September-October
2011
Volume 59
Issue 5

The Observer

The Newsletter of Central Valley Astronomers of Fresno

In this issue:

CVA Calendar

Sept 3-Public starparty at Riverpark

Sept 10-CVA monthly meeting at CSUF-7pm

Sept 24-CVA Star-b-que and starwatch at Eastman Lake

Oct 1-Public starparty at Riverpark

Oct 8-CVA monthly meeting CSUF-7pm

Oct 22-CVA starparty at Eastman Lake

Oct 29-CVA starparty site –TBA

M51-The Whirlpool Galaxy

This is the galaxy and its companion, NGC 5195, that William Parsons, the Earl of Rosse, made famous with his drawing in the 1850s. Found as the 51st object in his list by Charles Messier, M 51 has always been a favorite of amateur astronomers. Its distinctive head on spiral shape can be seen in an 8" scope. Image by NASA/HST

Astronomical Quote of the Month-

A broad and ample road, whose dust is gold
And pavement stars, as stars to thee appear, that milky way
Which nightly as a circling zone thou seest
Powder'd with stars....

-John Milton, *Paradise Lost*, book VII

Full Moon Sept 12 | New Moon Sept 27 | Full Moon Oct 11 | New Moon Oct 26

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The President's Message-

Well, it has finally happened! I now own a telescope that has been decades in the making. From John Dobson's revolutionary idea of making a telescope and mount inexpensively, to my first large telescope- RedEye in 1988. I have tried smaller aperture GoTo's, such as an 80mm Meade GS-2090, and lately a 4" Meade Mak.. The problem was trying to maneuver my way around the tripod mount without knocking the scope out of alignment. There are those who frequent our star parties that witnessed the abject frustration I had with those scopes. And not to mention the dim and small star field when I did use them.

Not any more! I now own Orion's XT8g GoTo Dobsonian. Marty Roberts and I took a trip to Orion's main office in Watsonville. We took it back to Fresno after being given a 30-40 minute overview by one of the technicians. What a dream scope for me- a 2 inch / 1.5 adaptor Crayford focuser with micro-focus; easy setup and take down that are foundations of true Dobs; and a wonderful GoTo system that is easily managed. The real 'kicker' for me was an electronic loop interface that allows one to go back to their original alignment without having to repeat the entire process. Oh, Yeah!

After assembly and learning basics at Marty's home, I was eager to try the scope in dark skies for a real First Light experience. Eastman Lake the last week of August became the perfect place. For those of you who have yet gone to Eastman Lake, you will be in for a wonderful visual treat. The skies for such a low altitude are incredible! South and the distant Chowchilla Women's Prison, as well as Fresno and Madera, are blocked by low hills. The panorama is perfect, and we have restroom facilities at the far boat ramp where we meet. There is ample room for many scopes. The rangers make sure that no lights are on to interfere with seeing. The only real hindrance is the late night boaters leaving. We just close our eyes or look away-no big deal.

That night we had six telescopes: Chad's 11" Celestron SC, Warren brought his classic 10 Meade SC", Steve Harness brought out Kingsburg Observatory's 10" Meade SC, Loren used an Orion 8" Dobsonian PushTo, a gentleman named Dan brought out a 12" Orion Truss-tube Dobsonian GoTo, and I had my new 8" Goto Dob. We had several guests and visitors to complete the group.

The sky cooperated with perfect skies, hints of the Milky Way at dusk, warm comfortable temperature all night (T-shirt weather), and Perseids all night long, some large and bright still, as well as shorter ones (zippers). Observers were noting meteors flashing across their eyepieces, distinct from the occasional space junk that glides along our FOV. These were my first and only Perseids this time around. I was skunked at Tenaya Lodge during our Full Moon, cloudy, smoky maximum at Glacier Point endeavor.

Steve and I found Caldwell Objects all night long after alignment. I started at C75 and C76 at the rear of Scorpius. By the end of the night at 2:00 AM, I tallied 26 Caldwells, many old favorite Messiers (as well as seldom visited ones like M52, M34 (Medusa's Head- take a look), and M102, a wonderful thick, mottled galaxy. I also went to SAO Red Giant stars, part of my 42T object database, and on to Jupiter.

