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 **FRIDAY**, February 20, 2014 at 7:30pm at the Physics Conference Room (room 244) in the Science Engineering Research (SER) building directly east of the library. **Please note the new day of the week for our meeting.** This month our speaker will be James Coburn. Mr. Coburn is the teaching laboratory supervisor for the department of physics and he runs the observatory. If the sky is clear we hope to have a chance to observe through the USU telescope.

The President's Corner
By Tom Westre, CVAS President

Those who attended the first CVAS meeting January 2015 enjoyed a full program. We discussed major sky events for 2015 and had our annual "Show and Tell". A number of items were brought by those in attendance. This is always a great opportunity for club members to get some actual hands-on of items we my only have read about. Another benefit of being a club member: Try before you buy.

January has been a great month for sky events, and the weather has cooperated for most. Jupiter is up in the east and will be with us for some time. Comet Lovejoy C/2014 Q2 is a bright comet we are still enjoying. A few of us met at Blaine Dickey's house to observe the triple transit of three of Jupiter's moons using Blaine's Mallincam Jr Pro camera. We were able to view this event in the warmth of his living TV. Then on Jan 26, we were treated with the close by-pass of asteroid BL86, visible as a 9th magnitude object near M44.

What a way to start off the 2015. We look forward to another great year of sky watching. As a club we are planning some star parties for both club members and the general public. We hope everyone has a chance to come out for these events.
Mr. James Coburn will be our Speaker for February 20. Mr. Coburn is the teaching laboratory supervisor for the department of physics and runs the observatory. If the sky is clear we hope to have a chance to view the sky through the USU telescope.
The February 2015 issue of *Astronomy* magazine has an interesting article called "7 wonders of the Milky Way". They had asked their readers to choose their favorite Milky Way deep sky objects. We would

like to ask our members to submit their 7 favorite Milky Way deep sky objects. Especially those seven that are your favorite to observe and or show to friends. Even if you don't have a telescope we would like to you to let us know what your favorites are. We will give the results in our March newsletter. You can email your choices to me or Dale, our emails are listed in the newsletter heading.

Here is a suggestion for the next time you take that telescope out to observe. Try the triple star Castor in Gemini the twins. I went out the other night and tried to image the star. My results were not as good as I thought. So I am going to try again in February. Castor and Pollux are the two brightest stars in Gemini. Castor is the highest of the two stars. Castor is 50 light years away. In mythology Castor was the son of Zeus and Leda.

Castor was discovered to be a visual binary in 1678, with a magnitude of its components being 2.0 and 2.9. The separation of the components is currently about 5", and the period of revolution is around 467 years. Even a fairly small telescope shows that Castor appears double, and in fact an even fainter star nearby also is part of the same system. Each of the components of Castor is a spectroscopic binary, making Castor a quadruple star system. Castor has a faint companion separated from it by about 72"; this companion is an eclipsing binary system with a period slightly less than 1 day. Castor can thus be considered to be a sextuple star system, with six individual stars gravitationally bound together. Next time you are out with the telescope see if you can see these three stars.

See you at our meeting in February.
Clear skies!!!

How I Became Interested in Astronomy

- **By Micah Fry**

It's difficult to pin-point when I got interested in astronomy and what exactly did it; I was the kid that bought models of the Solar System to hang up in his room and asked for the Astronomy magazine on my birthday when I was in middle school. However, I do remember one particular experience that may be most culpable in sparking astronomy into my life. In 5th grade our class prepared all year to play a "mock NASA mission" for a field trip. During the mock mission, I was the Navigator, who directed our shuttle to land on Mars. Halfway through the trip, I clicked on an object and discovered a previously unknown comet. We held a class meeting and decided to land on the comet instead. If only the European Space Agency knew about our 5th grade success!

