

January-February
2011
Volume 59
Issue 1

The Observer

The Newsletter of Central Valley Astronomers of Fresno

In this Issue:

Ice Volcanoes on Titan

Profiles in Astronomy-Alan Sandage and Brian Mars-ton

Roger Penrose's Previous Universes

One Way Trips to Mars

ESA's Moon Plans

The Commercial Space Market Heats Up

Mars Curiosity Ready for Launch

Billions and Billions and Billions of Stars

Anti-matter Found on Earth

CVA Calendar

January 8-CVA star party
Eastman Lake

January 22-CVA meeting
7pm CSUF

February 5-CVA star party
Eastman Lake

February 19-CVA meeting
CSUF 7pm



Astronomical Object of the Month-M43 in Orion

Also known as NGC 1982 and DeMairan's Nebula, after the French scientist who first observed it around 1715, M43 is usually overshadowed by its larger and better known next door neighbor, M42, the Great Nebula in Orion. Nevertheless, it's an interesting object in its own right, and well worth viewing. See it this year, along with all the other great winter objects!

Image by NASA/HST

Quote of the Month:

Do there exist many worlds, or is there but a single world? This is one of the most noble and exalted questions in the study of nature.

Albertus Magnus(Albert the Great), 1200s AD

How prophetic he was



New Moon January 4



Full Moon January 19



New Moon February 2



Full Moon February 18

Welcome to 2011!

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The Observer January-February 2011

The President's Message:

I hope you all had a happy holiday season and got what you wanted or wished for. One of mine certainly was answered. I am your President of CVA for the next term. I was president for the years 2000-2002. The years 2002 was the club's 50th anniversary. We had a wonderful celebration dinner at the home of my friend and fellow club member Dr. Ron Nelson, since retired. We also saw the last solar eclipse from Fresno until 2017 at the Discovery Center.

I have three main goals to achieve during my term. First, increase membership to include younger astronomy buffs and others. We have had a slow growth in membership the last few years. New members recently have been enthusiastic and participatory in many events. In order to remain a strong and vibrant entity, we need new blood, including more women and children. Second, we need to explore new ways to include more members at club events, such as meetings. There may have been some confusion the last few years. We normally scheduled meetings on the first Saturday until the last few years. The board decided with the advent of the club's calendar, (a beautiful and informative work available now) and now having the information posted on our Web page, we would have the meeting of the Saturday nearest Full Moon, which allows more flexibility planning our deep sky and other events. Third, plan and implement a CVA club tour and convoy to Chabot Science Center, Lick, and/or So Cal to Palomar, Griffith or JPL Pasadena. I don't think the club has ever done this before, and would be a good way to involve more family members.

I and I believe I speak for everyone, would like to thank Steve Harness for stepping up as President again and keeping the club moving in a positive and forward direction. Through the efforts of Steve and the Board, we were able to procure Eastman Lake as a deep sky club viewing site. Eastman is a more member-friendly, and much darker, viewing site.

Look at a picture of the Earth and particularly California at night, and you will see one of the last dark spots left in that general area. Eastman Lake also has a perfect group picnic area with ample shade and large facilities. The only thing lacking are restroom buildings. There are pit toilets there for emergencies. We will still be going to Hensley Lake twice, once during spring, and once during fall.

Steve and the board also got us River Park Shopping Center behind Border's to show members of the public Moon/planet viewing once a month during the spring through fall. CVA is well-received there, and many club members bring out their telescopes to share views with the public, most seeing into a telescope for the first time. Six to ten telescopes, including the club's 20" truss reflector are normally present. Thanks to CVA members Clarence, Dale, Fred, Larry, Warren, Steve H. and Steve B., Garret, and others. There is always room for more. Hundreds of people are curious enough to visit our astronomers and their setups.





Well done, Steve!

I look forward to serving as your president this term- from now and possibly all the way to the final weeks of the end of the Maya calendar timepiece and beyond. This is Warren Macguire's and my 25th club year as club members. I am looking forward to 25 more if that is to be. Are there any more silver sky viewers out there? Please let us know. I want to plan an anniversary party around our annual Star B-Q night.

With your help and always wanted input, we can continue to have a fun, educational, and rewarding experience as fellow members of Central Valley Astronomers, Inc. Please call or email me with any suggestions you may have to improve the club and your participation as a member.

