

Cache Valley Clear Skies

The Journal of the Cache Valley Astronomical Society



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Meeting Announcement

Our monthly meeting will be held on Thursday, December 10, 2015 at 7:30pm at the Physics Conference Room (room 244) in the Science Engineering Research (SER) building directly east of the library. **Please note that this is the second Thursday rather than the third Thursday.**

Our featured speaker will be Dr. Hollis R. Johnson, Emeritus Professor of Astronomy from Indiana University and father of club member Lyle Johnson. Dr. Johnson will be speaking to us about the timely subject of “The Star of Bethlehem”. The photo below is from a recent lecture Dr. Johnson gave (in Danish) at the Niels Bohr Institute in Copenhagen.



The President's Corner By Dell Vance, CVAS President



I hope that everyone had a great Thanksgiving. It is starting to get much colder and that can slow the observing down considerably. My wife and I have been able to visit California and upstate New York the last few months. I have been taking my binoculars along with me in an effort to show our grandchildren the wonders of the heavens. Unfortunately, we have also had a lot of rainy weather on these trips. We were able to have at least one night on each trip to do some stargazing with the

grandkids. What a great opportunity that can be. I will never get tired of their excitement when they see the craters of the moon or Pleiades. They get almost as excited as their Grandpa.

I am pleased with the views I am getting with my binoculars. On colder nights they are just right for a quick look at the skies. I have found that you need to remember to let them chill down to the ambient temperature before you start using them, as they fog up just like a telescope.

I would like to encourage all of us to take opportunities to share our love for astronomy with our families and friends. They don't seem to have much exposure in the schools these days, so they don't have much knowledge as to what they can see for themselves. Everyone uses the internet to get the vision of what is out there, but have no idea that they can actually see some pretty amazing things for themselves. Also, there is something about finding a planet, constellation, double star or whatever in the sky.

Last month David Hansen, gave a hands on presentation of how telescopes work to gather light. It was fun to see the demonstrations. Thanks David for putting this together for us.

We have another great presenter this month, Dr. Hollis R. Johnson. He will tell us about the Star of Bethlehem. It should be an exciting event. Be sure to bring your Friends. It is on December 10, 2015, in our usual room on the USU campus.

Have a great month of observing (you will probably have to make them quick observations at these temperatures).

Clear Skies!

Comet C/2013 US 10 Catalina By Tom Westre

Last year Comet Lovejoy was visible during the holiday season. This year we have Comet C/2013 US 10 Catalina. Discovered October 31, 2013 by the Catalina Sky Survey in Arizona it is now favorable for Northern Hemisphere observers.

Comet Catalina reached perihelion, it's closest to the Sun on November 15. At that point in its orbit it was between the orbits of Earth and Venus. The comet was traveling at a speed of 103,000 mph relative to the Sun at perihelion.

The comet is a first time visitor to the inner solar system. This comet came from the Oort Cloud. Before entering the inner solar system it had an orbital period of several million years. But now it is on an ejection trajectory. When first discovered it was thought to be an asteroid, and was given the unusual designation US 10. At the time the comet was thought to have a six year orbit until more orbit observations were made and the orbit was recalculated.

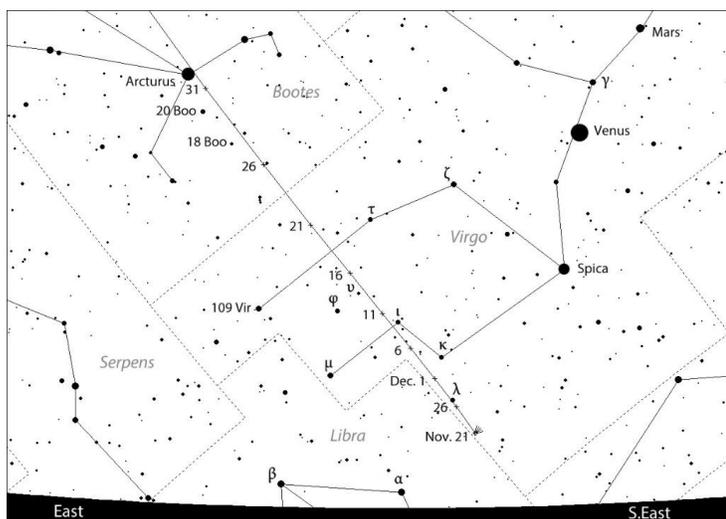
The comet is an early morning object located in the east before sunrise. At the beginning of December Catalina may be difficult to observe as it is near the eastern horizon, but observations should improve as it gets higher and brighter in the predawn skies during December. At the time of its discovery in 2013 it had a magnitude of 19. The comet might reach magnitude 5 or 6 so it should be within range of visual observations in a dark sky after the first of the year as it passes through Ursa Major. As December begins it is about magnitude 6.1 or 6.2. You should be able to see it using binoculars.