Since that "mission" I decided to become an astronaut. So maybe I was already interested in the stars and that cinched the fascination, or maybe it was my initiation. Regardless, I'm here now, and astronomy seems one of the most beautiful pastimes a person can enjoy. It blows my mind that people like Galileo may have stared at a fuzzy smudge like Lovejoy, and that that would have illuminated his mind on the structure of our solar system—just by tracking the movement of an obscure blur in a telescope. Now we're landing on comets, and using that information to determine how Earth was made. Astronomy to me isn't just discovering our Universe, its mimicking the same steps Kepler or Newton might have taken in defining the world around them.

How I Got Started in Astronomy

- **By Lyle Johnson**

I grew up in the home of an astronomer. My father took my family outside occasionally to look at the night sky, and he even drove us to Florida once to see a total solar eclipse (the sky was overcast that day!). However, I never felt a personal interest in astronomy.

Then, when I was almost 30, I was looking at the full moon rising above the mountains one evening and I suddenly felt a desire to see it up close; I drove to a nearby mall and bought a 60mm refractor. Although the telescope was small, it had good Japanese optics, and I was able to see many craters on the moon, Jupiter and its largest moons, Saturn and its rings, the Orion Nebula, and several other amazing things. I was hooked!

Next, I bought a book of star charts and a planisphere and I spent many evenings learning the night sky. I never had a very big budget for hobbies, but I learned that I could buy good-quality used equipment, use it for a period of time, and then resell it for the same price that I had paid. Doing that, I have been able to try 80 different telescopes. I now have a basic 10-inch Dobsonian reflector, a small "quick-look" telescope, and a good-quality 15x70 binocular. The hobby of astronomy has provided me, my family, and many friends with countless hours of enjoyment.

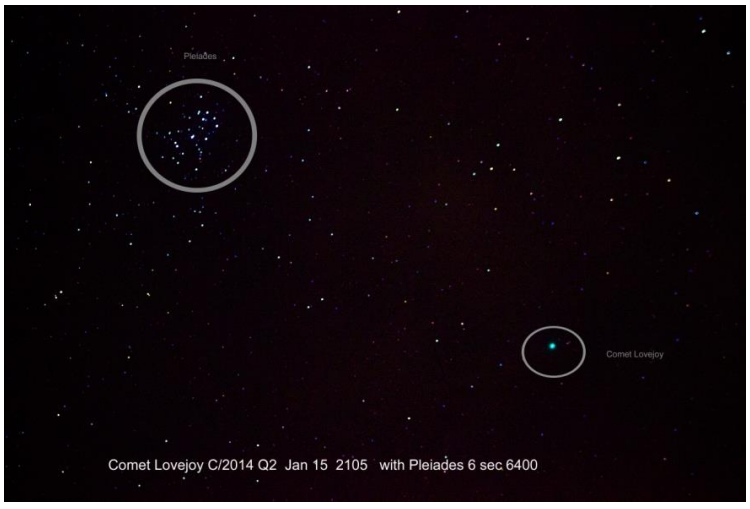
Recent Observations

- Submitted by Tom Westre

Messier 46 (NGC 2347) is a rich open star cluster in the constellation Puppis. Located in the Milky Way star field about 14 degrees east of Sirius in Canis Major.
Charles Messier discovered the cluster in 1771.