Randy M. Steiner

CVA Calendar January-February 2011

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						January 1-New Year's Day
2	3	4 Partial Solar Eclipse New Moon 	5	6 Christmas Day in Eastern Orthodox Church-Feast of the Epiphany	7 Galileo discovers three of the four large Jovian moons -1609	8 Star Party-Eastman Lake
9	10	11	12	13	14 Huygens lands on Saturn's moon Titan -2005	15
16	17 Martin Luther King, Jr. Day-observed	18	19 Full Moon 	20	21	22 CVA monthly meeting 7pm CSUF
23	24 Voyager 2 flies by Uranus-1986	25 Robert Burns Day in Scotland	26	27 44th anniversary of Apollo 1 fire -1967	28 25th anniversary of destruction of space shuttle Challenger	29
30	31	February 1 8th anniversary of destruction of space shuttle Columbia	2 New Moon 	3 Luna 9 lands on moon-first images of Moon's surface-1966 Chinese New Year-Year of the Rabbit	4	5 Star Party Eastman Lake Discovery of Quasars-1963 by Maarten Schmitt
6	7	8	9	10	11	12 NEAR-Shoemaker lands on Eros-first landing on an asteroid-2001 Lincoln's Brithday-1809 Darwin's Brithday-1809
13	14 Valentine's Day	15	16	17	18 Full Moon  Pluto discovered, 1930 by Clyde Tom- baugh	19 CVA monthly meeting 7pm-CSUF
20	21 Washington's Birthday-Presidents' Day	22	23 Supernova 1987A discovered	24 Discovery of Pulsars announced-1968	25	26
27	28	March 1	2	3	4	5

Profiles in Astronomy

Two Astronomical Giants Leave the Scene

Alan Sandage 1926-2010

Alan Sandage, one of the foremost cosmologists of the 20th century, died on November 13, 2010, in Pasadena, California. He was 84 years old.

Sandage was born and raised in Iowa City, Iowa, the son of a college professor. He attended the University of Illinois, where his father was teaching at the time, and, following a two year stint in the military at the end of World War II, graduated with a degree in physics. He then went to Southern California, to Caltech, to pursue a doctorate in astronomy under Jesse Greenstein, who had just established the astronomy program there. It was through Greenstein that Sandage met and worked for Walter Baade, and later Edmund Hubble, both at nearby Mount Wilson Observatory. He eventually became Hubble's observing assistant.

In 1953, just as Sandage was finishing his doctoral studies, Hubble died. He was offered Hubble's position at Mt. Wilson, and also Hubble's unfinished main research project—that of determining how fast the universe was expanding; i.e., how old the universe was and whether it was open or closed. During the 1950s and 60s, Sandage spent thousands of hours at the telescopes at both Mt. Wilson, and also at Palomar, and by the mid 1960s, had determined the Hubble Constant, a key factor in the universal expansion equation, to be 50, that the universe was about 15 billion years old, and open, that it would expand forever. It was a major event in cosmological research, and it cemented Sandage's reputation as one of the most gifted scientists of his generation.

Sandage also did important work in quasars in the 1960s, determining that there were far more than suspected, and made major findings in galaxy evolution. He also studied red giant stars, and figured out how they could be used as distant yardsticks for measuring the universe. However, in the 1980s, he fought against a new generation of young astronomers who sought to determine the age of the universe using infrared detectors and other tools, and who kept coming up with Hubble Constants of 75-100, which would make the universe much younger and smaller. Eventually in the mid-1990s, the Hubble Space Telescope, measuring Cepheid variables in far distant galaxies, determined the Hubble Constant to be between 65 and 70, giving the universe an age of about 13.5 billion years; these are the established figures that cosmologists use today.

Sandage won many awards for his work, including the Bruce Medal of the Astronomical Society of the Pacific, the Wolfe Medal, and the Crafoord Prize, which is considered the astronomical equivalent of the Nobel Prize. He officially retired from Mt. Wilson in 1997, but kept his office there and continued doing active research up until only a few months before his death. He was the last major scientist with living links to the great astronomers of the 1920s and 30s who worked on understanding the age and fate of the universe.

Brian Marsden 1937-2010

Brian Marsden, who specialized in comets and asteroids, and became the world's foremost authority on them, died in Cambridge, Massachusetts, on November 18, 2010, at the age of 73, only five days after Sandage's passing.