Reports indicate that the comet has two tails with possibly a third, between the other two. A telescope should show them, and a camera with its greater light gathering power will show more details than the eye. The tails are about 500,000 miles long, so the comet should be a nice object in small telescopes.

The comet should appear a greenish color, which is due to gases like diatomic carbon.

Here are some key dates to observe the comet:

December 7, 2015, 30 to 45 minutes before sunrise. The comet will be to the left of Venus and the waning Moon.



December 8, 2015, 30 to 45 minutes before sunrise. Another opportunity to glimpse the comet near the waning moon. No one knows if the comet will be visible to the eye by this date, so binoculars should come in handy.

December 31, 2015. Comet approaching the apparent position of the star Arcturus on our sky's dome. Another good photo opportunity.

January 1, 2016, from 2 a.m. to sunrise, local time. The comet will be very near (1/2 degree) the bright star Arcturus in the constellation Boötes.

If you get a chance to view Catalina, drop me an email on your observations. (twestre45@aol.com)

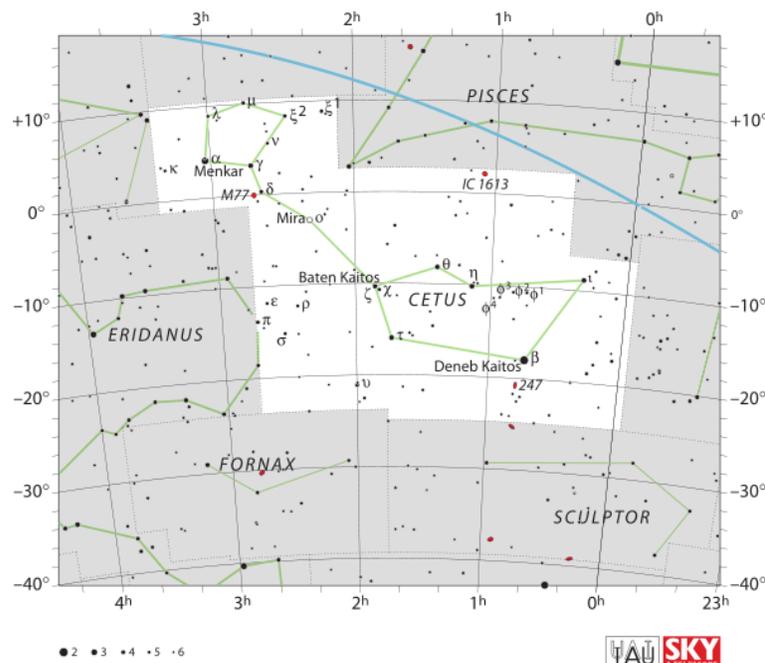
Spotlight on Cetus, the Whale

By Dale Hooper

Cetus was originally the sea monster from the Andromeda myth, but in modern times we know it as the whale. It gets a bit higher in the sky than Sculptor (which was featured last month) and like Sculptor it is composed of fairly dim stars. It is well away from the plane of the Milky Way galaxy so there are many galaxies which reside in its boundaries.