Jupiter rewarded us with a shadow transit of Ganymede as it rose over the low-lying trees to the East. I was able to first spot it, then Warren and others went to it. Another highlight of the night was the hunt for the elusive Stephan's Quintet, a cluster of galaxies in Pegasus. I know you long-time hunters think this is only visible in a 12.5 or larger aperture telescope. Chad found it at 150x, faint and visible incorporating averted vision.

Altogether that night, I went to 52 objects, finishing at a low M1 Crab Nebula at 1:30. Steve and I packed up and left by 2 AM, and home by 3:30. A true die-hard Loren said he was staying until morning. He told me, "why waste a perfect night", and this kind of sky was the first of the season for him. My GoTo is now named Cruiser, as I easily glide along the night sky.

I did forget to search for one thing though-comets Garrard and Elenin. At next months annual club Star B Q; these will be first on the list. I am still stuck at 58 since first spotting Halley's in 1986.

Please join us Saturday, September 24 at Eastman Lake, by all accounts. We are providing the hamburgers and hot dogs. At the September 10 meeting, we'll probably ask for other potluck items. And you will get to enjoy a rare dark sky sight at a warm location, if Nature allows.

See you there!

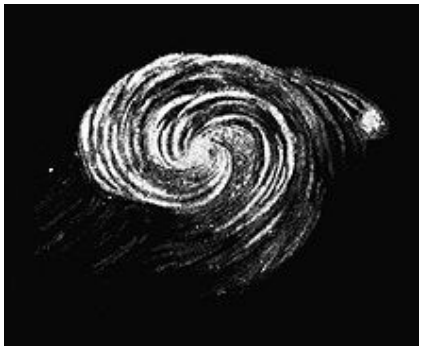
Randy

Profiles in Astronomy

William Parsons, the 3d Earl of Rosse
1800-1867

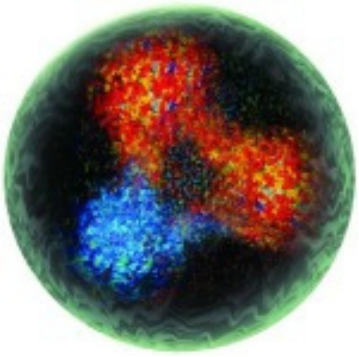
Parsons, the oldest son of an Irish nobleman, was born in England, and educated at Trinity College and Oxford University, where he excelled in mathematics. He inherited his father's title and property in 1841, served as a member of the British Parliament in both the House of Commons and the House of Lords, and was president of England's Royal Society for many years. His youngest son, Charles Parsons, following his father's scientific bent, invented the turbine engine.

With his scientific and mathematical background, Parsons had a natural interest in astronomy. Over the years, he built and used several reflector telescopes eventually leading up to his largest, the "Leviathan of Parsonstown," as the local people called it. Built in 1845, it was at the time the largest telescope in the world. It had a 72" mirror made of polished metal alloy, placed in a tube that was almost 40' long. With it, Parsons took on the galaxies, whether they were part of our Milky Way or outside it. He discovered and examined dozens of "nebulae," as they were called at the time, and, in a pre-photographic era, made remarkably detailed drawings of them. He was the first to distinguish the spiral nebulae from the more circular and elliptical ones. His famous sketch of M51, the Whirlpool Galaxy(bottom left), with its clear spiral structure, is still well known today. Parsons also studied M1, and gave it the name of the Crab Nebula. As well, he did extensive observations of the Orion Nebula, and believed it to be made up of thousands of tiny stars. Here, he fell in conflict with John Hershel, the son of William Hershel, who theorized that the Orion and all the other nebulae were essentially gaseous in nature. Not until the advent of spectroscopic analysis in the late 1800s would the question be resolved(and showed that both men were right: the nearer nebulae , like the Orion and the Crab, were gaseous; the spiral and elliptical nebulae were full of stars).



The Leviathan was one of the great telescopes of scientific history, and Parsons used it to his utmost. Unfortunately, the cold and wet Irish winters took their toll; he had repeated problems with corrosion and pitting of the mirror, and eventually abandoned it around 1860, and went back to his other, smaller telescopes. Today, the tube sits in in the garden of Parsons' estate in Ireland. Even though it was really nothing more than a hobby to him, Parsons was one of the great astronomers of the 19th century, and his findings ushered in the era of galaxy research in the 20th.