Marsden was born and raised in Cambridge, England, earned a bachelor's degree in mathematics at Oxford University, and then came to the U.S. to do his doctorate work at Yale. Afterwards, he took a position at Harvard University, and then went to work at Harvard's Smithsonian Center for Astrophysics, where he stayed for the rest of his life. There he became renowned for his brilliance in determining the orbits and trajectories of comets and asteroids. In the 1970s, he helped set up, and eventually became the director of the Minor Planet Center, which became the official cataloguing and clearing house for comets and asteroids. For many years, anyone who found what he, or she, thought was a new comet or asteroid, immediately sent the data on it to Marsden,





who calculated its position and orbit, and gave it an official catalogue number. He also discovered a number of comets and asteroids himself, and recalculated the orbits, to a high degree of precision, of many already known comets and asteroids. One of the outstanding examples was his calculation that Comet Swift-Tuttle, which had last been seen in 1862, would return to the inner solar system in 1992, rather than 1981 as had been previously predicted.

As well, during the 1970s, as more and more evidence mounted that the Earth has been hit by large meteors in the past, Marsden established a long term study to find and track potentially Earth threatening asteroids. Eventually, this was expanded into a world-wide effort to detect such objects and figure out ways to prevent them from crashing into the Earth.

Marsden also played a key role in the controversy concerning whether Pluto was a full-fledged planet, or simply a minor asteroid-like body. He originally proposed that it be listed as both a major and a minor planet and be given the catalogue designation as Minor Planet 10000. He argued for this at the 2006 meeting of the international Astronomical Union, but instead the scientists there voted to demote Pluto to the status of a "Dwarf Planet," and give it the designation of Minor Planet 134340. The debate as to whether Pluto is a planet or not is still ongoing.

Like Sandage, Marsden won many honors for his work, and at his death was acclaimed one of the great scientists of the 20th century. In the view of many astronomers and space scientists, he turned asteroid and comet hunting from what had been considered an amateur's hobby into an established scientific discipline.

Antimatter Isolated and Studied for the First Time

On November 18, 2010, scientists at CERN, the European Center for Physics in Geneva, Switzerland, announced that they had isolated tiny amounts of antimatter that lasted long enough to be observed and analyzed. The discovery, coming in the scientific magazine *Nature*, said that, although scientists had detected antimatter before in experiments, its inherent instability did not allow them to study it in any way. Using a new technique, they said, the CERN group was able to detect antimatter and keep it stable for up to a tenth of a second, which as they put it, is a very long time in particle physics.

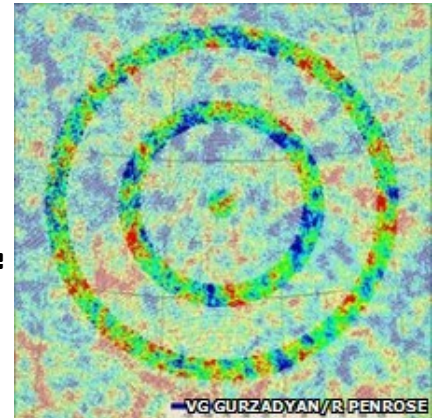
The CERN scientists involved in the discovery emphasized that science fiction ideas about matter-antimatter rocket engines that travel at almost the speed of light, and antimatter bombs as seen in Dan Brown's novel *Demons and Angels*, are still many decades in the future. However, the finding may help answer some of the fundamental questions of cosmology, such why the universe is made almost entirely of ordinary matter. Scientific theories today say that the universe was created with equal amounts of matter and antimatter, but 99.999% of all the antimatter was destroyed in interactions with matter within the first few minutes of its birth. They also believe that there may be other universes made up almost entirely of antimatter, and this finding may give them clues as to how to detect them.

Reminder to all CVA members- be sure to pay your 2011 dues!

