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- Ned Miller - (435) 757-9035
nedmiller2008@gmail.com

Public Relations – Lyle Johnson
lyledj@aol.com

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

Librarian – Open
Loaner Scope Coordinator – Lyle Johnson
Webmaster – Tom Westre

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

Vol. 4 Number 1 September 2016 www.cvas-utahskies.org

Annual Meeting This Month

Due to a library scheduling conflict, our annual general meeting will be held on **Thursday**, September 22, 2016 in the Bonneville Room at the Logan Library at 7:00pm. Note that in October we will return to meeting on the third Wednesday.

Elections for Officers in September

At the September annual meeting we will again have the opportunity to elect club officers. Please consider running for one of the officer positions.

The September meeting is also the time to pay our annual dues of $20. In addition, we will be voting on a few minor constitutional amendments.

We will finish off the meeting with an episode from the series, “The Universe” (time permitting).

The President’s Corner
By Dell Vance, CVAS President

School is back in session, the sun comes up later, the nights are longer, and Orion is high in the sky in the morning. It must be getting close to Fall. That also means that we are getting close to our annual business meeting. CVAS has some great members and an impressive depth of talent. I hope each of you are looking for ways to help us improve our club. As a group we can have a very positive influence on those around us. Sharing our hobby can be fun and fulfilling.

I have found that there are many people that have an interest in Astronomy. Many have a casual interest, where they may stay up late to see an unusual event that was mentioned on the news, or read an article about some new discovery. Others go beyond that and purchase a telescope or a pair of binoculars. They get excited to get their equipment out and take a look at the stars/planets at least once a year. Then you have those of us that go to star parties or solar parties to mingle with our friends and talk about what we are doing with our hobby. Some even travel great distances to share their hobby. No matter where we fall into experiencing our hobby, we all seem to find it intriguing to have an astronomical experience.

I get a real "high" when a child (or even sometimes an adult) says, "Wow I can really see it!" Saturn or the Orion Nebula, usually get this kind of response. I participated in a couple of town celebrations this summer where I set my telescope up with a solar filter and had many people take a look, for the first time, at the sun through a telescope. For many it was their first time to even look through a telescope. It was great to explain the sun spots that they were seeing and why we don't look directly at the sun without protection. The conversation often included the phrase, "I love to do this kind of stuff."

Most of it comes down to making the time to have the experience. It is pretty unusual to put forth the effort to have the experience and not get something out of it. Usually, I pick up a new way to do things or new targets for my observing. Sometimes it is just having an "Aha" moment when you try something different.

I usually take all these experiences and apply what I learn to my individual observing in my back yard. This year in particular I have seen a significant improvement in my abilities (don't get me wrong, I still have a long way to go to get as good as many of you, but I am getting closer). I find that I am more likely to make the effort to take my telescope outside and see something really interesting.

CVAS is a very positive influence on my love for astronomy. I am finding that I want to share more ideas with those around me. I have more people asking me questions about what they are seeing in the sky or interested in coming over to see what is so exciting. It all adds up to being an amateur or one that engages in a study for the pleasure rather than the financial benefits. Hopefully, you are also having positive experiences with CVAS.
I hope to see everyone out for our annual meeting on Thursday, September 22nd, at the Logan City Library.

Clear Skies!

Earth Mass Planet Discovered Around Proxima Centauri

By Dale Hooper & Layne Pedersen

Some of the biggest astronomical news this past month is regarding the discovery of an exoplanet. This particular exoplanet orbits the star Proxima Centauri, which is the closest star to our sun and is a red dwarf star about 4.25 light-years away.

The newly discovered exoplanet is being called Proxima b. It is slightly more massive than earth. Something very exciting is that it also orbits within its star's habitable zone which means there is the possibility of liquid water on its surface.

However, since Proxima Centauri is a red dwarf this means the exoplanet orbits every 11.2 days and is likely tidally locked with its star. This means that, like our moon, the same part of the planet would always be pointed to the star. This makes it much more likely that the planet would face temperature extremes. The part facing the planet may be very hot while the night side of the planet would probably be very cold.

But, depending on the type of atmosphere and winds there may be parts of the planet that would have just the right temperature.