FermiLab Confirms New Particle



A few issues ago, it was reported that FermiLab's Tevatron particle accelerator had found evidence of a new particle, suggested in mathematics, but not yet seen in reality. FermiLab reported on July 21 that it had found and confirmed a new kind of particle, the Xi-sub-b, a baronyic particle, which consists of an Up Quark, a Down Quark, and a Strange Quark, the basic building blocks of all matter in the standard model of particle physics. The Xi-sub-b has long been suggested by theorists; it is the first of what is being called "technicolor" particles, which may explain many mysteries of physics, such as how the elusive Higgs Particle works.

FermiLab scientist also announced that they may be close to finding the Higgs Particle, the so-called "God Particle" that is believed to deliver mass to all other particles. They are running out of time, however; the Tevatron is scheduled to be shut down in September, essentially because it has been made obsolete by CERN's Large Hadron Collider in Geneva, Switzerland. The Department of Energy, citing cutbacks, has cut the Tevatron's funding, but the governor and the state's senators are working to have it reinstated.

CVA Calendar September-October 2011

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				September 1 Pioneer 11 flies by Saturn 1979	2	3 CVA public starparty at Riverpark
4	5 Labor Day	6	7	8	9	10 CVA monthly meeting at CSUF-7pm
11	12 Full Moon 	13	14	15	16	17
18	19	20	21	22	23 Discovery of Neptune in 1846 Fall Equinox	24 CVA Bar-B-Q and star party at Eastman Lake
25	26	27 New Moon 	28	29 Rosh Hashanah begins	30	October 1 CVA public star party at Riverpark
2	3	4 Sputnik, first artificial satellite, launched in 1957	5	6 Discovery of the first planet orbiting a star outside our solar system-1995	7	8 Yom Kippur CVA monthly meeting at CSUF-7PM
9	10 Columbus Day	11 Full Moon 	12	13	14	15
16	17	18	19	20	21	22 First images of the surface of Venus-Venera 9 in 1975 CVA starparty at Eastman Lake
23	24	25	26 New Moon 	27	28	29 CVA starparty place TBA
30	31 Halloween	November 1	2	3	4	5

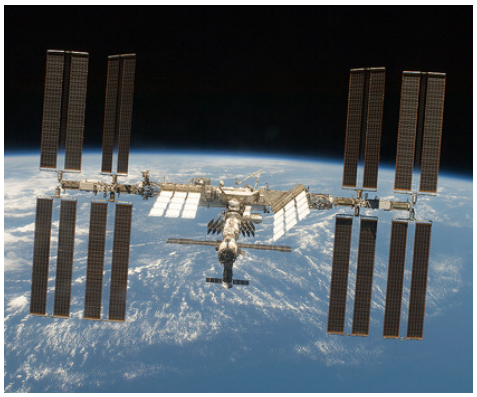
What's New in Space

NASA's Budget Cut, Webb Space Telescope Axed

With the federal budget that came out in June 2011, NASA's overall budget has been cut from $17.5 to $16.8 billion. For the 2012 fiscal year. The most dramatic cut was the elimination of future funding for the James Webb Space Tlescope, the successor to Hubble. Supporters of NASA in the house and Senate are going to try to get the funding restored, but chances are dim with the battle over the federal deficit, taxes, and budget cutting.

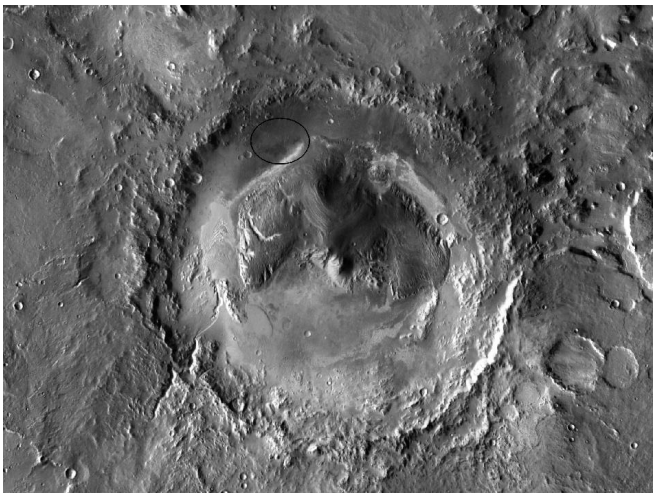
Russia wants ISS to be deorbited and destroyed in 2020

On July 27, 2011, RKA, the Russian Space Agency, dropped a bombshell on the world's media. It announced that in 2020, it will have the International Space Station deorbited and burned up over the Pacific Ocean. This news stunned those in the space community, especially NASA, which had not been given previous notice of it. As it is, NASA is now talking to ISS's other partners about extending the operational life of the station to at least 2028, and possibly beyond that. Reaction to the announcement was immediate and negative. Elected American officials said flatly that the U.S., which has paid almost 80% of the costs of the station, has first voice in saying with its fate might be. Many others commented that the Russians have made big surprising announcements like this before, but then not followed through with them.



