January-February
2015
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Issue 1

The Observer

The Newsletter of Central Valley Astronomers of Fresno

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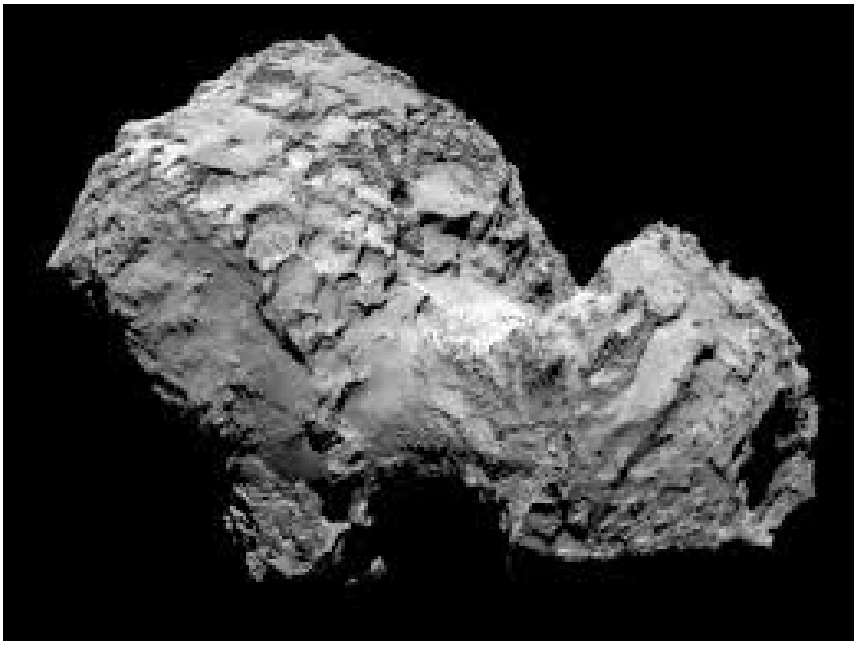
CVA Calendar

January 10-CVA monthly meeting 7pm-CSUF

January 17-CVA Star Party at Eastman Lake

January 24-CVA Star Party at Eastman Lake

February 7-CVA monthly meeting at 7pm-CSUF



The Astronomical Event of the Year-2104

Observer Image of the Month

ESA's Rosetta spacecraft took this image of comet P67/Churyumov-Gerasmenko in November 2014, shortly before it released its Philae probe, which landed on the surface on November 12. Scientists expect more findings from P67 in 2015.

Image-NASA/ESA

Quote of the Month-

It always surprises me when a young person tells me that he wants to work at cosmology. I think of cosmology as something that happens to one, not something that one can choose.

-William McCrea

○ January 5-Full Moon ● January 20-New Moon ○ February 3-New Moon ● February 18-Full Moon

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The Observer is the newsletter of the Central Valley Astronomers of Fresno

An announcement from the CVA webmaster, Scott Davis

A New Year, a Better Website

When I became the webmaster for the Central Valley Astronomers, it was my belief that my newly-designed website was an improvement on the old one, offering space news updates, a gallery system for our member-astrophotographers to post their artwork, and additional resources for users to discover who we are as a club and what we do. Like all things, however, it had deficiencies. As I saw messages come through the "Contact Us" feature, I could see that web visitors still had a lot of questions about memberships, star parties, telescopes, and locations. While some of the questions were best when answered one on one, many of them could have been avoided by having better or more complete information on the website. It is from these revelations that the new edition of the CVA website was born.

The new website has been completely re-designed to be more colorful, more graphical, and more informative. It seeks to answer many of the questions that come through the E-Mail system, including many that I had before I joined the club three years ago. Here is a quick listing of some of the newest features and improvements:

New Home Page – The new main page has the President's Message, announcements, photography, a space news feed (courtesy Space.com), a list of coming events, and even the astronomical zodiac constellation of the day.

Board/Contact Page – There is now a clear "Who Should I Contact" article that suggests the best members to contact based on what the needs of the visitor are.

Membership Page – This now attempts to make more clear what membership includes and why it is important to become a member.

Calendar & Information – The Maps & Directions page now contains detailed directions for every observing site. Weather forecasts now show five locations on a single page, and the Clear Sky Charts page shows data for six locations.

Event Types – This brand-new section shows in-depth information on eight different types of events, designed to answer common questions about each event type.

