January-February
2013
Volume 61
Issue 1

The Observer

The Newsletter of Central Valley Astronomers of Fresno

In this Issue:

January 2013 and the World is Still Here. What a Surprise.

Image-NASA/Apollo

Quote of the Month-

You can fool some of the people all of the time, and all of the people some of the time, but you cannot fool all of the people all of the time.

-Abraham Lincoln

CVA Calendar

January 12-CVA starparty at Eastman Lake(weather permitting)

January 26-CVA monthly meeting at CSUF

February 9-CVA starparty at Eastman Lake(weather permitting)

February 23-CVA monthly meeting at CSUF

January 11-New Moon

January 26-Full Moon

February 9-New Moon

February 25-Full Moon

Remember Your 2013 CVA Dues!

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

The President's Message

I hope ant all CVA members had a merry Christmas season and a happy New Year going into 2013. Now that we know the world didn't end, as if we didn't know it all along, we can got on with all our activities. We have many things planned for the coming year: the Eastman Lake starwatches, the very popular Riverpark public starwatches, and our monthly meetings, among others. 2012 will, of course, be a hard year to top, with our overwhelmingly successful telescope raffle and fundaraiser, star parties, and three major astronomical events in the space of a month-the May solar eclipse, and only a short time later, the june Lunar eclipse, immediately followed by the Venus transit. CVA was there for them with telescopes, displays ,and questions and answers. It was all good fun, but it's also a way to reach out to the public and make them ore aware of the wonders in the sky. Many thanks to everyone who took part in all these events.

At the December meeting, the members elected new officers for 2013. I served as president several years ago, and have agreed to do it once more. Steve Britton, longtime CVA member, will be the vice-president. Randy Steiner, who has been president for the last few years, is stepping down, and will be come second vice-president. Casey Chumley will continue as secretary; and Steve Harness has agreed to continue as treasurer. Brian Bellis will remain as star party coordinator. Together, along with the board, we will plan major activities for this year, to propel CVA into the future.

CVA just celebrated its 60th birthday; sixty productive and fulfilling years of watching the skies and bringing their beauty to the public. May it see another sixty years of adventure and discovery. So, keep you mirrors sharp, your eyepieces clean, and your mounts aligned, for this 2013 and many years to come!

Wishing you clear skies-Fred

The Pleiades, the Daughters of Atlas, one of the beautiful objects in he January skies. Image-NASA-HST

Profiles in Astronomy

Alfred Joy 1882-1973

Joy was born and raised in Illinois. He attended Greenville College in Illinois, where he did his undergraduate work in physics, and then Oberlin College, where he earned a master's degree in astronomy. After graduation, he worked at Yerkes Observatory in Wisconsin for a year, then left the U.S. and taught for over ten years at the American University in Beirut in Lebanon. He also did research at several European observatories. In early 1915, he came back to the U.S. for what was expected to be a short visit before returning to Beirut, but was prevented from doing so by World War I. Shortly afterwards, he accepted an offer to join the Mt. Wilson Observatory in Pasadena, California, and would stay there for the rest of his life.

Joy made stellar distances and movements his specialty. During his long tenure at Mt. Wilson, he determined this distances of thousands of stars using the spectrographic parallax method. As well, he measured and catalogued the radial velocities of hundreds of stars, especially Cepheid variables, which also helped him with his distance measurements. Based on earlier studies, he confirmed the distance to and the direction of the center of the Milky Way, and he determined the Sun's position and movement relative to it. He discovered a whole new class of stars, which he called T-Tauri stars, and did extensive studies of them. He also studied the spectra and movements of asteroids and comets. He officially retired from Mt. Wilson in 1948, but continued to do research there almost up to the time of his death 25 years later.

Joy was twice President of the Astronomical Society of the Pacific, in 1931 and 1939; he won many honors for his work, including the ASP's prestigious Bruce Medal in 1950. He was also the President of the American Astronomical Association from 1949 to 1952; a crater on the Moon and a minor planet are named after him.

Sources-The Bruce Medalists, Astronomical Society of the Pacific website
"Joy, Alfred," Wikipedia

CVA Turns 60

2012 marked a milestone year for Central Valley Astronomers-the organization celebrated its 60th year as a club. It was founded in 1952 by a group of Fresno-area astronomy enthusiasts, in the days when almost all amateur astronomers made their own telescopes, including grinding and polishing the mirrors(a few purists still make their own, but today's factory-built scopes are so good and so cheap that it's really not worth the time and effort any more). In 1978, the club was officially incorporated, and remains that way today. When the club started, Edwin Hubble was still alive, NASA did not exist, the origin of the universe was still vague, and the largest rockets the U.S. had were captured German V-2s from World War II. The club has seen the Space Age in its entirety, the manned Moon landings, the Voyager missions, the Big Bang, the "Pillars of Creation," black holes and dark energy, the Mars rovers, hundreds of extra-solar planets, Pluto's demotion, and finally, to show that all things eventually come full circle, the 22d anniversary of the great telescope that bears Hubble's name. Happy 60th to CVA, and may it have many more!