It is also the home of Mira which is the prototype of a type of variable star. Mira varies from around magnitude 2.0 to 10.1 over a period of 332 days. Mira is a red giant star that is in the process of fusing helium in its core. It is expelling the outer layers of

its atmosphere – which will eventually form a planetary nebula after Mira has ceased the fusion process.



IAU and Sky & Tel - Roger Sinnott & Rick Fienberg

I am only listing objects which rate at least four stars in *The Night Sky Observer's Guide* (Cetus is in Volume 1). As with Sculptor, there are many galaxies which rate three stars which I haven't listed. Many of these three star galaxies can be readily observed with an eight inch telescope. As usual, the table is organized according to increasing Right Ascension values.

Object	R.A.	Dec.
NGC 157 (Galaxy mag 10.4)	00h34.8m	-08°24'
NGC 246 (Plan neb mag 10.9)	00h47.0m	-11°53'
NGC 247 (Galaxy mag 9.2)	00h47.1m	-20°46'
26 Ceti (Double star)	01h03.8m	+01°22'
NGC 578 (Galaxy mag 11.0)	01h30.5m	-22°40'
NGC 779 (Galaxy mag 11.2)	01h59.7m	-05°58'
66 Ceti (Double star)	02h12.8m	-02°24'
Mira (Variable star)	02h19.3m	-02°59'
84 Ceti (Double star)	02h41.2m	-00°42'
Messier 77 (Galaxy mag 8.9)	02h42.7m	-00°01'
γ Ceti (Triple star)	02h43.3m	+03°14'
NGC 1087 (Galaxy mag 10.9)	02h46.4m	-00°30'
α Ceti (Binocular double)	03h02.2m	+04°05'

CVAS Minutes – November 2015

Layne Pedersen was appointed club Vice President by the Executive Committee. A motion was made and ratified by the members in attendance to recognize Layne as Vice President until the next annual general meeting. A motion was made and adopted to approve the new CVAS logo (along with minor variations). Lyle was asked to also look into trying a bull instead of a cow. Dues will be rolled over from last year.

Tom Westre led a discussion about a goal for IRS 501c3 status for the club. We are currently working on obtaining an EIN. There will be a 7pm club business meeting to discuss this issue just before the December meeting.

Dale Hooper discussed the current sky events. There will be occultations (by the Moon) of Aldebaran and Venus (daytime) over the coming month.

Our featured speaker, Dave Hansen then gave a presentation about the physics of telescopes. He showed his Dobsonian reflector telescope and explained how it worked. He then explained a ray trace diagram so that we could see what happens to the light to form an image. He also explained the effects of changing the focal length. As the object gets further away the final image is formed at the focal point. He also explained that the eyepieces act like a magnifying glass.

Dave included a lot of hands-on demonstrations which helped those in attendance to see and better understand the effects.

Upcoming Star Parties

Currently there are no organized club star parties planned for December.

Upcoming Events

1 Dec Jupiter rises about 12:30am

	Mars rises about 2am (with a disk of 5")
2 Dec	Mars 3, first craft to soft land on Mars (1971)
3 Dec	Last Quarter Moon Pioneer 10, first Jupiter flyby (1973)
5 Dec	Venus rises 3½ hours before the Sun Mars 0.1° north of Moon
7 Dec	Daytime occultation of Venus by the waning crescent Moon Hanukkah begins Pearl Harbor Remembrance Day
11 Dec	New Moon
13-14 Dec	Geminid meteor shower
14 Dec	Hanukkah ends Tycho Brahe born (1546)
15 Dec	Venera 7, First craft to soft land on Venus (1970)
18 Dec	First Quarter Moon
19 Dec	Uranus 1.2° north of Moon
21 Dec	First day of Winter Apollo 8 launched, first manned craft to leave Earth's gravity (1968)
23 Dec	Giovanni Cassini discovers Saturn's moon Rhea (1672)
25 Dec	Christmas Day Isaac Newton born (1642)
27 Dec	Johannes Kepler born (1571)
28 Dec	Mercury at greatest eastern elongation (20°)
31 Dec	Jupiter rises about 10:30pm New Year's Eve