Downloads – This section has been expanded, and now offers downloads of past calendars, various resources, the club newsletter archive, and club presentations available in PDF format. If you have any presentations you would like added, let me know and I will give you access to a shared Dropbox folder for uploading.

Education – Starting with just one article currently, this will be a place for members to contribute articles designed to be snippets of information for those looking for interesting astronomy-related reading. I know we have lots of smart people in our club (including several teachers) and we can really turn this into a great area for people to read and learn about astronomy.

The new website will launch in the evening of Sunday, January 4, and a complete presentation on the new features will demonstrated at the monthly club meeting on Saturday, January 10. I encourage you to visit the new website, check out the new features, and send feedback on what you think. Here's looking forward to a wonderful new year of observation and exploration!

Profiles in Astronomy

Herman Minkowski 1864-1909

Minkowski was born and raised in what is now Lithuania, at that time under the domination of Russia. When he was young his family, which was Jewish, moved to Konigsberg, then in Germany, to escape anti-semitic persecution. Minkowski was educated at the University of Koningsberg, receiving his doctorate in mathematics in 1885. In 1887, at the age of 23, his brilliance as a mathematician was recognized when he was awarded the Mathematics Prize by the French Academy of Sciences. Afterwards, he was a professor at several schools, including the Universties of Bonn, Gottingen, and Koningsberg, and also the Zurich Polytech in Switzerland, where he taught mathematics to the young Albert Einstein.

Minkopwski's academic reputation rests on his pioneering work in higher dimensional mathematics. He was one of the first to mathematically explain *n* dimensional space. He also worked with quadratic forms, and in 1896 wrote a paper on the geometry of numbers, which led to solving many problems dealing with number theory.

In astronomy, Minkowski is best known for the fact that he realized that the Special Theory of Relativity, published by his former student Einstein in 1905, could only work if it was seen in a four dimensional time-space geometrical form. In 1907, after reviewing the Special Theory, he postulated that time and space were not separate, but integrated parts of an overall continium. He expounded it at a scientific conference in 1908. At first Einstein did not take his former teacher seriously, but as he worked on the follow-up, the General Theory of Relativity, he realized that Minkowski's idea was the key to understanding how relativity worked. Eventually, Minkowski's theory and equations became a part of the General Theory. Today, the geometry of four dimensional space-time is known as Minkowski Space.

Tragically, Minkowski died at the age of 44 from an appendicitis attack. An asteroid, 12493 Minkowski, is named after him. The well known German-American astronomer Rudolph(Ralph) Minkowski, who was associated with the Mount Wilson Observatory for many years, was his nephew.

Source-Wikipedia, "Minkowski, Herman"

Interesting Things about January and February

January 6-The official records say that Isaac Newton was born on December 25, 1642, which technically he was. However, England was using the Julian calendar at that time, and would for over 100 more years. When it switched over to the Gregorian calendar in 1752, everything got moved up 12(or sometimes 11 or 13) days. So, it also can be said that he was born on January 6, 1643(which is in some biographies). For the same reason, the Eastern Orthodox Church, which still uses the Julian calendar, has Christmas on January 6 as well.

Week of January 27-February 1-The darkest week in the history of the U.S. space program. The Apollo 1 fire killed three astronauts on January 27, 1967. The space shuttle Challenger exploded, killing seven astronauts, 73 seconds after launch on January 28, 1986, and the space shuttle Columbia was destroyed during reentry, killing seven more, on February 1, 2003.

February 12-Abraham Lincoln and Charles Darwin were born on the same day in 1809. There is no mention on who was born first.

February 15-20-A noteworthy week-Starts with Galileo's birthday Feb 15, 1564; then goes to Clyde Tombaugh discovering Pluto on Feb 18, 1930; then to Copernicus'* birthday on Feb 19, 1473; and finally, John Glenn's historic Friendship 7 orbital flight on Feb 20, 1962.

*Copernicus' real name was Mikolaj Kopernik. He Latinized it to make it sound more important.