CVA Calendar January-February 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		January 1	2	3 Spirit rover lands on Mars-2004	4	5
6	7 Feast of the Epithany -Orthodox Christmas	8	9	10	11 New Moon 	12 CVA Star Party at Eastman Lake(weather permitting)
13	14	15	16	17	18	19
20	21 Martin Luther King, Jr. Day	22	23	24	25 Opportunity rover lands on Mars-2004	26 Full Moon  CVA monthly meeting at CSU Fresno 7pm
27 46th anniversary of the Apollo 1 fire	28 27th anniversary o of the Challenger disaster	29	30	31 55th anniversary of the launch of Explorer 1-America's first orbiting satellite	February 1 10th anniversary of the Columbia tragedy	2 Groundhog Day
3	4	5	6	7	8	9 CVA Star Party at Eastman Lake(weather permitting)
10 Lunar New Year New Moon 	11 President's Day	12 Mardi Gras	13 Ash Wednesday	14 St. Valentine's Day	15 Birthday of Galileo in 1564	16
17	18 Washington's Birthday Observed	19 Birthday of Copernicus in 1473	20 51st anniversary of John Glenn's Friendship 7 flight	21	22	23
24	25 Full Moon 	26	27	28	March 1	2

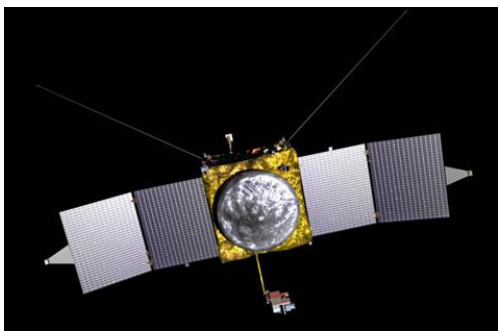
What's New in Space

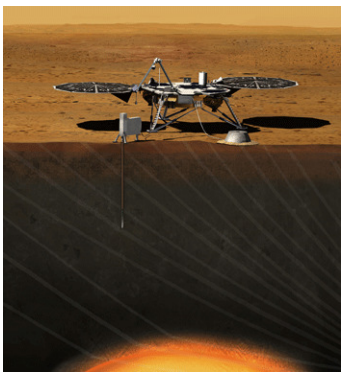
Chinese Announce the Next Step in Manned Space Flight

In November, the Chinese Space Agency announced that the next manned mission, Shenzhou 10, will take place in June 2013, and will involve a rendezvous and docking with the Tiangong-1 space lab. The Shenzhou 10 spacecraft will carry a crew of three, one of them a woman, and will spend two weeks aboard the prototype space station. In June 2012, three astronauts aboard Shenzhou-9 visited the space lab to check out its systems and practice docking. The mission will be the latest leading up to an eventual permanently manned space station by 2018. The Shenzhou-10 mission, so soon after Shenzhou 9(relatively speaking) reflects the Chinese Space Agency's growing confidence in its manned space flight capabilities. If Shenzhou 10 is successful, Western observers expect a whole series of manned missions, perhaps two to three a year starting in 2014, leading up to the space station, as well as practice missions for an eventual landing on the Moon sometime after 2020. Above right-the Shenzhou 9 spacecraft and its launch rocket.

NASA Plans 2020 Mars Rover

Also, in November, NASA and the Jet Propulsion Laboratory announced that they have budgeted funding for an unmanned rover to be launched to Mars in 2020. Details of the craft were not specified, but it will be the same size as Curiosity, and will have far more sophisticated scientific equipment. It will also use the "helicopter hook" landing mode the Curiosity used. Again, not specified, its main goal is probably to search for biological processes, as well as water, on the Martian surface. In a way, the 2020 rover is a disappointment to many planetary scientists; they had hoped that NASA would be able to launch a soil-return mission to Mars in partnership with ESA by 2018, but funding for that was eliminated in the budget cuts last year. ESA is now planning a soil return mission with Russia, tentatively scheduled for 2022. As of now, the only other Mars missions that NASA has planned are a 2013 orbital scientific survey spacecraft known as MAVEN(Mars Atmosphere and Volatile Evolution), and a 2016 craft -InSight., which will be a stationary lander that will probe the Martian interior. As one newspaper article recently put it, in the controversy over proposed budget cuts due to the federal deficit, NASA is an easy target for legions of attorneys and advocates demanding that spending be cut-just not to their programs.