The Russian announcement said that by 2020, ISS, which weighs over 700,000 Earth pounds, would probably be very unstable and no longer habitable, and needs to be deorbited so that it would not cause damage or casualties on Earth. RKA was probably thinking about the fate of Mir, which was in orbit for 15 years, and was finally abandoned, but fell into Earth's atmosphere and burned up before it could be deorbited in 2001. It may also be that the Russians are trying to get some controlling leverage on the ISS program, now that the shuttle has been retired and all manned activities are at the mercy of RKA, at least for the nest few years. At any rate, the space community and the American public have not heard the last of this issue.

Mars Curiosity Headed for Martian Crater



On july 21, NASA and the Jet Propulsion Laboratory announced that the Mars Curiosity landing team had chosen Gale Crater as the landing site for the SUV sized rover. Curiosity will land in the northern part of the 96 mile wide crater, and its primary objective will be to explore for water and evidence of life. By choosing Gale Crater over three other finalist landing sites, JPL hopes to find strong evidence that Mars once had vast amounts of water, and consequently life forms on the surface. The rover will land in a part of the crater that has an alluvial fan, which may contain traces of water and wet soil. During its mission, Curiosity will travel almost 40 miles, take hundreds of thousands of images, and sample and scientifically analyze soil and rock samples. Curiously is now scheduled to be launched on November 25, 2011, and land on the Red Planet in August 2012, for a scheduled six month mission(But then Mars Spirit and Mars opportunity were supposed to be short term missions as well. Spirit was officially declared dead in May 2011, after six years, and Opportunity is still going strong as of this writing, almost seven years into its mission). Above-an image of Gale Crater with the landing area in a ellipse.

Space-X Announces Next Dragon Flight

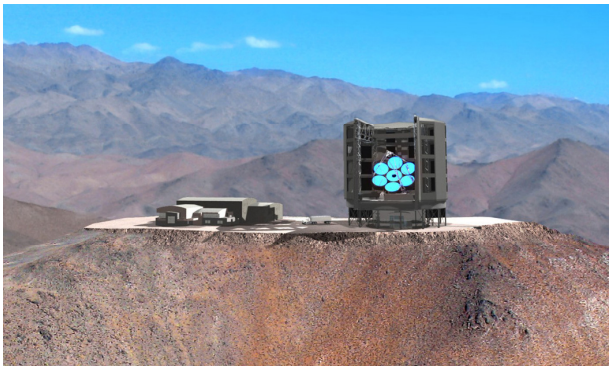
Space-X announced in July that the next unmanned Dragon flight will be launched on November 30, and that it will combine two missions in one: it will undertake a long-term orbital flight, and it will also dock with ISS, and deliver its first batch of cargo. Space-X decided to do the combined mission, rather than two separate flights to spped up the development of the Falcon-Dragon system, and also to fulfill its contract with NASA to start delivering supplies to ISS by the end of this year. Space-X also announced that work on the manned version of Dragon is going well, and that it should be ready for manned missions to ISS by early 2014.

In the meantime, Orbital Sciences Corporation announced that it has received a NASA contract to develop and launch its Cygnus unmanned cargo spacecraft by 2014. NASA is counting on both Space-X and Orbital Sciences to deliver cargo to ISS, perhaps for the rest of the decade. Cygnus is a cargo ship about the size of the Russian Soyuz spacecraft, and will be remotely operated. Right-OS' Cygnus