CVA Calendar January-February 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 New Year's Day Ceres, first asteroid, discovered by Giuseppe Piazzini-1801	2	3
4	5 Full Moon 	6 Epiphany-Eastern Orthodox Christmas Newton's birthday-1643(see article) Epiphany	7 Galileo discovers three of the four large moons of Jupiter-1610	8	9	10 CVA monthly meeting-7pm-CSUF
11	12	13	14	15	16	17 CVA starwatch Eastman Lake
18	19 Martin Luther King, jr, Day-legal holiday	20 New Moon  Luna 9 lands on Moon-1966	21	22	23	24 Voyager 2 flies past Uranus-1986 CVA starwatch-Eastman Lake
25	26	27 -48th anniversary of Apollo 1 fire-1967	28 -29th anniversary of Challenger disaster -1986	29	30	31
February 1-12th anniversary of Columbia disaster-2003	2 Groundhog Day	3 Full Moon 	4	5	6	7 CVA monthly meeting 7pm CSUF
8	9	10	11	12 Lincoln's birthday-also Darwin's-1809	13	14 Valentine's Day
15-Galileo's birthday-1564	16 Presidents' Day-legal Holiday	17-Mardi Gras Day	18 New Moon  Pluto discovered by Clyde Tombaugh-1930 Ash Wednesday	19 Chinese New Year-Year of the Sheep Copernicus' birthday-1473	20-53d anniversary of John Glenn's Friendshjip 7 flight-1962	21 CVA starwatch-Eastman Lake
22	23	24	25	26	27	28

What's New in Space
After SS2

The crash of SpaceShip 2 on October 31 has thrown the commercial space business into a state of limbo. Although Virgin Galactic owner Richard Branson says he wants SS2 to be flying again in less than a year, there are several factors which conspire against that. One is that the Department of Transportation and the National Transportation Safety Board will probably not finish their investigation into the crash for another year. A second problem is that currently there are no other SS2s available for testing; the one that was destroyed was the only one completed and ready for flight; a second SS2 will probably not be ready for at least a year to eighteen months. So, the earliest that SS2 will fly again will most likely be sometime in 2016 or 2017.

Right now, the investigation into the cause of the crash is focusing on the spacecraft's adjustable "feathering" wing and tail system, which allows it to slow down as it reenters the atmosphere, thereby reducing drag and friction. Indications are that the co-pilot may have prematurely activated it, causing the craft to lose aerodynamic stability and break up while it was still accelerating and climbing. The co-pilot was killed; the pilot was able to escape the craft as it plummeted, falling from 50,000 feet without a pressure suit before releasing his parachute. He suffered moderate injuries, but survived, and has been talking extensively to investigators about what might have happened.

Although many are lamenting the crash, and claiming that it may mark the end of manned commercial spaceflight, aviation historians say that something like this was almost expected; the early days of powered air flight also saw a number of crashes and fatalities. Eventually, airplanes became better and safer, and air flight became commonplace, and commercial spaceflight will evolve to be the same, according to them.

First Orion Mission a Success

On December 5 , the new Orion-MPCV spacecraft, which is intended to carry astronauts to asteroids, and (hopefully) to Mars, was successfully launched and put through a simulated high orbit trajectory and reentry before splashing down in the Pacific Ocean, ending a five hour test. The craft, atop a Delta IV heavy lift rocket, was launched just before dawn from the Cape Canaveral Launch Center(not the Kennedy Space Center, which is separate facility), made two low Earth orbits of the Earth, and then fired its booster engine to send it almost 4,000 miles away prior to a high speed reentry. After reentering the atmosphere at over 20,000 miles per hour, the spacecraft landed in the ocean off of Baja California, where it was picked up by a Navy ship. According to NASA and Lockheed Martin, the test was a total success, and paves the way for a second test in 2018(which will use the same craft), and a manned flight in 2021, which may rendezvous with a near-Earth asteroid. NASA is hoping that this successful test flight will reinvigorate the space program and raise public interest, which has flagged since the end of the space shuttle program in 2011. Also, with this first successful test, NASA is planning to press the President and Congress for funding for a manned Mars mission before 2030.

Two ISS Crewmembers to Spend a Year in Space-And a Unique Opportunity

In March 2015, American Scott Kelly and Russian Mikhail Kornienko will begin a long term stay aboard ISS for a distinctive reason: to test human endurance in preparation for trips to Mars and other parts of the outer solar system. The two will spend a full year aboard the space station, returning to Earth in April 2016. Even though it was not originally planned that way, it has turned out to be a unique opportunity for NASA to compare Scott's physiology to a person on Earth; that is, his identical twin brother Mark, who was also an astronaut. While Scott is orbiting the Earth in 2015 and 2016, Mark, who flew four shuttle missions, and left the space program after his wife, former Arizona congresswoman Gabrielle Griffiths, was shot in 2011, will undergo the same exercises and routines and be subjected to the same medical tests at the same time as his sibling. Mark, who now works for Space-X and hopes to go back into space someday aboard a private commercial spacecraft, agreed to participate in the project even though he officially is no longer with NASA. By testing two genetically identical people at the same time, one in space and one on Earth, NASA life science researchers hope to answer many questions concerning the performance and degeneration of the human body in a microgravity environment.