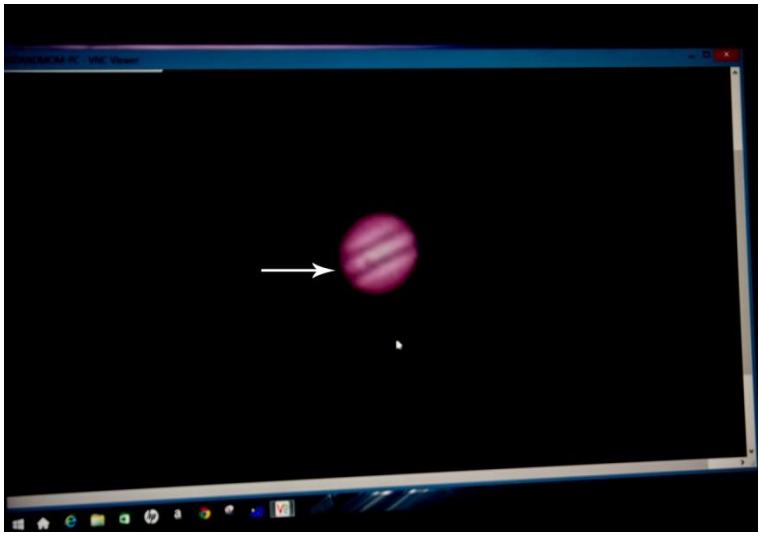
There are at least 150 members to this cluster and many contain as many as 500. All these stars are crammed into a volume about 30 light years in diameter the formed about 300 million years ago. The cluster is 5,400 light years from us. They are receding at a speed of 25 miles per second.
On the northern edge is a small planetary nebula (note arrow) a famous feature of the open cluster, NGC 2438. It's at magnitude 10.8. The nebula is probably a foreground object at a distance of 2,900 light years receding at 47 miles per second. So it lies in the same line of sight with M46. Its central star burned all the hydrogen in its core for nuclear fusion causing the star to collapse and heating up creating heavier elements and ejecting its outer layers. The famous Ring Nebula in Lyra is another example of this kind of nebula.
I imaged these two objects with my 6 inch Explore Scientific refractor and my Canon T3i on January 20th, with an exposure of 30 seconds at ISO 3200. I am going to try to image it again with my C11 to see if I can get more detail of the nebula.

Comet Lovejoy C/2014 Q2 has been an awesome naked eye object for several week as it moves north west passed Orion, Aries. It has dimmed from magnitude 4.0 to its present 4.5 as it moves through Andromeda in the northwest in the evening skies. I imaged Lovejoy January 15 as it neared the Pleiades star cluster.



The next image is of open star cluster Messier 35 in the constellation Gemini. Messier 35 is 2,800 light years away from us and, having been formed only a little more than 100 million years ago. Messier 35 on the lower center and NGC 2158 on the upper right. These two clusters have no relation to each other since detailed study shows that NGC 2158 is four times more distant, at 16,000 light years and 10 times older than M35 which is 100 million years old. It's always fun to look for bonus objects in the same field.

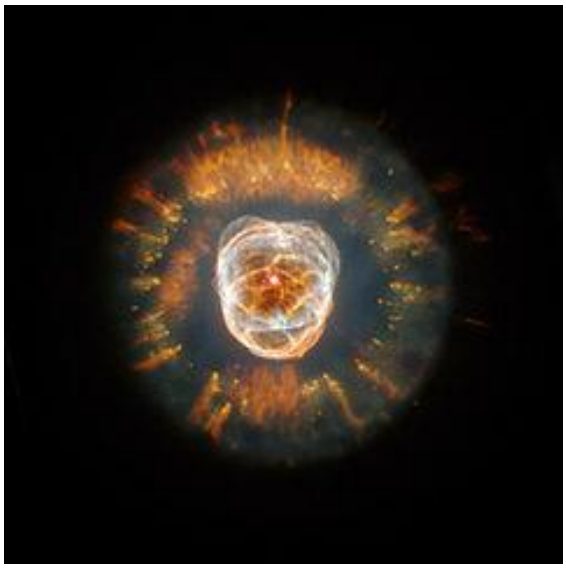
My last image was taken off the television screen in the living room of club member Blaine Dickey on the evening of January 24th as we watched three of Jupiter's moon pass in front of Jupiter allowing to also see the shadows of the moons using Blaine's Mallincam Pro Jr camera. As Galileo found early in the 17th century, Jupiter has four large, bright moons that are usually seen as points of light on one side of the planet or the other. These satellites — Io, Europa, Ganymede and Callisto — are known as the Galilean moons, after their discoverer. Jupiter has at least 63 smaller moons, most of which are too small to be seen with amateur telescopes. Three moon shadows at once on Jupiter Friday night! It won't happen again for U.S. observers until the year 2032. BTW the white dot is a cursor. The moons and shadows are on the far right just above the lower band.