There have been many articles about this exciting discovery. Here are references to a few of them:

http://spaceref.com/extrasolar-planets/earth-mass-planet-found-in-the-habitable-zone-of-proxima-centauri.html

http://www.skyandtelescope.com/astronomy-news/exoplanet-found-around-proxima-centauri-2408201623/

http://www.space.com/33834-discovery-of-planet-proxima-b.html

Vice President Layne Pederson has provided additional information to give further context:

Proxima Centauri is likely gravitationally bound to the Alpha Centauri binary system but at a distance of about 15,000 AU compared to the distance of Alpha Centauri A and B which are only about the distance from the Sun to Saturn at their closest approach: about 10 AU. Of the three, Alpha Centauri A and Alpha Centauri B look as one star from earth with only Sirius and Canopus being brighter but are below the horizon from our latitude. However, Proxima Centauri, being just a little closer, is too dim to be seen with the unaided eye. Additionally, even if the atmospheres of tidally locked planets, including Proxima b, don't distribute heat from the star side to the anti-star side, there is a chance that life could exist along the terminator.

The light we see from Proxima Centauri is 4.25 years old and if we could travel at the speed of light, it would take us 4.25 years to get there. However, current technology is much too primitive to visit these stars. The fastest man-made object is Voyager 1 traveling at almost 40,000 miles per hour. At that speed, it still would take almost 72,000 years to travel there. The extent of the Oort cloud isn't known with any refined degree of accuracy but it could be as far as 1/10 of the distance to the Alpha Centauri system.

Also, our Sun has been burning its fuel for about 5 billion years, with our earth being just over 4.6 billion years old. It is expected that in about 5 billion more years, the Sun will fuse all available hydrogen and it will start to fuse helium and begin its red giant phase on its way to the eventual conclusion of becoming a white dwarf in a relatively small amount of time after that.

However, since the atmosphere of red dwarfs is completely convective, the spent hydrogen fuel (helium) is carried away from the core to be replaced with more hydrogen. As a result the current model for the lifetime of a red dwarf is beyond the age of the universe, which is 13.7 billion years. This means that Proxima Centauri and, therefore, Proxima b may be around for a very, very long time, assuming no other external factors interfere with its evolution.

September Skies

By Tom Westre

It's September and Summer is coming to an end. The sky is getting a little darker in the evening. If we look to the west we see the bright star Arcturus, a pale-orange star in the constellation Bootes. Above us we see two birds of the summer sky, Aquila the Eagle and Cygnus the swan. Altair in Aquila is only sixteen light years away and rotates rapidly once every 6 hours compared to our sun at 25 days. Altair means the 'flying one." Just above Altair lies Alshain and below Altair lies Tarazad. Altair along with Deneb in Cygnus and Vega in Lyra form the Summer Triangle. Several small constellations can be easily overlooked. Just north of Aquila is Sagitta the Arrow, the third smallest constellation. Sagitta consists of four fourth magnitude stars. Could this be an arrow shot by Sagittarius? The other constellation is Delphinus the Dolphin. The two named stars in Delphinus are Sualocin and Rotanev. Vulpecula the Little Fox lies just above Sagitta between Aquila and Cygnus. Just to the east of Delphinus lies Equuleus (ek-kwoo-lee-us) the Colt or Foal or Little Horse. The last in this grouping of small constellations is Lacerta the Lizard, located between Cygnus and Cassiopiea.

Other constellations that appear to us in September are Cepheus the King shaped like an upside down house and his wife Cassiopeia looking like either a "W" or "M' on its side in the north-east. Draco the Dragon is located west of Cepheus. Because of the earth's wobbles every 26,000 years the position of the poles change along a circular path called precession circles. Six thousand years ago the pole star was Thuban located in Draco during the time of the building of the Great Pyramid.

If you look southeast of Aquila the Eagle you can see the fainter stars of Capricornus the Water-goat.