Even though Kelly and Kornienko will spend a year in space, they will not break the record for the most consecutive days in orbit. Several Russian cosmonauts spent a year or more in orbit in the 1980s and 90s in the Salyut space stations and Mir; the current record is 439 days held by Dr. Valeri Polyakov, a physician, aboard Mir, from January 1994 to March 1995.

2015 will also see the first concert from space. Sarah Brightman, the British actress and singer who is best known for her role in the popular musical "Cats," will spend a week aboard ISS as a paying commercial passenger in September 2015. While there, she will record, and beam back to Earth, a melody of her favorite songs, among other activities. This is not the same as the Lance Bass fiasco of several years ago, or Madonna's aborted attempt to go into space in 2010; Brightman and her sponsors paid RKA, the Russian Space Agency, up front, and passed approval from all players in the ISS consortium.

An Astronomy Short

In 1982, Stephen Hawking met Pope John Paul II at a cosmology conference at the Vatican in Rome. The Pope, who impressed Hawking as being very keen on the Big Bang and supporting of modern cosmology, told him with a chuckle that it was alright to study the universe up to the Big Bang, but not what happened before that. Inwardly, Hawking chuckled back.

From Dennis Overbye, *Lonely Hearts of the Cosmos*

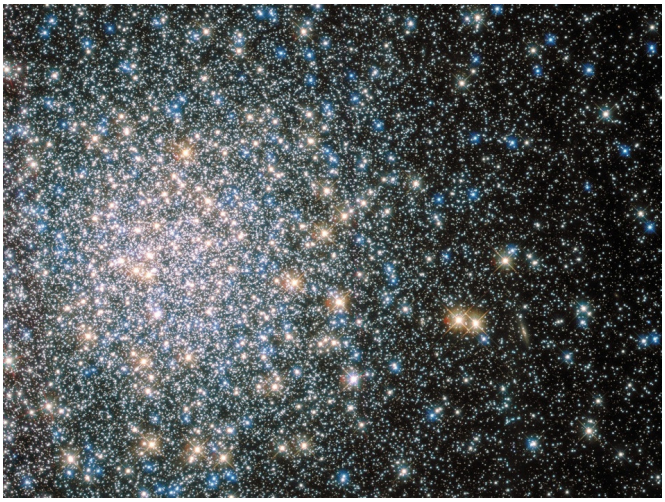
Number of Extrasolar Planets Discovered as of December 2014-1,855

How many more are out there?-Thousands? Tens of Thousands?

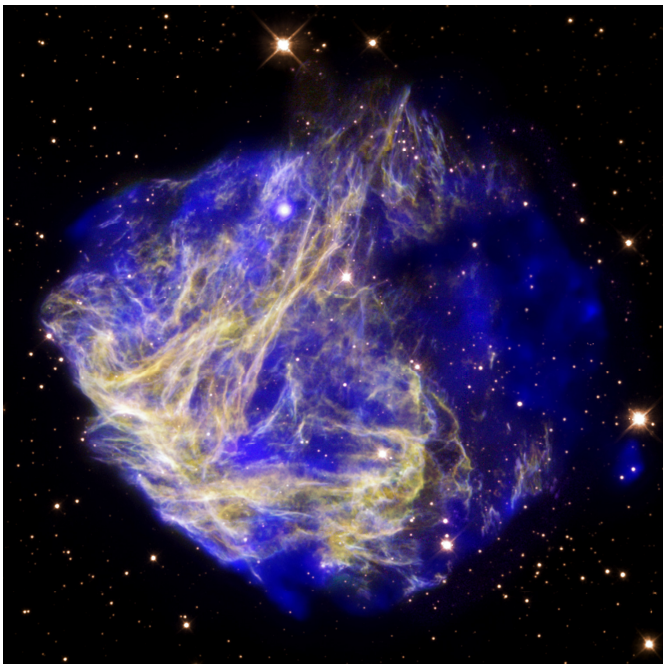
Great Hubble Images from 2014

Even though it's usually not in the headlines anymore, the Hubble Space Telescope continues to be the best ambassador the space program has ever had. Here is a collection of Hubble images from 2014, once again demonstrating that the old boy, now 24 years in space, keeps getting better all the time.