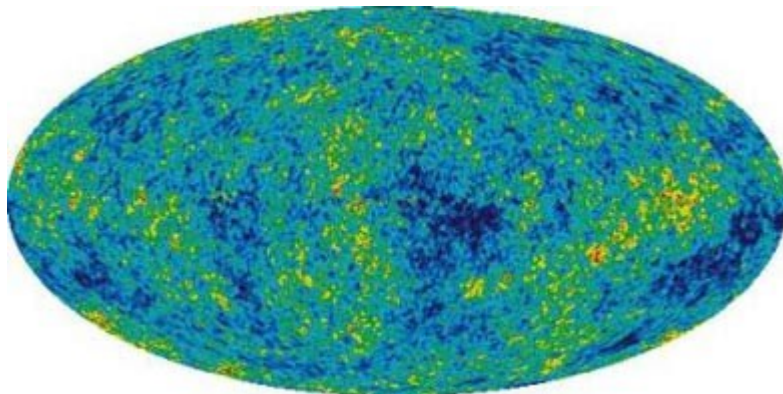
What Happened before the Big Bang? Penrose Thinks He Knows.

An English scientist and an Armenian astronomer have presented evidence to show what might have happened prior to our universe's Big Bang. Roger Penrose of Oxford University, along with Vahe Gurzadyan of Yerevan State University in Armenia, has been studying the results of the Wilkinson Microwave Background Probe (WMAP) for several years, and believes the data show evidence of events prior to the explosion that created our universe. To Penrose, one of the world's leading mathematicians and cosmologists, this evidence validates a theory that he has had about the universe for many years: it is cyclical, creating new universes out of gravitational forces caused by black hole collisions. Penrose's theory, which he calls CCC, for Conformal Cyclic Cosmology, is in direct opposition to the standard model of the beginnings of the Universe; that is, it began in a single huge explosion, followed by a very rapid expansion, known today as inflation.

On the WMAP surveys, Penrose and Gurzadyan found at least twelve examples of concentric rings surrounding far distant galaxies. According to him, these rings are the remnants of "shock waves" caused by violently interacting black holes at the end of the previous universe. Some of the examples had as many as five concentric rings, meaning that there were at least five previous



universes, which Penrose calls "aeons." Penrose says that, according to inflation theory, these rings should not exist; the inflationary force at the start of our universe would have smoothed them all out. Penrose and Gurzadyan announced their finding in November 2010; at the same time, Penrose brought out his new book, *The Cycles of Time*, which explains his cyclical theory of the universe. Penrose believes that the ESA Planck spacecraft, which will measure the cosmic microwave radiation in even greater detail than WMAP, will provide more evidence for the cyclical universes.



More Stars than We Ever Thought

A study by astronomers at Harvard and Yale has concluded that the universe is far more populated than most scientists previously realized, up to three times more crowded. The study which was published in the December 1, 2010 issue of *Nature*, says that for years, scientists have miscounted the number of small dim stars known as red dwarfs, and have also assumed, in their population surveys, that all the galaxies in the universe had roughly the same percentages of stars. Both of these assumptions, the study says, are wrong. There are far more red dwarfs than anyone previously believed, and scientists also have not taken into account that spiral and elliptical galaxies are very different and thus have different masses and numbers of stars. What all this adds up to is that the study concludes that the number of stars in the known universe is 300 sextillion, or, in scientific notation, 3×10^{23} , over three times what was previously calculated. Now, that's a lot of bright objects, but still, according to theories involving missing mass and "shadow matter," it's only about 5% of all the mass in the universe.

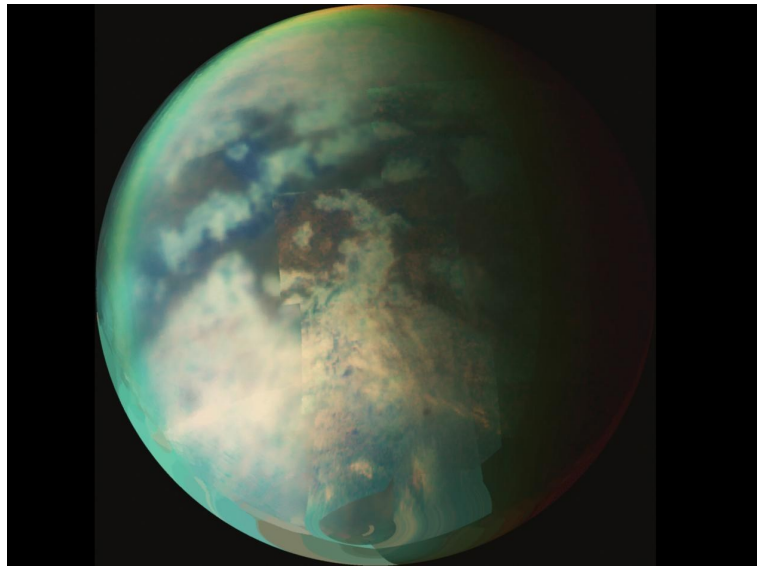
**The first CVA star watch of 2011 will be on Sat, January 8 at Eastman Lake!
The first CVA meeting of 2011 will be on Saturday, January 11 at 7pm, Room 191
East Engineering Building. Don't Miss It!**

CASSINI SPOTS POTENTIAL ICE VOLCANO ON SATURN MOON

NASA's Cassini spacecraft has found possible ice volcanoes on Saturn's moon Titan that are similar in shape to those on Earth that spew molten rock.