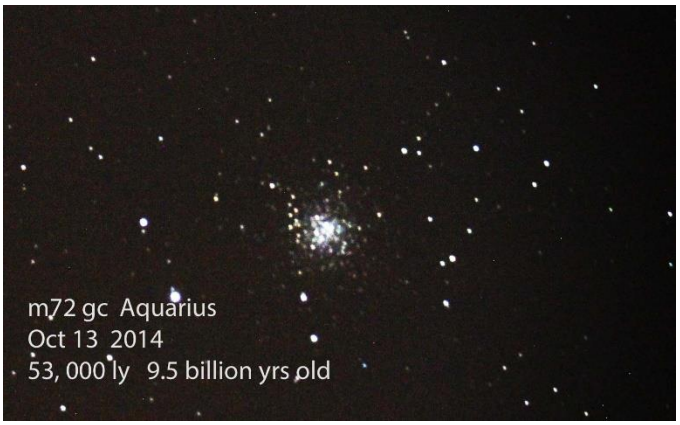
Another water constellation is Aquarius the Water Carrier located below the Great Square of Pegasus and east of Capricornus. East of Aquarius lies another water constellation, Pisces the Fish. It is here that the sun moving along the ecliptic crosses the celestial equator into the northern skies which is called the Spring Equinox. Due to precession of the earth's axis over a 26,000 year time, the Spring equinox will have moved toward Aquarius in about 600 years.

The constellation Sagittarius is well placed this month as it is due south above the southern horizon. To its west lies Scorpius the Scorpion. For the past few months we have been watching two planets, Saturn and Mars as they have moved through these two constellations. The faster of the two planets, Mars, is moving east, while Saturn is above the Mars-like red star Antares. All three objects form a triangle. Mars is the brighter of the two planets, but as the month progresses it will continue to fade as it continues to move eastward (left). By October Mars will be in Sagittarius so it will be interesting to watch it move eastward through the month.

Some of my favorite objects to view and photograph are listed below by constellation.

Aquarius: M2 Globular Cluster. M72 Globular Cluster, NGC 7009 Saturn Nebula, NGC 7293 Helix Nebula, NGC 7606 Galaxy, NGC 7723 Galaxy, NGC 7727 Galaxy
Capricornus: M30 Globular Cluster
Cassiopeia: M103 Open Cluster, NGC 7635 Bubble Nebula, NGC 185 Galaxy, NGC 278 Galaxy
Cepheus: NGC 7129 Open Cluster+Reflection Nebula
Delphinus: NGC 6905 Planetary Nebula, NGC 6934 Globular Cluster, NGC 7006 Globular Cluster
Draco: M102 Lenticular Galaxy, NGC 6543 Cat's Eye Nebula, NGC 6503 Galaxy
Lacerta: NGC 7209 Open Cluster, NGC 7243 Open Cluster
Pisces: NGC 524 Lenticular galaxy Group of nine galaxies. M 74 Galaxy
Sagitta: M71 Globular Cluster
Sagittarius: M8 the Lagoon Nebula, M 17 The Swan Nebula, M20 The Trifid Nebula, M22 Globular Cluster
Scutum: M11 The Wild Duck Open Cluster, M26 Open Cluster, NGC 6712 Globular Cluster
Serpens: M16 the Eagle Nebula
Vulpecula: M27 The Dumbell Nebula

I am including in the article some images of objects to view in September. Images taken by myself and those submitted by club member Blaine Dickey with his MalinCam. If any club member has images they would like posted on our website submit them to my email: twestre45@aol.com. Include the catalog number such as Messier or NGC, name of object, constellation, telescope and camera used.