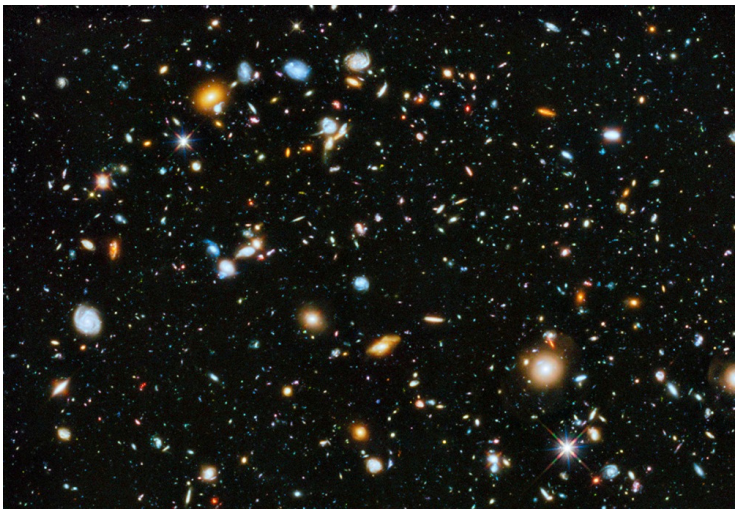
Pillars of star formation in the Carina Nebula



M5 Globular Cluster in



An unusual image, the supernova remnant N49 in the Large Magellanic Cloud, combining images from both Hubble and the Chandra X-Ray Telescope(blue is the x-ray imaging from Chandra; yellow and purple are visual and ultraviolet from Hubble)



The Hubble Ultra Deep Field, disclosing hundreds of previously unknown galaxies in Fornax in the southern skies

Images-NASA/HST

From NASA's Space Place-Something that's very much on a lot of people's minds-especially those who still think that Pluto should have never been demoted

What is a Planet?

The planets in our solar system didn't appear out of nowhere. Neither did the sun. They were all part of a big cloud of gas and dust. Gravity collected lots of material in the center to create the sun. The left over stuff swirled around the forming sun, colliding and collecting together. Some would have enough gravity to attract even more gas and dust, eventually forming planets.

Scientists spent a lot of time arguing over what a planet actually is. In 2006, they came up with a definition. They said a planet must do three things. The first thing might seem obvious—it has to orbit around the sun. Second, it must be big enough to have enough gravity to force it into a spherical shape . And third, it must be big enough that its gravity cleared away any other objects of a similar size near its orbit around the Sun.

What about planets in other places?

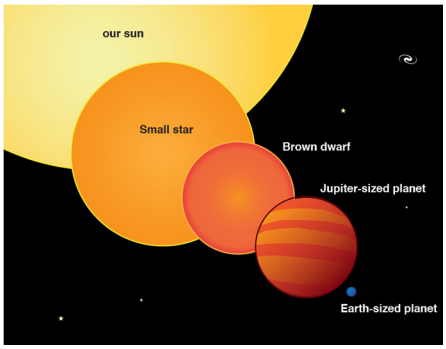
This definition is very much focused on our own solar system. But there are also planets in places that are not our solar system. These planets are called exoplanets. They can be found circling around stars, just like the planets here in our own solar system. Does that mean that all planets form the same way? Are all planets made from a star's leftovers?

That depends on who you talk to. What happens if a small cloud of gas floating out in the middle of nowhere forms a sphere because its gravity? Is that a planet, too? After all, Jupiter is a big sphere of gas. And both are just a mass of stuff that wasn't quite big enough to form a bright, fiery star.

Right-This cosmic cloud, called Sharpless 2-106, is an area where stars (and possibly planets) form.

Big planet or tiny star?

Clouds of gas that don't have enough material to form a bright star collect into spheres all the time. Most of the time these clouds form a type of star called a brown dwarf. They are pretty big compared to most planets, but they are not big enough to turn into the kind of star that makes lots of energy and gives off light.



But scientists recently discovered an even smaller gassy object in the middle of nowhere . It appears redder than most brown dwarfs, and is likely much younger than most, too. This object could have formed just like a brown dwarf—from a small cloud of gas. Or maybe it was created around a star and it somehow got flung off into space.

Some scientists are calling this object a planet. Others think that it can only be a planet if it formed around a star. They think that if it just formed from a cloud of gas, then it's nothing more than a not-quite-star.