Topography and surface composition data have enabled scientists to make the best case yet in the outer solar system for an Earth-like volcano landform that erupts in ice. The results were presented today at the American Geophysical Union meeting in San Francisco.

"When we look at our new 3-D map of Sotra Facula on Titan, we are struck by its resemblance to volcanoes like Mt. Etna in Italy, Laki in Iceland and even some small volcanic cones and flows near my hometown of Flagstaff," said Randolph Kirk, who led the 3-D mapping work, and is a Cassini radar team member and geophysicist at the U.S. Geological Survey (USGS) Astrogeology Science Center in Flagstaff, Ariz.



Scientists have been debating for years whether ice volcanoes, also called cryovolcanoes, exist on ice-rich moons, and if they do, what their characteristics are. The working definition assumes some kind of subterranean geological activity warms the cold environment enough to melt part of the satellite's interior and sends slushy ice or other materials through an opening in the surface. Volcanoes on Jupiter's moon Io and Earth spew silicate lava. Some cryovolcanoes bear little resemblance to terrestrial volcanoes, such as the tiger stripes at Saturn's moon Enceladus, where long fissures spray jets of water and icy particles that leave little trace on the surface. At other sites, eruption of denser materials might build up volcanic peaks or finger-like flows. But when such flows were spotted on Titan in the past, theories explained them as non-volcanic processes, such as rivers depositing sediment. At Sotra, however, cryovolcanism is the best explanation for two peaks more than 3000 feet high with deep volcanic craters and finger-like flows.

"This is the very best evidence, by far, for volcanic topography anywhere documented on an icy satellite," said Jeffrey Kargel, a planetary scientist at the University of Arizona, Tucson. "It's possible the mountains are tectonic in origin, but the interpretation of cryovolcano is a much simpler, more consistent explanation." Kirk and colleagues analyzed new Cassini radar images. His USGS group created the topographic map and 3-D flyover images of Sotra Facula. Data from Cassini's visual and infrared mapping spectrometer revealed the lobed flows had a composition different from the surrounding surface. Scientists have no evidence of current activity at Sotra, but they plan to monitor the area.

"Cryovolcanoes help explain the geological forces sculpting some of these exotic places in our solar system," said Linda Spilker, Cassini project scientist at NASA's Jet Propulsion Laboratory in Pasadena, Calif. "At Titan, for instance, they explain how methane can be continually replenished in the atmosphere when the sun is constantly breaking that molecule down."

Cassini launched Oct. 15, 1997, and began orbiting Saturn in 2004. Saturn has more than 60 known moons, with Titan being the largest. The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency (ASI). JPL manages the mission for NASA's Science Mission Directorate at the agency's Headquarters in Washington.

The Cassini orbiter was designed, developed and assembled at JPL. The radar instrument was built by JPL and ASI, working with team members from the U.S. and several European countries. The visual and infrared mapping spectrometer was built by JPL, with a major contribution by ASI. The visual and infrared mapping spectrometer science team is based at the University of Arizona, Tucson.

