Earth.

A near-Earth asteroid is defined as one whose orbit periodically brings it within approximately 1.3 times Earth's average distance to the sun -- that is within 121 million miles (195 million kilometers) -- of the sun (Earth's average distance to the sun is about 93 million miles, or 150 million kilometers). This distance also then brings the asteroid within roughly 30 million miles (50 million kilometers) of Earth's orbit. Observers have already discovered more than 90 percent of the estimated population of the large NEOs -- those larger than 0.6 miles (one kilometer).

"The rising rate of discovery is due to dedicated NEO surveys and upgraded telescopes coming online in recent years," said NASA's NEO Observations Program Manager Kelly Fast. "But while we're making great progress, we still have a long way to go." It is estimated by astronomers that only about 27 percent of the NEAs that are 460 feet (140 meters) and larger have been found to date. Congress directed NASA to find over 90 percent of objects this size and larger by the end of 2020.

Currently, two NASA-funded NEO surveys -- the Catalina Sky Survey and the [Panoramic Survey Telescope & Rapid Response System \(Pan-STARRS\)](#) in Hawaii -- account for about 90 percent of [new NEO discoveries](#). Both projects upgraded their telescopes in 2015, improving their discovery rates.

A recent upgrade to one of the Catalina Sky Survey's telescopes resulted in a tripling of its average monthly NEO discovery rate. When the Pan-STARRS system increased the observing time it devoted to NEO searching to 90 percent, it increased its rate of discovery by a factor of three. Pan-STARRS also will add a second telescope to the hunt this fall. As more capable telescopes are deployed, the overall NEO survey effort will be able to find more objects as small as and smaller than 140 meters (460 feet).

The NEO Observations Program is a primary element of NASA's [Planetary Defense Coordination Office](#), which is responsible for finding, tracking and characterizing potentially hazardous NEOs, issuing warnings about possible impacts, and coordinating U.S. government planning for response to an actual impact threat.

"While no known NEO currently poses a risk of impact with Earth over the next 100 years," says NASA Planetary Defense Officer Lindley Johnson, "we've found mostly the larger asteroids, and we have a lot more of the smaller but still potentially hazardous ones to find."

For asteroid news and updates, follow AsteroidWatch on Twitter:

<http://www.twitter.com/AsteroidWatch>

DC Agle  
Jet Propulsion Laboratory, Pasadena, Calif.  
818-393-9011  
agle@jpl.nasa.gov



# 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](http://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](mailto:nedmiller2008@gmail.com) or our Secretary Dale Hooper at [dchooper5@gmail.com](mailto:dchooper5@gmail.com).