Left-the MAVEN spacecraft, now scheduled for launch in 2013.
Center-Mars InSight, based on the Mars Phoenix lander, which will be launched in 2016
Right-The 2020 rover, as yet unnamed, will use the same design and engineering as Mars Curiosity, shown here during construction All images by NASA

Astronomy Through the Ages

CVA member Steve Britton and his wife spent time in Italy, France, and The Netherlands in June 2012, and came back with a number of interesting images. Steve recorded classical timepieces and other astronomical things that he came across, and shared them with CVA members at the December meeting. For those who weren't able to see them, here are some of the best:

Left-A sundial found in the ruins of Pompei. It was buried, along with most of the city when nearby Mt. Vesuvius erupted in 79 AD.

Right-the zodiac clock in the tower of St. Mark's Square in Venice. It was made in the 1400s

Right-the sundial at Castle Billy in Billy, France

Left-Galileo's tomb in the Church of Santa Croce in Florence, Italy. The same church also holds the tombs of Michelangelo, Dante, and Machiavelli.

Right-a sundial at the Ponte Vicchio in Florence, probably for the use of the wealthy and powerful Medici family, patrons of the arts and sciences in Renaissance Italy

Left-a 15th century clock in Rouen, France. Note how similar it is to the Venice clock. Both may have been designed and built by the same person.

Right-a mechanical calendar in the Het Scheepvaartmuseum in Amsterdam, the Netherlands

Far right-a collection of ancient globes, also in the Het Scheepvaartmuseum

All images by Steve Britton-Many Thanks

Black Holes May Be much Larger than Previously Known

Some of the biggest black holes in the Universe may actually be even bigger than previously thought, according to a study using data from NASA's Chandra X-ray Observatory. Astronomers have long known about the class of the largest black holes, which they call "supermassive" black holes. Typically, these black holes, located at the centers of galaxies, have masses ranging between a few million and a few billion times that of our sun.

This analysis has looked at the brightest galaxies in a sample of 18 galaxy clusters, to target the largest black holes. The work suggests that at least ten of the galaxies contain an ultramassive black hole, weighing between 10 and 40 billion times the mass of the sun. Astronomers refer to black holes of this size as "ultramassive" black holes and only know of a few confirmed examples. "Our results show that there may be many more ultramassive black holes in the universe than previously thought," said study leader Julie Hlavacek-Larrondo of Stanford University and formerly of Cambridge University in the UK. The researchers estimated the masses of the black holes in the sample by using an established relationship between masses of black holes, and the amount of X-rays and radio waves they generate. This relationship, called the fundamental plane of black hole activity, fits the data on black holes with masses ranging from 10 solar masses to a billion solar masses. The black hole masses derived by Hlavacek-Larrondo and her colleagues were about ten times larger than those derived from standard relationships between black hole mass and the properties of their host galaxy. One of these relationships involves a correlation between the black hole mass and the infrared luminosity of the central region, or bulge, of the galaxy.

Left-Galaxy PKS0745-226, where a massive black hole has been found

"These results may mean we don't really understand how the very biggest black holes coexist with their host galaxies," said co-author Andrew Fabian of Cambridge University. "It looks like the behavior of these huge black holes has to differ from that of their less massive cousins in an important way." All of the potential ultramassive black holes found in this study lie in galaxies at the centers of massive galaxy clusters containing huge amounts of hot gas. Outbursts powered by the central black holes are needed to prevent this hot gas from cooling and forming enormous numbers of stars. To power the outbursts, the black holes must swallow large amounts of mass, in the form of hot gas. Because the largest black holes can swallow the most mass and power the biggest outbursts, ultramassive black holes had already been predicted to exist, to explain some of the most powerful outbursts seen. The extreme environment experienced by these galaxies may explain why the standard relations for estimating black hole masses do not apply.

These results can only be confirmed by making detailed mass estimates of the black holes in this sample, by observing and modeling the motion of stars or gas in the vicinity of the black holes. Such a study has been carried out for the black hole in the center of the galaxy M87, the central galaxy in the Virgo Cluster, the nearest galaxy cluster to earth. The mass of M87's black hole, as estimated from the motion of the stars, is significantly higher than the estimate using infrared data, approximately matching the correction in black hole mass estimated by the authors of this Chandra study.

"Our next step is to measure the mass of these monster black holes in a similar way to M87, and confirm they are ultramassive. I wouldn't be surprised if we end up finding the biggest black holes in the Universe," said Hlavacek-Larrondo. "If our results are confirmed, they will have important ramifications for understanding the formation and evolution of black holes across cosmic time."