Science is full of arguments like this. That's what makes it so interesting.

Many Thanks to NASA's Space Place

Illustration-NASA

Image-NASA/ESA/HST/AURA

To All CVA Members-Be Sure to Pay Your 2015 Dues!

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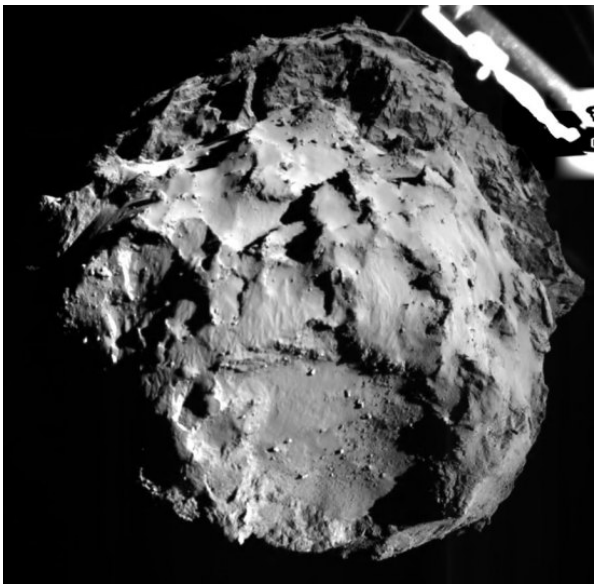
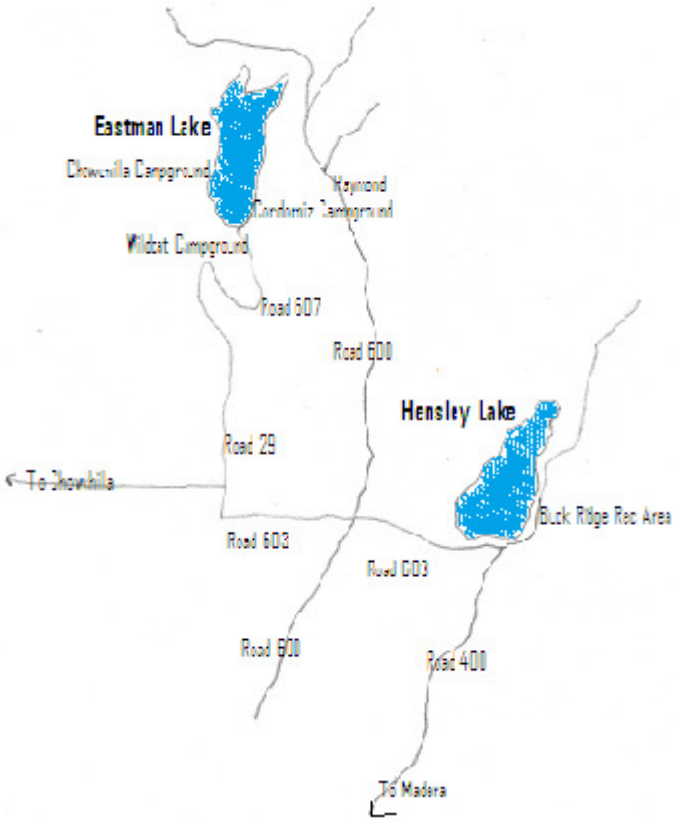
Finally-The Best Saved for Last



The Astronomical Event of 2014

On November 12, ESA's Rosetta spacecraft detached its Philae lander, which descended towards the surface of Comet P67/Churyumov-Gerasmenko, on a mission to reveal the secrets of comets, and perhaps the origin of the solar system. The comet, which looked like a dirty piece of rock about ten miles long and five wide, had been Rosetta's main target for almost 20 years, since the project was first conceived. Philae landed on P67's surface, and was able to radio back some data and images, but apparently it landed in the shadow of a ridge, and its batteries were quickly depleted. Mission mangers believe that it went into "sleep" mode, and will eventually resume experiments and data transmissions at a future date.

Image-Philae descending towards the surface of P67 ESA/NASA



To Hensley and Eastman Lakes-Star party sites. The Eastman Lake starwatching site is at the boat ramp at the end of Road 29, just past the Cardinez campground.

Upcoming Events-2015

CVA's annual Messier Marathon-March 21 at Eastman Lake

Public Star Parties at Riverpark resume on March 28

CVA Solar viewing at Fresno State during Vintage Days on April 18

Millerton Lake summer star parties resume on June 13