Space Shuttle Trivia-From the last issue

Who was the first non-American to fly aboard an American spacecraft?-Ulf Merbold of Germany on STS-9, Spacelab 1
Who made the most flights aboard the Space Shuttle? Two men: Jerry Ross and Franklin Chang-Diaz, both with seven flights
What were the Shuttle's three landing sites? The Kennedy Space Center, Edwards Air force Base, and White Sands Missile Range
Who was the first Russian aboard a Shuttle flight? Sergei Krikavelov aboard STS-60
How many Shuttle launch pads were there? Two, pads 39 A and 39B, which were originally built for the Apollo-Saturn misisons, then modified for the Shuttle. A third pad, 39C, was never built
Who was the first non-NASA "civilian" astronaut to fly aboard the Shuttle? Charles Walker, an engineer with McDonald-Douglass, who first flew aboard STS-41D. He flew in space three times
What was the average "turn around" time for a shuttle orbiter? About four months(NASA originally envisioned shuttles' turn-around time at two weeks)
What animal caused a Shuttle flight to be delayed three months? A woodpecker tapped holes in the protective insulation of the fuel tank of STS–70 as it sat on the launch pad. Eventually, the shuttle had to be taken back to the VAB and the fuel tank replaced
How many times did the Shuttle visit the Mir space station? Eleven times
Who was the oldest person on a Shuttle flight? John Glenn at age 78, aboard STS-95
Name one of the Shuttle's overseas emergency landing sites. Spain, the island of Crete, and Hawaii
Name the three major telescopes that the Shuttle put into orbit. Hubble, the Compton Gamma Ray Observatory, and the Chandra X-Ray Telescope
What was the name of the satellite that the shuttle "captured" and fixed in 1984? SMS, the Solar Maximum Satellite
What European born astronaut flew on more Shuttle flights than any other foreigner? Claude Nicollier of Switzerland, who flew on four shuttle missions
The term "bad hair day" originated with what happening aboard the early shuttle flights? When the first women, Sally Ride and Kathleen Sullivan, flew, their long hair spread all over the place in micro-gravity. They would jokingly call their flights "bad hair days."
A married couple flew on one of the Shuttle missions. Who were they and which one was it? Mark Lee and Jan Davis on STS-47. They were secretly married and didn't tell NASA about it until only a week before the flight. Afterwards, NASA passed a rule saying that married couples could not fly on the same mission.
What shuttle mission had to be duplicated because the original one was forced to end early due to problems?] STS-83(which was scheduled to be a fifteen day SpaceLab mission) was forced to return to Earth after four days due to major problems. NASA decided to repeat the mission with the same crew, and it flew again as STS-94(also known as STS-83R)

Huge New Telescopes Coming



They haven't received a lot of publicity up to now, but engineers and scientists are working on three new giant telescopes that will dwarf existing models, and bring whole new worlds literally into focus.

The first is what is called the GMT, the Giant Magellon Telescope, which will be built at Las Companas Observatory in the Andes Mountains of Chile, and is projected to see first light in 2018. GMT will actually consist of seven mirrors, each 8.4 meters(27.6 feet) in diameter. They will be set in a frame and curved and angled to work as one giant mirror, which will have an overall diameter of 81 feet. Currently, the mirrors are being made in the famous rotating oven at the University of Arizona's Stewart Observatory optical lab in Tucson. The GMT is being sponsored and financed by a consortium of institutions and universities including the Carnegie Institution, the Smithsonian Astrophysical Observations, the University of Texas, Texas A & M University, Harvard University, the University of Chicago, the University of Arizona, and the Australian National University.

Another future monster telescope will be TMT, the Thirty Meter Telescope. In 2009, the directors of the project decided to build it a Mauna Kea in Hawaii. Making it the laergest telescope on them ountain by far. TMT will have 492 segmented mirrors working together to form one mirror thirty meters(98 feet) in diameter, and will be able to "see" from the near ultra-violet to the mid-infrared. It will also have an adaptive optics system that will give it up to ten times the resolution of the Hubble Space Telescope. Preliminary work on TMT has alredy begun at Mauna Kea, and the telescope hopes to see first light with at least csome of its segments in 2014. The cost of the telescope is estimated at $900 million; it is being sponsored and funded by The California Institute of Technology, the University of California, and the Association of Canadian Universities for Research in Astronomy.

The third is the Large Synoptic Survey Telescope(LSST), which is being planned for Cerro Pachon in northern Chile, near the Gemini South Telescope. LSST will have a primary mirror of 8.36 meters(27,8 feet) ,with a very wide field of vew: 3.6 degrees.