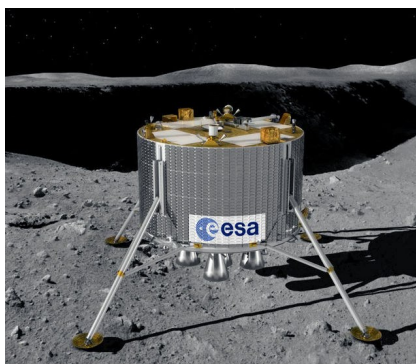
From nasa.com

Image of Titan from from NASA/Cassini

What's New in Space-Lots of News

A One-Way Trip to Mars? Could Be

Two space scientist have finally figured out what to do with spoiled children, obnoxious politicians, mouthy talk show hosts, immature actors and sports stars, and others of their ilk: Send them to Mars without providing a way to get back. Dirk Schulze-Makuch, at Washington State University and Paul Davies at Arizona State University have proposed, in a formal paper, of sending people to the Red Planet on the assumption that they'll stay there permanently. They liken this idea to the fact that the early pioneers who came to the Americas from Europe realized that they would probably never return to their mother countries, and also that the vast majority of American settlers who traveled west in the 1800s never went back to their homes in the east. Davies and Shulze-Makuch believe that such an idea is feasible and even necessary; as insurance against a major global disaster on Earth; and could begin as early as 2030. The technology to send people on one way trips to Mars already exists, they say, would be only 20% the cost of a round trip, and the planet's surface could be utilized for minerals, oxygen, and other living necessities. They believe that older people, 60 or more, will probably go first, since they have already lived most of their lives and are usually beyond their reproductive years. Younger colonists with families could immigrate to Mars later, after small colonies have been established and the planet proves its sustainability. Needless to say, NASA and the Obama Administration have both responded very unfavorably to this idea, saying that anyone they send to Mars will certainly come back. The two scientists say that such an idea would probably be initiated in the private spacecraft sector, rather than the government, which has much more to lose by people not returning. I have a list of people I can propose for such a program; they'll never be missed or mourned on Earth.



ESA Plans Unmanned Moon Mission by 2018

The European Space Agency has embarked on a project to land an unmanned craft on the Moon by 2018, a precursor to eventual manned landings and explorations there. The agency announced in September 2010 that the craft(at left) will launched by an Ariane rocket, and, after a three day journey, will make a soft landing near the lunar south pole, where it is now known that large amounts of water exist. ESA, along with the U.S., Russia, China, and several other countries, are looking at the south pole region as a prime location for a permanently manned moon base. Russia has already announced that it will attempt manned Moon landings by 2025, and built a permanent Moon station by 2032. China is saying almost nothing about its manned space plans, but indications are that it will try to land men on the moon by 2020. NASA, despite President Obama's slashing of the Constellation Program budget, is still hoping to have a manned Moon program sometime in the 2020s. ESA is believed to be preparing a partnership proposal with either the U.S. or Russia to go along with their moon plans in exchange for sending ESA astronauts to and from the Moon base on a regular basis. Much of this, however, depends on how the economic problems, both in the U.S. and Europe, are resolved. It is rumored that critics of NASA want to cut its budget by up to 50%, and ESA may well suffer also from the European monetary and budget crises.

Orion Rises from the Ashes-And Others are Coming

Even though President Obama effectively ended the Constellation program in 2010, the Orion spacecraft still has life, according to sources in the aerospace world. Lockheed-Martin, which was given the contract to build the Orion in 2006, is continuing to work on the craft, and, instead of the now-defunct Aeries rocket, intends to launch it using the venerable Delta workhorse rocket. Lockheed now has plans to launch an unmanned Orion spacecraft on top of a Delta IV rocket as early as 2013, the first of a series

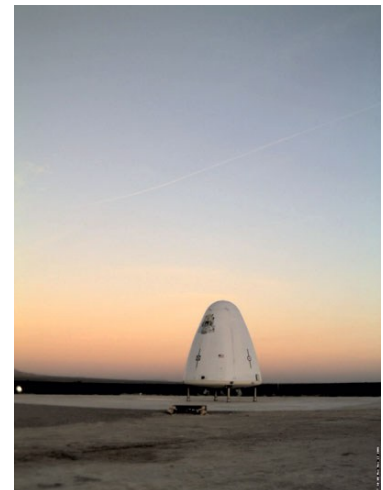
of unmanned flights to both prove the spacecraft and man-rate the Delta IV. If all goes well, the Orion-Delta system will be ready for manned flights by 2015. Lockheed is being quiet about its plans, but those in the know say that it is moving forward aggressively in the commercial spacecraft market, probably to stay on par with Boeing and the various other private companies that also have plans for manned spaceflights by 2015. As of now, at least five companies in the U.S. besides Lockheed are anticipating commercial manned LEO (low Earth orbit) missions by the middle of the next decade:

- 1) Space-X, headed by software billionaire Eldon Musk, is planning manned flights with its Dragon spacecraft within three years; if all goes well with an unmanned mission to the International Space Station in early 2011, it may receive a contract from NASA to shuttle American astronauts to and from ISS starting in 2013 (see story on the next page);
- 2) Sierra-Nevada Corporation, based in Sparks, Nevada, is currently building Dream Chaser (right) a mini shuttle that will carry up to seven people and have its first manned flight in 2014;
- 3) Blue Origin, founded by Amazon head Jeff Bezos, is building a spacecraft that will carry a crew of five and have its first manned flight as early as 2014;
- 4) and Boeing, which recently announced its CTS-100 spacecraft that will carry up to seven people into Earth orbit.
- 5) In addition, Frank Bigelow, the Las Vegas hotel billionaire, has announced that the followup to his prototype unmanned Genesis "hotel in space" of 2007, will be a manned mini-spacestation named Sundancer, which he plans to launch as early as 2014.



Left-an illustration of a Boeing CTS-100 spacecraft about to dock at a Bigelow Sundancer "Hotel in Space" around 2016

Right-Blue Origin's prototype spacecraft, named Goddard, shortly before its first test flight in 2006. The operational craft, to be called New Shepard, named after the first American astronaut Alan Shepard, will be a SSTO (single stage to orbit) spacecraft.



Mars Curiosity Ready for launch in 2011

NASA's Mars Science Laboratory, named Curiosity, is in its final preparation and testing stages, and is now scheduled for launch on November 25, 2011. Curiosity, which is the size of a medium SUV, will have an autonomous guiding system and will be able to travel up to twenty five miles away from its landing site. It will carry a fully automated bio-chemical laboratory which will look for evidence of past or present life in the Martian soil. It will also explore the geology and topography of the Martian environment. As of now, its mission is scheduled to last six months, but if its earlier counterparts, Spirit and Opportunity, are any indication, Curiosity could stay operational for at least three to five years.

In the meantime, Mars Spirit and Mars Opportunity, first launched in 2004, are waiting out the Martian winter. Scientists hope to reactivate the two craft for another season of exploration. Opportunity's new goal is a crater about two miles from where it is currently parked; Spirit is now permanently stationary, but is still capable of taking images and doing various experiments.



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More News From Space

The X-37B Returns to Earth

The Air Force's X-37B experimental unmanned spacecraft landed without incident on the runway at Vandenberg Air Force Base in Southern California on December 3, 2010, seven months after it was launched. The Air Force would say little other than its mission was successful, and that a second craft will be launched in April, 2011. The X-37B has been the target of major speculation as to both its orbit and mission. Most space experts now agree that it is not being used as a weapons platform, but probably instead as either a test bed for new military space technology, or as a spy craft itself. Amateur spacecraft watchers spent months trying to find its orbit, and finally determined that it was in a narrow band which took it over the Middle East during much of its mission. The craft, which looks like a mini-space shuttle, was carried aloft on April 22, 2010 aboard an Atlas V rocket. The above image, released by the Air Force, shows Vandenberg AFB workers tending to the X-37B shortly after its landing in the early morning hours of December 3.



In the meantime, on November 21, the Air Force launched what was only described as one of the largest unmanned payloads ever aboard a heavy lift Delta IV rocket from Cape Canaveral. (image on left). It is believed that the secret spacecraft, which is thought to be sponsored by the National Reconnaissance Office, is a highly sophisticated satellite designed to listen in on radio transmissions in the Middle East. In the past, such SigNet satellites, as they are called, have had dish antenna receivers up to 500 feet in diameter, and have gone under the code name of "Lacrosse." If past history is any indication, the new secret satellite has been placed in a geostationary orbit somewhere over Iran or Iraq.



The Shuttle Program Not Over Yet

The final mission of the space shuttle Discovery, STS-133, which was originally scheduled for November 2010, has now been postponed until at least February 2011, and may be delayed even longer. The shuttle engineers and technicians have been battling a series of engineering problems, the most serious of which is cracks found in the foam insulation of the main fuel tank. NASA now says that the earliest launch date for Discovery will be February 28. STS-134 is now being scheduled for launch on April 1, 2011. Another shuttle mission, STS-135, is now in the planning stages, and has a tentative launch date of June 28, 2011. However, if Discovery's problems push back its flight even further, STS-135, which is now being considered the last shuttle flight, may be delayed until the fall of 2011 or even early 2012.