Spotlight on Gemini

- **Submitted by Dale Hooper**

As Tom mentioned, this is a great time to observe objects in the constellation Gemini. It is over fifty degrees high in the sky by early evening. Gemini is the home to a number of colorful multiple star systems, many fine open clusters including M35 (as mentioned by Tom) and a fine planetary nebula – NGC 2392 (the Eskimo nebula).



NGC 2392 (Eskimo Nebula) - Hubble Space Telescope Image

Each of the objects in the table below are well worth observing. They each rate at least four stars out of five in *The Night Sky Observer's Guide*.

Object	R.A.	Dec.
NGC 2129 (Open Cluster)	06h01.0m	+23°18’
M 35 (Open Cluster)	06h08.9m	+24°20’
15 Geminorum (Double star)	06h27.8m	+20°47’
20 Geminorum (Double star)	06h32.3m	+17°47’
NGC 2266 (Open Cluster)	06h43.2m	+26°58’
38 Geminorum (Double star)	06h54.6m	+13°11’
Lambda Gem (Double star)	07h18.1m	+16°32’
Delta Gem (Double star)	07h20.1m	+21°59’
NGC 2392 (Planetary Nebula)	07h29.2m	+20°55’
Castor (Multiple star)	07h34.3m	+31°53’
Kappa Gem (Double star)	07h44.4m	+24°24’

CVAS Minutes – January 2015

Tom welcomed everyone to the meeting and began by discussing important sky events for 2015. Tom next presented some of the recent images that he has taken and showed that the images contained secondary “bonus” objects. He also mentioned the upcoming close encounter with near earth asteroid (NEA) 2004 BL86 and explained where comet Lovejoy is currently located.

The time was then turned over to members which brought something for “show and tell”.

- Blaine showed several images that he had recently taken with his Mallincam Jr. Pro.
- Dell displayed several of the images that he has taken with his new Canon T3i.
- Dale showed the Mallincam Jr. Pro that he begged for from Santa.
- Janice discussed her new 12x56 binoculars and tripod adapter.
- John showed the club his new TeleVue Delos 17mm eyepiece, Pocket Sky Atlas and Constellation Guidebook
- Tom finished up by showing us his new 20mm eyepiece with illuminated crosshair, an Orion 50mm small guide scope (with helical focuser) and several observing guides.

Everyone agreed that they now could see additional things to spend their money on.

Upcoming Star Parties

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

Upcoming Events

1 Feb	Anniversary of space shuttle Columbia disaster (2003).
7 Feb	Anniversary of first untethered spacewalk (Bruce McCandless 1984).
13 Feb	Saturn is two degrees sout of the Moon at 0h UT.
18 Feb	New Moon Clyde Tombaugh discovers Pluto (1930).
20 Feb	John Glenn, first American in orbit (1962)
24 Feb	Discovery of first pulsar announced (1968)
25 Feb	Aldebaran 1 degree south of the moon (an occultation occurs but it is not visible from Cache Valley).
26-27 Feb	Over a six hour period four events occur involving Io, Ganymede and Callisto. Io occults Ganymede from 11:17pm to 11:24pm MST. Europa comes out of Jupiter’s shadow at 12:23am MST. A ten minute eclipse of Ganymede by Io then starts at 12:31am MST. Callisto’s shadow covers Ganymede for 11 minutes beginning at 01:28am MST and at 04:49am MST Callisto eclipses Io for 12 minutes. Additional mutual events of Jupiter’s moons can be found on page 53 of the February issue of *Sky & Telescope*.