Messier 72 in Aquarius by Tom Westre

Messier 2 in Aquarius by Tom Westre

Messier 71 in Sagitta by Tom Westre

Messier 27 in Vulpecula by Blaine Dickey

Messier 17 (Swan Nebula) in Sagittarius by Blaine Dickey

Messier 16 in Sagittarius by Blaine Dickey

Spotlight on Cygnus, the Swan

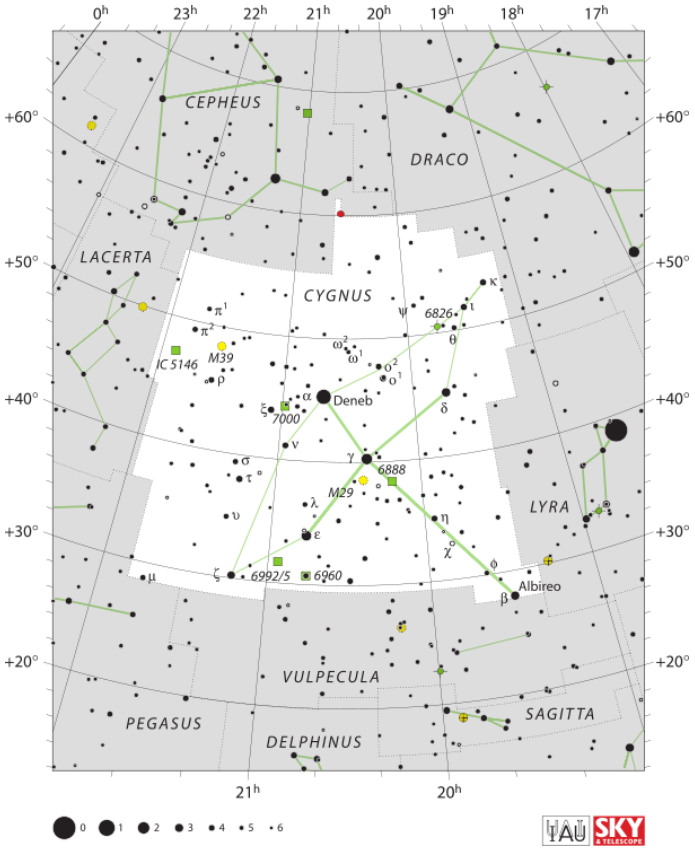
By Dale Hooper

Summer is beginning to fade, but the summer triangle which includes the luminary Deneb found in Cygnus is high in the sky right now. Cygnus includes open clusters, planetary nebulae, emission nebulae, dark nebulae, supernova remnants and one of the finest colorful double stars in the sky.

Cygnus is one of the constellations in which you should spend a few evenings not looking for any particular object, but instead spend some time with binoculars or a rich field telescope just scanning the entire region. You will be amazed at the beauty of the star fields found in this constellation which flies along the plane of our Milky Way.

Veil Nebula (CC0 Public Domain)

Only objects which rank four to five stars in *The Night Sky Observer's Guide* (Cygnus is in Volume 2) have been included, which means there are a great many fine open clusters and nebulae that are not listed.



IAU and Sky & Tel - Roger Sinnott & Rick Fienberg

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

Object	R.A.	Dec.
Albireo β Cygni (Double star)	19h30.7m	+27°58'
NGC 6819 (Open cluster)	19h41.3m	+40°11'
NGC 6826 (Planetary nebula)	19h44.8m	+50°31'
δ Cygni (Double star)	19h45.0m	+45°08'
Messier 29 (Open cluster)	20h23.9m	+38°32'
NGC 6960 (SNR & Emission neb) Veil – western segment	20h45.7m	+30°43'
NGC 6992 (SNR & Emission neb) Veil – eastern segment	20h56.4m	+31°43'
NGC 6995 (SNR & Emission neb) Veil – eastern segment	20h57.1m	+31°13'
61 Cygni (Double star)	21h06.9m	+38°45'
Messier 39 (Open cluster)	21h32.2m	+48°26'

CVAS Minutes – Aug 2016

There was no meeting in August.

Upcoming Star Parties

09 Sep	Public Star Party – Macey's Parking Lot
10 Sep	Solar Party – Logan Library (10am – 11:30am)
30 Sep	Heritage Park (2456 S. 800 W. Nibley)

** Tentative End of Star Parties for 2016 **

Upcoming Events

01 Sep	New Moon
	Karl Harding discovers asteroid Juno (1804)
	Pioneer 11 first Saturn flyby (1979)
02 Sep	Neptune at opposition
	Jupiter 0.4° south of Moon
03 Sep	Viking 2 lands on Mars (1976)
05 Sep	Labor Day
09 Sep	First Quarter Moon
	E.E. Barnard discovers Jupiter's moon Amalthea (1892)
11 Sep	Patriot Day
	ICE probe flies past comet Giacobini-Zinner (1985)
13 Sep	Luna 2, first craft to impact the Moon (1959)
16 Sep	Full Moon
19 Sep	William Bond discovers Saturn's moon Hyperion (1848)
21 Sep	Aldebaran 0.2° south of the Moon
22 Sep	Autumnal Equinox
23 Sep	Last Quarter Moon
	Neptune discovered (1846)
28 Sep	Mercury at greatest western Elongation
29 Sep	Mercury 0.7° north of the Moon
30 Sep	New Moon