Space-X's Dragon Orbital Mission a Major Success

On December 8, 2010, Space-X launched the second mission of the Falcon-Dragon spacecraft from Cape Canaveral. The unmanned Dragon craft made two orbits of the Earth, then reentered the atmosphere and made a pinpoint landing in the Pacific Ocean off the coast of Southern California. It was a major test of the Dragon capsule, and was hailed as a complete success by both Space-X and NASA, which has provided part of the funding for the Falcon-Dragon system. The next step will be early in 2011, when another unmanned Dragon spacecraft will make a rendezvous and docking with the International Space Station. If that goes well, Dragon, under a NASA contract, will start delivering supplies to ISS as early as the end of 2011. Eventually, it may also ferry NASA astronauts to and from ISS as well.



Astronomical Trivia

Last issue's question, "What was the company that was responsible for the Hubble Space Telescope's flawed mirror?" was partially answered by Steve Harness. He was right in saying that Corning made the mirror blank, but the company that ground and polished it, and ultimately missed the boat on determining its accuracy, was Elmer-Perkin, which never got over that mistake, and was eventually bought out by another organization.

This issue's trivia question-

What was the original name given to the Voyager spacecraft that were ultimately sent to the outer planets and beyond in the 1970s and 80s?

Larry Parmeter is the editor of

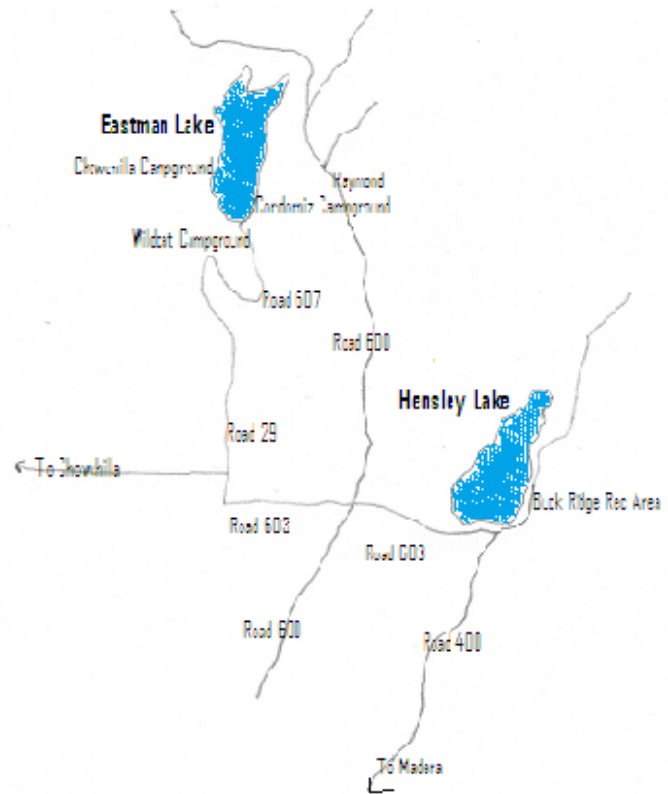
The Observer

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Deadline for articles submission for the
March-April 2011 issue-
February 15

Please submit articles in Microsoft Word format



Map to the Hensley and Eastman Lake area-sites of the CVA
star parties for 2011

CVA Treasury Report by Bryon Spicci
As of December 2010

Savings account-\$979.84

Checking account-\$68.67

Scientists Find Planet from Another Galaxy

On November 18, astronomers in Germany announced that they had discovered a planet in the Milky Way whose star, HIP 13044, is from another galaxy. Scientists at the Planck Institute for Astronomy in Heidelberg said that the planet, known as HIP 13044b, formed around the star when it was in another galaxy, then the star was captured by the Milky Way's gravity. The star was part of a small dwarf galaxy that fell into our galaxy's influence, through what is called Helmi streaming. At any rate, they are certain that the star, and its planet, did not originate in the Milky Way. HIP13044b is a Jupiter sized planet that is orbiting very close to its star, only about 25 million miles from its surface. They also believe that the star is in the last phase of its life, and will soon (in astronomical terms) expand to a red giant and swallow its planet. This is the first clear confirmation that planets exist around stars in other galaxies. In 2009, a team of scientists claimed to have detected a planet around a star in the Andromeda Galaxy, but it is so far away that it cannot be confirmed.

Number of extra-solar planets found as of December 2010-502
How many more are out there?