This is because its primary mission will be to image the entire sky every three nights; as part of the telescope, engineers are also building a digital camera the size of a human that will have a 3.2 gigapixel CCD capacity. It is expected to take over 200,000 images every year; the computer power needed for the images is estimated at over 100 teraflops per night, and the storage is estimated at 15 petabytes, and will probably rise as the telescope goes into full operation. The LSST, which is scheduled to begin operations in 2015, is being sponsored and built by a consortium of ninetten universities and organizations, including Pennsylvania State University, Columbia University, the University of Illinois, the University of Arizona, the University of California-Davis, Princeton Univeristy, the Stanford Linear Accelerator, the Lawrence Livermore Laboratory, the Brookhaven National Laboratory, the Harvard-Smithsonian Institute for Astrophysics, the California Institute of Technology, and several others. Recently Google, Inc. signed on with the project to help with the image and data gathering and processing.

Number of extra-solar planets found as of August 2011-573
How many more are out there?

CVA's Astronomy Exhibit at the Fresno County Library

In July, CVA members Randy Steiner, Ste Harness, and Warren McGuire designed and set up an exhibit on astronomy at the Fresno County Public Library's downtown branch. The library will also hand out CVA information sheets to all who are interested. A great display and a round of applause for Randy, Steve, and Warren!

Warren, Steve, and Randy in front of the display window

The completed display window

Astronomical Trivia

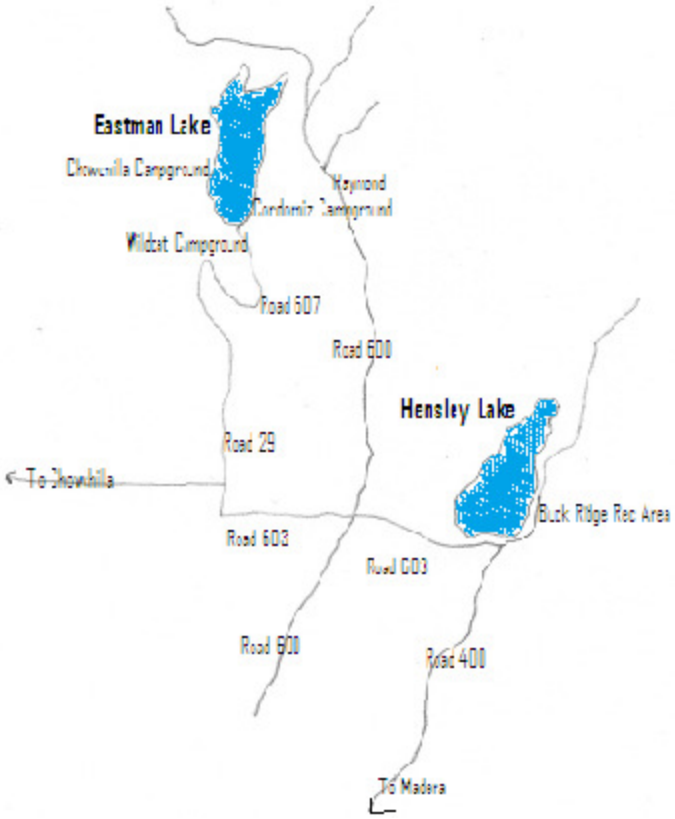
This issue's trivia question-

Up to the 20th century, most(but not all) reflecting telescope mirrors were not made out of polished glass. What was the most common material used for them?

Up to the 1800s, most mirrors were made of polished metal, copper and tin being the most common. These had the advantages of being solid and easily cleaned, but they were also hard to make, especially the parabolic curve. Another drawback was that fact that they tarnished and pitted easily, making them almost useless after a few years. As a result, with advances in polishing and coating technology, mirrors made out of molded glass became increasingly popular in the mid-1800s, and by 1900, virtually all large reflecting telescopes were using them.

This issue's Trivia Question-

Where did we get the term *Galaxy* to describe the "island universes" in the nighttime sky?



To Hensley and Eastman Lakes-Star party sites

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Deadline for articles submission for the November-December 2011 issue- October 14

Please submit articles in Microsoft Word format

Astronomy Short

Not many people know about it, but the world's most remote observatory is at the South Pole. It is a microwave/millimeter wave telescope run by a consortium of universities and funded by the National Science Foundation. Its purpose is to study galaxy clusters in order to learn more about the mysterious dark energy.

Another Hubble Classic Image

This is the Necklace Nebula, a recently discovered object in the constellation Sagitta, taken by Hubble in July 2011. It is a planetary nebula, about 15,000 light years away. The "diamond" glow is lumps of gas being absorbed by ultraviolet light. Image by NASA-HST