From-nasa.gov

Number of extrasolar planets found as of December 2012-854

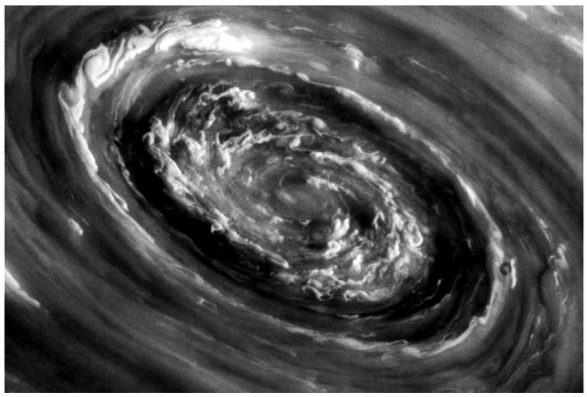
How many more are out there?

The Best Astronomy Images of 2012

With modern astronomical imaging, humans are finding that the universe is stranger and more beautiful than they ever imagined. Here are among the best astronomical images of 2012-and may 2013's be even better.

A solar flare taken on August 31. The "arch" created by the flare is 200,000 mile wide. NASA/Goddard Space flight Center

Right-this amazing image was a composite taken by Mars Curiosity on October 31. NASA/JPL. The arm holding the camera has been edited out



Left -this vortex on Saturn was taken by the Cassini spacecraft-NASA/ESA/JPL

Two iconic images by the Hubble Space Telescope, which does astronomical imagery better than anything that has ever come along. On the left-M70, taken in February. On the right, the "Celestial Rose:" Arp 273, taken in April of this year. Both NASA/HST

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Deadline for articles submission for the March-April 2013 issue

December 20

Please submit articles in Microsoft Word format

A Classic Handbuilt Telescope Needs a Home

Clarence Funk, who was president of CVA for many years, has an 8" reflector telescope that he wants someone to take-at no cost. It was originally built by Glynn Reavis, one of the founders of CVA, so it probably dates back to the 1950s or 60s. Clarence says that it is 6' long, probably an f9 or f10. It is simply the tube, the primary mirror and the secondary mirror. There is no tripod, pedestal, or mount for it, nor are there any eyepieces. There were originally two telescopes, and whoever took the first one took the eyepieces as well. This is an opportunity to get a classic handbuilt telescope for free!

If you're interested, contact Clarence Funk at clarencefunk@yahoo.com

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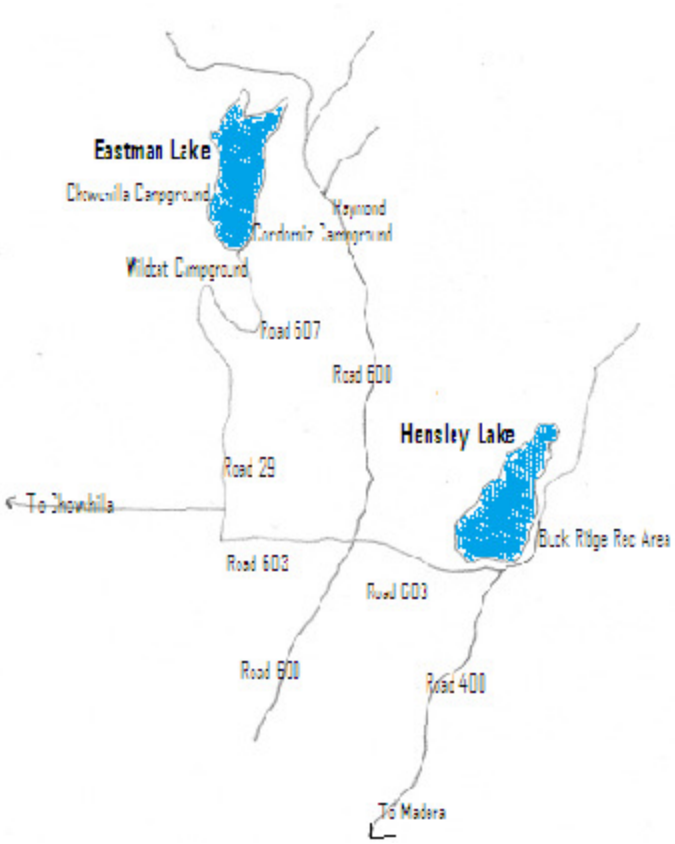
May 2013 give you clear skies, great views, and galaxies of wonder and imagination throughout the year!



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.

2013-the 60th Anniversary of the Death of Edwin Hubble

Edwin Hubble, arguably the foremost astronomer of the 20th century, died on February 28, 1953, from a heart attack. He was 63 years old at the time. Hubble is best known for his 1925 paper showing that the galaxies, then called spiral nebulas, were outside the Milky Way, each an island universe of its own. In 1929, he announced a second shattering fact-that the galaxies are rushing away from the Milky Way at unimaginable speeds, that the universe was expanding. Today, Hubble's Law is the standard tool in calculating distances to the galaxies, as well as the age of the universe itself. In the next few issues, there will be articles relating to Hubble, his life, and his research. He is, of course, memorialized in the great orbiting telescope that bears his name, and has opened up the universe like no astronomical instrument ever has.
